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DRY PEAS: SITUATION AND OUTLOOK

Canada is the largest producer and exporter of dry peas in the world, accounting for about 25% of world production and 55% of world exports. The value of Canadian dry pea exports was about $450 million in 2000-2001. Canadian seeded area for dry peas increased by about 600% during the past 10 years. The expansion of dry pea production in Western Canada has provided producers with an alternative cash crop to use in their rotations and livestock feeders with a new source of feed ingredient. In addition, the expansion has resulted in increased employment opportunities in Western Canada through the expansion of the handling, marketing and processing facilities. This issue of the *Bi-weekly Bulletin* examines the situation and outlook for dry peas.

AGRONOMICS

Dry peas were one of the first cultivated crops and were first domesticated in the Middle East. They were an important crop in Eastern Canada during the period 1850-1950, with as much as 300,000 hectares seeded annually. The crop was gradually replaced by soybeans and had largely disappeared in Eastern Canada by the 1970s. In Western Canada, production started during the 1930s in Manitoba, but grew slowly until the 1990s, when most of the production shifted to Saskatchewan.

Dry peas are a cool season crop with a relatively shallow root system. They are, generally, as drought tolerant as cereal grains, but cannot tolerate heat stress during flowering. Peas take about 90-105 days to reach maturity, depending on the variety grown. The crop is best suited to the black soil zone, with well drained, clay loam soils being ideal for dry pea production. However, peas have performed well in all areas of the Prairies, especially in summers with cool and moist conditions. Poorly drained, cold soils can favour the development of seedling diseases and root rots. Peas should not be grown on saline soils and should not be grown on the same field more than once in every four years to avoid the rapid increase of soil-borne and foliar diseases.

Dry pea production provides an agronomically sound way of extending and improving crop rotations. They are capable of fixing part of their nitrogen requirements if properly inoculated with the pea strain of Rhizobium. Thus, acceptable pea yields can be produced in some years with little nitrogen fertilizer. However, a soil test should be used to determine required nutrients. The crop following dry peas in the rotation generally yields more than the same crop grown after cereals or oilseeds. Care must be taken in harvesting the crop. Dry peas which have been harvested in a careless manner and contain excessive amounts of foreign material, cracked seed coats, and broken and damaged seed will have heavy losses in the cleaning process.

UTILIZATION

There are two uses for dry peas, livestock feed and human food. Use for livestock feed is mainly in Europe and Canada, whereas use for food is mainly in Latin America and Asia.

Feed

The hog production industry is the most important user of feed peas, although poultry, cattle and other livestock also consume them. A small, but important user, is the bird seed industry.

Dry peas are a good source of energy for hogs and contain amounts of digestible energy similar to wheat. When protein quality and amino acids, such as lysine, are considered in diet formulation for hogs, peas are very price competitive. Moreover, feed peas do not have to be heat treated to deactivate anti-nutritional factors. Protein testing of peas for on-farm feeding is recommended since feed pea protein will vary between individual lots.

Dry peas are known for having high quality protein, with a protein content of about 22.5%. The digestibility of protein from peas is good, with digestibility values of 83-86% for hogs and 84-88% for poultry, which is almost as high as soymeal protein. Dry pea protein fed to cattle is readily digested. Pea protein, protein from cereals, and canola meal are nutritionally complementary, enhancing each one's value when used in rations.

Although dry peas are most widely used in feeding hogs, they are also used for feeding all classes of poultry. In feeding poultry, they are a good source of protein and a moderate source of energy. The nutrient profile makes peas a very economical ingredient for layers, but they can also be used for broilers. Dry peas are also a good source of supplementary protein for cattle, as well as a good source of energy. The relatively slow degradation rate of starch in peas may be beneficial in animals fed diets containing a high concentration of grain.

Food

Food use of dry peas includes canning, split and whole dry markets, as well as constituent products such as protein, flour, starch, and fibre. These products are then used in baked goods, baking mixes, soup mixes, breakfast cereals, processed meats, health foods, pastas and purees. Dry peas are an

WORLD: DRY PEA PRODUCTION AND TOTAL SUPPLY

	1997 -1998	1998 -1999	1999 -2000	2000 -2001	2001 -2002f
	.....thousand tonnes.....				
Canada*	1,747	2,337	2,252	2,864	2,398
France**	3,220	3,325	2,750	1,940	2,093
China	1,000	1,207	1,170	1,070	1,200
Russia	1,196	660	598	700	700
Ukraine	903	652	498	560	550
India	720	600	600	600	600
Germany**	400	589	610	403	486
Australia***	316	298	357	401	345
United Kingdom**	371	323	356	298	367
United States****	300	304	249	193	220
Other	2,092	2,114	1,718	1,687	1,720
Total Production	**12,265**	**12,409**	**11,158**	**10,716**	**10,679**
Carry-in stocks (e)	600	900	900	800	450
Total Supply	**12,865**	**13,309**	**12,058**	**11,516**	**11,129**

e: estimate, AAFC, September 2001
f: forecast, AAFC, September 2001
Source: FAO, except *Statistics Canada, **UNIP/COCERAL, ***ABARE, ****USDA, September 2001

excellent source of protein, fibre, and complex carbohydrates well suited to the demands of health conscious consumers. In addition, dry peas are a good source of potassium and B vitamins.

WORLD

Production

World dry pea production has been in the range of 11-13 million tonnes (Mt) during the past 10 years except for two unusually high production years, 1993-1994 and 1994-1995, when it approached 15 Mt. However, production has shifted out of Russia and Ukraine into Canada. In 1991-1992, Canada accounted for only 3% of world dry pea production, but by 2000-2001 Canada's share increased to 27%. Production in the European Union (EU) had been fairly stable, until decreasing sharply in 2000-2001 because of reduced seeded area and lower yields. In China, India, Australia, and the United States (U.S.), production varied from year to year, but there was not a significant change from the beginning of the decade to the end.

Trade

World trade in dry peas has been variable during the 1990s, ranging from a low of 2.37 Mt in calendar year 1992 to 3.63 Mt in 1995. In 1999, the latest year for which trade data is available, 3.73 Mt of dry peas were exported. At the beginning of the 1990s, world exports were dominated by France which had about a 40% share of exports. Canada's share was only about 10%. Other major exporters were Australia, Czechoslovakia, Hungary, Denmark, the United Kingdom, and the U.S. During the decade, Canada's share grew until it became the largest exporter in 1997. In 1999, Canada's share of exports increased to 40%, with France in second place at 33%. In 1999, the only other significant exporters, in addition to Canada and France, were Australia and the U.S. Ukraine's exports dropped sharply in 1996, in line with lower production. Canada's share of world exports increased further since 1999 and is estimated at 55% for crop year 2000-2001.

At the beginning of the 1990s, the main importing countries were in western Europe; with the Netherlands being the largest, followed by Germany, Belgium, and Spain. The only large non-European importer was India. By the end of the decade, there was some shifting of exports from Europe to Asia. Western Europe was still the largest importing region, with Belgium the largest importing country, followed by Spain, the Netherlands, Germany, and Italy. However, India's imports quadrupled and Bangladesh and China became significant importing countries. The shift in exports from Europe to Asia, implies that a larger share of the exports are now going for food use, rather than for feed. Latin America is also a significant importing region, with Cuba being the largest individual importing country.

CANADA

Production

Canadian dry pea seeded area increased by nearly 500% during the period 1991-1992 to 2000-2001, with 1.24 million hectares seeded in 2000-2001. Production increased by 600%, during the same period, from 0.41 Mt in 1991-1992 to 2.86 Mt in 2000-2001. Most of the increase in production was due to increased seeded area, but there has also been an upward trend in average yields. The growth in dry pea production has been largely in Saskatchewan. During the 1991-1992 to 2000-2001 period, Saskatchewan production increased by nearly 1,200%, Alberta by 275% and Manitoba by 90%. In 1991-1992, Saskatchewan accounted for 39% of Canadian production, Alberta for 40% and Manitoba for 20%. The remaining 1% was produced in British Columbia, Ontario, and Quebec. In 2000-2001, Saskatchewan's share of production increased to 72%, Alberta's dropped to 22% and Manitoba's decreased to 5.5%, with 0.5% produced in British Columbia, Ontario, and Quebec. Canada produces several types of peas, with the large and medium yellow types accounting for 66% of 2000-2001 production. Green peas accounted for 29% of the production and the remaining 5% consisted of maple, green marrowfat, small yellow, and Austrian winter peas.

Marketing

Dry peas are sold on the open market to dealers located throughout the Prairie provinces. Feed peas are sold mainly to large grain companies, whereas food peas are sold to specialized cleaning and handling facilities. Some of the facilities are owned by large grain companies, but most are smaller or medium- sized companies. Some dry peas are also sold directly to processing plants and feed mills. Some dry peas are grown under production contracts which guarantee a price for part of the production.

The Winnipeg Commodity Exchange (WCE) revised the field (feed) pea futures contract on July 25, 2001. Pricing is based on seven

WORLD: DRY PEAS EXPORTS

calendar year	1995	1996	1997	1998	1999
	.....thousand tonnes.....				
Canada*	1,063	853	1,004	1,302	1,594
France	1,057	883	821	1,096	1,176
Australia	128	292	274	197	260
United States	112	117	100	127	101
Ukraine	456	87	116	132	74
Other	827	534	568	499	522
Total	**3,643**	**2,766**	**2,883**	**3,353**	**3,727**

WORLD: DRY PEAS IMPORTS

calendar year	1995	1996	1997	1998	1999
	.....thousand tonnes.....				
Belgium	642	636	513	579	569
Spain	556	332	425	561	527
Netherlands	706	558	365	512	522
India	173	155	282	257	366
Cuba**	200	200	200	200	200
Germany	425	223	141	131	164
Italy	193	89	86	99	108
Bangladesh	11	2	49	70	118
China	25	148	138	105	68
Other	672	600	539	531	574
Total	**3,603**	**2,943**	**2,738**	**3,045**	**3,216**

Note: The difference between imports and exports is attributed to the timing of delivery.
Source: FAO, except *Statistics Canada and **AAFC estimate, September 2001

defined pricing regions across the Prairie provinces. However, the futures price is based on a Par region, central Saskatchewan, with delivery in alternate regions at predefined premiums and discounts reflective of the underlying cash feed pea market. The contract is traded in Canadian dollars and the trading months are March, May, July, October, and December. Please visit the WCE website for details: www.wce.mb.ca .

Feed peas are generally shipped bulk by rail, from the dealers plants to ports and other markets. Food peas are also generally shipped by rail, either bulk or in containers.

The Canadian Special Crops Association (CSCA) is an industry organization representing traders, exporters and processors of special crops, including dry peas. The CSCA website is: www.specialcrops.mb.ca . Pulse Canada is also an industry organization, with the CSCA and provincial pulse growers' organizations as members. It is involved in policy issues, coordinating research efforts and market development. The Pulse Canada website is: www.pulsecanada.com

The Canadian Grain Commission (CGC) establishes quality standards for dry peas. The grades are No. 1, 2, and 3 Canada Green; No. 1, 2, 3 and extra 3 Canada other than Green, as well as Canada Feed and Sample Canada. Generally, No. 1 and 2 peas are sold into the food market. For further information, or to access the Official Grain Grading Guide, please visit the CGC website: www.cgc.ca .

Domestic Use

About 35% of the dry peas produced in Canada are consumed domestically. Canadian domestic use has been increasing with increasing Canadian supply. Most of the increase is due to greater use for livestock feed in the Prairie provinces, especially for feeding hogs. Usually peas displace soymeal and high energy grains, such as wheat or corn, in a hog ration in a one-third to two-thirds ratio. Therefore, a formula of one-third soymeal and two-thirds wheat or corn, whichever has the lower price, gives an approximation of the opportunity price of peas.

Dry peas are a very economical feed ingredient and can substitute for imported corn and soymeal in Western Canada. The lowest price spread between a two-thirds corn and one-third soymeal mixture, and dry peas is in eastern Manitoba, because of the lowest transportation cost from the U.S. mid-west corn and soybean producing areas.

An innovative use of dry peas in livestock feed is a mixture of two-thirds ground peas and one-third canola meal. In a mixture of peas and canola meal, peas complement canola meal. Although canola meal is an excellent source of protein, it is low in digestible energy. Peas have high energy digestibility, and the amino acid profile of peas, which is high in lysine, complements the amino acid profile of canola meal, which is high in methionine and cystine. A more recent development is an extruded blend of ground dry peas and canola seed. In addition to the two ingredients complementing each other, the high oil content is a readily available source of energy and can be used as a replacement for such products as corn oil or rendered fat.

The domestic food market is much smaller than the feed market, but is important for producers and dealers. The domestic processing industry includes splitting, canning, packaging of whole or split seed, the production of dry soup mixtures, or milling for flour, hulls, protein concentrate and starch. The marrowfat type, as well as some others, are used in the confectionary markets. An additional domestic market for dry peas is seed for planting. Some small yellow seed is sold for seeding silage mixtures. The maple and Austrian winter types are used mainly by the bird seed industry.

Exports

In 2000-2001, about 65% of Canadian dry peas were exported. About 45% of the exports went into the feed market, mainly in Europe, and 55% into the food market mainly in Latin America and Asia. The feed market consumes both the yellow and green types. Although both yellow and green peas are sold into the food markets all over the world, the main market for green peas is Latin America and for yellow peas, Asia. In Europe, the largest importing country is Spain. Belgium is the second largest importer, but the volume of imports are less consistent than Spain. Other significant European importers are the Netherlands, Italy, Ireland, and more recently France. In Asia, the largest importer is India, followed by Bangladesh, China, and Pakistan. Other significant importers in Asia are Japan, South Korea, and Taiwan. In the western hemisphere, on average, Cuba is the largest importer, but the volume imported is extremely variable from year to year. Other significant importers are Colombia, Brazil, the U.S., Venezuela, Mexico, Ecuador, and Peru.

Canadian exports increased sharply in 2000-2001 to a record 2.1 Mt, because of increased supply in Canada and strong

CANADA: DRY PEA PRODUCTION BY TYPE

August-July crop year	1997 -1998	1998 -1999	1999 -2000	2000 -2001	2001 -2002f
	.....thousand tonnes.....				
Yellow	1,150	1,400	1,450	1,900	1,560
Green	500	800	700	830	730
Other*	97	137	102	134	108
Total	**1,747**	**2,337**	**2,252**	**2,864**	**2,398**

* small yellow, Maple, green marrowfat, and Austrian winter peas

f: forecast, AAFC, September 2001

Source: AAFC estimates based on Statistics Canada and industry reports

CANADA: DRY PEA SUPPLY AND DISPOSITION

August-July crop year	1997 -1998	1998 -1999	1999 -2000	2000 -2001e	2001 -2002f
Harvested Area (thousand ha)	848	1,078	835	1,220	1,408
Yield (t/ha)	2.06	2.17	2.70	2.35	1.70
	.....thousand tonnes				
Carry-in Stocks	215	335	375	400	195
Production	1,747	2,337	2,252	2,864	2,398
Imports	12	10	12	10	10
Total Supply	**1,974**	**2,682**	**2,639**	**3,274**	**2,603**
Exports	1,116	1,705	1,417	2,100	1,600
Total Domestic Use	523	602	822	979	953
Total Use	**1,639**	**2,307**	**2,239**	**3,079**	**2,553**
Carry-out stocks	**335**	**375**	**400**	**195**	**50**
Stocks-to-Use Ratio (%)	20	16	18	6	2
Average producer price ($/t)	180	135	135	137	140 -170
Harvested Area (thousand ac.)	2,095	2,664	2,063	3,015	3,479
Yield (bu/ac.)	31	32	40	35	25
Production (Mbu)	64	86	83	105	88
Average producer price ($/bu)	4.90	3.67	3.67	3.73	3.81 -4.63

e: estimate, AAFC, September 2001
f: forecast, AAFC, September 2001
Source: Statistics Canada and Agriculture and Agri-Food Canada

COST SAVINGS USING PEAS IN A HOG RATION *

	Opportunity Price of Peas [1/]	Actual Price of Peas	Feed Cost Saving [2/]
	.....$/t.....		
Winnipeg	190	140	13
Saskatoon	206	147	15
Calgary	218	157	15

* September 2001
[1/] Based on one-third soymeal and two-thirds corn.
[2/] Based on a 25% inclusion level.

Source: AAFC

demand from Europe and Asia.

Prices

The price of feed peas is related to prices of alternate feed grain and protein meal ingredients. There are, however, regional price differences within the Prairie provinces based on local supply and demand factors. Food pea prices are at a premium to feed pea prices, however the quality standards are higher. The premiums for yellow food peas and green food peas are usually different, depending on the supply and demand factors for each type. For example, in 2000-2001, the average price for green peas was higher than for yellow peas, but in 1999-2000 the average price of yellow peas was higher. The market for green food peas is smaller than for yellow food peas. Therefore, it is easier to oversupply the market, as happened in 1998-1999. The price for maple and small yellow peas also varies depending on the supply and demand factors for each type. Green marrowfat peas are mostly produced under contract, which guarantee a price for the production.

The average price over all types, grades and markets increased slightly in 2000-2001, because of the increase for green food pea prices. Prices of yellow food peas and feed peas were similar to 1999-2000.

OUTLOOK: 2001-2002

World

World dry pea production is forecast to decrease slightly to 10.68 Mt, as higher expected production in the EU is more than offset by lower production in Canada. World total supply is forecast to decrease by 3% to 11.13 Mt, because of lower production and carry-in stocks.

Canada

Canadian production is forecast to decrease by 16% to 2.40 Mt, as an 18% increase in the seeded area is more than offset by lower yields and a higher abandonment rate. The lower yields and higher abandonment rate are due to drought in most of the dry pea growing areas of Saskatchewan and Alberta. Production is expected to decrease proportionally for all types of dry peas. Saskatchewan's share of Canadian production is expected to fall to 67%, while Alberta's share increases to 25.5% and Manitoba's share increases to 6.5% with the remaining 0.5% produced in British Columbia, Ontario, and Quebec. Total supply is expected to decrease by 20% to 2.60 Mt. Exports are forecast to decrease by 24% to 1.6 Mt, with the largest decrease for Europe, because of reduced Canadian supply and increased production in the EU. Domestic use is expected to decrease by 3% because of the lower supply. Carry-out stocks are forecast to decrease to a negligible level, with a stocks-to-use ratio of 2%. The average price over all types, grades, and markets is forecast to increase by about 15%, in line with the lower Canadian and world supply. Price increases are forecast for all types of dry peas.

CANADA: DRY PEA EXPORTS

August-July crop year	1997 -1998	1998 -1999	1999 -2000	2000 -2001e	2001 -2002f
			.....thousand tonnes.....		
Asia	395	700	638	850	700
Europe	438	589	533	970	700
South America	77	90	103	135	100
Central America	152	215	50	60	35
United States	31	23	24	25	25
Africa	8	25	24	30	20
Oceania	0	42	29	15	10
Middle East	15	21	16	15	10
Total	**1,116**	**1,705**	**1,417**	**2,100**	**1,600**

e: estimate, AAFC, September 2001
f: forecast, AAFC, September 2001
Source: Statistics Canada

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

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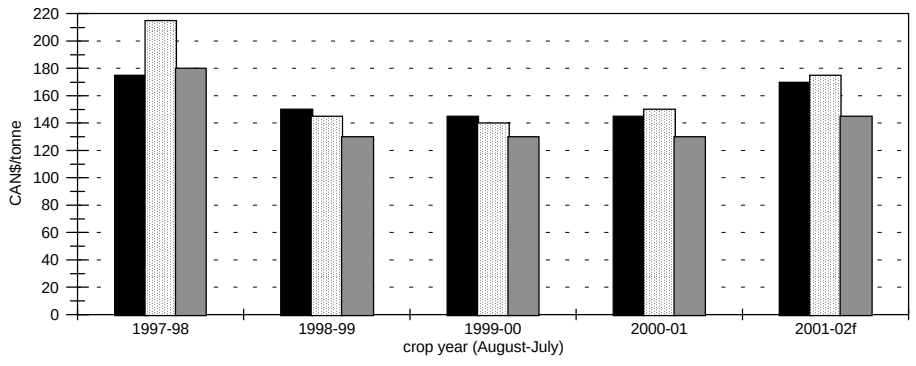
CANADA: AVERAGE PRODUCER PRICE FOR DRY PEAS



f: forecast, AAFC, September 2001
Source: AAFC

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