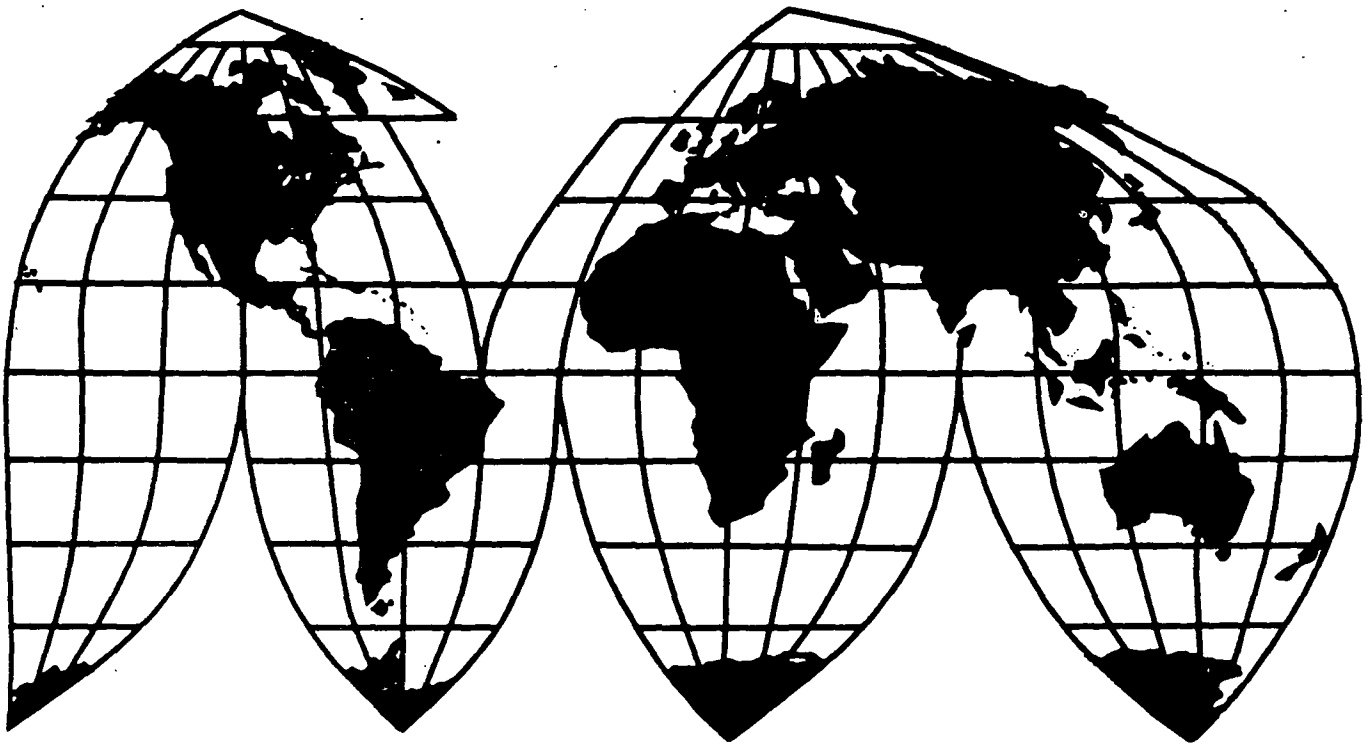
Dry Peas and Lentils: Conditions of Competition Between the United States and Canada in Third-Country Markets

Report to the Committee on Ways and Means of
the United States House of Representatives
on Investigation No. 332-335
Under Section 332(g) of the Tariff Act of 1930

Publication 2627 **April 1993**

U.S. International Trade Commission



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PREFACE

On September 14, 1992, at the request of the Committee on Ways and Means (Committee), U.S. House of Representatives,[1] and in accordance with section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), the U.S. International Trade Commission (Commission) instituted investigation No. 332-335, *Dry Peas and Lentils: Conditions of Competition Between the United States and Canada in Third-Country Markets*, for the purpose of providing a report on the conditions of competition between the United States and Canada in dry peas and lentils. More specifically, the Committee was interested in the competitive conditions of the U.S. and Canadian dry pea and lentil industries in overseas markets and the effect of Canadian Government programs on those competitive conditions. The Committee requested that, to the extent possible in its investigation, the Commission should:

(1) Describe and analyze the U.S. and Canadian dry pea and lentil industries, including patterns of production, consumption, exports, and imports since 1986;

(2) Describe and analyze the current conditions of trade in dry peas and lentils between the United States, Canada, and the rest of the world;

(3) Describe and analyze the purpose, nature, and use of Canadian programs and policies to assist dry pea and lentil producers and exporters and their impact on competitive conditions. When examining Canadian programs and policies, special attention should be given to programs affecting transportation costs, including the Western Grain Transportation Act, and income support programs, such as the Gross Revenue Insurance Program; and

(4) Provide an analysis of other relevant factors having a significant bearing on competitive conditions and trade in dry peas and lentils, including prices, production and marketing costs, and exchange rates.

Notice of the investigation and hearing was posted in the Office of the Secretary, U.S. International Trade Commission, Washington, DC,[2] and published in the Federal Register (57 F.R. 43985) of September 23, 1992. A public hearing on the investigation was held on December 8, 1992, in Washington, DC.

The information presented in this report was obtained from a number of sources, including: the Commission's files; the public hearing; fieldwork, which included visits with U.S. and Canadian growers and their respective associations, importers, exporters, and processors of dry peas and lentils in

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[1] The request from the Committee on Ways and Means is reproduced in appendix A.

[2] A copy of the Commission's notice of investigation and public hearing is reproduced in appendix B.

the United States and Canada, as well as Federal, State, and Provincial Government agencies; and, academic researchers. The Commission was requested to report the results of the investigation as soon as possible, but no later than April 20, 1993.

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EXECUTIVE SUMMARY

Background

In crop year 1991/92, the United States exported 83,000 metric tons (mt) (47 percent of U.S. production) of dry peas and 37,000 metric tons (49 percent of U.S. production) of lentils (table A). In the same year, Canadian exports of dry peas amounted to 271,000 mt (66 percent of Canadian production) and exports of lentils amounted to 187,000 mt (55 percent of Canadian production). Although the U.S. and Canadian products have some differences (e.g., a large share of Canada's exports of dry peas are feed quality while the United States exports food quality dry peas), U.S. and Canadian dry peas and lentils compete directly in many third-country markets.

This investigation was conducted at the request of the House Committee on Ways and Means (the Committee). In its letter of August 10, 1992, the Committee expressed concern about the effect of Canadian Government programs, particularly the Western Grain Transportation Act (WGTA) and the Gross Revenue Insurance Program (GRIP), on the ability of the U.S. dry pea and lentil industry to compete internationally. Within this context, the Committee requested the Commission to conduct an investigation under section 332(g) of the Tariff Act of 1930 [19 U.S.C. 1332(g)] for the purpose of providing a report on the conditions of competition between the United States and Canada in dry peas and lentils in overseas markets and the effect of Canadian Government programs on those competitive conditions. The following paragraphs summarize results of this investigation.

Summary of Conclusions

Production and Export Trends

- Production of dry peas and lentils in the United States fluctuated erratically during 1986/87 through 1991/92, with the fluctuations being the result of weather variations, though harvested area fluctuated as well. U.S. production of dry peas during 1986/87 through 1991/92 ranged from 109,000 mt to 185,000 mt and averaged 164,000 mt annually. Production of lentils ranged from 41,000 mt to 81,000 mt and averaged 60,000 mt annually.

- Production of dry peas and lentils in Canada increased throughout the same period. Canadian production of dry peas increased from 239,000 mt in 1986/87 to 410,000 mt in 1991/92; production of lentils more than doubled, increasing from 171,000 mt in 1986/87 to 343,000 mt in 1991/92.

- U.S. exports of dry peas and lentils fluctuated erratically with no discernable trend during 1986/87 through 1991/92, and averaged 101,000 and 45,000 mt, respectively. During the same period, Canadian exports of dry peas increased from 125,000 to 271,000 mt and exports of lentils increased from 110,000 to 187,000 mt. India, the Philippines, and Peru were the leading export markets for U.S. dry peas; Spain, Peru, and Italy were the leading export markets for U.S. lentils. The leading

Table A
Profile of U.S. and Canadian dry pea and lentil industries, crop years[1] 1986/87 to 1991/92

	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
United States:						
Harvested area in dry peas (1,000 hectares)	85	82	75	72	68	82
Harvested area in lentils (1,000 hectares)	65	62	30	38	46	52
Production of dry peas (1,000 metric tons)	158	184	171	185	109	175
Production of lentils (1,000 metric tons)	81	77	38	49	41	76
Yield of dry peas (metric tons per hectares)	1.88	2.24	2.29	2.58	1.61	2.15
Yield of lentils (metric tons per hectares)	1.24	1.25	1.27	1.27	0.89	1.48
Exports of dry peas (1,000 metric tons)	85	116	109	142	72	83
Exports of lentils (1,000 metric tons)	38	33	46	65	49	37
Ratio of exports of dry peas to production (percent)	54	63	64	77	66	47
Ratio of exports of lentils to production (percent)	47	43	121	133	120	49
Canada:						
Harvested area in dry peas (1,000 hectares)	131	237	271	150	123	198
Harvested area in lentils (1,000 hectares)	131	218	136	103	134	238
Production of dry peas (1,000 metric tons)	239	415	320	234	264	410
Production of lentils (1,000 metric tons)	171	286	59	96	213	343
Yield of dry peas (metric tons per hectares)	1.82	1.75	1.18	1.56	2.15	2.07
Yield of lentils (metric tons per hectares)	1.31	1.31	0.43	0.93	1.59	1.44
Exports of dry peas (1,000 metric tons)	125	305	193	179	163	271
Exports of lentils (1,000 metric tons)	110	160	78	90	150	187
Ratio of exports of dry peas to production (percent)	52	73	60	76	62	66
Ratio of exports of lentils to production (percent)	64	56	132	94	70	55

[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission based on data from the American Dry Pea and Lentil Association; U.S. Department of Commerce; Statistics Canada; and report from American Embassy, Ottawa, Sept. 28, 1992, pp. 3-7 and pp. 9-13.

market for Canadian dry peas and lentils was the European Community, which accounted for 50 percent of Canadian exports of dry peas and 41 percent of Canadian exports of lentils in 1991/92.

- An increasing portion of U.S. exports of dry peas and lentils are concessional sales. Public Law 480 sales accounted for 24 percent and 35 percent of the volume of U.S. exports of dry peas and lentils, respectively, in marketing year 1991/92. Exports under Canadian food assistance programs accounted for 13 percent of the volume of Canadian exports of food-quality dry peas and 4 percent of lentil exports in 1991/92.

- Competition between the United States and Canada is increasing in foreign dry pea and lentil markets. The United States has lost market share in traditional commercial export markets in South America, Spain, and India, while Canadian exports to these markets have risen. U.S. exporters have attempted to defend export market shares by creating product niches, based on quality differences. Nonetheless, price is still the most important factor in the dry pea and lentil trade.

- A number of factors have influenced the relative growth in Canadian and U.S. dry pea and lentil production and trade during 1986/87-1991/92. These include market factors, government programs in the United States and Canada, and cost differentials that tend to provide a price advantage to Canadian producers.

Impact of Government Programs

- According to the Commission's statistical analysis, the 26-percent decline in the Canadian export price for wheat during 1985-90 was an important factor explaining the growth of Canadian crop area in dry peas and lentils through 1990/91. Wheat, an important crop for dry pea and lentil producers, is grown in rotation with these crops in both the United States and Canada. The Commission's analysis indicated that U.S. price-support program benefits for wheat and barley, as well as higher yields reported for these crops, generally restrict U.S. wheat and barley growers from shifting to dry peas and lentils in response to market prices. The decline in the U.S. loan rate for wheat, as well as the Export Enhancement Program, were important factors contributing to changes in world wheat prices during this period.

- In 1991/92, the Canadian government introduced the GRIP, a voluntary program which provides both price and yield insurance to participating producers of dry peas and lentils, as well as other crops, in Canada. The GRIP provides this insurance by offering producers guaranteed target revenues that are specific for each eligible crop. The Commission's statistical analysis found that the guaranteed target revenues established by the GRIP during 1991/92-1992/93 induced additional Canadian production of dry peas and lentils by (1) providing revenue incentives that, on average, favored dry pea and lentil production relative to wheat, and (2) reducing the uncertainty in price and yield associated with their production. Higher Canadian production of dry

peas and lentils under the GRIP has resulted in increased Canadian exports and lower world prices for these products.

- It is likely that the addition of dry peas and lentils to the list of products eligible for Canadian transportation assistance under the WGTA in 1984 also benefitted Canadian dry pea and lentil growers, thereby encouraging increased Canadian production and exports of these crops. The effect of changes in the WGTA on current Canadian production of dry peas and lentils may be indeterminate, however, for two reasons. First, under the GRIP, target revenues are based on long-term average prices. Thus, for producers enrolled in the GRIP, the prices received for dry peas and lentils may not be appreciably affected by any modification of the WGTA, at least in the short- to medium-run. Second, prior research on the WGTA indicates that the program primarily benefits relatively lower-valued crops, such as wheat, barley, and other export grains. If WGTA assistance were eliminated for dry peas and lentils, as well as for other crops, then the resulting price changes could induce additional production of dry peas and lentils.

Other Competitive Factors

- U.S. export prices for dry peas were 24 percent higher than Canadian prices, on average, during 1986-92 and 40 percent higher than Canadian export prices for lentils. Production and transportation cost advantages, in addition to quality differences between the U.S. and Canadian products, have contributed to the lower export prices for Canadian dry peas and lentils. Total production costs for dry peas in Canada are roughly 46 percent less than costs in the United States, and roughly 34 percent less for lentils. Additionally, Canadian shippers of dry peas and lentils benefit from both internal and external transportation cost differentials that tend to provide the Canadian product with a cost advantage over the U.S. product in third-country markets. Recently, Canadian exporters have begun to ship food-grade peas from Vancouver to India and Colombia in bulk instead of in containers, which reduces shipping costs by up to 50 percent.

- The decline in the value of the U.S. dollar relative to the Canadian dollar during 1986-92 should have contributed to a price advantage for U.S. exports of dry peas and lentils. However, the effect of exchange rate changes on U.S. and Canadian exports may have been overshadowed by other factors that determine dry pea and lentil prices in third-country markets.

Acreage base.--The annual total of the individual crop acreage bases (wheat, feed grains, upland cotton, and rice) on a farm, the average acreage planted to soybeans, peanuts, and other approved nonprogram crops, and the average acreage devoted to conserving uses. Conserving uses include all uses of cropland except crop acreage bases, acreage devoted to nonprogram crops, acreage enrolled in annual acreage reduction or limitation programs, and acreage in the conservation reserve program.

Acreage reduction program (ARP).--A voluntary land retirement system in which participating farmers idle a prescribed part of the crop acreage base of wheat, feed grains, cotton, or rice. The base is the average of the acreage planted for harvest and considered to be planted for harvest. Acreage considered to be planted includes any acreage not planted because of acreage reduction and diversion programs during a period specified by law. Farmers are not given a direct payment for ARP participation, although they must participate to be eligible for benefits such as Commodity Credit Corporation loans and deficiency payments.

Commodity Credit Corporation (CCC).--A federally owned and operated corporation within the U.S. Department of Agriculture created to stabilize, support, and protect farm income and prices through loans, purchases, payments, and other operations. All money transactions for agricultural price and income support and related programs are handled through the CCC; the CCC also helps maintain balanced, adequate supplies of agricultural commodities and helps in their orderly distribution.

Common Agricultural Policy (CAP).--A set of regulations by which member states of the European Community seek to merge their individual agricultural programs into a unified effort to promote regional agricultural development and achieve other goals. The variable import levy and export restitution payments are main elements of the CAP.

Deficiency payment.--A Government payment made to farmers who participate in wheat, feed grain, cotton, or rice programs. The payment rate is per bushel, pound, or hundredweight, based on the difference between the price level established by law (target price) and the higher of the market price during a period specified by law or the price per unit at which the Government will provide loans to farmers to enable them to hold their crops for later sale (loan rate). The payment is equal to the payment rate multiplied by the acreage planted for harvest and then by the program yield established for the particular farm.

Export enhancement program (EEP).--Begun in May 1985 under a Commodity Credit Corporation charter to help U.S. exporters meet competitors' prices in subsidized markets. Under the EEP, exporters are awarded bonus certificates which are redeemable for CCC-owned commodities, enabling them to sell certain commodities to specified countries at prices below those of the U.S. market.

Export prices.--As used in this report, U.S. and Canadian export unit values are referred to as prices.

Hectare.--One hectare is equal to 2.47 acres.

Import prices.--As used in this report, import unit values are referred to as prices.

Legume.--A family of plants that produces seeds in a fruit called a pod. More technically, a legume is a superior one-celled, monocarpellary fruit, usually dehiscent into two valves, and having the seed attached along the ventral suture. Legume plants have the ability to improve soil fertility by returning more nitrogen to the soil than was taken from it; the plants, in a symbiotic relationship with bacteria that form nodules on the plant roots, "fix" nitrogen from the air.

Loan rate.--The price per unit (bushel, bale, or pound) at which the Government will provide loans to farmers to enable them to hold their crops for later sale.

Metric ton.--One metric ton is equal to 2,204.62 pounds.

Nonrecourse loans.--Farm loans provided under the CCC that allow farmers who agree to comply with all commodity program provisions may pledge a quantity of a commodity as collateral and obtain a loan from the CCC. The borrower may elect either to repay the loan with interest within a specified period and regain control of the collateral commodity or default on the loan. In case of a default, the borrower forfeits without penalty the collateral commodity to the CCC.

Public Law 480 (P.L. 480).--The common name for the Agricultural Trade Development and Assistance Act of 1954. U.S. exports of dry peas and lentils under this program are sold through long-term considered concessional financing or donated by the U.S. government to eligible foreign countries for use as food aid for disaster relief, foreign feeding programs, and food for work programs.

Pulse.--The edible seeds of leguminous plants, including dry peas, beans, lentils, and chickpeas.

Target price.--A price level established by law for wheat, feed grains, cotton, and rice. Farmers participating in the Federal commodity programs receive the difference between the target price and the higher of the market price during a period prescribed by law or the unit price at which the Government will provide loans to farmers to enable them to hold their crops for later sale (the loan rate).

CHAPTER 1

INTRODUCTION

The United States has been a major global supplier of dry peas and lentils for many years. During crop years 1984/85 to 1986/87,[1] U.S. exports of these products averaged 140,000 metric tons (mt) annually, or 15 percent of total world exports in 1985/86. Although U.S. exports of dry peas and lentils increased to an annual average of 159,000 mt during 1989/90 to 1991/92, the U.S. market share declined to 10 percent of total world exports in 1991/92. Part of the decline in the U.S. export share can be explained by the fact that foreign competitors have increased their exports of dry peas for use as animal feed, whereas U.S. exports are primarily used as human food. Nonetheless, in recent years, U.S. exports to and U.S. market shares in foreign commercial dry pea and lentil food markets, such as Spain, Italy, Colombia, Venezuela, and India, have also declined. Moreover, an increasing proportion of U.S. dry pea and lentil exports are U.S. Government food aid donations under title II of Public Law 480 (P.L. 480).

Increased dry pea and lentil exports from Canada, an important U.S. competitor in foreign dry pea and lentil markets, have been cited by the U.S. industry in particular for their adverse impact on U.S. export shares in foreign commercial markets.[2] The U.S. industry contends that two Canadian agricultural programs, the Western Grain Transportation Act (WGTA) and the Gross Revenue Insurance Program (GRIP), provide unfair benefits to Canadian producers and exporters of dry peas and lentils. These benefits, according to the U.S. industry, result in increased Canadian production and exports of dry peas and lentils, thereby resulting in lower Canadian export prices in third-country markets.

The Canadian industry contends that the primary reason for growth in Canadian production and exports of dry peas and lentils has not been the WGTA or the GRIP, but the decline in the price of an important alternative crop, wheat, which occurred during 1985-90. The Canadian industry further contends that the reduced U.S. share of world dry pea and lentil exports has not resulted from Canadian competition, but from U.S. Government programs that discouraged U.S. wheat and barley producers from switching to dry peas and lentils in response to market signals.[3] Recent trends in U.S. and Canadian production and trade in dry peas and lentils, and the role of government programs, are discussed in this report.

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[1] In this report, a crop year covers the period from July 1 to the following June 30, unless otherwise noted.

[2] American Dry Pea and Lentil Association, prehearing brief, Nov. 11, 1992, p. 2.

[3] Canadian Special Crops Association and Western Canada Pulse Growers Association, joint posthearing brief, Jan. 5, 1993, p. 11.

Purpose and Approach of the Study

As requested by the House Committee on Ways and Means, the major objectives of this investigation are to--(1) describe and analyze the U.S. and Canadian dry pea and lentil industries, including patterns of production, consumption, exports, and imports since 1986; (2) describe and analyze the current conditions of trade in dry peas and lentils between the United States, Canada, and the rest of the world; (3) describe and analyze the purpose, nature, and use of Canadian programs and policies to assist dry pea and lentil producers and exporters, with special attention given to programs affecting transportation costs, including the WGTA, and to income support programs, such as the GRIP; and (4) provide an analysis of other relevant factors having a significant bearing on competitive conditions and trade in dry peas and lentils, including prices, production and marketing costs, and exchange rates. The investigation was instituted on September 14, 1992, following the receipt of a request dated August 10, 1992, from the Committee on Ways and Means, U.S. House of Representatives.

Information for this study was obtained from the Commission's files, interviews with U.S. and Canadian growers and their respective associations, and with importers, exporters, and processors of dry peas and lentils in the United States and Canada. Officials at Federal, State, and Provincial Government agencies in the United States and Canada, and academic researchers were also contacted for the study.

The Commission used statistical analysis to examine the effect of the GRIP and the WGTA on Canadian production of dry peas and lentils. The Commission also used statistical analysis to examine the effects of certain U.S. programs, particularly the crop support program for wheat and the Export Enhancement Program (EEP), on U.S. and Canadian production of these crops. In addition, the Commission evaluated the impact of the GRIP on U.S. and Canadian exports and prices of dry peas and lentils in third-country markets. This analysis was conducted by using an economic model that links changes in production to trade and export prices.

Scope of the Study

The Product

Dry peas and lentils are annual crops that are members of the legume family of plants whose seeds are produced in a pod. The edible seeds of these pod-bearing plants are also called pulses. Other important legumes include dry beans, soybeans, clover, and alfalfa. The dry peas covered by this study include whole and split green and yellow peas and Austrian Winter peas. Not included are pea seed and lentil seed for planting and several dry pulses which are commonly called "peas," but which are actually beans (e.g., chickpeas, black-eyed peas, and cowpeas).

Although there are hundreds of different varieties of dry peas and lentils produced and marketed worldwide, less than a dozen dry pea and lentil varieties are grown in the United States and Canada. Color and size are the

primary distinguishing characteristics of the different varieties of dry peas and lentils. The Brewer variety is the primary variety of lentil produced in the United States, whereas Canadian producers primarily grow the larger Laird variety. Similarly, U.S. producers primarily cultivate the Columbia variety of dry green pea, whereas Canadian producers primarily cultivate the green Radley and the yellow Century dry pea. The varieties grown in the United States and Canada reflect the particular growing conditions in each country. Additionally, each variety has specific cooking characteristics that may affect consumption in particular markets.

Due to their high protein content and nutritional value,[4] dry peas and lentils are primarily used as a food crop, especially in developing countries where they are an important substitute for higher cost protein from animals (meat and fish). Consumption of dry peas also competes with that of other pulses, such as dry beans, depending upon such factors as product availability, end-use requirements, and prices.[5] In recent years, dry peas and, to a lesser extent, lentils, have been increasingly used in animal feed, particularly in the European Community and in Canada. The food and feed markets for dry peas and lentils are related in that dry peas and lentils initially planted for food use can be diverted into the feed market where they receive a lower price.

On the production side, dry pea and lentil plants are important soil conditioners that are plowed under after seed harvest to add nutrients and organic matter to the soil. As with other legumes, dry pea and lentil plants 'fix' soil nitrogen (i.e., bind nitrogen from the air to soil particles), thereby making the soil more fertile for the cultivation of other plants. Therefore, when planted in rotation with such crops as wheat and barley, the production of dry peas and lentils tends to raise cereal-crop yields in the season following legume production.[6] However, dry peas and lentils have relatively shallow root systems and return relatively small quantities of crop residues to the field, thus leaving fields more susceptible to soil erosion.

Industry Defined

The dry pea and lentil industry in the United States and Canada includes (1) growers that produce dry peas and lentils on individual farms; (2) processors that clean, grade, and package dry peas and lentils; and (3) exporters that market, promote, and export dry peas and lentils. Dry peas and lentils are generally grown on the same farms, are handled by the same processors, shippers, or brokers, and are sold through the same distribution channels around the world. Both crops are similar in growing and processing requirements, thus enabling growers and processors to manage either crop

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[4] Dry peas and lentils provide large amounts of complex carbohydrates and fiber, as well as many vitamins and trace elements.

[5] The substitutability of lentils with dry peas and beans in consumer diets is less well established, according to industry sources.

[6] USA Dry Pea and Lentil Council, "Growing Into the Future," (Moscow, ID: 1991), p. 5.

without incurring any significant additional production or processing costs. Certain factors, however, such as topography and the amount of annual rainfall received, may favor the production of one crop over the other.

Production Processes

The process by which dry peas and lentils are made ready for sale is shown in figure 1-1 and described as follows:

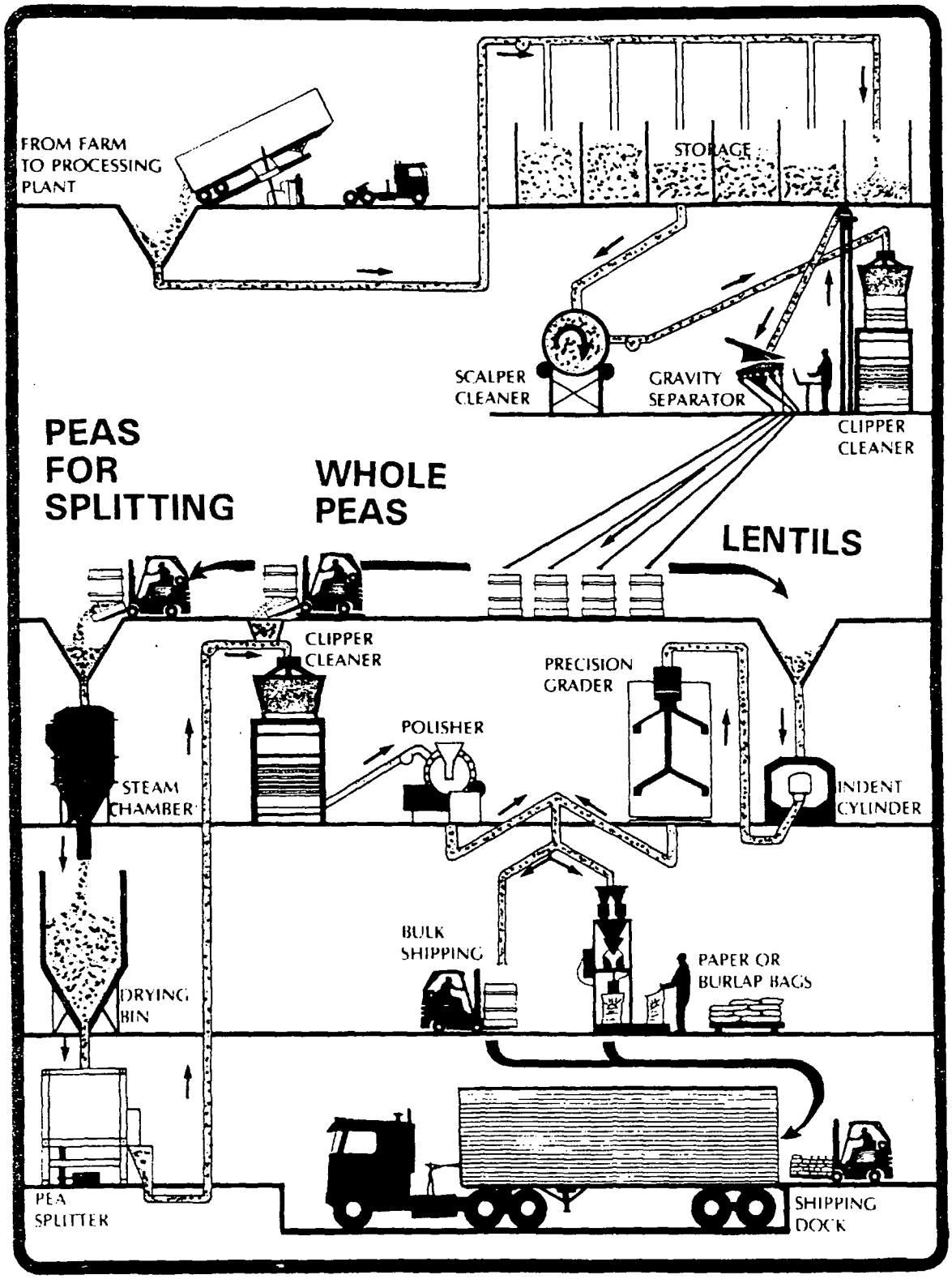
(1) About 90 days after planting, depending upon the variety grown, dry pea or lentil plants are mechanically harvested with specially adapted combines. The plants are cut close to the ground level, with the field-dried peas or lentils separated from their pods and vines. The pods and vines are dropped back into the field, and the seeds are loaded into trucks for bulk transport to nearby processing or storage facilities.

(2) At the processing facility, the field-dried seeds are commingled with seeds from a number of other growers and placed into bulk temporary storage. Although stored and processed separately, both dry pea and lentil seeds use the same extensive cleaning process. First, the seeds are put through a scalper cleaner that removes any remaining pods, stems, and dirt. Second, a clipper cleaner sizes the seeds, removing split and under-sized seeds. Finally, seeds are passed through a gravity separator which removes all other impurities that can be separated by weight.

(3) Lentils are then passed through an indent cylinder, to remove any remaining foreign matter, and then through a precision grader to remove cereal grains and weed seeds. The lentils are then packaged and ready for immediate shipment or storage. Peas, on the other hand, are handled slightly different. Prior to packaging, whole peas are passed through a clipper cleaner and polisher prior to packaging. Dry peas intended for splitting, however, are passed through a steam chamber to soften the seed prior to splitting and then through a drying bin. These peas are then passed through a splitter, prior to a final cleaning and polishing before packaging.

(4) Dry peas and lentils are usually packaged in one-pound bags or bulk bins for retail distribution. For international markets, dry peas and lentils are generally packaged in 100-pound burlap bags. Transportation from processing plants to consumers is usually by truck, rail, or barge.

Figure 1-1
Movement of dry peas and lentils from harvest to finished product



Source: "Growing into the Future," USA Dry Pea and Lentil Council, Moscow, ID.

Study Time Period

In most instances, the period covered by the study is 1986-92, the period during which significant increases in competition occurred in foreign markets for U.S. dry peas and lentils. Data for longer periods of time are presented, however, when necessary for the purpose of analysis.

Organization of the Study

The remainder of this chapter provides an overview of the conditions leading to the study and a brief description of U.S. and Canadian dry pea and lentil industries and markets. Chapter 2 discusses the U.S. dry pea and lentil industry and market. Chapter 3 examines the Canadian industry and market. Chapter 4 describes the conditions of trade in major foreign dry pea and lentil markets. Chapter 5 provides an analysis of the effects of various government programs on the competitive conditions affecting the Canadian and U.S. industries. Chapter 6 examines other competitive factors, such as costs of production, ocean freight and handling, exchange rates, and prices. All of the tables referenced in the study are located in appendix C.

Overview of U.S. and Canadian Issues

Export Trends

In 1992/93, the United States produced 188,000 mt of dry peas and lentils--less than 1 percent of world production in that year. U.S. production of dry peas and lentils is largely concentrated in the States of Washington, Idaho, and Oregon. Although production is variable, based on weather and other related factors, the U.S. area planted in these crops has remained relatively constant since 1981. About three-fourths of annual U.S. production of dry peas and lentils is exported.

As shown in tables C-1 and C-2, the United States is one of four major exporters of dry peas, the others being Hungary, Canada, and Australia, and one of three major exporters of lentils, the others being Canada and Turkey. In 1991/92, Canada was the second leading exporter of dry peas, accounting for about 26 percent of world exports. Canada was the largest world exporter of lentils in that year, accounting for 37 percent of world exports. On the other hand, the U.S. shares of dry pea and lentil exports were 8 and 7 percent, respectively, in 1991/92.

U.S. exports of dry peas and lentils grew by 55,000 mt and 27,000 mt, respectively, during 1985/86 to 1989/90, and then fell appreciably during 1989/90 to 1991/92 (tables C-1 and C-2). Most of the growth in U.S. exports of lentils prior to 1990/91, however, occurred through sales under the P.L. 480 program; commercial lentil exports (total U.S. exports less exports under P.L. 480) actually declined during 1985/86 to 1989/90 by 7,400 mt and by 10,800 mt during 1985/86 to 1991/92. The share of U.S. exports of dry peas sold under P.L. 480 also increased starting in 1988/89. Sales under the P.L.

480 program accounted for 24 percent and 35 percent of the volume of U.S. exports of dry peas and lentils, respectively, in crop year 1991/92.

Almost all U.S. exports of dry peas are sold for food, whereas Canadian exports consist of both food- and feed-quality products. Both U.S. and Canadian lentil exports are primarily destined for food use, although Canada, from time to time, has exported small quantities for use as feed. Trends in U.S. and Canadian exports of dry peas and lentils from 1982/83 to 1991/92 are shown in figures 1-2 and 1-3, respectively.[7]

Growth in Canadian exports of both dry peas and lentils has largely occurred since 1985/86. Canadian dry pea and lentil exports rose by 171,000 mt and 152,000 mt, respectively, during 1985/86 to 1991/92 (tables C-1 and C-2). Exports of feed-quality dry peas to the European Community (EC) have accounted for much of the growth in Canada's exports of dry peas. However, Canada's exports of food-quality dry peas to non-EC destinations have risen steadily since 1988/89 (figure 1-2). Canada's exports of lentils also rose from 1985/86 to 1987/88, fell in 1988/89 owing to a decline in world prices and to poor yields, but then rose steadily thereafter. Canada provides some food-quality dry peas and lentils to developing countries under a food aid program administered by the Canadian International Development Agency (CIDA). Exports under the CIDA program accounted for 13 percent of Canadian exports of food-quality dry peas, and 4 percent of lentil exports in 1991/92.

The increase in Canadian exports of dry peas and lentils largely reflects the dramatic rise in dry pea and lentil production that has occurred in Canada since 1982. Dry peas and lentils are primarily grown in the Western Provinces of Alberta, Manitoba, and Saskatchewan. Higher Canadian production and exports of these crops are of particular concern to the U.S. industry because the Canadian products compete with U.S. products in foreign dry pea and lentil markets in South and Central America, the European Community, Asia, and elsewhere (figures 1-4 and 1-5).

To some extent, the growth in Canada's exports of dry peas and lentils has served to fill increased world demand, particularly in the market for feed-quality dry peas. Canada's exports have also resulted in some displacement of exports from other suppliers, such as Hungary and Turkey, whose dry pea and lentil exports have, in the past, been of similar quality to exports from Canada (tables C-1 and C-2). More recently, the U.S. dry pea and lentil industry has become concerned that Canadian sales are displacing U.S. exports. As shown in figures 1-2 and 1-3, the decline in U.S. exports during 1989/90 to 1991/92 was accompanied by increased Canadian sales. Related to the U.S. industry's concerns about declining exports is that, in 1990/91, Canada introduced a new revenue stabilization program that directly affects Canadian growers of dry peas and lentils.

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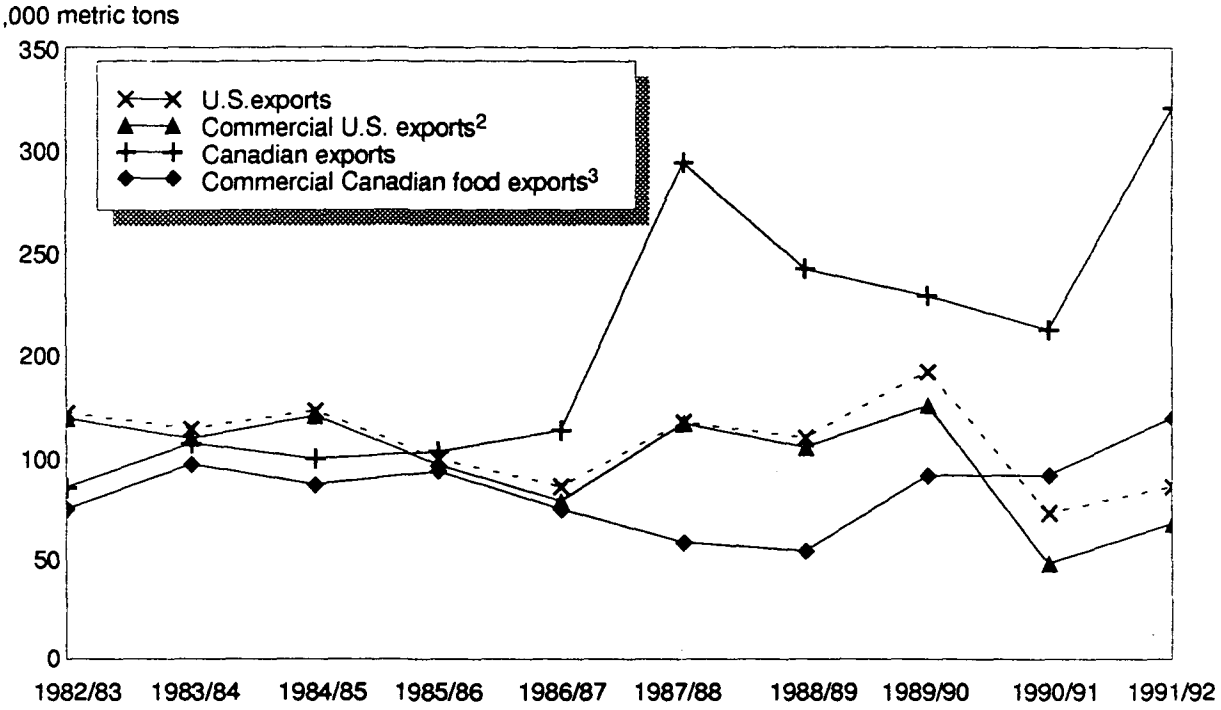
[7] Owing to data limitations, the Canadian data in figures 1-2 and 1-3 are for the calendar year until 1988/89.

Figure 1-2
Dry peas: U.S. and Canadian exports, crop years 1982/83 to 1991/92[1]

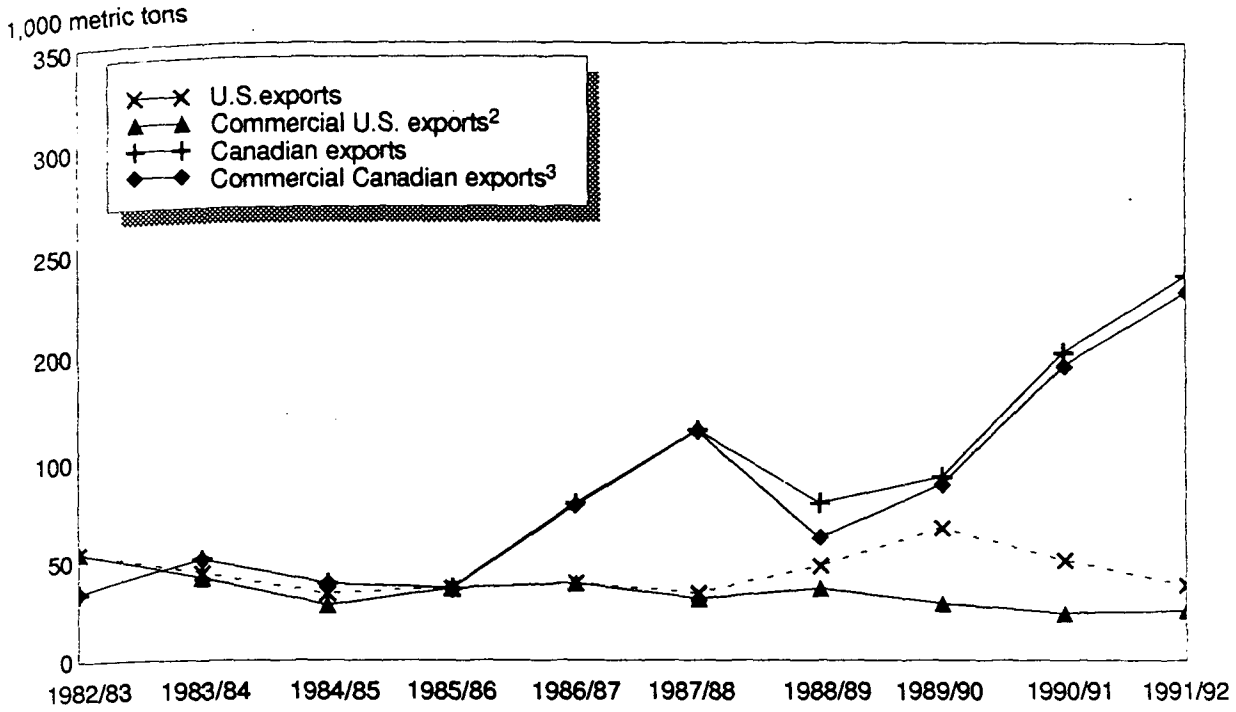


[1] Crop years are from July 1 to June 30.
[2] Commercial U.S. exports estimated as total U.S. exports less P.L. 480 tenders.
[3] Commercial Canadian food exports estimated as total Canadian exports less CIDA shipments and sales to the European Community.

Note.—Up until 1988/89, Canadian data are reported on a calendar year basis.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce and Statistics Canada.

Figure 1-3
Lentils: U.S. and Canadian exports, crop years 1982/83 to 1991/92[1]

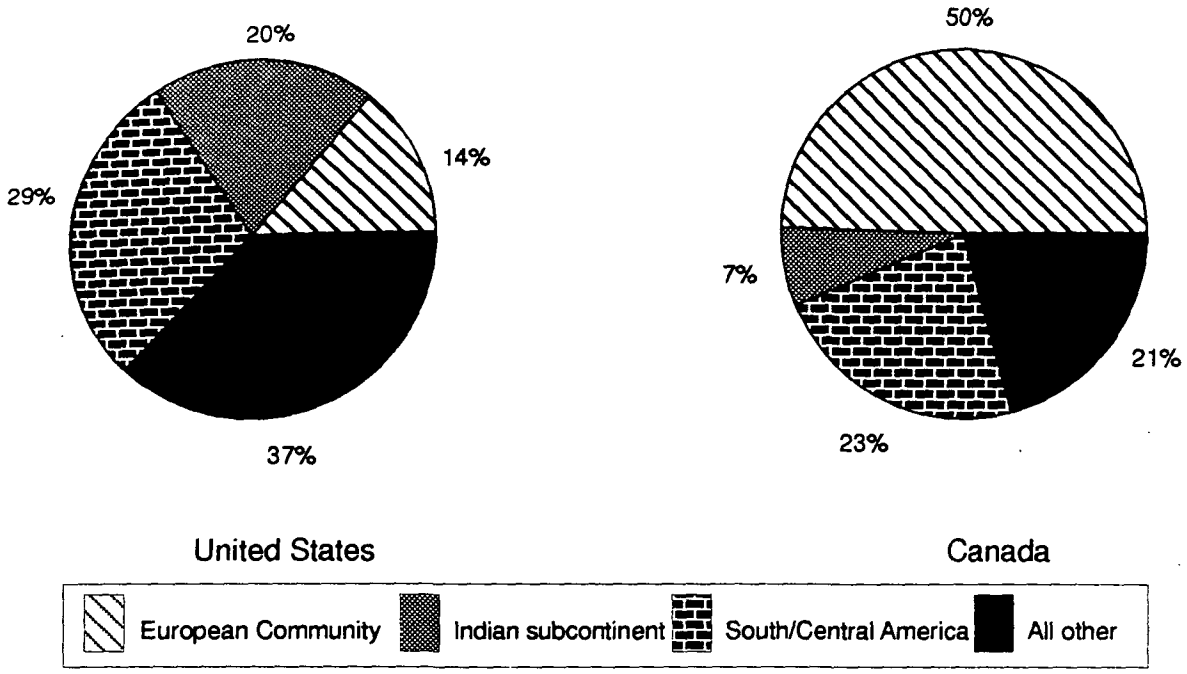


[1] Crop years are from July 1 to June 30.
[2] Commercial U.S. exports estimated as total U.S. exports less P.L. 480 tenders.
[3] Commercial Canadian food exports estimated as total Canadian exports less CIDA shipments.

Note.—Up until 1988/89, Canadian data are reported on a calendar year basis.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce and Statistics Canada.

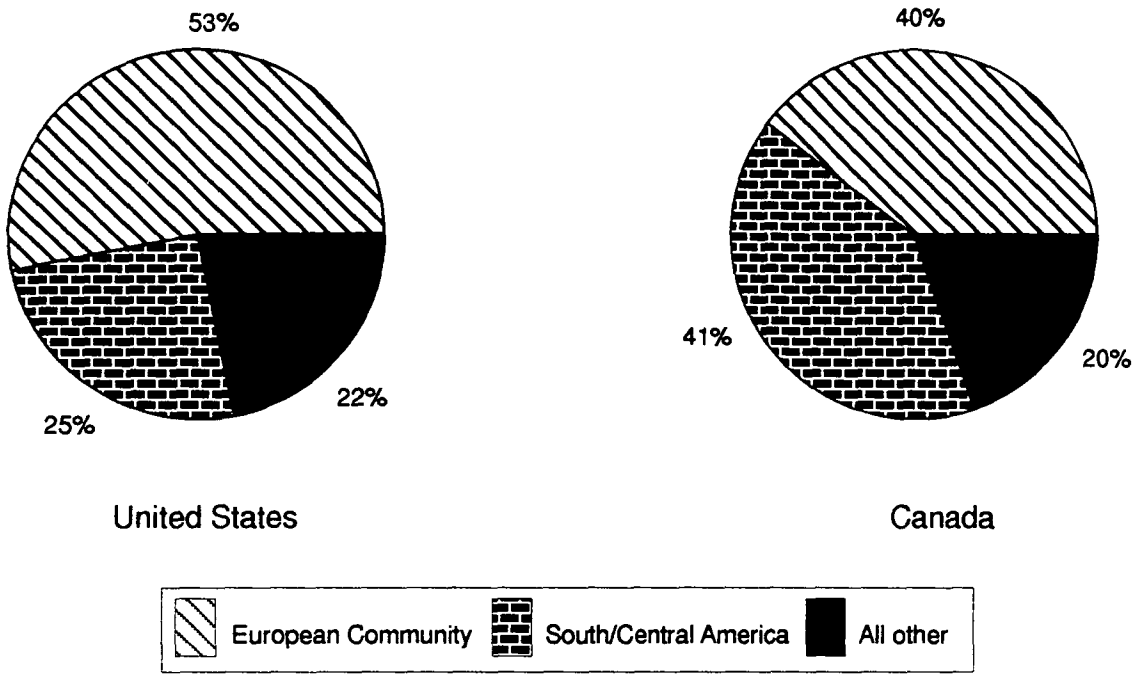
Figure 1-4
Dry peas: U.S. and Canadian exports, by destination, crop year 1991/92[1]



[1] Crop year from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce and Statistics Canada.

Figure 1-5
Lentils: U.S. and Canadian exports, by destination, crop year 1991/92[1]



[1] Crop year from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce and Statistics Canada.

Programs and Policies

As mentioned previously, the U.S. industry contends that increased production of Canadian dry peas and lentils has primarily been the result of two Canadian programs: the WGTA, which has been available for internal Canadian railroad shipments of dry peas and lentils since 1984, and the GRIP, which was enacted by Canadian Federal and Provincial Governments in 1991. According to industry sources, Canadian Government payments to Canadian railways for transporting eligible crops under the WGTA reduce Canadian freight costs to export markets, thus providing a price advantage to Canadian shippers in third-country markets.[8]

The GRIP is a voluntary, insurance-type program administered jointly by the Canadian Federal and Provincial Governments that provides income support for agricultural producers in Canada.[9] In a major restructuring of Canadian agricultural programs, the GRIP replaced three programs that previously had been applicable to agricultural producers in Western Canada: the Western Grains Stabilization Program, the Agricultural Stabilization Act, and the Special Canadian Grains Program.[10] The GRIP insures a target revenue per acre for over 30 crops produced in Canada, based on target prices and long-term average yields for each crop planted. A payout under the program is made to a producer when his actual revenue is lower than the guaranteed target revenue established under the GRIP. The cost of the program is shared among producers, the Canadian Federal Government, and participating Provincial Governments.

The GRIP introduced two important changes that are of concern to dry pea and lentil growers in the United States. First, dry peas and lentils had not previously been eligible for support under the Canadian programs it replaced. Thus, the U.S. industry is concerned that the insurance-type benefits of the GRIP, that is, reduced uncertainty in regard to price and revenue, will result in increased Canadian dry pea and lentil production. Second, the GRIP provides crop-specific payouts. U.S. producers are concerned that the GRIP target revenues for dry peas and lentils have encouraged Canadian producers to switch to dry peas and lentils from other crops.[11]

Canadian producers, on the other hand, argue that the WGTA and the GRIP have little impact on Canadian dry pea and lentil production.[12] In regard to WGTA, the Canadian industry contends that the program is product neutral; thus, it does not create incentives for farmers to expand production or

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[8] Glen Squires, Department of Agricultural Economics, U.S. Dry Peas & Lentils--Subsidized Foreign Competition: A Critical Issue, (Pullman, WA: Washington State University, June 1992), pp. 25-29.

[9] Richard Gray, et al., "A New Safety Net Program for Canadian Agriculture: GRIP," Choices, 3rd quarter, 1991, p. 34.

[10] These programs will be discussed more fully in chapter 3 of this report.

[11] Squires, Dry Peas & Lentils, p. 16.

[12] Canadian Special Crops Association and Western Canada Pulse Growers Association, prehearing brief, Nov. 23, 1992.

exports of any particular crop.[13] The Canadian industry also argues that the GRIP is a market-oriented insurance program that allows farmers to respond to market signals, rather than GRIP-determined incentives.[14]

The Canadian industry argues that the U.S. Export Enhancement Program, which has been used to promote U.S. exports of wheat and other commodities, contributed to lowering the price of wheat on world markets.[15] According to the Canadian industry, Canadian wheat prices during 1985-90 fell by Can$52.34 per metric ton,[16] or by 26 percent, as compared with 1980-84 average prices, thus encouraging Canadian wheat producers to increase production of dry peas and lentils. The Canadian industry also suggests that the opportunity to sell dry peas and lentils to the U.S. Government under P.L. 480 allows U.S. producers and exporters to be less aggressive in developing products and markets.[17]

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[13] Ibid., p. 37.
[14] Ibid., p. 41.
[15] Ibid., p. 45.
[16] Ibid., p. 47.
[17] Ibid., p. 50.

CHAPTER 2

U.S. INDUSTRY AND MARKET

The U.S. dry pea and lentil industry, relative to other agricultural sectors, is relatively small, accounting for about 0.1 percent of U.S. crop area in recent years. Dry peas and lentils, however, are important rotation crops for wheat and barley growers in eastern Washington State, northern Idaho, and northeastern Oregon. This chapter profiles the U.S. dry pea and lentil industry in terms of industry structure, production, consumption, trade levels, and Federal Government programs that affect this industry.

U.S. Industry

Number and Location of Producers

The number of farms producing dry peas and lentils, about 3,500, has remained relatively constant over the last decade. Virtually all U.S. dry pea and lentil production takes place in an area known as the Palouse, or 'Green lawn,' which is centered along the border between eastern Washington State, northern Idaho, and northeastern Oregon (figure 2-1). This area gets its name from the velvety green plants that cover the rolling hillsides in early spring.

According to industry sources,[1] the Palouse area has a total of about 405,000 hectares of usable farmland capable of supporting dry pea and lentil production, with about 125,000 hectares currently in production. About 60 percent of the area currently in production of dry peas and lentils is leased and about 40 percent is owned directly by farmers.[2] The area in dry pea and lentil production has remained about the same over the past 10 years.

Dry peas and lentils are largely grown in the Palouse area in rotation with wheat and barley. Wheat and barley yields tend to be higher following the production of dry peas or lentils because (1) dry peas and lentils "fix" nitrogen into the soil, thereby improving soil fertility; and because (2) dry peas and lentils, when grown in rotation with wheat and other grains, break the life cycle of harmful insect and disease organisms normally attacking these grain crops. As a result, most farmers are likely to continue growing dry peas and lentils even in periods when prices are low.[3] Additionally, the harvesting and transportation machinery used for wheat and barley can be used interchangeably for dry pea or lentil production.

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[1] Representative of the American Dry Pea and Lentil Association, interview by USITC staff, Moscow, ID, Oct. 1992.

[2] Douglas Young, Department of Agricultural Economics, Washington State University, Pullman, WA, telephone conversation with USITC staff, Dec. 10, 1992.

[3] Representative of the American Dry Pea and Lentil Association, interview by USITC staff, Moscow, ID, Oct. 1992.

Figure 2-1
Dry peas and lentils: Principal U.S. production region

Source: Prepared by the staff of the U.S. International Trade Commission from 1990-91 USA Dry Pea and Lentil Updates, USA Dry Pea and Lentil Council, Moscow, ID, 1991, p. 2.

The decision as to whether to plant dry peas or lentils depends on such factors as past experience raising each crop, expected market price, and the type of climate and soil. The area planted to lentils in 1992/93 was about 74 percent of the area planted to dry peas.[4]

In the Palouse growing area, dry peas and lentils are field dried with a normal moisture content of about 10 percent prior to harvesting and transport to a processor for storage. In nearly all other producing countries, dry peas and lentils have a much higher in-field moisture content at harvest and must, therefore, be mechanically dried at a processing facility prior to storage, which increases processing costs.

About 20 firms in the Palouse growing region process (i.e., clean, grade, and store) dry peas and lentils. Owing to overcapacity and lack of profitability, the number of processors has fallen in recent years. Recently, Conagra, Inc., a multinational agri-processing firm, purchased two processing facilities, but subsequently closed one of them (Klein Brothers, LTD.).

Over 40 firms throughout the United States account for the bulk of dry pea and lentil export shipments. Historically, most processors sold their product through a broker or exporter. In recent years, a growing number of processors have made direct export sales.

Trends in Production

About 116,465 mt of dry peas were produced on 72,000 hectares in the United States in 1992/93 (table C-3 and figure 2-2). Regular green peas, which accounted for 89 percent of production in 1992/93, supply the bulk of total U.S. production. Other types of dry peas include yellow peas and Austrian Winter peas. Yields are typically higher for green peas relative to the other types. Yields of about 2.2 mt per hectare were reported for green peas in 1991/92, followed by yields of 1.9 and 1.2 mt per hectare for yellow peas and Austrian Winter peas, respectively (figure 2-3).

Area harvested in dry peas fell steadily from 1986/87 to a 10-year low level in 1990/91, before rebounding slightly in 1991/92. Dry pea production, on the other hand, did not exhibit any particular trend (figure 2-2). Variability in yields accounted for much of the change in dry pea production during 1986/87 to 1992/93. Although dry pea yields generally trended upwards during 1986/87 to 1989/90, reaching an average of 2.6 mt per hectare in 1989/90, they fell by 38 percent to 1.6 mt per hectare in 1990/91 and 1992/93, owing to dry conditions in those years (figure 2-2 and table C-3).

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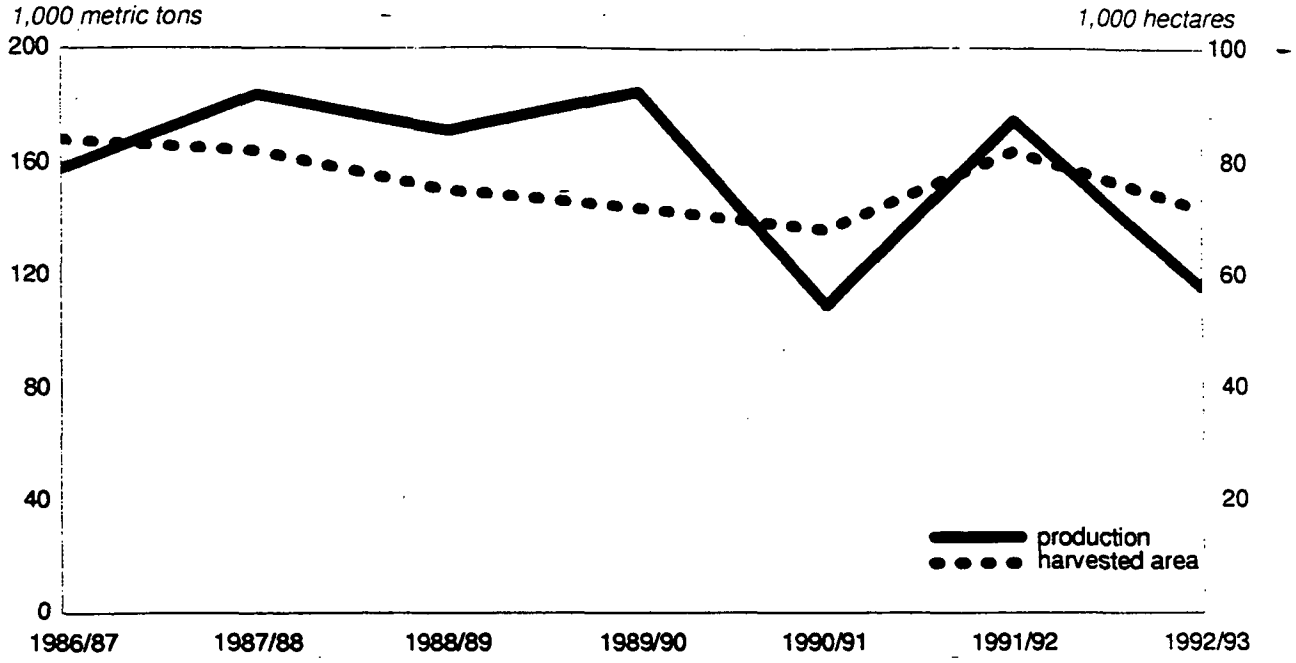
[4] Painter and Young also argue that greater price fluctuations for lentils may be partly responsible for the lower area planted in lentils relative to dry peas. See Kathleen Painter and Douglas Young, Environmental and Economic Trade-offs for Alternative Cropping Rotations in the Pacific Northwest Palouse, Washington State University, Pullman, WA, paper presented at the Soil and Water Conservation Society 47th Annual Meeting, Baltimore, MD, Aug. 9, 1992.

Figure 2-2
Dry peas: U.S. production and harvested area, crop years 1986/87 to 1992/93[1]

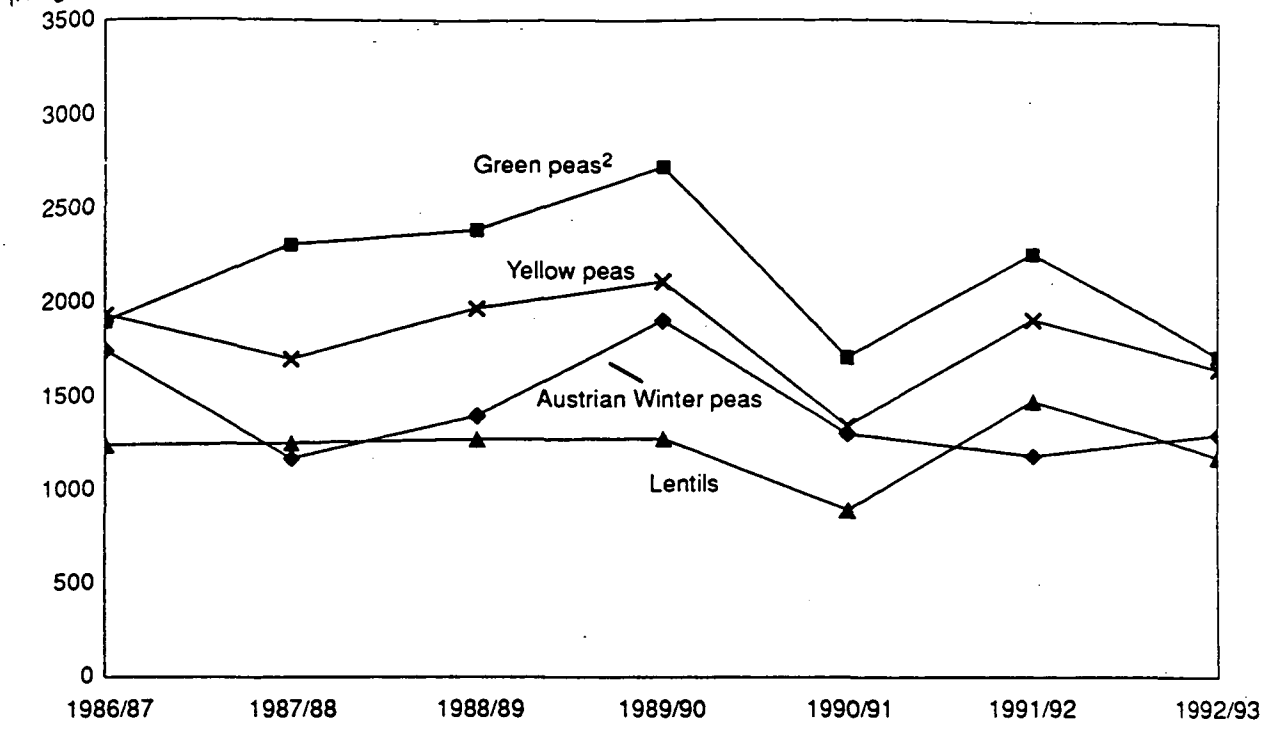


[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the American Dry Pea and Lentil Association, Moscow, ID.

Figure 2-3
Dry peas and lentils: U.S. yield, by types, crop years 1986/87 to 1992/93[1]

(Kilograms/hectare)



[1] Crop years are from July 1 to June 30.
[2] Average of regular and small-sieve green peas.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the American Dry Pea and Lentil Association, Moscow, ID.

In 1992/93, about 69,400 mt of lentils were produced on an estimated 53,430 hectares (figure 2-4 and table C-3). Lentil area and production fell by roughly 50 percent during 1986/87 to 1988/89, but increased somewhat during 1989/90 to 1992/93 (figure 2-4). Except for a weather-damaged crop in 1990, lentil yields trended slightly upward during 1986/87 to 1992/93 (figure 2-3).

Producer Prices

The average prices received by growers of dry peas and lentils, as reported by the Grain Market News Service in Greeley, Colorado, fluctuated during 1986/87 to 1991/92, but did not exhibit any particular trend, as shown in the following tabulation (in dollars per metric ton):

Crop	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
Dry peas . .	$182.31	$166.31	$191.77	$198.44	$270.74	$178.55
Lentils . . .	352.74	241.41	372.58	395.73	510.37	342.82

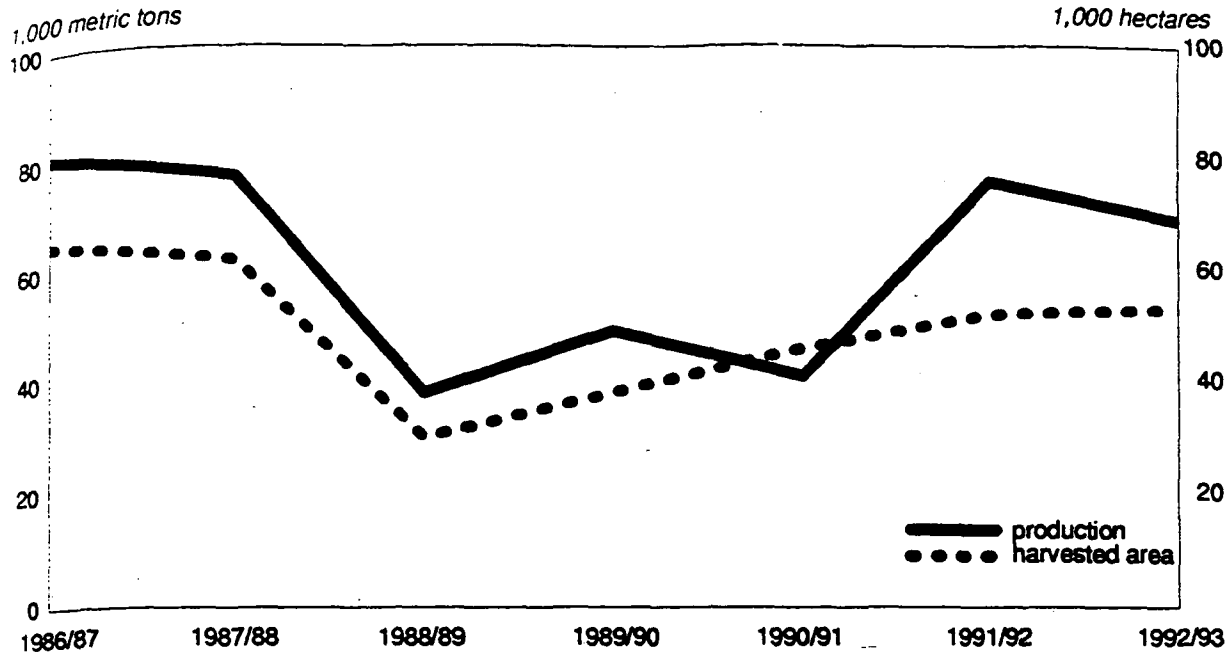
In addition, the relative prices received by growers generally fell in relation to the prices received for other crops, except in 1990/91, when drought conditions resulted in relatively high prices for both dry peas and lentils (figure 2-5). Changes in dry pea and lentil area during 1986/87 to 1992/93 generally reflect these relative price movements in that, with the exception of 1990/91, growers did not have an incentive to shift from production of other crops to dry peas and lentils. Nonetheless, changes in the grower prices of dry peas and lentils generally kept up with changes in the average price index of production inputs, except in 1987 and 1991. To the extent that the grower prices of dry peas and lentils kept up with movements in the input price index, then the returns received by these growers, net of variable costs plus interest and taxes, also stayed constant or possibly increased.

U.S. Market

Trends in Consumption

U.S. apparent consumption of dry peas fell irregularly from 73,000 mt in 1986/87 to 56,000 mt in 1991/92 (table C-4). Apparent U.S. consumption of lentils fluctuated considerably from 20,000 mt in 1986/87 to 30,000 mt in 1991/92 (table C-5). However, it is likely that actual U.S. consumption of dry peas and lentils is fairly stable. Much of the variability shown in U.S. apparent consumption is the result of the accounting methods used for stocks on hand. As both crops can be stored for over 1 year without sustaining significant deterioration in quality, large users of dry peas and lentils, such as soup makers and rebaggers who package for retail, may also be holding significant amounts of stocks that are not accounted for in the Commission staff's calculation. Thus, the timing of sales to large industrial users has a significant impact on the apparent consumption calculation.

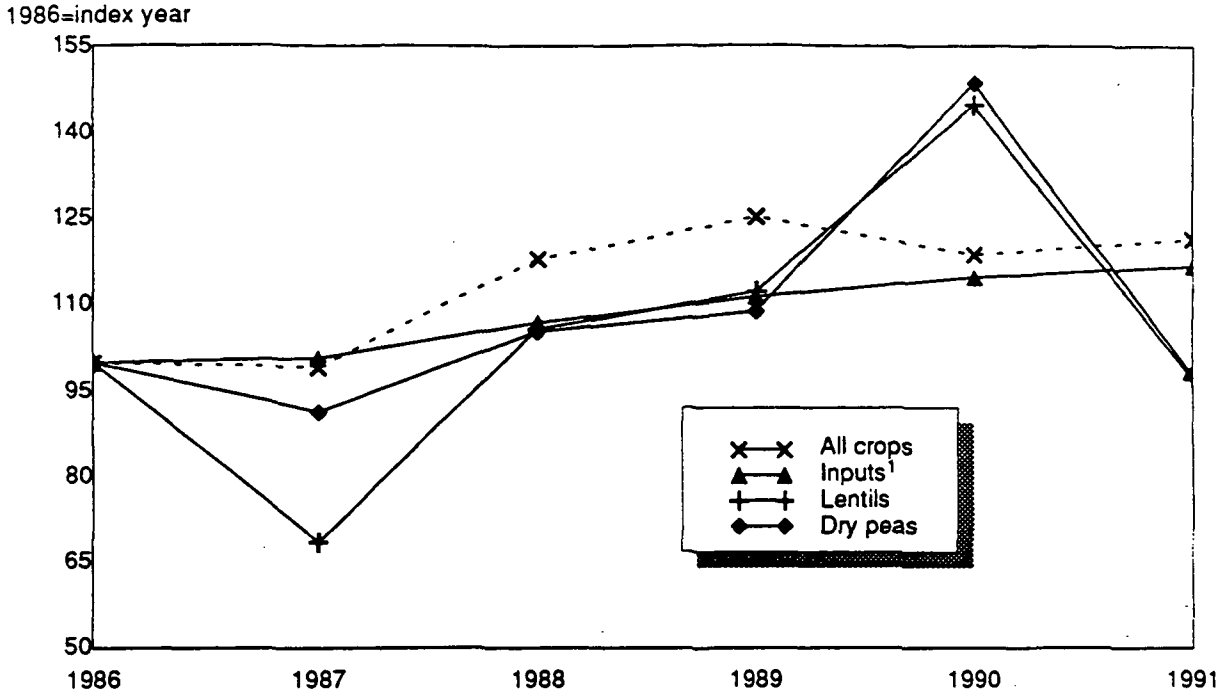
Figure 2-4
Lentils: U.S. production and harvested area, crop years 1986/87 to 1992/93[1]



[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the American Dry Pea and Lentil Association, Moscow, ID.

Figure 2-5
Dry peas and lentils: Index of prices relative to all crops and inputs, 1986–91



[1] Inputs' index is an index of prices of production inputs, interest, taxes, and wage rates.

Note.—Lentil and dry pea prices are calculated on a crop-year basis.

Source: Compiled by the staff of the U.S. International Trade Commission from various editions of Agricultural Outlook, Economic Research Service, U.S. Department of Agriculture, Washington, DC and Grain Market News Service, Greeley, CO

In 1991/92, apparent consumption of 56,000 mt of dry peas represented 32 percent of U.S. production of 175,000 mt (table C-4). Apparent consumption of lentils of 30,000 mt similarly represented 39 percent of production in 1991/92. U.S. per capita consumption of dry peas and lentils combined is estimated at below 250 grams annually for each item, as compared with per capita consumption in many other countries of over 5 kilograms.

U.S. Imports

Tariff treatment

Dry peas and lentils are provided for in the Harmonized Tariff Schedule of the United States (HTS) in items 0713.10.20 (split peas), 0713.10.40 (other peas), and 0713.40.20 (lentils).[5] Split peas enter free of duty. In 1991, imports of split peas accounted for about one-third of U.S. dry pea imports. Other dry peas are assessed a tariff rate of 0.9 cent per kilogram but are eligible for duty-free entry under the Generalized System of Preferences, the United States-Canada Free-Trade Agreement, the Caribbean Basin Economic Recovery Act, the United States-Israel Free-Trade Area, and the Andean Trade Preference Act. Lentils are assessed a tariff rate of 0.33 cent per kilogram and are eligible for duty-free entry under the same provisions as those for other dry peas. Dry peas and lentils from both Canada and India, the leading sources for such items in 1991/92, entered duty-free under the special tariff provisions.

Trends in imports

U.S. imports of dry peas reached a 6-year low of 8,243 mt, valued at $4.5 million, in 1991/92, down from a high of 16,120 mt, valued at $6.2 million, in 1989/90 (table C-6). Canada was the leading supplier of dry peas during 1986/87 to 1991/92. Imports from Canada are believed to supplement somewhat U.S. supplies as they are largely processed and packed in the United States by U.S. companies. Imports from other foreign suppliers, processed and packed before coming into the United States, are largely intended for ethnic markets. The import share of U.S. consumption of dry peas ranged from 14 to 20 percent during 1986/87 to 1991/92 (table C-4).

U.S. imports of lentils rose steadily from 1,732 mt, valued at $1.3 million, in 1986/87 to 6,043 mt, valued at $3.4 million, in 1991/92 (table C-7). Canada was also the leading supplier of lentils to the United States, accounting for 66 percent of U.S. imports in 1991/92. The import share of U.S. consumption of lentils has been highly variable, as shown in table C-5.

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[5] See app. D for a copy of the appropriate sections of the HTS relating to dry peas and lentils, including headnotes and rates of duty.

U.S. Exports

U.S. exports of dry peas fell abruptly from 141,823 mt, valued at $42.5 million, in 1989/90 to 84,806 mt, valued at $26.7 million, in 1991/92 (table C-8). The leading market for dry peas throughout the study period was India, which accounted for 25 percent of the total quantity of exports during 1986/87 to 1991/92. Exports to India declined by 58 percent between 1989/90 and 1991/92, however, due to increased shipments from other foreign suppliers. In addition, reduced exports to Colombia also contributed to the decline in U.S. exports during 1989/90 to 1991/92. Exports during July through December 1992 are much below the level reported for July through December 1991.

U.S. exports of lentils totaled 36,501 mt, valued at $18.9 million, in 1991/92, down considerably from exports of 65,227 mt, valued at $32.0 million, in 1989/90 (table C-9). The leading market for U.S. exports in 1991/92 was Spain, which accounted for 34 percent of the quantity of such exports. The second and third leading markets for U.S. lentils in 1991/92 were Peru and Italy. Peru receives about one-third of its imports of U.S. lentils as food aid under P.L. 480, which is discussed in a later section. Declines in exports to a number of countries accounted for the overall reduction in U.S. lentil exports during 1989/90 to 1991/92.

Export unit values for dry peas rose between 1989/90 and 1990/91, and export unit values for lentils rose during 1987/88 to 1990/91, as shown in the following tabulation based on tables C-8 and C-9 of this report (in dollars per metric ton):

Crop	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
Dry Peas . .	$299	$262	$302	$300	$364	$315
Lentils . . .	535	370	462	490	530	517

Higher export prices during 1990/91 to 1991/92 for both dry peas and lentils may have contributed to reduced demand in export markets during this period. The relationship between exports and unit value changes in other years is not apparent. In markets where U.S. exports are donated through the P.L. 480 program, however, prices do not have a strong influence on the volume of U.S. exports.

U.S. Federal Government Programs

A number of Federal Government programs directly or indirectly affect U.S. dry pea and lentil production. These programs are summarized in figure 2-6. The Canadian dry pea and lentil industry has cited the U.S. price and income support programs for wheat and barley, and P.L. 480 sales, as providing disincentives for increased U.S. production and exports of dry peas

gure 2-6
Certain U.S. programs relating to dry peas and lentils

Program	Terms of the Program	Outlays/Effects
Wheat and Barley Programs:		
• Price and Income Support Programs[1]	Available to participating producers with an established acreage base for the program commodity. Nonrecourse loans and purchase agreements provide price support; target prices and deficiency payments provide income support.	Wheat producers received $2.4 billion in deficiency payments in 1990/91 and $2.2 billion in 1991/92. Barley producers received $59.1 million in deficiency payment in 1990/91 and $173.0 million in 1991/92.
• Planting Flexibility[1]	Authorizes producers participating in USDA programs to plant a portion of their crop area into "non-program" crops, which do not receive deficiency payments.	Wheat and barley growers may plant up to 20 percent of their acreage base in dry peas and lentils.
• Conservation Provisions[1]	Requires participating producers to implement a conservation plan on highly erodible land by January 1, 1995.	The Palouse area is highly erodible. Thus, current production rotations may be affected in 1995.
Disaster Protection:		
• Federal Crop Insurance[2]	The Federal Crop Insurance Corporation provides insurance against yield loss due to drought, excess moisture, frost, freeze, or hail, or other occurrences.	During 1981-90, total indemnity payments exceeded premium revenue by $2.5 billion. Payments, if any, to dry pea and lentil producers are unknown.
• Disaster protection (various programs)[3]	Emergency loans are provided through the Farmers Home Administration when a disaster has been declared, and through the Commodity Credit Corporation for the restoration of damaged or impaired land.	Payments, if any, to dry pea and lentil producers are unknown.

See footnotes at end of figure.

Figure 2-6--Continued
Certain U.S. programs relating to dry peas and lentils

Program	Terms of the Program	Outlays/Effects
Transportation Programs:		
• U.S. Barge and Waterways Programs[4]	The U.S. Army Corps of Engineers constructs and maintains certain U.S. waterways, including canals, locks, and dredging.	$21.8 million of Federal funds has been spent annually on the Columbia River System.
Market Development and Exports:		
• Commercial Export Credit GSM-102[5]	Guarantees repayment of short-term loans (6 months to 3 years) made to eligible countries that purchase U.S. farm products.	No exports of dry peas and lentils under this program were recorded in fiscal year 1991. 2,138 mt of dry peas, valued at $0.7 million were exported in fiscal year 1992.
• Public Law 480[6]	Commodities are sold to the U.S. Government for distribution in developing countries through the use of highly concessional interest rates and repayment terms, or as donations.	Fiscal year 1992 expenditures for exports of 46,700 tons of dry peas and lentils were $19.7 million.
• USA Dry Pea and Lentil Council[7]	Receives government assistance for foreign market development through the Market Promotion Program (MPP) and the Foreign Market Development Cooperator (FMD) Program.	Expenditures for dry peas and lentils under MMP and the FMD program were $1.1 million and $165,000, respectively, in 1991/92.
• Export Enhancement Program (EEP)[8]	Provides bonuses, in the form of Commodity Credit Corporation generic certificates, to exporters so that they can lower their export prices in selected foreign markets characterized by unfair competition.	Dry peas and lentils are not eligible. Expenditures for wheat averaged $579 million annually during fiscal years 1987-1992.

See footnotes at end of figure.

Figure 2-6--Continued
Certain U.S. programs relating to dry peas and lentils

Program	Terms of the Program	Outlays/Effects
Research and Development:		
• Various Research and Development[9]	The U.S. Department of Agriculture (USDA) provides funding for research by the USDA and through cooperative arrangements with certain State universities. Such funds have contributed to research projects for seed, varietal development, as well as disease, insect, and weed control.	An estimated $4.7 million was spent over the last 5 years ($0.94 million annually) with USDA providing 91 percent of funds and industry contributions accounting for the rest.

[1] Agriculture Stabilization and Conservation Service, USDA, Wheat: Summary of 1992 Support Program and Related Information, July 1992 and Feed Grains Summary of 1992 Support Program and Related Information, July 1992.

[2] Joy Harwood, "Federal Crop Insurance: Issues and Possibilities," Agricultural Outlook, Nov. 1991, pp. 34-39.

[3] USDA, Agricultural Stabilization and Conservation Service, Agriculture Handbook No 476, Washington, D.C., Jan. 1985.

[4] Bob Hopman, U.S. Army Corps of Engineers North Pacific Division, facsimile transmission, "Cost Estimates," Dec. 21, 1992.

[5] USDA, Foreign Agricultural Service.

[6] USDA, Foreign Agricultural Service.

[7] USA Dry Pea and Lentil Council.

[8] Karen Ackerman, USDA Economic Research Service, telephone conversation, Mar. 1993.

[9] American Dry Pea and Lentil Association, Moscow, ID, posthearing brief, Dec. 31, 1992, p. 1.

and lentils.[6] The Canadian industry has also suggested that U.S. Government support for construction and maintenance of waterways in the western United States provides similar benefits to U.S. dry pea and lentil growers as the WGTA provides to Canadian producers.[7]

Crop Support and Transportation Programs

U.S. crop support programs

Neither dry peas nor lentils are program crops that are directly affected by the crop support programs of the U.S. Department of Agriculture (USDA). Since dry peas and lentils are generally grown in rotation with wheat and barley, which are program crops, price-support programs de facto affect the U.S. area planted in dry peas and lentils. This is because farmers are faced with the decision of whether to trade the returns they make from planting program crops with the returns they receive from planting dry peas and lentils which have no price and income support available.

Current provisions

Under the provisions of U.S. farm program legislation,[8] price support is provided to growers of wheat and other eligible grains through nonrecourse loans and purchase agreements,[9] whereas income support is provided through target prices and deficiency payments.[10] In addition, these producers have been eligible for paid diversion, through which they are paid to idle land, disaster payments, and storage payments, through the farmer-owned reserve. To qualify for nonrecourse loans and deficiency payments, however, producers must

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[6] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint prehearing brief, Nov. 23, 1992.

[7] Ibid.

[8] The Food Security Act of 1985 (P.L. 99-198) provided the legislative authority for U.S. farm programs during 1986-90 and the Food, Agriculture, Conservation, and Trade Act of 1990 (P.L. 101-624) provides the legislative authority for farm programs during 1991-95.

[9] Price support programs keep farm prices received by participating producers from falling below specific minimum prices (loan rates). The major price support instrument is the nonrecourse loan. To obtain these loans, participating producers pledge some quantity of product as collateral and, in return, they receive a loan from the Commodity Credit Corporation (CCC). The CCC provides these loans at a specified price per unit, or loan rate, in exchange for holding crops.

[10] Deficiency payments are direct payments made to participating producers. These payments are based on the difference between a price level established by law (target price) and the higher of the market price or the loan rate during a specified period.

set aside part of their established crop area base.[11] In 1992/93, wheat[12] and barley[13] growers were required to set aside 5 percent of base acres. The idled acreage must be maintained in approved conservation uses (Acreage Conservation Reserve).

Additionally, conservation provisions of the 1985 Food Security Act and the 1990 Food, Agriculture, Conservation and Trade Act require farmers that are enrolled in USDA crop support programs to file by 1990, and to implement by 1995, a conservation plan for highly erodible land. Such producers must file and implement these plans to remain eligible for USDA program benefits.[14]

The Food Security Improvements Act of 1986[15] first authorized U.S. farmers to plant a portion of their crop acreage base in approved "nonprogram crops," including dry peas and lentils. These acres, however, were not eligible for deficiency payments. Under this law, farmers were allowed to plant up to 50 percent of their permitted acres (crop acreage base less required acreage reduction) in approved nonprogram crops in 1986 and 1987; 35 percent in 1988; and 20 percent in 1989.[16] Separate legislation extended the 20-percent planting flexibility to crops planted in 1990. The Food, Agriculture, Conservation, and Trade Act Amendments of 1991[17] authorized farmers to plant up to 20 percent of their wheat and feed grain bases in dry peas and lentils, and extended the authorization to 1995.[18]

Growers of wheat and other eligible grains generally benefited from this provision because it allowed them to grow nonprogram crops without affecting their program acreage base.[19] For this provision to be financially advantageous to growers, however, the return over variable costs from the nonprogram crop must exceed the return the farmer would otherwise receive on the program crop.

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[11] A farm's acreage base is defined as a 5-year moving average of the number of acres planted and "considered" planted (idled under government programs) to a specific program crop.

[12] Agricultural Stabilization and Conservation Service (ASCS), Wheat: Summary of 1992 Support Program and Related Information, July 1992, p. 1.

[13] ASCS, Feed Grains: Summary of 1992 Support Program and Related Information, July 1992.

[14] The possible effects of these conservation provisions on dry pea and lentil production are discussed in chapter 6.

[15] P.L. 99-260, 99 Stat. 51, Mar. 20, 1986.

[16] James Langley, ASCS, USDA, A Guide to Planting Flexibility, Mar. 1992, and memorandum to USITC staff, Dec. 17, 1992, p. 2.

[17] P.L. 102-237, 105 Stat. 1836, Dec. 13, 1991.

[18] Langley, A Guide to Planting Flexibility, p. 2.

[19] Growers may wish to preserve their program acreage base because deficiency payments are paid on the eligible base acres planted for harvest.

Effects of wheat and barley programs

As mentioned earlier, nearly all of the area planted in dry peas and lentils is rotated into wheat and barley in the key producing States of Washington, Idaho, and Oregon. About 80 percent of wheat and barley area in those two States is enrolled in USDA programs. In 1992/93, there were 2 million hectares of wheat and barley in the program (out of a total area planted in those 2 States of 2.5 million hectares.[20] Farmers theoretically could have planted up to nearly 0.4 million hectares in dry peas and lentils, but only by forgoing government benefits on this area.

The Palouse area where dry peas and lentils are grown has excellent yields for winter wheat. In addition, because of its transportation advantages, the area tends to have higher market prices for wheat than other U.S. wheat-growing regions.[21] In the Palouse, a hectare of land planted in winter wheat yields about 5.7 mt, 2.4 mt of dry peas, or 1.2 mt of lentils. At the prevailing prices for a typical farmer in the Palouse enrolled in the USDA program in 1992, this hectare would have produced gross sales of $704 to $800 if planted in wheat, $444 if planted in dry peas, or $408 if planted in lentils.[22]

Returns above variable costs of production for wheat and barley also tend to be much higher than for dry peas and lentils.[23] In the analysis by Painter et al. of the costs and returns of growing winter wheat, spring barley, and dry peas in a 3-year crop rotation in 1992, returns for wheat and barley were 2 to 5 times higher than returns for dry peas, as shown in the following tabulation (in dollars per hectare):

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[20] Craig Jagger, ASCS, USDA, telephone conversation with USITC staff, Dec. 9, 1992.

[21] Kathleen Painter, et al., 1992 Crop Enterprise Budget--Eastern Whitman County, Washington, revised, (Pullman, WA: Washington State University, publication No. EB1437, Apr. 1992) pp. 8-13.

[22] Ibid.

[23] Ibid.

Item	Winter wheat[1]	Winter wheat[2]	Barley	Dry peas
Chemicals	$133.01	$243.30	$ 86.08	$113.15
Seed	27.29	27.29	23.71	88.92
Machinery	64.34	44.31	79.31	86.57
Labor	25.84	21.22	28.55	30.46
Set aside cost	10.65	10.65	5.34	-
Other	26.31	31.10	12.57	16.55
Overhead	14.55	18.92	11.78	16.77
Total	301.99	396.79	247.34	352.42
Yields (metric tons per hectare)	5.71	5.71	4.68	2.24
Price ($ per metric ton)[3]	$138.87	$138.87	$102.43	$198.45
Net revenue ($ per hectare)	$490.96	$396.16	$232.03	$ 92.11

[1] Conventional tillage practices.
[2] No-till practices. Although costs are higher, this practice improves conservation.
[3] Includes government payments for wheat and barley.

The profitability of lentils relative to dry peas and barley in a 3-year rotation has been the same in recent years.[24]

The fact that returns above variable costs are so much higher for wheat and barley than for dry peas tends to limit the substitution among these crops. Moreover, Painter et al. found the economic returns above variable costs of production of dry peas for a typical farmer in the Palouse region were below those of wheat and barley over a wide range of price scenarios.[25] Thus, farm programs tend to reinforce the difference in profitability among these crops.

Currently, in the case of wheat, government programs permit farmers to rotate dry peas and lentils using a 2-year crop rotation program in which they plant wheat and then follow with either dry peas or lentils.[26] Under the provisions of such programs, farmers with established long-term rotations only count area actually planted for wheat and barley over the past 3 years in their base acres for these crops.[27] Thus, should prices for dry peas and lentils temporarily rise while prices for wheat and barley fall, producers

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[24] Ibid.
[25] Ibid., p. 15.
[26] According to industry representatives and farmers, a 3-year rotation including wheat, barley, and dry peas or lentils would be more beneficial for controlling erosion and maintaining soil fertility.
[27] ASCS official, telephone conversation with USITC staff, Feb. 23, 1993.

with long-term rotations would be discouraged from switching crops because the area eligible for future government payments would decline.

The flexibility option only affects producers who have not established a long-term rotation plan. The 20-percent flexibility provision, however, provides a ceiling under which producers can switch from wheat or barley to dry peas or lentils without losing program benefits. The fact that the returns on dry peas and lentils are so much lower than those on wheat or barley suggests that the incentives to substitute among these crops, with or without the flexibility option, are limited, at least within certain price ranges.

Federal crop insurance and other emergency programs[28]

The Federal Crop Insurance Act of 1980[29] made crop insurance the primary form of disaster protection for U.S. farmers. This act authorized expansion of crop insurance to all counties with significant agriculture through the Federal Crop Insurance Corporation (FCIC). Crop insurance provides yield protection in the event of drought, excess moisture, frost or freeze, hail, or other occurrences.

Farmer participation in crop insurance is voluntary, and farmers who sign up pay a premium. In the past, the government has paid, on average, over half the cost of the program. The government pays for up to 30 percent of the premium cost, delivery and service expenses of private companies that deliver insurance, and the cost of indemnities in excess of premiums.

The crop insurance program has been characterized by low farmer participation and high costs, although participation varies by crop. In the past, farmers have been hesitant to participate because the Federal Government tends to provide ad hoc payments whenever drought or other disasters occur, so there is little incentive for low risk farmers to participate.[30] During 1981-90, total indemnity payments paid out for crop losses exceeded premiums by $2.5 billion.[31] The loss ratios, that is the extent to which indemnities exceeded premiums, were highest for wheat and soybean growers during this period.

Two other Federal programs provide disaster protection for crop farmers, including growers of dry peas and lentils:

(1) Emergency Loans--Farmers Home Administration provides low-interest, emergency loans to eligible farmers in counties where a disaster has been declared; and

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[28] This section is adapted from Joy Harwood, "Federal Crop Insurance: Issues and Possibilities," Agricultural Outlook, Nov. 1991, pp. 34-39.

[29] P.L. 96-365 94 Stat. 1312.

[30] The Kiplinger Agriculture Letter, Mar. 19, 1993, Vol. 64, No. 6, p. 1.

[31] Ibid., p. 36.

(2) Emergency Conservation Program--the Commodity Credit Corporation provides emergency funds to farmers for the restoration of damaged or impaired cropland.

The Commission was unable to determine the extent to which dry pea and lentil producers have been affected by any of these programs due to lack of data.

U.S. barge and waterways programs

U.S. Government assistance for waterways in the western United States is provided through maintenance and construction of waterways, canals, locks, and dredging by the U.S. Army Corps of Engineers.[32] The Canadian industry argues that this assistance benefits exporters of bulk agricultural products, including dry peas and lentils, who ship their product internally to export ports on waterways via barge.[33] In regard to the export of U.S. dry peas and lentils, however, only a small portion of these exports move through the Snake River and Columbia River systems to the export ports of Portland and Seattle.[34] Most U.S. exports of dry peas and lentils move to export points by rail rather than by barge.

According to data supplied by the Army Corps of Engineers, annual operations and maintenance costs for the Snake River and Columbia River locks, channels, and harbors have amounted to an estimated $21.8 million in recent years.[35] An estimated 602 million bushels of 'bulk grain' (presumed to include dry peas and lentils) were inspected for export through the Columbia River in 1991.[36] A number of other products including gasoline, heating oil, pulp and paper, and wood chips also are shipped by barge on the system.

Assuming that only bulk grain inspected for export through the Columbia River were transported on the two rivers system and ignoring the other products, the Army Corps of Engineers expenditures amounted to $1.44 per metric ton of bulk grain.[37] These expenditures overstate the amount of the U.S. Government assistance provided since they do not include user fees (such as fuel taxes) paid by shippers and they do not account for the other products shipped. If the fuel tax were deducted from the Army Corps of Engineers expenditures, the net Army Corps of Engineers assistance attributable to dry

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[32] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint prehearing brief, Nov. 23, 1992, p. 38.

[33] Ibid., pp. 38-39.

[34] American Dry Pea and Lentil Association, posthearing brief, Dec. 31, 1992, p. 16.

[35] Bob Hopman, U.S. Army Corps of Engineers North Pacific Division, facsimile transmission, "Cost Estimates," Dec. 21, 1992.

[36] Official of the Agricultural Marketing Service, USDA, telephone interview by USITC staff, Dec. 12, 1992.

[37] $21.8 million divided by 602 million bushels.

pea and lentil transportation through the barge system would amount to about 35 cents per metric ton.[38]

Thus, a reasonable estimate of the effect of the barge system would amount to between $0.35 to $1.44 per metric ton of dry peas and lentils exported through the Columbia River system. Since most U.S. dry pea and lentil exports are shipped by rail to export ports, however, these data represent high estimates of the benefits of transportation assistance to U.S. dry pea and lentil exports.

Other U.S. Programs

Commercial export credit programs

The Export Credit Guarantee Program (GSM-102), which has been in operation since 1980, guarantees repayment of short-term loans (6 months to 3 years) made to eligible countries that purchase U.S. farm products. The program is administered by the Foreign Agricultural Service (FAS) of the USDA. In fiscal year[39] 1992, 2,138 tons of dry peas, valued at $700,000, were exported under this program. U.S. exports of dry peas and lentils under the GSM-102 program have been highly variable, as shown in the following tabulation based on information from the Foreign Agricultural Service of the USDA (in metric tons and percent):[40]

	Dry peas		Lentils	
Fiscal year	Volume	Percent of total	Volume	Percent of total
1987	0	-	1,803	5
1988	8,733	7	2,740	7
1989	9,536	9	0	-
1989	20,272	15	476	1
1991	0	-	0	-
1992	2,138	3	0	-

The USDA also administers an Intermediate Credit Guarantee Program (GSM-103) that guarantees 3- to 7-year loans. Dry pea and lentil exports under the GSM-103 program, however, are believed to have been negligible.[41]

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[38] American Dry Pea and Lentil Association, posthearing brief, Dec. 31, 1992, p. 16.

[39] U.S. fiscal year is Oct. 1 through Sept. 30.

[40] The data represent the exports actually shipped under the GSM-102 program, as compared to the volume of exports registered for shipment, which is believed to be substantially higher.

[41] Official at the Foreign Agricultural Service (FAS), USDA, conversation with USITC staff, Feb. 1, 1993.

Analysts have generally been unable to quantify the benefits to U.S. agricultural exporters and producers provided by commercial credit sales.[42] However, a General Accounting Office (GAO) study notes that the GSM-102 program tends to increase U.S. agricultural exports because it enables foreign buyers with limited hard currency to purchase commodities, and it offsets the impact of export credits provided by other exporting countries.[43]

Food aid programs

In the past, all U.S. exports of dry peas and lentils under the P.L. 480 program have been provided under title II, which provides food aid for disaster relief, foreign feeding programs, and food for work programs.[44] Title II commodities are purchased by the Agricultural Stabilization and Cooperative Service at the lowest landed cost from private U.S. dealers and processors. These commodities are then distributed to foreign countries through private voluntary organizations (PVOs) and the World Food Program.[45]

Tenders[46] for export shipments of dry peas under P.L. 480 in fiscal year 1992 amounted to an estimated 19,382 mt, valued at $5.7 million, or 22 percent of the volume of fiscal year exports.[47] Tenders for export shipments of lentils under P.L. 480 amounted to 28,598 mt, or 80 percent of fiscal year 1992 exports. P.L. 480 shipments have accounted for an increasing share of total U.S. exports of dry peas and lentils since fiscal 1986, as shown in the following tabulation (in metric tons):

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[42] GAO, Commodity Credit Corporation's Export Credit Guarantee Programs, GAO/NSIAD-88-194, June 1988.

[43] Ibid., p. 3.

[44] Food aid is provided to developing countries through the P.L. 480 program under a number of different terms. Under the terms of title I of P.L. 480, agricultural commodities are sold to designated developing countries on the basis of highly concessional interest and repayment terms. Under titles II and III, developing countries receive agricultural commodities on a grant basis. FAO, USDA, P.L. 480 Title I and Market Development, prepared by Joseph W. Welch, FAS staff report No. 28, Dec. 1992.

[45] Sue Parks, Chief, Commodity and Procurement Division, Office for Food for Peace, Agency for International Development, telephone interview by USITC staff, Jan. 1993.

[46] Tenders represent the amounts purchased under the P.L. 480 program, but these amounts may not have been exported during the same fiscal year.

[47] P.L. 480 data based on information from U.S. Agency for International Development; FAS, USDA; and STAT Publishing.

Fiscal year	Dry peas		Lentils	
	Tenders	Percent of total	Tenders	Percent of total
1986	7,140	7	0	-
1987	642	1	2,725	8
1988	4,699	4	11,153	29
1989	17,151	16	37,608	77
1990	24,746	19	26,350	41
1991	19,188	28	13,925	33
1992	19,382	22	28,598	80

Houck[48] has shown that direct government purchases of designated surplus commodities for food aid can provide price benefits to U.S. producers in the same manner as a price-support program. These purchases can provide a price floor by taking surplus production off the market via the direct purchases that are ultimately destined for the (noncommercial) export market.

Because the world markets for dry peas and for lentils are interrelated, Canadian producers of dry peas and lentils also benefit from the U.S. P.L. 480 program. Title II aid is targeted to low-income groups in designated countries--groups which would probably not be able to otherwise purchase P.L. 480 products on a commercial basis. Thus, its effect in displacing commercial exports is generally considered to be much less than for other types of food aid.[49] To the extent the P.L. 480 program raises total export demand and prices for dry peas and lentils, then other exporters also benefit from the P.L. 480 sales.[50]

USA Dry Pea and Lentil Council

The USA Dry Pea and Lentil Council (DPLC) is a nonprofit trade association created in 1965 to increase the consumption and sales of U.S. dry peas and lentils in foreign and domestic markets.[51] The DPLC is funded from

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[48] James P. Houck, Elements of Agricultural Trade Policies (New York: MacMillen Publishing Company, 1986), pp. 108-109.

[49] Mark Smith, Commodity Economics Division, Economic Research Service, USDA, interview by USITC staff, Jan. 1993.

[50] The benefits to other exporters depend on the "additionality" of the P.L. 480 sales. For example, if the United States did not purchase dry peas and lentils under the P.L. 480 program, U.S. exporters would have to lower their prices to sell all of their product on the world market. Foreign competitors would have to compete with this lower priced product in commercial export markets. However, if the U.S. Government purchases surplus product and redistributes it so that it does not affect commercial sales of U.S. or other suppliers, then these sales are "additional". By increasing the export demand for dry peas and lentils, additional sales tend to raise prices, thus enabling other exporters to benefit from the price floor set by P.L. 480 sales.

[51] DPLC, FY 1993 Market Promotion Program Application, Oct. 1992.

three primary sources: (1) the Idaho Pea and Lentil Association, (2) the Washington Dry Pea and Lentil Commission, and (3) the American Dry Pea and Lentil Association (ADPLA). Both the Idaho and Washington Associations derive their revenue from assessments (check offs) paid by growers. Idaho growers pay a fixed assessment, currently $2.86 per metric ton of dry peas and $3.08 per metric ton of lentils and chickpeas at the time of sale. Washington growers pay 1 percent of net receipts at the point of sale.[52] The ADPLA is funded through membership fees.

In addition, the foreign market development activities of the DPLC have benefited from two Federal Government programs: the Market Promotion Program (MPP) and the Foreign Market Development Cooperator Program (FMD). The MPP was established by the 1990 Food, Agriculture, Conservation, and Trade Act to establish, maintain, and expand markets for agricultural products.[53] The MMP succeeded the Target Export Assistance (TEA) program, whose primary purpose had been to offset the adverse effect of unfair foreign trade practices on U.S. exports. The FMD was started in 1954 under P.L. 480 to promote U.S. agricultural products overseas. Both programs are administered by the Foreign Agricultural Service of the USDA.

DPLC expenditures by funding source are shown in the following tabulation (in thousand dollars):

Marketing year[1]	Funding source			Industry
	MMP/TEA	FMD	Industry	percent of total
1988/89	1,757	131	430	19
1989/90	784	61	566	40
1990/91	779	114	335	27
1991/92	1,101	165	572	31
1992/93[2]	731	155	([3])	([3])

[1] September-August marketing year.
[2] Estimate.
[3] Not applicable.

Contributions derived from grower assessments and membership fees accounted for 19 to 40 percent of DPLC cash expenditures for domestic and foreign market development during 1988-92.[54] The DPLC spends approximately $75,000 annually on domestic marketing activities.[55]

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[52] Ibid.
[53] ERS, USDA, Provisions of the Food, Agriculture, Conservation, and Trade Act of 1990. Agriculture Information Bulletin No. 624, June 1991.
[54] USA Dry Pea and Lentil Council.
[55] Ibid.

Export enhancement program

The Export Enhancement Program (EEP) was introduced in 1985 under the Food Security Act of 1985, and was continued under the Food, Agriculture, Conservation, and Trade Act of 1990. The purpose of the program is to allow U.S. agricultural exporters to lower their export prices in selected markets characterized by unfair competition.[56] This program provides bonuses to exporters in the form of Commodity Credit Corporation (CCC) generic certificates. Exporters may either resell the certificates or redeem them for commodities in CCC inventories. In the past, the EEP has primarily concentrated on wheat, although other commodities are also eligible.

Dry peas and lentils are currently not eligible for EEP. However, the Canadian industry contends that the EEP, along with export subsidies provided by the EC, have reduced world prices of wheat, thereby indirectly encouraging Canadian growers to diversify into specialty crops such as dry peas and lentils.[57] During fiscal years 1987-92, annual EEP expenditures for wheat amounted to $579 million.[58]

Research and development

The Federal Government provides assistance to U.S. dry pea and lentil growers through funds allocated to crop research by the USDA and through cooperative arrangements with certain state universities. In recent years, such funds have contributed to research projects for seed varietal development, as well as for disease, insect, and weed control problems affecting dry pea and lentil production. An estimated $4.7 million was spent during the past 5 years, or an average of $0.9 million annually, for dry pea and lentil research. The USDA provided 91 percent of these funds, and the remainder were provided from industry contributions.[59]

Lentil varieties developed through research are now planted on over 90 percent of all U.S. lentil production area. The five leading dry pea varieties currently produced in the United States were also developed in this research program. Currently there are three scientists employed full-time on research related to crop breeding, disease control, and production problems for dry peas and lentils.[60]

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[56] USDA, "Farmline," July 1991, p. 4.

[57] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint perhearing brief, Nov. 23, 1991, p. 7.

[58] Karen Ackerman, Economic Research Service, USDA, telephone conversation with USITC staff, Mar. 1993.

[59] American Dry Pea and Lentil Association, posthearing brief, Dec. 31, 1992, p. 1.

[60] Harold Blain, American Dry Pea and Lentil Association, Moscow, ID, testimony before the Commission, Dec. 8, 1992; see transcript at p. 52.

CHAPTER 3

CANADIAN INDUSTRY AND MARKET

Dry peas and lentils are grown throughout Canada, but the major producing Provinces are Saskatchewan, Manitoba, and Alberta (figure 3-1). Dry peas and lentils are important crops for farmers in these Provinces, although they are grown on only a small proportion of total planted hectares. As in the United States, dry peas and lentils are grown in rotation with wheat. Production is harvested from diversified crop farms producing wheat, barley, sunflower seed, and/or canola (rapeseed), as well as other specialty crops, such as flaxseed, canary seed, or mustard seed. As shown in Chapter 1, Canadian dry pea and lentil exports have grown steadily since 1982, with a large surge in exports occurring after 1985.

Canadian Industry

Number and Location of Producers

The number of farms in Canada producing dry peas and lentils in 1991/92, along with their respective seeded area, is shown in the following tabulation:[1]

	Dry peas		Lentils	
Province	Farms	Seeded hectares	Farms	Seeded hectares
Saskatchewan .	1,385	79,253	2,414	179,002
Manitoba . . .	1,141	51,558	925	54,041
Alberta	1,600	67,607	115	4,930
Other	145	2,169	22	512
Total . . .	4,271	200,587	3,476	238,485

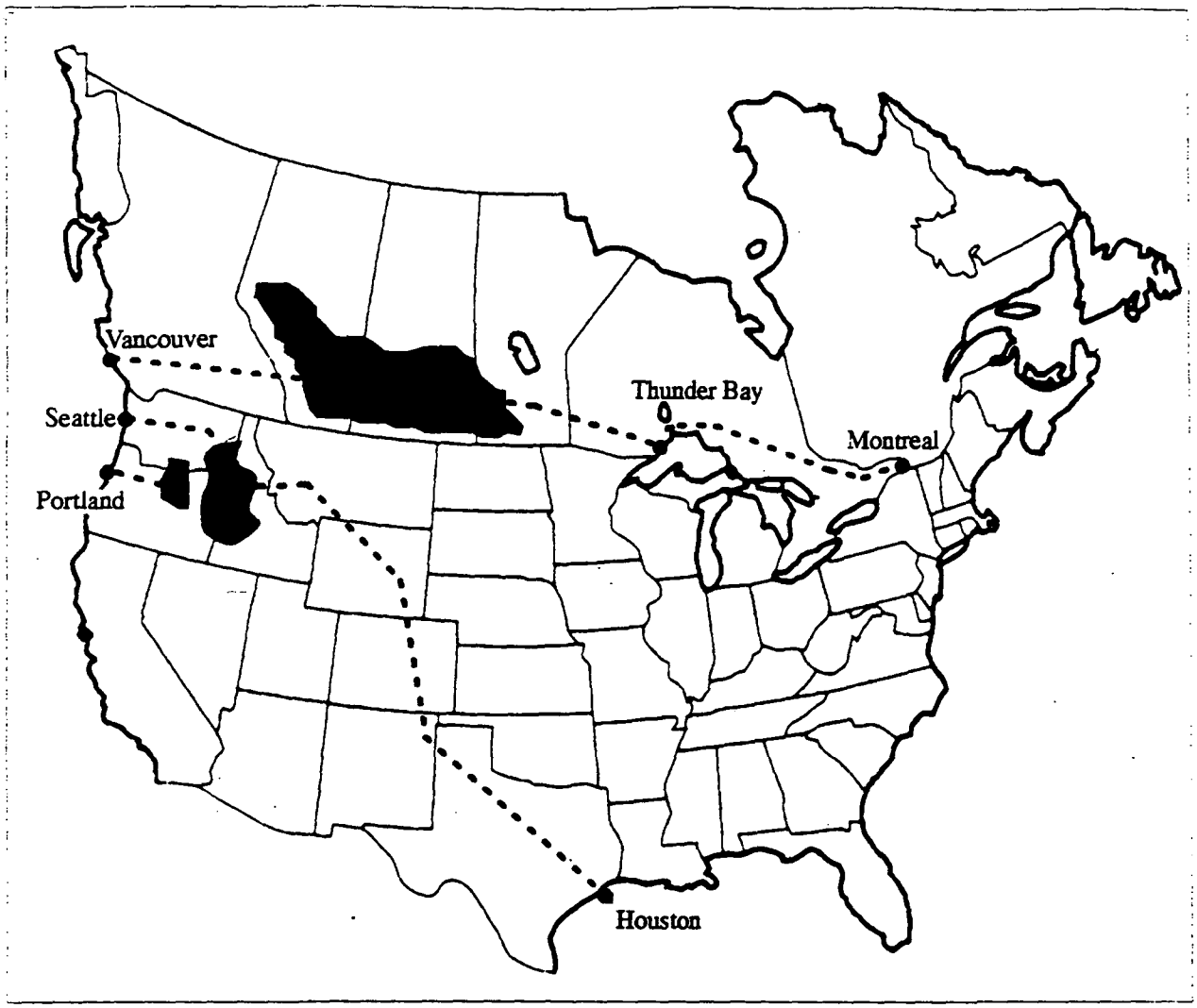
The same farms can produce both dry peas and lentils, although farms in particular areas generally specialize in either crop depending on soil type and rainfall.

Dry peas and lentils are grown in Canada to diversify farm sales and to agronomically improve cereal yields in the following season. Farmers raise dry peas and lentils using the same machinery and cultivation techniques that are used for wheat. There has been a trend in Canada over the past 5 years toward planting these crops in lieu of leaving land idle in the summer.

In 1991/92, Canadian planted area in all specialty crops, including dry peas, lentils, mustard seed, sunflower seed, and canary seed, amounted to

[1] Agricultural Profile of Canada, Statistics Canada, June 1992, p. 12.

Figure 3-1
Dry peas and lentils: U.S. and Canadian production areas and major transportation routes to ports of export



Note.—Routes indicate direction only and are not intended to show actual location of rail lines.

Source: Compiled by the staff of the U.S. International Trade Commission.

850,000 hectares, or 3 percent of total planted Canadian area of 27 million hectares.[2] Dry peas and lentils accounted for about one-half of the total specialty crop area in that year.[3] Although the total area planted in all crops declined about 1 percent from 1991/92 to 1992/93, the planted area in specialty crops increased by 11 percent to 943,000 hectares during the same period, with most of the increase in lentils.[4]

Trends in Production

Canadian production of dry peas and lentils reached a record 860,000 mt in 1992/93, a 109-percent increase from 1986/87 (table C-10 and figure 3-2). The harvested area of both crops more than doubled from 262,000 hectares in 1986/87 to a record 542,000 hectares in 1992/93 (table C-10 and figure 3-3). Both production and area harvested were volatile during the 1986/87 to 1992/93 period. The Canadian growing season is short, and, since little land is irrigated, rainfall and snowfall exert a significant effect on crop yields.

In 1988/89, production of lentils fell by 80 percent due to lower yields and to reduced price expectations, which provided Canadian growers an incentive to shift land into other crops. Canadian dry pea production similarly fell in both 1988/89 and 1989/90. Since 1989/90, Canadian production of both dry peas and lentils has increased sharply. Most of the gain in production of these crops occurred in lentil production. Lentil output increased by almost threefold during 1989/90 to 1992/93, while dry pea production approximately doubled.

Saskatchewan is the leading provincial supplier of dry peas and lentils in Canada in terms of production and area harvested (tables C-11 and C-12, figures 3-4 and 3-5). In 1992, Saskatchewan produced 238,000 mt of dry peas, or 48 percent of Canada's production, and 267,000 mt, or 74 percent of lentil production. Manitoba is the second-leading supplier of dry peas and lentils, accounting for 109,000 mt of dry peas in 1992, or 22 percent of Canadian production, and 79,000 mt of lentils, or 22 percent of Canada's lentil production. Alberta produced about 4 percent of Canada's lentil production in 1992; since 1986, however, it has become an important supplier of dry peas. In 1992, Alberta supplied 151,000 mt of dry peas (30 percent of Canada's production)--an increase of over 800 percent from the 1986 level. Much of Alberta's dry peas are destined for feed use.

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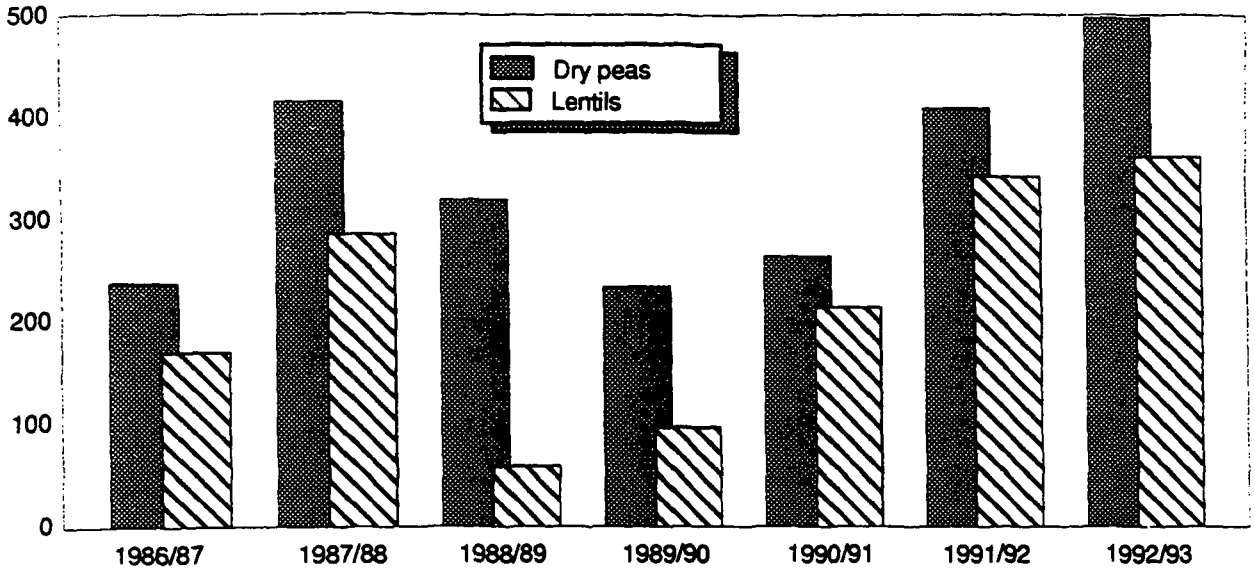
[2] Grains and Oilseeds Branch, National Grains Bureau, Agriculture Canada, "GRIP and Market Responsiveness," Bi-weekly Bulletin, Aug. 14, 1992, table 4.

[3] Saskatchewan Agriculture and Food, 1992 Specialty Crop Report, pp. 4-5.

[4] Grains and Oilseeds Branch, National Grains Bureau, Agriculture Canada, "GRIP and Market Responsiveness," Bi-weekly Bulletin.

Figure 3–2
Dry peas and lentils: Canadian production, crop years 1986/87 to 1992/93[1]

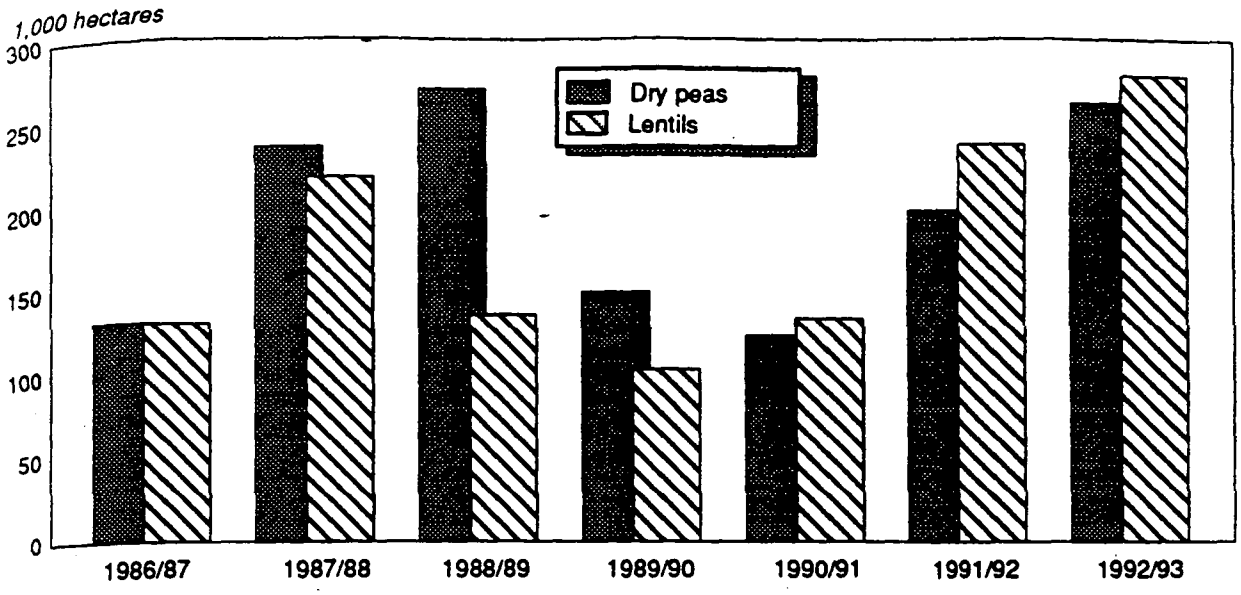
1,000 metric tons



[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission based on data from table C-11 of this report.

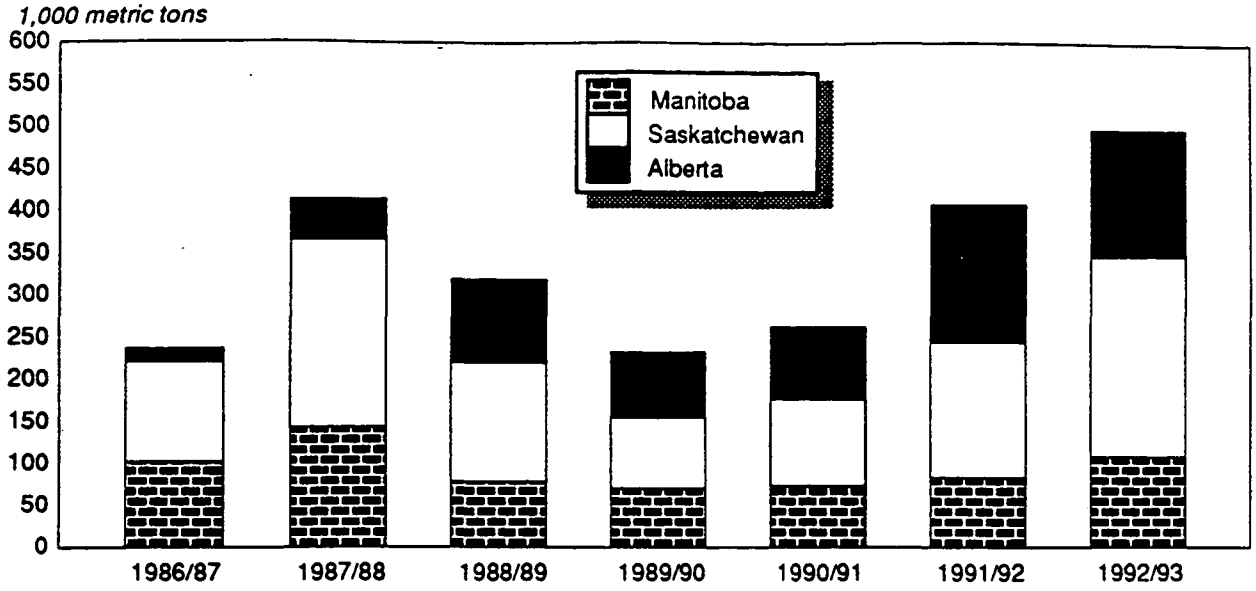
Figure 3–3
Dry peas and lentils: Canadian harvested area, crop years 1986/87 to 1992/93[1]



[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission based on data from table C-12 of this report.

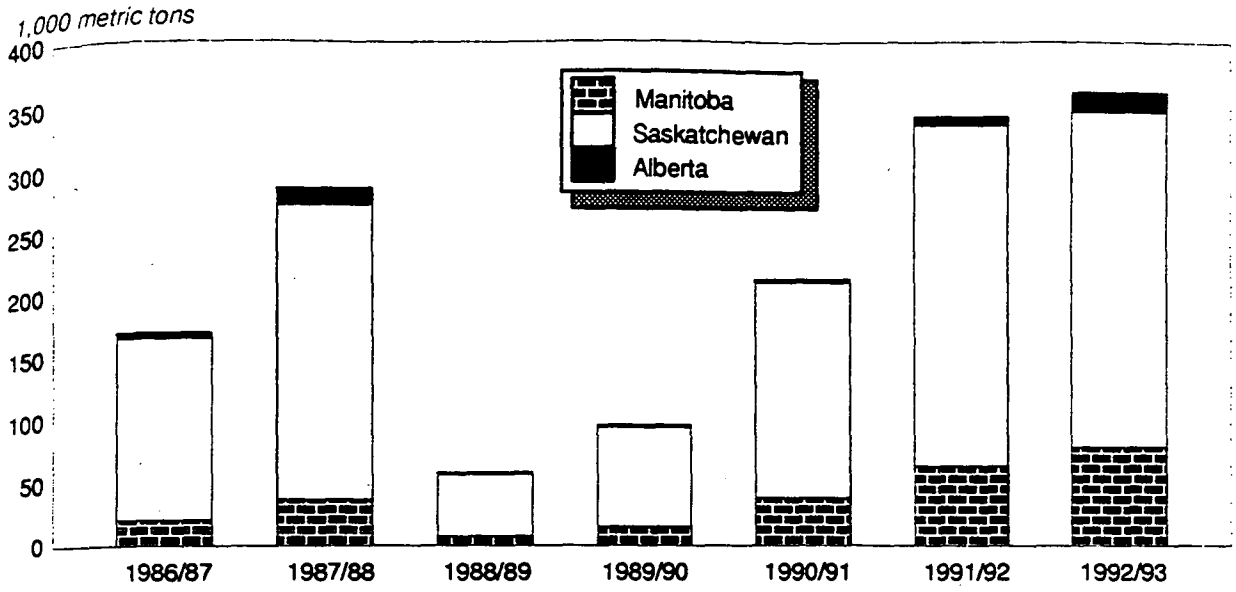
Figure 3–4
Dry peas: Canadian production, by Provinces, crop years 1986/87 to 1992/93[1]



[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission based on data from table C-11 of this report.

Figure 3-5
Lentils: Canadian production, by Provinces, crop years 1986/87 to 1992/93[1]



[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission based on data from table C-11 of this report.

A number of dry pea and lentil varieties are grown in Canada. The dominant yellow-pea type is the Century variety, which accounts for most of Canada's production of yellow peas. Dry green peas have been grown in sizable amounts in Canada since 1988; by 1991, this type accounted for about half of the Saskatchewan's production of dry peas.[5] Feed-grade peas grown in Canada are the lower quality green or yellow peas which do not meet the higher requirements of food-grade peas, as well as dry peas grown specifically for that purpose.

In Canada, the large-sized Laird lentil is the leading variety grown, accounting for over 80 percent of Canadian lentil area in recent years.[6] The next most important lentil variety grown is the Eston lentil, a smaller sized lentil. A description of the development of these varieties is given later in this chapter.

Producer Prices

The average price received by Canadian farmers for dry peas fell from about Can$196 per metric ton in 1986/87 to about Can$176 per metric ton in 1992/93; the price for lentils dropped from Can$473 to about Can$300 per metric ton in the same years, as shown in the following tabulation based on information from the Canadian Special Crops Association and the Western Canadian Pulse Growers Association (in Can$ per metric ton):

Item	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93[1]
Dry peas...	$196	$173	$201	$180	$184	$174	$176
Lentils....	473	264	373	447	421	316	300

[1] Preliminary estimates for 1992/93 are for all grades, Saskatchewan Agriculture pool, 1992 Specialty Crop Report, p. 14.

The average 1991/92 grower price of dry peas represented about 65 percent, and that of lentils about 85 percent, of the export unit value (f.o.b., Canadian export port) in that year. The difference in the prices reflects the cost of transportation, cleaning, and handling of the product from Prairie Province farms to Canadian seaports.

The prices received by growers for dry peas and lentils vary by variety and by end use in Canada. Information on farm-level prices for specific varieties and end uses of dry peas and lentils is not available. However, data on Canadian dealer prices for dry peas indicate that food-quality green

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[5] A. E. Slinkard and A. Vandenberg, Introduction of New Crops in Canada: Emerging Success Stories, 1992, pp. 7-10.

[6] Ibid.

peas sell at a slight premium to food-quality Century (yellow) peas in all three Provinces (table C-13). Moreover, prices in 1991/92 for food-quality yellow and green peas were roughly 30 percent higher than prices received for feed peas. Additionally, the data indicate that Laird lentils tend to sell at a premium to the smaller Eston lentil.

Market prices for dry peas and lentils at the grower level generally declined relative to the index of prices received for all crops produced in Canada during 1986/87 to 1992/93 (figure 3-6). Dry pea and lentil prices also fell relative to the production input price index, which suggests that returns net-of-cost also declined for dry peas and lentils during this period. These data suggest that Canadian growers generally had market incentives to shift land out of dry peas and lentils and into production of other crops.[7]

However, Canadian analysts have noted that changes in the prices of dry peas and lentils relative to the price of wheat, in particular, influence dry pea and lentil production. More specifically, the Canadian Special Crop Association has argued that a sharp decline in Canadian wheat prices relative to the prices for dry peas and lentils over the past decade encouraged farmers to plant more acreage to dry peas and lentils and less to wheat.[8] Canadian analysts have noted that when the lentil price has been greater than that of wheat, the planted area of lentils tended to increase the following year.[9]

Canadian Market

Trends in Consumption

During 1986/87 to 1991/92, 34 percent of Canadian production of dry peas and about 29 percent of lentils were consumed domestically (table C-14). During these crop years, Canadian consumption of dry peas rose by 61 percent to 137,000 mt, while consumption of lentils rose by 85 percent to 98,000 mt.

In addition to their traditional use as food, dry peas and lentils have been increasingly used in Canada as protein feedstuff, largely as a substitute for soybean or canola meal. Consumption of dry peas and lentils in animal feed doubled during 1986/87 to 1991/92.[10] In 1991/92, an estimated 60 percent of total Canadian consumption of dry peas and lentils was in animal feed. The feed market for these crops is a residual one. The volume of product that is

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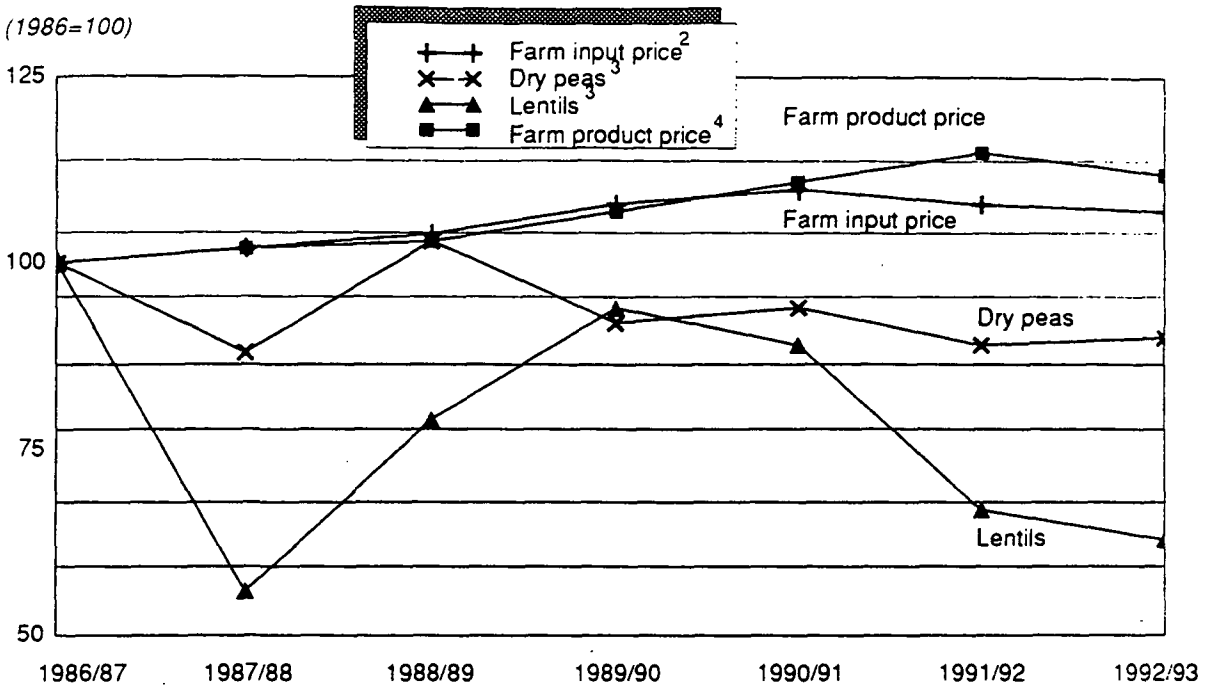
[7] This discussion abstracts from the effects of government programs, which are discussed in Chapter 5.

[8] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint prehearing brief, Nov. 23, 1992, pp. 15-18.

[9] Slinkard and Vandenberg, pp. 8-9.

[10] Foreign Agricultural Service, U.S. Department of Agriculture, "Peas and Lentils Supply and Demand Update," report prepared by Steve Hammond, report from U.S. Embassy, Ottawa, Sept. 29, 1992.

Figure 3–6
Dry peas and lentils: Index of price trends in Canada, crop years 1986/87 to 1992/93[1]



[1] Crop years are from July 1 to June 30.
[2] All farm input prices.
[3] Average price received by farmers.
[4] All farm products price.

Note.—In some instances, data are preliminary or are partially estimated by the staff of the U.S. International Trade Commission.

Source: Compiled by the staff of the U.S. International Trade Commission based on data from Statistics Canada and industry sources.

sold for feed largely depends on the crop quality and price of alternative protein sources.

Imports

Tariff Treatment

Canada provides for duty-free treatment of dry pea and lentil imports from all countries with most-favored-nation status, except for packages of dry peas weighing less than 500 grams, which are dutiable at 9 percent ad valorem.[11]

Import Trends

During 1986/87 to 1991/92, Canada imported an average of 8,000 mt annually of dry peas and 5,000 mt of lentils (table C-14). In recent years, Canadian imports of dry peas and lentils have supplied only a small fraction of domestic consumption. During 1986/87 to 1991/92, imports of dry peas and lentils supplied 8 and 6 percent, respectively, of domestic consumption. The United States supplied nearly three-fourths of Canadian dry pea and lentil imports during this period, with Turkey and India other suppliers of note.[12]

Canadian Foreign Markets

Canadian Export Trends

In 1982, Canada exported 84,358 mt of dry peas, valued at Can$30.7 million, and 33,588 mt of lentils, valued at Can$20.6 million (tables C-15 and C-16). Canadian exports of dry peas and lentils grew during 1982-85, but the surge in its exports began after 1985. Canada's exports of dry peas and lentils rose from a combined 137,255 mt in 1985 to 458,385 mt in 1991/92, a 234-percent increase. In 1991/92, Canada exported 66 percent of its production of dry peas and 55 percent of its production of lentils (table C-14).

Declines in Canadian export prices and subsequent increased foreign demand for dry peas and lentils may explain the growth in Canada's exports during the 1985 to 1991/92 period. Canadian export prices of dry peas fell

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[11] See appendix E for a copy of the appropriate sections of the Canadian Tariff Schedules relating to dry peas and lentils, including headnotes and rates of duty.

[12] U.S. exporters have indicated that U.S.-grown dry peas and lentils have been transshipped through Vancouver for third-country markets. Subsequently, Canadian import data may be including these products as imports.

from Can$384 per metric ton in 1985 to Can$267 per metric ton in 1991/92, as shown in the following tabulation (in Can$ per metric ton):

Item	1985	1986	1987	1988/89	1989/90	1990/91	1991/92
Dry peas . .	$384	$304	$231	$281	$294	$330	$267
Lentils . . .	670	642	481	479	461	370	363

Canadian export prices for lentils fell by almost one-half during 1985 to 1991/92.

Foreign Markets

During 1986 to 1991/92, about 55 percent by volume of average Canadian dry pea exports went to the EC, followed by 11 percent to Colombia (table C-15). An estimated 55 percent of dry pea exports were believed to be feed-grade peas and the remainder food grade.[13] About 47 percent of Canadian lentil exports went to the EC and 22 percent to Colombia. The five leading export markets together accounted for about 75 percent by value of total Canadian dry pea and lentil exports in 1991/92, as shown in the following tabulation (in millions of Canadian dollars):

	1986		1991/92	
Market	Value	Percent	Value	Percent
EC	40	47	63	45
Colombia	9	11	25	18
United States . . .	4	5	7	5
Venezuela	5	6	6	4
India	2	2	5	4
All other	24	29	34	24
Total	84	100	140	100

The EC is by far the largest export market for Canadian dry peas and lentils. The share of Canadian exports destined to the EC remained stable during 1986 to 1991/92 at slightly less than 50 percent. About 29 percent of the increase in Canadian exports was accounted for by increased shipments to Colombia. Low Canadian prices and the increasing quality of Canadian exports reportedly enhanced sales in Colombia.

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[13] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint prehearing brief, Nov. 23, 1992, p. 12.

Grading Practices

The Canadian Grain Commission has established a grading system for both domestic and export grade dry peas and lentils. Green peas are graded into four classes: No. 1 Canada, No. 2 Canada, No. 3 Canada, and Sample (feed grade). Dry peas other than green peas are similarly graded into four classes. Dry peas are graded with color forming part of the grade name, such as "peas, No. 3 Canada yellow." In addition to color, other grading factors include the presence of foreign material, share of cracked seed or splits, and share of damaged peas. For lentils, Canada has five classes: No. 1 Canada, No. 2 Canada, Extra No. 3 Canada, No. 3 Canada, and sample (feed grade) which are divided based upon the factors of uniformity of size and color, percent of damage, and percent of foreign material.

Marketing Networks

Dry peas and lentils are marketed through a network outside the larger Canadian grain marketing system that handles wheat, canola, and barley. The Canadian Wheat Board (CWB), the principal Canadian grain marketing entity, does not handle dry peas and lentils. Instead, there exists a separate network of companies and dealers that handle most of the specialized crops in Canada, including such products as mustard seed, sunflower seed, and canary seed. Dry peas and lentils are given priority shipment on Canadian railroads, unlike wheat, which is controlled through marketing quotas of the CWB that specify the timing of rail shipments.[14]

Farmers sell dry peas and lentils to an estimated 300 seed-cleaning companies operating in Canada that clean, sort, grade, bag, load, and, in the case of green peas, split the products.[15] There are over 30 contracting companies in Canada acting as brokers, dealers, or grain merchants handling both domestic and export sales.[16] Some farmer cooperative organizations, such as the Alberta Wheat Pool, also handle or process dry peas and lentils.[17] A number of contracting companies in Canada sign preharvest agreements with individual farmers to supply specific volumes at fixed prices.

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[14] Mike Shumsky, Grain Transportation Agency, conversation with USITC staff, Nov. 18, 1992.

[15] Slinkard and Vandenberg, pp. 4-5.

[16] Ibid.

[17] Craig Shaw, Western Canada Pulse Growers Association, telephone conversation with USITC staff, Oct. 19, 1992.

Movement of Products to Export Points

In both domestic and export marketing of dry peas and lentils, the products are shipped from Prairie Province farms to seed cleaning plants, then to domestic users or to export ports where the products are transported largely by vessel to foreign markets.

Once the dry peas and lentils have been processed, they are transported by rail from producing areas to the three principal Canadian export ports of Vancouver, British Columbia; Thunder Bay, Ontario; or Montreal, Quebec.[18] After reaching Thunder Bay, a sizable portion of the peas and lentils are then shipped to Montreal for export.

Saskatchewan, the leading Province in production, is about 1,000 miles from Vancouver and 900 miles from Thunder Bay. According to Canadian industry sources, current maritime freight rates from Thunder Bay and Montreal to Europe are believed to be comparable to rates from Vancouver to Europe, despite the much shorter distance and shipping time. Montreal shipments reach Europe in under 2 weeks while shipments from Vancouver (via the Panama Canal) take 30 days or more. However, ships using the St. Lawrence Seaway are restricted by the limited draft, lower speed limits that are in force while traveling in the river, and seasonal limits of use (the seaway is closed during most winter months).

Since most dry peas for export are processed eventually into animal feed, they are exported largely as bulk products. Lentils, on the other hand, are used mainly as food products. Thus, they generally are bagged and containerized to minimize deterioration during transit.

Canadian Government Programs

The Canadian programs affecting dry pea and lentil production during the 1986-92 period are listed in figure 3-7. These programs are primarily administered by the Canadian Federal Government or by the Federal Government and the Provincial Governments together. Programs affecting wheat production are included in the discussion of Canadian programs because, as in the United States, these programs have most likely influenced dry pea and lentil production during this period. Two programs are of particular concern to the U.S. industry: the Gross Revenue Insurance Program and the Western Grain Transportation Act.

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[18] Alan Morrow, Canadian Special Crops Association, telephone conversation with USITC staff, Oct. 16, 1992.

Figure 3-7
Certain Canadian programs relating to dry peas and lentils

Programs	Terms of the Program	Outlays/Effects
Current Programs Income Stabilization:		
• The Gross Revenue Insurance Program (GRIP)[1]	The GRIP was designed to stabilize farm incomes by reducing the revenue risk from crop yield failure and/or price declines. The cost is shared among farmers, the Federal Government, and the Provincial Governments.	The estimated payout to farmers was Can$2.7 billion (US$2.4 billion) in 1991/92 for all program crops, including dry peas and lentils.
• The National Income Stabilization Act (NISA)[1]	The NISA enables producers to make contributions to individual savings accounts, matched by the Federal and Provincial Governments. Farmers can withdraw funds from individual accounts when income is low.	Estimated government expenditures were Can$334 million (US$292 million) in 1991 and Can$220 million (US$182 million in 1992.
Grain Marketing Programs:		
• Canadian Wheat Board (CWB)[2]	The CWB issues delivery quotas to each farmer proportional to the total seeded acreage of wheat and barley, based on logistical, cost, and grain demand considerations. Farmers in Canada must deliver wheat and barley to the CWB, and receive an initial partial payment set by the government.	Canadian farmers seeking to avoid marketing quotas can plant specialty crops, such as dry peas and lentils, in lieu of the CWB-controlled grains. The delayed CWB payments for wheat and barley are an additional incentive for Canadian farmers to grow specialty crops.

See footnotes at end of figure.

Figure 3-7--Continued
Certain Canadian programs relating to dry peas and lentils

Programs	Terms of the Program	Outlays/Effects
Transportation programs:		
• The Western Grain Transportation Act (WGTA)[3]	Lentils, dry peas, and other eligible crops receive freight assistance if transported by rail.	Total payments to the railroads for crop shipments under the WGTA amounted to Can$ 645 million (US$553 million) in 1990/91 and Can$725 million (US$632 million) in 1991/92. In 1990/91, Can$6.7 million (US$5.7 million) was spent for dry peas and lentils.
Market Development and Exports:		
• Pulse Crop Development Boards[4]	Canadian dry pea and lentil growers make contributions to Provincial pulse crop development boards for market promotion and research and development activities. The Saskatchewan Board collects a levy of 0.5 percent of the initial sale price of all pulse crops since 1985. Similar development boards exist in Manitoba and Alberta.	Total fund outlays are not available for all three Provinces. The Saskatchewan Board expended Can$585,000 (US$484,472) in 1992 for all activities.[5]
• Assisted food exports of the Canadian International Development Agency (CIDA)[6]	Dry peas and lentils are donated or provided at below-market rates to certain developing countries as food aid under programs of the CIDA.	In 1991/92, 27,000 tons of dry peas and lentils, valued at Can$11 million (US$10 million) were exported under CIDA programs.

See footnotes at end of figure.

Figure 3-7--Continued
Certain Canadian programs relating to dry peas and lentils

Programs	Terms of the Program	Outlays/Effects
Research and Development:		
• The Western Diversification Act[7]	Provides funds for development, research, and production of alternative agricultural products in the Prairie Provinces.	Can$284,000 (US$247,900) was spent for studies and promotion of domestic consumption of pulse crops during 1988-93.
• Various Research and Development Programs[8]	Major research efforts in Canada concerning dry peas and lentils have occurred at a university research station for development of better cultivars and for agronomic and nutritional studies.	Research and development expenditures for new dry pea and lentil varieties were Can$1.5 million (US$1.3 million) annually over the last several years.[9]
Other Programs:		
• 3rd Line Defence Programs, including Farm Support and Adjustment Measures (FSAM)[10]	Begun in 1991 as part of GRIP/NISA, these ad hoc programs provide for transition funding, farm debt refinancing, land use, and diversification. One program made interest-free cash advances of up to Can$50,000 (US$43,641) available for prairie farmers; another paid farmers to remove land from cultivation and place it into permanent cover.	Can$50 million (US$44 million) was allocated for removal of cultivated land in 1991/92. A special farm income program (FSAM) provided Can$800 million (US$698 million) to prairie farmers in October 1991. It is not known to what degree dry pea and lentil acreage was affected.
Pre-GRIP Programs:		
• Western Grain Stabilization Program (WGSA)[11]	The WGSA stabilized net cash flow to grain and oilseed producers in Alberta, Manitoba, and Saskatchewan. Payments were made for seven major crops (wheat, barley, oats, rye, rapeseed, flaxseed, and mustard seed). The program was jointly funded by producers and the Federal Government.	The program was incorporated into the GRIP in 1991. The Government paid out Can$1.9 billion (US$1.7 billion) during 1976 through July 31, 1991.

See footnotes at end of figure.

Figure 3-7--Continued
Certain Canadian programs relating to dry peas and lentils

Programs	Terms of the Program	Outlays/Effects
• The Temporary Special Canadian Grains Program (SCGP), and other ad hoc programs[1]	After 1985, these programs were created to cushion grain and oilseed producers from lower world prices, drought, and provide adjustment aid owing to lower world grain prices. No dry peas or lentils were directly affected.	Expenditures amounted to Can$ 4.1 billion (US$3.6 billion) during 1986-91. The program ended in 1991.
• Agricultural Stabilization Act (ASA)	The ASA provided producers of livestock, dairy products, corn, soybeans, wheat, oats, and barley (grown outside the Prairie Provinces) with price support. Deficiency payments to farmers were made when market prices fell below the price floor. Dry peas and lentils were not covered.	The ASA was replaced by the GRIP in 1991.

[1] Agriculture Canada, Farm Income Financial Conditions and Government Expenditures Data Book. Ottawa, Canada, January 1991, p. 7.
[2] GAO, Report to the Chairman, Subcommittee on Domestic and Foreign Marketing and Product Promotion, Committee, Nutrition, and Forestry, U.S. Senate: International Trade: Canada and Australia Rely Heavily on Wheat Boards to Market Grain, June 1992, p. 24.
[3] Commission staff interview with Michael Shumsky, Canadian Grain Transportation Agency, Nov. 18, 1992.
[4] A. E. Slinkard and A. Vandenberg, Introduction of New Crops in Canada: Emerging Success Stories, University of Saskatchewan, 1992, pp. 3-4.
[5] Saskatchewan Pulse Crop Development Board Newsletter, vol. 9, No. 1, January 1993, p. 12.
[6] Canadian International Development Agency, facsimile of "Canadian Food Aid Shipments of Peas and Lentils," Oct. 30, 1992.
[7] Ian Thompson, AG Canada, facsimile transmission, "Western Diversification Act," Jan. 20, 1993, p. 2.
[8] Slinkard and Vanderbeng, pp. 3-4.
[9] Canadian Special Crops Association and Western Canada Pulse Growers Association, joint posthearing brief, Jan. 5, 1993, p. 5.
[10] Ernie Harac, Agriculture Canada, Comments on GRIP/NISA/3rd Line, undated, p. 2.
[11] Western Grain Stabilization Annual Report, 1990-91, Exhibit J.

Source: Compiled by the staff of the U.S. International Trade Commission from various sources.

The Gross Revenue Insurance Program[19]

The Government of Canada introduced the GRIP in 1991/92. The GRIP, along with the Net Income Stabilization Account (NISA) discussed in a later section, represent two of Canada's most significant pieces of agricultural legislation in the last 50 years. The purpose of the GRIP is to provide yield, price, and revenue protection for Canadian farmers. The GRIP does this by providing crop insurance and supplemental revenue deficiency payments to participating producers.

U.S. growers are particularly concerned about the GRIP provisions that offer guaranteed revenue protection to Canadian growers. The GRIP provides this protection through long-term guaranteed prices and yields. Dry pea and lentil producers in Canada had not previously been included in any revenue protection program prior to the GRIP.

Operation of the GRIP

Provincial crop insurance agencies administer the GRIP. To participate, a farmer must sign up for one of three options provided under the program: (1) crop insurance, (2) revenue protection, or (3) both crop insurance and revenue protection. The crop insurance option under the GRIP continues the yield protection benefits that had been available to producers before the GRIP. The revenue protection component alone provides price protection to producers who do not wish to insure against yield risk. The third option offers more comprehensive insurance coverage against both yield and price risk.

The cost of the GRIP is shared among farmers, the Federal Government, and the Provincial Governments who each pay a share of the premium costs associated with the program. The share of the premium paid by the producer and the Federal Government differs depending on the program option as shown in the following tabulation (in percent):

Program	Producer	Federal Government	Provincial Government
Revenue and crop insurance . .	40.0	35.0	25.0
Revenue insurance only	33.3	41.7	25.0
Crop insurance only	50.0	25.0	25.0

[19] This section is adapted from USDA, "Canada's Grip Program," prepared by Mark Simone and Joy Harwood, Wheat Situation and Outlook, May 1991, pp. 24-31; "Canada's Grip Program," Agricultural Outlook, Sept. 1991, pp. 35-38; and FAS, USDA, Grain and Feed Annual: Canada, Apr. 8, 1991.

To encourage participation in the first year of the GRIP, 1991/92, the Federal Government provided producers with a reduction of 25 percent on their revenue insurance premiums. The Federal Government also paid 10 percent of the Provincial share of premiums for the revenue insurance component.[20]

In 1992, 127,000 Canadian farmers, with 83 percent of Canada's cultivated area, were enrolled in the GRIP.[21] Crops currently eligible for the GRIP include, among others, dry peas, lentils, wheat, barley, oats, corn, alfalfa, canola, soybeans, rye, flaxseed, mustard seed, canary seed, mixed grain, and perennial crops.[22] Participating producers must sign up all eligible crops into the revenue protection component of the GRIP; those opting for crop insurance can choose which eligible crops to cover.

There are no limits on individual payouts under the GRIP. During the first year of the GRIP, there was a 10-percent ceiling on any increase in total area, but there was no limit on the acreage increases for individual crops (except for Saskatchewan, which set a 20-percent limit on individual crop changes).

GRIP benefits

Specific GRIP provisions differ among the various participating provinces. Figure 3-8 describes the different payment provisions in operation under the GRIP among the three primary dry pea and lentil producing Provinces. Producers who sign up for crop insurance (CI) receive a payment, based on coverage level, for each enrolled hectare when the farmer's actual yield falls below his or her established historical yield, called the Long Term Average Yield (LTAY) under the GRIP. A number of coverage options are available under the crop insurance component, ranging from 50 to 100 percent among the various Provinces.[23]

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[20] National Grains Bureau, Agriculture Canada, Bi-weekly Bulletin, vol. 4, No. 21 (Nov. 29, 1991).

[21] Ernie Harac, Comments on GRIP/NISA/3rd Line, Agriculture Canada, 1992, p. 1.

[22] Agriculture Canada, GRIP Agreement: National Agreement Establishing a Tripartite Gross Revenue Insurance Plan for Crops, 1991, p. 45.

[23] Producers can also sign up for coverage at different price options. For instance, in Saskatchewan in 1992, producers could choose yield coverage at low price, high price, and average market price for the crop year. Saskatchewan, Canada "Gross Revenue Insurance Plan (GRIP) 1992."

Figure 3-8
Gross Revenue Insurance Program: Certain program details, by selected Provinces, crop year 1992/93

Item	Alberta	Saskatchewan	Manitoba
Options available.....	• Two component GRIP (CI + RPC), crop and revenue insurance, available separately	• Area-based revenue • Crop insurance, available separately	• Two component GRIP (CI + RPC) • CI and RPC available separately
Target revenue formula (TR).....	• 70% IMAP x LTAY x acres	• Risk-area seeded acres x risk-area LTAY x 70% IMAP	• 70% IMAP x LTAY x acres peas • 58% IMAP x LTAY x acres lentils
Payment formula.....	• TR - Prairie Aug. market price x actual yield x acres - crop insurance payment * modified with offset yield	• Risk-area seeded x risk area LTAY x 70% IMAP - market price	• TR - Prairie average market price x actual yield x acres - crop insurance payment *modified for producers with Superior Management Adjustment
Coverage levels.....	• 70%	• 70%	• 70% - dry peas • 58% - lentils

Note.--CI= crop insurance; RPC= revenue protection component; IMAP= indexed moving average price; LTAY= long term average yield; TR= target revenue for producers participating in both the crop insurance and revenue protection plans. In Saskatchewan, there are 23 "risk areas;" farms within each area have comparable agronomic and yield history. Each risk area has its own LTAY.

Source: Richard Ulrich, Insurance Division, Agriculture Canada, 1992-1993 GRIP Detail by Province, 1992, p. 1.

Payments to producers under the revenue component (for farmers who choose revenue insurance and crop insurance combined or revenue insurance only) are made when the market revenue falls below a guaranteed per acre target revenue that is established under the GRIP. The target revenue is established by the participating Provinces for each enrolled crop based on a farmer's LTAY, the farmer's seeded area, the Provincial support price, and the Provincial coverage level. The support price in each Province is based on a 15-year moving average of market prices (indexed for input costs), or Indexed Moving Average Price (IMAP). The historical yield is measured at the individual farm level, based on crop insurance history. The market revenue is the actual yield valued at the current average Provincial market price times the actual harvested area.

The payout for each crop under the revenue component is equal to the shortfall of the market revenue from the target revenue. Producers who opt for revenue protection alone receive payouts based on the difference between target revenue, as calculated from the actual yields, and actual market revenue. Producers who opt for both crop insurance and revenue protection receive payouts based on the difference between the target revenue, based on 100-percent yield coverage, and actual market revenue.

Crop insurance benefits are also subtracted from any potential revenue payout. Payments are made only if the sum of market revenues for all covered crops falls short of the sum of target revenues for all covered crops.[24] Officials from the Canadian Government have estimated that the GRIP is expected to pay out about Can$2.7 billion for all program crops in 1991/92.[25]

Problems with the GRIP

Analysts have cited two fundamental problems with the GRIP.[26] First, by providing crop-specific revenue protection using a price derived from a compiled moving average of prices over 15 years, there is concern that the GRIP will direct production rather than allow fluctuating commodity market prices to guide individual farmer's plantings. Gray, et al. note that the target revenues established by GRIP may not reflect the economic valuation of the various covered crops.[27] For example, the target price (70 percent of the IMAP) for dry peas and lentils exceeded the average market price for dry peas

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[24] National Grains Bureau, Bi-weekly Bulletin, Jan. 25, 1991. In Provinces offering separate crop insurance, the crop insurance payment is deducted from any target revenue payout under GRIP.

[25] Agriculture Canada, Farm Income Financial Conditions and Government Expenditures Data Book. Ottawa, Canada, Jan. 1991, p. 7.

[26] Grain and Feed Annual: Canada, Apr. 8, 1991.

[27] Richard Gray, Ward Weinsensel, Ken Rosaasen, Hartley Furtan, and Daryl Kraft, "A New Safety Net for Canadian Agriculture: GRIP," Choices, 3rd quarter 1991, pp. 34-35.

and lentils in both 1991/92 and 1992/93 as shown in the following tabulation (in Can$ per metric ton):

Item	Dry Peas		Lentils	
	1991/92	1992/93	1991/92	1992/93
Target price	$199	$193	$486	[1]$473
Average prices received by farmers	174	176	316	308

[1] In Manitoba, the target price was 58 percent of the IMAP, or Can$392 per metric ton.

Gray, et al., note that the GRIP can distort production by providing incentives to seed the crops that earn the highest target revenues, rather than the highest market revenues, net of cash production costs.

A second problem with the GRIP concerns the issue of "moral hazard."[28] GRIP payouts are based on long-term, historical yields; thus, there is concern that the GRIP will encourage individual producers not to maximize their use of production inputs since changes in actual yields will be reflected in the GRIP payout only after a number of years.

Recent changes in the GRIP

The GRIP was changed substantially in Saskatchewan in 1992, and to a lesser extent for lentils in Manitoba (figure 3-8). Saskatchewan separated the revenue protection component from the crop insurance component of the GRIP. Farmers in Saskatchewan are able to sign up for one or both components of the protection plan. Saskatchewan also reduced the crop insurance plan to allow for a maximum of up to 80-percent yield coverage rather than the 100-percent coverage offered in other Provinces.

The revenue protection component under the Saskatchewan plan in 1992 provided participating farmers a guaranteed per acre payment based on average yields for the area in which the crop is grown (risk areas) and 70 percent of the IMAP. Thus, in contrast to the earlier program, which provided participating farmers a guaranteed return based on their individual yield history, the revised Saskatchewan GRIP provides each producer the same base

[28] "Moral hazard" is the term for behavioral changes that can occur after insurance is obtained. These changes range from altered farming practices, such as reduced fertilizer use or other cultivation changes, to program abuse or fraud. See Jerry Skees, "Alternatives for U.S. Agricultural Policy in the Next Century," paper presented to the National Committee on the GRIP in Halifax, Nova Scotia, Canada, Apr. 28, 1992.

per acre support. Additionally, the Saskatchewan GRIP adjusts each farmer's revenue payment by an index that reflects each farmer's land quality, summerfallow-stubble crop mix, and management as compared to the average for all farmers in the risk area. The revised GRIP in Saskatchewan is designed to encourage farmers to maximize harvested yields by reducing their GRIP payments in response to poor management practices.

In March 1993, the Government of Saskatchewan announced that it intends to withdraw from the GRIP on March 31, 1995.[29] Another farm safety net program is to be developed, and will replace the GRIP in Saskatchewan. In the interim, the GRIP will continue, mostly as was the case in 1992.

Manitoba reduced its coverage of lentils under the revenue protection component in 1992 from 70 percent to 58 percent to reduce expected payouts under the program.[30] Manitoba's action lowered the effective target price in that Province for lentils from Can$473 per ton to Can$392 per ton in 1992, or by 17 percent. Despite this coverage reduction, Manitoba's acreage in lentils rose by 24 percent in 1992/93.

In 1992, the Canadian Government also altered the way in which the IMAPs are determined by adding a 2-year lag to the pricing formula. Without this 2-year lag, price-support levels for individual commodities, including dry peas and lentils, would have dropped by 5 to 15 percent in 1992/93. This is because the high crop prices of the 1970s would have been replaced by relatively low prices in the 1990s, thus lowering the IMAP. As a result of this change, there was a negligible drop in the IMAP for dry peas and lentils in 1992/93.

The Net Income Stabilization Account

The Net Income Stabilization Account (NISA) program enables producers to make contributions to individual accounts, which will be matched by the Federal and Provincial Governments.[31] The NISA was designed as part of the "whole farm" approach to income stabilization and is complementary to the GRIP. In essence, the NISA allows a farmer to set up a trust account and to make contributions to that account based on qualifying sales of eligible commodities during the year, up to a maximum of Can$250,000. The program allows farmers to withdraw from individual accounts when income is low.

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[29] U.S. Department of State, "Saskatchewan Announces Withdrawal from Gross Revenue Insurance Program," message reference No. 0221362, prepared by U.S. Consulate, Calgary, Apr. 2, 1993.

[30] Daryl Kraft, University of Manitoba, interview by USITC staff, Nov. 18, 1992.

[31] Canada Publishing Group, Guide to Federal Programs and Series, 1992, p. 125.

In tax years 1990 and 1991, the program became more flexible, offering incentives for producers and Provinces to join the program and allowing farmers to access funds in the account almost immediately. For 1990, the NISA applied to grains and oilseeds, specialty crops (including dry peas and lentils), and to certain edible horticultural crops.

Farmers' contributions to the NISA are not tax deductible and are not taxable when withdrawn. The government contribution and interest on funds in the account are taxed only when withdrawn. The account earns interest at a competitive rate and contributions are matched by both the Federal and Provincial Governments.[32] Individual farmers may withdraw funds from their accounts if their current year's gross margin falls below the previous 5-year average or if their taxable income falls below Can$10,000.[33]

The NISA remained virtually unchanged in 1992, according to the USDA.[34] However, the NISA is believed to have been of minimal interest to Canadian farmers. Sign-up rates in 1991/92 were low, even though it was also used by the Federal Government to disburse ad-hoc payments.

Grain Marketing Programs

The Canadian Wheat Board (CWB) marketing programs for wheat and barley tend to exert an indirect influence on dry pea and lentil production in Canada. The CWB each year issues delivery quotas to farmers that specify the amounts of wheat and barley, grades, and times of delivery to the CWB.[35] The CWB uses the delivery quotas to control the grain flow to the transportation and the marketing system.

In a study by the U.S. General Accounting Office (GAO), CWB officials indicated that delivery quotas do not influence farmers' planting decisions. However, the GAO study suggested that the quotas "might compel farmers to plan production according to expected on-farm storage costs for undeliverable grain board delivery quotas."[36] In any event, Canadian farmers seeking to avoid marketing quotas altogether could and do plant specialty crops, such as dry peas and lentils, in lieu of the CWB grains.

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[32] USDA, "Canada's GRIP Program," p. 25.

[33] Agriculture Canada, GRIP and NISA: A New Safety Net for Grains and Oilseeds Farmers, [n.d.], p. 4; and Harac, Agriculture Canada, Comments on GRIP/NISA/3rd Line, [n.d.], p. 2.

[34] FAS, USDA, Grain and Feed Annual: Canada, Apr. 8, 1992, p. 29.

[35] U.S. General Accounting Office, Report to the Chairman, Subcommittee on Domestic and Foreign Marketing and Product Promotion, Committee, Nutrition, and Forestry, U.S. Senate: International Trade: Canada and Australia Rely Heavily on Wheat Boards to Market Grain, June 1992, p. 24.

[36] Ibid.

Additionally, Canadian producers of wheat and barley must deliver their crops to the CWB, and they receive an initial partial payment set by the CWB (at generally 80 percent of the expected sales value).[37] Farmers must wait at least a year (often up to 18 months or more) for the final payment of the remaining 20-percent.[38] Payment delays provide another incentive for Canadian farmers to grow specialty crops.

The Western Grain Transportation Act[39]

With the 1984 enactment of the WGTA,[40] the Canadian Government first began providing benefits for rail shipments of crops other than grains.[41] Lentils, dry peas, and other specialty crops were added to the list of eligible crops to receive the freight assistance if transported by rail.[42] The WGTA provided for direct Government payments to Canadian railroads for certain rail shipments of grain (including dry peas and lentils) within Canada.

Current provisions

Rail shipments of dry peas and lentils subject to the statute are those shipped on Canadian railroads:

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[37] Ibid.

[38] In July 1992, for example, the CWB announced an initial 1992/93 wheat price of Can$112 per metric ton for No. 1 Canada Western Red Spring Wheat, roughly 20 percent below the then prevailing world prices. USDA, FAS, "Market Updates: Canadian Wheat Board Announces Initial Payments," Trade Highlights, Aug. 1992, p. 14.

[39] For a more complete discussion of whether the WGTA could be considered to be an export subsidy under the U.S.-Canada Free Trade Agreement (FTA) or the General Agreement on Tariffs and Trade (GATT) Subsidies Code, see Alfalfa Products: Conditions of Competition Between the U.S. and Canadian Industries, USITC publication 2472, Dec. 1992, pp. 5-1 through 5-3. The FTA proscribes Canadian export subsidies only on goods exported to the United States; it does not purport to prohibit export subsidies on goods to third-country markets.

[40] The WGTA is codified in ch. W-8 of the Revised Statutes of Canada (1985), as amended by the following two session laws: 1985, c. 40 and 1987, c. 28, §§ 355-358.

[41] See schedule I to ch. W-8. The WGTA, as originally introduced in the Canadian parliament, covered only six types of grain. See House of Commons Debates, p. 26647 (June 22, 1983).

[42] Dry peas and lentils transported by truck are not eligible for WGTA assistance. See Neil Meyer, Department of Agricultural Economics, "Dry Pea and Lentil Exports to the United States:," Transportation Forum, (Moscow, ID: University of Idaho), p. 253.

From any point west of Thunder Bay, Ontario or Armstrong, Ontario to Thunder Bay or Armstrong;

From any point west of Thunder Bay or Armstrong to any port in British Columbia for export (except to the United States); and,

From any point west of Thunder Bay or Armstrong to Churchill, Manitoba for export.[43]

Under the WGTA, the Canadian Government directly pays to Canadian railroad companies a portion of the transportation costs attributable to the covered commodity movements.[44] The payment generally consists of two components: a fixed payment called the Crow Benefit,[45] and the Government's portion of increased rail costs.

The Canadian Transport Commission establishes an annual scale of freight rates for commodity movements subject to the WGTA based on an estimate of the amount of Government payment, the percent of the rate to be borne by the Government, and the percent to be borne by shippers.[46] Tariffs published by the railroad are to reflect this apportionment between the Government and the shippers.[47] The tariff rate that the shipper must pay the railway is less than what the railroad receives from the Government for the shipment. The shipper's rate is reduced by the Government payment, although the payment is made to the railroad rather than to the shipper directly.

For the 1990/91 fiscal year (the 12 months beginning April 1, 1990), total payments to the railroads under the WGTA amounted to Can$644.9 million. Total WGTA payments increased to Can$724.5 million in 1991/92.[48] During 1990/91, WGTA expenditures of Can$6.7 million were attributable to the transport of 320,000 mt of dry peas and lentils. Thus, WGTA benefits during 1990/91 were Can$21 per metric ton of dry peas and lentils.[49] In crop year 1990/91 (year beginning July 1), Canada produced 515,000 mt of dry peas and

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[43] See WGTA, 21(1); U.S.-Canada Free-Trade Agreement, art. 701(5) (excluding agricultural products shipped via Canadian west coast ports for U.S. consumption from the WGTA). Should agricultural products be transported by rail east beyond Thunder Bay, only that portion of the transportation from the point of origin to Thunder Bay would be subject to the WGTA.

[44] See WGTA, 56(1).

[45] Ibid., 55(1), 34(1).

[46] Ibid., 35(1) and 37.

[47] Ibid., 44.

[48] Michael Shumsky, Canadian Grain Transportation Agency, interview by USITC staff, Nov. 18, 1992.

[49] Jean Caron, Grains and Oilseeds Branch, Agriculture Canada, "WGTA Total Subsidies, by Port, by Crop, 1990-91," facsimile sent to USITC staff, Oct. 27, 1992.

lentils, and exported 313,000 mt. Thus, about 67 percent of Canada's production and all of its exports received WGTA benefits. About 65 percent of the products receiving WGTA benefits in the 1990/91 fiscal year were shipped through Thunder Bay; the remaining 35 percent were shipped through Vancouver.[50]

Proposed changes to the WGTA

For several years, the Canadian Government has had under consideration the following five proposals for changing the WGTA:[51]

Extension of the rail subsidy to all domestic and export-bound shipments;

Phase out the WGTA without direct compensation to farmers, but with possible indirect payments;

Direct payment of WGTA funds to farmers;

Direct payment to farmers through a bond or annuity; and,

Direct payment to farmers using the Net Income Stabilization Account program.

As of March 1993, no changes in the WGTA had been implemented.[52] If the present method of WGTA payment is maintained, private shipper's freight costs will increase by 8 percent in crop year 1992/93 to Can$11.98 per metric ton of grain shipped, as compared to Can$11.07 per metric ton in 1991/92.[53] If this occurs, the Government's share of the rail cost to ship grain midpoint in the Prairie Provinces to the West Coast would fall from 67 percent paid in 1991/92 to 63 percent of the total cost in 1992/93, with the private shipper's share rising from 33 to 37 percent, respectively.

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[50] Ibid.

[51] FAS, USDA, Grain and Feed Annual Report: Canada, Apr. 8, 1992, pp. 5-6.

[52] Steve Hammond, FAS, USDA, Ottawa, Canada, telephone interview with USITC staff, Mar. 18, 1993.

[53] Canadian Grain Transportation Agency, "Average Freight Rate Per Tonne," Nov. 18, 1992.

Canadian market promotion efforts

Canadian dry pea and lentil growers make contributions to Provincial pulse crop development boards for market promotion and research and development activities based upon the volume of products sold. The Saskatchewan Pulse Crop Development Board has collected a compulsory levy of 0.5 percent of the initial sale price of all pulse crops since 1985.[54] Similar development boards in Manitoba and Alberta collect a levy on dry peas and lentils. These payments are voluntary and growers can receive a refund at the end of the marketing year, if desired.

Food aid

The Canadian International Development Agency provides commodities to certain developing countries as food aid or humanitarian assistance. These commodities are donated or provided at below-market prices under various programs.

In 1991/92, Canada exported 18,000 mt of dry peas under CIDA programs, or 7 percent of its total export volume of dry peas in that year. Lentil exports under CIDA programs amounted to 8,000 tons, or 4 percent of total exports in 1991/92. However, food aid may rise significantly when commercial movement slows and there is a need for increased aid food, such as in 1988/89 with lentils and 1990/91 through 1991/92 with dry peas. The trend in Canada's exports under CIDA programs is shown in the following tabulation (in thousand metric tons):

	Dry Peas		Lentils	
Marketing year	Volume	Percent of total	Volume	Percent of total
1986/87	2.7	2	0.9	1
1987/88	1.9	1	0.4	-
1988/89	2.8	1	17.2	22
1989/90	6.0	3	3.7	4
1990/91	16.9	10	6.6	4
1991/92	18.0	7	8.0	4

Research and development

The major research efforts in Canada concerning dry peas and lentils have occurred at the University of Saskatchewan and the Agricultural Canada

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[54] Slinkard and Vandenberg, pp. 3-4.

Research Station at Morden, Manitoba. These efforts have resulted in the development of 13 pea cultivars over the past 30 years, and many agronomic and nutritional studies.[55] The total number of registered pea cultivars[56] in Canada increased from two in 1970 to over 30 by 1992.

Canadian expenditures for research and development for new dry pea and lentil varieties are estimated at Can$1.2 million annually over the last several years, with funding for such projects as plant breeding, pathology, and agronomy.[57] Expenditures for such related projects as herbicides, soil innoculants, soil conservation programs, etc., amounted to an estimated Can$400,000 annually.

The Western Diversification Act has provided funds for development, research, and production of alternative agricultural products in the Prairie Provinces. The act provided Can$284,000 in funding for studies and promotion of domestic consumption of pulse crops from 1988 to early 1993.[58]

Other Programs

There are also a group of ad hoc programs collectively termed "3rd line defence," as part of the GRIP and NISA programs. These include a Cash Flow Enhancement Program through which interest-free cash advances up to Can$50,000 were available under either the Prairie Grain Advance Payment Act or the Advance Payment for Crops Act during the 1991/92 crop year.[59] A Can$72 million Land Management Initiative also made available Can$50 million to farmers to remove 243,000 hectares from cultivation and place them into permanent cover crops. It is not known to what degree these programs influenced dry pea and lentil production.

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[55] Ibid.

[56] The name official given for all cultivated variants of plans, but distinguished from the botanical use of the term "variety."

[57] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint posthearing brief, Jan. 5, 1993, p. 5.

[58] Ian Thompson, Agriculture Canada, "Western Diversification Act," from facsimile transmission sent to the USITC, Jan. 20, 1993, p. 2.

[59] Harac, Agriculture Canada, Comments on GRIP/NISA/3rd Line, undated, p. 2.

Pre-GRIP programs

The GRIP and NISA replaced three programs: the Western Grain Stabilization Act (WGSA), the Agricultural Stabilization Act (ASA),[60] and the Special Canadian Grains Program (SCGP), all of which were ended in 1991. None of these three programs benefited the production of dry peas and lentils. However, two of these programs, the WGSA and the SCGP, benefitted wheat producers in western Canada. These two programs are discussed below.

The Western Grain Stabilization Act was established in 1976 and attempted to stabilize net cash flow to grain and oilseed producers in Alberta, Manitoba, and Saskatchewan. Payments from the program were made to farmers when net cash flow from the seven major crops (wheat, barley, oats, rye, rapeseed, flaxseed, and mustard seed) grown in these Provinces fell below 90 percent of the previous 5-year average. The program was jointly funded by producers and the Federal Government.

The Special Canadian Grains Program was an ad hoc program created to cushion grain and oilseed producers from lower world prices after 1985. Over Can$1.6 billion was paid out under the SCGP during 1986-88. The SCGP was terminated in 1989, but other ad hoc programs were instituted in its place. These included the Crop Drought Assistance Program in 1988/89 and the combined Federal-Provincial farm aid program in 1990.

Although the WGSA and the SCGP did not directly impact dry peas and lentils, these programs, through their effects on wheat producers, may have indirectly affected production of these crops. Karl D. Mielke and T.K. Warley, two Canadian analysts, have argued that because the WGSA applied to a basket of seven grains, and because guaranteed minimum aggregate payments automatically dropped if market receipts fell due to weak market conditions, the WGSA was relatively neutral in its effect on Canadian resource allocation, at least prior to 1984 when WGSA payments were infrequent and modest.[61] Mielke and Warley note that between 1986 and 1988, however, payments under the WGSA and the SCGP increased, and these payments held the realized farm price of grain above the variable cost of production for some producers, thus maintaining grain supplies. They also note that grain producers had an incentive to produce at least $60,000 of grain (the contribution limit) under the WGSA to maximize their payouts from the program.

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[60] The ASA provided floor prices to producers outside the designated area of the Canadian Wheat Board. Under this act, minimum floor prices were set at not less than 90 percent of the average market price over the previous 5 years. Annual deficiency payments were used to make up the difference if average market prices fell below the floor price.

[61] Karl D. Mielke and T.K. Warley "Canada" in Agricultural Protectionism in the Industrialized World, ed. Fred H. Sanderson, (Baltimore: Johns Hopkins University Press, 1990).

These findings suggest that although WGSA provisions allowed growers in western Canada to respond to market signals, the program benefits for wheat growers under the WGSA may have moderated the response of Canadian producers in shifting from wheat to non-WGSA crops. In another paper, Mielke and Weersink found that, between 1972 and 1988, WGSA payouts led to an increase in area planted to wheat in western Canada by affecting expected market returns and by reducing the variability associated with those returns.[62]

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[62] K.D. Mielke and Alfons Weersink, "The Impact of Support Programs on Crop Area Response," Canadian Journal of Agricultural Economics, vol. 38 (Dec. 1990), pp. 871-885. Wheat in particular was found to benefit from the WGSA because WGSA payments were based on the value of grain marketings, and wheat is higher-valued compared to the other crops included in the WGSA. This paper also found that the WGSA generally increased the area planted to all WGSA crops during the 1980s.

CHAPTER 4

OTHER SUPPLIERS AND MAJOR FOREIGN MARKETS

U.S. exports to third-country markets consist primarily of high-quality dry peas and lentils destined for food use, with only minimal exports intended for use in animal feed. Thus, the U.S. industry has been particularly concerned about declining exports and loss of market share in important commercial markets that primarily import dry peas and lentils for food use. These markets include Spain, Italy, Colombia, Venezuela, and India. Since the mid-1980s, U.S. exports of dry peas and lentils have faced increasing competition from Canadian exports, but also from a number of other suppliers including Turkey and Hungary.

This chapter focuses on recent trends in U.S. and foreign suppliers' exports of dry peas and lentils to certain commercial markets, as well as on prices, production, and trade policies. Production and export trends, and trade policies of other major suppliers, excluding Canada, are also discussed since these countries also compete in the same third-country markets with Canada and the United States.

Although the U.S. industry is concerned about the overall price effects of certain Canadian programs in commercial dry pea and lentil markets, the information in this chapter suggests that other factors, such as ocean shipping rates, and bulk versus containerized handling capabilities and costs, can also affect price differences in foreign markets. Price differences can also exist among the products supplied by different exporters because their dry peas and lentils are not perfectly substitutable in consumption.[1] Dry peas and lentils supply distinct markets and, according to industry sources, the substitution between the two products is relatively low. Additionally, the different varieties and types of dry peas and lentils are not perfectly substitutable within the respective dry pea and lentil markets. As a result, price differences can exist for dry peas or lentils sold because of differences in product variety, quality, intended end-use, and consumer tastes and preferences in the importing market.

U.S. dry pea exports in 1991/92 consisted primarily of food grade peas comprised of 86 percent whole green peas, 7 percent whole yellow peas, 1 percent Austrian Winter peas, and 6 percent split or other peas.[2] U.S. exports of lentils were mostly accounted for by the Brewer variety of lentil, although no official statistics are available. These lentil exports compete with a number of different varieties and types of lentils produced by foreign suppliers. In current U.S. markets, U.S. exporters have tried to develop a market niche for a small, or quick-cooking, high-quality lentil. Canadian Laird lentils, the primary lentil type with which U.S. lentils compete, are a slightly larger, slow-cooking lentil.

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[1] Prices for undifferentiated, perfectly substitutable products should be the same regardless of the supplier.

[2] Compiled by USITC staff from official statistics of the U.S. Department of Commerce.

Other Foreign Suppliers

In addition to Canada, Hungary and Turkey currently compete with U.S. dry pea and lentil exporters; Hungary exports food peas whereas Turkey exports lentils. Australia is also a major exporter of dry peas, although Australian exports do not appear to compete directly with U.S. exports. Production, export developments, and export policies in these countries are described below.

Hungary

Although an important player in dry pea markets, the variable quality of its exports has tended to make Hungary an inconsistent supplier of food-quality dry peas. According to estimates of trade sources, exports rose to 292,300 mt in 1991, with exports believed to be in the 175,000 to 200,000 mt range for 1992.[3] Nonetheless, Hungary managed to maintain a 37-percent share of the Indian green pea import market in 1991/92.[4]

Dry pea production in Hungary increased during 1985-91 with peak production occurring in 1989 when 405,000 mt were harvested, as shown in the tabulation below:[5]

Year	Production *1,000 metric tons*	Area *1,000 hectares*	Yield *metric ton/ hectare*
1985	150	56	2.7
1986	177	64	2.8
1987	211	88	2.8
1988	339	126	2.7
1989	405	158	2.5
1990	302	135	2.2
1991	258	109	2.4

Hungarian output dropped since 1989 due to drought and to a reduction in the use of farm inputs as a result of the farm sector's worsening financial situation in recent years.[6] The future of Hungarian production and export levels is uncertain as Hungarian producers are in a transition period from

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[3] Estimates based upon unofficial commercial databases and trade sources as reported by the U.S. Embassy, Budapest, Hungary, facsimile transmission signed by Ferenc Nemes, Agricultural Specialist, Agricultural Office, sent to the U.S. International Trade Commission, Mar. 18, 1993.

[4] See figure 4-7.

[5] Production figures are based upon official statistics of the Government of Hungary as reported to the U.S. International Trade Commission by the Agricultural Office, U.S. Embassy, Budapest, facsimile transmission, Jan. 11, 1993.

[6] Ibid.

basing planting decisions on planned production targets to expected profitability and cash flow.

The Hungarian Government historically provided production, investment, and export support to its dry pea industry.[7] However, production subsidies were practically eliminated by 1990 and export subsidies are gradually being reduced. Nonetheless, payments to exporters for dry peas used for either food or seed and lentils used for seed has remained unchanged at 10 percent since January 1990.[8] In 1991, these payments provided by the Government of Hungary to exporters were estimated at $17.50 for every metric ton of dry peas shipped out of the country.[9]

Relative to overall transportation and final selling costs, dry green pea export subsidies are not considered to play a major role in the competitiveness of Hungarian dry peas.[10] In 1991, shipping costs to India provided by Gabona Company Limited, Budapest,[11] which shipped approximately 35 to 50 percent (30,000 mt) of all Hungarian peas in 1991, were as follows (in US$ per metric ton):

Budapest to Slovenia Border	$10-15
Rail/Truck Transit Hungary through Slovenia to Adriatic Sea	30
Ocean Freight to India (CIF)	55-60
Total	95-105

Total 1991 CIF Bombay export prices for Hungarian dry food peas were US$300 per metric ton.[12]

Turkey

Turkey's exports of lentils averaged 301,000 mt annually during 1986-91.[13] Turkey is estimated to have had an exportable surplus of green lentils, the type that competes most directly with U.S. and Canadian exports, of 60,000

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[7] John W. Burns and David Youmans, The Hungarian Dry Pea Export Situation and Its Relevance to Traditional Export Markets, (Pullman, WA: Washington State University, May 1992).

[8] U.S. Embassy, Agricultural Office, Budapest, facsimile transmission sent to the U.S International Trade Commission, Jan. 11, 1993.

[9] The amount is calculated using an average free Hungarian border price of US$160 per metric ton plus an estimated domestic rail shipment cost of US$15 per metric ton from Budapest to the Hungarian border.

[10] Burns and Youmans, p. 12.

[11] Ibid., p. 15.

[12] Ibid.

[13] Derived from official statistics of the Government of Turkey sent by facsimile transmission by the Embassy of the Republic of Turkey, Washington, DC, to the USITC, Jan. 1993.

mt in 1992, down from 100,000 mt in 1991.[14] Egypt, Iraq (until the United Nation's embargo), Iran, Saudi Arabia, Sri Lanka, Spain, the United Kingdom, and the Sudan have been among Turkey's major export markets.

Since the Gulf War in 1991, Turkey's exports have been largely to Iran, Saudi Arabia, and other Middle Eastern countries, which are primarily red lentil markets. Smaller amounts were sold in the southern European markets such as Spain and Italy, primarily green lentil markets. It is not known if this is the result of lower production and consequently lower availability of exportable Turkish lentils, the increased competition from Canadian exports in southern European markets, or a preference for sales to Iran, Saudi Arabia, and other Middle Eastern countries.

Based on information from the Government of Turkey and the Foreign Agricultural Service of the USDA, production of lentils in Turkey fluctuated during 1985-90, but increased from 618,000 mt in 1985 to 850,000 mt in 1992, as shown in the following tabulation:

Year	Production *1,000 metric tons*	Area planted *1,000 hectares*	Yield *metric tons/ hectare*
1985	618	597	1.0
1986	850	750	1.1
1987	925	916	1.0
1988	1,040	983	1.1
1989	520	997	0.5
1990	846	906	0.9
1991[1]	750	850	0.9
1992	850	850	1.0

[1] 1991 and 1992 data for area planted are Foreign Agricultural Service estimates of harvested area.

Note.--Data for 1991 and 1992 based on "Grain and Feed Annual Report-1993," Foreign Agricultural Service, Ankara, Turkey, Report No. TU3010, Mar. 1993.

However, most of the rise in Turkey's production has gone for its rapidly expanding domestic market for lentils.

The Turkish Government encourages lentil production through a number of measures, including support prices, tax exemptions, and investment grants.[15] Producers are eligible for a minimum support price based on one-half of the anticipated production cost. Support prices in 1992 were T£3,100 (Turkish

[14] Estimate of the USA Dry Pea and Lentil Council.

[15] Thomas R. Hoffmann and David Youmans, "Red Lentils, International Production and Trade," (Pullman, WA: Cooperative Extension Service, Washington State University, 1992), pp. 14-18.

lira) per kilogram or US$335 per metric ton for green lentils, and T£3,500 per kilogram or US$380 per metric ton for red lentils.[16] The Toprak Mahsulleri Ofisi (TMO), or Turkish Grain Board, competes to some extent with the private industry by offering the minimum support price, maintaining domestic stores, processing, milling, and engaging in export activities. However, TMO only purchased 2,000 mt of lentils in 1991 and 12,000 mt in 1992 indicating that market prices were high enough for most of production to be marketed through private channels.

Lentil processors are exempted from paying taxes on land and capital expenditures for 5 years if machinery is kept in continuous use for this period.[17] In addition, the Turkish government will refund 50 percent of the investment cost of the processing equipment if kept in continuous use over the same 5-year period.

Turkish lentil exports also benefit from a US$5.00 per metric ton payment for all land and ocean shipments.[18] An additional US$1.00 per metric ton is paid to the shipper if hard currency is repatriated within 90 days. Furthermore, exporters receive US$8.00 per metric ton for product shipped on Turkish vessels and US$4.00 per metric ton for product shipped on foreign flag vessels.

Australia

Australian production of all pulses including dry peas has grown strongly since the early 1980s. These pulses are grown in rotation with wheat and are likely a result of the decline of the Australian sheep and wool industry, as sheep grazing is the principal land use on the fallow wheat area. Production of dry peas in Australia fluctuated between 240,700 mt in 1985/86 and 532,000 mt in 1988/89, as shown in the tabulation below:[19]

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[16] Agricultural Specialist, U.S. Embassy, Ankara, Turkey, "Grain and Feed Annual report," AGR No. TU3010, Mar. 16, 1993.

[17] Ibid, pp. 14-18.

[18] Ibid.

[19] U.S. Embassy, Canberra, Australia, facsimile transmission to the USITC, signed by John E. Riesz, Agricultural Counselor, Dec. 8, 1992; and STAT Publishing.

Year	Production *1,000 metric tons*	Area planted *1,000 hectares*	Yield *metric tons/ hectare*
1985/86	240.7	208.4	1.15
1986/87	518.0	317.0	1.63
1987/88	487.0	442.3	1.10
1988/89	532.0	456.0	1.17
1989/90	388.0	326.0	1.19
1990/91	309.0	309.0	1.00
1991/92	463.0	423.0	1.09
1992/93	441.0	372.0	1.19

Over 90 percent of dry pea production is concentrated in Victoria and South Australia. Lentils are at present a very minor crop in Australia. Australia produces around 400 mt of red lentils and 1,400 mt of green lentils annually.[20]

Australia is one of the largest exporters of dry peas in the world. Nonetheless, Australia is relatively new to the world market for dry peas, growing from only 36,800 mt exported in 1984/85 to 183,815 mt in 1991/92.[21] Additionally, Australian exports, for the most part, do not compete with U.S. exports of food-grade dry peas. Through 1990/91, nearly 90 percent of these exports were dun (yellow) peas shipped to India and Bangladesh to be used as ingredients in *dal* purees, substituting for small chickpeas. However, there has been a major shift in the Australian export markets, with roughly 75 percent of 1991/92 exports going into the EC feed market.[22]

Major Foreign Markets

Spain

Spain is an important market for both dry peas and lentils. Spain's dry pea imports were roughly 180,000 mt in 1991.[23] Dry peas are used almost exclusively for animal feed in Spain; thus, U.S. exporters do not significantly compete in this market. Spain's imports of dry peas are primarily from France, Canada, Australia, Hungary, and other Eastern European countries.

On the other hand, lentils are well incorporated into the traditional cuisine of Spain. Lentil imports were 44,289 mt in 1991, with Canada, the United States, and Turkey the leading suppliers in that year (figure 4-1). Since Spain's accession to the EC in 1986, Spanish farmers have reduced their

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[20] U.S. Embassy, Canberra, Australia, signed by John E. Riesz, Agricultural Counselor, facsimile transmission to the USITC, Dec. 8, 1992.

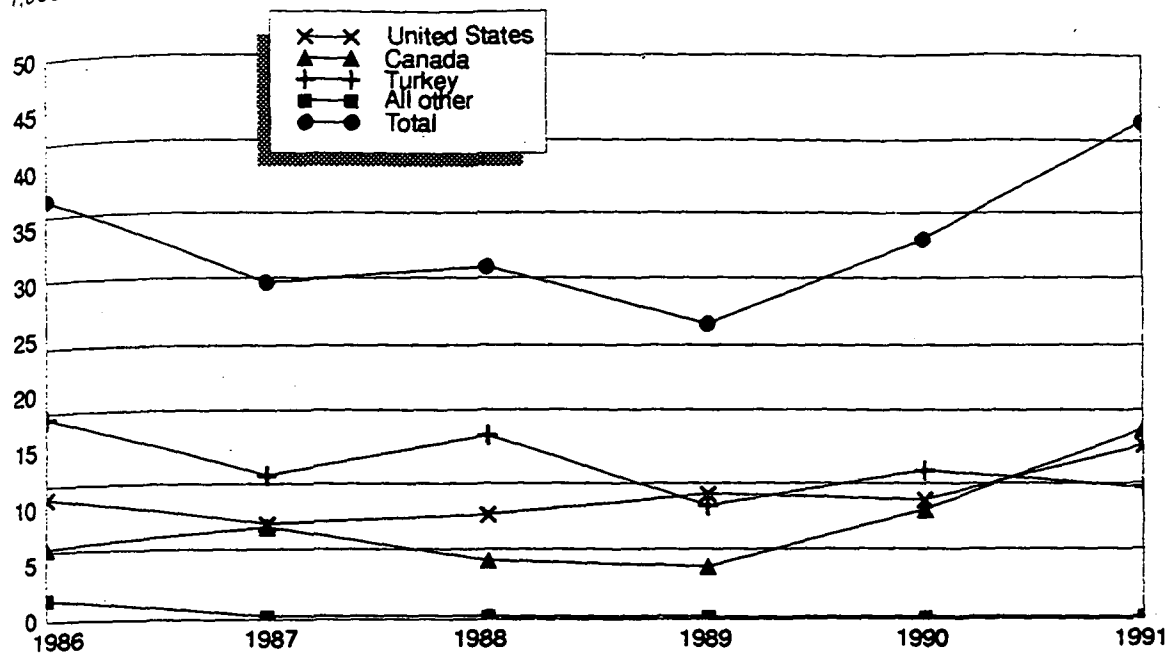
[21] Australian Bureau of Statistics as reported by STAT Publishing.

[22] Ibid.

[23] Official Statistics of Eurostat.

Figure 4–1
Lentils: Spanish imports from the United States, Canada, Turkey, and all other, 1986-91

1,000 metric tons



Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the European Community, Eurostat database.

production of lentils to produce crops that are more profitable under the price incentives provided by the EC's Common Agricultural Policy (CAP).[24,25] Lentil output fell from 49,000 mt in 1987/88 to only 21,000 mt in 1991/92, while planted area declined from 91,000 hectares to 42,000 hectares over the same period.[26] Spain's declining lentil production has resulted in a 48-percent rise in imports since 1987, and imports currently represent over two-thirds of Spain's lentil supply.[27]

Market characteristics

Spanish sellers market three distinct categories of lentils based upon product characteristics: Castillian, U.S., and Pardina. Castillian is the principal variety of lentil grown in Spain and is larger than the U.S. product. Turkish green lentils and Canadian Laird lentils are classified in the Castillian category. U.S. regular lentils, which are smaller in size and darker in color, are sold as *lentejas rapidas*--quick-cooking lentils--in this market. The U.S. industry has been able to develop a particular market niche for its product based on reduced preparation time and higher cooking qualities that are preferred by the Spanish consumers. In addition, the United States is presently the only foreign supplier of Pardina lentils, an even smaller, darker brown lentil; Spanish production of this variety has almost disappeared, making the United States the principal supplier.

At the present time, Canada produces only very small quantities of lentils that compete directly with U.S. regulars (lentejas rapidas) and U.S. small browns (pardinas) in Spanish markets. However, Canadian plant geneticists reportedly are working to develop these varieties for Canadian production.

As a result of consumer preferences for lentils, Spanish consumers have historically paid a premium for high-quality lentils. Duties on both dry peas and lentils imported from non-EC countries are relatively low, 3 and 2 percent, respectively.

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[24] Dan Bruce, President of BNP Lentils, interview by USITC staff, Sun River, OR, Oct. 23, 1992.

[25] The basic aim of the Common Agricultural Policy, established by Article 39 of the Treaty of Rome (March 1957), was to provide efficient farmers an income comparable with their counterparts in industry, and to provide consumers with adequate food supplies at reasonable prices. This is accomplished through a system of producer price guarantees for major agricultural commodities.

[26] Production Estimates Crop Assessment Division, FAS, USDA; and FAS report from Madrid, Spain, AGR No. SP2104, Dec. 1, 1992.

[27] Spain's production of dry peas, on the other hand, has been increasing because dry peas are one of the more profitable crops under the CAP. Dry pea area planted and production have risen from 2,000 hectares and 3,000 metric tons in 1987/88 to 7,000 hectares and 8,000 metric tons in 1991/92. Ibid.

Trade and price trends

Total Spanish imports of lentils grew from 37,527 mt in 1986 to 44,289 mt in 1991. However, imports in 1991 were significantly higher than the 1987-90 average import level of 30,324 mt. Imports of U.S. lentils grew from 10,924 mt in 1986 to 15,430 mt in 1991. The Canadian share of Spanish lentil imports has rapidly increased, from 18 percent in 1986 to 38 percent in 1991. Over this same period, the U.S. share rose from 29 percent to 35 percent while the Turkish share declined from 48 percent to 27 percent.

Average unit values for imports of lentils from all major sources in the Spanish market fell from $616 per metric ton in 1986 to $425 per metric ton in 1988, before climbing back to $613 per metric ton in 1991, as shown in the following tabulation based on Eurostat data (in US$ per metric ton):

Source	1986	1987	1988	1989	1990	1991
United States . . .	$706	$528	$493	$558	$603	$669
Canada	586	457	378	533	550	561
Turkey	557	364	402	464	546	615
All sources	616	438	425	517	565	613

Turkey generally had been the low-cost supplier from 1986 through 1989. Canada nearly matched Turkish unit values in 1990 and were significantly lower than all the other major suppliers in 1991. U.S. lentils sold at higher prices, relative to the other suppliers, throughout the study period. This price differential reflects the specific market niche created for U.S. lentils which allows U.S. product to be sold at a premium.

The Spanish import figures indicate that the strong growth in imports from Canada has most directly affected lentil imports from Turkey. The Canadian laird lentil looks very similar to the Spanish and Turkish large green lentils, but has had a much lower price since 1991. In spite of this, many importers initially resisted buying Canadian Laird lentils because Laird lentils tend to lose their skin and fall apart when cooked. However, strong price competition reportedly has forced Spanish packagers to choose between using lower priced Canadian laird lentils or losing market to their competitors. This has resulted in all major packagers using lairds for most of their large green lentil needs. U.S. exporters were able to increase their market share and volume by creating the differentiated *lentejas rapidas* category for U.S. regular lentils and by being the exclusive pardina lentil suppliers.

Lower retail prices from the competition between Turkish and Canadian lentils, however, resulted in downward pressure on all lentil retail prices, thereby hurting sales of U.S. lentils as well.[28] This competition tends to make higher priced U.S. lentils less attractive to Spanish consumers and

[28] USA Dry Pea and Lentil Council, Madrid, Spain, facsimile communication with USITC staff, signed by David McClellan, European director, Jan. 4, 1993.

packagers who find their margins reduced.[29] Consequently, many retailers have reduced the shelf space reserved for the U.S. product, and have often placed U.S. lentils on shelves above the natural eye level of the shopper, thereby reducing the likelihood that Spanish shoppers will see or consequently buy U.S. product when they are looking for lentils in general.[30]

Italy

Italy is an important market for both dry peas and lentils. Italy's dry pea imports totaled 66,800 mt in 1991 with estimated annual consumption of over 100,000 mt.[31] As in the case of Spain, Italy's dry pea imports are used mostly for animal feed. Eastern European countries along with France and other EC countries are Italy's main foreign dry pea suppliers.

The lentil market is the focus of the U.S. industry in Italy. Italy's lentil imports of 24,700 mt in 1991 (figure 4-2) were equivalent to 96 percent of annual consumption of 25,700 mt. Price incentives established under the European Community CAP generally discourage domestic lentil production in Italy, which averages about 1,000 mt annually, in favor of dry peas and other grain-type crops.[32] U.S. lentils compete with imports from Canada and Turkey in the Italian market.

Market characteristics

Lentils are categorized by size and color in Italy. The prevalent varieties in the Italian market are the large green (Canadian Laird or Turkish), medium-sized green (U.S. regular or small Turkish), small green (Eston or Syrian), small red (Turkish), and decorticated (peeled) red (Turkish) varieties. Sales of medium-sized green lentils are concentrated in the Italian regions of Bari and Rome, where there is some recognition of their distinct cooking qualities.

Because the lentil market in Italy is not as highly differentiated as that in Spain, consumers in Italy reportedly are not as familiar with the quality and quick-cooking attributes of U.S. regular lentils. Therefore, U.S. lentils generally compete with Turkish and Canadian lentils solely on the basis of price. Under these circumstances, the cheaper Canadian and Turkish lentils are much more competitive. The Italian pulse trade is composed of many regional packagers and canners, most of whom import through brokers or buy from wholesalers. According to industry sources, many of these importers

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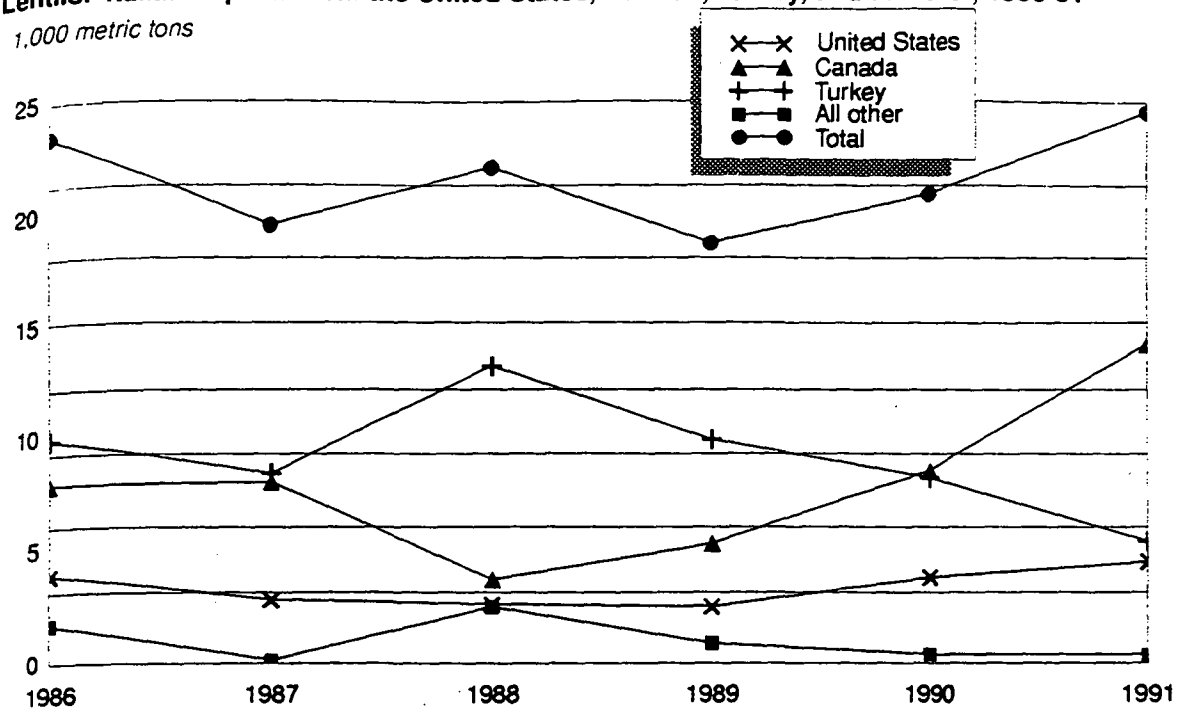
[29] Ibid.

[30] Dan Bruce, President of BNP Lentils, interview by USITC staff, Sun River, OR, Oct. 22, 1992.

[31] Trade data from USDA reports.

[32] For instance, Italy's dry pea production tripled from 11,000 metric tons in 1988 to 34,000 metric tons in 1990.

Figure 4-2
Lentils: Italian imports from the United States, Canada, Turkey, and all other, 1986-91



Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the European Community, Eurostat database.

are not aware of the advantages of the U.S. product or its market potential.[33] Two companies, Agria, SPA and Zorzi Sementi, S.R.L., have national distribution, yet even they generally work through brokers.

U.S. industry efforts are underway to convince Italian dry pulse packagers that U.S. quick-cooking regulars should be marketed under a separate lentil category. Creation of a category for U.S. lentils would allow the lentils to be packaged in such a way as to stress the unique characteristics of the U.S. product. Italian packagers have no incentive to market U.S. lentils as a premium product unless the Italian consumers become sufficiently knowledgeable about U.S. lentils and are willing to pay a higher price for this product.

Trade and price trends

Imports of lentils rose slightly from 23,572 mt in 1986 to 24,690 in 1991. Over this period, imports from the United States rose from 3,978 mt to 4,565 mt. As in Spain, the Canadian share of the Italian import market for lentils increased rapidly while the Turkish market share declined, particularly during 1989-91. The Canadian share of Italian imports rose from 28 percent in 1989 to 58 percent in 1991, while the Turkish share fell from 53 percent to 22 percent. The U.S. share rose from 14 percent to 19 percent during the same period.

According to Eurostat data, average unit values for Italy's imports of lentils may explain the shift in market shares in the Italian import market. Canadian unit values were lower than Turkish unit values in both 1990 and 1991, as shown in the following tabulation (in US$ per metric ton):

Source	1986	1987	1988	1989	1990	1991
United States . . .	$631	$528	$441	$591	$578	$563
Canada	554	468	411	555	552	550
Turkey	569	395	381	508	568	643
All sources	577	447	408	538	567	575

Average unit values of U.S. products were much closer to those of other suppliers in Italy as compared to the unit values in the Spanish market. This indicates that price is likely the dominant factor in purchases of lentils in the Italian import market.

Venezuela

Venezuela's imports of dry peas and lentils are largely for human consumption. In 1991, Venezuela's imports of dry peas amounted to 21,174 mt

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[33] USA Dry Pea and Lentil Council "Market Promotion Program Activity Plan for Fiscal Year 1992, Mediterranean," p. 22.

and were sourced from the United States and Canada (figure 4-3). Venezuela's imports of lentils amounted to 11,269 mt in 1991, sourced principally from the United States and Canada with minor amounts from Argentina and Turkey (figure 4-4). Production of dry peas and lentils in Venezuela is considered to be negligible.[34]

Venezuela's imports of both dry peas and lentils were variable during 1985-91. Imports fell sharply in 1986, reflecting the shortages of foreign exchange that occurred after the price of oil, Venezuela's major export, fell in that year.[35] Venezuela's imports of dry peas and lentils also fell in 1989, reflecting the devaluation of its currency, the bolivar.[36]

Market characteristics

The principal types of dry peas and lentils consumed in Venezuela are whole white (yellow) peas, lentils (mostly the Canadian Laird type), green split peas, green whole peas, and yellow split peas.[37] In general, product origin is not a primary consideration for final consumers. The Venezuelan trade is familiar with the high-quality and product characteristics of U.S. dry peas and lentils, but price is the most important determinant of sales in this market.

The structure and marketing channels of the trade in Venezuela have been decentralized over the last few years. At present, there are about 60 importers, with 7 importers controlling more than 55 percent of total imports. Venezuela has 15 to 20 larger wholesalers, 2 or 3 principal packagers, and primary wholesale markets located in Caracas and Barquisimeto.[38] About 70 percent of the product moves in bulk through wholesale channels.

As of March 1992, the import duty rate in Venezuela for both dry peas and lentils was 15 percent ad valorem. Venezuela has a preferential duty for products from Andean Pact countries, including Argentina and Chile. Despite these trade preferences, however, Venezuela's imports of dry peas and lentils from Argentina and Chile have not increased significantly. Imports of dry peas and lentils require phytosanitary certificates from the country of origin and from the Venezuelan Ministry of Agriculture.

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[34] U.S. Embassy, Caracas, facsimile communication sent to USITC staff, signed by Pablo Alvarez, agricultural specialist, Dec. 23, 1992.

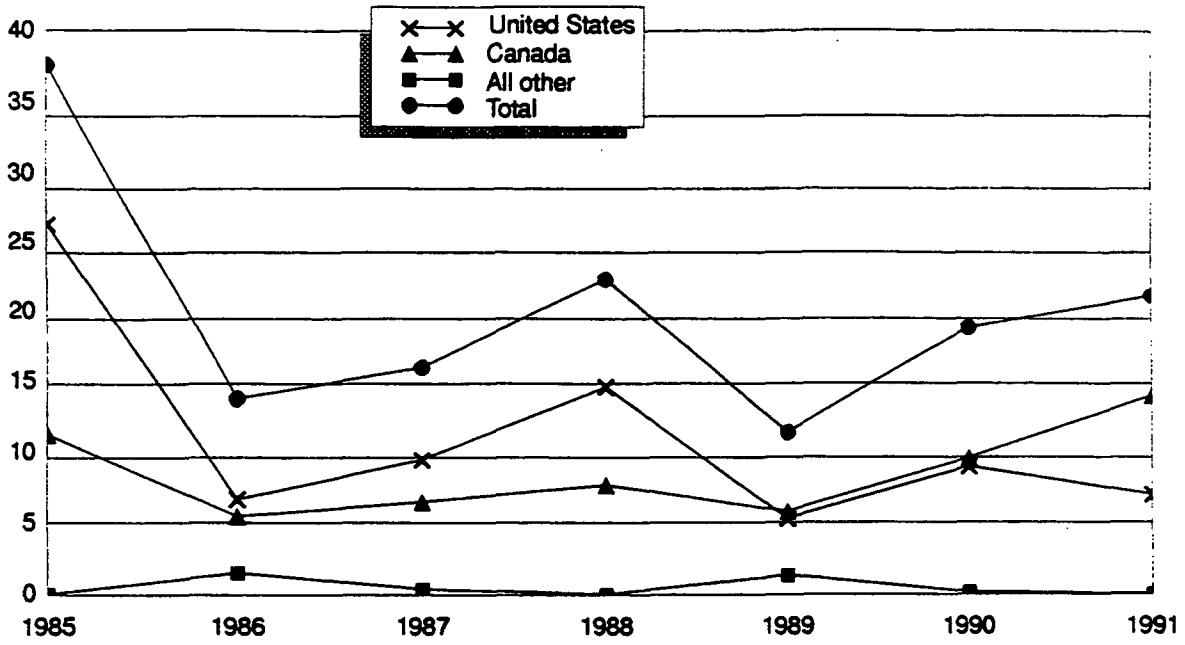
[35] International Monetary Fund's International Financial Statistics data base.

[36] Ibid.

[37] Ibid.

[38] USA Dry Pea and Lentil Council.

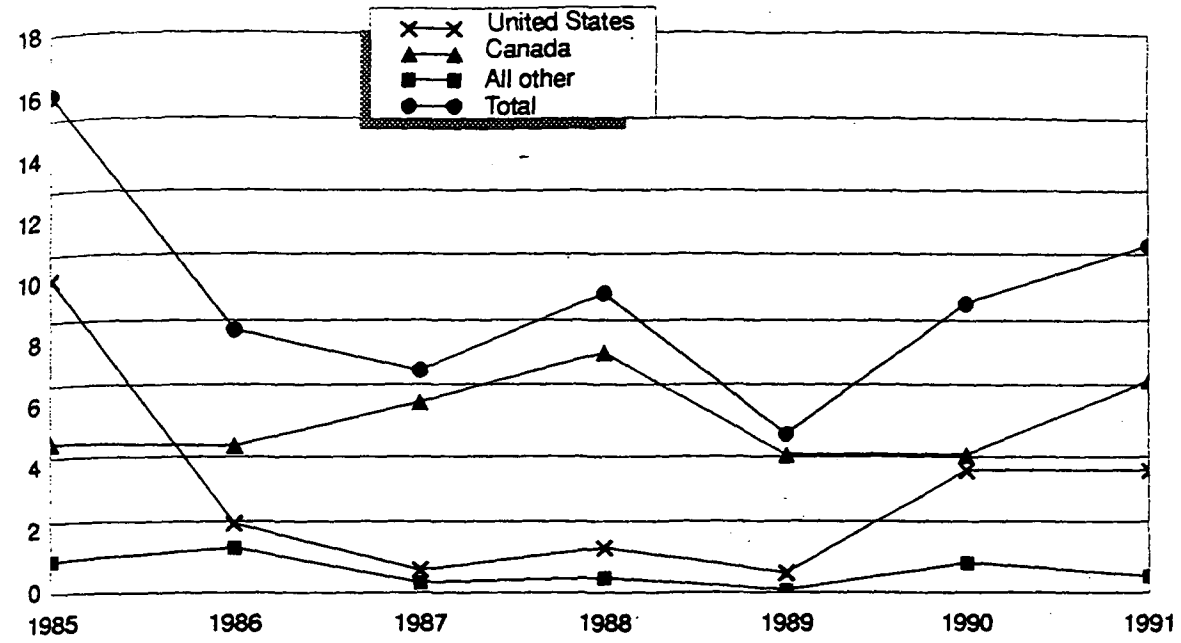
Figure 4–3
Dry peas: Venezuelan imports from the United States, Canada, and all other, 1985-91
1,000 metric tons



Source: Compiled by the staff of the U.S. International Trade Commission based on data from the U.S. Department of Agriculture, Foreign Agricultural Service, American Embassy, Caracas, Venezuela, facsimile to the U.S. International Trade Commission, Dec. 1992.

Figure 4–4
Lentils: Venezuelan imports from the United States, Canada, and all other, 1985-91

1,000 metric tons



Source: Compiled by the staff of the U.S. International Trade Commission based on data from the U.S. Department of Agriculture, Foreign Agricultural Service, American Embassy, Caracas, Venezuela, facsimile to the U.S. International Trade Commission, Dec. 1992.

Trade and price trends[39]

Venezuela's total imports of dry peas rose during 1989-1991, with imports from the United States rising from 5,302 mt in 1989 to 7,091 mt in 1991, and imports from Canada rising from 5,823 mt to 14,083 mt during those years. In terms of market share, imports of dry peas from the United States fell from 46 percent in 1989 to 34 percent in 1991, while Canada's market share rose from 51 percent to 66 percent. However, unit values for imports from the United States and Canada have remained fairly close in the Venezuelan market for dry peas in most years as shown in the following tabulation (in US$ per metric ton):

Source	1985	1986	1987	1988	1989	1990	1991
United States . .	$416	$405	$367	$407	$404	$391	$406
Canada	397	394	268	364	346	340	368
All sources . . .	411	398	326	392	374	365	381

Canada has had a higher market share in Venezuela's lentil market compared to the United States since 1986, and the difference in the these market shares widened during 1986-88 (figure 4-4). During 1989-91, Venezuela's imports from the United States rose at a relatively faster rate than imports from Canada, increasing from 604 mt in 1989 to 3,924 mt in 1991. Imports from Canada rose from 4,466 mt to 6,823 mt during this period. The U.S. market share rose from 12 percent to 35 percent, while Canada's market share fell from 88 percent to 61 percent during 1989-91. This increase may be attributable to the narrowing of the difference in average unit values for imports from the United States and Canada in 1990 and 1991, as shown in the following tabulation (in US$ per metric ton):

Source	1985	1986	1987	1988	1989	1990	1991
United States . .	$750	$572	$601	$573	$639	$540	$605
Canada	825	768	515	477	560	529	556
All sources . . .	776	718	525	493	570	532	573

The U.S. industry contends that ocean freight rates contribute to the price differential between U.S. and Canadian products in Venezuela. According to the industry, lower shipping rates are available on shipments of dry peas and lentils originating in Vancouver, British Columbia for Venezuela and other South American markets compared with rates available for shipments from Seattle or Portland.[40] Ocean shipping rates are discussed in chapter 6.

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[39] Information in this section based on data from the U.S. Embassy, Caracas, facsimile communication, Dec. 23, 1992.

[40] Judy Van Vleet-Mills, Palouse Empire Marketing, Inc.; Dirk Boettcher, Continental Grain Company; and Lynn Virchler, Chairman of the Foreign Marketing Committee, USA Dry Pea and Lentil Council, interviews by USITC staff, Oct. 1992.

Colombia

Colombia imports both dry peas and lentils for human consumption. In 1991/92, Colombia imported 35,394 mt of dry peas, largely from the United States and Canada, with minor amounts from Argentina and Venezuela (figure 4-5). Colombia also imported 27,991 mt of lentils, primarily from Canada, in 1991/92, along with smaller amounts from the United States and other suppliers (figure 4-6). Colombia is not known to be a producer of dry peas and lentils.[41] Consumption of dry peas and lentils has been increasing in Colombia as the price of beef, an important consumer substitute, has also risen in recent years.

Market characteristics

Colombia primarily imports dry whole green peas (Alaska-type No. 1), lentils, and small quantities of dry whole yellow peas. About 30 percent of Colombia's dry peas and lentils are used for canning. Industry sources indicate that Colombian consumers prefer the cooking and flavor qualities of U.S. lentils, although they prefer the visually colorful qualities of Canadian Laird lentils. Price, however, is by far the most important factor in purchasing decisions.[42]

There are eight plants in Colombia which process imported dry peas and lentils. All of these plants are located in the main cities of Bogota, Cali, and Medellin. An estimated 50 companies import dry peas and lentils. The Government of Colombia's agricultural marketing agency (IDEMA) imported an estimated 20 percent of Colombia's dry peas and lentils in 1991/92.[43]

Dry peas and lentils were assessed a duty of 15 percent ad valorem in 1992 in Colombia. Under Colombia's economic liberalization policy (*apertura*), dry peas and lentils are imported without quotas, but such imports require prior licenses. Imported dry peas and lentils must be fumigated and accompanied by a phytosanitary certificate prior to entry.

Trade and price trends

Although the United States and Canada supply almost the entire Colombian market, U.S. dry pea and lentil exports have lost considerable market share in recent years. In 1985/86, U.S. exports of 17,649 mt of dry peas accounted for all of Colombia's imports (figure 4-5). By 1991/92, U.S. exports were 14,515 mt, yet these exports accounted for only 41 percent of the market. Canadian dry pea exports of 20,404 mt accounted for 58 percent, with most of the

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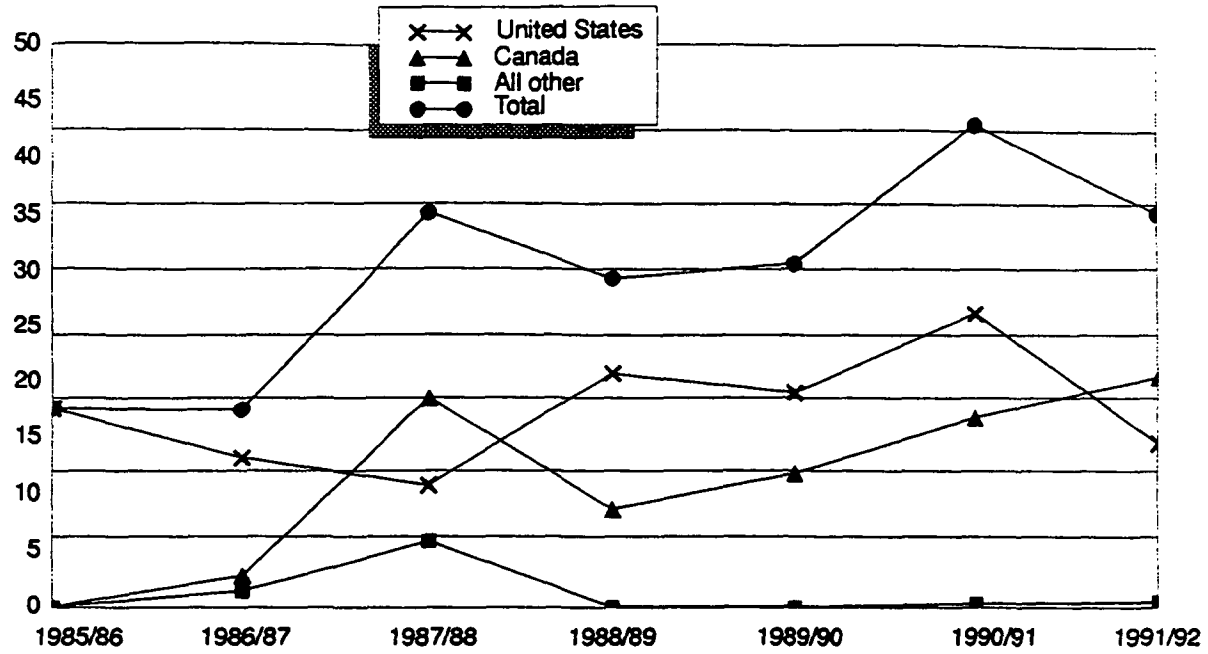
[41] U.S. Department of State, message reference No. 18454, prepared by U.S. Embassy, Bogota, Dec. 1992.

[42] Horacio Herzberg, pulse trader for Pittra Inc., New York City, NY, telephone interview by USITC staff, Feb. 1993.

[43] U.S. Department of State, message reference No. 18454, prepared by the U.S. Embassy, Bogota, Dec. 1992.

Figure 4–5
Dry peas: Colombian imports from the United States, Canada, and all other, crop years 1985/86 to 1991/92[1]
1,000 metric tons

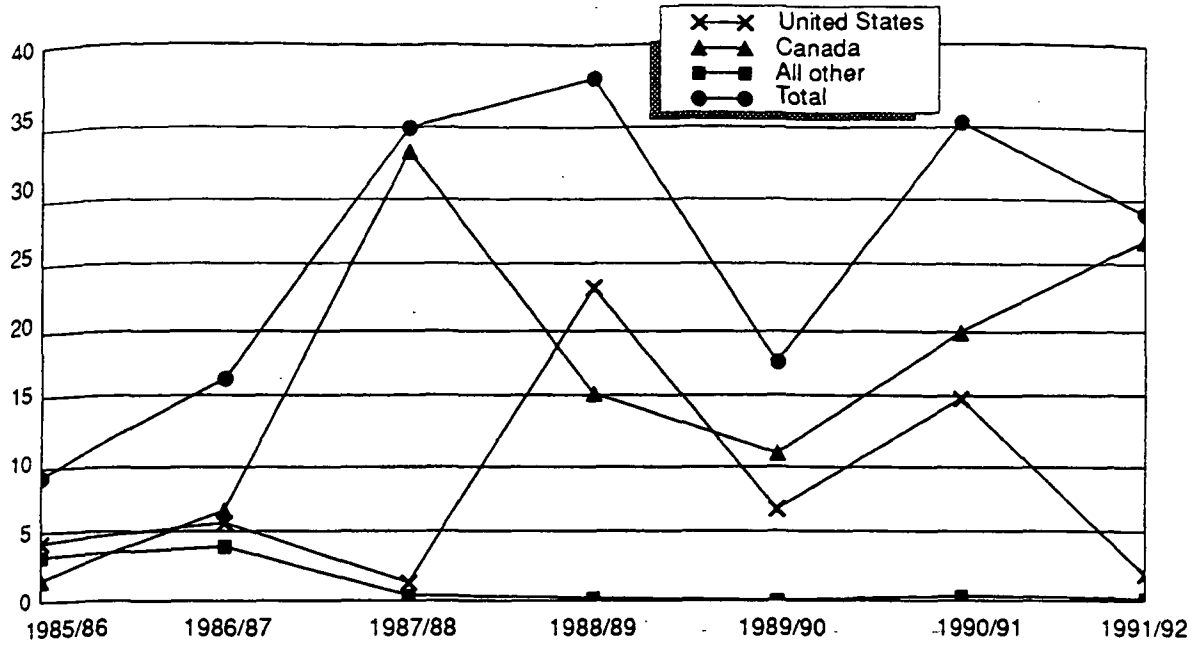


[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission based on data from U.S. Department of State Telegram, Bogota, Colombia, message reference No. 142305Z, Dec. 1992.

Figure 4–6
Lentils: Colombian imports from the United States, Canada, and all other, crop years 1985/86 to 1991/92[1]

1,000 metric tons



[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission based on official data from U.S. Department of State Telegram,1992, Bogota, Colombia, message reference No. 142305Z Dec. 1992

increase in Canadian exports occurring since 1990/91. Industry sources have indicated that U.S. market share declined further in the 1992/93 marketing year because of U.S exporters' inability to match lower Canadian prices.

Import unit values for U.S. dry peas have been consistently lower than those for Canadian dry peas,[44] as shown in the following tabulation based on information prepared by the U.S. Embassy in Bogota (in US$ per metric ton):

Source	1987/88	1988/89	1989/90	1990/91	1991/92
United States .	$291	$303	$315	$239	$219
Canada	307	309	341	277	233
All sources . .	308	305	325	254	229

Nonetheless, Canadian exports have still been able to increase at the apparent expense of U.S. exports. Part of this rise may be explained by the increased acceptance of Canadian product among Colombian importers, as Canadian exporters have worked with importers to meet Colombian quality standards.

U.S. sales in the Colombian dry pea market are likely to decline further because the port at Buenaventura, Colombia has recently installed facilities which can accept bulk shipments of dry peas. Bulk shipping reduces the handling costs in Canada by eliminating the need to bag, palletize, and load the dry peas in containers before shipping.[45] In addition, bulk shipping rates for ocean transportation generally are $50 per metric ton less than the containerized shipping rate.[46]

Imports of lentils from the United States fell from 4,208 mt in 1985/86 to 1,951 mt in 1991/92 while imports from Canada rose from 1,547 to 25,906 mt over the same period (figure 4-6). These volumes translate into a decline in market share for U.S. lentil exports from 47 percent in 1985/86 to 7 percent in 1991/92 while Canadian market share rose from 17 percent to 93 percent. A significant amount of the increase in Canadian exports occurred between 1990/91 and 1991/92.

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[44] Horacio Herzberg, telephone conversation with USITC staff, Feb. 1993.

[45] Joe St. Denis, president of St. Denis Seed Farm Inc., interview by staff of USITC, Sun River, OR, Oct. 23, 1992.

[46] Joe St. Denis, interview by USITC staff, Oct. 22, 1992, and Glen Squires, "An Investigation of the Impact of Transportation Costs on the Competitive Position of Canada and United States Pea and Lentil Industries," masters thesis, (Pullman, WA: Washington State University, Dec. 1992), p. 214.

Import unit values of U.S. lentils were lower than import unit values of Canadian lentils in the 1988/89 and 1990/91 crop years, when U.S. exports increased, as shown in the following tabulation (in US$ per metric ton) :

Source	1987/88	1988/89	1989/90	1990/91	1991/92
United States .	$487	$321	$469	$324	$331
Canada	431	347	362	409	353
All sources . .	435	332	403	374	352

The lower unit value for U.S. products in 1991/92 was not indicative of overall pricing structures as U.S sales volumes were too low, relative to total sales, in that year to obtain a representative sale price.

India

India's lentil imports were estimated to be 100,000 mt in 1991/92.[47] However, almost none of this product came from the United States or Canada. Official government data indicate that India's dry pea imports generally average about 250,000 mt per year.[48] Most of these dry pea imports are yellow peas, also called dun or white peas in India, that are priced significantly less than U.S. and Canadian yellow peas, and thus they preclude imports from North American suppliers. India's estimated commercial imports of dry green peas have averaged about 60,000 mt annually over the last 5 years (figure 4-7).[49] Exporters from the United States, Hungary, Canada, and New Zealand compete for these sales.

India has increased its production of dry peas over the last decade.[50] Production of dry peas has risen from a 1979-81 period average of 295,000 mt to 440,000 mt in 1990.[51] Production for the 1992/93 crop year is projected to be 460,000 mt.[52] However, overall pulse production has not kept pace with the population growth, resulting in a decline in per capita availability and

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[47] FAS, USDA, New Delhi, India, AGR No. IN2007, Jan. 1992.

[48] India's Imports by Commodities-Countries, various issues.

[49] Data collected by the USA Dry Pea and Lentil Council local representative.

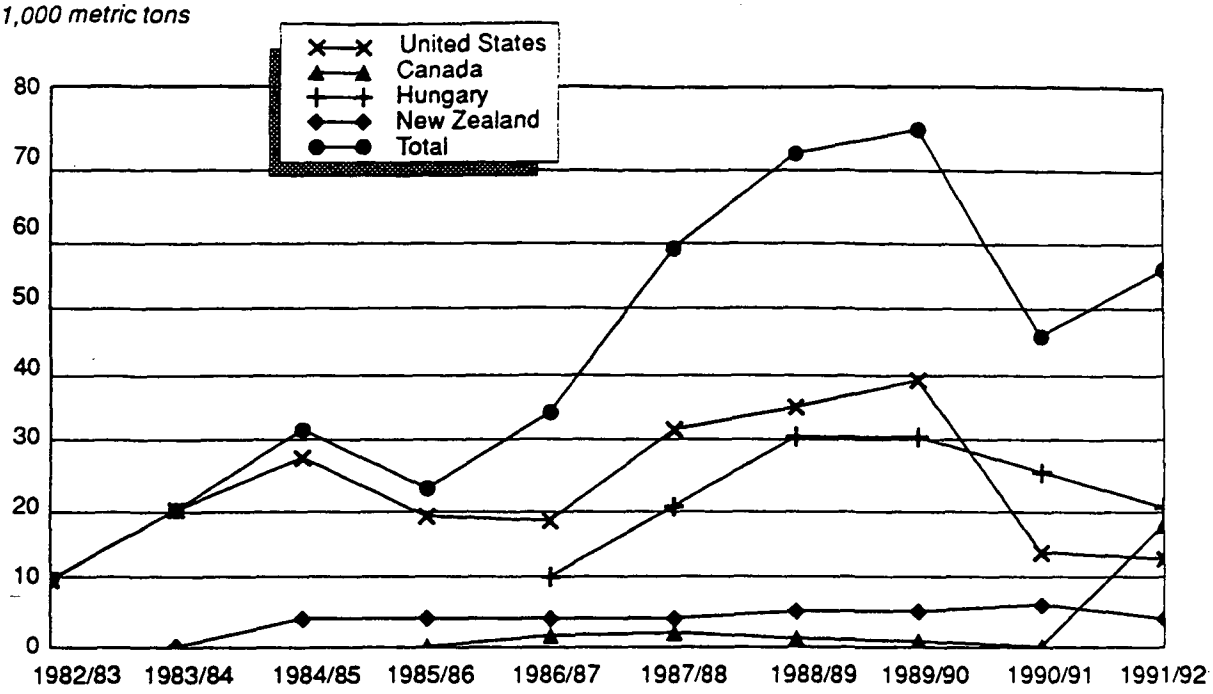
[50] Lentil output also increased from an average annual production of 411,000 metric tons for the 1979-81 period to 703,000 metric tons in 1990. Lentil production in the 1992 crop year is estimated to be 750,000 metric tons See Food and Agriculture Organization of the United Nations (FAO), FAO Yearbook, Production, 1990, vol. 43 (1991), p. 106.

[51] Ibid., p. 103.

[52] FAS, USDA, New Delhi, India, AGR No. IN2007.

Figure 4–7
Dry green peas: Commercial Indian imports from the United States, Canada, Hungary, and New Zealand, crop years 1982/83 to 1991/92[1]

1,000 metric tons



[1] Crop years are from September 1 to August 31.

Source: Compiled by the staff of the U.S. International Trade Commission based on commercial import estimates gathered by the USA Dry Pea and Lentil Council local representative from trade sources.

generally higher prices for pulses.[53] Per capita availability in recent years has been around 40 grams per day compared to about 70 grams in the 1960s.[54]

Market characteristics

Dry peas and lentils are most commonly used in *dal* dishes, which are a basic staple of much of Indian diet.[55] Green and yellow peas do not compete with each other because they have distinct markets in India. Green peas are used with vegetables, rice, in soups, and in snacks. Yellow peas and dun peas are often used as a substitute for, or mixed with, small chickpeas to be ground into flour (besan) and served as a base in thick-textured dal purees. They may also be split and mixed with pigeon peas or used as a snack ingredient.[56]

The Government of India has allowed the import of pulses under open general license (OGL) since 1979.[57] Importers need to register their contracts with the National Cooperative Marketing Federation (NAFED) in order to monitor the level of imports. During 1987 to 1989, the import duty on dry peas and lentils in India ranged from 10 to 35 percent ad valorem; the 1992 duty was 10 percent ad valorem, with imports handled by numerous small traders.

Dry green peas were not a traditional product in Indian meals. In recent years the U.S. industry has conducted extensive market development for the dry green pea market in India. The USA Dry Pea and Lentil Council informed importers, wholesalers, and consumers as to the use of dry green peas in various food preparations by arranging trade team visits for testing, advertising, and trade fairs. The USA Dry Pea and Lentil Council consumer promotions were for generic green peas, through which Indian consumers learned to utilize dry green peas, which, in turn, increased Indian imports of U.S. dry peas. Retail consumers in India cannot identify the U.S. product in the market because products of all origins are sold in the same fashion; however,

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[53] Total pulse production has grown from 11.8 million metric tons in 1970/71 to 14.5 million metric tons in 1991/92, much slower than the rate of population growth. See International Monetary Fund data, Statistical Abstract India, and USA Dry Pea and Lentil Council estimates.

[54] FAS, USDA, New Delhi, India, Situation and Outlook Report, AGR No. IN2023.

[55] In India, the generic name for all members of the dry pea, lentil, and bean family, and the dishes made from them, is *dal*.

[56] USA Dry Pea and Lentil Council local representative, New Delhi, India, facsimile communication sent to USITC, Feb. 16, 1993; Peter Johnstone, president of Spokane Seed Co., telephone conversation with USITC staff, Jan. 14, 1993.

[57] It is important to note that India generally bans the import of all consumer goods, including processed agricultural goods. Many of the agricultural imports are traditionally channeled through public sector trading companies. Pulses have been the principal exception to this import policy.

importers and wholesalers are fully aware of U.S. product qualities and wholesale brands.

According to commercial import estimates gathered by the USA Dry Pea and Lentil Council's representative in India, the U.S. industry was dominant in the dry green pea market with over 80 percent of the import market as recently as 1985/86. Since then, U.S. exporters have seen this dominance slip away. U.S. sellers of dry peas allege that other Indian dealers are counterfeiting U.S. brands.[58] For example, it is alleged that bulk Canadian green peas are being bagged in "Rumpa" brand sacks that are virtually the same in appearance as the "Rumba" brand sold exclusively by one Pacific Northwest producer.[59]

Many Indian traders have expressed their preference for U.S. dry peas, citing brand name recognition, consistency of product quality, and especially lower moisture content that allows them to store the dry peas for a longer period. However, price is usually the most important factor in the Indian market, and the current higher prices of U.S. dry peas are considered a major deterrent limiting imports of U.S. dry peas.

Trade and price trends

India's import data indicate that imports from Hungary have taken significant market share from the United States since 1986/87 (figure 4-7). This is likely the result of the discount of dry green peas from Hungary relative to other suppliers, excluding bulk shipments. A sample offering price structure for December 1992 is shown in the following tabulation as an example of local prices in Bombay, India, cif basis, based on information from the USA Dry Pea and Lentil Council, Bombay, India (in US$ per metric ton):

Origin	In containers	In bulk
United States	380/390	(1)
Canada	350/370	290/295
Hungary	308	(1)
New Zealand	320	(1)

[1] Not applicable.

U.S. exports in 1990/91 declined partially due to higher U.S. prices and lower U.S. production (figure 4-7), but in 1991/92, even with a good U.S. crop, U.S. exports did not return to their previous levels. The lower U.S. sales in India in 1991/92 have been attributed to the import of about 17,000 mt of Canadian dry peas in two bulk shipments. These Canadian dry peas cost about $55 per metric ton less than similar U.S. dry peas shipped in

[58] Peter Johnstone, President of Spokane Seed Company, interview by USITC staff, Sun River, OR, Oct. 22, 1992.
[59] Ibid.

containers.[60] The ports of Vancouver, British Columbia and Bombay, India have the necessary equipment for handling bulk shipments with only minimal losses reported for the two bulk shipments that have occurred so far.

[60] Joe St. Denis, St. Denis Seed Farm, Inc., Alberta, Canada, interview by USITC staff; and USA Dry Pea and Lentil Council, Bombay, India.

CHAPTER 5

CONDITIONS OF COMPETITION: GOVERNMENT PROGRAMS IN THE UNITED STATES AND CANADA

As discussed previously, both the U.S. and Canadian dry pea and lentil industries argue that government programs in the United States and Canada play an important role in determining the conditions of competition between dry pea and lentil producers in the two countries. This chapter analyzes the effects of government programs on dry pea and lentil production and exports in the United States and Canada. Particular emphasis is placed on evaluating the effects of the two Canadian programs that are of concern to the U.S. industry--the Gross Revenue Insurance Program and the Western Grains Transportation Act. Additionally, the effects of U.S. price support programs for wheat are analyzed. These price support programs have been cited by the Canadian industry as important competitive factors. Other factors affecting the competitive position of the U.S. and Canadian dry pea and lentil industries are examined in chapter 6.

To analyze the importance of government programs, the Commission used statistical analysis to test the extent to which U.S. and Canadian dry pea and lentil crop area is responsive to changes in relative producer prices for dry peas, lentils, and wheat.[1] The parameters estimated from the statistical analysis were also used to evaluate the effects of the GRIP and the WGTA on Canadian production and exports of dry peas and lentils. The results of this analysis were used to evaluate the contention of the Canadian industry that the primary reason for increased Canadian dry pea and lentil area in recent years was not the GRIP and the WGTA, but the decline in the world price of wheat.[2]

The Commission used an economic model that links changes in production to trade and export prices to examine the impact of the GRIP on U.S. exports to selected third-country markets. The effect of the WGTA on U.S. exports in third-country markets was not analyzed because, since 1991/92, the GRIP has been the most important factor affecting Canadian production and exports of dry peas and lentils.

Summary of Results

In regard to the GRIP, the Commission found that during 1991/92 and 1992/93, the guaranteed target revenues established by the GRIP induced additional Canadian production of dry peas and lentils by (1) providing

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[1] Specifically, the Commission used regression techniques to obtain estimates of the response of Canadian and U.S. dry pea and lentil area to price incentives. The relevant price incentives were used, along with yield history, to measure "expected revenue," which was included as an explanatory variable included in the regressions. See appendix F for further discussion.

[2] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint prehearing brief, Nov. 23, 1992.

revenue incentives that, on average, favored dry pea and lentil production relative to wheat, and (2) reducing the uncertainty in price and yield associated with their production. The Commission also found that higher Canadian production of dry peas and lentils under the GRIP has resulted in increased Canadian exports and lower world prices for these products.

The results of this chapter also indicate that it is likely that the addition of dry peas and lentils to the list of crops eligible for transport assistance under the WGTA in 1984 benefitted Canadian dry pea and lentil growers, thereby encouraging increased Canadian production and export of these crops. Using 1990/91 as a base year, the Commission found that if dry peas and lentils were eliminated from the WGTA, all other things held constant, Canadian production and exports of dry peas and lentils could fall, and world prices for these crops would most likely rise.

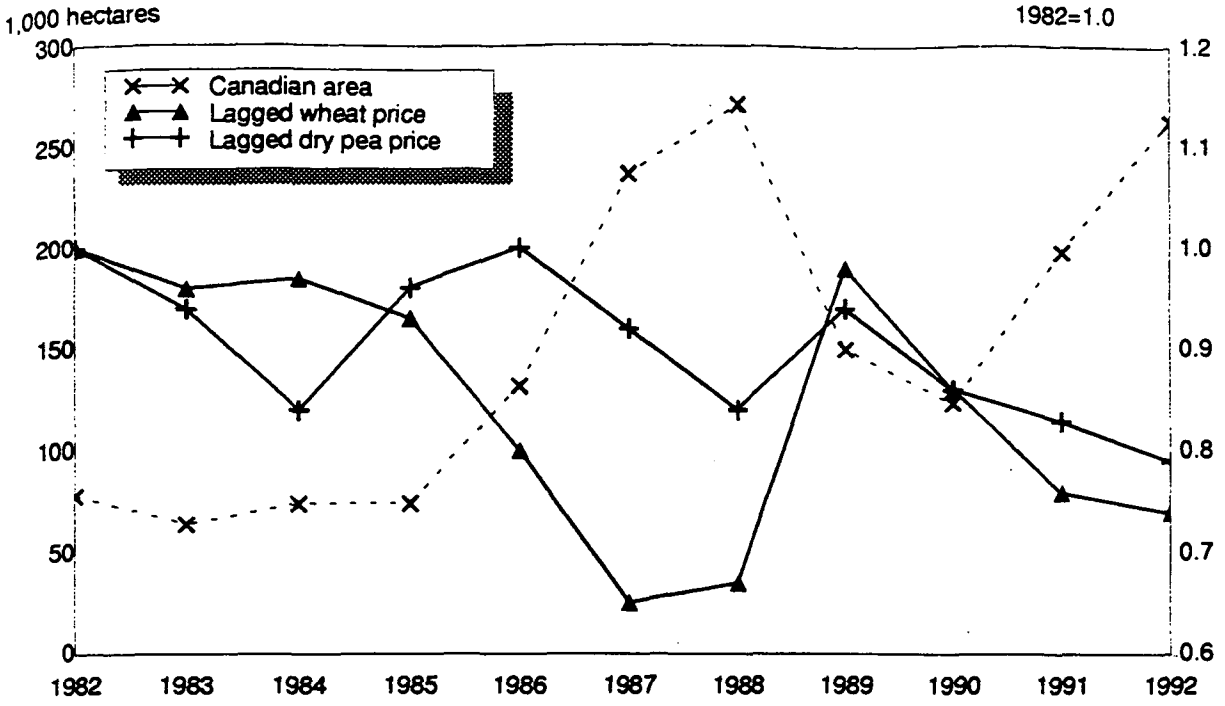
Despite these findings, however, the impact of changes in the WGTA on current Canadian production of dry peas and lentils may be indeterminate for two reasons. First, under the GRIP, target revenues are based on long-term average prices. Thus, for producers enrolled in the GRIP, the prices received for dry peas and lentils may not be appreciably affected by any modification of the WGTA, at least in the short-to-medium run. Second, prior research on the WGTA indicates that the program primarily benefits relatively lower valued crops, such as wheat, barley and other export grains. If WGTA assistance were eliminated for dry peas and lentils, as well as for other crops, then the resulting price changes could induce additional production of dry peas and lentils, since production of dry peas and lentils was found to depend on the price of these products relative to that of wheat.

The results of this chapter also suggest that the decline in the average Canadian wheat price was an important factor in the growth of Canadian production of dry peas and lentils, at least during 1979/80 to 1990/91, the last year before the GRIP. In contrast, the Commission found no relationship between U.S. area in dry peas and lentils and the market prices of wheat or barley, although the U.S. area was found to respond to the market prices of dry peas and lentils. These results for the U.S. industry are consistent with the findings in chapter 2 that U.S. program benefits for wheat and barley, as well as these crops' higher yields, tend to discourage U.S. growers from shifting from wheat or barley to dry peas or lentils in response to market prices. As shown in a later section, the decline in the U.S. loan rate for wheat, based upon authority provided by the Food Security Act of 1985, as well as the Export Enhancement Program, were important factors contributing to world wheat price movements during this period.

Price and Area Trends

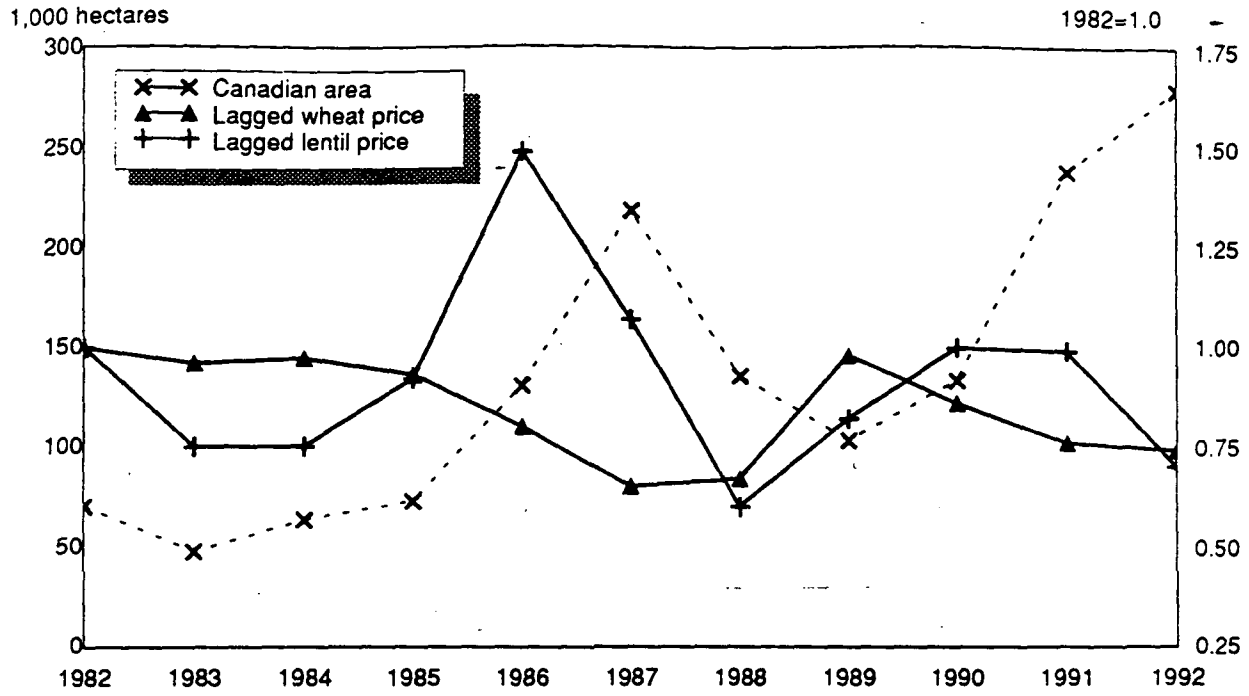
Canadian area in dry peas and lentils more than doubled during 1982 through 1992 while U.S. area has remained about the same (figures 5-1 and 5-2). Canadian industry officials contend that the responsiveness of Canadian producers to market forces, particularly to the decline in the price of wheat, has been the most important factor explaining the relative growth in U.S. and Canadian dry pea and lentil production.

Figure 5-1
Dry peas: Harvested Canadian area and indexes of lagged prices of dry peas and wheat, 1982-92



Source: Prepared by the staff of the U.S. International Trade Commission based on data presented in Appendix F of this report.

Figure 5–2
Lentils: Harvested Canadian area and indexes of lagged prices of lentils and wheat, 1982-92



Source: Prepared by the staff of the U.S. International Trade Commission based on data presented in Appendix F of this report.

Figures 5-1 to 5-4 illustrate the relationships between dry pea and lentil area in the United States and Canada and the prices for dry peas, wheat, and lentils from 1982 to 1992. One-year lagged prices are shown in these figures under the assumption that farmers do not know the prices that they will actually receive at the time of planting. Thus, farmers are assumed to base their planting decisions on expected prices. These expected prices are measured by the previous year's average price in figures 5-1 to 5-4.[3]

As shown in figure 5-1, Canadian area in dry peas remained relatively stable until 1985, but rose sharply from 1985 to 1988. However, the increase in area during 1985-1988 was largely associated with lower expected prices for wheat. The Canadian dry pea price also fell during this period, but the decline was less than for wheat, thus resulting in an increase in the dry pea to wheat price ratio. Similarly, the decline in dry pea area in 1989 was also associated with a higher expected wheat price in that year. Canadian lentil price and area relationships shown in figure 5-2 also indicate the importance of wheat prices, particularly during the mid-1980s.

Canadian area harvested in dry peas and lentils almost doubled after the GRIP was put into effect in 1991 (figures 5-1 and 5-2). Expected price movements favored dry pea and lentil production only in 1991/92, however. The price of wheat fell by more than the prices of dry peas and lentils in that year, but the price movements were much smaller than those that elicited the relatively large increases in Canadian area in dry peas and lentils during the mid-1980s. This suggests that the various GRIP provisions may have severed the links between Canadian area response and market prices that had existed in earlier years.[4]

In contrast to the Canadian case, U.S. dry pea and lentil area are shown to be much less responsive to market prices for wheat in figures 5-3 and 5-4. Changes in U.S. area planted to dry peas and lentils appear to be much more responsive to movements in expected prices for dry peas and lentils rather than to the expected price of wheat.

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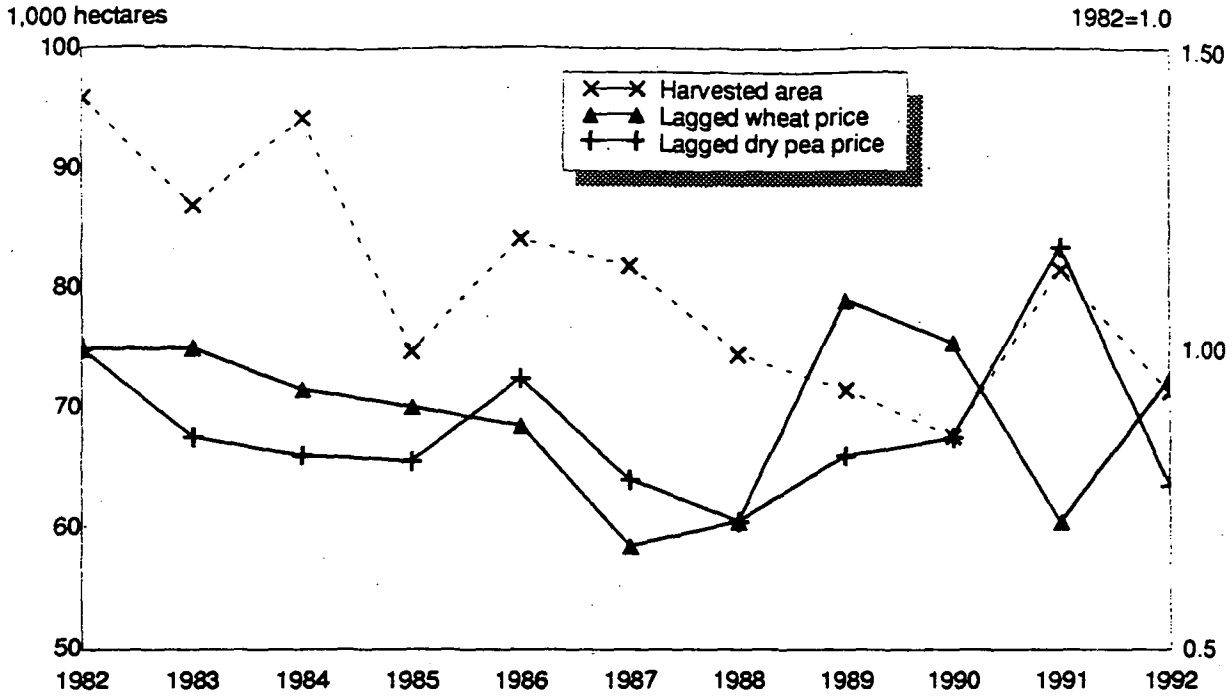
[3] K.D. Mielke and Alfons Weersink, "The Impact of Support Programs on Crop Area Response," Canadian Journal of Agricultural Economics, vol. 38, No. 4 (Dec. 1990), pp. 871-885.

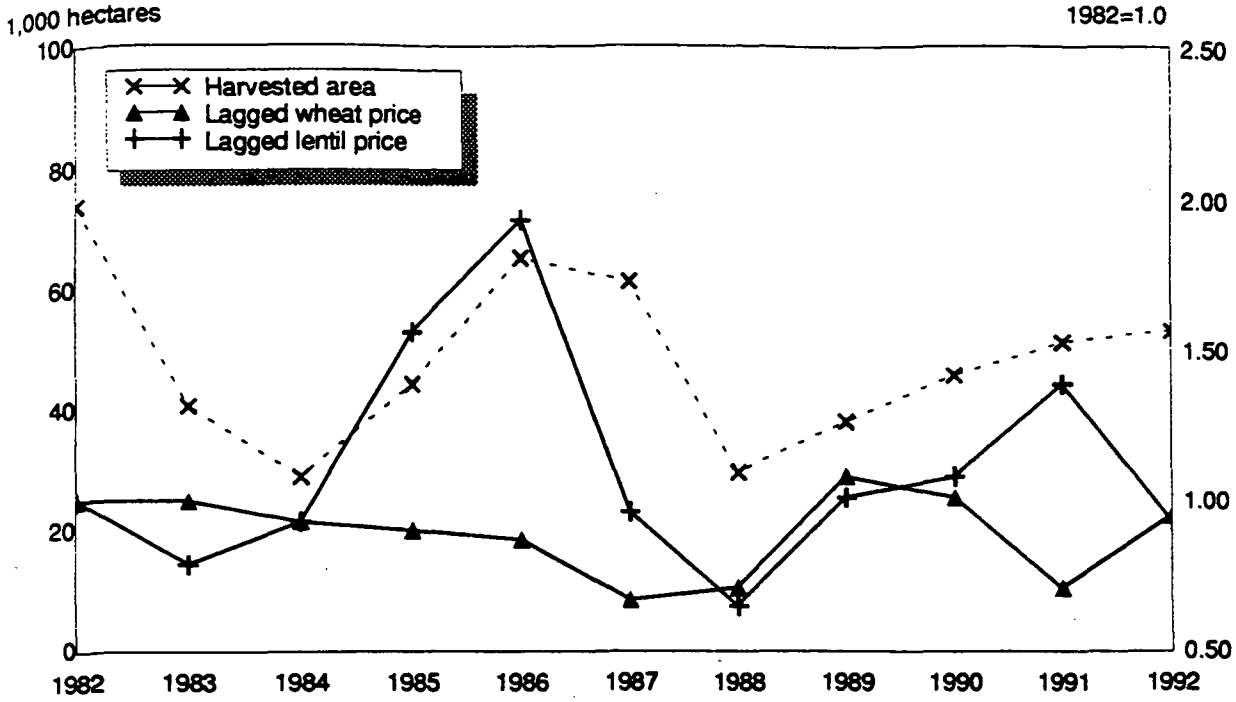
[4] The Commission found, using a statistical test, that the Canadian production response to relative market prices of dry peas and lentils to wheat was different before and after the GRIP. This statistical test was the "Chow predictive test". This test involved estimating regressions using Canadian data from 1979/80 to 1990/91, and then updating these regressions to include data for 2 additional years, 1991/92 and 1992/93 (See appendix F). The results of these two sets of regressions were then compared using the Chow test. The test confirmed that all of the estimated coefficients using data through 1990/91 were structurally different from the coefficients estimated with data to 1992/93. See Jan Kmenta, Elements of Econometrics, 2nd edition, (New York: Macmillan Publishing Co., 1986), pp. 421-422.

Figure 5-3
Dry peas: Harvested U.S. area and indexes of lagged prices of dry peas and wheat, 1982-92



Source: Prepared by the staff of the U.S. International Trade Commission based on data presented in Appendix F of this report.

Figure 5-4
Lentils: Harvested U.S. area and indexes of lagged prices of lentils and wheat, 1982-92



Source: Prepared by the staff of the U.S. International Trade Commission based on data presented in Appendix F of this report.

Canadian Government Programs

The U.S. dry pea and lentil industry is primarily concerned about the effects of two Canadian programs: the WGTA and the GRIP. The possible effects of these two programs on Canadian production and exports of dry peas and lentils are discussed below. Primary emphasis is placed on the GRIP, however, for two reasons.

First, since the 1991/92 crop season, the GRIP provides a minimum guaranteed revenue to participating dry pea and lentil producers that may be unrelated to the expected market revenue. WGTA benefits, on the other hand, affect producer behavior in Canada by reducing internal transportation costs. These lower transportation costs benefit Canadian growers of dry peas and lentils by raising the prices that they receive from the internal Canadian market, and by improving the competitiveness of their products through lower export prices. In periods when the announced GRIP target revenues for dry peas and lentils, as well as other alternative crops, exceed the returns expected from the market, the GRIP will tend to override any market distortions imposed by the WGTA in any particular year.

Second, the WGTA benefits apply to wheat as well as to dry peas and lentils. The findings below suggest that eliminating WGTA assistance only for dry peas and lentils will likely benefit the U.S. industry.[5] However, the effect of eliminating WGTA benefits for dry peas and lentils, as well as for other crops, could be quite different because the cross-commodity effects of the program tend to primarily benefit growers of wheat and other grains.

Western Grain Transportation Act

The U.S. dry pea and lentil industry contends that the WGTA provides Canadian shippers a transportation advantage in supplying export markets.[6] WGTA rail freight rates for the movement of dry peas and lentils to Canadian export ports, government payments, and the full rates that would be paid without the WGTA, are compared in the following tabulation (in US$ per metric ton):

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[5] This would be true only in the absence of GRIP considerations. Under the GRIP, changes in market prices generally enter into the IMAP formula over a period of 15 years, although, as noted in chapter 3, the Canadian Government altered the target price formula in 1992 so that target prices would not decline sharply in that year.

[6] Prehearing brief of the American Dry Pea and Lentil Association, Nov. 11, 1992, pp. 24-30.

Origin/Port	Shipping Rates: Government Distance[1] *Kilometers*	Payment	Actual WGTA rate	Cost
From Saskatoon, Saskatchewan to:				
Vancouver	1,667	$18.08	$10.80	$28.88
Thunder Bay	1,448	15.87	9.48	25.35
From Edmonton, Alberta to:				
Vancouver	1,189	14.55	8.60	23.15
Thunder Bay	2,014	19.84	11.68	31.52
From Carmen,[3] Manitoba to:				
Vancouver	2,292	25.13	14.99	40.12
Thunder Bay	702	11.68	6.83	18.51

[1] Distances for Edmonton and Winnipeg are from the 1993 Rand/McNally Road Atlas.
[2] The cost actually paid for shipments.
[3] Distance given from Winnipeg, Manitoba which is 82 kilometers from Carmen.

Export prices of dry peas and lentils include the price of transport from the farm to the export port. Therefore, according to the U.S. industry, the Canadian export prices for dry peas and lentils are lowered due to the reduction in inland transport costs provided by the WGTA.[7]

The Canadian industry, on the other hand, argues that the WGTA does not provide a competitive advantage to its dry pea and lentil industry because (1) it covers all major crops, (2) WGTA benefits increase Canadian land values and subsidize rail inefficiencies, and (3) the foreign demand facing Canada's dry pea and lentil exports is sufficiently high that WGTA benefits affect grower returns, but not export prices.[8]

Partial effect of the WGTA on dry peas and lentils

Canadian analysts have generally argued that the direct payments made to railroad shippers under the WGTA have the effect of keeping farm level transportation costs for export crops relatively low while raising the on farm

[7] Ibid., p. 29; and posthearing brief of the American Dry Pea and Lentil Association et al., Dec. 31, 1992, pp. 3-4.
[8] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint prehearing brief, Nov. 23, 1992, pp. 3-4.

price of these products.[9] Data on the level of assistance provided for dry pea and lentil shipments under the WGTA during 1985-1989 are not available to analyze the impact of WGTA assistance on Canadian dry pea and lentil production during the 1985-1990 period. However, in a recent study, the Commission analyzed the effect of the WGTA on Canadian exports of alfalfa products.[10] In this study, the Commission found that eliminating alfalfa products from the WGTA would reduce both the grower price of alfalfa products in Canada and Canadian production of alfalfa products. World prices for alfalfa products were also found to rise as a result of the decline in Canadian production.

It is expected that eliminating dry pea and lentils from the WGTA would most likely reduce Canadian production and on-farm prices for dry peas and lentils in the same manner as alfalfa products. For example, in the Commission's Alfalfa Report, eliminating WGTA assistance to Canadian railroads was assumed to result in an initial decline in the grower price of alfalfa products by an amount equal to the transportation assistance.[11] In 1990/91, the per unit WGTA shipping payment of Can$21 per metric ton, which was discussed in chapter 3, was roughly 11 percent of the average farm price of dry peas and 5 percent of the average farm price of lentils. Assuming that elimination of the WGTA payment for shipments of dry peas and lentils would lower farm prices for these crops by an equivalent amount, and using the Commission's estimated short and long-run elasticities that are discussed in appendix F,[12] Canadian area in dry peas and lentils could fall as shown in the following tabulation (in percent):

Crop	Time frame	
	Short-run	Long-run
Dry peas	-15	-37
Lentils	-4	- 9

The changes shown above assume that the price of wheat will remain constant, and they represent an upper bound of the potential effect of

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[9] See Mielke and Warley, "Canada;" and Agriculture Canada, Summary of Regional Impacts of Compensatory Freight Rates for Prairie Grain, working paper 4/91, Jan. 1991.

[10] USITC, Alfalfa Products: Conditions of Competition Between the U.S. and Canadian Industries. Investigation No. 332-310, USITC publication 2472, Dec. 1991.

[11] USITC, Alfalfa Products, pp. D-2 to D-5.

[12] Elasticities of the area planted to dry peas and lentils in Canada were estimated from regression coefficients discussed in appendix F. Dry pea area elasticity is a function of the relative expected revenue from dry peas to that from wheat, and the lentil area elasticity is a function of the expected revenue from lentils relative to that for wheat. In the case of dry peas, the elasticity was estimated to be 1.4 in the short run (one year or less) and 3.4 in the long run. In the case of lentils, the elasticity was estimated to be 0.8 in the short run and 1.8 in the longer run.

eliminating WGTA assistance for dry peas and lentils. In reality, the farm-price effect from eliminating the per unit shipping payment could be overstated because competition from other forms of transport could be utilized by the industry to minimize increases in shipping costs. Additionally, the long-run estimates may overestimate the production effects to the extent that the decline in Canadian production raises world prices, thus reducing the decline in Canadian farm prices and production in later years. Moreover, any benefits from eliminating WGTA assistance for dry peas and lentils can only be realized to the extent that the target revenues established under the GRIP eventually allow market prices to determine producer decisions through the 15-year indexing moving average price.

World prices for dry peas and lentils would most likely rise if WGTA assistance were eliminated for dry peas and lentils. This is because, as the largest lentil exporter in the world, Canada's production and exports are generally considered to have a significant role in the determination of world lentil prices.[13] Canada is also the second largest dry pea exporter, although it exports both bulk feed and food peas. Some sources have indicated that because the European feed pea market is the primary world market for dry peas, other high protein feed substitutes, in particular soy meal, are important determinants of the prices received for dry peas. However, since the prices for food-quality peas are higher than for feed-quality peas, it is more likely that the feed market sets a price floor for Canadian dry peas, and that other factors determine the ultimate price of food-quality peas.[14] As shown in the section on the GRIP, Canadian production of dry peas can affect world market prices in selected markets where dry peas are used as food.

Overall WGTA effect

An analysis of eliminating WGTA benefits for dry peas and lentils as well as for other crops is not as straight forward as the partial analysis because wheat is also eligible for WGTA assistance. Moreover, previous research on the cross-commodity effects of the WGTA indicates that WGTA benefits favor wheat and other lower-valued export grains. A study by Agriculture Canada, which analyzed the effects of reducing WGTA freight benefits on Canadian crop production, found that production of wheat and barley would decline, while there would be "more opportunities for

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[13] For instance, Agriculture Canada analysts have noted that "Canada grows enough lentils to have an impact on world price." Duncan McKinon and Richard Downey, National Grains Bureau, Agriculture Canada, "GRIP and Market Responsiveness," Bi-weekly Bulletin, Aug. 14, 1992.

[14] Young and Malorgio note that during 1988 Canadian exports of feed-quality lentils provided an outlet for surplus lentils and a "floor price," for lentils. See Douglas Young and Giulio Malorgio, Lentils: Market Concerns for North American Growers, Research Bulletin XB1003, (Pullman, WA.: Washington State University, 1988).

diversification into high value, low volume specialty crops."[15] In 1990/91, the per unit WGTA railroad payment of Can$21 per metric ton was equivalent to 15 percent of the average producer price of wheat[16] in that year, compared to 11 percent of the price of dry peas and 5 percent of the price of lentils as noted earlier.

Gross Revenue Insurance Program

With the introduction of the GRIP in 1991, there began considerable debate in Canada and elsewhere about the impact of the program on the area planted to individual crops. The intent of the program was to avoid favoring the planting of one crop over another, and to allow farmers to plant any of the crops based upon market signals, rather than upon fixed individual crop bases, such as in the United States. However, the program gives price signals in the form of 15-year indexed moving average prices, which, by design, adjust slowly to the current market price.[17] Moreover, the IMAPs that were established during 1991/92 to 1992/93 capture several of the high price years of the 1970s; thus, some are higher than current market prices.[18] Harrington[19] has noted that once a producer has decided to participate in the GRIP, the producer's gross revenue from production of a particular crop stays constant at the guaranteed target revenue unless the market revenue exceeds the guarantee in a particular year. Therefore, the GRIP can result in a situation where Canadian producers are growing crops largely on the basis of the expected GRIP returns rather than on the basis of market incentives.

In August 1992, Agriculture Canada researchers analyzed producer response to the GRIP in Canada, comparing the area planted in 1990/91 to the area planted in 1991/92 and 1992/93.[20] These researchers found that the area in grain and oilseed crops declined by 1.5 percent from 1990/91 to 1992/93, while the area planted to special crops rose by 19 percent. Much of the percentage increase in specialty crops was accounted for by lentils. The Agriculture Canada study also noted that producers in the Prairie Provinces[21] reduced the amount of land placed in summer fallow by about 2.8 million hectares, an

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[15] See Kurt Klein, et al., Regional Implications of Compensatory Freight Rates for Prairie Grains and Oilseeds, Agriculture Canada working paper 3/91, Jan. 1991, p. 193.

[16] The Commission estimate of the 1990/91 farm price of wheat in Canada is Can$135 per metric ton, based on data supplied from the Canadian Wheat Board.

[17] Richard Gray, et al., "A New Safety Net Program for Canadian Agriculture: GRIP," Choices, 3rd Quarter 1991, pp. 34-35.

[18] These crops include wheat and canola in Western Canada, as well as dry peas and lentils. In Eastern Canada, corn, soybeans, and winter wheat have relatively high IMAPS. Dave Harrington, "Canada's Gross Revenue Insurance Plan: A Brilliant Design or Policy Gone Awry?" Speech given at Purdue University, West Lafayette, IN, Dec. 1991.

[19] Harrington, ibid.

[20] McKinnon and Downey, "GRIP and Market Responsiveness."

[21] Saskatchewan, Manitoba, and Alberta.

8-percent decline, during 1990/91 and 1991/92.[22] USDA analysts have noted that the smaller Canadian area left in summer fallow may reflect GRIP provisions since farmers incur little risk, and a potential gain, from planting fallow land in a crop.[23]

The benefits of GRIP participation for dry pea and lentil growers in Canada are summarized in the following tabulation, which compares the premiums payable for revenue and crop insurance under the GRIP, market and target revenues, and variable costs of production for dry peas and lentils (in Can$ per hectare harvested):[24]

Item	1991/92[1]		1992/93	
	Dry Peas	Lentils	Dry Peas	Lentils
Premiums:[1]				
Alberta	$43	$81	$40	$76
Saskatchewan	26	56	31	48
Manitoba	24	57	28	47
Target revenue:				
Alberta	$366	$538	$329	$481
Saskatchewan	305	486	294	458
Manitoba	360	514	364	464
Market revenue[2]	$343	$449	$337	$389
Variable costs:				
Alberta and Saskatchewan	([3])	([3])	188.0	288.0
Manitoba	([3])	([3])	247.0	267.0

[1] Premium cost for producers participating in both the crops insurance and revenue protection plans.
[2] Based on actual production valued at the market price.
[3] Not applicable.

The target guaranteed gross revenues for dry peas were relatively close to the actual market revenues for dry peas during 1991/92-1992/93, whereas the target revenues were higher than actual market revenues for lentils in those years. When the producer premiums shown in the above tabulation are subtracted from the target revenues, participation in the GRIP was only marginally beneficial for some producers, if at all.

However, because GRIP is a long-term program of revenue insurance, it is not clear that producer decisions to participate in the GRIP are determined by the target revenue in any particular year. More important is the fact that

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[22] McKinnon and Downey, table 4.
[23] Simone and Harwood, "Canada's GRIP Program," p. 37.
[24] See also tables C-17 and C-18 of this report for more detail on these calculations.

the target revenue, which will change very slowly over the next 15 years, currently provides a minimum guaranteed revenue that is far above current average variable costs for both dry peas and lentils. Hence, high returns above variable costs, when compared to returns from other crops, provide producers an incentive to shift currently available land into dry pea and lentil production.

Effect of the GRIP

The Commission used a two-step approach to examine the effect of the GRIP on Canadian dry pea and lentil production, exports, and world prices. First, the Commission calculated the "production effects" of the GRIP, or the extent to which the GRIP encouraged additional production of dry peas and lentils during 1991/92 and 1992/93, the only years for which GRIP data are available. In the second step, the Commission employed an economic model to analyze the impact of the GRIP's "production effects" on exports of Canadian dry peas and lentils. The economic model used for this analysis was developed by the Commission to link changes in Canadian production to changes in exports and world market prices. The economic model is described in appendix G.

The calculation of GRIP "production effects" also involved several steps. Studies by Mielke and Weersink and Chavas and Holt[25] analyzed the effects of price and revenue stabilization programs on agricultural production in both the United States and Canada. These studies found that production decisions involve uncertainty about prices and yields. Therefore, stabilization programs were found to affect crop area decisions by influencing--(1) the average expected returns from production of an individual crop, and (2) the riskiness of expected revenue.

The Commission used the methodology developed in these studies to evaluate two production effects from the GRIP. First, the Commission estimated the GRIP's effect on relative revenue incentives between dry peas, lentils, and wheat. Second, the Commission estimated the GRIP's effect on reducing the uncertainty associated with the revenues from dry peas and lentils under the GRIP.

Production effects

The methodology used to calculate the "production effects" of the GRIP is described in appendix F. The "revenue or incentive effect" was calculated by estimating the difference between the GRIP guaranteed target revenues and the market revenues that producers would have otherwise expected for dry peas, lentils, and wheat in the absence of the GRIP during 1991/92 and 1992/93 (see

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[25] Mielke and Weersink, "Impact" and Jean-Paul Chavas and Matthew T. Holt, "Acreage Decisions under Risk: The Case of Corn and Soybeans," American Journal of Agricultural Economics, Vol. 72, No. 3 (Aug. 1990), pp. 529-538.

appendix F).[26] The Commission estimated that over the 1991/92 and 1992/93 period, the GRIP increased the ratio of expected dry pea to wheat revenue by 7 percent and the ratio of expected lentil to wheat revenue by 8 percent. When multiplied by the long-run elasticities estimated by the Commission for Canadian area in dry peas and lentils, these "revenue effects" result in a 24 percent increase in Canadian dry pea area and a 14 percent increase in lentil area.

The Commission estimated that the GRIP contributed to an additional increase of 67,924 hectares of dry peas and 97,842 hectares of lentils during 1991/92 to 1992/93 because of reduced uncertainty about returns. These estimated increases are equivalent to 55 percent of Canadian area in dry peas and 73 percent of the area in lentils in 1990/91. The "uncertainty effect" is based on the coefficient estimated from a binary variable in the regression analysis described in appendix F.[27] The larger increase found for lentil area due to the "uncertainty effect" is consistent with other studies that found that lentil yields are highly variable in Canada, absolutely and in relation to other crops.[28] Thus, it is likely that Canadian lentil producers benefit relatively more than Canadian dry pea producers from the stabilization provisions of the GRIP.

Results of the model

The estimated GRIP "production effects" were included in an economic model that relates changes in Canadian production of dry peas and lentils to U.S. and Canadian exports, and to world prices. The model results show the impact of the two GRIP production effects on Canadian and U.S. export prices, export sales, and revenues from dry peas and lentils imported by specific groups of countries which are each considered collectively as an aggregate "importing country." For dry peas, the importing country group includes Colombia, Venezuela, Algeria, Peru, Taiwan, Japan, and India.[29] For lentils, the importing country group includes Colombia, Venezuela, Algeria, Peru, and the European Community.

The importing countries were chosen for their significance as U.S. and Canadian export markets for commercial dry peas and lentils used as human

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[26] The price expectations of Canadian growers for the 1992/93 crop are based on market prices in 1991/92. It is likely that these 1991/92 market prices were influenced by the increased production as a result of the GRIP program. Nonetheless, the Commission staff used this market price as the best available estimate.

[27] Additionally, the binary variable could be picking up the effect of any other changes that occurred in Canadian dry pea and lentil area that were not accounted for by other variables in the regression analysis.

[28] See Douglas Young and Giulio Malorgio, Lentils: Market Concerns for North American Growers.

[29] Only non-P.L. 480 and non-CIDA exports of dry peas and lentils were included in calculating imports. Additionally, only the commercial green pea market for India was included in this analysis.

food. Countries that import dry peas from Canada for use as animal feed were excluded assuming that the two markets for dry peas and lentils (food and feed) are distinct and that, for the range of prices analyzed, exports will not cross over between the two markets. As noted in earlier chapters, the United States almost exclusively exports dry peas and lentils for use as human food. Similarly, concessional markets were also excluded under the assumption that these countries would not increase their use of the Canadian product in response to a decline in price.

Collectively, these importing country groups accounted for 79 percent of U.S. exports of dry peas and 94 percent of lentils in 1990/91. They also represented 69 and 89 percent of Canada's exports of these commodities in the same year. The base year of the model is 1990/91, the year before the implementation of the GRIP.

Increased Canadian production of dry peas and lentils from the GRIP is assumed to result in a decline in Canadian prices and an increase of Canadian export quantities to each importing country group, thus inducing importers to substitute Canadian for U.S. products. This substitution will tend to cause both U.S. exports of and prices for dry peas and lentils to fall. The effects of the GRIP on lentil markets is shown in the tabulation below. The production effects are those calculated (1) from the revenue incentives (RI) alone, and (2) from the combined effect of the revenue incentives and the risk reduction effect (RIRRE).[30]

	RI[1]	RIRRE[2]
	--Percent change--	
Effect on Canadian--		
Price	-4.3	-20.4
Exports	4.3	24.5
Revenue	-0.2	-0.8
Effect on U.S.--		
Price	-0.7	-3.8
Exports	-1.2	-6.2
Revenue	-2.0	-9.8

[1] Includes expected revenue effect only, an 8 percent change in the expect revenues from lentils relative to wheat.
[2] Includes expected revenue effect and 73 percent increase in crop area.

The model indicates that the GRIP ultimately results in increased Canadian exports of lentils, and a decline in the Canadian export price to the third-country markets analyzed. The decline in the export price of Canadian lentils also results in a reduction in the U.S. lentil prices in the importing country markets and a decline in U.S. exports and export revenues. The effects on

[30] The markets for lentils and dry peas are analyzed separately. Any interrelationship between the two markets is not considered.

export prices, exports, and revenues are largest from the "uncertainty effect" as shown in the tabulation.

The effect of the GRIP on markets for dry peas is shown in the following tabulation:

	RI[1]	RIRRE[2]
	--Percent change--	
Effect on Canadian--		
Price	-3.7	-10.9
Exports	8.1	27.1
Revenue	4.2	13.3
Effect on U.S.--		
Price	-1.2	-3.8
Exports	-0.9	-2.6
Revenue	-2.1	-6.3

[1] Includes expected revenue effect only, a 7 percent change in the expected revenues from dry peas relative to wheat.
[2] Includes expected revenue effect and 55 percent increase in crop area.

Similarly to lentils, the GRIP results in a decline in the Canadian export price and an increase in Canadian exports of dry peas to these markets. U.S. export prices and quantities are also reduced.

U.S. Wheat Programs and the EEP

The extent to which U.S. wheat programs, including the Export Enhancement Program (EEP), affect the competitiveness of the U.S. and Canadian dry pea and lentil industries largely depends on whether or not dry pea and lentil producers in the two countries respond to market incentives to shift production between the two crops. This section examines the price responsiveness of the two industries to the market price of wheat, and it examines the extent to which lower world prices for wheat, as influenced by the EEP and U.S. loan rate policy, may have induced increased Canadian production of dry peas and lentils.

Crop Area Response

The Commission evaluated the responsiveness of U.S. and Canadian dry pea and lentil area to changes in relative prices of dry peas, lentils, and wheat through regression analysis. Following methodology in Mielke and Weersink, expected revenues from dry peas and lentils relative to those for wheat, as well as lagged area, were used as variables to explain movements in U.S. and

Canadian area.[31] Expected revenue was defined as the product of the expected price (the average crop price in the previous year) and the average yield over the previous 3 years. Relative prices are thus included in the regression analysis through these expected revenue variables. Lagged area was included as a variable in the regressions to account for the fact that constraints exist that prevent producers from instantaneously responding to expected price signals. Inclusion of this variable allows the estimation of both short and long run area response to price and revenue changes.

Regressions were estimated for Canadian area during 1979/80 to 1990/91 (the pre-GRIP years) and for U.S. area during 1979/80 to 1992/93. The analysis of Canadian response ends with 1990/91 because, as shown previously, the target revenue provisions of the GRIP provide price incentives for dry pea and lentil production that are different from market prices. The estimation methodology and final regression results are discussed in detail and shown in appendix F. The area response functions were estimated using the "seemingly unrelated regression" technique.[32]

In the Canadian case, the regression results indicate that the expected revenue of dry peas relative to wheat and the expected revenue of lentils relative to wheat were the most important variables determining dry pea and lentil area, respectively, through 1990/91 (see appendix table F-1). A 1-percent increase in the expected price of dry peas, or a 1-percent decline in the expected price of wheat, was estimated to result in a 1.4-percent increase in Canadian area in dry peas in the short run (one year or less). After Canadian producers have fully adjusted to the change in prices, the area in dry peas would be 3.4 percent above the initial level. Similarly, a 1-percent increase in the expected price of lentils, or a 1-percent decline in the price of wheat, was estimated to result in a 0.8-percent increase in Canadian area in lentils in the short run. After producers have fully adjusted to the price change, the area in lentils would be 1.8 percent above the initial level.[33]

While Canadian area in dry peas and lentils appears to depend on the prices of these crops relative to the price of wheat, the regression analysis of U.S. dry pea and lentil area did not indicate any significant relationship between the area planted to these crops and the price of wheat. This suggests that, in contrast to growers in Canada, U.S. growers undertake limited substitution of dry peas and lentils for wheat in response to changes in relative prices. As discussed in chapter 2, this limited response is most likely due to the program benefits and higher yields associated with wheat

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[31] Mielke and Weersink, "Impact of Support Programs."

[32] The "seemingly unrelated regression technique" is a form of generalized least squares estimation that takes into account the possible correlation of the error terms across equations. See Kmenta, Elements, pp. 635-648.

[33] As noted previously, the estimated elasticities of Canadian dry pea area with respect to relative expected prices of dry peas to wheat are 1.4 in the short run and 3.4 in the long run; the estimated elasticities of lentil with respect to the relative expected prices of lentils and wheat are 0.8 in the short run and 1.8 in the long run.

production in the major U.S. areas growing dry peas and lentils. U.S. dry pea area was generally found to be responsive to the relative expected revenue of dry peas to lentils, while lentil area was found to be somewhat responsive to the expected revenues from lentils.[34]

World Wheat Price Movements

The Canadian industry has attributed the decline in the Canadian wheat price, which appears to have encouraged increased Canadian dry pea and lentil production during 1985-90, to two factors: (1) the decline in the overall world supply/demand balance for wheat, and (2) the EEP.[35] With respect to the latter, the Canadian industry, in its prehearing brief, cited research that indicated the EEP lowered Canadian wheat prices by approximately Can$27.38 (US$23.27) per metric ton during the 1985-90 period. This estimate of the effect of EEP on Canadian wheat prices was calculated by taking the average of the difference between U.S. and Canadian average wheat prices during 1985-1990.[36] The Canadian industry consequently compared its estimate of the price effect from EEP to the decline in the Canadian wheat price of Can$52.34 (US$44.85) per metric ton that occurred during this period.[37]

EEP-related research by the Congressional Research Service (CRS) suggests that the estimated effects of the EEP on world wheat prices can vary, depending upon the assumptions used and the base year of the estimate.[38] For example, the CRS study, using two different models and 1992 as a base year, found that if the EEP were eliminated, U.S. farm prices for wheat would decline by 17 to 38 cents per bushel, or by $6 to $14 per metric ton. Assuming that the EEP maintains U.S. wheat prices at levels $6 to $14 per metric ton above Canadian levels, then the effect of the EEP on Canadian wheat prices is far less than the amount attributed to the EEP by the Canadian industry.

In addition to the EEP and world supply and demand factors, legislated changes in U.S. wheat prices also affected market prices for wheat during 1985-90. The Food Security Act of 1985 permitted the Secretary of Agriculture to reduce basic loan rates for wheat and other program crops by up to

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[34] The estimated elasticity of U.S. dry pea area with respect to the expected price of dry peas relative to that of lentils was found to be 0.4 in the short run and 1.4 in the long run. The estimated elasticity of lentil area to the expected price of lentils was found to be 0.6 in the short run and 1.4 in the long run.

[35] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint prehearing brief, Nov. 23, 1992, p. 47.

[36] Canada Grains Council, USA Grain Sector Support Review. (Winnipeg, Manitoba: Canada Grains Council, October 1992), p. 45.

[37] Ibid., p. 47.

[38] Congressional Research Service, If the Export Enhancement Program Were Eliminated, prepared by Susan B. Epstein and A. Barry Carr, 91-861 ENR, Dec. 1991.

5 percent per year.[39] The 1985 Food Security Act also allowed the U.S. Secretary of Agriculture the discretion to announce loan rates up to 20 percent lower than the basic loan rate, the so-called reduced (Findley) loan rate. Using the Findley Provision, the national average loan rate for wheat fell by $49 per metric ton from 1985/86 to 1990/91. More specifically, the loan rate fell from $3.30 per bushel in 1985/86 ($121 per metric ton) to $2.40 per bushel ($88 per metric ton) in 1986/87, and to $1.95 per bushel ($72 per metric ton) in 1990/91.[40]

In the Canadian case, Mielke and Warley note that ad hoc payments paid to Canadian grain producers under the Special Canadian Grains Program during 1986 and 1987 provided some price support for Canadian grain producers after the announced declines in U.S. loan rates during those years.[41] However, data in figures 5-1 and 5-2 suggest that increases in Canadian dry pea and lentil area from 1985 to 1988 were particularly sensitive to the declines in the expected prices for wheat that occurred after the U.S. loan rate announcements.

Impact of World Wheat Prices

The elasticities obtained from the regression analysis can be used to determine the extent to which the decline in Canadian wheat prices encouraged Canadian production of dry peas and lentils during 1985-1990. Assuming that Canadian wheat prices fell by Can$52.34, or by 26 percent, and holding all other factors (dry pea and lentil prices and crop yields) constant, the contribution of the decline in wheat prices to increased Canadian dry pea and lentil area during 1985-1990 was 88 and 47 percent, respectively.

These results are based on the long-term elasticity estimates that were discussed previously.

Canadian lentil area rose by 140 percent, and dry pea area by 150 percent, during 1985-90.[42] The decline in Canadian wheat prices explains 59 percent of the increase in Canadian area in dry peas during 1985-90 and 34 percent of the increase in Canadian area in lentils during the same period.

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[39] Economic Research Service, USDA, Wheat: Background for 1990 Farm Legislation, prepared by Joy Harwood and C. Edwin Young, Nov. 1989.

[40] Ibid., p. 34.

[41] Karl D. Mielke and T.K. Warley, "Canada," Agricultural Protectionism in the Industrialized World. (Washington, D.C.: Resources for the Future, 1990), pp. 112-180.

[42] To conform with Canadian price calculations, the percentage increases in Canadian area are based on the difference between the average area in dry peas and lentils in 1980-1984 and the average area in 1985-1990 (see Canadian Grains Council, USA Grain Sector Support Review). Using this methodology, Canadian area in dry peas rose from 64,900 hectares during 1980-84 to 164,500 hectares in 1985-90, while lentil area rose from 54,900 hectares during 1980-84 to 132,400 hectares in 1985-90. See appendix F for data sources.

CHAPTER 6

CONDITIONS OF COMPETITION: OTHER FACTORS

In addition to government programs, a number of other factors currently affect the competitive position of the dry pea and lentil industries in the United States and Canada. These factors include production costs, environmental requirements, transportation and handling costs, exchange rates, and overall price relationships. The effects of these factors on the competitive position of the dry pea and lentil industries in the United States and Canada are examined in this chapter.

Summary of Results

Information in this chapter indicates that, even without the Gross Revenue Insurance Program and the Western Grain Transportation Act, Canadian producers of dry peas and lentils have a cost advantage over U.S. producers. Total production costs at the farm level for dry peas and lentils in Canada are roughly 46 percent and 34 percent, respectively, less than farm costs in the United States. Relatively low variable costs explain why farmers in Canada can easily shift acreage into dry pea and lentil production in response to price incentives. In addition, the relatively low fixed production costs associated with Canadian production suggest that it is cheaper for Canadian farmers to bring new land into production of dry peas and lentils relative to U.S. farmers. Environmental regulations in the United States may exacerbate these cost differences in the future as U.S. wheat and barley producers implement required conservation plans in 1995.

The information presented here also suggests that Canadian shippers of dry peas and lentils benefit from both internal and external transportation cost differentials that tend to provide the Canadian product with a cost advantage over the U.S. product in third-country markets. In addition to quality differences discussed in chapter 4, production and transportation cost disadvantages may have contributed to the higher prices charged for U.S. dry peas and lentils relative to Canadian products during 1986-92. The decline in the U.S. dollar relative to the Canadian dollar during 1986-92 should have contributed to a price advantage for U.S. exports of dry peas and lentils to foreign markets, but has likely been overshadowed by a number of other factors determining dry pea and lentil prices.

Costs of Production

At the farm level, costs of production vary considerably between U.S. and Canadian dry pea and lentil growers, as well as among different farmers in each country. Table C-19 presents a cost comparison for production of dry peas and lentils in Washington State, the leading area for U.S. production, and in Saskatchewan, the leading area for production in Canada. This table summarizes estimated budget costs presented in more detail in appendix H for dry pea and lentil production in Idaho, Washington State, Saskatchewan, and Manitoba. Cost estimates are based on crop enterprise budgets prepared by

university and Provincial agricultural officials that are used as guides by individual farmers for estimating costs of production in their respective states or provinces. These estimates are believed to be representative of actual costs that farmers incur within each region. Data may not be strictly comparable across regions, however, because of differences in methodology.

Both fixed and variable costs of production for dry peas and lentils are lower in Canada relative to U.S. costs. U.S. yields for dry peas are slightly higher (by 25 percent) than in Canada, which helps to offset some of the Canadian cost advantage for that crop, but U.S. yields are slightly lower for lentils compared to Canada.

Variable Costs

In 1992, Canadian variable costs of production at the farm level were about 49 percent below U.S. costs for dry peas and about 26 percent below U.S. costs for lentils. Total variable costs per metric ton for dry peas in Washington State amounted to about $161 per metric ton. In Saskatchewan, variable costs were $82 per metric ton. U.S. and Canadian farm costs for lentils were somewhat closer than for dry peas, with variable costs in Saskatchewan of $144 per metric ton versus variable costs in Washington State of $194 per metric ton.

Variable costs of producing dry peas or lentils in the United States are much higher than those in Canada, principally because of differences in the cost of seed; chemicals; and repair, maintenance, and fuel for machinery. Dry peas and lentils are planted more densely in the Palouse area than in Canada to prevent competition from weeds and to hold the soil firmly in place; thus, U.S. seed costs are higher. Additionally, U.S. seeds may be somewhat more expensive than in Canada because growers produce dry peas and lentils for high-quality food markets.

The cost of chemicals includes both the actual cost of the chemical and the cost of application. A large share of the U.S. costs are attributed to weed control, whereas Canadian cost estimates do not include any expense for weeds. Additionally, the chemical costs associated with insect control in Canada may be less because the harsher Canadian climate reduces insect damage by destroying pests at the end of each growing season and in the overwintering stage.

Finally, machinery costs in the United States are higher because U.S. growers require specially-designed equipment for use on the slopes of the Palouse area. Canadian farmers, in contrast, can use the standard types of equipment available for use in Prairie province agriculture. It should be noted, however, that actual Canadian costs of new equipment in table C-19 are not believed to be as fully accounted for as in U.S. cost estimates.

Fixed and Total Costs

Fixed costs for both land and farm machinery in the United States are considerable higher than in Canada. Land values range from US$3,000 to $3,500 per hectare in U.S. production areas,[1] as compared with US$425 to $625 per hectare in Canadian production areas.[2] Additionally, machinery costs in the United States are much higher because the terrain in the U.S. production area requires growers to purchase special harvesting equipment. For example, the leveler presently used on combines in the Palouse is estimated to cost between $50,000 and $60,000.[3]

Total costs of production in Washington State, including fixed costs and land charges (i.e., rent and returns to ownership of land), amounted to $286 per metric ton for dry peas and $341 per metric ton for lentils in 1992. When estimated land charges and other fixed costs were added to overall costs in Saskatchewan,[4] total production costs there amounted to $154 per metric ton for dry peas and $225 per metric ton for lentils. Thus, total farm production costs for dry peas in Saskatchewan were about 46 percent lower than those in Washington State for dry peas and about 34 percent lower than those in Washington State for lentils.

Processing Costs

Little information is available on processing costs in either the United States or Canada. Nonetheless, U.S. processors state that they likely face higher costs with dry peas because the producers must process all of the crop to ensure that the pea weevil is removed in order to protect the quality.[5] In addition, U.S. processors typically process their products more intensively to create a higher quality product in order to be able to sell at premium prices in world markets. Canadian processors leave much of their pea crop unprocessed, since slightly over half of the dry pea crop (as well as a portion of lentils) goes to the feed market where processing is not required. Furthermore, Canadian growers do not have the pea weevil present in their crop.

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[1] Kathleen Painter and others, 1991 Crop Enterprise Budgets-Eastern Whitman County, Washington State, (Pullman, WA: Department of Agricultural Economics, Washington State University, publication No. EB1437, 1991), p. 7.

[2] According to Statistics Canada, the value of land (excluding buildings) in 1990 in Manitoba was Can$642 per hectare, Can$516 in Saskatchewan, and Can$788, in Alberta, respectively. The rate of exchange in 1992 was US$1.00 = Can$1.21.

[3] Dave Wilken, interview by USITC staff, Kendrick, ID, Oct. 19, 1992.

[4] Commission staff added estimated land charges to Saskatchewan total costs based upon land charges reported in Manitoba dry pea and lentil studies. Land charges in Saskatchewan and Manitoba are close. For example, agricultural land was valued at Can$209 per acre in Saskatchewan and Can$260 per acre in Manitoba in 1990, according to Statistics Canada.

[5] Dean Brocke, manager of George F. Brocke & Sons, interview by USITC staff, Kendrick, ID, Oct. 19, 1992.

Environmental Factors

Conservation provisions of the 1985 Food Security Act and the 1990 Food, Agriculture, Conservation and Trade Act (see chapter 2) require that farmers with highly erodible land implement a conservation plan by 1995. Wheat and barley growers who include dry peas and lentils in their rotation plans are likely to be affected. The Palouse production area is a highly erodible farming region, especially in the early spring when wheat plants are very small and crop residues are nonexistent.[6] In Whitman County, Washington, one of the principal U.S. dry pea and lentil production areas, nearly 90 percent of all farmland is classified as highly erodible by the Soil Conservation Service.[7] Dry peas and lentils leave little in the way of crop residue and soil cover, thus their production tends to aggravate erosion problems relative to other alternative crops.

To comply with the program, wheat and barley growers might be encouraged to reduce dry pea and lentil acreage somewhat in favor of crops that have less of an adverse impact on soil erosion. Production of other rotational crops, however, while reducing soil erosion, could lead to lower grower returns over time, and therefore less agricultural production in the wheat and dry peas or wheat and lentils rotation cycle.[8] This is because the alternative crops, such as bluegrass and rapeseed, generally provide little or no economic return.

In Canada, on the other hand, the main wheat and barley production areas in the Prairie Provinces where dry peas and lentils are grown are less susceptible to erosion problems, although wind erosion may be appreciable at times. Moreover, the Federal and Provincial Governments do not require growers to adhere to soil conservation practices comparable to those for U.S. growers. As a result, growers are less concerned about growing wheat or dry peas and lentils in a rotation with other crops that yield lower financial returns.

Transportation Methods and Costs

The cost of transportation and handling for export shipments of dry peas and lentils to third-country markets is an integral part of the landed price of the product in these markets. This section describes the different transportation and handling methods available to shippers in the United States and Canada for exports of dry peas and lentils. The information presented in this section indicates that methods of shipment and handling differ between the two countries, and that these differences provide a cost advantage to Canadian shippers of dry peas and lentils.

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[6] See Kathleen M. Painter and Douglas L. Young, "Environmental and Economic Trade-Offs for Alternative Cropping Rotations in the Pacific Northwest Palouse", paper presented at the Soil and Water Conservation Society 47th annual meeting, Baltimore, MD, Aug. 9-12, 1992.

[7] Ibid., p. 1.

[8] Ibid.

The Canadian industry uses rail for virtually all of the inland transportation of dry peas and lentils, primarily because of the existence of an excellent rail system and the low rates available to shippers under the WGTA. By contrast, the United States uses rail, truck, and barge shipment for internal movement of peas and lentils to export ports. Additionally, the Canadian port of Vancouver has handling facilities suited to bulk export shipments. Bulk handling allows costs savings of approximately 50 percent, as compared with export shipments of product in containers. The Commission also found that ocean freight rates for dry peas and lentils destined for Europe, India, and the eastern coast of South America generally are higher when shipped through the Port of Seattle than when shipped through the Port of Vancouver.

Internal Transportation

United States

U.S. exports of dry peas and lentils are shipped mainly through either the two northwest ports of Seattle or Portland (together accounting for 53 percent of U.S. dry pea and lentil exports in 1991),[9] or through the leading U.S. gulf ports, New Orleans or Houston (a combined 25 percent). U.S. dry peas and lentils destined for export are most frequently bagged, and then loaded into containers which are transported by rail or on barges to export ports.[10] A small portion of the containerized dry peas and lentils also move to the two U.S. northwest ports by truck. U.S. exports of dry peas and lentils under the P.L. 480 program of U.S. Department of Agriculture (USDA) move primarily to export ports in the U.S. Gulf of Mexico in bags on rail boxcars rather than in containers. Rail boxcars hold about 20,400 kilograms, or about the equivalent of three container loads, and thus a much larger single volume must be assembled before loading.

In a paper prepared for the American Dry Pea and Lentil Association, Glen Squires reported U.S. transportation rates for internal movement of dry peas and lentils to U.S. export ports, as shown in the following tabulation (in US$ per metric ton):

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[9] Based upon the value of U.S. exports of all peas and lentils in 1991, compiled from official data of the U.S. Department of Commerce.

[10] Kenneth Casavant and Glen Squires, Washington State University, prehearing brief, Nov. 19, 1992, p. 3.

Mode	Port	Distance *Kilometers*	Rate
Truck (bagged) . .	Seattle, WA	451	$16.53
Rail (in two-way containers) . . .	Seattle, WA	451	25.79
Rail (on boxcars, bagged)	Houston, TX	3,364	54.45

These rates are higher than those shown in chapter 5 for Canadian rail shipments under the WGTA. The latter were shown to range from US$8.60 to US$14.99 per metric ton for product shipped from producing areas in western Canada to the port of Vancouver.

The ports at Seattle and Portland are not currently equipped to handle the bulk loading of dry peas and lentils into ocean vessels unlike the situation in Vancouver where such bulk loading occurs (as noted below). Consequently, there is little bulk shipment of U.S. dry peas and lentils although some bulk U.S. dry peas and lentils have been exported through Vancouver.[11]

Canada

Canadian exports of dry peas and lentils are shipped from the three Prairie Provinces to three export ports: Vancouver, Thunder Bay, and Montreal. Traditionally, most Canadian products were exported through the Thunder Bay or Montreal ports, but more recently, products have been shipped west to Vancouver. However, the proportion of Canadian exports leaving through these ports is in dispute. Official Canadian Government data for the WGTA in 1990/91 indicate that 35 percent of total shipments moved to Vancouver.[12] Canadian industry sources and documentation from the port authorities in Canada indicated that 85 percent of Canadian dry pea and lentil export volume went through Vancouver in 1991.[13] Reliable Canadian industry sources indicated to Commission staff in February 1993 that 1992 and 1993 exports shipments have been primarily through Vancouver, with considerably less passing through Thunder Bay and Montreal ports.

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[11] Ibid., p. 6.

[12] Jean Caron, Agriculture Canada, facsimile transmission sent to the USITC staff, Oct. 27, 1992. In 1990/91, about 64 percent of Canadian pea export shipments and 66 percent of lentil exports went through Thunder Bay, with remaining exports through Vancouver.

[13] Ken Casavant and Glen Squires, Washington State University, prehearing brief, p. 17, based on information obtained from the Vancouver Port Corp., the Port of Montreal, and the Lake Shippers Clearance Association, Winnipeg, Manitoba. They indicated the export flow in 1991, as follows: Vancouver at 85 percent, Thunder Bay at 10 percent, and Montreal at 5 percent.

Most Canadian dry peas and lentils move by rail to export ports and then are loaded onto ocean vessels for export. There is very little transport of these products by truck, except for Canadian exports destined for the United States.[14] As described in chapter 5, the Canadian Government pays about two-thirds of the total rail cost for shipping peas and lentils from the producing areas to either the port of Thunder Bay or to Vancouver.

The form of external Canadian shipment varies depending on whether the product is destined for feed or for food use. Currently, it is estimated that 55 percent of Canadian dry pea exports are destined for feed and the remaining 45 percent are destined for food.[15] Additionally, a small quantity of low quality lentils are also sold for feed through export markets.

Dry peas and lower-grade lentils exported for feed are shipped as bulk grain. The use of bulk shipments lowers handling costs at the port and results in significantly lower ocean shipping rates. Bulk shipments eliminate the labor costs associated with bagging and placing the product in containers, thus resulting in lower handling costs. Bulk shipping rates are also 50 to 60 percent lower than rates on containerized vessels as shown in the following tabulation based on information reported by Glen Squires[16] (in US$ per metric ton):

Shipments from Vancouver to:	Bulk	Container
Colombia	33.07	83.56
India	52.92	99.21

An important factor in the decision to use bulk versus containerized shipping relates to the moisture content of the Canadian and U.S. product. Canadian products have a slightly higher moisture content (12-15 percent) compared to the U.S. dry peas (9-12 percent).[17] The higher moisture Canadian product tends to resist breakage as it is loaded in bulk form into the hull of the ship, thus reducing the risk of product damage and the costs associated with potential rejection of the shipment by the buyer.

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[14] Eighty percent of Canadian exports of dry peas and lentils to the United States move by truck. These exports are shipped mostly to cities in the eastern United States. Barry Prentice and Art Wilson, "Dry Pea and Lentil Exports to the United States," Transportation Forum, 1990, p. 548.

[15] Canadian Special Crops Association and the Western Canada Pulse Growers Association, joint prehearing brief, Nov. 23, 1992, p. 12.

[16] Glen Squires, An Investigation of the Impact of Transportation Costs on the Competitive Position of Canada and the United States Pea and Lentil Industries, M.A. thesis, (Pullman, WA: Washington State University, Dec. 1992), p. 214.

[17] USITC staff conversations with representatives of the U.S. and Canadian dry pea and lentil industries.

Nonetheless, most Canadian exports of food peas and lentils are still shipped in 100-pound bags packed in containerized vessels.[18] In recent years, exporters have increasingly used the port of Vancouver for these exports because ocean freight rates from Vancouver are more competitive than those from the other ports.

External Ocean Rate Differentials

Ocean freight rates for dry peas and lentils destined for Europe, India, and the eastern coast of South America generally are higher when shipped through the port of Seattle than when shipped through the port of Vancouver, as shown in the following tabulation (in US$ per 20-foot container):

Destination	Vancouver	Seattle
Spain	1,550[1]	1,820[1]
Netherlands	1,623[2]	1,810[2]
Italy	1,220[3]	1,470[3]
India	2,030[4]	2,132[4]
Venezuela	2,100[5]	2,270[5]
Peru	2,260[6]	2,260[6]
Japan	1,206[7]	1,206[7]

[1] Italian and D'Amico Lines as of Jan. 1993; the rate includes US$350 terminal fee (with a Currency Adjustment Factor (CAF) of 15 percent on the base rate).

[2] Hapag-Lloyd Line as of Jan. 1993; it includes US$420 terminal fee and US$40 bunker surcharge (with a CAF of 34 percent on the base rate) for Seattle, and $391 terminal fee and US$39 bunker surcharge (with a CAF of 34 percent on the base rate) for Vancouver, using an exchange rate of US$1 = Can$.7824 as of Jan. 21, 1993.

[3] Atlantic Container Line as of Jan. 1993; it includes US$350 terminal fee (with a CAF of 15 percent on the base rate). Italian and D'Amico Lines charge US$1,550 out of Vancouver and US$1,920 out of Seattle as of Jan. 1993.

[4] American President Line as of Jan. 1993; includes Interior Point Internodal (IPI).

[5] Italian and D'Amico Lines as of Jan. 1993; includes US$350 terminal fee.

[6] Chilean Line as of Jan. 1993; includes US$60 bunker surcharge. Elma Line charges US$1,900 out of both Vancouver and Seattle as of Jan. 1993.

[7] Mitsui Line as of Jan. 1993; includes Fuel Adjustment Factor (FAF) of US$80 (with a CAF of 38 percent on the base rate). NYK Line charges the same rate as of Jan. 1993.

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[18] Ibid., p. 6.

shipping rates for dry peas and lentils destined for East Asia and the western coast of South America, however, tend to be equal whether or not the goods are shipped through Seattle or Vancouver.[19]

The reasons for the differentials in ocean rates are complex. Ocean rates for dry peas and lentils at all ports are influenced by the supply of appropriate cargo space available at the port. While U.S. farmers produce dry peas and lentils primarily for human consumption, shipping their product bagged in containers, Canadian farmers produce a significant amount of animal feed which can be shipped bagged or bulk in containers or shipped breakbulk.[20] Thus, even if more carriers enter the Port of Seattle, the supply of appropriate cargo space available in Vancouver could be greater and the rates lower simply by virtue of the fact that the Canadian product can be shipped via a greater variety of means.[21] [22]

Secondly, most ocean freight rates on agricultural products, such as dry peas and lentils from U.S. ports, are regulated by one of several international shipping conferences and all are published by the U.S. Federal Maritime Commission (FMC). Fewer rates out of Canadian ports are regulated by these conferences, however, and Canada has no counterpart to the FMC which publishes shipping rates. Thus, the rates established by conference may be more difficult to enforce in Canada and the price that has developed for ocean rates out of Vancouver is lower than rates out of Seattle.[23] With respect to shipping routes for which the Ports of Seattle and Vancouver are highly competitive--largely those to East Asia and the western coast of South America--however, the rates out of Vancouver will approach the price established in Seattle.

Ocean rates through Vancouver, for product destined for Europe, India, and the eastern coast of South America, however, compete more with rates through the Great Lakes ports than with rates through Seattle. The reason for this is that internal transportation assistance in Canada under the WGTA allows Canadian exporters the option to ship either west or east. This would force Vancouver shipping companies to compete with Great Lakes shippers for business.

Ocean rates through Vancouver, destined for East Asia or the western coast of South America, however, compete less with rates through the Great Lakes ports and more with rates through Seattle because of the additional

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[19] Rate trends confirmed by officials at the Canadian Shippers' Council, Agriculture Ocean Transportation Coalition; Spokane Seed Co.; and Geo. S. Bush & Co., Inc.

[20] Breakbulk shipping consists of bagged products loaded on pallets.

[21] Information from official at the Canadian Shippers' Council. Additionally, the Port of Seattle has limited facilities for loading breakbulk.

[22] Information from official at Finora Canada Ltd., a Canadian exporter of dry peas and lentils.

[23] Information from sources at American President Lines, Inc. and the Agriculture Ocean Transportation Coalition.

ocean transport time the Great Lakes ports would necessitate. The end result is that shipping companies can only compete if the rates they charge out of Vancouver do not exceed the sum of the Great Lakes rates plus any additional transportation charges required to bring the goods to the Great Lakes.[24]

Given the above scenario, one might expect U.S. dry pea and lentil shippers to take advantage of the lower ocean rates by sending their goods via truck or rail to Vancouver.[25] To hold onto their business, however, shipping companies operating out of Seattle have responded to this situation by offering various incentives. One of these incentives is "spotting"--delivering containers to certain locations at which the shipper loads them.[26] One source estimates that spotting could save a shipper $300 per container.[27] Another incentive is the shipping company's coverage of all inland transportation fees, known as Interior Point Intermodal (IPI).[28] For instance, included in the ocean freight rate charged by American President Lines on dry peas and lentils from Seattle to Bombay, India, is the inland transportation from Spokane, Pullman, or Lewiston to Seattle.[29] Thus, by providing these incentives, a shipping company otherwise limited by the price floor established in a conference can compete with the lower rates quoted in the Port of Vancouver.

Currency Exchange Rates

Export sales of dry peas and lentils are largely denominated in U.S. dollars. Thus, the impact of exchange rates on U.S. and Canadian exports of dry peas and lentils largely concerns the relative changes in the value of the U.S. and Canadian dollars. Changes in the value of the U.S. dollar relative to the currencies of other countries should affect Canadian and U.S. exports equally, all other things held constant.

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[24] Agent for Italian Lines, interview by USITC staff.

[25] The cost of sending goods from Seattle to the Port of Vancouver has been estimated by a number of shipping lines at about $200 per container.

[26] Most of the spotting is provided for goods destined for the Mediterranean. Conferences regulating shipping routes to Northern Europe are not allowed to spot containers. Increasingly, spotting is also not allowed by various conferences serving South America. This information was obtained from an industry official at JAS Pacific, Inc., a freight forwarder of dry peas and lentils to destinations worldwide.

[27] This information was obtained from an official at Atlantic Container Lines.

[28] Due to the regulations of various conferences, these IPI rates are currently provided only for routes to India and Pakistan. This information attained from JAS Pacific, Inc.

[29] This information was abtained from an official at APL. Official at APL said APL has no rate on dry peas and lentils from Seattle to India that does not include the inland transportation. He added that his company has very few lines out of Vancouver to India and none of them include spotting or inland transportation because it is not necessary to attract business. The Canadian National Railway brings the goods directly to the Port of Vancouver.

A change in the value of the U.S. dollar relative to the Canadian dollar could have two possible effects on Canadian prices of dry peas and lentils. First, a depreciation (appreciation) of the U.S. dollar vis à vis the Canadian dollar, when translated into Canadian dollars, could result in a decrease (increase) in the price received by Canadian exporters and growers of dry peas and lentils. Second, the price change, in Canadian dollars, could also result in an increase (decline) in Canadian export prices to third-country markets, depending on whether the Canadian exporters are able to pass through the exchange rate change to foreign customers. Either way, however, a depreciation in the U.S. currency should benefit U.S. growers and exporters relative to their Canadian counterparts in third-country markets.

The U.S. dollar fell in value against the Canadian dollar during 1986-91, as shown in the following tabulation (in Can$ per US$):

1986	1987	1988	1989	1990	1991	1992
$1.40	$1.33	$1.23	$1.18	$1.17	$1.14	$1.21

The depreciation of the U.S. dollar during this period should have provided a price advantage to U.S. dry pea and lentil exporters in third-country markets, all other things held constant.

Price Levels and Trends

Canadian prices for dry peas and lentils have consistently been lower than U.S. prices during 1986-92 at the farm, dealer (wholesale), and export levels (table C-20). These price differences reflect several factors, particularly differences in quality, but also the lower costs of production and transportation in Canada described elsewhere in this report.[30] U.S. producers of dry peas and lentils have tried to maintain their prices through emphasis on quality. An important issue for U.S. producers is whether or not they will be able to maintain their higher prices in view of the increasing quality and quantity of Canadian product.

U.S. and Canadian grower prices for dry peas and lentils have fluctuated widely, reflecting annual changes in supplies. From 1986/87 to 1992/93, Canadian farm prices for dry peas averaged US$149 per ton, and for lentils US$357 per ton, while U.S. farm prices averaged $195 per ton for dry peas and $384 per ton for lentils. Thus, average U.S. farm prices for dry peas were 31 percent above Canadian prices, and about 8 percent above average Canadian farm prices for lentils. The lowest farm prices during this period occurred in 1987/88, when Canadian production of dry peas and lentils rose 73 percent above that of the prior year and when U.S. production levels were also high.

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[30] Additionally, higher U.S. prices could reflect U.S. opportunities for P.L. 480 sales. As shown in chapter 2, the P.L. 480 program can act as a price floor for U.S. dry pea and lentil sales.

In 1991/92 (the latest full crop year for which data are available), U.S. dealer prices for U.S. lentils of US$412 per metric ton were 24 percent above Canadian dealer prices for Canadian laird lentils. The U.S. dealer price for U.S. green peas of $230 per metric ton was 22 percent higher than the Canadian dealer price for yellow Century peas the same year. U.S. dealer prices for dry peas during 1986/87 to 1992/93 averaged $255 per metric ton, or 27 percent above the average Canadian dealer price of $200 per metric ton during this period. The average U.S. dealer price for lentils of $460 per metric ton was 18 percent above the average Canadian dealer price during this 7-year period.

At the export level, the average U.S. export unit value during 1986/87 to 1992/93 was $313 per ton for dry peas and $521 per ton for lentils. Canadian export unit values averaged $253 per ton for dry peas and $373 per ton for lentils, respectively. Thus, U.S. dry peas exports sold at a unit value which was 24 percent above that for Canadian peas, and U.S. lentils sold for about 40 percent above that for Canadian lentil exports. Even excluding 1986/87 when U.S. lentils sold for a high $718 per ton, the U.S. export unit value for lentils was 35 percent above the average Canadian export unit value during 1987/88 to 1992/93. Thus, during 1986/87 through 1992/93 (a partial crop year), U.S. dry peas and lentils sold at average price margins substantially above comparable Canadian products at three different levels in the marketing chain, as shown in the following tabulation (in percent):

Marketing level	Dry peas	Lentils
Farm	31	8
Dealer	27	18
Export	24	40

APPENDIX A

Letter of Request from the U.S. House of Representatives
Committee on Ways and Means

COMMITTEE ON WAYS AND MEANS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515-6348

August 10, 1992

The Honorable Don E. Newquist
Chairman
U.S. International Trade Commission
500 E Street, S.W.
Washington, D.C. 20436

Dear Mr. Chairman:

The House Committee on Ways and Means is concerned about the U.S. dry pea and lentil industry and the effect of Canadian Government policies on the ability of the U.S. industry to compete internationally. Accordingly, the Committee requests that the U.S. International Trade Commission conduct an investigation under section 332(g) of the Tariff Act of 1930 [19 U.S.C. 1332(g)], for the purpose of providing a report on the conditions of competition between the United States and Canada in dry peas and lentils.

Specifically, the Committee is interested in the competitive conditions of the U.S. and Canadian dry pea and lentil industries in overseas markets and the effect of Canadian Government programs on those competitive conditions.

In its investigation, the Commission should, to the extent possible:

(1) Describe and analyze the U.S. and Canadian dry pea and lentil industries, including patterns of production, consumption, exports, and imports since 1986;

(2) Describe and analyze the current conditions of trade in dry peas and lentils between the United States, Canada, and the rest of the world;

(3) Describe and analyze the purpose, nature, and use of Canadian programs and policies to assist dry pea and lentil producers and exporters and their impact on competitive conditions. When examining Canadian programs and policies, special attention should be given to

programs affecting transportation costs, including the Western Grain Transportation Act, and income support programs, such as the Gross Revenue Insurance Program; and

(4) Provide an analysis of other relevant factors having a significant bearing on competitive conditions and trade in dry peas and lentils, including prices, production and marketing costs, and exchange rates.

The Commission should provide the results of this investigation as soon as possible, but no later than April 20, 1993.

Thank you for your attention to this request.

Sincerely yours,

Dan Rostenkowski
Chairman

DR/bwp

APPENDIX B

United States International Trade Commission's
Notice of Institution of Investigation and Public Hearing

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, DC

(Investigation No. 332-335)

DRY PEAS AND LENTILS: CONDITIONS OF COMPETITION BETWEEN THE UNITED STATES AND CANADA IN THIRD-COUNTRY MARKETS

AGENCY: United States International Trade Commission

ACTION: Notice of institution of investigation and public hearing

EFFECTIVE DATE: September 14, 1992

SUMMARY: Following receipt on August 10, 1992, of a request from the Committee on Ways and Means, U.S. House of Representatives, the Commission instituted investigation No. 332-335, under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)) for the purpose of reporting on the conditions of competition between the U.S. and Canadian dry pea and lentil industries in third-country markets.

As requested by the Committee, the Commission in its investigation and report thereon will seek to:

(1) Describe and analyze the U.S. and Canadian dry pea and lentil industries, including patterns of production, consumption, exports, and imports since 1986;

(2) describe and analyze the current conditions of trade in dry peas and lentils between the United States, Canada, and the rest of the world;

(3) describe and analyze the purpose, nature, and use of Canadian programs and policies to assist dry pea and lentil producers and exporters along with their impact on competitive conditions, especially programs affecting transportation costs, including the Western Grain Transportation Act, and income support programs, such as the Gross Revenue Insurance Program; and

(4) provide an analysis of other relevant factors having a significant bearing on competitive conditions and trade in dry peas and lentils, including prices, production and marketing costs, and exchange rates.

The Committee requested that the Commission submit its report not later than April 20, 1993.

FOR FURTHER INFORMATION CONTACT: Timothy McCarty ((202)-205-3324) or Cathy Jabara ((202)-205-3309), Agriculture Division, Office of Industries, or William Gearhart ((202)-205-3091), Office of the General Counsel, U.S. International Trade Commission. Hearing impaired persons can obtain information on this study by contacting the Commission's TDD terminal on (202)205-1810.

PUBLIC HEARING: A public hearing in connection with this investigation is scheduled to begin at 9:30 a.m. on December 8, 1992, at the U.S. International Trade Commission Building, 500 E Street SW., Washington, D.C. All persons have the right to appear by counsel or in person, to present information, and to be heard. Persons wishing to appear at the public hearing should file a request to testify with the Secretary, United States International Trade Commission, 500 E Street SW., Washington, DC, 20436, not later than the close of business (5:15 p.m.) on November 20, 1992. In addition, persons testifying should file prehearing briefs (original and 14 copies) with the Secretary by the close of business on November 23, 1992. The deadline for filing post hearing briefs is the close of business on January 5, 1993.

WRITTEN SUBMISSIONS: In addition to or in lieu of filing prehearing and/or post hearing briefs, interested persons may submit written statements concerning the investigation. To be assured of consideration, written statements (original plus 14 copies) must be received by the close of business (5:15 p.m.) January 5, 1993. Commercial or financial information that a submitter desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform to the requirements of section 201.6 of the Commission's Rules of Practice and Procedure (19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. All submissions should be addressed to the Secretary at the Commission's office in Washington, DC.

By order of the Commission.

Paul R. Bardos
Acting Secretary

Issued: September 16, 1992

APPENDIX C

Statistical Tables

Table C-1
Dry peas: Primary sources and their world market shares, crop years 1985/86 to 1991/92[1]

Item	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
	(1,000 metric tons)						
Exporters:							
Hungary	66	86	156	189	189	194	293
Canada	103	122	307	192	183	166	274
Australia	122	371	293	238	251	210	184
United States	91	94	119	112	146	77	88
All other	192	266	305	197	224	219	229
Total	574	939	1,180	928	993	866	1,068
	(Percent)						
World market share:							
Hungary	11.5	9.2	13.2	20.4	19.0	22.4	27.5
Canada	18.0	13.0	26.0	20.7	18.4	19.2	25.7
Australia	21.3	39.5	24.8	25.6	25.3	24.2	17.2
United States	15.9	10.0	10.1	12.1	14.7	8.9	8.3
All other	33.3	28.3	25.9	21.2	22.6	25.3	21.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission from official data from the U.S. Department of Commerce; Statistics Canada; the Government of Hungary; the Australian Bureau of Statistics; STAT Market Research; and estimates from the Foreign Agricultural Service, U.S. Department of Agriculture.

Table C-2
Lentils: Primary sources and their world market shares, crop years 1985/86 to 1991/92[1]

Item	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
	(1,000 metric tons)						
Exporters:							
Canada	35	108	157	78	90	150	187
Turkey	200	252	353	606	195	242	147
United States	37	42	34	47	64	49	37
All other	82	155	93	151	112	120	135
Total	354	557	637	882	461	561	506
	(Percent)						
World market share:							
Canada	9.9	19.4	24.6	8.8	19.6	26.7	37.0
Turkey	56.5	45.2	55.4	68.7	42.3	43.1	29.1
United States	10.5	7.5	5.4	5.4	14.0	8.7	7.4
All other	23.1	27.9	14.6	17.1	24.1	21.5	26.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission from official data from the U.S. Department of Commerce; Statistics Canada; the Government of Turkey; and estimates from the Foreign Agricultural Service, U.S. Department of Agriculture.

Table C-3
Dry peas and lentils: U.S. production, harvested area, and yields, crop years 1986/87 to 1992/93

Crop year[1]	Dry peas	Lentils	Total
	Production (*1,000 metric tons*)		
1986/87	158	81	239
1987/88	184	77	261
1988/89	171	38	209
1989/90	185	49	234
1990/91	109	41	150
1991/92	175	76	251
1992/93	116	69	185
	Harvested area (*1,000 hectares*)		
1986/87	84	65	149
1987/88	82	62	144
1988/89	75	30	105
1989/90	72	38	110
1990/91	68	46	114
1991/92	82	52	134
1992/93	72	53	125
	Yield (*metric tons/hectare*)		
1986/87	1.88	1.25	1.59
1987/88	2.24	1.24	1.81
1988/89	2.28	1.27	2.00
1989/90	2.57	1.29	2.12
1990/91	1.60	0.89	1.32
1991/92	2.13	1.46	1.89
1992/93	1.61	1.30	1.49

[1] Crop years are from July 1 to June 30.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission from data of the American Dry Pea and Lentil Association, Moscow, ID, bulletin 165, Sept. 18, 1992.

Table C-4
Dry peas: U.S. production, stocks on hand, domestic exports, imports for consumption, and apparent U.S. consumption, crop years 1986/87 to 1991/92

Crop year[1]	Production	Beginning stocks[2]	Exports	Imports	Ending stocks[2]	Apparent consumption	Ratio of imports to consumption
	----------	----------	*1,000 metric tons*	----------	----------	----------	*Percent*
1986/87....	158	19	85	13	32	73	17.8
1987/88....	184	32	116	16	37	79	20.2
1988/89....	171	37	109	14	42	71	19.7
1989/90....	185	42	142	16	21	80	20.0
1990/91....	109	21	72	11	12	57	19.3
1991/92....	175	12	85	8	54	56	14.3

[1] Crop years are from July 1 to June 30.
[2] As of June 30.

Note.--Export and import data are reported here on a crop-year basis and may not match export and import data shown elsewhere in this report.

Source: Production and stocks-on-hand data compiled from statistics of the American Dry Pea and Lentil Association; export and import data compiled from official statistics of the U.S. Department of Commerce.

Table C-5
Lentils: U.S. production, stocks on hand, domestic exports, imports for consumption, and apparent U.S. consumption, crop years 1986/87 to 1991/92

Crop year[1]	Production	Beginning stocks[2]	Exports	Imports	Ending stocks[2]	Apparent consumption	Ratio of imports to consumption
	1,000 metric tons						*Percent*
1986/87....	81	1	38	2	26	20	10.0
1987/88....	77	26	33	3	55	18	16.7
1988/89....	38	55	46	3	29	21	14.3
1989/90....	49	29	65	3	19	-3[3]	([4])
1990/91....	41	19	49	4	7	8	50.0
1991/92....	76	7	37	6	22	30	20.0

[1] Crop years are from July 1 to June 30.
[2] As of June 30.
[3] In some years, stocks are believed to be under reported and exports are believed to be overstated because of misclassification.
[4] Not meaningful.

Source: Production and stocks-on-hand data compiled from statistics of the American Dry Pea and Lentil Association; export and import data compiled from official statistics of the U.S. Department of Commerce.

Table C-6
Dry peas: U.S. imports, by principal sources, crop years[1] 1986/87 to 1991/92, July-December 1991/92, and July-December 1992/93

Source	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	July-December-- 1991/92	1992/93
	Quantity (metric tons)							
Canada	9,997	12,068	9,980	11,735	6,706	4,362	1,929	2,300
Australia	236	503	514	1,033	1,222	1,040	732	792
India	249	225	468	456	632	973	542	371
Peru	531	692	318	579	444	428	299	341
Ireland	82	138	81	170	918	288	160	2
Kenya	727	374	288	425	204	269	149	37
New Zealand	111	808	222	64	196	174	48	6
Belgium	0	19	195	361	178	168	20	129
Netherlands	7	11	69	1	422	123	80	46
All other	619	786	1,389	1,296	437	418	247	81
Total	12,559	15,624	13,524	16,120	11,359	8,243	4,206	4,105
	Value (1,000 dollars)							
Canada	2,322	2,788	2,753	3,052	1,744	1,270	580	645
Australia	72	288	263	477	578	483	353	308
India	200	211	423	346	466	626	359	214
Peru	291	364	192	359	299	295	216	293
Ireland	277	294	101	149	708	480	228	3
Kenya	469	212	219	233	109	150	76	30
New Zealand	226	849	296	321	331	426	267	22
Belgium	0	11	127	239	116	109	14	92
Netherlands	7	13	85	2	334	98	58	42
All other	586	1,009	1,210	1,067	574	593	334	128
Total	4,450	6,039	5,669	6,245	5,259	4,530	2,485	1,777

[1] Crop years are from July 1 to June 30.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce.

Table C-7
Lentils: U.S. imports, by principal sources, crop years[1] 1986/87 to 1991/92, July-December 1991/92, and July-December 1992/93

Source	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	July-December-- 1991/92	1992/93
	Quantity (metric tons)							
Canada	1,128	2,148	2,064	2,243	3,254	3,960	1,946	1,414
India	175	150	219	239	314	896	257	339
Turkey	196	347	384	452	400	589	407	344
United Kingdom	35	52	112	154	163	145	92	17
Lebanon	40	40	100	20	0	142	62	42
Australia	5	-	43	90	28	65	1	43
Spain	-	-	-	18	26	62	0	0
France	1	5	8	11	13	48	17	34
Morocco	-	-	-	0	0	36	0	24
All other	152	227	291	99	59	100	77	27
Total	1,732	2,969	3,221	3,326	4,257	6,043	2,859	2,284
	Value (1,000 dollars)							
Canada	601	1,156	1,252	1,240	1,796	1,578	819	624
India	150	144	209	218	242	637	190	225
Turkey	108	253	196	326	287	445	286	239
United Kingdom	30	33	77	119	175	142	74	34
Lebanon	34	18	47	18	0	102	39	33
Australia	10	8	39	48	11	253	218	22
Spain	0	0	0	17	21	63	0	0
France	4	15	17	19	17	92	30	80
Morocco	0	0	0	0	0	24	0	23
All other	395	467	298	83	64	98	64	46
Total	1,332	2,094	2,135	2,084	2,613	3,434	1,720	1,326

[1] Crop years are from July 1 to June 30.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce.

Table C-8
Dry peas: U.S. exports, by principal markets, crop years[1] 1986/87 to 1991/92, July-December 1991/92, and July-December 1992/93

Market	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	July-December-- 1991/92	1992/93
	Quantity (metric tons)							
India	15,592	32,653	30,992	41,241	11,696	17,195	14,334	1,829
Philippines	1,984	2,528	9,230	15,916	11,321	10,739	4,945	10,825
Peru	7,248	6,932	5,399	7,854	10,293	9,201	4,282	6,680
Venezuela	6,461	13,579	6,759	8,258	3,647	7,706	4,631	3,511
Netherlands	543	3,601	3,542	313	209	5,769	5,590	0
Taiwan	7,740	14,311	3,698	5,292	3,636	4,979	2,252	1,795
United Kingdom	2,468	5,165	5,274	6,291	6,678	3,992	1,472	1,653
Haiti	0	0	6,978	3,481	2,312	3,018	544	4,243
Japan	7,017	6,524	4,470	4,560	6,720	2,949	1,892	1,048
Colombia	13,538	11,954	13,224	5,389	199	2,123	730	1,307
All other	22,141	19,020	19,029	43,228	15,440	17,135	7,225	7,975
Total	84,732	116,267	108,595	141,823	72,151	84,806	47,897	40,866
	Value (1,000 dollars)							
India	4,822	7,727	8,273	10,756	3,389	5,655	4,909	539
Philippines	532	626	2,344	3,668	3,633	2,595	1,258	2,691
Peru	2,830	2,235	2,185	2,464	4,262	3,125	1,656	2,029
Venezuela	2,221	4,348	2,309	2,624	1,204	2,453	1,499	1,066
Netherlands	217	546	699	158	122	1,215	1,070	0
Taiwan	1,854	3,163	1,143	1,428	1,048	1,325	591	479
United Kingdom	697	1,330	1,640	1,460	2,171	1,103	397	496
Haiti	0	0	1,421	996	876	853	160	1,204
Japan	1,981	1,609	1,429	1,527	2,162	886	555	328
Colombia	2,805	2,695	3,359	1,239	87	479	185	255
All other	7,336	6,184	7,946	16,190	7,282	7,015	2,940	3,063
Total	25,295	30,463	32,748	42,510	26,234	26,704	15,220	12,150

[1] Crop years are from July 1 to June 30.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce.

Table C-9
Lentils: U.S. exports, by principal markets, crop years[1] 1986/87 to 1991/92, July-December 1991/92, and July-December 1992/93

Market	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	July-December-- 1991/92	July-December-- 1992/93
	Quantity (metric tons)							
Spain	11,637	9,860	10,896	9,763	11,453	12,439	8,232	15,722
Peru	792	2,125	2,081	8,151	4,980	4,743	2,858	2,816
Italy	4,532	2,754	1,587	4,368	3,154	2,753	1,971	1,445
Canada	1,710	1,241	1,755	4,732	1,788	1,960	1,379	93
Mexico	439	2,064	1,933	2,378	1,676	1,951	909	264
Russia	0	0	0	0	0	1,640	0	0
Venezuela	1,202	347	0	3,137	3,359	1,631	1,632	18
Germany, West	1,940	681	1,217	1,036	1,235	1,570	357	7
Lebanon	2,728	2,712	4,975	5,488	1,541	1,377	0	132
Colombia	59	422	6	1,938	848	229	202	0
All other	12,803	10,443	21,899	24,236	19,365	6,208	3,649	18,796
Total	37,842	32,649	46,349	65,227	49,399	36,501	21,189	39,293
	Value (1,000 dollars)							
Spain	6,094	3,640	4,965	3,908	5,856	6,215	4,181	7,164
Peru	322	796	967	4,002	2,709	2,457	1,583	1,400
Italy	2,441	1,036	711	1,866	1,516	1,338	991	645
Canada	997	625	1,131	3,145	963	1,052	730	69
Mexico	272	799	1,058	1,527	854	1,166	605	151
Russia	0	0	0	0	0	789	0	0
Venezuela	635	48	0	1,224	1,636	865	865	11
Germany, West	991	309	468	534	815	802	204	13
Lebanon	1,307	869	2,054	2,633	897	612	0	58
Colombia	9	21	4	586	312	54	44	0
All other	7,196	3,933	10,065	12,530	10,622	3,517	2,129	9,957
Total	20,264	12,076	21,423	31,955	26,179	18,867	11,332	19,468

[1] Crop years are from July 1 to June 30.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce.

Table C-10
Dry peas and lentils: Canadian production, harvested area, and yields, crop years[1] 1986/87 to 1992/93

Crop year	Dry peas	Lentils	Total
	Production (*1,000 metric tons*)		
1986/87	239	171	410
1987/88	415	286	702
1988/89	320	59	378
1989/90	234	96	330
1990/91	264	213	477
1991/92	410	343	752
1992/93	498	362	860
	Harvested area (*1,000 hectares*)		
1986/87	131	131	262
1987/88	237	218	455
1988/89	271	136	407
1989/90	150	103	253
1990/91	123	134	257
1991/92	198	238	437
1992/93	263	279	542
	Yield (*metric tons/hectare*)		
1986/87	1.82	1.31	1.56
1987/88	1.75	1.31	1.54
1988/89	1.18	0.43	0.93
1989/90	1.56	0.93	1.30
1990/91	2.15	1.59	1.86
1991/92	2.07	1.44	1.72
1992/93	1.89	1.30	1.59

[1] Crop years are from July 1 to June 30.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission on the basis of data from tables C-11 and C-12 of this report.

Table C-11
Dry peas and lentils: Canadian production,[1] by Province, 1986-92

(1,000 metric tons)

Province	1986	1987	1988	1989	1990	1991	1992
				Dry peas			
Saskatchewan	119.7	223.2	141.5	84.4	103.4	160.6	238.1
Manitoba	103.4	144.2	78.9	70.8	73.5	84.4	108.9
Alberta	15.8	47.6	99.3	78.9	87.1	164.7	151.0
Total	238.9	415.0	319.7	234.1	264.0	409.7	498.0
				Lentils			
Saskatchewan	145.1	235.9	49.9	79.4	172.4	272.2	267.0
Manitoba	20.9	37.2	7.3	15.0	38.1	64.0	79.4
Alberta	4.5	13.4	1.4	1.8	2.7	6.6	15.6
Total	170.5	286.5	58.6	96.2	213.2	342.8	362.0
				Total			
Saskatchewan	264.8	459.1	191.4	163.8	275.8	432.8	505.1
Manitoba	124.3	181.4	86.2	85.8	111.6	148.4	188.3
Alberta	20.3	61.0	100.7	80.7	89.8	171.3	166.6
Total	409.4	701.5	378.3	330.3	477.2	752.5	860.0

[1] Data include only those Western Canada Provinces shown.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission from Statistics Canada, Agricultural Profile of Canada, June 1992, p. 12, and Canada Year Book, 1992, p. 357, and 1990, pp. 9-26; Saskatchewan Agriculture and Food, Agricultural Statistics Fact Sheet, June 1992; Saskatchewan Agriculture and Food, 1992 Specialty Crop Report; and Nelson Longwin, Agriculture Canada, "Estimated Prairie Market Prices 1992 Crop Using Contract and Spot Grade Price Quotations, by Variety, and Estimated Grade," Oct. 15, 1992.

Table C-12
Dry peas and lentils: Canadian harvested area,[1] by Province, 1986-92

(1,000 hectares)

Province	1986	1987	1988	1989	1990	1991	1992
				Dry peas			
Saskatchewan . .	66.8	137.6	153.7	64.8	52.6	79.2	131.5
Manitoba	58.7	72.8	72.8	46.5	36.4	51.6	50.6
Alberta	5.9	26.3	44.5	38.4	34.3	67.6	80.9
Total	131.4	236.7	271.1	149.7	123.4	198.4	263.1
				Lentils			
Saskatchewan . .	108.0	182.1	121.4	89.0	109.3	179.2	192.2
Manitoba	17.8	24.3	12.1	12.1	22.2	54.0	66.8
Alberta	4.9	12.1	2.0	2.0	2.0	4.9	20.2
Total	130.8	218.5	135.6	103.1	133.5	238.2	279.2
				Total			
Saskatchewan . .	174.8	319.7	275.1	153.8	161.9	258.4	323.7
Manitoba	76.5	97.1	84.9	58.6	58.6	105.6	117.4
Alberta	10.8	38.4	46.5	40.4	36.3	72.5	101.1
Total	262.2	455.2	406.7	252.8	256.8	436.6	542.2

[1] Data include only those Western Canada Provinces shown.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission from Statistics Canada, Agricultural Profile of Canada, June 1992, p. 12, and Canada Year Book, 1992, p. 357, and 1990, pp. 9-26; Saskatchewan Agriculture and Food, Agricultural Statistics Fact Sheet, June 1992; Saskatchewan Agriculture and Food, 1991 Specialty Crop Report; and Nelson Longwin, Agriculture Canada, "Estimated Prairie Market Prices 1992 Crop Using Contract and Spot Grade Price Quotations, by Variety, and Estimated Grade," Oct. 15, 1992.

Table C-13
Dry peas and lentils: Canadian dealer offering prices, crop years 1986/87 to 1991/92[1]

Product and shipping point	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
	(Can$ per metric ton)					
Century peas--						
Manitoba	239	271	277	248	230	217
Saskatchewan	239	249	278	248	230	217
Alberta	228	262	278	248	230	217
Green peas, Western Canada	(2)	268	275	254	312	224
Feed peas--						
Manitoba	(2)	200	201	168	165	156
Saskatchewan	(2)	200	201	168	165	156
Alberta	(2)	198	201	168	165	156
	(US$ per metric ton)					
Lentils:						
Laird--						
Montreal	455	336	458	542	564	381
Eston--						
Montreal	366	294	497	538	490	357

[1] Crop years are from September 1 to August 31.
[2] Not available.

Note.--Prices shown are monthly average prices for the entire crop year.

Source: Compiled by the staff of the U.S. International Trade comission on the basis of data from Agriculture Canada, Canadian Pulses Review, Annual Edition, 1991.

Table C-14
Dry peas and lentils: Canadian production, stocks on hand, imports, exports, and apparent Canadian consumption, crop years 1986/87 to 1991/92

(1,000 metric tons)

Crop year[1]	Production	Beginning stocks	Imports	Exports	Ending stocks	Apparent consumption
			Dry peas			
1986/87.....	239	3	7	125	39	85
1987/88.....	415	39	8	305	31	126
1988/89.....	320	31	9	193	65	102
1989/90.....	234	65	7	179	52	75
1990/91.....	264	52	7	163	37	123
1991/92.....	410	37	9	271	48	137
			Lentils			
1986/87.....	170	3	4	110	14	53
1987/88.....	286	14	5	160	73	72
1988/89.....	59	73	4	78	32	26
1989/90.....	96	32	6	90	7	37
1990/91.....	213	7	4	150	22	52
1991/92.....	343	22	4	187	84	98
			Total			
1986/87.....	410	6	11	235	53	138
1987/88.....	702	53	13	465	104	198
1988/89.....	378	104	13	271	97	128
1989/90.....	330	97	13	269	59	112
1990/91.....	477	59	11	313	59	175
1991/92.....	753	59	13	458	132	235

[1] Crop years are from July 1 to June 30.

Note.--Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission derived from tables C-10 and C-11 of this report; report from U.S. Embassy, Ottawa, Sept. 28, 1992, pp. 3-7 and pp. 9-13.

Table C-15
Dry peas and lentils: Canadian exports, by principal markets, 1982-87 and crop years[1] 1988/89 to 1991/92

(Metric tons)

Market	1982	1983	1984	1985	1986	1987	1988/89	1989/90	1990/91	1991/92
					Dry peas					
EC	10,465	10,424	4,057	2,097	35,680	184,635	136,231	83,076	55,388	134,516
Colombia	1,091	5,446	501	0	3,504	13,095	19,856	26,622	31,589	32,015
India	106	340	5,175	35,548	4,716	5,980	1,888	674	4,287	16,752
United States	6,482	6,159	4,211	2,963	5,222	6,167	10,658	14,343	12,857	14,616
Japan	1,810	3,220	3,783	961	5,656	4,788	7,026	10,427	8,097	11,999
Venezuela	2,044	16,729	12,941	21,159	5,341	5,677	4,312	8,198	13,502	11,931
Cuba	45,466	46,384	41,202	10,078	33,787	9,943	0	10,200	0	9,341
Algeria	1	0	7	0	0	0	0	0	4,701	8,171
All other	16,893	17,241	26,434	29,044	18,197	13,931	12,540	25,769	32,292	31,736
Total	84,358	105,943	98,311	101,850	112,103	244,216	192,511	179,309	162,713	271,077
					Lentils					
EC	23,146	26,503	20,567	26,012	48,564	56,395	27,581	41,840	73,116	77,059
Colombia	3,828	15,361	5,393	850	12,367	34,180	18,299	25,850	20,548	41,517
Peru	514	2,856	570	110	1,054	2,722	1,663	2,749	5,183	10,141
Venezuela	962	2,176	6,341	6,102	5,653	6,048	4,292	1,813	5,031	9,981
Ecuador	1,535	568	759	0	0	89	0	1,105	2,493	4,691
Mozambique	0	0	0	0	0	326	6,014	1,205	3,860	4,023
United States	1,986	1,466	1,004	762	2,491	3,952	2,563	2,184	3,257	3,980
All other	1,617	868	2,885	1,569	7,239	9,070	17,096	13,473	36,591	35,916
Total	33,588	49,798	37,519	35,405	77,368	112,782	77,508	90,219	150,079	187,308

[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of Statistics Canada, Trade by Commodity, various issues.

Table C-16
Dry peas and lentils: Canadian exports, by principal markets, 1982-87 and crop years[1] 1988/89 to 1991/92

(1,000 Can$)

Market	1982	1983	1984	1985	1986	1987	1988/89	1989/90	1990/91	1991/92
						Dry peas				
EC	3,174	3,045	1,487	902	7,546	38,096	34,121	28,118	27,394	37,816
Colombia	251	1,428	137	0	1,200	4,042	6,238	5,944	5,671	7,114
India	39	113	1,989	13,618	1,560	1,954	746	272	1,328	4,717
United States	2,036	1,620	1,768	1,133	2,041	2.064	3,875	4,939	4,362	4,995
Japan	618	1,056	1,125	1,415	1,593	1,453	1,979	2,391	2,602	2,985
Venezuela	815	6,083	4,200	8,519	2,207	1,548	1,533	2,509	4,305	2,780
Cuba	17,171	13,939	10,258	3,712	9,840	2,670	0	0	0	3,293
All other	6,600	6,449	9,837	9,770	8,072	4,636	5,670	8,604	8,100	8,596
Total	30,704	33,733	30,801	39,069	34,059	56,463	54,162	52,777	53,762	72,296
						Lentils				
EC	14,660	12,951	10,069	17,469	32,113	26,264	13,474	20,609	30,648	24,919
Colombia	2,031	5,996	2,386	582	7,636	17,235	6,592	11,661	8,271	18,034
Peru	265	986	282	74	595	1,481	1,066	993	2,545	3,889
Venezuela	530	1,301	3,536	3,745	2,926	2,825	2,101	515	1,584	3,014
Ecuador	900	315	728	0	0	49	0	375	834	1,574
Mozambique	0	0	0	0	0	100	2,529	2,083	1,443	2,745
United States	1,082	708	609	727	2,053	1,904	1,390	1,632	2,310	1,712
All other	1,102	993	1,692	1,117	4,360	4,403	10,008	3,726	7,937	12,103
Total	20,570	23,250	19,302	23,714	49,683	54,261	37,160	41,594	55,572	67,990

[1] Crop years are from July 1 to June 30.

Source: Compiled by the staff of the U.S. International Trade Commission from official statistics of Statistics Canada, Trade by Commodity, various issues.

Table C-17
Dry peas and lentils: A comparison of calculated economic returns to farmers from market sales and from participation under the Canadian GRIP program, crop year 1991/92[1]

(*Can$ per hectare harvested*)

	Dry peas	Lentils
Target revenue:[2]		
Alberta	$366	$538
Saskatchewan	305	486
Manitoba	360	514
Market revenue:[3]		
Alberta	426	427
Saskatchewan	354	480
Manitoba	286	376
Revenue insurance premium:		
Alberta	25	45
Saskatchewan	13	35
Manitoba	12	32
Average crop insurance premium:		
Alberta	18	36
Saskatchewan	13	21
Manitoba	12	25
Variable costs:[4]		
Alberta	188	208
Saskatchewan	188	208
Manitoba	247	267
Net returns from GRIP:[5]		
Alberta	135	249
Saskatchewan	91	222
Manitoba	89	190
Net returns from market:[6]		
Alberta	220	183
Saskatchewan	153	251
Manitoba	27	84

[1] Crop year from July 1 to June 30.

[2] Target revenue = (70%)(1991/92 IMAP) x LTAY (long-term average yield).

[3] Market revenue = (the average price received by Canadian farmers) x (the yield in 1991/92).

[4] Budgeted variable (cash) production costs for 1992 for Saskatchewan and Manitoba. Alberta costs are estimated to be the same as those of Saskatchewan.

[5] Target revenue less variable costs, and revenue insurance and crop insurance premiums. This does not reflect additional fixed and land costs.

[6] Market revenue less variable costs and crop insurance premium. This does not reflect additional fixed and land costs.

Source: Compiled by the staff of the U.S. International Trade Commission on the basis of data from Mark Simone and Joy Harwood, USDA, "Canada's GRIP Program," Wheat Situation and Outlook, and May 1991; unpublished data from Agriculture Canada. Variable cost data are derived from: Saskatchewan Agriculture and Food, Cost of Producing Grain Crops in Saskatchewan, 1991; and Manitoba Agriculture, Farm Planting Guide 1992 Crop Estimates.

Table C-18
Dry peas and lentils: A comparison of calculated economic returns to farmers from market sales and from participation under the Canadian GRIP program, crop year 1992/93[1]

(Can$ per hectare harvested)

	Dry peas	Lentils
Target revenue:[2]		
Alberta	$370	$481
Saskatchewan	294	458
Manitoba	364	464
Market revenue:[3]		
Alberta	329	286
Saskatchewan	318	517
Manitoba	378	443
Revenue insurance premium:		
Alberta	22	54
Saskatchewan	18	27
Manitoba	18	27
Average crop insurance premium:		
Alberta	18	22
Saskatchewan	13[4]	21[4]
Manitoba	10	20
Variable costs:[5]		
Alberta	188	208
Saskatchewan	188	208
Manitoba	247	267
Net returns from GRIP:[6]		
Alberta	142	197
Saskatchewan	75	202
Manitoba	89	150
Net returns from market:[7]		
Alberta	123	56
Saskatchewan	117	288
Manitoba	121	156

[1] Crop year from July 1 to June 30.

[2] Target revenue = (70%)(1992/93 IMAP) x (LTAY); for lentils in Manitoba it is: (58%)(1992/93 IMAP) x (LYAY).

[3] Market revenue = (the average price received by Canadian farmers) x (the yield in 1992/93).

[4] The 1992/93 rate is not available; the 1991/92 rate is shown.

[5] Budgeted variable (cash) production costs for 1992 for Saskatchewan and Manitoba. Alberta costs are estimated to be the same as those of Saskatchewan.

[6] Target revenue less variable costs, and revenue insurance and crop insurance premiums. This does not reflect additional fixed and land costs.

[7] Market revenue less variable costs and crop insurance premium. This does not reflect additional fixed and land costs.

Source: Compiled by the staff of the U.S. International Trade Commission on the basis of data from Mark Simone and Joy Harwood, USDA, "Canada's GRIP Program," Wheat Situation and Outlook, May 1991; and unpublished data from Agriculture Canada. Variable costs from: Saskatchewan Agriculture, Cost of Producing Grain Crops ..., 1991; and Manitoba Agriculture, Farm Planting Guide: 1992 Crop Estimates.

Table C-19
Dry peas and lentils: A comparison of budgeted farm costs in Washington State and in Saskatchewan, 1992

Item	Washington State		Saskatchewan	
	Dry peas	Lentils[1]	Dry peas	Lentils[1]
Production costs (US$ per hectare):				
Variable costs:				
Chemicals	113	94	52	56
Seed	89	39	38	37
Machinery	91	48	34	37
Labor	36	32	10	10
Interest on variable expenses	9	7	7	8
All other	23	19	5	46
Total variable costs	361	239	146	194
Fixed costs:				
Machinery	171	74	34	35
Land charge (net rent)	100	100	(3)	(3)
All other	10	7	10	21
Total fixed costs	281	181	44	56
Total production costs	641	420	(2)190	(2)250
	(metric tons per hectare)			
Yield	2.24	1.23	1.79	1.35
	(US$ per metric ton)			
Variable production cost	161	194	82	144
Total production cost	286	341	(3)154	(3)225

[1] Data do not include GRIP and crop insurance enrollment costs, estimated at US$25 per hectare for dry peas and US$47 per hectare for lentils.

[2] Data do not include estimated land charges for Saskatchewan. In Manitoba, land charges were US$86 per hectare for peas and US$54 per hectare for lentils.

[3] Data include estimated land charges based on Manitoba land charges specified in Farm Planning Guide-1992 Crop Estimates.

Note.--Canadian dollars were converted to U.S. dollars at an exchange rate of US$1=Can$1.20. Because of rounding, figures may not add to the totals shown.

Source: Compiled by the staff of the U.S. International Trade Commission on the basis of data derived from Farm Planning Guide-1992 Crop Estimates, Manitoba Agriculture, Jan. 1992; Cost of Producing Grain in Saskatchewan-1992, Saskatchewan Agriculture and Food, 1992; and 1992 Crop Enterprise Budgets-Eastern Whitman County, Washington State University, Pullman, WA, Spring 1992.

Table C-20
Dry Peas and lentils: U.S. and Canadian prices, crop years 1986/87 to 1992/93[1]

(US$ per metric ton)

Item	1986/87		1987/88		1988/89		1989/90		1990/91		1991/92		1992/93[2]	
	U.S.	CANADA	U.S.	CANADA	U.S.	CANADA	U.S.	CANADA	U.S.	CANADA	U.S.	CANADA	U.S.	CANADA
Grower level[3]														
Peas . . .	186	140	167	130	183	163	192	152	272	158	168	152	196	146
Lentils . .	353	337	242	199	373	303	396	378	510	361	346	276	467	300
Dealer level														
Peas[4] . . .	241	170	225	205	239	226	248	209	342	197	230	189	258	202 ([5])
Lentils[6] .	437	324	316	253	444	372	468	458	598	484	412	333	545	507 ([5])
Export prices[7]														
Peas . . .	328	297 ([8])	286	222 ([8])	271	228	301	248	294	283	397	233	312 ([9])	257 ([10])
Lentils . .	718	457 ([8])	519	363 ([8])	367	389	496	389	485	317	542	317	521 ([9])	382 ([10])

[1] Crop years are from Sept. 1 to Aug. 31, except as noted.
[2] Sept. 1992-Jan. 1993 only.
[3] U.S. grower prices are for green whole peas, in Washington and Idaho; lentil grower prices are for #1 grade in Washington. Canadian grower prices are the average prices received for all peas and all lentils.
[4] U.S. price is for green whole peas in Washington State and Idaho; Canadian price is for Century peas in Saskatchewan.
[5] Spot grower price for Saskatchewan, Sept.-Nov. 1992 only.
[6] Canadian price is for Laird lentils in Montreal; U.S. price is for lentils in Washington State.
[7] Export unit values.
[8] Calendar year 1988 only.
[9] Sept.-Nov. 1992 only.
[10] Sept.-Oct. 1992 only.

Note.--Prices in Canadian dollars were converted to U.S. dollars using the average calendar year exchange rates as reported by the International Monetary Fund statistical database.

Source: Compiled by the staff of the U.S. International Trade Commission from data of Agriculture Canada, Canadian Pulses Review, 1991; ERS, USDA, Vegetables and Specialties, various issues; data from AMS, USDA, Greeley, CO.; the joint prehearing brief of the Canadian Special Crops Association; official data of the U.S. Dept. of Commerce; and Saskatchewan Agriculture and Food, 1992 Specialty Crop Report.

APPENDIX D

Sections of the U.S. HTS Relating to Dry Peas and Lentils

CHAPTER 7

EDIBLE VEGETABLES AND CERTAIN ROOTS AND TUBERS

Notes

1. This chapter does not cover forage products of heading 1214.

2. In headings 0709, 0710, 0711 and 0712 the word "vegetables" includes edible mushrooms, truffles, olives, capers, marrows, pumpkins, eggplants (aubergines), sweet corn (Zea mays var. saccharata), fruits of the genus Capsicum (peppers) or of the genus Pimenta (e.g., allspice), fennel, parsley, chervil, tarragon, cress and sweet marjoram (Majorana hortensis or Origanum marjorana).

3. Heading 0712 covers all dried vegetables of the kinds falling in headings 0701 to 0711, other than:

   (a) Dried leguminous vegetables, shelled (heading 0713);

   (b) Sweet corn in the forms specified in headings 1102 to 1104;

   (c) Flour, meal and flakes of potatoes (heading 1105);

   (d) Flour and meal of the dried leguminous vegetables of heading 0713 (heading 1106).

4. However, dried or crushed or ground fruits of the genus Capsicum (peppers) or of the genus Pimenta (e.g., allspice) are excluded from this chapter (heading 0904).

Additional U.S. Notes

1. Unless the context requires otherwise, the provisions of this chapter cover the named products whether or not reduced in size.

2. In the assessment of duty on any kind of vegetables, any foreign matter or impurities mixed therewith shall not be segregated nor shall any allowance therefor be made.

3. Articles of a kind covered by this chapter that can be used either for food or for sowing or planting (e.g., onions, onion sets, shallots, garlic, potatoes, and potato eyes) remain classified in this chapter even if rendered inedible as the resut of treatment with insecticides, fungicides or similar chemicals.

4. In subheading 0701.10, the expression "seed" covers only seed potatoes which are certified by a responsible officer or agency of a foreign government in accordance with official rules and regulations to have been grown and approved especially for use as seed, in containers marked with the foreign government's official seed potato tags and imported for use as seed.

5. The rates of duty set forth in subheadings 0711.20.15 and 2005.70.13 apply to the first 4,400 metric tons of olives, green in color, not pitted, in a saline solution, in containers each holding more than 8 kg, drained weight, certified by the importer to be used for repacking or sale as green olives, the foregoing entered under both subheadings combined in any calendar year.

Heading/ Subheading	Stat. Suf- fix	Article Description	Units of Quantity	Rates of Duty 1 General	Rates of Duty 1 Special	Rates of Duty 2
0712 (con.)		Dried vegetables, whole, cut, sliced, broken or in powder, but not further prepared (con.):				
0712.90 (con.)		Other vegetables; mixtures of vegetables (con.):				
0712.90.80		Other vegetables; mixtures of vegetables.....	.....	13%	Free (A,E,IL,J) 6.5% (CA)	35%
	50	Sweet corn seeds of a kind used for sowing.....	kg			
	90	Other.....	kg			
0713		Dried leguminous vegetables, shelled, whether or not skinned or split:				
0713.10		Peas (Pisum sativum):				
0713.10.10	00	Seeds of a kind used for sowing.....	kg.....	3.3¢/kg	Free (A,CA,E,IL,J)	13.2¢/kg
		Other:				
0713.10.20	00	Split peas.....	kg.....	Free		5.5¢/kg
0713.10.40		Other.....	.....	0.9¢/kg	Free (A,CA,E,IL,J)	3.9¢/kg
	20	Green peas.....	kg			
	40	Yellow peas.....	kg			
	60	Austrian winter peas.....	kg			
	80	Other.....	kg			
0713.20		Chickpeas (garbanzos):				
0713.20.10	00	Seeds of a kind used for sowing.....	kg.....	3.3¢/kg	Free (A,CA,E,IL,J)	13.2¢/kg
0713.20.20	00	Other.....	kg.....	3.1¢/kg	Free (A,CA,E,IL,J)	3.9¢/kg
		Beans (Vigna spp., Phaseolus spp.):				
0713.31		Beans of the species Vigna mungo (L.) Hepper or Vigna radiata (L.) Wilczek:				
0713.31.10	00	Seeds of a kind used for sowing.....	kg.....	3.3¢/kg	Free (A,CA,E,IL,J)	13.2¢/kg
		Other:				
0713.31.20	00	If entered for consumption during the period from May 1 to August 31, inclusive, in any year.....	kg.....	Free		6.6¢/kg
0713.31.40	00	If entered for consumption outside the above stated period, or if withdrawn for consumption at any time.....	kg.....	1.1¢/kg	Free (A*,CA,E,IL, J)	6.6¢/kg
0713.32		Small red (adzuki) beans (Phaseolus or Vigna angularis):				
0713.32.10	00	Seeds of a kind used for sowing.....	kg.....	3.3¢/kg	Free (A,CA,E,IL,J)	13.2¢/kg
0713.32.20	00	Other.....	kg.....	2.6¢/kg	Free (A,CA,E,IL,J)	6.6¢/kg
0713.33		Kidney beans, including white pea beans (Phaseolus vulgaris):				
0713.33.10		Seeds of a kind used for sowing.....	.....	3.3¢/kg	Free (A,CA,E,IL,J)	13.2¢/kg
	20	Navy or pea beans.....	kg			
	40	Other.....	kg			
		Other:				
0713.33.20		If entered for consumption during the period from May 1 to August 31, inclusive, in any year.....	.....	2.2¢/kg	Free (A,CA,E,IL,J)	6.6¢/kg
	20	Navy or pea beans.....	kg			
	30	Dark red beans.....	kg			
	50	Light red beans.....	kg			
	90	Other.....	kg			
0713.33.40		If entered for consumption outside the above stated period, or if withdrawn for consumption at any time.....	.....	3.3¢/kg	Free (A,CA,E,IL,J)	6.6¢/kg
	20	Navy or pea beans.....	kg			
	30	Dark red beans.....	kg			
	50	Light red beans.....	kg			
	90	Other.....	kg			

Heading/ Subheading	Stat. Suf-fix	Article Description	Units of Quantity	Rates of Duty 1 General	Rates of Duty 1 Special	Rates of Duty 2
0713 (con.)		Dried leguminous vegetables, shelled, whether or not skinned or split (con.):				
		Beans (Vigna spp., Phaseolus spp.)(con.):				
0713.39		Other:				
0713.39.10	00	Seeds of a kind used for sowing.....	kg.....	3.3¢/kg	Free (A,CA,E,IL,J)	13.2¢/kg
		Other:				
0713.39.15	00	Cowpeas.....	kg.....	Free		6.6¢/kg
		Other:				
0713.39.20		If entered for consumption during the period from May 1 to August 31, inclusive, in any year....	.....	1.7¢/kg	Free (A,CA,E,IL,J)	6.6¢/kg
	10	Black beans.....	kg			
	20	Great Northern beans.....	kg			
	30	Baby lima beans.....	kg			
	40	Other lima beans.....	kg			
	50	Pinto beans.....	kg			
	60	Other white beans....	kg			
	70	Other.....	kg			
0713.39.40		If entered for consumption outside the above stated period, or if withdrawn for consumption at any time.....	.....	3.3¢/kg	Free (A,CA,E,IL,J)	6.6¢/kg
	10	Black beans.....	kg			
	20	Great Northern beans.....	kg			
	30	Baby lima beans.....	kg			
	40	Other lima beans.....	kg			
	50	Pinto beans.....	kg			
	60	Other white beans....	kg			
	70	Other.....	kg			
0713.40		Lentils:				
0713.40.10	00	Seeds of a kind used for sowing.....	kg.....	3.3¢/kg	Free (A,CA,E,IL,J)	13.2¢/kg
0713.40.20	00	Other.....	kg.....	0.33¢/kg	Free (A,CA,E,IL,J)	1.1¢/kg
0713.50		Broad beans (Vicia faba var. major) and horse beans (Vicia faba var. equina and Vicia faba var. minor):				
0713.50.10	00	Seeds of a kind used for sowing.....	kg.....	3.3¢/kg	Free (A,CA,E,IL,J)	13.2¢/kg
0713.50.20	00	Other.....	kg.....	2.6¢/kg	Free (A,CA,E,IL,J)	6.6¢/kg
0713.90		Other:				
0713.90.10	00	Seeds of a kind used for sowing.....	kg.....	3.3¢/kg	Free (A*,CA,E,IL, J)	13.2¢/kg
		Other:				
0713.90.50	00	Guar seeds.....	kg.....	Free		Free
		Other:				
0713.90.60	00	If entered for consumption during the period from May 1 to August 31, inclusive, in any year.....	kg.....	1.7¢/kg	Free (A,CA,E,IL,J)	6.6¢/kg
0713.90.80	00	If entered for consumption outside the above stated period, or if withdrawn for consumption at any time.....	kg.....	3.3¢/kg	Free (A,CA,E,IL,J)	6.6¢/kg

APPENDIX E

Sections of the Canadian HTS Relating to Dry Peas and Lentils

Chapter 7

EDIBLE VEGETABLES AND CERTAIN ROOTS AND TUBERS

Notes.

1. This Chapter does not cover forage products of heading No. 12.14.

2. In heading Nos. 07.09, 07.10, 07.11 and 07.12 the word "vegetables" includes edible mushrooms, truffles, olives, capers, marrows, pumpkins, aubergines, sweet corn (*Zea mays var. saccharata*), fruits of the genus *Capsicum* or of the genus *Pimenta*, fennel, parsley, chervil, tarragon, cress and sweet marjoram (*Majorana hortensis* or *Origanum majorana*).

3. Heading No. 07.12 covers all dried vegetables of the kinds falling in heading Nos. 07.01 to 07.11, other than:

   (a) dried leguminous vegetables, shelled (heading No. 07.13);

   (b) sweet corn in the forms specified in heading Nos. 11.02 to 11.04;

   (c) flour, meal, flakes, granules and pellets of potatoes (heading No. 11.05);

   (d) flour and meal of the dried leguminous vegetables of heading No. 07.13 (heading No. 11.06).

4. However, dried or crushed or ground fruits of the genus *Capsicum* or of the genus *Pimenta* are excluded from this Chapter (heading No. 09.04).

Supplementary Notes.

1. The weight of the packages shall be included in the weight of the goods for the purpose of calculating the customs duties on the goods classified under heading No. 07.02, 07.03, 07.04, 07.05, 07.06, 07.07, 07.08 or 07.09.

2. (a) The Minister or Deputy Minister may, subject to a tariff item mentioned in Supplementary Note 2 (b), order that a tariff item mentioned in Supplementary Note 2 (c) be suspended, for a period specified in the order, with respect to goods specified in the order and that a tariff item mentioned in Supplementary Note 2 (b) shall apply to those goods, when those goods are imported through a customs office in a region or part of Canada specified in the order during that period.

   (b) Tariff items that may be brought into force: 0702.00.91, 0703.10.21, 0703.10.31, 0703.10.91, 0704.10.11 or 0704.10.12, 0704.20.11 or 0704.20.12, 0704.90.21, 0704.90.31, 0704.90.41, 0705.11.11 or 0705.11.12, 0705.19.11 or 0705.19.12, 0706.10.11 or 0706.10.12, 0706.10.21 or 0706.10.22, 0706.90.21 or 0706.90.22, 0706.90.51, 0707.00.91, 0708.10.91, 0708.20.21 or 0708.20.22, 0709.20.91, 0709.40.11 or 0709.40.12, 0709.60.10, 0709.90.31, 0709.90.41, or 0709.90.51 or 0709.90.52.

   (c) Tariff items that may be suspended: 0702.00.99, 0703.10.29, 0703.10.39, 0703.10.99, 0704.10.90, 0704.20.90, 0704.90.29, 0704.90.39, 0704.90.49, 0705.11.90, 0705.19.90, 0706.10.30, 0706.90.30, 0706.90.59, 0707.00.99, 0708.10.99, 0708.20.30, 0709.20.99, 0709.40.90, 0709.60.90, 0709.90.39, 0709.90.49 or 0709.90.60.

   (d) If, before the coming into force of an order under Supplementary Note 2 (a), a person purchased goods for importation through a customs office in a region or part of Canada specified in the order, in the expectation in good faith that the free rate of customs duty set out in a tariff item or tariff items listed in Supplementary Note 2 (c) would apply to the goods, and, at the time of the coming into force of the order, the goods were in transit to the purchaser in Canada, the tariff item or tariff items listed in Supplementary Note 2 (c) apply to the goods, notwithstanding the order.

3. (a) The Minister or Deputy Minister may order, for goods specified in the order and described in tariff item No. 0703.20.00, 0703.90.00, 0704.90.90, 0706.90.40, 0708.20.99, 0708.90.90, 0709.90.20, 0709.90.99 or 0714.90.21, that the rate of customs duty applicable to those goods be suspended for a period specified in the order and that a free rate of customs duty shall apply to those goods when those goods are imported through a customs office in a region or part of Canada specified in the order during that period.

   (b) If, before an order under Supplementary Note 3 (a) is revoked or otherwise ceases to have effect, a person purchased goods for importation through a customs office in a region or part of Canada specified in the order, in the expectation in good faith that the free rate of customs duty would apply to the goods, and, at the time the order is revoked or ceases to have effect, the goods were in transit to the purchaser in Canada, the free rate of customs duty applies to the goods, notwithstanding that the order has ceased to have effect.

4. An order made by the Minister or Deputy Minister pursuant to Supplementary Note 2 (a) or 3 (a) shall be deemed not to be a regulation within the meaning and for the purposes of the *Statutory Instruments Act*.

Tariff Item	SS	Description of Goods	Unit of Meas.	M.F.N. Tariff	G.P. Tariff	U.S. Tariff	Potential Codes
0712.90		**-Other vegetables; mixtures of vegetables**					
0712.90.10	00	---Tarragon, sweet marjoram and savory	KGM	Free	X	Free	
0712.90.20	00	---Sweet corn seed	TNE	$3.15 /tonne	X	$1.575 /tonne	
0712.90.90		---Other		10%	X	5%	9671
	10	-----*Garlic*	KGM				
	90	-----*Other*	KGM				
07.13		**Dried leguminous vegetables, shelled, whether or not skinned or split.**					
0713.10		**-Peas (*Pisum sativum*)**					
0713.10.10	00	---Seed in packages of a weight not exceeding 500 g each	KGM	9%	X	Free	
0713.10.90		---Other		Free	X	Free	
	10	-----*Seed*	KGM				
	20	-----*Split*	KGM				
	90	-----*Other*	KGM				
0713.20.00	00	**-Chickpeas (garbanzos)**	KGM	Free	X	Free	
		-Beans (*Vigna spp., Phaseolus spp.*):					
0713.31		**--Beans of the species *Vigna mungo* (L.) Hepper or *Vigna radiata* (L.) Wilczek**					
0713.31.10	00	---Of the species *Vigna radiata (L.) Wilczek*, in bulk or in packages of a weight exceeding 500 g each	KGM	Free	Free	Free	
0713.31.90	00	---Other	KGM	3.31¢/kg BPT Free	Free	Free	
0713.32.00	00	**--Small red (Adzuki) beans (*Phaseolus or Vigna angularis*)**	KGM	3.31¢/kg	Free	Free	
0713.33		**--Kidney beans, including white pea beans (*Phaseolus vulgaris*)**					
0713.33.10	00	---Seed	KGM	Free	X	Free	
		---Other:					
0713.33.91		----Red kidney beans		2.21¢/kg	Free	Free	
	10	-----*Dark*	KGM				
	90	-----*Other*	KGM				
0713.33.99		----Other		3.31¢/kg BPT Free	Free	Free	
	10	-----*White pea*	KGM				
	90	-----*Other*	KGM				

SCHEDULE I

Tariff Item	SS	Description of Goods	Unit of Meas.	M.F.N. Tariff	G.P. Tariff	U.S. Tariff	Potential Codes
0713.39		--Other					
0713.39.10	00	---Lima and Madagascar beans	KGM	Free	X	Free	
0713.39.90		---Other		3.31¢/kg BPT Free	Free	Free	
	10	-----*Seed*	KGM				
	90	-----*Other*	KGM				
0713.40.00		-Lentils		Free	X	Free	
	10	-----*Seed*	KGM				
	90	-----*Other*	KGM				
0713.50		-Broad beans (*Vicia faba var. major*) and horse beans (*Vicia faba var. equina, Vicia faba var. minor*)					
0713.50.10	00	---Seed in bulk or in packages of a weight exceeding 500 g each	KGM	Free	X	Free	
0713.50.90	00	---Other	KGM	3.31¢/kg	Free	Free	
0713.90		-Other					
0713.90.10	00	---Seed in bulk or in packages of a weight exceeding 500 g each	KGM	Free	X	Free	
0713.90.90		---Other		3.31¢/kg	Free	Free	
	10	-----*Seed*	KGM				
	90	-----*Other*	KGM				
07.14		Manioc, arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers with high starch or inulin content, fresh or dried, whether or not sliced or in the form of pellets; sago pith.					
0714.10.00	00	-Manioc (cassava)	KGM	Free	X	Free	
0714.20.00	00	-Sweet potatoes	KGM	Free	X	Free	
0714.90		-Other					
0714.90.10	00	---Arrowroot and sago pith	KGM	Free	X	Free	
		---Jerusalem artichokes:					
0714.90.21	00	----Fresh	KGM	5%	X	2.5%	
0714.90.22	00	----Dried	KGM	10%	X	5%	
		---Other:					
0714.90.91	00	----Fresh	KGM	Free	X	Free	
0714.90.92	00	----Dried	KGM	10%	X	5%	

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APPENDIX F

Methodology, Data Sources, and Regression Estimation Results

Methodology

The Commission performed regression analysis to examine the relationships between crop area, expected revenues, and government programs in chapter 5. This methodology provides estimates of the responsiveness of area planted to dry peas and lentils in the United States and Canada to prices, yields, and other relevant factors.

Area response functions provide the important parameters required to estimate the effects of price and other factors on crop production. Although production is measured as the product of both area and yield, current yields are heavily influenced by random factors such as weather, disease, etc. Thus, the area response functions provide the best estimates of producer response to changes in expected prices, expected yields, and revenue.

Two sets of regression equations were estimated for the Canadian area planted to dry peas and lentils. The first set utilized annual data during 1979/80 to 1990/91 to evaluate the factors affecting area response before the Gross Revenue Insurance Program (GRIP) was implemented in 1990/91. The second set of Canadian area equations used annual data from 1979/80 to 1992/93 to evaluate the factors affecting area response, including GRIP-specific variables. Since no changes occurred in government programs for U.S. dry peas and lentils during the period of estimation, only one set of U.S. area regressions was estimated using annual data during 1979/80 to 1992/93.

The regression equations were estimated using Zellner's seemingly unrelated regression technique. This technique allows for the fact that the error terms across the area equations may be correlated. By accounting for this cross-commodity correlation, the seemingly unrelated regression technique improves the efficiency of the regression estimates.

Equation Specification

Most analyses of area response assume that the area planted to a crop is a function of the expected revenues from that crop and the expected revenues from alternative crops.[1] This is because agricultural producers usually do not know in advance the prices they will receive for their crops or the yields that will occur from their harvest. The expected revenue is the product of the expected price and yield. For annual crops, such as dry peas and lentils, the expected price is normally assumed to be the average price received in the previous crop year.[2] Following Mielke and Weersink, who estimated area response functions for crops in Western Canada, the Commission assumed the

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[1] See Hossein Askari and John Thomas Cummings, Agricultural Supply Response: A Survey of the Econometric Evidence. (New York: Praeger Publishers, 1976).

[2] Mielke and Weersink, "The Impact of Support Programs on Crop Area Response," Canadian Journal of Agricultural Economics, vol. 38, No. 4 (Dec. 1990), pp. 871-885.

expected yield to be a simple average of actual yields over the previous 3 years.

Dynamic considerations are also considered in area response estimates. Numerous constraints exist that prevent farmers from adjusting crop area instantaneously in response to price and other incentives. Dynamic effects are normally accounted for by including lagged area in the response function. Assuming that expected revenues and lagged area are included in regression estimates of area response, then the relationship between area and expected revenue is estimated by:

$$AR_t = a + yBX_t + (1-y)AR_{t-1} + yE_t$$

where AR_t is crop area,

X_t = the ratio of the expected revenue of crop i to the expected revenue from alternate crop n,

yB = the short-run coefficient of adjustment,

$(1-y)$ = the speed of adjustment,

B = the long run coefficient, and

E_t = the error term associated with the regression equation.

Since B above is not observable, long-run coefficients are calculated by dividing the estimated regression coefficients by y.[3]

Lagged prices and yields are used in the calculation of the expected revenues, thus, the equations could be estimated singly using the ordinary least squares technique. However, Zellner's technique was used to capture the effect of any error correlation across equations.

Empirical Estimation

Canadian Regressions 1979/80 to 1990/91

Because dry peas and lentils are grown in long-term rotation with wheat in Canada, it was hypothesized that the relative revenues of dry peas and lentils to wheat would be important explanatory variables for dry pea and lentil area in Canada. Thus, the equations estimated were of the form:

$$CARP_t = a + (1-y)CARP_{t-1} + yB_1(CEPR_t/CEWR_t) + yE_t \qquad (1A)$$

$$CARL_t = a + (1-y)CARL_{t-1} + yB_1(CELR_t/CEWR_t) + B_2D87 + yE_t \qquad (1B)$$

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[3] See Robert S. Pindyck and Daniel L. Rubinfeld, Econometric Models and Economic Forecasts. 2nd ed. (New York: McGraw-Hill, 1981), pp. 215-217.

where CARP and CARL refer to Canadian area in dry peas and lentils, respectively; CEPR, CEWR, and CELR refer to the expected revenues from dry peas, wheat, and lentils in Canada, respectively; and t refers to the time period. A binary variable was included in the lentil equation to account for a surge in Canadian lentil area in 1987. This surge was most likely due to Canadian Government announcements at the end of 1986 that special payments for wheat under the Special Canadian Grains Program would not be in effect in the following year. This announcement may have resulted in a change in the relationship between crop area and revenue expected from lentils relative to wheat in that year. A surge in dry pea production did not occur, possibly due to shortages of seed in 1987.[4]

The results of these estimations are presented in table E-1. All of the estimated coefficients are statistically significant at the 99-percent level of confidence. The Durbin-Watson statistic (DW) and adjusted R^2 estimated for the regression equations are also shown in this table.[5]

U.S. Regressions 1979/80 to 1992/93

It was also hypothesized that the relative revenues of dry peas and lentils to wheat (and/or barley) would be important explanatory variables for dry pea and lentil area in the United States. However, preliminary regression estimation did not show the expected revenues from wheat or barley to be important explanatory variables for dry pea and lentil area. Thus, the equations estimated were of the form:

$$USARP_t = a + (1-y)USARP_{t-1} + yB_1(USEPR_t/USELR_t) + yE_t \qquad (2A)$$

$$USARL_t = a + (1-y)USARL_{t-1} + yB_1(USELR_t/PP_{t-1}) + yE_t \qquad (2B)$$

where USARP and USARL refer to U.S. area in dry peas and lentils, respectively; USEPR and USELR refer to the expected revenues from dry peas and lentils, respectively; and PP refers to the index of prices paid by U.S. producers for production inputs. The results of these estimations are also presented in table F-1.

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[4] USITC staff conversation with Dr. Alfred Slinkard, Senior Crop Research Scientist, Crop Development Centre, University of Saskatchewan, Jan. 1993.

[5] The Durbin-Watson statistic is usually reported with regressions that are estimated with time series data. Error terms from the time series observations could be correlated, thus giving rise to serial correlation which affects the efficiency of the regression estimates. Durbin-Watson statistics in the range of 1.5 to 2.5 usually indicate the absence of a serial correlation. The adjusted R^2 indicates the goodness-of-fit of the regression.

Canadian Regressions 1979/80 to 1992/93

A second set of Canadian area regressions was estimated to evaluate the extent to which the GRIP induced the planting of additional Canadian area in dry peas and lentils during 1991/92 and 1992/93, the only years for which GRIP data are available. To calculate the effect of price and revenue stabilization programs on production decisions, previous studies have incorporated the prices received and/or government payments made under the program into the price and revenue expectations for each covered crop. Additionally, Mielke and Weersink and Chavas and Holt[6] analyzed the possible effects of price and revenue support programs on the allocation of crop area to individual crops in the United States and Canada. Both of these studies argued that crop area decisions involve uncertainty about prices and yields. Thus, stabilization programs were found to affect area decisions by influencing: (1) the average expected returns from production of an individual crop, and (2) the riskiness of expected revenue.

The Commission attempted to use methodology developed in these two studies to analyze the production effect of the GRIP. To analyze the GRIP effect on expected revenues, the target revenues applicable to dry peas, lentil, and wheat production under the GRIP in 1991/92 and 1992/93 were used to measure expected revenues in those 2 crop years. Previous studies of the effects of price stabilization programs on crop area response have also included a risk variable to measure producer reactions to any reduction in the variability of expected producer returns.[7] Due to the lack of sufficient time series data on the GRIP, it was not possible for the Commission to calculate a risk variable based on changes in the variance of expected returns due to the GRIP.

Therefore, to account for any risk reduction effect, a binary variable, DGR, (1=1991/92 and 1992/93, = 0 otherwise) was included in the second set of Canadian regressions. The binary variable basically measures the average change in output during 1991/92 to 1992/93 that is not associated with the expected revenue effects of the GRIP. Thus, in addition to the risk reduction effect, the binary variable could account for any other benefit of the GRIP that cannot be measured through relative revenue incentives.

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[6] K.D. Mielke and Alfons Weersink, "The Impact of Support Programs on Crop Area Response," Canadian Journal of Agricultural Economics, vol. 38 (Dec. 1990), pp. 871-885, and Jean-Paul Chavas and Matthew T. Holt, "Acreage Decisions under Risk: The Case of Corn and Soybeans," American Journal of Agricultural Economics, vol. 72, No. 3 (Aug. 1990), pp. 529-538.

[7] A common measure of risk is the weighted sum of the squared deviations of actual and expected returns for the past three periods. This measure is then included in regression equations as an independent variable. See Mielke and Weersink, op. cit. and Chavas and Holt, op. cit.

The regression equations estimated were of the form:

$$CARP_t = a + (1-y)CARP_{t-1} + yB_1(CEPR_t/CEWR_t) + B_3DGR + yE_t \qquad (3A)$$

$$CARL_t = a + (1-y)CARL_{t-1} + yB_1(CELR_t/CEWR_t) + B_2D87 + B_3DGR + yE_t \qquad (3B)$$

where all variables are defined previously.

It was hypothesized that the coefficient on DGR would be positive because, prior to the GRIP, there were no revenue stabilization programs for dry peas and lentils; wheat production, on the other hand, benefited from the Western Grains Stabilization Act. Thus, a possible effect of the GRIP is to reduce the revenue uncertainty that had been associated with dry peas and lentils relative to wheat in the earlier 1979/80 to 1990/91 period.

The results of these regressions are shown in appendix table F-1. The estimated coefficients on the binary variables indicate that the GRIP resulted in an increase of 67,924 hectares of dry peas and 97,842 hectares of lentils, on average during 1991/92 to 1992/93, holding the relative revenue effects constant. These figures translate into a 55-percent increase in Canadian hectares of dry peas over the 1990/91 level, and an increase of 73 percent for lentils. In the lentil area equation, the larger coefficient estimated for DGR relative to the coefficient estimated for dry peas is consistent with other studies that found that lentil yields are highly variable in Canada, absolutely and in relation to other crops.[8]

[8] See Douglas Young and Giulio Malorgio, Lentils: Market Concerns for North American Growers. Research Bulletin XB1003, Washington State University, Pullman, Washington, 1988.

Appendix table F-1
Dry peas and lentils: Estimated regression equation for production area in the United States and Canada, by country and crop, crop years 1979/80 to 1992/93

1. Canadian estimates 1979/80 to 1990/91

1A. Dry Peas:

$$CARP_t = \underset{(-3.79)}{-102,186^{*a}} + \underset{(5.71)}{.572^{*}CARP_{t-1}} + \underset{(5.81)}{137,450^{*}(CEPR_t/CEWR_t)}$$

$\bar{R}^2$=.89 DW=2.40

1B. Lentils:

$$CARL_t = \underset{(-1.44)}{-27,893} + \underset{(5.94)}{.533^{*}CARL_{t-1}} + \underset{(3.76)}{51,206^{*}(CELR_tCEWR_t)} + \underset{(3.34)}{69,923^{*}D87}$$

$\bar{R}^2$=.91 DW=1.52

2. U.S. estimates 1979/80 to 1992/93

2A. Dry Peas:

$$USARP_t = \underset{(2.17)}{32,880} + \underset{(.63)}{.125\ USARP_{t-1}} + \underset{(3.52)}{29,105^{*}(USEPR_t/USELR_t)}$$

$\bar{R}^2$ = .41 DW = 2.43

2B. Lentils:

$$USARL_t = \underset{(-.59)}{-5,896} + \underset{(3.97)}{.558^{*}USARL_{t-1}} + \underset{(4.82)}{96.0^{*}(USELR_t/PP_{t-1})}$$

$\bar{R}^2$ = .72 DW = 2.28

3. Canadian estimates 1979/80 to 1992/93

3A. Dry Peas:

$$CARP_t = \underset{(-3.93)}{-102,804^{*}} + \underset{(6.18)}{.588^{*}CARP_{t-1}} + \underset{(5.96)}{136,550^{*}(CEPR_t/CEWR_t)} + \underset{(3.53)}{67,964DGR^{*}}$$

$\bar{R}^2$=.91 DW=2.40

3B. Lentils:

$$CARL_t = \underset{(-1.49)}{-27,207} + \underset{(6.55)}{.521^{*}CARL_{t-1}} + \underset{(3.98)}{51,415^{*}(CELR_t/CEWR_t)} + \underset{(3.56)}{70,629^{*}D87}$$

$$+ \underset{(6.01)}{97,842^{*}DGR}$$ $\bar{R}^2$=.97 DW = 1.71

[a] = t-values in parentheses.
* = statistically significant at the 1-percent level or greater.
** = statistically significant at the 5-percent level.

Source: Staff of the U.S. International Trade Commission.

Variable Definitions and Sources

Dependent Variables

CARP: Annual dry pea area harvested in Manitoba, Saskatchewan, and Alberta, Canada in hectares. Data for 1978-81 are from Statistics Canada, Canada Yearbook; the data for 1982-92 were obtained from Saskatchewan Agriculture and Food, Specialty Crop Report, 1992.

CARL: Annual lentil area harvested in Manitoba, Saskatchewan, and Alberta, Canada in hectares. The data for 1978-81 were obtained from (1) Statistics Canada, Crop Reporting Unit, Ottawa, Canada; (2) personal communication with Douglas Young; and (3) Douglas Young and Giulio Malorgio, Lentils: Market Concerns for North American Growers, Research Bulletin XB1003, College of Agriculture and Home Economics Research Center, Washington State University, Pullman, Washington, 1988. The data for 1982-92 were obtained from Saskatchewan Agriculture and Food, Specialty Crop Report, 1992.

USARP: Annual dry pea area harvested in Washington State, Idaho, and Oregon in hectares. The data were obtained from the American Dry Pea and Lentil Association.

USARL: Annual lentil area harvested in Washington State, Idaho, and Oregon in hectares. The data were obtained from the American Dry Pea and Lentil Association.

Independent Variables

CEPR: Expected dry pea revenue in Canada in Can$ per hectare. This variable is calculated from the product of the average farm price of dry peas received in the previous year and the average yield obtained over the past 3 years. The dry pea price for 1982-91 is the Saskatchewan average price for all grades as reported in Saskatchewan Agriculture and Food, Specialty Crop Report, 1992; the price in 1978-81 is the Saskatchewan average price average of all grades as reported by Saskatchewan Agriculture and Food. The dry pea yield is derived from the same sources as the Canadian dry pea area.

CEPW: Expected wheat revenue in Canada in Can$ per hectare. This variable is calculated in the same manner as expected dry pea revenue. The Canadian wheat price is the average price received at Saskatoon as reported in the joint prehearing submission of the Canadian Special Crops Association and the Western Canadian Pulse Growers Association, November 1992, as compiled by the Canada Grains Council and derived from the Annual Reports of the Canadian Wheat Board. The wheat yield is the average Canadian wheat yield, excluding durum wheat, in the Western Canadian Provinces as reported by the Canadian Wheat Board.

CELR: Expected lentil revenue in Canada in Can$ per hectare. This variable is calculated in the same manner as expected dry pea and wheat revenue. The Canadian lentil price is the Saskatchewan average farm price for all grades as reported in the same sources as the Canadian dry pea price. The

Canadian lentil yield is reported in the same manner and from the same sources as the Canadian lentil area.

D87: A binary variable to account for the relatively large increase in Canadian lentil area, 1=1987/88, = 0 all other years.

DGR: A binary variable to take account of the introduction of the GRIP, 1= 1991/92 and 1992/93, = 0 all other years.

USEPR: Expected dry pea revenue in the United States in US$ per hectare. As in the Canadian regressions, this variable is calculated from the product of the average farm price of dry peas received in the previous year and the average yield obtained over the past 3 years. The dry pea price is the average price over the September to August marketing period obtained from the American Dry Pea and Lentil Association and based on statistics from the Market News Service, Greeley, CO. The dry pea yield was obtained from the same data sources as the U.S. dry pea area.

USELR: Expected lentil revenue in the United States in US$ per hectare. This variable is calculated in the same manner as dry pea revenue. The dry pea price is the average price over the September to August marketing period obtained from the American Dry Pea and Lentil Association. The lentil yield was obtained from the same source as the U.S. lentil area.

PP: The index of prices paid by farmers in the United States is from the Economic Research Service, U.S. Department of Agriculture, January 1993.

Elasticities

Short-run area response elasticities, which measure the percentage change in crop area in dry peas and lentils for a given percentage change in expected revenues, can be calculated from the regression coefficients using the following formula:

$$e_i = yB_i * \overline{AR_i} / \overline{X_i}$$

where e represents the area response elasticity for the i^{th} crop (dry peas or lentils), yB is the short-run coefficient estimated for the revenue variable for the i^{th} crop, AR is the average crop area for the i^{th} crop during the estimation period, and X is the average revenue ratio for the i^{th} crop during the estimation period. The long-run elasticity can be obtained by dividing the regression coefficients by (1-y) as discussed earlier.

The calculated elasticities, which measure the percentage change in crop area for a percentage change in the revenue variable included in each regression equation, are shown in the following tabulation:

Country/Crop	Time Frame	
	Short run	Long run
United States		
Dry peas	.40	.45
Lentils	.60	1.40
Canada		
Dry peas	1.40	3.40
Lentils	.80	1.80

The Canadian elasticities measure the percentage change in Canadian crop in dry peas and lentils for a 1-percent change in the ratio of expected dry pea to wheat revenues and expected lentil to wheat revenues, respectively. The U.S. elasticity for dry peas measures the percentage change in U.S. crop area in dry peas for a 1-percent change in the ratio of expected dry pea to lentil revenues; the U.S. lentil elasticity measures the percentage change in U.S. area in lentils for a 1-percent change in the ratio of expected lentil revenues to the index of prices paid for agricultural inputs, lagged one year. The elasticities can be used to estimate the impact of a price change on dry pea and lentil area by holding all other factors (i.e., yield, other prices) constant. The short-run elasticities measure the impact of a price or revenue change during the first year, while the long-run elasticities measure the impact after producers have fully adjusted to the price or revenue change.

Calculation of GRIP Production Effects

To calculate the effect of price and revenue stabilization programs on production decisions, most studies incorporate government payments made under the program into the price and revenue expectations for each covered crop. Following this approach, the Commission first calculated the GRIP effect on expected revenues during 1991/92 to 1992/93 by estimating the difference between the GRIP guaranteed target revenues and the market revenues that producers would have otherwise expected for dry peas, lentils, and wheat in the absence of the GRIP. As noted previously, the expected market revenues are based on the lagged producer prices and average yields in the 3 previous years. The target revenues were obtained using the coverage levels and moving average index prices (IMAPs) that were in effect for dry peas and lentils during 1991/92 to 1992/93 and 10-year average yields. The expected and target revenues for dry peas, lentils, and wheat are shown in the following tabulation (in Can$ per hectare):

	1991/92		1992/93	
Crop	Expected revenue	Target revenue	Expected revenue	Target revenue
Dry peas.....	283.1	361.6	319.1	354.6
Lentils.....	434.1	515.6	412.6	499.1
Wheat.....	238.0	286.5	278.2	285.6

The "revenue or incentive (RI) effect" of the GRIP can be calculated as the difference between the producer's expected revenue and the target revenue established by the GRIP in 1991/92 and 1992/93. Because relative price relationships with wheat are important, the revenue effect was estimated by the difference between the ratio of the expected revenues between dry peas or lentils and wheat without the GRIP and the ratio of the expected revenues under the GRIP.

Using this methodology, the target revenues set under the GRIP during 1991/92 to 1992/93 increased the ratio of expected revenue of dry peas to wheat by 7 percent and the ratio of expected revenue of lentils to wheat by 8 percent. The estimated coefficient from the binary variable GRIP variable, DGR, in equations 3A and 3B were assumed to measure the risk reduction effects of the GRIP.

APPENDIX G

Economic Model Used in GRIP Analysis

The Basic Approach

The economic model used to evaluate the effect of the Gross Revenue Insurance Program (GRIP) in third-country markets focuses on the importing country's market and the demand in this market for dry peas and lentils imported from Canada and the United States. Products imported from the United States and Canada are assumed to be imperfect substitutes.[1] It is further assumed that the market in the importing country is competitive, so that individual firms do not have control over prices.

Economic Effects of Production Assistance

The process by which increased Canadian production under the GRIP impacts U.S. producers is as follows. First, production assistance under the GRIP causes Canadian production of dry peas and lentils to increase. This increased production results in a decline in the price of Canadian dry peas and lentils in the importing country's market, which induces consumers of like products (U.S. products) to substitute toward the relatively cheaper Canadian product. This, in turn, results in a decline in the revenue received by U.S. growers of dry peas and lentils.

The extent to which the production assistance lowers the price of Canadian output in the importing country market depends on a number of factors. These include the level and extent of the assistance, the elasticity of supply in Canada, and the price responsiveness of demand in both Canada and the importing country market.

The decline in the Canadian price will result in reduced demand for competing imports from other sources. The extent of the reduction in demand depends on the magnitude of the price decline for the Canadian product and on the degree of substitutability between the Canadian product and products from other sources (whether domestically produced or imported from the United States). The greater the degree of substitutability, the larger the decline in the demand for the substitute products.

Technical Description of the Model

The model segments the importing country market into three categories: Canadian imports, imports from the United States, and a domestically produced like product (which includes products traded among the importing countries).

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[1] See P. Armington, "A Theory of Demand for Products Distinguished by Place of Production," IMF Staff Papers 16, 1969, 159-178, for further discussion of the imperfect substitutes approach.

Model Parameters

The demand side of the model is characterized by the elasticity of demand for the aggregate product, the demand elasticity for the Canadian product in the foreign market, and the substitution elasticities for the three products.

1. η: elasticity of aggregate demand for the product.

2. η^*_u : elasticity of demand for the Canadian product in the foreign market.

3. $\sigma_{fu}, \sigma_{du}, \sigma_{df}$: elasticities of substitution between imports from the Canada, U.S. and the domestic product.

The supply side of the market is described by a calculated assistance rate and the supply elasticities of the products.

4. m: Margin of production assistance.

5. ϵ_d: elasticity of domestic good supply for the importing market.

6. ϵ_f: elasticity of supply for the U.S. and other suppliers.

7. ϵ_u: elasticity of supply for the Canadian product.

The product market is described by market shares for the three types of product, and the share of the Canadian product going to the importing market.

8. v_d, v_u, v_f: market shares of the domestic, Canadian, and U.S. suppliers.

9. λ_u: share of Canadian production going to the importing market in quantity terms.

Parameters Calculated in the Model

The demand for the products from various sources is described by own-price and cross-price elasticities of demand, which quantify the response of demand for each product to changes in the prices of itself and its substitutes. These are derived from the substitution elasticities and aggregate demand elasticities defined above.

1. $\eta_{du}, \eta_{ud}, \eta_{fu}, \eta_{uf}, \eta_{df}, \eta_{fd}$: cross-price elasticities of demand for the domestic product with respect to changes in the price of the Canadian import product (du); of demand for the Canadian import product with respect to changes in the price of the domestic product (ud); of demand for the U.S. import product with respect to changes in the price of the Canadian import product (fu);, etc. Each is calculated as the difference between the elasticity of substitution between the products and the aggregate demand

elasticity multiplied by the market share of the product whose price is changed. For example,

$$\eta_{du} = v_u (\sigma_{du} - \eta).$$

2. η_d, η_f, η_u: elasticities of demand for the domestic, Canadian, and U.S. import in the importing market. As an example,

$$\eta_d = v_d\eta - v_u\sigma_{du} - v_f\sigma_{df}.$$

Canadian producers are further characterized by the margin of production assistance for goods sold in all markets and in the importing market alone. As generally defined, this margin represents the assistance for production destined for all markets.[2] The effect of the assistance for production destined for the importing market in question must be calculated from an estimate of the demand elasticity for the Canadian product sold elsewhere (η_u^*) and the proportion of the product sold in the importing market (λ_u).

Effect of a Decline in the Price of the Canadian Product

If the price of the Canadian import declines by p_u percent, holding other product prices and output quantities fixed, then imports from the United States and other foreign suppliers would have a surplus of $p_u\eta_{fu}$, the price change multiplied by its effect on imports. If the United States and other suppliers respond by lowering their prices by p_f percent, then output will be reduced by $p_f\epsilon_f$, while demand is increased by $p_f\eta_f$ percent. If the domestic product price is assumed fixed, the price of the product imported from the United States and other suppliers will decrease only enough to eliminate the surplus supply created by the increased Canadian supply; $p_f(\epsilon_f-\eta_f) = p_u\eta_{fu}$. If the domestic price varies, then changes in both domestic and Canadian imports must also be accounted for:

Effects of Production Assistance on Prices

The preceding section described the effects of a price change. If the production assistance provides an incentive of s_u percent for increased Canadian production, then (holding prices fixed in the import market) Canadian producers would increase output to that market by $s_u\epsilon_u$ percent. This creates a surplus that must be eliminated by lowering prices by p_u percent. This, in turn, raises demand by $p_u\eta_u$ and causes Canadian producers to reduce output by $p_u\epsilon_u$ percent. The Canadian import price will fall by the amount necessary to eliminate the surplus supply created by the production assistance: $p_u(\epsilon_u-\eta_u)=s_u\epsilon_u$. Rearranging, we have the percentage decrease in the price of Canadian imports resulting from a 1-percent increase in the production assistance:

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[2] See J.F. Francois, "Countervailing the Effects of Subsidies: An Economic Analysis," Journal of World Trade 26:1, February 1992, 5-13.

$p_u(\epsilon_u - \eta_u) = s_u\epsilon_u$. Rearranging, we have the percentage decrease in the price of Canadian imports resulting from a 1-percent increase in the production assistance:

The new equilibrium (after the production assistance) may be found by simultaneously solving the three equations immediately above for p_u, p_d, and p_f. The percentage reduction in the output of the U.S. suppliers is found by calculating $q_f = p_f\epsilon_f$, where q represents percentage changes in quantity.

Parameter Values

The parameter values used in the economic model for dry peas and lentils are shown in appendix tables G-1 and G-2. The base year of the economic model is 1990/91. The market share parameter values were calculated from trade data for 1990/91. The market share parameters for dry peas are calculated for seven countries, which are treated as an aggregate "importing country": Colombia, Venezuela, Algeria, Taiwan, Japan, commercial sales only to Peru, and commercial dry green pea sales only to India. The importing country group for lentils is comprised of Colombia, Venezuela, Algeria, the European Community, and commercial sales only to Peru. The Canadian and U.S. supply elasticities are the long-run supply elasticities estimated for dry peas and lentils from the regression analysis discussed in appendix F. The production assistance parameters are also those discussed in appendix F. The remaining parameters are the Commission's "best guess" estimates.

Table G-1
Dry peas: Parameter assumptions for the economic model

Parameter	
Market share:	
Canadian product	20.2%
Domestic product	67.7%
Share of Canadian product sold in this market	56.2%
Supply elasticities:	
Canada	3.4
United States (and others)	0.5
Substitution elasticities	3.5
Aggregate demand elasticity	-0.5
Calculated assistance margin[1]	7%, 23%

[1] The assistance margins are calculated from the revenue and risk effects of the GRIP. Because the risk effect was calculated from the binary variable, it is entered into the model by dividing the increase in hectares due to risk reduction by the long-run Canadian supply elasticity.

Source: Estimated by the staff of the U.S. International Trade Commission.

Table G-2.
Lentils: Parameter assumptions for the economic model

Parameter	
Market share:	
Canadian product	44.1%
Domestic product	46.8%
Share of Canadian product sold in this market	82.9%
Supply elasticities:	
Canada	1.8
United States (and others)	1.5
Substitution elasticities	1.5
Aggregate demand elasticity	-0.5
Calculated Assistance margin[1]	8%, 48%

[1] The assistance margins are calculated from the revenue and risk effects of the GRIP. Because the risk effect was calculated from the binary variable, it is entered into the model by dividing the increase in hectares due to risk reduction by the long-run Canadian supply elasticity.

Source: Estimated by the staff of the U.S. International Trade Commission.

APPENDIX H

Costs of Production for Dry Peas and Lentils
in the United States and Canada

Costs of Production

Costs of producing dry peas and lentils in the United States and Canada were estimated using data reported in crop enterprise budgets from both countries. A summary of costs, taken from crop enterprise budgets prepared by research associates in the Department of Agricultural Economics at Washington State University (WSU) and the University of Idaho (UI), are presented in tables H-1 through H-3 and H-6 through H-8. The WSU studies provided budgeted costs, itemized on a per-acre basis, for dry peas and lentils planted in a 3-year wheat, barley, and dry pea or lentil rotation in Eastern Whitman County, Washington. The UI studies provided budgeted costs for dry peas and lentils, planted in a 3-year wheat, barley, and dry pea or lentil rotation, in Latah County, Idaho. Production costs in Washington and Idaho are similar but are not directly comparable. Each study is for a specific production area with different climatic factors (i.e., annual amounts of rainfall) and topographic conditions (i.e., elevation and soil conditions). Furthermore, each study is based on different underlying assumptions.

Crop cost budgets, prepared by farm management specialists of the Economics Branch of Manitoba Agriculture and Saskatchewan Agriculture and Food, are presented in tables H-4 and H-5. These studies represent average estimates of production costs and are not directly comparable. Each study is for a specific production area with different climatic factors (i.e., annual amounts of rainfall) and topographic conditions (i.e., elevation and soil conditions). Furthermore, each study is based on different underlying assumptions.

Dry peas

United States

In 1992, variable costs were 56 percent of estimated total production costs for dry pea farmers in Washington state (table H-1). The costs of chemicals and their application, machinery operation and upkeep costs, and the cost of seed, together, accounted for four-fifths of total variable costs. The bulk of fixed costs were accounted for by the cost of machinery and net rent for land. Total variable costs for dry pea producers in Idaho accounted for 55 percent of estimated total production costs in 1992, with the costs of chemicals and their application, machinery operation and upkeep costs, and seed costs, together, accounting for about four-fifths of total variable costs (table H-2). As with producers in Washington state, the bulk of fixed costs for producers in Idaho included the costs of machinery and net rent for land. Differences in costs of individual expense items between farmers in Washington state and Idaho may be attributed to such factors as the difference in seeding rates, the greater use of chemicals, and a greater share of producers in Washington state renting land as opposed to owning it.

In an effort to evaluate changes in estimated production costs in recent years, crop enterprise budgets of estimated costs for dry pea producers in Idaho were compared for various years since 1985. Since 1985, total variable

Table H-1
Dry peas: Budgeted per-hectare production costs[1] in Washington State, 1992

(In US$)

Item	Amount
Production costs--	
Variable:	
Chemicals and application	113
Machinery operation and upkeep	91
Seed	89
Labor	36
Interest on operating capital	9
Other variable costs	23
Total variable costs	361
Fixed:	
Machinery	171
Net rent for land	100
Other fixed costs	10
Total fixed costs	281
Total production costs	642

[1] Based on a 3-year wheat, barley, and dry pea rotation.

Note.--Data were based on detailed descriptions of farming operations and associated costs gathered from most dry pea producing farms and developed on the following assumptions: an average farm size of 516 hectares; yields based on farmer surveys, research trials, and consultations with university scientists; labor costs estimated at $10 per hour; fire and hail insurance based on a premium of $1.35 per $100 of insurance; interest costs on operating capital and machinery based on an effective annual rate of 9.5 percent; overhead costs estimated at 5 percent of variable costs and including such items as shop costs, utilities, telephone, legal, and accounting fees; a rate of $9.88 per hectare for custom aerial pesticide application; and estimated land costs using a 'net rent' concept. Net rent is an opportunity cost for the owner-operator, but for the tenant farmer represents what the tenant must pay the land owner for using the land. Net rent is calculated as one-fourth the expected yield times the expected price, minus one-fourth the insurance expense, one-fourth the fertilizer expense, and the land tax.

Source: Compiled by the staff of the U.S. International Trade Commission from data published in Farm Business Management Report, 1992 Crop Enterprise Budget--Eastern Whitman County, Washington, Kathleen Painter, et al., Department of Agricultural Economics, Washington State University, Pullman, WA, publication No. EB1437 (Revised), April 1992.

Table H-2
Dry peas: Budgeted per-hectare production costs[1] in Idaho, 1992

(In US$)

Item	Amount
Production costs--	
Variable costs:	
Chemicals and application	87
Machinery operation and upkeep	79
Seed	65
Labor	43
Interest on operating capital	8
Other variable costs	4
Total variable costs	286
Fixed costs--	
Machinery	148
Net rent for land	74
Other fixed costs	9
Total fixed costs	231
Total production costs	517

[1] Based on a 3-year wheat, barley, and dry pea rotation.

Note.--Data were based on detailed descriptions of farming operations and associated costs gathered from dry pea producing farms and developed on the following assumptions: an average farm size of 516 hectares, with 135 hectares in spring peas; yields based on farmer surveys; labor costs estimated at $8.75 per hour for machinery operation and $6.25 per hour for other work, including an additional 25 percent of base wage for worker compensation, unemployment insurance, and other labor overhead expenses; interest costs on operating capital, based on a nominal rate of 11 percent, charged from the time of input until the month of harvest; interest costs on intermediate term capital, to finance machinery and equipment, based on a nominal rate of 12 percent; overhead costs of 2.5 percent of all cash expenses to cover such items as office and shop expenses and utilities; a rate of $12.35 per hectare for custom aerial pesticide application; and estimated land costs using a 'crop share' basis, wherein the landowner pays one-fourth of the fertilizer, seed, and chemical costs in exchange for one fourth of the crop produced.

Source: Compiled by the staff of the U.S. International Trade Commission from data published in 1991-92 Northern Idaho Crop Enterprise Budgets-District 1, Robert Smathers, Department of Agricultural Economics and Rural Sociology, University of Idaho, Moscow, ID, publication No. MS 101-1 (Revised), February 1992.

costs, as a share of total production costs, fluctuated between 53 and 65 percent (table H-3). Total fixed costs, as a share of total estimated production costs, varied between 35 and 47 percent and have trended upward since 1985.

Table H-3
Dry peas: Budgeted per-hectare production costs in Idaho, 1985, 1987, 1990/91, and 1991/92

(In US$)

Item	1985	1987	1990/91	1991/92
Production costs:				
Variable	261	320	263	286
Fixed	219	173	235	231
Total	480	493	499	517

Source: Compiled by the staff of the U.S. International Trade Commission from data published in various editions of Northern Idaho Crop Enterprise Budgets-District 1, Robert Smathers, Department of Agricultural Economics and Rural Sociology, University of Idaho, Moscow, ID.

Canada

In 1992, operating costs were nearly two-thirds of estimated total production costs for dry pea farmers in Manitoba (table H-4). The costs of chemicals and their application, the cost of seed, and machinery operation and upkeep costs, together, accounted for two-thirds of total operating costs. The bulk of fixed costs were made up of land investment costs. Total operating costs for dry pea producers in Saskatchewan amounted to 78 percent of estimated total production costs in 1992, with the costs of chemicals and their application, seed costs, and the costs of machinery operation and upkeep, together accounting for about four-fifths of total operating costs (table H-5). Unlike producers in Manitoba, the bulk of fixed costs for producers in Saskatchewan was depreciation. As with producers in the United States, differences in costs of individual expense items between farmers in Manitoba and Saskatchewan may be attributed to such factors as the difference in seeding rates and the greater use of chemicals.

Table H-4
Dry peas: Budgeted per-hectare production costs[1] for Manitoba, 1992

(In Can$)

Item	Amount
Production costs--	
Operating costs:	
Chemicals and application	70
Seed	66
Machinery operation and upkeep	51
Labor	30
Interest on operating capital	12
Other operating costs	58
Total operating costs	286
Fixed costs:	
Land investment costs	104
Machinery investment and depreciation	56
Other fixed costs	7
Total fixed costs	166
Total production costs	453

[1] Does not include estimated costs for management or premiums for the GRIP.

Note.--Data on estimated costs for peas were developed on the following assumptions: seed costs estimated at Can$10.50 per bushel for 6.2 bushels per hectare; fertilizer rates estimated at Can$0.21 per lb. of phosphorous, Can$0.11 per lb. of potash, and Can$0.22 per lb. of sulfur; chemical applications of Can$4.94 per hectare for post-emergence broadleaf herbicides and Can$30.87 per hectare for wild oats/millet herbicides; land taxes estimated at Can$16.05 per hectare; interest charges on operating costs calculated at 10 percent for 6 months; land and machinery investment costs estimated at 8 percent return on investment as opportunity cost; depreciation assumed at 10 percent with no salvage value; farm storage requirements, based on 74 bushels per hectare, of Can$1.00 per bushel for 75 percent of the storage and Can$1.25 per bushel for 25 percent aerated storage, with a 5 percent depreciation cost and 8 percent investment cost; labor estimated at Can$8.00 per hour for 3.7 hours per hectare.

Source: Compiled by the staff of the U.S. International Trade Commission from data published in Farm Planning Guide--1992 Crop Estimates, Manitoba Agriculture, Manitoba, January 1992.

Table H-5
Dry peas: Budgeted per-hectare production costs[1] in Saskatchewan, 1992

(In Can$)

Item	Amount
Production costs--	
Operating costs:	
Chemicals and application	63
Seed	46
Machinery operation and upkeep	41
Labor	12
Interest on operating capital	8
Other operating costs	6
Total operating costs	176
Fixed costs:	
Depreciation	41
Other fixed costs	12
Total fixed costs	53
Total production costs	229

[1] Does not include estimated costs for management or premiums for the GRIP.

Source: Compiled by the staff of the U.S. International Trade Commission from data published in Cost of Producing Grain Crops in Saskatchewan, Saskatchewan Agriculture and Food, Saskatchewan, 1992.

Lentils

United States

Data on budgeted costs for U.S. lentil production are shown in tables H-6 through H-8. These data represent a 3-year crop rotation which includes 1 year of wheat followed by 1 year of barley then 1 year of red lentils. In 1992, variable costs accounted for 57 percent of estimated total production costs for lentil farmers in Washington state (table H-6). The costs of chemicals and their application, machinery operation and upkeep costs, and the cost of seed, together, accounted for about three-fourths of total variable costs. The bulk of fixed costs were accounted for by net rent for land and the cost of machinery.

Total variable costs for lentil producers in Idaho accounted for only 46 percent of estimated total production costs in 1992, with the costs of chemicals and their application, machinery operation and upkeep costs, and labor costs, together accounting for 78 percent of total variable costs (table H-7). As with producers in Washington state, the bulk of fixed costs for producers in Idaho included the costs of machinery and net rent for land. Differences in costs of individual expense items between farmers in Washington state and Idaho may be attributed to such factors as the difference in seeding rates, the greater use of chemicals, and a greater share of producers in Washington state renting land as opposed to owning it.

Crop enterprise budgets of estimated costs for lentil producers in Idaho were compared for various years since 1985. Since 1985, total fixed costs, as a share of total production costs, fluctuated between 54 and 60 percent (table H-8). Total variable costs, as a share of total estimated production costs, varied between 40 and 46 percent but have trended downward prior to 1991-92.

Table H-6
Lentils: Budgeted per-hectare production costs[1] in Washington State, 1992

(In US$)

Item	Amount
Production costs--	
Variable costs:	
Chemicals and application	94
Machinery operation and upkeep	48
Seed	39
Labor	32
Interest on operating capital	7
Other variable costs	17
Total variable costs	239
Fixed costs:	
Net rent for land	100
Machinery	74
Other fixed costs	7
Total fixed costs	181
Total production costs	420

[1] Based on a 3-year wheat, barley, and red lentil rotation.

Note.--Data were based on detailed descriptions of farming operations and associated costs gathered from most lentil producing farms and developed on the following assumptions: an average farm size of 516 hectares; yields based on farmer surveys, research trials, and consultations with university scientists; labor costs estimated at $10 per hour; fire and hail insurance based on a premium of $1.35 per $100 of crop insurance; interest costs on operating capital and machinery based on an effective annual rate of 9.5 percent; overhead costs estimated at 5 percent of variable costs and including such items as shop costs, utilities, telephone, legal, and accounting fees; a rate of $9.88 per hectare for custom aerial pesticide application; and estimated land costs using a 'net rent' concept. Net rent is an opportunity cost for the owner-operator, but for the tenant farmer represents what the tenant must pay the land owner for using the land. Net rent is calculated as one-fourth the expected yield times the expected price, minus one-fourth the insurance expense, one-fourth the fertilizer expense, and the land tax.

Source: Compiled by the staff of the U.S. International Trade Commission from data presented in Red Lentils: International Production and Trade, publication No. EB 1662, Washington State University, Pullman, WA, April 1992.

Table H-7
Lentils: Budgeted per-hectare production costs[1] in Idaho, 1991-92

(In US$)

Item	Amount
Production costs--	
Variable costs:	
Machinery operation and upkeep	91
Chemicals and application	75
Seed	37
Labor	50
Interest on operating capital	7
Other variable costs	18
Total variable costs	279
Fixed costs--	
Machinery	191
Net rent for land	128
Other fixed costs	9
Total fixed costs	329
Total costs	608

[1] Based on a wheat, barley, and lentil rotation.

Note.--Data were based on detailed descriptions of farming operations and associated costs gathered from lentil producing farms and developed on the following assumptions: an average farm size of 516 hectares, with 135 hectares in spring peas; yields based on farmer surveys; labor costs estimated at US$8.75 per hour for machinery operation and US$6.25 per hour for other work, including an additional 25 percent of base wage for worker compensation, unemployment insurance, and other labor overhead expenses; interest costs on operating capital, based on a nominal rate of 11 percent, charged from the time of input until the month of harvest; interest costs on intermediate term capital, to finance machinery and equipment, based on a nominal rate of 12 percent; overhead costs of 2.5 percent of all cash expenses to cover such items as office and shop expenses and utilities; a rate of US$12.35 per hectare for custom aerial pesticide application; and estimated land costs using a 'crop share' basis, wherein the landowner pays one-fourth of the fertilizer, seed, and chemical costs in exchange for one fourth of the crop produced.

Source: Compiled by the staff of the U.S. International Trade Commission from data published in 1991-92 Northern Idaho Crop Enterprise Budgets-District 1, Robert Smathers, Department of Agricultural Economics and Rural Sociology, University of Idaho, Moscow, ID, publication No. MS 101-1 (Revised), February 1992.

Table H-8
Lentils: Budgeted per-hectare production costs in Idaho, 1985, 1987, 1990/91, and 1991/92

(In US$)

Item	1985	1987	1990/91	1991/92
Production costs:				
Variable	186	164	172	279
Fixed	255	232	262	329
Total	440	396	434	608

Source: Compiled by the staff of the U.S. International Trade Commission from data published in various editions of Northern Idaho Crop Enterprise Budgets-District 1, Robert Smathers, Department of Agricultural Economics and Rural Sociology, University of Idaho, Moscow, ID.

Canada

Crop cost budgets for lentils, prepared by farm management specialists of the Economics Branch of Manitoba Agriculture and Saskatchewan Agriculture and Food, are presented in tables H-9 and H-10. As with dry pea production, these studies represent average estimates of production costs and are not directly comparable. Each study is for a specific production area with different climatic factors (annual amounts of rainfall) and topographic conditions (elevation and soil conditions). Furthermore, each study is based on different underlying assumptions.

In 1992, operating costs were 70 percent of estimated total production costs for lentil farmers in Manitoba (table H-9). The costs of chemicals and their application, seed costs, and machinery operation and upkeep costs, together, accounted for 63 percent of total operating costs. The bulk of fixed costs were land investment costs and the costs of machinery investment and depreciation.

Total operating costs for lentil producers in Saskatchewan amounted to 77 percent of estimated total production costs in 1992, with the costs of chemicals and their application, seed costs, and the costs of machinery operation and upkeep, together accounting for 69 percent of total operating costs (table H-10). As with producers in Manitoba, the largest single item of fixed costs for producers in Saskatchewan was depreciation. As with producers in the United States, differences in costs of individual expense items between farmers in Manitoba and Saskatchewan may be attributed to such factors as the difference in seeding rates and the greater use of chemicals.