



take your
PULSE

December 2011 - Vol. I, No. 3



USA Dry Pea
& Lentil Council

On the Pulse Front

Dear Pulse Industry Member,

If you raise dry peas, lentils, chickpeas or dry beans you are a “pulse” grower with ancient roots. The word “pulse” is from the Latin word “puls” which comes from the ancient Greek word “poltos” meaning porridge or thick soup.

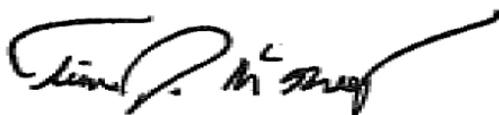
The ancients understood the importance of pulse crops as a super food. These podded legume crops provided protein, dietary fiber and essential nutrients in those dark winter days when meat was scarce. Some historians argue that the successful production of pulse crops is directly linked to the advancement of civilization.

In this issue of *Take Your Pulse* we explore how pulse crops are replacing summer fallow in the northern plains of the United States. We take a look at how our marketing efforts are meeting the challenge of increasing demand for these crops at home and around the world. Check out the latest news on our efforts to shape the 2012 Farm Bill and our stories on health, nutrition and sustainability research investments that will yield new production and end use technologies 5 to 10 years from now.

Also, don't forget to try the recipe at the end of this publication. It's delicious.

Pulse crops are truly ancient foods for the modern world. The USA Dry Pea & Lentil Council's (USADPLC) goal is to further the advancement of these incredible nutrient dense foods one civilization at a time.

All the best,



Tim D. McGreevy, CEO
USA Dry Pea & Lentil Council



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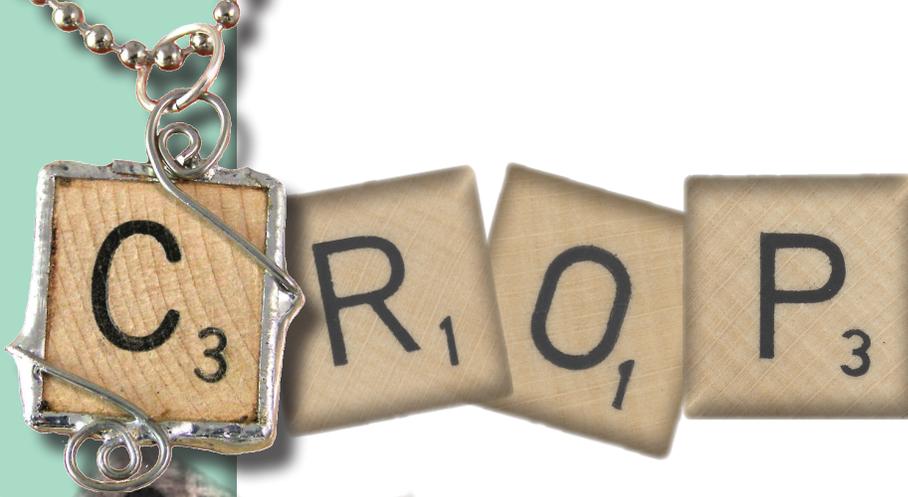
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 USA Dry Pea
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On November 17, the Federal Crop Insurance Corporation's Board of Directors voted to approve the Pulse Crop Revenue insurance product for expert review.

This is another important step in the process of getting this new insurance product approved for implementation. The process of getting the product to this point has been very long, with members of USADPLC senior staff initiating the first attempt at obtaining revenue coverage in 1999. Despite a number of setbacks and delays in the process over the last 10 years, pulse growers have never given up. This diligence may soon pay off.

Starting in 2009, USADPLC initiated a unique partnership with the NorthHarvest Bean Growers, the major check-off organization for dry beans in Minnesota and North Dakota. This partnership, in cooperation with a private crop insurance development firm, submitted a concept paper under the terms of the Federal Crop Insurance Act to the Federal Crop Insurance Corporation (FCIC) for its consideration. This concept was approved by the FCIC Board of Directors in 2010 and has been under a rigorous development process until September of this year. Thanks to strong efforts by these check-off groups and excellent support from the warehouses and processors across the region, the full development (over 700 pages of technical analysis and insurance language) was deemed to be of sufficient quality to merit official consideration.

The development is now under review by a panel of five independent experts. Over the next two months, they will prepare detailed reports, including their recommendations for revisions to and approval of the pulse crop revenue product for implementation.

In February, the USADPLC and NorthHarvest leadership will testify before the FCIC board of directors and request approval for implementation. If all goes well, the product could be available for purchase from any crop insurance agent in the region in the spring of 2013.

The new product is designed to offer revenue coverage that operates exactly like revenue coverage currently available for wheat and other major commodities. Revenue protection will be offered for green and yellow peas, lentils, chickpeas, black beans, dark red kidney beans, navy beans and pinto beans in every county where yield-based MPCIC coverage is currently available for these crops. While there remains a chance the product may not be approved, everyone involved in the process feels this is the best chance for effective revenue coverage to be available for pulse crops since the effort was started so many years ago.

New Consumer Website

Cooking With Pulses

Imagine it is your turn to host the monthly supper club or bring a dish to a work gathering. You are in a hurry and need to find a quick dish that will really “wow” the group. Where is the first place you will turn? If you are like most Americans, one of the first places you will look is the Internet. Why? It’s fast, convenient and for an increasing number of people it is available at home and on-the-go.

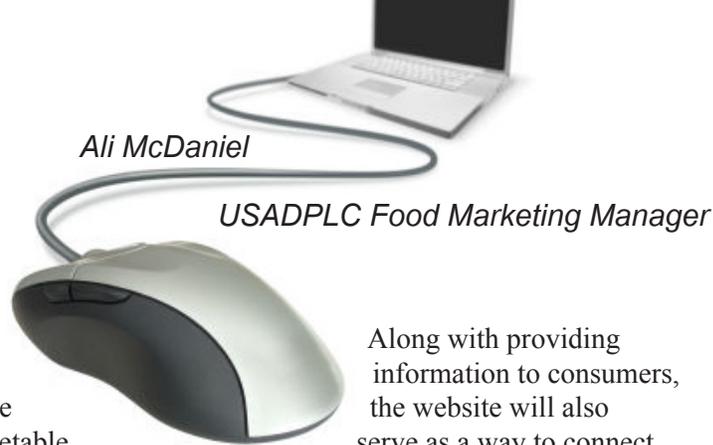
With consumers finding more and more information through the Internet, it makes sense we would want to make sure they are able to find accurate, quality information regarding dry peas, lentils and chickpeas online. As part of the 3-year national marketing/public relations campaign the USA Dry Pea & Lentil Council (USADPLC) will be launching a new consumer website at the start of 2012. It will be the solution for consumers looking for information about dry peas, lentils and chickpeas.

Cookingwithpulses.com will have three main focal points: recipes, health and nutrition facts and where to find pulses in the market (both as whole and value-added products). Working with Edelman, a public relations agency, we have been reaching out to brands currently including pulses in their products. These partnerships not only allow the USADPLC to build relationships with these brands to aid in future development, they also allow us to educate consumers about products that are currently using pulses as ingredients.

For many consumers, it may come as a shock to know pea flour is being used to make Newman’s Own

high protein pretzels or that lentils are in Uncle Ben’s Whole Grain Medley Vegetable Harvest. The goal of the brands section is to help consumers make connections between dry peas, lentils and chickpeas and products they already know and love.

Consumers are interested in using dry peas, lentils and chickpeas in their diets; they just do not know how to use them to their full potential. One of the key findings from our study with Kelton Research is consumers do not think these ingredients are tasty, but they are willing to try them. People eat with their eyes first, so by showcasing photos of tasty recipes we hope to entice a new generation of pulse consumers into trying our delicious recipes.



Along with providing information to consumers, the website will also serve as a way to connect consumers to some of our current social media outlets. Links to our Facebook page, Twitter feed and blog will be available on our website to give consumers a variety of options to connect with us. The website will also serve as a promotional platform for our other consumer outreaches such as blogger contests, Facebook challenges and annual events such as the National Lentil Festival and National Split Pea Soup Week.

The possibilities for the website are endless. With feature stories changing and new recipes highlighted with the seasons, the website is sure to inspire consumers to cook with pulses all year long!

USA Dry Pea & Lentil Council

about pulses healthy kids recipes in the news blog

Need some culinary inspiration?

See what's cooking in our recipes section >

Where smart meets savory: *pulses.*

Introducing pulses, the protein-packed seeds of dry peas, lentils and chickpeas. Pulses are high in fiber, antioxidants, calcium and iron. And they taste great. Think of pulses as comfort food that's good for you.

[Learn more >](#)

A Successful History of U.S. Exports into India

Pete Klaiber, USADPLC Director of Marketing

The India dry pea export market hasn't always thrived the way it does today. In the 1980s, the USA Dry Pea & Lentil Council recognized the potential market in India and began promotional activities. From 1980 to 1990, U.S. pea exports to India trended upwards, pushed higher by sales of U.S. dry green peas sold at a premium to generic green peas, satisfying a niche market for high quality.

In the 1990s, Canadian pea production increased rapidly, and the Canadian pulse industry used lower input costs and subsidized rail rates to undercut U.S. prices and dominate pulse sales to India. The Indian importers felt that the vast majority of Indian consumers made purchasing decisions based on price rather than quality, and that there would not be ready buyers for higher-priced peas, even though the quality was superior. U.S. branded peas continued to service India's small niche market for high quality, but our annual pea exports to India had fallen back to less than 5,000 metric tons (MT) by the end of the decade.

By the year 2000, most U.S. exporters were no longer pursuing opportunities in India, because they sensed the only way to compete in that market would be by cutting prices, which they were unwilling to do. We noted, however, that India's population was expanding much more quickly than its pulse production. We saw the likelihood that the gap between India domestic production and domestic demand would widen year by year, and that gap would be filled by imported pulses. We also saw that India's increased import volumes would be dominated by whole yellow peas, since yellow peas represented a low-cost alternative to pigeon peas, chickpeas and lentils.

While all of this boded well for increased U.S. pulse exports to India, we still faced major competition from a maturing Canadian pulse industry, and we were hampered by a lack of relationships between U.S. suppliers and Indian importers. We realized generating more contacts between buyers and sellers would allow them to find opportunities where their needs and capabilities were in sync.

In 2000, a group of Indian buyers were selected in consultation with our marketing representative,

Shakun Dalal, for an inbound trade mission. In addition to meeting with U.S. processors and exporters, the trade team members visited farms, intermodal facilities for containerized shipping, USDA FGIS grading facilities and USDA ARS pulse research facilities.

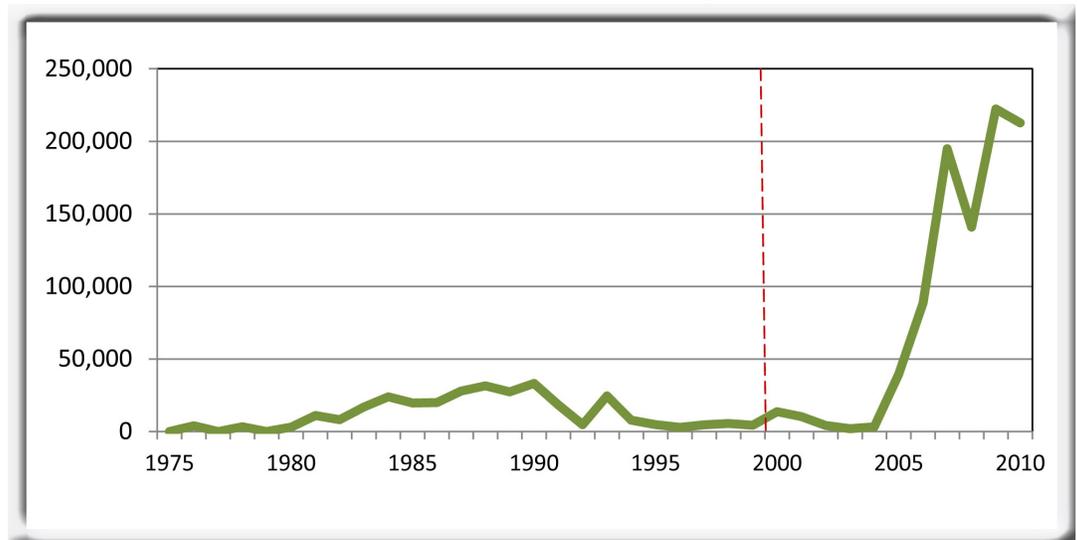
Similar inbound missions have continued annually since then. By establishing (and in some cases, re-establishing) relationships between Indian importers and U.S. dry pea suppliers, we added a necessary element for increasing dry pea exports to India. The early missions did not show immediate results, but that was not unexpected. Over time, however, these trade missions have helped our marketing efforts in India gain traction, and the impacts are now clear.

While other factors played a role besides the inbound trade missions in leading to the success of U.S. dry peas in India, the buyer-seller contacts played a critical role in making India our leading dry pea export market for the past five years. Our annual dry pea exports to India reached 222,298 MT in 2009, a seven-fold increase over our previous high point in 1990, and a 74-fold increase over our low point of 2,900 MT in 1996.

We are now competing not only for a high-quality market niche in India, but for the high-volume processed pea sector as well. Overall, our success in India has increased farmgate income, created new jobs, and has the potential to grow further in the coming years.



U.S. Dry Pea Exports to India, 1975-2010



Researching the Invisible Details of Pulse Crops

*a Q & A with Dr. Dil Thavarajah
from North Dakota State University*

*Erica Beck
USADPLC Communications Manager*

Quality. It's stamped on bags filled with pulses ready for export shipments. It's a driving force behind the network of researchers and scientists seeking more knowledge about pulse crops. It's at the core of the growers who put the seed in the ground. It's our standard.

Since quality is a critical component of the foundation the U.S. pulse industry sits on, it should come as no surprise we have a pulse quality lab at North Dakota State University as well as an outstanding pulse quality scientist in Dr. Dil Thavarajah.

There are a lot of unknown details about dry peas, lentils and chickpeas. A lot of those invisible characteristics like what minerals are present, percentage of protein and how the nutrient profile might have a positive impact on different types of cancers or diabetes make a big difference for being invisible.

Dr. Thavarajah started at NDSU in September 2010 and has been effectively spearheading the effort to get the nation's first pulse quality lab up and running. This lab will combine research on the quality and nutrition of pulses with pulse crop breeding.

She will also be handling the pulse quality survey efforts, a report initially funded three years ago through a grant won by Northern Crops Institute and Northern Pulse Growers Association. This pulse quality survey is a critical tool in providing information on micronutrients and how qualities differ between varieties. Establishing this bank of information will provide marketing benefits.

Pulse quality includes far more than what can be seen, and Dr. Thavarajah is focused on learning more about those invisible details.



What are your goals for the pulse quality lab?

Lots of goals, but my number one goal is to develop a better crop with better nutritious qualities. An improved nutritious profile can assist in preventing different types of cancers, diabetes and obesity.

What do you see as the key components to improving the pulse industry and raising the bar for our products? Number one is yield. If there is no money, they won't grow pulses. We need to find the answers on how to increase yields while improving nutrition quality. Increased yield equals more revenue for the farmer, and increased nutrition qualities may get a premium.

What types of cooperation do you need from the industry?

NDSU, especially Dr. Grafton, has been very supportive in helping me get a basic lab up and running as well as support from the Northern Pulse Growers Association and the USADPLC. I need manpower. I am establishing a basic lab, but when the seeds come in for testing, they need to be cleaned, etc. If I can have graduate students, then I can have thesis projects. We need to do research.

What is your protocol for testing samples outside of the pulse quality survey?

If growers or processors want me to test their product, they can send it to my lab. That's not a problem. My lab operates on a fee-for-service basis so anyone can get their analysis done. I like to see samples straight from the farmer and what has been mixed together at the processing plant, but I also like to test samples from export shipments.

Will you be handling the pulse quality survey for the industry? Yes. I went through the 2010 report, and basic parameters were tested. I want to see beyond that. What's next? What type of things are processors interested in knowing?

How many samples can you run? Average capacity for one year is about 10,000 samples. I have a lot of international collaborations. Australia is one of our really good partners, and I also work with Bangladesh, Sri Lanka and Nepal. I just finished working with Canada, and I may start a new project with them.

Pulse Health Initiative: the “Perfect Storm” of Opportunity

Dr. Janice Rueda, USADPLC Director of Health & Nutrition

According to the Centers for Disease Control, in 2010 at least 1 in 5 people in every single state of the U.S. was clinically obese. In 12 states, the prevalence of obesity was approximately 1 out of every 3 people!

Obesity, defined as having a body mass index of ≥ 30 , is perhaps the greatest threat to public health in the U.S., as it raises the risk of developing many chronic diseases including cardiovascular disease, type 2 diabetes, stroke and several types of cancer.

Obesity is also a global concern, and the World Health Organization estimates that over 2.8 million people die each year as a result of obesity-related causes. While the worldwide obesity prevalence nearly doubled between 1908 and 2008, food security and agricultural sustainability are also critical issues that urgently require solutions.

The Pulse Health Initiative (PHI) is poised to offer viable solutions to these challenges, and since its inception in 2010, USADPLC and USDBC have been working hard to bring this important program to life.

I am very happy to be a part of the DPLC team, and I am really excited to be working to bring the vision of the PHI to life. I hold a Ph.D. in Nutrition & Food Science from Wayne State University in Detroit, where my research focus was cholesterol metabolism, cardiovascular disease and the development of interventions designed to reduce weight gain in young adults. I also have extensive experience in school food and nutrition education as well as a background in non-profit fundraising. Pulses hold the promise to have

such a positive impact on the health issues we face today, and through implementation of the PHI, I look forward to making them a staple on the plates of people worldwide.

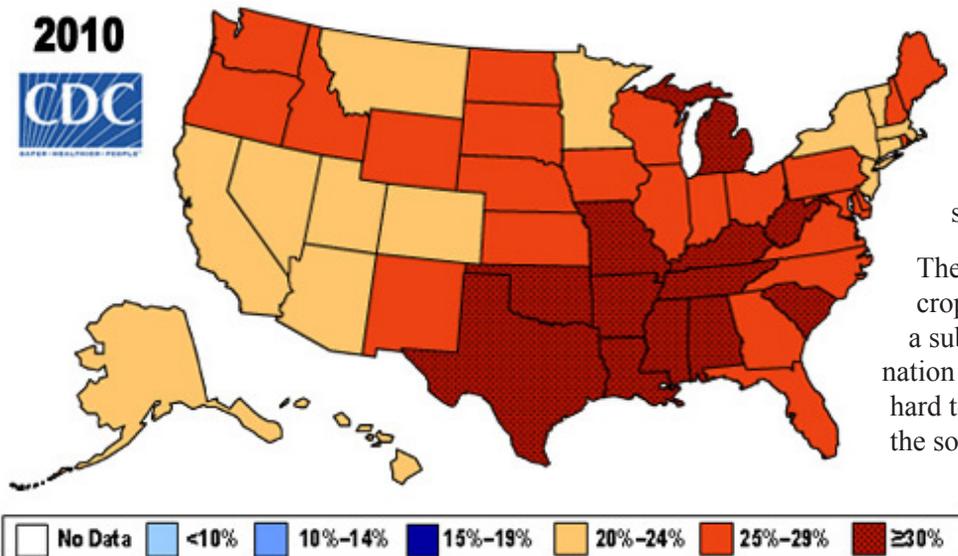
Despite their unique nutritional attributes, pulse crops: dried peas, lentils, chickpeas and dried beans, remain overlooked as a health promoting food. Are they vegetables? Meat alternatives? This identity crisis has frequently resulted in their exclusion from large-scale nutrition studies, and this lack of current data resulted in a 50% reduction to the recommended intake of pulse crops in the 2010 Dietary Guidelines.

As we formulate a strategy to secure funding for the PHI, our immediate objective is to raise the profile of pulse crops as economic solutions to health and nutrition issues among policy and research leaders with the goal of increasing the recommended intake of pulse crops to its previous level. To that end, USADPLC through the APA has begun a campaign to meet face-to-face with key “influencers” of health and nutrition policy in order to build a base of support for the PHI and the increase the role of pulse crops in healthy American diets.

Representing the APA and the PHI, I have attended several scientific meetings with the aims of not only remaining current on research relevant to the PHI, but also identifying and meeting with research groups most highly qualified to conduct PHI-related health research and connecting with scientists to increase the profile of the PHI and its research goals within the scientific community.

Pulse crops are excellent sources of dietary fiber, good sources of protein, potassium, iron and thiamin, and it has been shown that people who include pulses in their diets consume less fat and saturated fat, have diets with 2-times more fiber than non-consumers, and eat more servings of whole grains.

The unique nutritional profile of pulse crops makes them perfectly suited to have a substantial impact on the health issues our nation and world face today. We are working hard to make sure these crops become part of the solution, and we look forward to updating you on the continued progress of the Pulse Health Initiative.



Pulse Crop Pote

Chad Lee, Montana Department of Agriculture

Since 1998, Montana farmers have increased pulse crop production by roughly 400,000 acres. In recent years, the growth has been substantial, with an increase of over 35% in 2010, much of which came from a doubling of lentil acres.

For much of the past decade, northeastern Montana accounted for 75 to 80% of the state's pulse crop acreage. What is most notable is not the region's pulse crop acreage or even the rate of expansion (both of which are impressive) but that northeastern Montana farmers are raising pulse crops on cropland that they previously left fallow for a growing season. Between 1998 and 2010, northeastern Montana farmers increased pulse crop production by 341,000 acres while decreasing fallow cropland by 390,000 acres. For 2010, the Montana Department of Agriculture estimates that the economic benefit resulting from the change in cropping practices is \$102 million. Of this, \$85 million is directly associated with the impact of pulse crops replacing fallow. The remaining \$17 million is an estimate of the economic benefit of improved yield and protein levels in the following spring wheat crop.

Substantial increases in pulse acres are occurring elsewhere in the state, particularly in the Golden Triangle

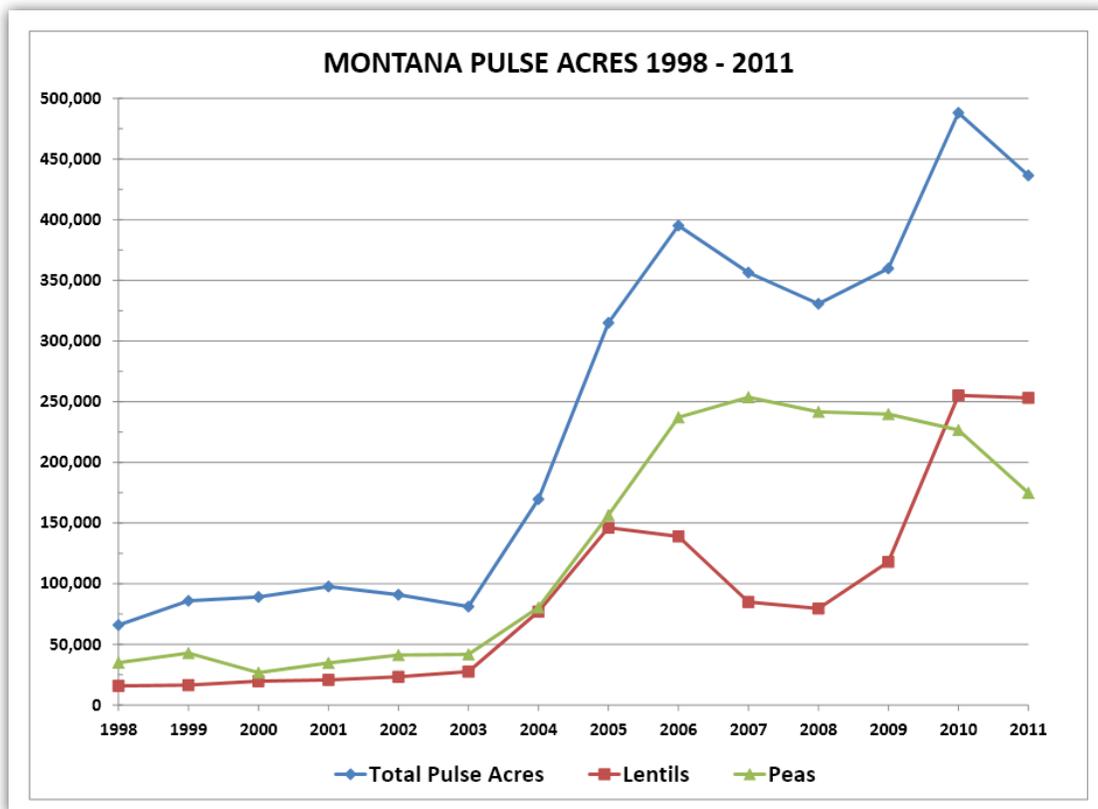
region north of Great Falls. The Golden Triangle is Montana's largest farming district and accounts for over 50% of Montana's 3.5 million fallow acres. Pulse production increased dramatically in the last two years, climbing from 27,000 acres in 2009 to almost 96,000 acres in 2011.

Montana is poised to become a world-class pulse production region in terms of both quantity and quality. Within the next five to fifteen years, Montana's dryland pulse crop acreage could increase by 500,000 to 1,250,000 acres, primarily through replacement of fallow. Increased pulse production may also occur on irrigated cropland, possibly in excess of 50,000 acres.

The Montana Department of Agriculture estimates that replacement of approximately 25% (878,500 acres) of Montana's fallow cropland with pulse crops could generate an annual economic benefit of about \$243 million (based on recent market conditions). Of this, approximately \$207 million would be attributed to the replacement of fallow with pulse crops and \$36 million to improvements in the following wheat crop. Such estimates do not include the economic benefit that could be realized by expanded pulse processing within Montana. The anticipated land use change may be

conservative, because it presumes that the practice of fallowing cropland will remain at significant levels for much of the state.

While there is no guarantee that Montana farmers will increase pulse acreages to their full agronomic and economic potential, future pulse production potential in Montana is not limited to the 1.4 million acres projected. Current levels of production and industry investment are firmly rooted, and there are fundamental reasons why significant future growth may occur.



Potential in Montana

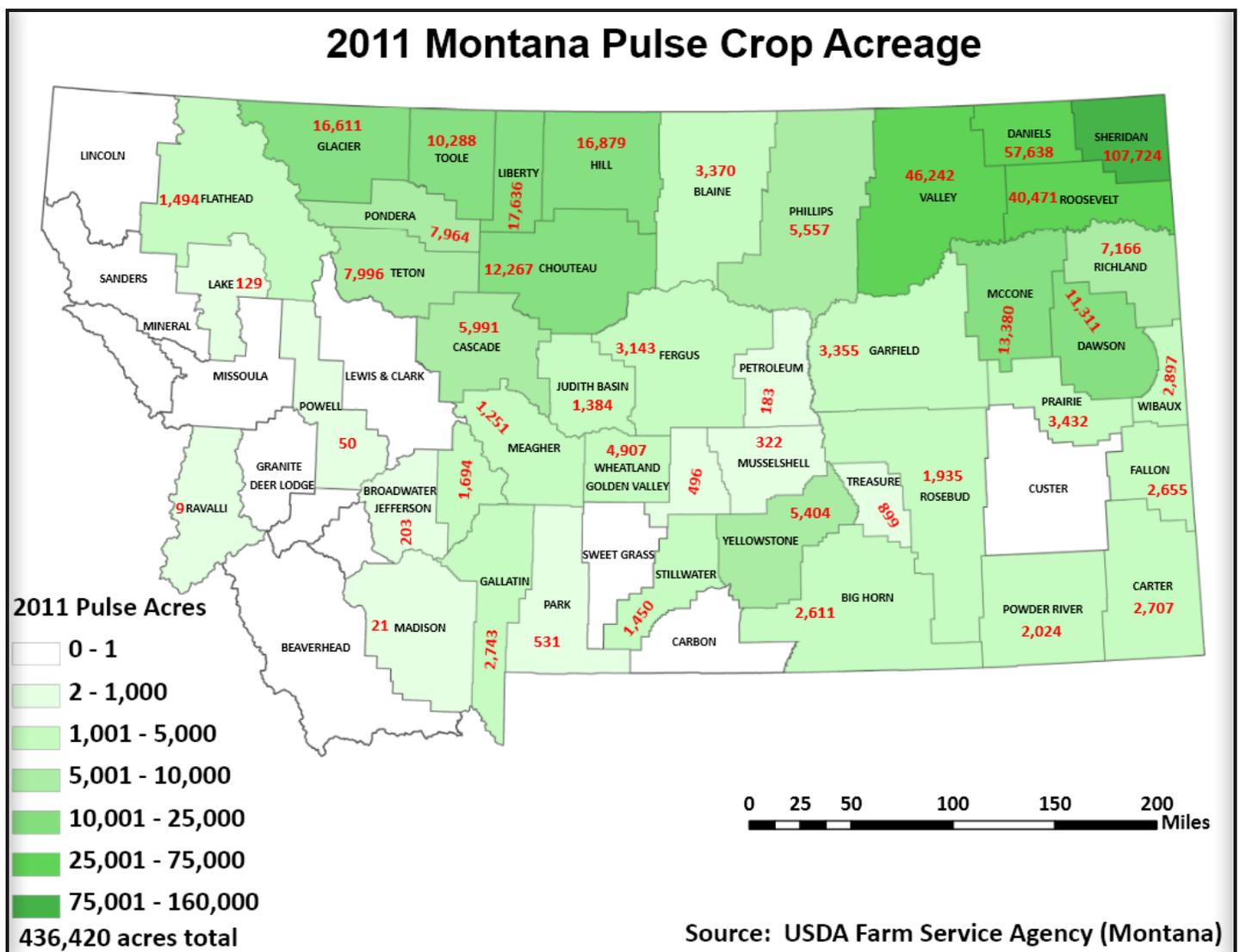
Pulse production makes sense for Montana farmers economically and agronomically, and Montana farmers are establishing a track record of success.

Besides favorable crop economics, factors that have impacted Montana's recent growth in pulse production include increases in delivery points, pulse buyers and in-state processing capacity. As Montana's pulse acreage increases, there will be a need for additional delivery points and processing facilities. The Montana Department of Agriculture encourages the pulse industry to continue to invest in Montana, particularly in processing facilities. Montana is open for business and ranks competitively in national business climate rankings.

For Montana's pulse potential to be realized, pulse markets need to grow. Montana supports the efforts

of the USA Dry Pea & Lentil Council and private companies to expand export markets. Montana is watching with great anticipation as efforts by the USA Dry Pea & Lentil Council and the Northern Pulse Growers Association progress toward creating substantial new demand for pulses in ingredient markets. Montana hopes to play a major role in helping the industry achieve a large, consistent supply of high quality pulse crops for the ingredient market. Montana would like to become a center within the United States of pulse processing, including niche pulse ingredient manufacturing.

Clearly, Montana's economy, farmers and communities have a lot to gain from expanded pulse production; there may be no single opportunity available to Montana's agricultural industry that offers as much potential benefit.

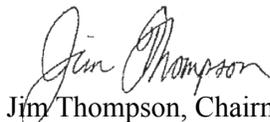


From the Chairman

As I sit down to write this article, we are all concluding the Thanksgiving holiday and sprinting into the Christmas season. At least that is what retailers are hoping you are doing! Before leaving Thanksgiving in the dust, I would like to give one final word of thanks.

Over the last two and a half years I have had the privilege of being the chairman of this organization (yes, I said privilege). And over these years I have had the opportunity to work with the USADPLC staff on a regular basis. Most of the time they are helping to arrange travel for me, write PowerPoint presentations or gathering info for national board meetings, and this is a very small sliver of their activities. Day in and day out they are working on domestic and international markets, trade issues, research initiatives, legislative issues (farm bill), compliance with federal programs and trying to keep all parties happy (i.e. farmers, processors, exporters). I am very proud of our staff and would put them up against any other crop organization staff.

As we move into the meeting season with our various groups, I invite you to take a moment and say thanks to these individuals that work on our behalf every day. Best wishes to all of you during this upcoming holiday season and here's to a bountiful 2012!

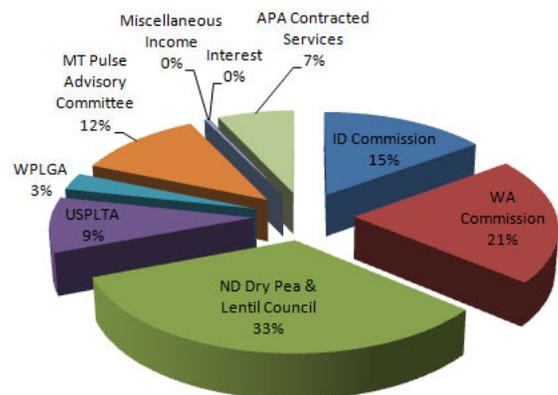


Jim Thompson, Chairman
USA Dry Pea & Lentil Council

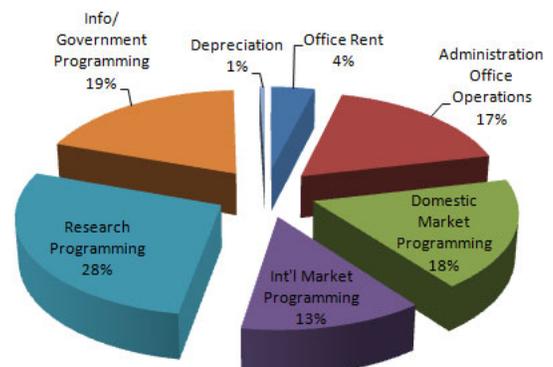
Fiscal Year 2010-11 Income and Expense Report

Income	
ID Commission	\$ 270,740
WA Commission	\$ 380,800
ND Dry Pea & Lentil Council	\$ 600,000
USPLTA	\$ 165,584
WPLGA	\$ 51,316
MT Pulse Advisory Committee	\$ 207,000
Miscellaneous Income	\$ 6,248
Interest	\$ 47
APA Contracted Services	125,000
Total Income	\$ 1,806,735
Expenses	
Office Rent	\$ 61,600
Administration Office Operations	\$ 272,625
Domestic Market Programming	\$ 285,612
International Market Programming	\$ 201,973
Research Programming	\$ 433,537
Info/Government Programming	\$ 298,183
Depreciation	\$ 7,350
Total Expenses	\$ 1,560,880

FY 2010-11 Income: \$1,806,735



FY 2010-11 Expenses: \$1,560,880



Riding the Farm Bill Roller Coaster

Dale Thorenson, Gordley Associates

Congress passed the Budget Control Act (BCA) August 2, 2011, as a means to increase the federal debt ceiling to avoid a government default. This was passed with hopes that the Joint Select Committee on Deficit Reduction created by the BCA would actually reduce the deficit by at least \$1.2 trillion. The BCA also had a fall back plan to impose the deficit reduction starting in 2013 through automatic cuts to non-exempt programs, including agriculture, if this so-called Super Committee failed to approve a plan to do so by November 23rd. As has been reported, the Super Committee failed.

However, much effort was expended by the House and Senate agriculture committee leaders to develop a deficit reduction package to submit to the Super Committee. They sent a letter October 17, 2011, that committed to reducing spending on mandatory farm bill programs by \$23 billion over the next 10 years (FY 2012-21). The committee leaders indicated they would continue to work on how to distribute these cuts among the various farm bill titles, including commodities, conservation and, possibly, nutrition (the other titles such as energy and rural development have little spending to cut) and that they would provide a legislative package to the Super Committee by November 1st.

The agriculture committees, or at least the staff for the Chairs of the committees, worked 7 days a week to accomplish this. However, November 1st came and went with no finished farm bill to submit. In fact, staff continued working through the weekend before Thanksgiving, but reports were that it continued to be over budget... i.e. would not provide the needed \$23 billion in savings.

However, there are many who would like to examine the product the agriculture committees were working on. Direct Payments, ACRE, & SURE were to be eliminated. To replace them, producers were going to be given two options – either a revenue program or a target price program – that supposedly would be chosen at the start of the farm bill, and by crop. The revenue

program option would have provided crop specific coverage at the farm level starting at 87% of a producer's 5-year Olympic average revenue down to 75%. Once the 13% loss threshold was hit, producers would have received payments on 60% of planted and prevented planted acres, up to the aggregate combined base of the farm.

The target price option would have provided price-only protection on 85% of program crop production, up to the aggregate combined crop base of the farm, if the national average price fell below the target prices.

The target price option was quite controversial in that it would have recoupled payments to production of crops, impacting planting decisions and distorting production in years when prices are near or below support levels.

Furthermore, based on the experience of the 1980s and early 1990s, it is impossible to set target prices in a way that accurately reflects the value of crops over time. The end result would have been farmers "farming the program" instead of following market signals. Since all program base acres would have been available to the highest supported crop, it is highly likely crops with relatively high target prices would have been planted on most, if not all, base acres on a farm to the exclusion of other crops that are currently grown in rotation.

Such a program would be devastating to small acreage crops such as dry peas, lentils and chickpeas. The USADPLC joined six other commodity groups in opposing the target price option. This target price program will face continued opposition as the process of writing a farm bill begins anew under regular order.

Writing a new farm bill will not be an easy process. The current farm bill authorization expires September 30, 2012, one month before the general elections. It will be extremely difficult for the agriculture committees to write a bill, pass it in each chamber, conference it to reconcile the differences, and then pass a conferenced bill by that date. It will also be difficult to pass a simple one-year extension, given the budget problems facing the federal government. But failure to pass an extension would impose "permanent farm law" on production agriculture, an arcane set of price supports and allotments dating back to the depression era.

The combination of all the above shall make the coming months more than interesting for those involved in agriculture policy work here in DC. Stay tuned.



Replacing Eggs with Peas

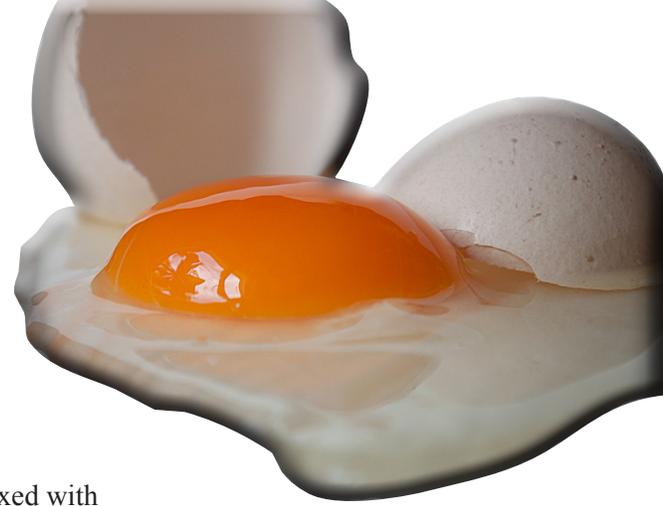
Dr. Clifford Hall, North Dakota State University

Research being conducted at North Dakota State University (NDSU) has included the use of pea proteins as egg replacers. Dry peas have traditionally been used as an ingredient in soups. The common uses include split peas, as a component in multi bean soups, and in canned soup products. However, peas have other functional benefits that could be exploited to create new ingredients.

Much research has been done to fractionate peas into starch, protein and fiber ingredients. The starch fraction is well suited for products such as Asian noodles while the protein and fiber have not been widely used in food systems. The Northern Crops Institute demonstrated that a 10% pea protein had the same beneficial effect as a 2% egg addition in pasta. However, the use of the protein fraction as an egg replacer has not been reported.

The recent increase in egg costs has led to an industry-wide interest in replacing eggs with ingredients of lower cost. Furthermore, replacing eggs as the protein source would allow the food industry to develop vegetarian food products. The inclusion of pea proteins in place of egg protein would allow food manufacturers to eliminate the egg allergen statement from the food label, an attractive option for food manufacturers. In addition, egg intolerance, which causes symptoms such as inflammation and diarrhea, is more widespread than the true egg allergens. Creating food products without eggs would attract a wider population of consumers that at one time could not consume products with eggs.

The replacement of eggs in bakery products has been the focus of our research group, because few researchers have considered pea proteins as egg replacer. An egg replacer must be able to provide structure to the baked product without negatively impacting texture. Pancakes, waffles, cookies and cakes have been a focal point for egg replacement research at NDSU. Replacing eggs with 2 tablespoons of pea protein for each egg in pancakes, waffles and cookie recipes has been an effective replacement level. Water addition is also necessary if the recipe does not include significant liquid. In pancakes added water is not necessary, but 3 to 4 tablespoons of water should be added to hydrate the pea protein in waffles. This is a general recommendation in which



the pea protein, once mixed with water, solution should have an egg-like watery appearance. If the pea protein appears paste-like, add water as needed.

Pea protein isolates in cakes produced varying results depending on the cake formula, i.e. white vs. chocolate or between brands of commercially available cake mixes. In our research, we used two approaches in making cakes: commercial cake mixes from the grocery store and a cake recipe from scratch. Cakes made using commercial cake mixes produced better cakes compared to cakes made from scratch.

We also evaluated different pea protein sources. White cakes made with commercial protein isolates had center heights that were 0.3-0.4 cm lower than the height of the cake made with egg. However, cakes made with the laboratory prepared spray or freeze dried protein isolates had center heights that were 0.6-0.8 cm lower than the height of the egg containing cakes. The center height of chocolate cakes made with pea protein had heights that were approximately 1 cm lower than chocolate cakes made with eggs.

Sensory evaluation of the cakes indicated texture was significantly impacted by pea protein in commercial boxed white cakes. The cakes made with freeze dried pea protein isolate had appearance and flavor scores comparable to the cakes with eggs. Sensory panelists identified an off-flavor only in cakes containing the enzyme modified pea protein. Cakes that did not contain

eggs or pea protein had sensory scores significantly lower than cakes with eggs or pea proteins suggesting that an acceptable cake cannot be made without the addition of pea protein.

In chocolate cakes, the cakes made with pea proteins had comparable appearance and texture scores while the overall score was slightly lower than

Research thus far indicates that pea proteins with appropriate water addition can be an effective egg replacer.

the cakes with eggs. However, the panelists commented that all the cakes had a good chocolate flavor and were moist. Comments by panelists indicated the cake texture was more brownie-like in nature and thus gave a good texture score even though the chocolate cakes did not have the same cake height as the egg formula.

Cookies are an ideal product to utilize pea protein isolates. In some cookie formulas, pea proteins can be used to replace the egg while in other cookie recipes the addition of pea protein can increase cookie moistness and softness. The cookie width and height parameters were not different for cookies made with pea protein isolate versus eggs (see chart). Dropped sugar cookies show that pea proteins can be effectively used in place of eggs (see photos). Water addition is also necessary for the sugar cookies. For each tablespoon of pea protein added, approximately 3 tablespoons of water should be added to replace the water normally present in eggs. A preliminary sensory evaluation was completed on the sugar cookies, and there was no difference in texture or flavor. Overall acceptability was observed between the cookies with eggs and pea protein.

The research conducted thus far indicates that pea proteins with appropriate water addition can be an effective egg replacer. Products such as pancakes and cookies can be made with commercially available pea protein. However, additional research is needed to optimize pea protein additions in cake formulas.

Photos: Sugar drop cookies made with eggs (left) and pea protein isolate (right).

Chart: Average width and height of butter drop cookies made with egg or pea protein isolates and either all-purpose flour or pastry flour.

Buttermilk Pancakes

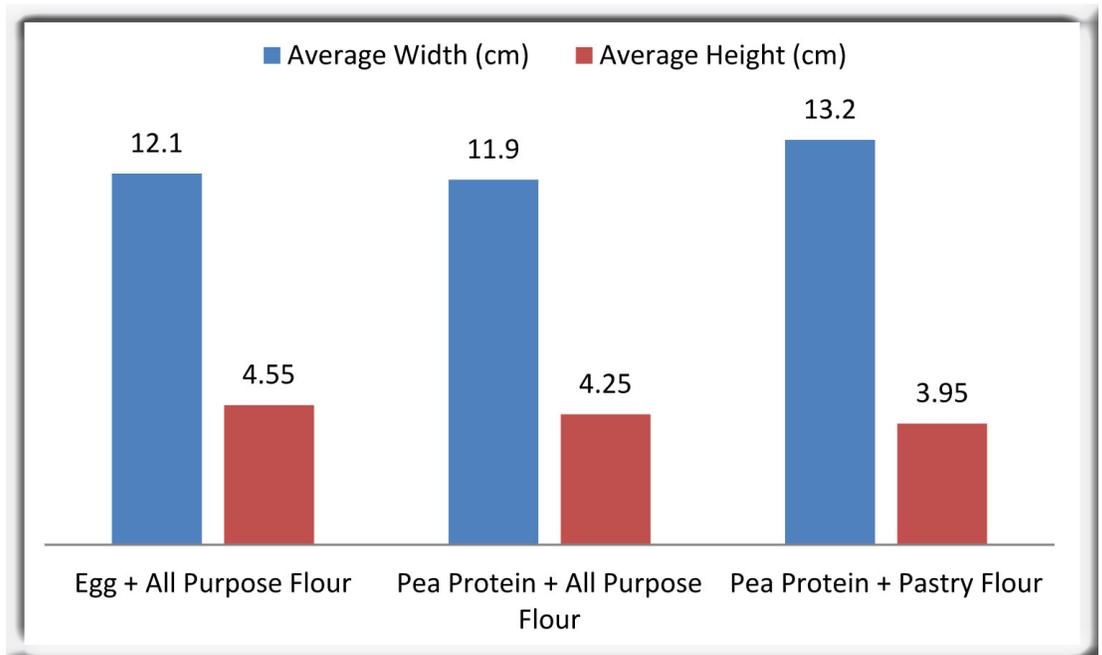
Ingredients

1 3/4 cup cake flour	1 tsp. vanilla
2 tsp. sugar	1/2 Tbsp. baking powder
1/2 tsp. salt	2 cups buttermilk
2 Tbsp. pea protein	2 Tbsp veg. oil or butter

Directions

With pea protein, it is important that the pea protein is mixed into the liquid (either buttermilk or milk). Use a wire whisk until the protein is thoroughly mixed. Add in oil and vanilla and whisk for about 1 minute. Combine the dry and liquid ingredients and mix.

Use 1 1/2 cups of all purpose flour if cake flour is not available.



The Magic of Harvest

Erica Beck, USADPLC Communications Manager

Harvest. That magical time of year filled with long days, breakdowns, fires and a whisper of hope that you'll be able to pay enough bills to farm for another year. Yes...so magical.

The 2011 harvest followed a 2011 spring fraught with weather bumps and bruises. In some areas, those bumps and bruises were more like a knockout punch to end the round, and it caused pulse acres to drop from 2010.

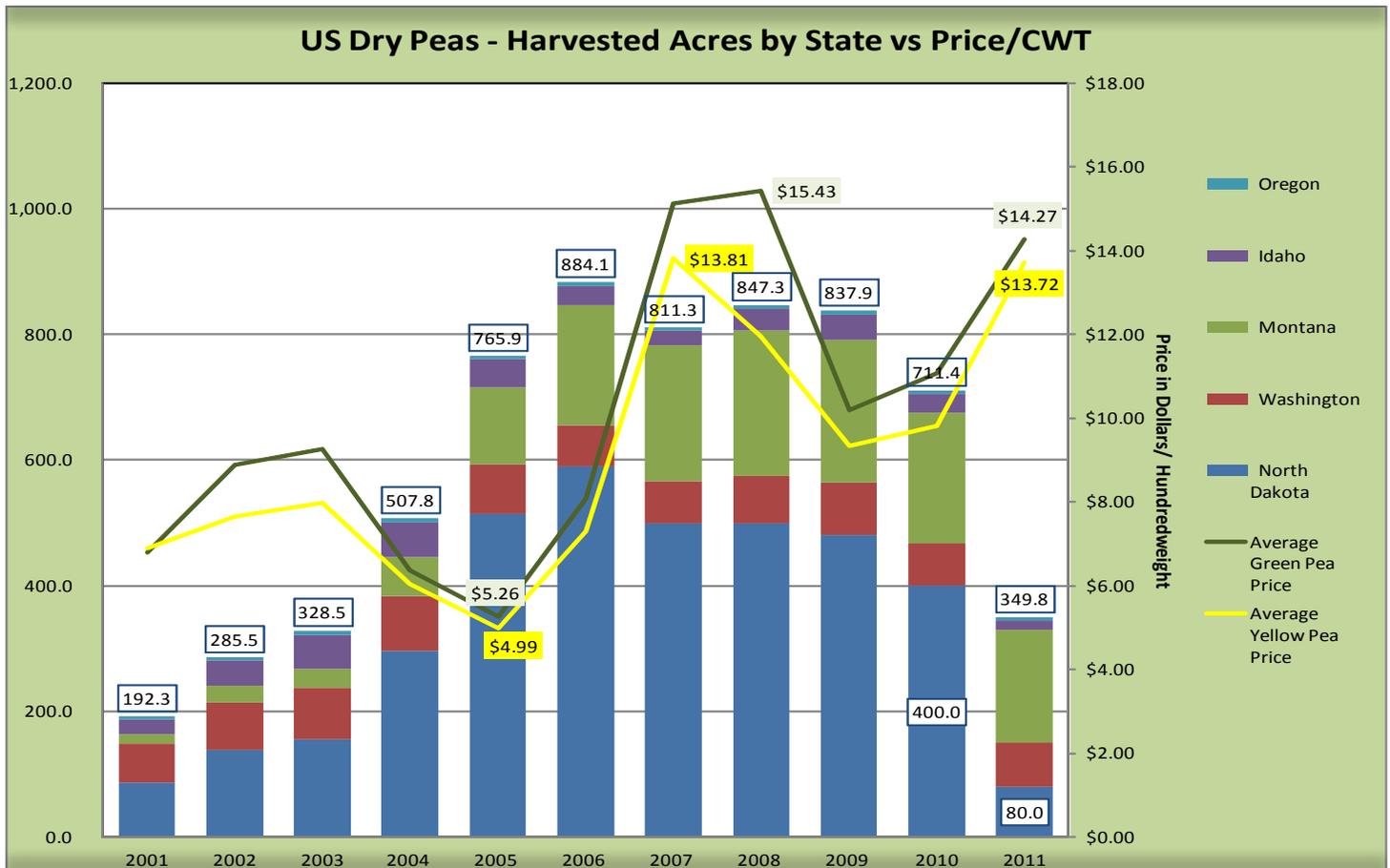
North Dakota farmers couldn't catch a break with the weather, and dry pea acreage plummeted from 400,000 harvested acres in 2010 to 80,000 harvested acres in 2011. Lentil acreage experienced a similar drop from 255,000 acres to 77,000 acres. Farmers in Montana fared a little better with dry pea acreage dropping from 207,000 acres to 180,000 acres. Lentil acreage actually increased

Dry pea acreage in the Pacific Northwest dropped a little from 98,000 in 2010 to 85,000 acres in 2011. Lentils dropped from 132,000 acres to 87,000 acres. Chickpea planted acreage was estimated at 133,000 acres in 2011 compared to 146,000 acres in 2010. Harvested chickpea data wasn't released prior to this publication's printing deadline.

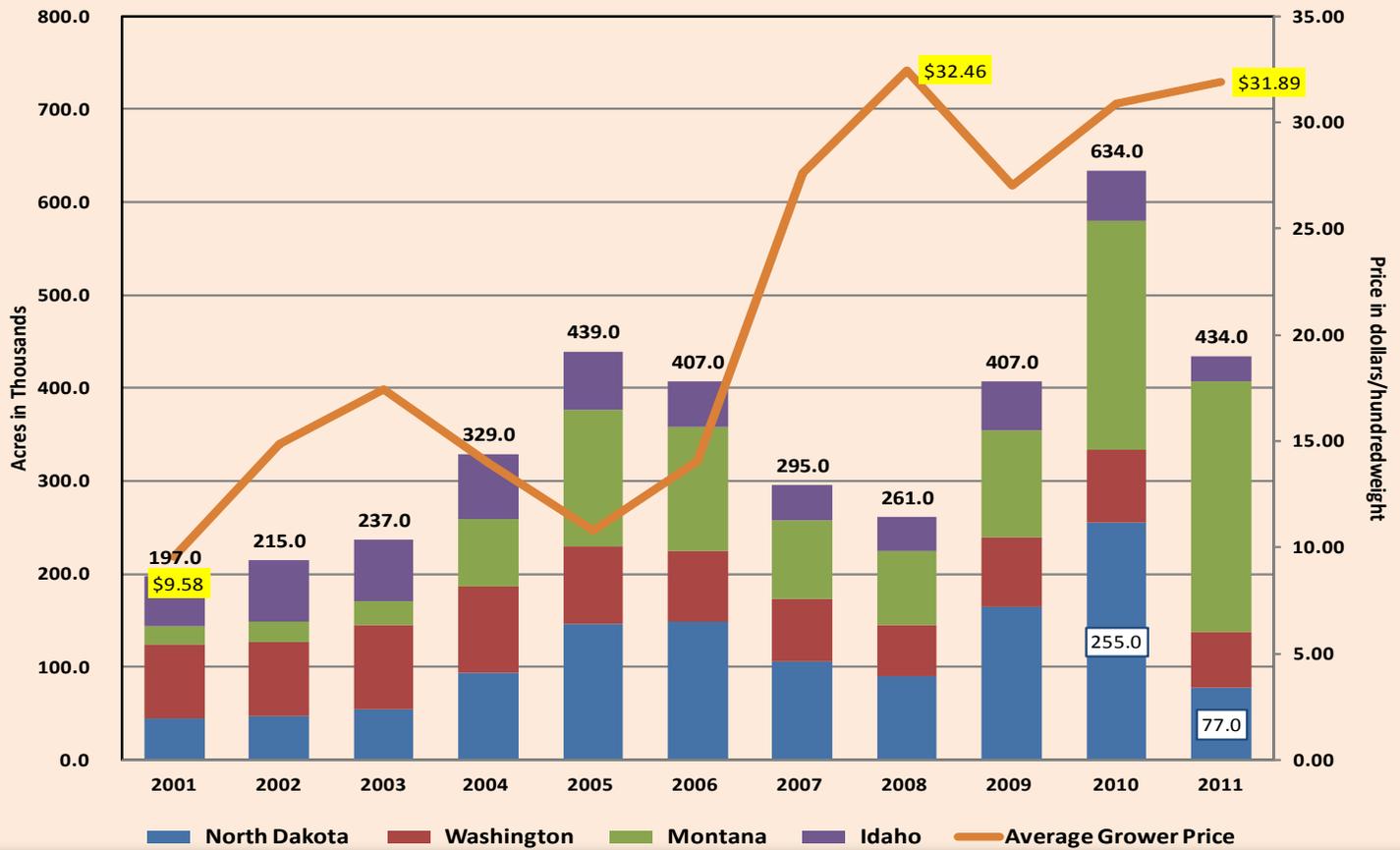
Pulse acres will hopefully rebound next spring provided the weather cooperates.

Well, harvest was fine for what was there. The high percentage of prevented plant acres in the spring made for a quick harvest. - Joe Bloms, Viterra (Ray, ND)

The crop was better than average overall though we were later than normal. Customers were anxious to get the first shipments. Late harvest impacted them as well. – Gary Heaton, Northwest Pea & Bean (Spokane, WA)

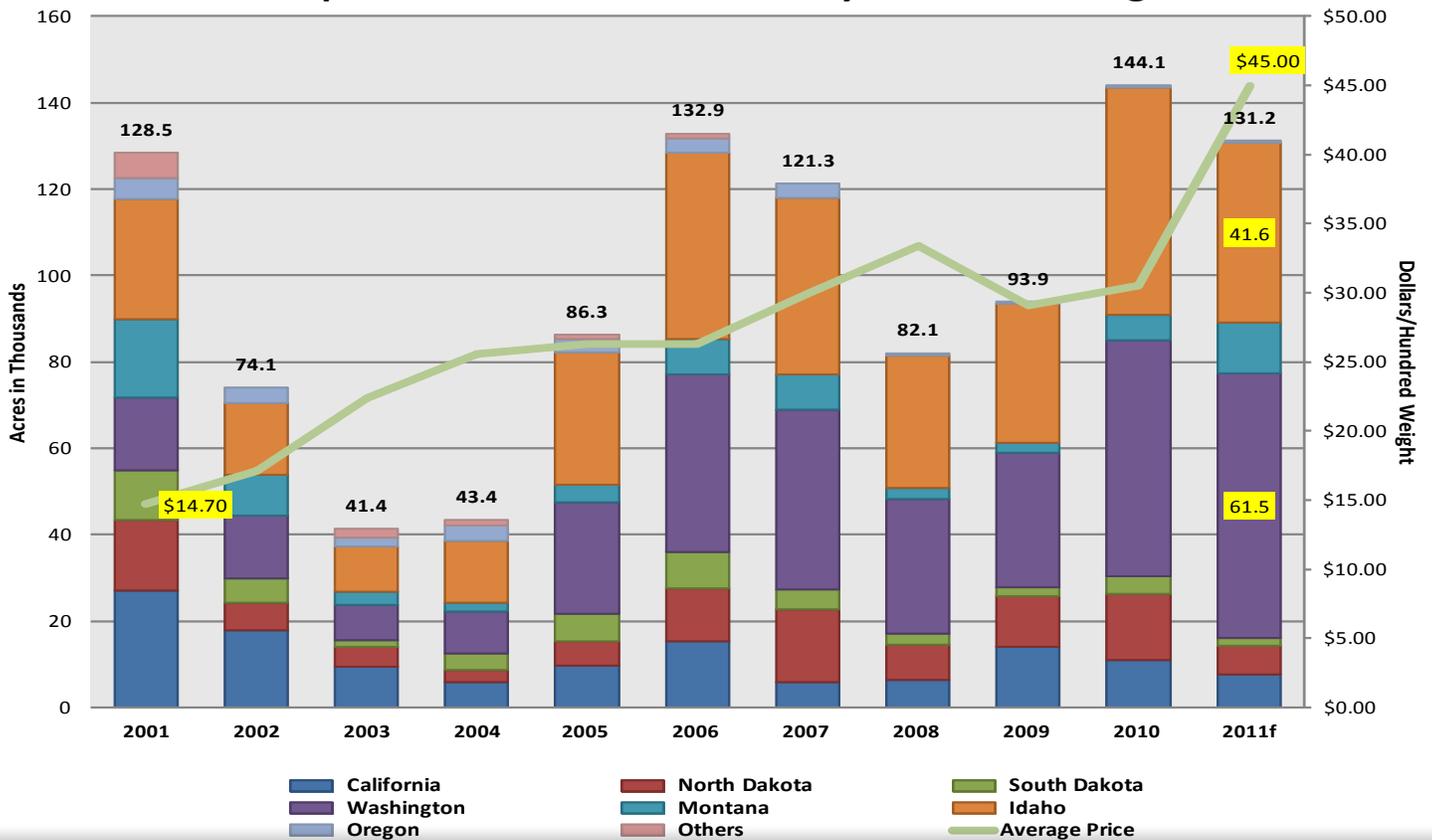


US Lentils--Harvested Acres by State vs Average Price/CWT



North Dakota Washington Montana Idaho Average Grower Price

US Chickpeas, All-- Harvested Acres by State Vs Average Price



California Washington Oregon North Dakota Montana Idaho Average Price Others

Weed Control in Pulse Crops

Ed Davis, Montana State University

What is the greatest challenge to controlling weeds in pulse crops with herbicides? In the 19th century coal miners would take caged canaries into new coal seams as an early warning device for detecting toxic gasses. Early coal mines did not have ventilation systems and if not detected early, toxic gasses like carbon monoxide and methane could accumulate and prove fatal to coal miners. The canary is very sensitive to these gases, enabling it to detect very small concentrations. As long as the canary kept singing, the miners knew their air supply was safe. A dead canary signaled an immediate evacuation. So what does the canary have to do with weed control in pulse crops?

Weed scientists often use lentil as an indicator tool for detecting very low concentrations of chemical residues left in the soil following herbicide applications made some time previous to planting the lentil. This sensitivity to herbicides makes lentil a valuable tool for research purposes (like a canary in a coal mine), but poses a difficult challenge for producers trying to control weeds growing in a crop of lentils with the use of herbicides. Peas, although not as sensitive as lentil, also present the same challenge.

There are scores of herbicides available for effectively controlling the most common and problematic broadleaf weeds growing in cereal grain crops, but most of them can't be used in pulse crops due to injury potential. Since pulse crops are broadleaf (dicotyledonous) plants, there are several labeled herbicides available for effectively controlling grass weeds (monocotyledonous plants) in these pulse crops. Herbicides like Prowl, Treflan, Sonalan and Pursuit Plus can be applied to the ground prior to planting lentil, pea or chickpea, and prior to emergence of the weeds and planted crop. Some of these soil applied herbicides require incorporation by mechanical means or by precipitation/irrigation for optimum activity.

Other herbicides that have activity on grass weeds can be applied directly to the crop after emergence of the grass weed and crop. Post-emergence products like Assure II, Select and Poast are very effective on most grass weeds and require an adjuvant to help the herbicide enter the plant. Herbicide labels should be consulted for specific information on weeds controlled and application requirements.

However, the greatest challenge to weed control in pulse crops is controlling broadleaf weeds like kochia, wild buckwheat, prickly lettuce and Russian thistle. Since both crop and weed are dicot plants, the list of herbicides that have the ability to control these broadleaf weeds and prove safe on the pulse crop is very short. The best approach is to plant pulse crops in fields where a concerted effort has been made over past years to control these broadleaf weeds and keep them from producing seeds. The herbicides used during this preparation period must be selected while paying attention to crop rotation restriction time periods prior to planting pulse crops. The time between herbicide application and planting pulse crops may vary depending on the soil properties of the field and the amount of precipitation accumulated during this time period.

Making sure the field is clean of all emerged weeds prior to planting the pulse crop is also essential. An application of glyphosate in the fall and/or in the spring prior to planting will give the crop the best chance of establishment and early advantage in competing for nutrients, moisture, sunlight and space. The use of a soil active herbicide like Prowl can be applied with the glyphosate to provide some level of control of later emerging weeds. Enhanced burn down of problematic weeds like prickly lettuce can be achieved by combining Sharpen herbicide with glyphosate and applying prior to crop emergence for dry pea and chickpea. If broadleaf weed populations persist after emergence of the pulse crop, there are a few herbicides that can be applied directly over the crop but should be applied when the weeds are still small. The spectrum of weeds controlled by these post emergence herbicides varies by product. Often the best control is achieved when a pre-plant herbicide application is used in combination with a post-emergence herbicide application as a one-two punch.

Occasionally herbicides used in pulse crops cause a delay in flowering, so planting crops as soon as feasible in a region may help avoid blossom



MRLs: the Saga Continues

Todd Scholz, USADPLC Director of Research & Info

Until March of this year, M, R & L were just letters that might work well in the “Wheel of Fortune” TV show. Now, MRLs (Maximum Residue Limits) directly influence basic management decisions such as how to treat the growing plants and where to market the harvested crop. USADPLC is working on three fronts to make crop management decisions more about the economic and environmental climate and less about three letters.

Solving immediate issue of the glyphosate MRL for lentils in EU

- **Strategy:** The USADPLC joined with Pulse Canada, US EPA and Canadian PMRA, the registrant (Monsanto-USA and Canada), and the International Pulse Trade and Industry Cooperative (CICILS/IPTIC) to change the MRL in the EU. The process takes at least 12 months.
- **Status:** According to EU protocols, Germany served as a Rapporteur for the Data Package. The EFSA (European Food Safety Agency) reviewed the package and will report their recommendation to the Standing Committee in December.
- **Next:** The Standing Committee approves the recommendations of EFSA in December. Actual adoption of the EU approved MRL is done by each member country. Acceptance of glyphosate MRL for lentils is anticipated in the first half of next year.

Residue Trials to support Lentil MRL Data Package

- **Strategy:** The Data Packages sent to EU and CODEX used a mix of dry pea and lentil residue trials to establish the MRL. The mix of crops was considered by the registrant and the regulators a possible data gap. Residue trials on lentils were conducted to fill this gap.
- **Status:** Ten trials, three in US and seven in Canada, were conducted this summer. The trials have been harvested and submitted to Monsanto for lab analysis which is being conducted now.
- **Next:** Final analysis will be completed and published within the next six months.

CODEX Standards

- **Strategy:** CODEX standards are used as a default for a majority of our trading partners. A review of CODEX MRLs found a serious lack of MRLs for pulse crops overall and no MRL for glyphosate on lentils. The normal CODEX process takes over three years. USADPLC joined an international coalition with Pulse Canada and Pulse Australia along with the CICILS/IPTIC organization to establish a harmonized MRL for glyphosate on lentils, and to establish a prioritized list of chemicals in use in pulse crops for establishing harmonized MRLs.
- **Status:** With the help of Lois Rossi from US EPA, USADPLC and Monsanto-USA were able to attach an MRL data package for glyphosate in lentils to a glyphosate package that was reviewed in May 2011. This cut over two years off the process! In November, the Joint Meeting for Pesticide Residues (JMPR) completed a scientific review with a draft recommendation to approve 5 parts per million (ppm) for glyphosate in lentils. In addition, the US Committee for JMPR submissions has included the Pulse Crop Priorities in its submission for consideration by the JMPR—beginning the process of harmonization of USADPLC priorities.
- **Next:** The next step in MRL approval is the CCPR (CODEX Committee on Pesticide Residues) which meets in Shanghai, China, in April 2012. This group is the risk management group for CODEX. Glyphosate on lentils will be considered for approval as well as the schedule of MRLs for CODEX establishment.

Weed Control

occurring during the hot, dry conditions of late summer.

Lentil growers also have the option of using Clearfield varieties which allows the use of Beyond herbicide as an additional tool for weed control since it offers both grass and broadleaf weed control. Beyond can't be used in conventional lentil varieties due to severe crop injury potential.

Perennial broad leaf weeds like Canada thistle are best controlled through an aggressive, multi season approach prior to planting a pulse crop. Again, caution should be taken to make sure the herbicides used in this preparatory period will not persist and injure the pulse crop. A glyphosate application to vegetative rosette Canada thistle plants in the autumn over several seasons is an effective approach.

Researchers at North Dakota State University and Montana State University continually evaluate potential new herbicides and “new twists” on old herbicides in attempts to increase the “tool box” of products to assist pulse growers in optimizing their efforts to produce a high quality, high yielding product.

Pea Breeders Recognized at Research Meeting

Todd Scholz, USADPLC Director of Research & Information

Pea breeding is a rewarding experience. Just ask three industry stalwarts who received recognition from their peers at a North American Pulse Improvement Association (NAPIA) meeting in November.

NAPIA is a voluntary group of researchers and industry supporters working to improve cool season grain legumes including dry peas, lentils and chickpeas. The group sponsors a biennial scientific meeting where current pulse research is presented. The USA Dry Pea & Lentil Council has been a sponsor of the meeting for the last 12 years.

Bob Arthur

Bob Arthur began his career with the pea industry at the end of a pitchfork, feeding green pea vines into a stationery harvester or “viner”. Bob graduated from WSU with an agronomy degree in 1969, went to Brazil as a member of the Peace Corps and was hired by Crites Moscow Growers as the Assistant Research Director in 1974.

Other than a five-year stint starting in 1978 at Morrison Brothers Seed Company in Spokane, Bob has been with Crites. Among his accomplishments as Research Director are *Snake*, an afilea variety of pea with resistance to Fusarium wilt race 1, 2, 5 and 6, *Samish*, with resistance to pea enation mosaic virus (PEMV), *Barle*, a popular variety in European markets with resistance to Pea Seed borne Mosaic virus (PSMV), and *Sapphire*, a stringless snap pea. *Moose*, one of Bob’s most unexpected successes, has tolerance to Aphanomyces Root Rot.

Mike Wood

Mike currently works as the Primary Pea Breeder for ProGene Research, LTD. Graduating from WSU in agronomy in 1974, Mike began work with Asgrow Seed Company in Filer, ID, as a field man for pea and bean seed until 1983. He then worked for Rogers Seed Company in the dry bean breeding program until it was closed in 2003 which prompted his move to ProGene.

Mike has significantly improved the development of winter peas with white flowers and forage peas including a 2011 spring variety named *Flex*. *Aragorn* (2006) and *Banner* (2007) were released under his supervision. Both varieties are smooth, green dry peas that dominate the U.S. spring green pea market with over 90 percent of the acres. In the pipeline are some outstanding green peas he calls *Kiwi Green* and *Velvet Green* because of the deep green color and excellent splitting characteristics.

Dr. Rebecca McGee

Dr. Rebecca McGee was also recognized for her service over the last 19 years. Rebecca worked as the senior research scientist and fresh pea breeder for Seneca Foods and before that as a scientist for General Mills in Minnesota. During that time, she developed aphanomyces resistant fresh pea varieties and worked to develop genetic tools identifying this resistance.

Rebecca was also recognized for her service as a member of the executive board for the last eight years, organizing the finances and the publications for the NAPIA conferences. In August of 2010, Rebecca joined the USDA-ARS Grain Legume Genetics and Physiology Research Unit in Pullman, WA, as the Dry Pea Breeder and Geneticist. She is now working to develop improved spring and winter varieties of smooth green and yellow peas.



Herbed Lentils & Rice

The winning recipe from Betty Fulmer in the 2009 National Lentil Festival Cook-off.

Ingredients:

- 3 cups chicken broth
- 3/4 cup dry lentils
- 3/4 cup chopped onion
- 1/2 cup uncooked brown rice
- 1/4 cup white wine or water
- 1/2 tsp. basil
- 1/4 tsp. salt
- 1/4 tsp. oregano
- 1/4 tsp. thyme
- 1/8 tsp. garlic powder
- 1/8 tsp. pepper
- 4 oz Swiss cheese, grated

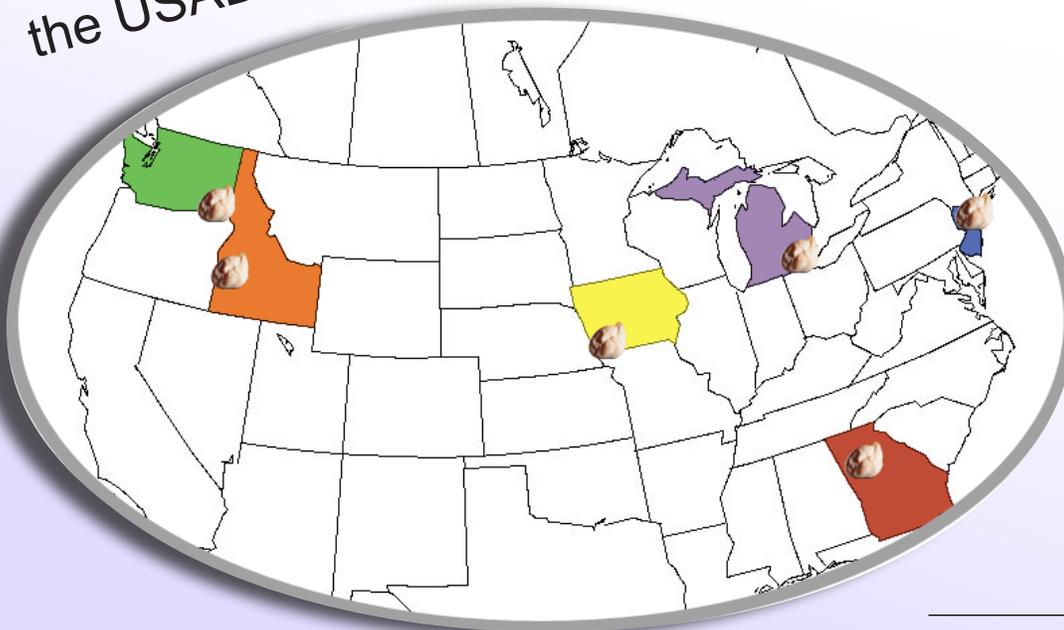
Directions:

1. Combine all ingredients except half of cheese.
2. Put in ungreased 1 1/2 or 2 quart casserole dish.
3. Bake covered in 350 degree oven 1 1/4 to 1 1/2 hours.
4. Stir twice during baking.
5. Put remaining cheese on top.
6. Bake 2 to 3 minutes more.
7. Serves 4. (Freezes well.)



A hearty casserole for cold winter evenings.

Where We're From: the USADPLC Staff



From Georgia to southern Idaho. The cities of New Jersey and Michigan. The countryside of Iowa and Washington - the staff of the USA Dry Pea & Lentil Council is here working for all the growers, industry members and consumers of dry peas, lentils and chickpeas across the nation. Don't hesitate to contact us if you have a question!



Ryan Brooks is a 3rd generation farmer and rancher in Bowman, North Dakota. He shares about his history in agriculture.

USA Dry Pea & Lentil Council

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