Bi-weekly Bulletin

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DRY BEANS: SITUATION AND OUTLOOK

Dry beans are the fourth largest special crop produced in Canada, after dry peas, lentils, and chick peas. Production increased during the 1990s and is expected to increase further during the next ten years with the increased diversification of Canadian crop production. Although Canada produces only about 1.5% of the world's dry beans, it is the fifth largest exporter of dry beans in the world, accounting for nearly 10% of world exports. The value of Canadian exports has increased from $96.2 million in 1996-1997, to $188.5 million in 1999-2000. This issue of the *Bi-weekly Bulletin* examines the situation and outlook for dry beans.

BACKGROUND

On a world level, the term dry beans refers to several categories of beans. Dry beans produced in North and South America, Europe and Africa belong mainly to the genus *Phaseolus*, which is of American origin. Most of the beans in the genus *Phaseolus* belong to the species vulgaris, widely known as common bean. This species includes the classes of beans produced in Canada, such as white pea, pinto, black, dark and light red kidney, cranberry, small red, Great Northern, pink, brown and white kidney. The other significant species under the genus *Phaseolus* is *lunatus*, which includes lima beans. In Asia and Australia, most dry beans produced belong to the genus *Vigna,* which is of Asian origin. Common members of *Vigna* include azuki beans *(Vigna angularis)* and mung beans *(Vigna radiata)*. A small amount of azuki beans are produced in Canada. In addition, in some countries other crops are included under dry beans. An example of this is the inclusion of garbanzo beans under dry beans in the U.S. Garbanzo beans are actually kabuli chick peas and are included with chick peas in Canada and other producing countries.

Agronomics

Dry beans are a leguminous crop and are able to fix their own nitrogen, therefore the seed must be inoculated. However, they will not fix as much nitrogen as dry peas, lentils, and fababeans. Dry beans are very sensitive to frost; therefore seeding should be done when the risk of killing spring frost is over and soil temperature is greater than 10 degrees Celsius. They require 90-110 frost free days, depending on bean class and variety. Dry beans adapt to a wide range of soils, but do best in medium textured soils such as light loams, sandy loams and silt loams that offer good water infiltration and good water holding capacity, combined with good internal drainage. A crop rotation pattern over three to four years is recommended to reduce disease, improve soil fertility and help in overall weed control. Dry beans fit well in crop rotations with crops such as cereal grains and corn.

Combining at low cylinder speed (150-300 revolutions per minute), seed moisture of 18% and a wide concave should reduce seed splitting and seed coat cracking. Dry beans can safely be stored at 16% moisture content. Belt conveyors should be used to move dry beans to avoid seed coat injury or seed cracking.

Nutrition

Dry beans are used almost entirely for human food. They are an excellent source of protein and are complementary to the proteins contained in wheat, barley, oats, rye, corn, as well as buckwheat. Dry beans are low in fat and cholesterol-free and are a very high source of soluble fibre. Some medical studies have shown that beans help to lower blood cholesterol and may help to control blood sugar in people with diabetes. As a food rich in complex carbohydrates, dry beans are an excellent source of energy. They supply

CANADA: DRY BEAN PRODUCTION BY CLASS

	1998 -1999	1999 -2000	2000 -2001f
	.....thousand tonnes.....		
White Pea	65	143	120
Pinto	38	42	67
Cranberry	19	24	20
Black	18	22	20
Great Northern	7	14	19
Small Red	12	15	14
Dark Red Kidney	12	13	10
Light Red Kidney	5	9	8
Pink	5	6	1
Other	8	6	6
Total	**189**	**294**	**285**

f: forecast, AAFC, October 2000
Source: AAFC estimates based on Statistics Canada and industry reports

impressive amounts of B-vitamins, calcium, iron, phosphorous, potassium, and zinc. Dry beans are gluten-free and contain very little sodium. The nutritional profile of dry beans makes them a welcome addition to any diet and they play an important role in gluten-free, diabetic, low salt, low calorie, low cholesterol, high iron, and high fibre diets. Dry beans also act as an appetite suppressant. Because they digest slowly and cause a low, sustained increase in blood sugar, researchers have found that beans can delay the reappearance of hunger for several hours, enhancing weight-loss programs. Dry beans are often eaten as a meat substitute because of the high protein content and quality.

WORLD

Production

World dry bean production has been trending upwards during the 1990s reaching 19.37 million tonnes (Mt) in 1999-2000. The top ten producing countries, India, Brazil, U.S., China, Mexico, Myanmar, Indonesia, Argentina, Uganda, and Canada account for about 75% of total world production.

U.S. production (without garbanzos) has been trending upwards since the mid 1990s and reached 1.47 Mt in 1999-2000. Since the early 1990s, there has been a shift in production from Idaho, Colorado, California, and Nebraska to Minnesota and, especially, North Dakota. In 1999-2000, North Dakota accounted for 25% of U.S. dry bean production, followed by Michigan at 23%, Nebraska at 12%, Colorado at 8%, and Minnesota at 8%. These top five production states accounted for 76% of U.S. dry bean production (excluding garbanzos).

Pinto, white pea (navy), and black beans accounted for 33%, 22%, and 10% of U.S. dry bean production respectively in 1999-2000. Other classes produced include Great Northern, dark and light red kidney, blackeye, small red, pink, cranberry, baby limas, large limas, and small white. In 1999-2000, white pea beans accounted for most of the increase in production. The most significant decrease was for pinto beans.

Consumption and Trade

About 85% of dry beans are consumed in the countries where they are produced. India, Brazil, Mexico, U.S., and China are the world's largest consumers of dry beans. On a regional basis, per capita consumption is the highest in Latin America at about 15 kilograms (kg), and is predominantly of coloured beans such as pinto, black, red kidney, and cranberry. In the U.S., dry bean consumption has increased from an average of 2.8 kg per person during the 1980s, to a projected 3.7 kg per person in 2000.

World trade in dry beans has been trending upwards during the 1990s, from 2.0 Mt per year during the early 1990s, to an average of about 2.5 Mt per year during the period 1995-1997. In 1998, the latest year for which data are available, exports decreased to 2.3 Mt. The top five exporting countries in 1998 were Myanmar, U.S., China, Argentina, and Canada. They accounted for 82% of world exports. Imports are distributed much more widely than exports. The top ten importing countries, Brazil, Mexico, Japan, United Kingdom, Netherlands, Venezuela, Pakistan, France, Spain, and U.S. account for only 55% of world imports.

About 35% of U.S. production is exported, mainly to Latin America and Europe.

WORLD: DRY BEAN PRODUCTION

	1996 -1997	1997 -1998	1998 -1999	1999 -2000	2000 -2001f
	.....million tonnes.....				
India	3.00	3.60	3.00	4.55	4.50
Brazil	2.82	2.99	2.20	2.89	2.80
China	1.54	1.30	1.71	1.81	1.70
United States *	1.25	1.31	1.36	1.47	1.11
Myanmar	0.93	0.84	1.08	1.21	1.25
Mexico	1.35	0.96	1.26	1.08	1.17
Indonesia	0.86	0.87	0.90	0.90	0.90
Argentina	0.23	0.27	0.30	0.31	0.29
**Canada ** **	**0.13**	**0.16**	**0.19**	**0.29**	**0.29**
Uganda	0.23	0.22	0.27	0.30	0.28
Other	4.44	4.51	4.56	4.56	4.61
World	**16.78**	**17.03**	**16.83**	**19.37**	**18.90**

f: forecast, AAFC, except * USDA, October 2000
Source: FAO, except * USDA (without garbanzos) and ** Statistics Canada

CANADA

Production

Canadian dry bean production has increased sharply from 133,000 tonnes (t) in 1996-1997 to 294,000 t in 1999-2000. Over that period, white pea bean production has increased from 59,000 t to 143,000 t, while coloured bean production increased from 74,000 t to 151,000 t.

There has been a shift in white pea bean production during the past four years from Ontario to Manitoba. Coloured bean production increased in all producing provinces during the same period, but the largest increase was in Manitoba and Alberta. Manitoba surpassed Ontario as the largest producer of dry beans in 1998-1999. Eastern Canada's share of dry bean production decreased from 55% in 1996-1997 to 41% in 1999-2000 and Western Canada's share grew from 45% to 59% during the same period.

White pea beans accounted for 49% of Canadian dry bean production in 1999-2000, followed by pinto beans at 14% and cranberry at 8%. Although there has been an upward trend in the production of all classes of dry beans

since 1996-1997, there has been some fluctuation from year to year in response to changes in prices for individual classes of beans.

Marketing

Most of the dry beans in Canada are marketed on the open market, however there are two pooling arrangements. The Government of Canada guarantees the initial payment for both of the pools under the Agricultural Marketing Programs Act (AMPA) Price Pooling Program. In Ontario, the Ontario Bean Producers' Marketing Board (OBPMB) is responsible for marketing white pea beans. The OBPMB was established (1) to provide orderly marketing of white pea beans in Ontario, (2) to ensure a reasonable return to producers, and (3) to maintain continuity of supply to domestic and export markets. Marketing Ontario grown white pea beans through the OBPMB is compulsory under provincial regulations, although for the first time in 1998-1999, producers were offered more flexibility by being able to market up to 0.56 t/ha (500 pounds per acre) outside the pool through a Partial Production Contract (PPC) through one of the seven licensed dealers that serve as agents of the Board. Originally there was a total program volume cap, but this was removed for the 2000-2001 crop

CLASSES OF DRY BEANS PRODUCED IN CANADA

WHITE PEA BEANS *(also known as navy beans and alubias chica)*
- produced mainly in Manitoba and Ontario
- round beans used mainly for canning and dry packaging
- seeds/100 grams (g): 450-525
- most of the production is exported to the United Kingdom, where they are mainly canned in tomato sauce; also used in soups, stews, Boston baked beans, salads, and purees

PINTO BEANS
- produced mainly in Manitoba and Alberta
- flat beans, with white to beige background and brown mottled flecks
- seeds/100 g: 260-300
- used for refried beans and dry packaging; also for stews and dips
- a favourite for Mexican and South American dishes; beans turn solid pink when cooked

BLACK BEANS *(black turtle beans, preto beans)*
- produced mainly in Manitoba and Ontario
- seeds/100 g: 500-550
- used for canning and dry packaging
- popular in Caribbean and Latin American cuisine; traditional in soups, stews, and sauces; add colour to salads

BROWN BEANS *(dutch brown beans)*
- produced mainly in Ontario and Manitoba
- tan in colour, with a white hilum
- seeds/100 g: 210-300
- used for canning and dry packaging

CRANBERRY BEANS
(romano beans, speckled sugar beans)
- produced mainly in Ontario, Quebec and Manitoba
- burgandy mottled beans with a white to buff seed coat
- seeds/100 g: 145-255
- used for dry packaging and canning; used in soups, stews, and salads
- a favourite for Italian cuisine

AZUKI *(small red)*
- small red bean
- produced in Ontario
- sweet bean paste, candied beans
- popular in Japanese cuisine

GREAT NORTHERN BEANS *(large white beans)*
- produced mainly in Alberta and Manitoba
- flat, white coloured beans
- seeds/100 g: 280-330
- used for dry packaging
- a frequent choice for soups, casseroles, baked dishes and mixing with other varieties
- very popular in North Africa and the Middle East

SMALL RED BEANS *(red Mexican beans)*
- produced mainly in Alberta and Manitoba
- dark red beans
- seeds/100 g: 275-330
- used for canning and dry packaging
- adds sparkle to bean salads; can be used in any coloured bean recipe

PINK BEANS
- produced mainly in Alberta and Manitoba
- pinkish beige beans
- seeds/100 g: 330-400
- used for refried beans and dry packaging
- popular in barbecue style dishes

DARK AND LIGHT RED KIDNEY BEANS
- produced mainly in Ontario and Manitoba
- kidney shaped, dark or light red beans
- seeds: 100 g: 150-220
- used for canning and dry packaging
- favoured bean for making New Orleans red bean dish and chili

WHITE KIDNEY *(alubia type beans)*
- flat white bean
- produced in Ontario
- seeds/100 g: 150-200
- used for canning and dry packaging

year. The bulk of the production continues to be marketed through the OBPMB pooling system. The beans are delivered to one of the licensed dealers and OBPMB takes legal possession of the beans when the growers have received an initial payment. The OBPMB offers beans for sale over the marketing season to their agents who store, clean, and ship the beans to domestic and export markets. Sales revenue for white pea beans are pooled and producers receive an interim and a final payment at the close of the pool account after the storage, processing, selling, and transportation costs are deducted.

The Agricore Bean Business Unit (ABBU) operates a voluntary pool for pinto, pink, great northern, small red and black beans. Producers wishing to participate in the pool, sign a production contract with the ABBU, receive an initial payment on delivery and a final payment after all beans are sold and the cost of storage, processing, marketing and transportation deducted. The vast majority of the producers participating in the pool are in Alberta, however there are some in Saskatchewan.

The rest of the dry beans produced in Canada are sold on the open market to dealers. There are about 25 dealers with about 45 plants buying dry beans in Canada. The dealers are either private companies, individuals or producer co-operatives. Most of them are located in Ontario and Manitoba. Some of the Ontario dealers have developed business partnerships with Manitoba dealers because of the shift in production from Ontario to Manitoba. In addition some of the beans are sold directly to dealers in the U.S. Some of the beans are grown under production contracts which guarantee the price for part of the production and others are sold on the spot market. The amount grown under production and price contracts varies from year to year depending on the level of prices offered under the contracts.

Prices

Canadian dry bean prices are determined on an export basis because Canada exports roughly 80% of its production. Prices generally follow U.S. prices for the same class of beans adjusted for the differences in currency exchange rates and transportation costs. The average producer price, over all classes and grades, was about $605 per tonne (/t) in 1996-1997, but dropped to $485/t in 1997-1998. In 1998-1999, prices improved and averaged about $655/t, but fell again in 1999-2000 to about $505/t. Increased production contributed to the decrease in prices. Substitution of one class of bean with another is limited in the market place, therefore it is common for wide price spreads to exist between different class of beans. In 1999-2000, the prices of dark and light red kidney, cranberry and Great Northern beans were the strongest with prices above the average levels; the prices of small red and pink beans were near average levels; and the prices of pinto, white pea, black and brown beans were at below average levels.

Since there is no futures market for dry beans, prices are negotiated directly between dealers and customers and are based on supply and demand factors for each class of beans. The prices negotiated could be for nearby delivery or for delivery as much as a year in the future.

Domestic Use

Canadian domestic use, which includes food, feed, seed, dockage and waste, accounts for only about 20% of production. It has been increasing

CANADA: DRY BEAN PRODUCTION

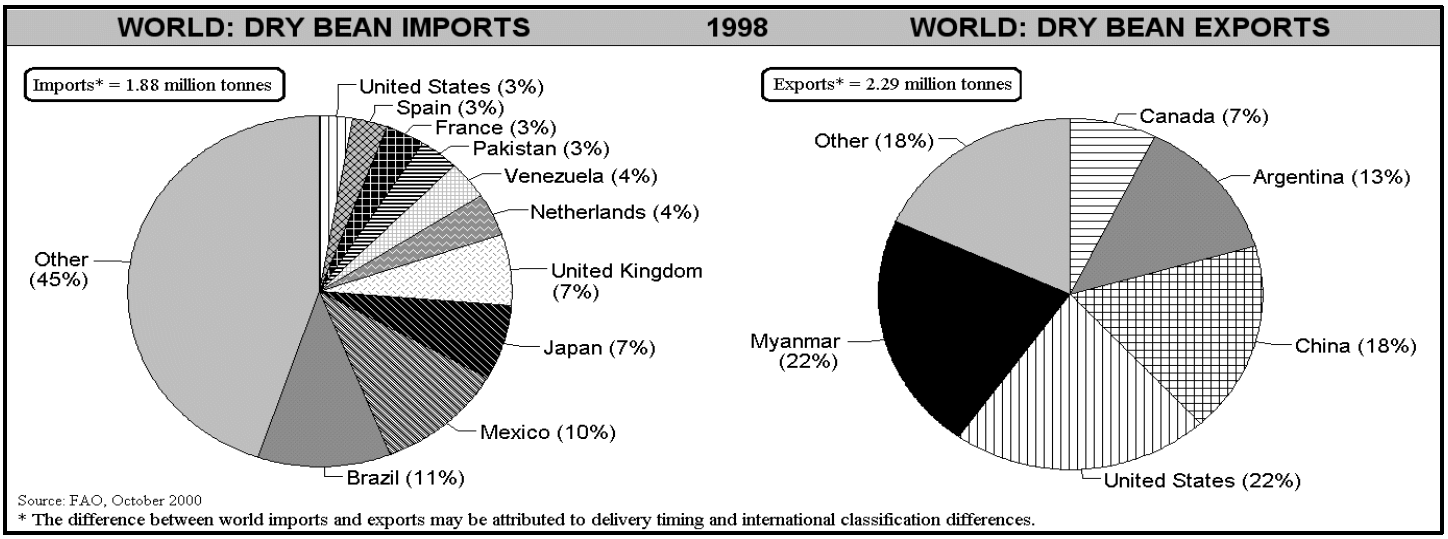
	1996 -1997	1997 -1998	1998 -1999	1999 -2000	2000 -2001f
	.....thousand tonnes.....				
WHITE PEA BEANS					
Quebec	2	3	3	3	2
Ontario	38	43	26	67	25
Manitoba	19	32	36	73	93
Total	**59**	**78**	**65**	**143**	**120**
COLOURED BEANS					
Quebec	8	7	7	11	8
Ontario	25	23	32	39	22
Manitoba	18	16	36	49	82
Saskatchewan	1	3	4	9	10
Alberta	22	36	45	43	43
Total	**74**	**85**	**124**	**151**	**165**
ALL BEANS					
Quebec	10	10	10	14	10
Ontario	63	66	58	106	47
Manitoba	37	48	72	122	175
Saskatchewan	1	3	4	9	10
Alberta	22	36	45	43	43
Total	**133**	**163**	**189**	**294**	**285**

f: forecast, AAFC, October 2000
Source: Statistics Canada and AAFC

CANADA: DRY BEAN EXPORTS

August-July crop year	1996 -1997	1997 -1998	1998 -1999	1999 -2000	2000 -2001f
	.....thousand tonnes.....				
Europe	50	60	71	118	120
United States	37	27	33	58	55
South America	12	18	17	26	30
Central America and Caribbean	7	9	44	23	25
Middle East	3	5	9	13	15
Asia and Oceania	10	5	9	11	15
Africa	5	3	10	10	10
Total	**124**	**127**	**193**	**259**	**270**

f: forecast, AAFC, October 2000
Source: Statistics Canada



gradually from about 45,000 t in 1996-1997 to 61,000 t in 1999-2000. Only a small amount of low grade, weather-damaged beans are used for livestock feed. Food use is estimated at 20,000 t in 1999-2000 or about 0.7 kg per person. It has been growing because of the increased use of beans in ethnic cuisine and the development of quick-cooking and specialty products. Dry beans are either canned, packaged dry for retail sale or further processed into products such as refried beans, pork and beans, stews, soups, chili, bean flour, bean paste, fibre biscuits, and snack food.

Exports and Imports

Canadian dry bean exports are primarily in the unprocessed form. Exports peaked at 173,000 t in 1995-1996, dropped to 124,000 t in 1996-1997 due to decreased production, then increased during the next three years to 259,000 t in 1999-2000. Although exports increased to all regions of the world, the largest increase was to Europe. For white pea beans, the largest customer is the UK and for coloured beans, the U.S. However, Canadian dry beans are exported to all parts of the world. The main importing countries in 1999-2000 were (in order of importance): UK, U.S., Colombia, Cuba, Italy, Spain, Portugal, Netherlands, Japan, and Dominican Republic. These ten countries accounted for 77% of Canadian exports. All exports are carried out by the bean dealers. Access and market development activities are conducted under the leadership of Pulse Canada, a national organization created in 1997 by producers, processors, and exporters of Canadian pulses. With about 80% of Canadian dry bean production moving to other countries, Canadian producers and dealers are far more dependent on exports than their counterparts in most other countries.

Canadian imports of dry beans are mostly from the U.S. and are primarily for seed and to fill niche markets or supply gaps. Import volumes averaged about 40,000 t per year during the past four years.

OUTLOOK

World: 2000-2001

World production is forecast to decrease slightly to 18.9 Mt in 2000-2001, with the total supply also decreasing slightly to about 19.8 Mt.

U.S. production is expected to decrease by 25% to about 1.11 Mt (excluding garbanzos). Although production estimates by class will not be available until December, production estimates based on the seeded area suggest a decrease in production for all classes, with the sharpest decrease for pink, blackeye, small red, black and white pea beans.

Canada: 2000-2001

Canadian dry bean seeded area increased by 9% to 168,000 hectares (ha) in 2000-2001. Dry white beans seeded area decreased slightly to 74,500 ha and coloured beans seeded area increased by 20% to 93,500 ha. Pinto beans accounted for most of the increase in seeded area for coloured beans, but Great Northern, dark and light red kidney, and cranberry seeded area also increased. The only significant decrease in seeded area was for pink beans. The white pea bean seeded area shifted to Manitoba with a 35% decrease in Ontario and a 25% increase in Manitoba. The increase in seeded area for coloured beans was almost entirely in Manitoba, where it increased by nearly 60%.

Total Canadian dry bean production is expected to decrease slightly to 285,000 t because of lower expected yields in Eastern Canada. Growing areas in Eastern Canada, especially Ontario, had a very wet summer, which reduced yields. Therefore, production shifted further to Western Canada with about 80% of Canadian production compared to 20% in Eastern Canada. Production of white pea beans is expected to decrease by 15% to about 120,000 t, while coloured bean production increases by 10% to about 165,000 t.

Total supply of all dry beans is forecast to decrease slightly to 350,000 t. Domestic use is forecast to increase by 9% to 65,000 t and exports are forecast to increase by 5% to 270,000 t. The growth in exports is expected to be spread out through most regions of the world. With the decreased supply and increased use, carry-out stocks are forecast to drop to a low level, with a stocks-to-use ratio of 5%.

The average price, over all classes and grades is expected to increase slightly to $505-535/t. The high carry-in stocks in North America are continuing to pressure prices for most types of dry beans. Factors to watch include the final production reports for Canada and the U.S. The strongest potential for average crop year price increases is for cranberry, dark and light red kidney, and Great Northern beans. The Canada/U.S. exchange rate plays an important role in Canadian bean prices since prices are generally determined in the U.S. market. The Canadian dollar is expected to appreciate in 2000-2001, which will also pressure prices.

Canada: Long-Term

Canadian dry bean production is expected to increase over the decade, with the bulk of the growth occurring in Western Canada, especially in Saskatchewan and Manitoba. The Saskatchewan dry bean industry is still in the development stage, but work is underway to develop shorter season pinto, black and white pea bean varieties. Once commercial production of the shorter season varieties starts in three to five years, Saskatchewan is expected to become an important dry bean producer. Production in Manitoba is also expected to grow and will likely expand into new areas with the development of shorter season varieties. The potential growth in Alberta dry bean seeded area is limited because beans use mainly irrigated land and face competition from higher value per hectare crops such as potatoes and sugar beets. Outside the irrigated area, Alberta is generally either too dry or has too short a growing season for dry bean production, but as in Manitoba there could be some growth in new areas with the development of shorter season varieties.

Mexico, the world's second largest importer of dry beans, has the potential of becoming an important market for Canada. Under the North American Free Trade Agreement (NAFTA) agreement, a 15 year transition period, ending in 2008, was established for the import of dry beans from the U.S. and Canada. For 2000, Canada has a tariff rate quota (TRQ) of 1,791 t and an over quota tariff of 93.9%. Dry beans imported for seeding already have a zero tariff rate. Canadian dry bean exports are expected to trend upwards during the next decade as a result of the increasing TRQ and decreasing tariff rate, which will be eliminated in 2008. The Mexican demand is mainly for coloured beans.

For periodic updates on the situation and outlook for dry beans, visit the Market Analysis Division Website for "Canada: Special Crops Situation and Outlook".

CANADA: DRY BEAN SUPPLY AND DISPOSITION

August-July crop year	**1996 -1997**	**1997 -1998**	**1998 -1999**	**1999 -2000**	**2000 -2001f**
Harvested Area (000 ha)	84	90	96	154	168
Yield (t/ha)	1.58	1.82	1.98	1.91	1.70
					.....thousand tonnes.....
Carry-in Stocks	20	10	15	25	40
Production	133	163	189	294	285
Imports	26	20	69	41	25
Total Supply	**179**	**193**	**273**	**360**	**350**
Exports	124	127	193	259	270
Total Domestic Use	45	51	55	61	65
Carry-out Stocks	**10**	**15**	**25**	**40**	**15**
Stocks-to-Use Ratio (%)	6	8	10	13	5
Average producer price ($/t)	605	485	655	505	505 -535
Harvested Area (000 ac.)	208	222	237	381	415
Yield (lb/ac.)	1,410	1,624	1,767	1,704	1,517
Production (thousand cwt)	2,932	3,594	4,167	6,482	6,283
Average producer price ($/lb)	0.274	0.220	0.297	0.229	0.229 -0.243

f: forecast, AAFC, October 2000
Source: Statistics Canada and AAFC

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