

The Pulse Potential

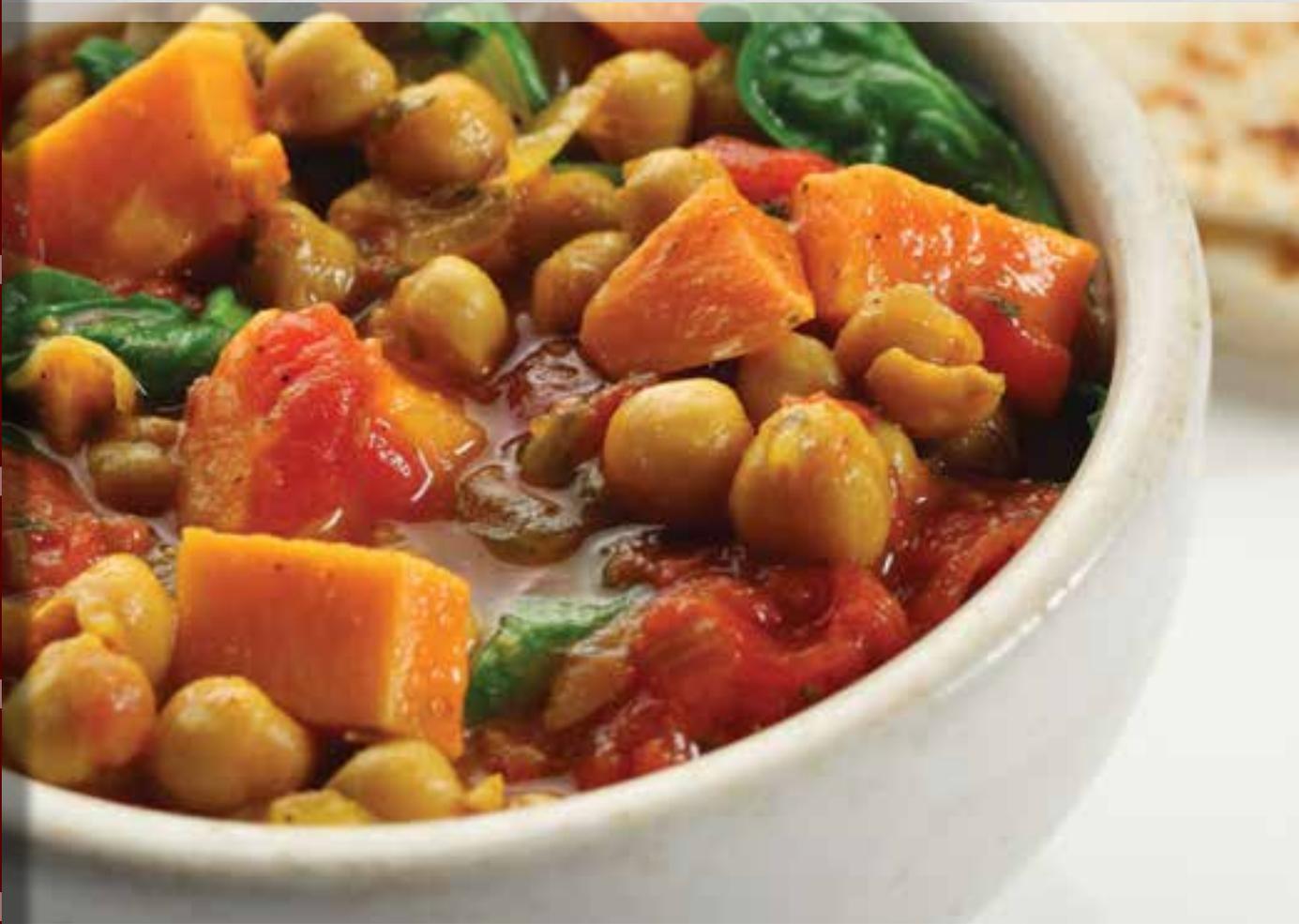
Large Scale Recipes for the Foodservice Industry

BEANS

PEAS

LENTILS

CHICKPEAS



Healthy Recipes Featuring Beans, Peas, Lentils and Chickpeas



SOUPS



SALADS



ENTREES



DESSERTS

Table of Contents

Types of Pulses	3
What are Pulses?	4
What are the Health Benefits of Pulses?	4
Who Should Eat Pulses?	5
Pulses and Important Nutrients	6
Pulses and Special Diets	6
Pulses and Digestion	7
Ten Easy Ways to Add More Pulses to Your Menu	8
Storing and Cooking Pulses	9
Soaking Tips and Methods	9
Baking Soda	9
Cooking Tips and Methods	10
Pulse Purée	10
Pulse Flours and Fractions	10
Recipe Cards	Inside Panel

LOOK FOR THESE SYMBOLS IN THE INCLUDED RECIPES



Vegetarian choice



High fibre
(4 grams or more per serving)



Freezes Well



Gluten-Free

Discover

a tasty, nutritious and versatile food...pulses. Enjoyed for centuries by many cultures around the world, pulses make wonderful main dishes, soups, salads, appetizers, snacks and even baked goods!

The 13 recipes included with this manual were developed by the Saskatoon Health Region (SHR). At the outset of the project, an on-line survey of 60 dietitians working in Canadian health care foodservice institutions was completed. The information gathered during this process was used as the basis for decisions regarding types of recipes, batch and portion sizes, costing, nutritional targets for different meal categories, and main dietary or health issues (e.g. fibre, sodium). Based on the survey, 94.7% of respondents said they were interested in increasing the use of pulses in their menu. Key nutrition considerations for the institutions were improving fibre content, and dealing with constipation.

The SHR developed the recipes using scaled-up batch sizes. These recipes have been tested in both long term and acute care facilities in Saskatoon. For the taste panels, participants included residents and staff (dietitians, managers, supervisors, front line staff and visitors) from acute care, long term care, rural and urban health care facilities across Saskatchewan.

Pulse Canada would like to acknowledge Vicki Dutton for initiating this project with the SHR. Since 1974, pulse crops have added value to Vicki's farm in the Paynton, Saskatchewan area where she farms with her husband David. The lentil soup recipe in this manual was developed by the SHR based on one of Vicki's own recipes.

While this manual was originally developed by representatives from the health care industry, all recipes are suitable for any large scale foodservice operation.

Recipe Notes

Nutritional analysis was completed using the Hospitality Suite (Computrition) system used in the health region. Nutrient values for individual ingredients are from the Canadian Nutrient Database. Please note that the substitution of ingredients may occur to provide alternative results of sodium, fat and calories. For more information and recipes, visit www.pulsecanada.com

Types of Pulses

Peas



Yellow



Green



Split Yellow



Split Green

Lentils



Large Green
Other names: Laird-type,
Masoor Large Green



Red
Other name: Masoor



French Green
Other name: Dark Speckled



Split Large Green
Other names: Yellow Split Lentil,
Masoor dal



Split Red
Other name: Masoor dal



Dehulled Red
Other names: Football,
Masoor dal

Chickpeas



Garbanzo
Other names: Kabuli, Bengal
gram, Kabuli chana



Desi
Other names: Kala chana



Split Desi Chickpea
Other name: Chana dal

Beans



Navy
Other names: White Pea,
Alubia Chica



Cranberry
Other names: Romano,
Speckled Sugar, Borlotti



Pinto



Great Northern
Other name: Large White



Black
Other names: Black Turtle,
Preto



Dark Red Kidney



Light Red Kidney

What are Pulses?

Pulses are also known and often referred to as legumes. Pulse is the term for the edible seeds of legumes (plants with a pod), which includes:

- Dry peas
- Dry beans
- Lentils
- Chickpeas (garbanzo beans)

Pulses do not include fresh green beans or peas. Although they are related to pulses because they are also edible seeds of podded plants, soybeans and peanuts differ because they have a much higher fat content, whereas pulses contain virtually no fat.

What are the Health Benefits of Pulses?

Pulses are nutritional powerhouses! They are rich in protein, fibre and complex carbohydrates, low in fat and sodium and contain a variety of vitamins and minerals. These nutrients make pulses an important part of any healthy diet, including the gluten-free diet.

- Pulses are a **good source of plant protein**. Eating pulses with grains, nuts or seeds ensures a high quality, complete protein.
- Pulses are **very high in fibre**. They contain both soluble and insoluble fibre. Soluble fibre helps lower cholesterol and other blood lipid levels, while insoluble fibre helps with digestion and maintaining regular bowel movements. High-fibre diets may also reduce the risk of certain cancers. Fibre-rich foods like pulses are often more filling than other foods, helping you keep full until your next meal, an added bonus for those watching their weight.

In order to avoid digestive issues when adding high-fibre foods like pulses to your diet, gradually increase your intake and make sure you drink enough water!

- Pulses have a **low glycemic index**. Most of the carbohydrates in pulses are fibre and resistant or slowly digested starch that prevent blood sugars from rising quickly after a meal or snack. Eating foods with a low glycemic index can help you to control your blood glucose levels, maintain high energy levels throughout the day, control your appetite and lower your risk of developing type 2 diabetes.

- Pulses are **low in fat and sodium** making them a heart healthy option. Pulses are also free of trans fats and cholesterol.
- Pulses are an **excellent source of folate**, a B vitamin, which has been shown to lower homocysteine levels. Evidence suggests that high levels of homocysteine (a type of protein) damages the lining of arteries and promotes plaque buildup and blood clots. Over time, this damage can slow or block blood flow to the heart or brain causing a heart attack or stroke. Folate also plays a role in cell development, which is especially important during infancy and pregnancy when new cells are rapidly being formed.
- Pulses are a **good source of other B vitamins** such as thiamin (B1), riboflavin (B2), niacin (B3), pantothenic acid (B5) and pyridoxine (B6). B vitamins are essential for healthy cells and help our bodies create energy from foods.
- Pulses are **high in potassium**, a mineral which helps regulate fluid balance and maintain normal blood pressure.
- Pulses are a **good source of various minerals** such as iron, zinc, magnesium and calcium that play important roles in the body.



Who Should Eat Pulses?

Everyone can benefit from eating pulses. Pulses are high in fibre and complex carbohydrates, and are a good source of protein and are low in fat. These nutrients make pulses an important part of any healthy diet and can help maintain a healthy body weight.

Pulses have additional benefits for people who:

- Are overweight
- Tend to be constipated
- Have diabetes
- Have celiac disease
- Have high blood cholesterol levels
- Are vegetarians

Pulses are **gluten-free** and are a great alternative to wheat-based products. They add fibre, protein, and many vitamins and minerals that may be lacking in a gluten-free diet.

A healthy **vegetarian** diet should include a variety of peas, beans, lentils and chickpeas in place of beef, pork, chicken and fish. Eating pulses with a grain, such as wheat, rice, or oats, ensures a high quality protein.

Examples are:

- Hummus with pita bread
- Lentils with rice
- Baked beans with toast



Pulses Provide Important Nutrients

Pulses are a very high source of **fibre**. They contain both soluble and insoluble fibres. Soluble fibre helps lower blood cholesterol levels, while insoluble fibre helps with digestion as well as maintaining regular bowel movements. Fibre-rich foods like pulses are often more filling than other foods, helping to increase feelings of fullness and reduce appetite until the next meal. Current recommendations from the United States National Academy of Sciences, Institute of Medicine, suggest that adults should consume 20-35 grams of dietary fibre per day, but on average, North Americans consume less than 50% of the dietary fibre levels recommended. Eating just ½ cup (125 mL) of pulses per day provides 3-6.5 g fibre. With their high fibre levels, pulses are a very healthy food choice!

Besides fibre, pulses contain other **complex carbohydrates** like resistant and slowly digestible starch as well as oligosaccharides. Resistant starch (RS) refers to carbohydrates that are not absorbed in the small intestine because they are resistant to digestion by enzymes. Oligosaccharides are carbohydrate compounds that are smaller in size than fibre and starch but are larger than simple sugars. RS and oligosaccharides have similar effects in the body as fibre, including improved colonic and digestive health and management of blood sugar and body weight. Slowly digestible starch (SDS) is digested completely but at a slower rate than other starches and sugars. This means that SDS gives a better blood sugar response after eating and can also increase satiety or feelings of fullness.



Pulses are somewhat unique as a plant food because in addition to high amounts of fibre and complex carbohydrates, pulses typically contain about twice the amount of **protein** found in whole grain cereals like wheat, oats, barley and rice. Pulses also have higher amounts of the essential amino acid lysine whereas cereals have higher amounts of the essential amino acids methionine and cysteine, so blending pulses with cereals or nuts results in a better quality protein that contains all essential amino acids in appropriate amounts. This combination is particularly important for people eating vegetarian or vegan diets.

Pulses have a **low glycemic index**. Most of the carbohydrates in pulses are fibre in starch that prevent blood sugars from rising quickly after a meal or snack.

Pulses are **nutrient dense** meaning they provide high amounts of vitamins and minerals for the amount of calories. Some of the important vitamins and minerals in pulses include iron, potassium, phosphorous, zinc, folate, thiamin and other B vitamins.

Pulses are **low in fat**, saturated fat and are free of trans fats and cholesterol.

Pulses are Appropriate for Special Diets

A healthy **vegetarian** diet should include a variety of pulses including peas, beans, lentils and chickpeas as protein-rich plant foods. Eating pulses along with cereal grains such as wheat, rice, or oats, ensures a high quality protein.

Pulses are a **heart-healthy** food. Regular consumption of pulses can lower blood cholesterol, a major risk factor for heart disease.

Pulses are a good food choice for **diabetes** and research has shown that pulse consumption can help with managing blood sugar levels.

Pulses can help maintain a **healthy body weight**. Research suggests that eating pulses may help to increase satiety or feelings of fullness over the short term. Over longer periods, regular pulse consumption as part of a reduced calorie diet may contribute to weight loss.

Pulses are **gluten-free** and can be eaten by people with celiac disease. Pulses are a great alternative to wheat-based products. They add fibre, protein, and many vitamins and minerals that may be lacking from a gluten-free diet.

Pulses and Digestion

Some carbohydrates found in pulses produce gas and bloating for some people, similar to the effects produced by certain other foods (e.g. cabbage, broccoli, and other vegetables and fruits). Eating pulses often allows your gut to adapt to the higher fibre and carbohydrates, decreasing these effects over time.

A study published in the Nutrition Journal reported that for participants who ate ½ cup of pinto beans, black beans or black eyed peas every day for 8 to 12 weeks, less than half reported increased flatulence during the first week of the study and by the second or third week, 70% or more of the participants felt that any increase in flatulence had dissipated. Interestingly, 3-11% of participants reported increased flatulence when eating the control foods (canned green beans, carrots, chicken soup) which did not contain any known flatulence-producing compound.

Another study published in Food Research International in 2010 found similar results for healthy male participants who ate soups made from either chickpeas, lentils, or dry peas versus a potato control every day for a period of 28 days. In this study, pulse consumption was not associated with significant changes in participants' perception of the occurrence or severity of flatulence. There were also no significant differences in abdominal discomfort over time or between any of the treatments.

The primary flatulence-producing compounds in pulses are the oligosaccharides including raffinose and stachyose which are carbohydrate compounds that are not readily digested by humans because of their chemical structure. Soaking and rinsing dry beans before cooking, as well as rinsing of canned beans, can reduce the levels of these hard to digest sugars. It is also important to note that gas production is a normal physiological process that, to some extent, aids in digestion by softening and helping to move stools through the colon.



Ten Easy Ways to Add More Pulses to Your Menu

- 1 Add chickpeas to any green salad to increase protein without the fat.
- 2 Mix black beans into salsa for a high fibre dip.
- 3 Add whole chickpeas or lentils to pasta sauce or chili to increase fibre.
- 4 Include black beans in omelettes or quesadillas to add fibre.
- 5 Add puréed* chickpeas or lentils to meatloaf to reduce the amount of ground beef and boost fibre.
- 6 Replace half the butter or oil when baking with a lentil purée* to lower the fat.
- 7 Add cooked chickpeas to soups to increase protein.
- 8 Add beans to rice side dishes to make a tasty, complete protein. This combination will also boost the mineral and vitamin content of the dish.
- 9 Mix puréed* chickpeas or white beans with fresh or dry herbs and use as a sandwich spread.
- 10 Serve chickpea hummus or bean dip with vegetables as a feature appetizer.

*See instructions for making puréed pulses on page 10.



Storing and Cooking Pulses

Dry pulses will keep for years if stored in tightly-covered containers in a cool, dark, dry place. However, it is best to use pulses within a year of purchasing. The longer a pulse is stored, the drier it becomes, which increases the cooking time required.

Canned pulses are very convenient as they are ready-to-use. Always rinse and drain canned pulses before using. This simple step reduces the sodium content of canned pulses by more than 40%.¹ Canned pulses store well in cool, dry places. They may be stored for up to one year.

¹ Duyff RL, Mount JR, Jones JB. Sodium reduction in canned beans after draining, rinsing. *Journal of Culinary Science & Technology* 2011;9(2):106-12.



1 Open a can of beans, pour the contents into a colander and drain for two minutes.



2 Rinse the beans under tap water for at least 10 seconds.



3 Allow beans to drain for two more minutes.

Soaking Tips and Methods

- Dry beans, whole peas and chickpeas must be soaked before cooking.
- Dry lentils and split peas do not need to be soaked, but should be rinsed before cooking.

For every 1 cup (250 mL) of pulses, soak with 3 cups (750 mL) water. Whole peas can be soaked for 1-2 hours. Beans and whole chickpeas require longer soaking than whole peas (e.g. min. 4 hours, or preferably soak for 8 hours or overnight).

Always discard the soaking water by putting pulses into a strainer and rinsing them well. This washes away the carbohydrates and sugars that cause gas.

SOAKING METHOD FOR DRY PULSES	INSTRUCTIONS
Long, cold soak or overnight	<ul style="list-style-type: none"> • Let stand 12 hours or overnight in refrigerator
Quick soak	<ul style="list-style-type: none"> • Bring pulses and water to boil in a saucepan • Boil gently for 2 minutes • Remove from heat, cover, and let stand for 1 hour
Microwave soak	<ul style="list-style-type: none"> • Combine pulses and water in microwavable dish • Cover and microwave on high for 10-15 minutes • Let stand for 1 hour

Following these directions can further decrease the sodium content of the recipes included in this manual.

Baking soda

Some recipes call for baking soda (sodium bicarbonate) to shorten the cooking process, especially if using hard water. Baking soda increases the absorption of water, but it also destroys thiamin, an important B vitamin found in pulses. Baking soda may also make the texture of

pulses too soft, an undesired side effect. Therefore, using baking soda to aid in cooking pulses is not recommended. If hard water is your only choice and you need to add baking soda, limit the amount to 1/8 teaspoon per 2 cups (0.5 ml per 500 ml) water.

Cooking Tips and Methods

- Make sure your cooking pot is big enough, as pulses double or triple in size during cooking.
- To prevent foaming, add 1 teaspoon (5 mL) of oil to the cooking water.
- Seasonings like garlic, onion or herbs can be added while cooking pulses.
- Always cook pulses slowly, as cooking them too quickly can break the seed coats.
- Cooking time guidelines are provided below. Note that cooking times may vary based on a number of factors, including age of the pulses, elevation, water hardness, etc.
- The goal is to cook pulses until they are tender. To achieve optimal cooking, pulses can be tested as they near the prescribed cooking time.
- Tomatoes, vinegar or other acidic ingredients should be avoided until pulses are tender. Acids slow the cooking process.
- Beans naturally have a toxic compound in them called phytohemagglutinin. This is destroyed by adequate cooking. For slow cooker recipes, pre-soaked beans should be boiled for 10-12 minutes in fresh water before adding to the crock pot.

Pulse Purée

Purées are useful for dips, spreads and some baked goods. To make a purée:

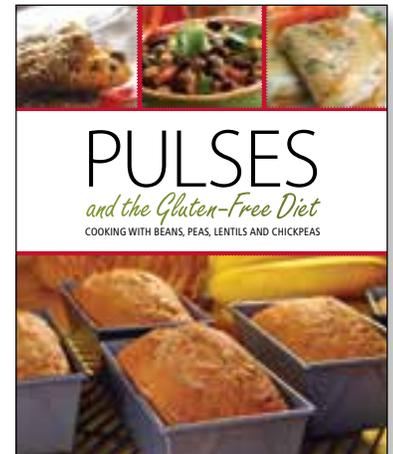
- Place cooked or rinsed and drained canned pulses into a food processor.

- For every 1 cup (250 mL) cooked pulses, add approximately ¼ cup (50 mL) water.
- Blend to make a smooth purée, with a consistency like canned pumpkin.
- If needed, add additional water 1 tablespoon (15 mL) at a time.
- Purées can be placed in plastic bags and kept for several months in the freezer.

Pulse Flours and Fractions

Pulse flours and fractions like pea fibre can be used in a variety of recipes including cakes, muffins and cookies. Using pulse flours (pea flour, bean flour, chickpea flour, lentil flour) and fraction ingredients (pea fibre, starch and protein) can boost the protein, fibre and vitamin and mineral content of many recipes. For more information on using pulse ingredients in gluten-free foods, see *Pulses and the Gluten-Free Diet: Cooking with Beans, Peas, Lentils and Chickpeas* available at www.pulsecanada.com.

For information on ingredient suppliers, contact Pulse Canada or your provincial grower association (details on back cover).



COOKING METHODS & TIMES FOR DRY PULSES

	Beans	Whole Peas	Split Peas	Whole Lentils	Split Lentils	Whole Chickpeas	Split Chickpeas
Rinse	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Soak	Yes	Yes	No	No	No	Yes	No
Amount of water per 1 cup (250 mL) dry pulses	2½-3 cups (625 to 750 mL)	2½-3 cups (625 to 750 mL)	2 cups (500 mL)	2½-3 cups (625 to 750 mL)	2 cups (500 mL)	2½-3 cups (625 to 750 mL)	2 cups (500 mL)
Cooking time	1-1½ hrs.	1½-2 hrs.	45 min.	10-30 min.	5-15 min.	1½-2 hrs.	½-1 hrs.
Pressure cook time (at 15 psi)*	8-12 min.	5-7 min.	No	No	No	12-15 min.	5-7 min.
Yield from 1 cup (250 mL) dry pulses	2½ cups (625 mL)	2½ cups (625 mL)	2 cups (500 mL)	2½ cups (625 mL)	2 cups (500 mL)	2½ cups (625 mL)	2 cups (500 mL)

* Pressure cook times are for pulses that have been pre-soaked and are based on the “quick” or “cold water” release method, in which the pressure cooker is placed under cold water after removing from the burner to lower pressure. If a “natural” release method is used instead (pressure is left to fall on its own), the cooking times need to be reduced.

Pulses for a healthy planet

When you're eating products made from pulses, you're making a choice that is good for the environment. Pulses take less energy to grow than other crops, and produce fewer greenhouse gases. Pulse crops are also one of the most environmentally-friendly sources of protein, contributing to sustainable food production by protecting and improving soil and water resources.



Pulse Canada is the national association representing pulse growers, processors and traders. Direction and funding is provided by Alberta Pulse Growers Commission, Saskatchewan Pulse Growers, Manitoba Pulse Growers Association, the Ontario Bean Producers Marketing Board, Ontario Coloured Bean Growers and the pulse processors and exporters that are members of the Canadian Special Crops Association (CSCA). Pulse Canada provides its members with a single, unified voice on national and international issues affecting the pulse industry. Areas of focus include market access and transportation, as well as positioning pulses as a cornerstone ingredient for healthier foods and a more sustainable environment.

Pulse Canada's members include:



The Ontario Coloured Bean Growers Association represents 450 producers in Ontario who grow a variety of coloured beans including Kidney, Cranberry, Blacks, Otebas, Pintos and Adzuki Beans. Our mandate includes product promotion, consumer education, agronomy and production research and is funded by a non-refundable check-off / tonne of production. Formed in 1986, the association is based in Mitchell, Ontario and is very active in lobbying the provincial and federal governments for programs to benefit our producers.

To learn more about the Ontario Coloured Bean Growers Association, visit www.ontariobeans.on.ca



The Ontario Bean Producers' Marketing Board (OBPMB) is a not for profit organization that represents the interests of approximately 1,000 farmers in Ontario that grow White Pea Beans (commonly found on store shelves as baked beans or beans in tomato sauce). Adapted varieties of White Pea Beans are grown throughout Ontario from the deep southwest – Harrow/Windsor area to the opposite end of the province in the Ottawa valley. Board operations are funded through a grower-licensing fee that is assessed against production. Revenues are allocated to prioritized strategic areas such as research, communications, promotions and marketing.

To learn more about OBPMB, visit www.ontariobeans.on.ca



The Manitoba Pulse Growers Association (MPGA) represents 3,000 farmers in Manitoba who grow edible beans, peas, lentils, chickpeas, faba beans and soybeans. The organization is funded by a 0.5% check off levied against the sales of these crops. MPGA's mission is to provide Manitoba pulse grower members with production knowledge and market development support, through focused research, advocacy and linkages with industry partners. MPGA's focus areas include research, market development, advocacy and communication.

To learn more about MPGA, visit www.manitobapulse.ca



Saskatchewan Pulse Growers represents over 18,000 pulse crop producers in Saskatchewan. Accountable to growers and funded through a mandatory check-off, SPG has a producer-elected board of directors comprised of seven pulse growers.

With a legislated mandate to build a prosperous pulse industry in Saskatchewan, SPG invests in research and market development and promotes sustainable innovation, growth and success through leadership, collaboration and support. Today, Saskatchewan is the heart of Canada's pulse industry. We produce 99% of the Canadian lentil crop, 65% of the Canadian pea crop, and 99% of the Canadian chickpea crop and there are over 100 special crop processors in Saskatchewan.

To learn more about Saskatchewan Pulse Growers, visit www.saskpulse.com



The Alberta Pulse Growers Commission (APG) represents 4,700 Alberta farmers who grow peas, beans, chickpeas, lentils and faba beans. It is a producer-driven, not-for-profit, organization funded by a refundable levy deducted at the point of pulse crop sale. Our mission is "To provide leadership, increasing the competitiveness, profitability, and sustainability of pulse production as well as promoting health and environmental benefits of pulses." The Alberta pulse industry has grown from its inception, in the early 1980s, to one where primary production contributed \$137 million to the Alberta economy in 2010.

To learn more about APG, visit www.pulse.ab.ca



The Canadian Special Crops Association (CSCA) is a national trade association established in 1987. It represents companies

involved in the merchandising of Canadian pulse and special crops, including bean, chickpea, lentil, pea, canary seed, buckwheat, sunflower seed and mustard seed. The CSCA currently has more than 110 members, ranging from large multi national organizations to single-plant processors. Together they represent more than 85% of the pulse and special crops produced in Canada.

To learn more about CSCA, visit www.specialcrops.mb.ca

To learn more about Pulse Canada, visit our website at www.pulsecanada.com

Pulse Canada

1212-220 Portage Avenue
Winnipeg, Manitoba, Canada R3C 0A5

Telephone: 204.925.4455
Fax: 204.925.4454

Email: office@pulsecanada.com

Web: www.pulsecanada.com



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