Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Bi-weekly Bulletin

April 25, 2003 Volume 16 Number 9

BUCKWHEAT: SITUATION AND OUTLOOK

Buckwheat has many uses and is rated as one of the best sources of high biological value protein in the plant kingdom. In spite of its name, buckwheat is technically a fruit or a nut rather than a cereal grain. Although Canada produces less than 1% of the world's buckwheat, it accounts for about 5% of world exports and is expected to become a more significant producer and exporter over the longer term with the development of new varieties and increased consumption in Canada and the United States (US). In recent years, the value of Canadian exports was about $4 million per year. This issue of the *Bi-weekly Bulletin* examines the situation and outlook for buckwheat.

WORLD

Production and Trade

World buckwheat production has been variable during the past 10 years, ranging from 2.35 million tonnes (Mt) in 1999-2000 to 3.15 Mt in 2000-2001. Production decreased during the two subsequent years. China produced about 50% of the world's buckwheat during the past five years, Russia about 25% and Ukraine about 15%.

Most of the world's buckwheat production is consumed in the country where it is produced. World buckwheat exports averaged about 170,000 tonnes per year (t/yr) during the past 5 years ending in 2001 and also totalled 170,000 t in 2001, the latest year for which world trade statistics are available. China normally accounts for about 60% of the exports, with Ukraine, the US, Russia, Canada, and Poland accounting for most of the balance. Netherlands is a re-exporter of buckwheat. Japan accounts for about 55% of the imports, with the balance going mostly to the European Union.

CANADA

Production

Buckwheat is a broadleaf plant which grows best in well drained light to medium textured soils. Seeding normally takes place in the early part of June, after the risk of frost is gone. It matures in 80-90 days and makes an excellent rotation with cereal grains. It requires less nitrogen than cereal crops and is very efficient at removing phosphorus from the soil for its own needs. It also increases the phosphorus available for subsequent crops through its decomposing residue. Buckwheat is more susceptible to stress during dry periods because the stomata stays open causing the plant to wilt faster. Weed control in buckwheat is a challenge since there are few herbicides available for grassy weed and none for broadleaf weed control. Since it is sown late, weeds are generally controlled with cultivation before seeding. However, it is best to use clean fields. Buckwheat benefits from pollination by honey or leaf-cutter bees, especially during the early stages of flowering, to improve yields. Canadian buckwheat is normally harvested in September and early October.

Some of the buckwheat is grown organically, especially in eastern Canada. In addition to the buckwheat which is combined for its seed, there is some buckwheat grown in eastern Canada as a green manure crop.

The older buckwheat varieties, such as Manor and Mancan, have been supplemented with newer, larger-seed varieties, AC Manisoba, AC Springfield, Koban, and Koto, during the past decade. Koban and Koto are large-seed varieties with increased seed density, which has resulted in increased starch content. Koto has a black hull. Kade Research Ltd., an industry sponsored buckwheat research organization based in Morden, Manitoba, works in collaboration with Agriculture and Agri-Food Canada in developing new varieties.

Canada

Buckwheat production in Canada has declined significantly from nearly 39,000 t in the mid 1980s, to an average of about 15,000 t during the past 10 years. For 2002-2003, production decreased by 25%, compared to 2001-2002, to 12,000 t. Although buckwheat is produced from the Maritimes to Alberta, Manitoba normally accounts for 60-70% of Canadian production, with most of the rest produced in Ontario and Quebec.

Uses

Buckwheat is very nutritious and is used to make a wide range of products. The protein of buckwheat is comparable to animal-based proteins and is easily digestible. It has a well-balanced amino acid composition that is complementary to cereal grains. Buckwheat is high in iron, potassium, magnesium, sulfur and phosphorus, as well as vitamins B and P. Buckwheat is virtually fat free and is gluten free. An important by-product of buckwheat production is buckwheat honey, produced from nectar collected from buckwheat flowers by bees.

Buckwheat is milled into light or dark flour or processed into groats, the meat of the seed, and grits which are essentially cracked groats. Buckwheat flour is mixed with wheat flour to make noodles called Soba in Japan. Soba is eaten cold dipped in soya sauce or hot in soya sauce flavoured soup. Large seeded varieties, such as Koban and Koto, have a starch content about 7-8% higher than other varieties. In addition, the starch is softer, which makes the noodles chewy. This is a desirable trait. It also enables Japanese buckwheat millers to use up to 80% buckwheat in their noodle mixes compared to the usual blend of 50% buckwheat and 50% wheat flour. Buckwheat flour is also used for pancake mixtures or mixed with wheat flour for baking bread, rolls and cakes. As well, it is mixed with semolina to make pasta and is used in breakfast cereals, puffed snacks and stuffing. Since buckwheat does not contain gluten, it can be used to produce flour rich in high quality proteins, valuable for people with gluten sensitive enteropathy (celiac disease).

The groats and grits can be eaten plain, roasted or flavoured. Roasted groats and grits are called “kasha” in central and eastern Europe and are eaten as a porridge or used as a stuffing. The groats are also used to decorate bread and other baked goods. They are also used as a meat substitute or extender, for stuffing meats and vegetables, for mixing in soups and stews, and as a side dish.

Buckwheat is also used in the manufacture of beer and ice cream. Some light weight buckwheat seed is used for bird seed mixtures. The hull can be used to make pillows and heating pads.

Marketing

All of the buckwheat produced in Canada is sold on the open market to dealers. Buckwheat is mostly shipped by truck to domestic and US markets, but it is shipped in containers for overseas markets. Buckwheat is normally sold within a year after harvest, as it tends to lose its value when new crop starts to come into the market.

WORLD: BUCKWHEAT SUPPLY AND DISPOSITION

	1999 -2000	2000 -2001	2001 -2002	2002 -2003f	2003 -2004f
Harvested Area (000 ha)	2,393	3,093	2,820	2,803	2,800
Average Yields (t/ha)	0.98	1.02	0.91	0.85	0.89
			thousand tonnes		
Carry-in Stocks (e)	100	100	600	500	200
Production:					
China	*1,250*	*1,317*	*1,250*	*1,200*	*1,250*
Russia	*579*	*998*	*574*	*600*	*600*
Ukraine	*222*	*481*	*380*	*250*	*300*
United States	*63*	*65*	*65*	*65*	*65*
Poland	*60*	*73*	*59*	*60*	*60*
Brazil	*50*	*50*	*50*	*48*	*50*
*Canada**	*13*	*14*	*16*	*12*	*12*
Other	*112*	*154*	*183*	*156*	*148*
Total Production	2,349	3,152	2,577	2,391	2,485
Total Supply	**2,449**	**3,252**	**3,177**	**2,891**	**2,685**
Total Use (e)	**2,349**	**2,652**	**2,677**	**2,691**	**2,585**
Carry-out Stocks (e)	100	600	500	200	100

e: estimate, Agriculture and Agri-Food Canada, April 2003
f: forecast, Agriculture and Agri-Food Canada, April 2003
Source: FAO, except * which is Statistics Canada, April 2003

The Manitoba Buckwheat Growers Association was formed in 1995 to advance the production of buckwheat and promote the industry.

The Canadian Special Crops Association (www.specialcrops.mb.ca) establishes trade rules and serves as a forum for exporters, dealers and brokers involved in the industry of trading Canada's pulse and special crops, including buckwheat.

The North American Buckwheat Promotion Committee is an industry group working to increase the supply of buckwheat products available to consumers and is engaged in market development to increase the use of buckwheat in Canada and the United states.

The Canadian Grain Commission (CGC) administers quality control standards for buckwheat. There are three grades and buckwheat can also be graded sample if specifications for the grades are not met. For further information, or to access the Official Grain Grading Guide, please visit the CGC website: www.grainscanada.gc.ca

Domestic Use

Canadian domestic use, which includes food, feed, seed, dockage and waste has ranged from 7,000 to 8,000 t/yr during the past three years and is estimated at 7,000 t for 2002-2003. There are several small processors of buckwheat in Canada, concentrating on milling buckwheat for flour, groats and grits. Some of the processors mill buckwheat for the organic food market. Some buckwheat is used in bird seed mixtures.

WORLD: BUCKWHEAT EXPORTS

calendar year	**1997**	**1998**	**1999**	**2000**	**2001**
	.....thousand tonnes.....				
China	107	106	106	106	104
United States	7	9	10	12	17
Netherlands	5	5	5	8	10
Russia	1	2	1	7	10
Ukraine	23	49	1	1	9
Canada*	14	6	7	9	7
Poland	1	3	5	6	7
Other	11	9	13	9	6
Total	**169**	**189**	**148**	**158**	**170**

WORLD: BUCKWHEAT IMPORTS

calendar year	**1997**	**1998**	**1999**	**2000**	**2001**
	.....thousand tonnes.....				
Japan	105	99	103	97	93
France	8	13	11	9	14
Netherlands	12	15	17	14	13
United States	3	2	2	5	6
South Korea	1	1	2	3	4
Kazakhstan	0	2	0	5	4
Germany	3	2	3	4	3
Belarus	16	12	3	3	2
Russia	10	19	1	13	1
Other	21	23	16	13	16
Total	**179**	**188**	**158**	**166**	**156**

The difference between imports and exports is attributed to the timing of delivery.

Source: FAO, except * which is Statistics Canada, April 2003

Exports

Canadian buckwheat exports have ranged from 7,000 to 9,000 t/yr during the past three years and are estimated at 7,000 t for 2002-2003. Japan and the US are the main markets for Canadian buckwheat. Canadian buckwheat imports are mainly from the US.

Prices

Average Canadian prices, over all grades and markets, have been relatively stable during the past three years at $305-325 per tonne (/t). For 2002-2003, average prices are forecast at $325-355/t. Most of the buckwheat is grown under contract which guarantees the price for part, or all, of the production before seeding.

OUTLOOK

World: 2003-2004

World buckwheat production is forecast to increase slightly to about 2.49 Mt, but the total supply is expected to decrease slightly to 2.69 Mt because of lower carry-in stocks.

Canada: 2003-2004

Production is forecast to remain stable, as a 10% decrease in seeded area is offset by higher yields, assuming normal precipitation during the growing period. Currently, soil moisture is lower than normal in the main buckwheat growing areas of Manitoba. Therefore, timely rains will be needed. Total supply is forecast to decrease by 7% because of lower carry-in stocks. Exports and domestic use are expected to remain stable, and the carry-out stocks are expected to be negligible. The average price, over all grades and markets, is forecast to increase slightly due to the lower supply.

Canada: Longer Term

Over the long-term, there are three main challenges which affect buckwheat production. First, there is a low rate of seed development. In buckwheat, only about 12% of the flowers develop into seed. Research is underway to develop self-pollinating varieties, which are expected to have significantly higher yields. The first of these varieties will be submitted for registration in 2004 and could be commercially available in 2005. This variety yields as much as 70% more than current cross-pollinated varieties. Development of higher yielding varieties will make buckwheat more economically viable and is expected to increase seeded area and production. Second, there is a lack of frost tolerance. Research is also ongoing on frost-resistant varieties, but this is proving to be more difficult to achieve.

Third, no herbicide for broadleaf weed control has been developed. The Manitoba Buckwheat Growers Association is working to obtain "minor use registration" for products to control broadleaf weeds, but it is uncertain when these products will be available for use. Therefore, farmers must continue to rely on cultural practices for the foreseeable future. Plant breeders are developing a new variety with a more solid root system and large leaves. This new variety does not lodge and the large leaves help the

plant to compete against weeds.

Another variety being developed contains ten times the normal chlorophyll and produces a testa which is bright green in colour. The testa is the outer layer of the dehulled buckwheat seed. It is green when first harvested, but gradually becomes reddish brown. The Japanese prefer buckwheat with a testa which stays green because food with a green colour is considered to be natural, healthy and good. The new variety is expected to be desirable for the Japanese market and could double or triple Canadian buckwheat exports to Japan. This variety is expected to be commercially available in three years.

Buckwheat has the potential to be used in pharmaceutical and nutraceutical products. It is high in lysine, an amino acid used in nutraceuticals. Buckwheat contains antioxidants: rutin, quercetin, hyperoside, catechin, epicatechin and proanthocyanidins. Research institutions in Canada and other countries are working on developing pharmaceutical and nutraceutical products from buckwheat.

The North American Buckwheat Promotion Committee is working "to develop and promote expanding use of buckwheat and its products by creating awareness of buckwheat's natural nutritional advantages." The committee plans to target dietitians and food and nutrition professionals with information about the nutritional value of buckwheat. It also plans to promote the use of buckwheat among the general public by providing information on the use of buckwheat products and where to buy them. Increased use in Canada and the US would increase production and provide an additional opportunity for crop diversification as well as increasing the processing industry in Canada.

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

CANADA: BUCKWHEAT SUPPLY AND DISPOSITION

August-July crop year	**1999 -2000**	**2000 -2001**	**2001 -2002**	**2002 -2003f**	**2003 -2004f**
Seeded Area (000 ha)	14	16	16	12	11
Harvested Area (000 ha)	13	15	14	12	11
Yield (t/ha)	1.00	0.93	1.14	1.00	1.09
	..... thousand tonnes.....				
Carry-in Stocks	2	1	0	2	1
Production	13	14	16	12	12
Imports	1	1	1	1	1
Total Supply	**16**	**16**	**17**	**15**	**14**
Exports:					
Japan	*4*	*3*	*3*	*3*	*3*
United States	*2*	*5*	*3*	*3*	*3*
Other	*2*	*1*	*1*	*1*	*1*
Total Exports	8	9	7	7	7
Total Domestic Use	7	7	8	7	7
Total Use	**15**	**16**	**15**	**14**	**14**
Carry-out Stocks	**1**	**0**	**2**	**1**	**0**
Stocks-to-use ratio (%)	7	0	13	7	0
Harvested Area (000 ac.)	32	37	35	30	27
Yield (bu/ac.)	18.6	17.4	21.2	18.6	20.3
Production (000 bu)	597	643	735	551	551
Average producer price*					
$/t	305	305	325	325	330
				-355	-360
$/bu	6.65	6.65	7.05	7.05	7.15
				-7.75	-7.85

* over all grades and markets
f: forecast, Agriculture and Agri-Food Canada, April 2003
Source: Statistics Canada and Agriculture and Agri-Food Canada

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ISSN 1207-621X
AAFC No. 2081/E

Bi-weekly Bulletin is published by the:
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To receive a free e-mail subscription to Bi-weekly Bulletin, please send your request to bulletin@agr.gc.ca.

Issued also in French under title:
Le Bulletin bimensuel
ISSN 1207-6228
AAFC No. 2081/F

While the Market Analysis Division assumes responsibility for all information contained in this bulletin, we wish to gratefully acknowledge input from the following:
Canadian Special Crops Association, Kade Research, Manitoba Agriculture and Food, Market and Industry Services Branch (AAFC)