

Montana

1 Producer of Pulse Crops



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April 21, 2015

Pulses

The Heart of Healthy Food



The Montana Department of Agriculture is dedicated to expanding the pulse industry in the state, as well as globally. We want to create awareness and educate people on all the possibilities these crops offer. The International Year of Pulses (2016) is going to be a year that consumers and producers alike are going to benefit. The state of Montana has opportunities for producers, as well as businesses and companies that are looking to expand in this profitable industry.

Department of Agriculture Mission

“To protect producers and consumers and to enhance and develop agriculture and allied industries”

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Montana's Pulse Potential

Why Pulses are Super Foods

Why Pulses are Super Ingredients

Pulse Crops: Peas, Lentils & Chickpeas

Pulse Crops: Peas, Lentils & Chickpeas

Pulse crops present a major opportunity to Montana farmers.


- Pulse crops utilize soil moisture efficiently.
- In Montana, farmers have incorporated pulse crops into their crop rotations to reduce the amount of land left fallow (idle). Pulse crop acres have increased from 350,000 in 2009 to over 700,000 in 2014.
- Pulse crops require little (if any) nitrogen fertilizer; instead they fix nitrogen from the air into the soil.
- Pulse crops help break disease and pest cycles in wheat and barley.
- The wheat or barley crop that follows a pulse crop can experience substantial rotational benefits, improving yield and quality.
- Pulse crops are versatile, adding flexibility to cropping systems. If growing conditions turn dry, pulse crops can be harvested or grazed for forage or terminated to conserve soil moisture - the soil will still benefit from nitrogen fixation, rotation, and having a cover crop.

Because Montana's economy, farmers, and communities have so much to gain from expanded pulse production, the Montana Department of Agriculture seeks to help increase growers' understanding of pulse crops, marketing opportunities, and profit potential.

The department works to attract more buyers and processors and encourage the expansion of existing companies, with the goals of increasing delivery points and in-state processing so that Montana farmers benefit from a strong marketplace.


As the pulse industry grows, Montana communities will benefit from job creation and increased economic activity resulting from additional in-state processing.

Image Gallery



2012 Pea Harvest in Teton County - Photo Courtesy of Abigail Konen

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Pulses = Protein

In 2012, 2013, and 2014 pea acreage in **Montana** has increased dramatically, due to the high prices and the comparable profitability to lentils. (Peas are considered easier to grow.) There has been very strong international demand for green peas from Montana due to the global recognition of their quality. Demand has increased for yellow peas, which are entering an increasing number of markets: pet food, flour for vermicelli noodles, and milling into flour.

Some new products that are being developed include:

- Low-fat ice cream that uses pea starch;
- High protein pizza crust using yellow peas;
- New pulse fries that use both red lentils and yellow peas;
- A pulse burger is an alternative that uses yellow peas, red lentils, green peas, and black beans for a power-packed burger; and
- Ready-to-eat snack foods and trail mixes combining red lentils, split yellow peas, split green peas combined with sunflower seed, cranberries, and chocolate chips.

Pulse crops, whether being shipped domestically or internationally, are becoming big business in the Montana region. The success of these crops will continue to increase in popularity with opportunities for producers continuing to grow.

Overall, pulses are a whole food that is high in protein, low in fat, rich in prebiotics, contain no cholesterol, and are abundant in low glycemic carbohydrates. Pulses are valuable nitrogen fixing crops. Incorporation of pulses into both daily diets and agricultural production will provide solutions to healthy living and healthy crop production.

Eating 100 g of pulses per day provides very beneficial amounts of protein, iron, zinc, selenium, and no cholesterol. **We should eat more Montana grown pulses!!**



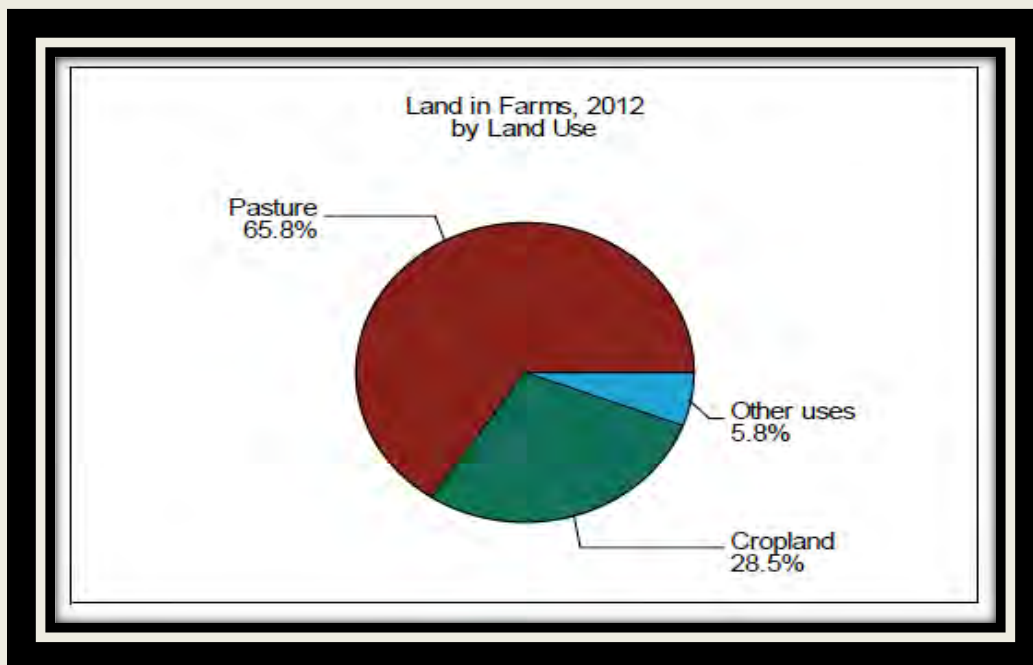
The Montana Lentil Burger

Montana Produces Superior Quality Pulse Crops

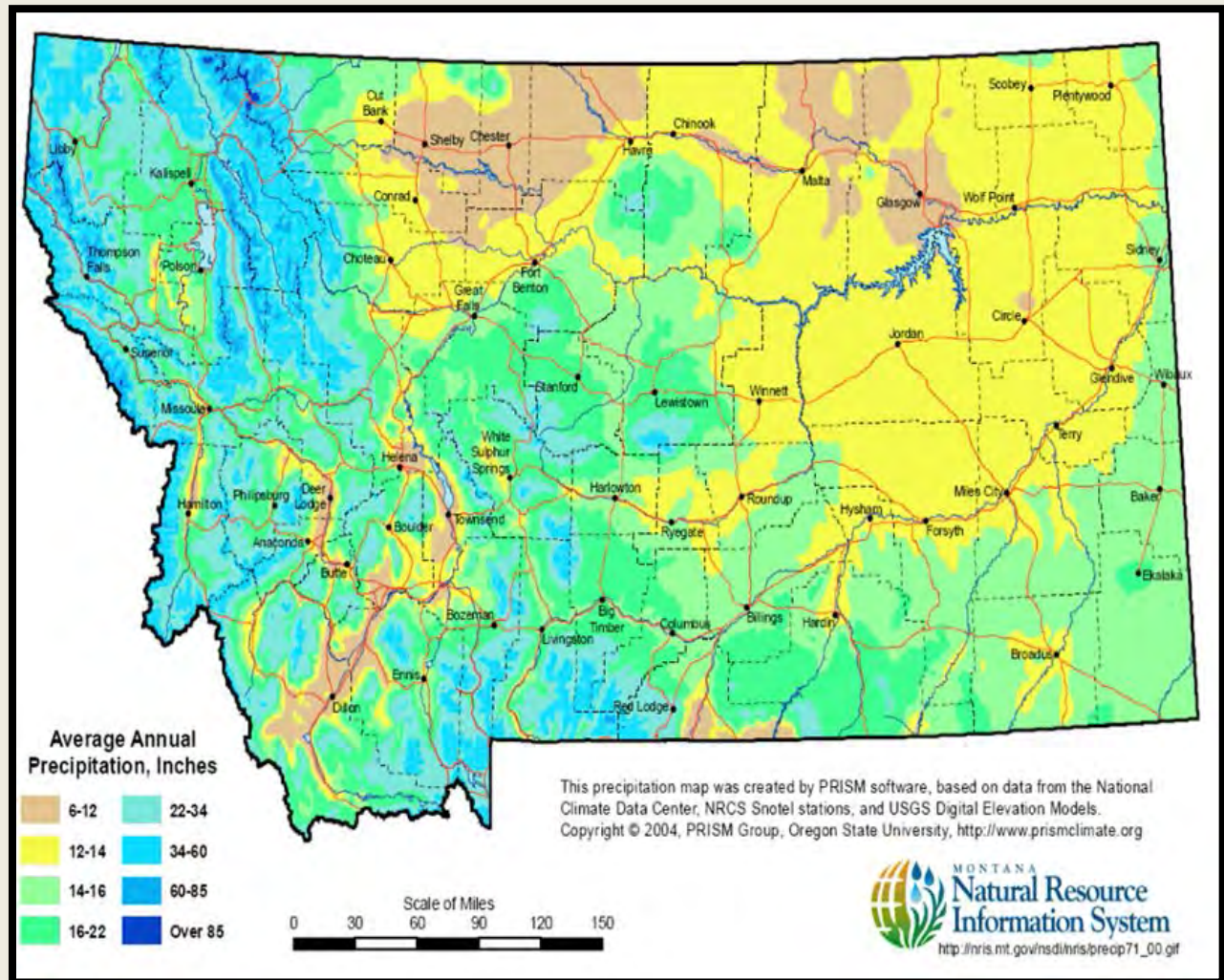
- Montana ranks **#1** in the nation for **dry peas** and **lentils**.
- Montana climate is conducive to the growing environment these crops thrive in.
- Land is available and, when given the appropriate resources, farmers are increasing their bottom line.
- With an increasing number of processing plants and elevators receiving pulse crops in Montana, more producers are including peas, lentils, and chickpeas in their rotation.
- Replacing fallow acres with pulse crops works economically for the producers.
- Field trials have shown a yield boost to wheat grown on pea ground, which is encouraging more Montana producers to introduce pulse crops
- Montana produces 48% of U.S. dry peas.
- Montana produces 39% of U.S. lentils.

There are 28,008 farms and ranches in Montana.

The average size of a farm is 2,134 acres (863 hectares).



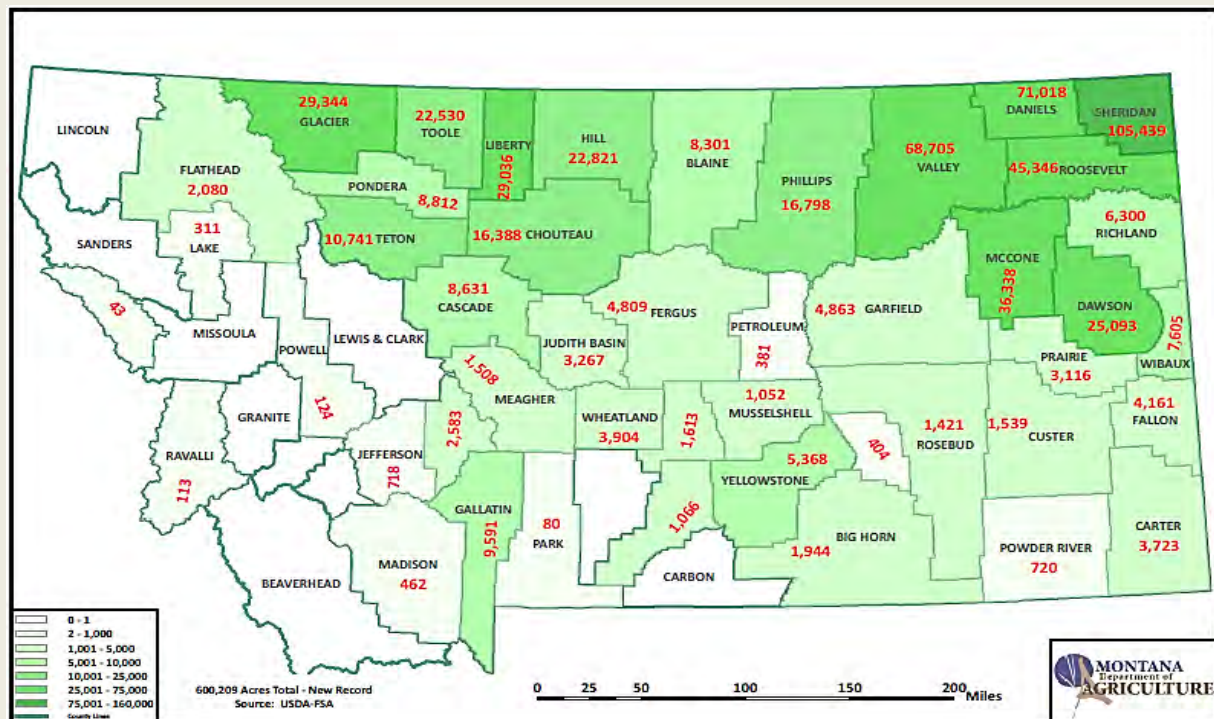
Montana Average Annual Precipitation



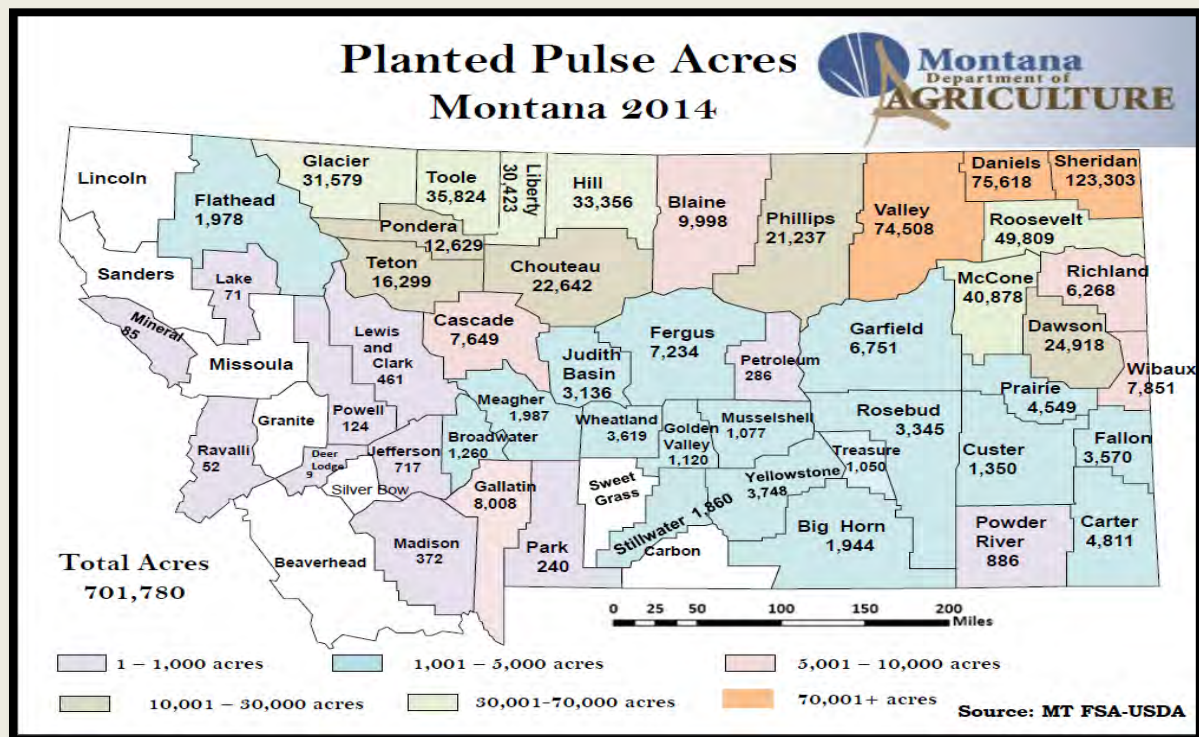
Average Precipitation by Region

- Northwestern Montana: 18.6 inches (47.24 cm)
- Southwestern Montana: 16.2 inches (41.15 cm)
- South Central Montana: 14 inches (35.56 cm)
- Eastern Montana: 13.1 inches (33.27 cm)
- Average : 15.3 inches (38.86 cm)

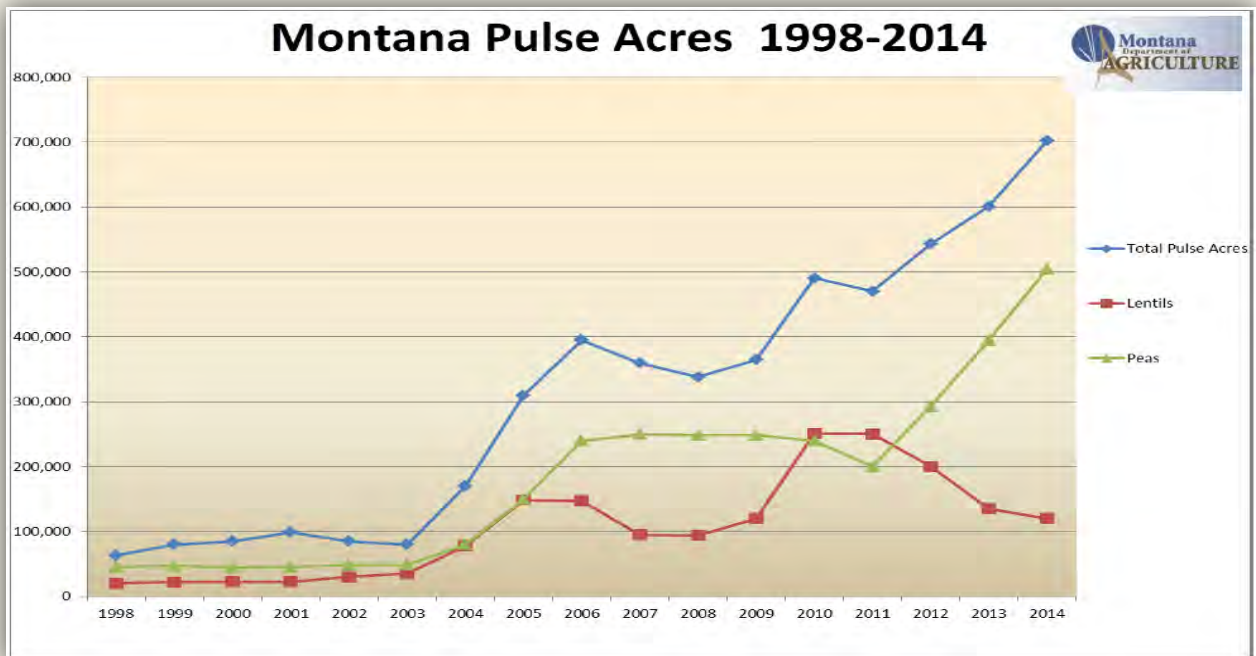
2013 Pulse Crop Acreage



600,209 acres (242,891 hectares)



701,780 acres (284,000 hectares) *new record



Why Pulse Production Will Continue to Expand in Montana

- Capacity to enable intensifying crop rotations, reducing fallow
- Competitive economics vs. other crops
- Increasing fertilizer prices
- Need for crop diversification to address disease, pest and weed problems
- Possible diversification of production and market volatility
- Increased number of buyers and delivery points

Prospective Plantings- March 2015(USDA)

Montana Highlights

- **Dry edible bean** acreage is expected to total 53,000 acres, up 41 percent from the 37,500 acres in 2014
- **All garbanzo beans** (chickpeas) area planted is expected to total 43,000 acres, up 11,500 acres from 2014
- **Lentil** acres planted for 2015 is expected to total 180,000 acres, up 50,000 acres from 2014
- **Dry edible pea** area planted is expected to total 570,000 acres, up 45,000 acres from 2014

Consumers have spoken, and they're asking for pulses.



Looking ahead, Montana is poised to become a world-class pulse production region as acreage continues to expand and as Montana's reputation for quality becomes increasingly recognized across the globe. It is predicted that Montana's pulse crop acreage has the potential to increase to 1,400,000 acres in the next 5-10 years



Peas

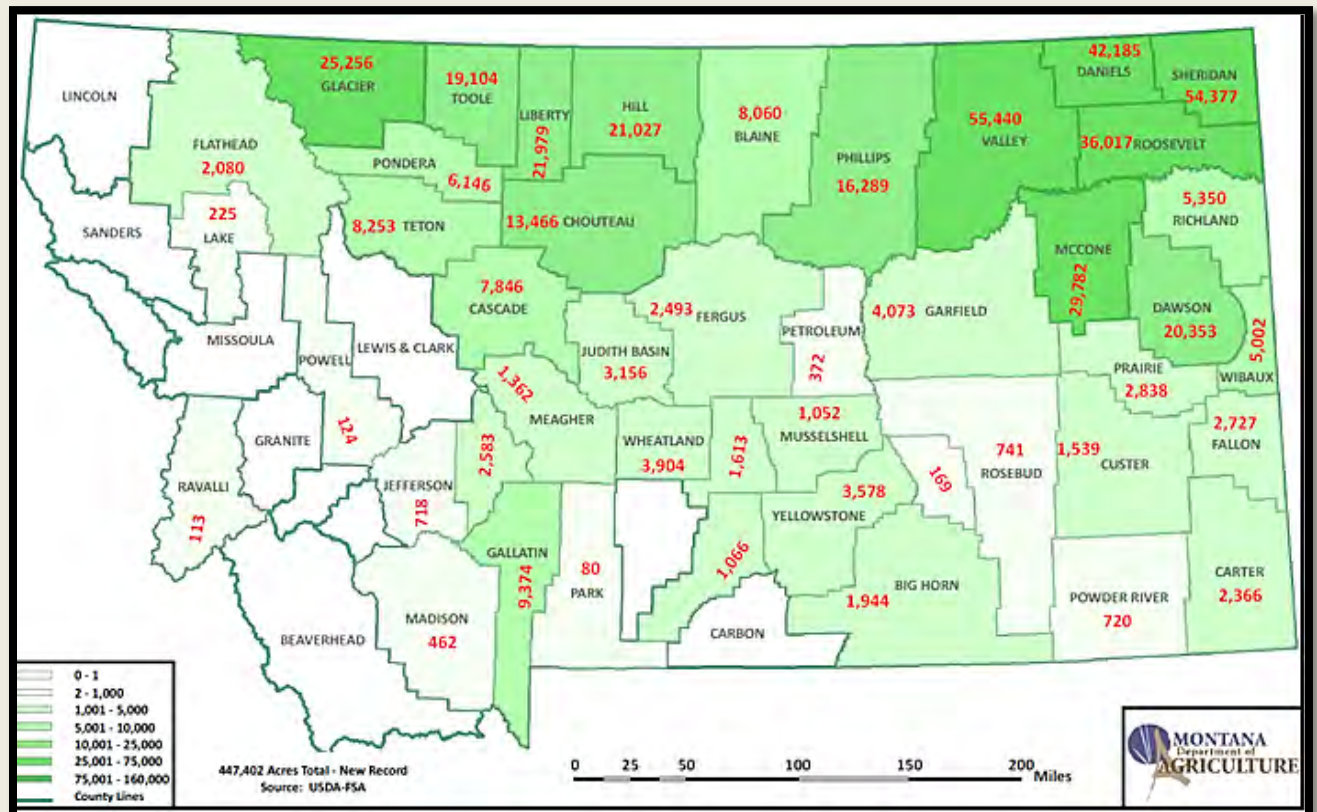


Growth of Dry Pea Acreage and Production

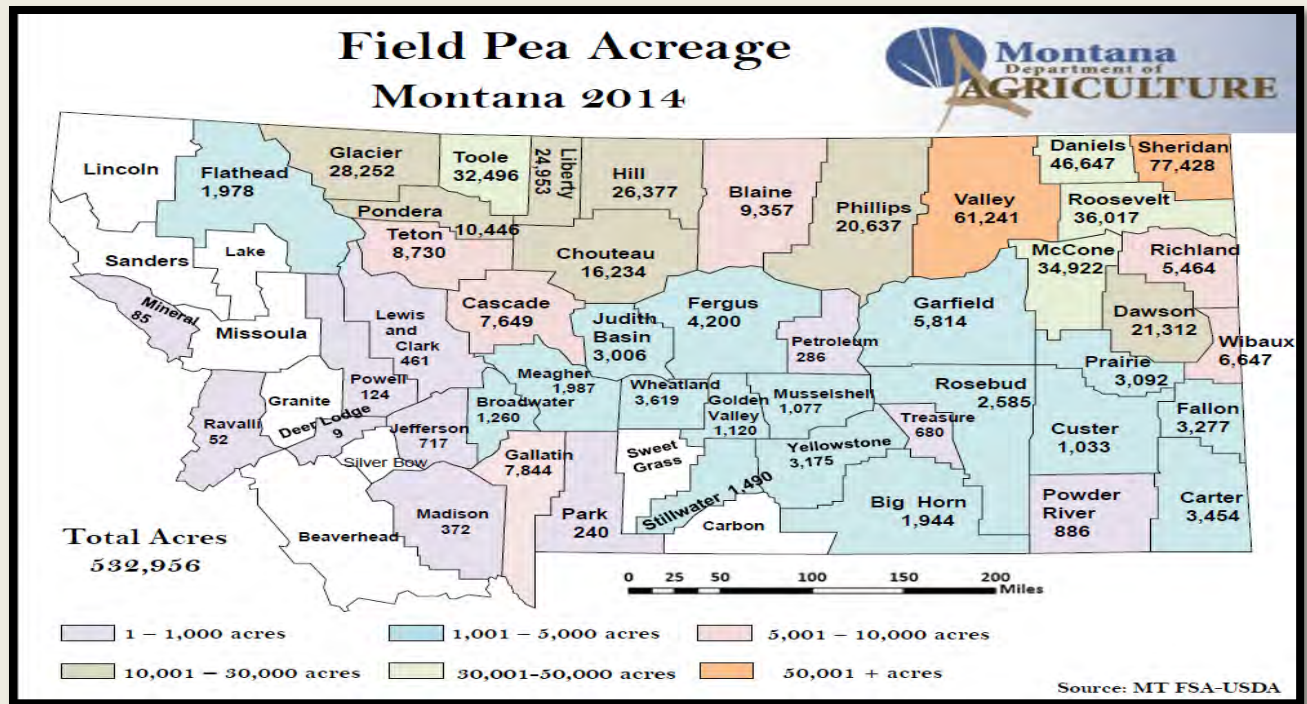
Year	Planted	Harvested	Yield
	(000) Acres		Pounds
2003	33.0	31.0	1,450
2004	68.0	63.0	2,010
2005	135.0	122.0	1,800
2006	210.0	191.0	1,080
2007	235.0	217.0	1,700
2008	245.0	231.0	1,080
2009	240.0	226.0	1,330
2010	220.0	207.0	2,000
2011	190.0	177.0	1,500
2012	315.0	293.0	1,500
2013	440.0	395.0	1,800



2013 Montana Pea Crop Acreage by County



447,402 acres (181,054 hectares)



532,956 acres (215,534 hectares) *new record



Harvest Time - Yellow Peas

Garfield County/Eastern Montana

Grades and Grade Requirements for Peas

Grading Factors	Maximum percent limits of:		
	Grades U.S. Nos. <u>1</u> /		
	1	2	3
Defective Peas			
Weevil-Damaged Peas	0.3	0.8	1.5
Heat-Damaged Peas	0.2	0.5	1.0
Damaged Peas <u>2</u> /	1.0	1.5	2.0
Other Classes <u>3</u> /	0.3	0.8	1.5
Bleached Peas <u>4</u> /	1.5	3.0	5.0
Split Peas	0.5	1.0	1.5
Shriveled Peas	2.0	4.0	8.0
Peas with Cracked Seedcoats	5.0	7.0	9.0
Foreign Material	0.1	0.2	0.5
Minimum Requirements for Color	Good	Good	Poor
Smooth Yellow Dry Peas	Good	Fair	Poor
<p>U.S. Sample grade: U.S. Sample grade shall be dockage-free peas which:</p> <ul style="list-style-type: none"> (a) Do not meet the requirements for the grades U.S. Nos. 1, 2, or 3; or (b) Contain metal fragments, broken glass, or a commercially objectionable odor; or (c) Contain more than 15 percent moisture; or (d) Are materially weathered, heating, or distinctly low quality; or (e) Are infested with live weevils or other live insects. <u>5</u>/ <p><u>1</u>/ Uniformity of Size Requirements - Dry peas of any of the numerical grades shall be of such size that not more than 3.0 percent shall pass through the appropriate oblong-hole sieve as follows:</p> <p style="margin-left: 40px;">Mottled peas 9/64" x 3/4"</p> <p style="margin-left: 40px;">Special grade - Small peas..... 10/64" x 3/4"</p> <p style="margin-left: 40px;">All other peas 11/64" x 3/4"</p> <p><u>2</u>/ Damaged peas do not include weevil-damaged or heat-damaged peas.</p> <p><u>3</u>/ These limits do not apply to the class Mixed Dry peas.</p> <p><u>4</u>/ These limits do not apply to Mottled, Wrinkled and/or Miscellaneous Dry peas, except for Marrowfat- type Dry peas.</p> <p><u>5</u>/ As applied to dockage-free whole dry peas, the meaning of the term <u>infested</u> as set forth in the Pea and Lentil Inspection Handbook.</p>			



Peas-60 days

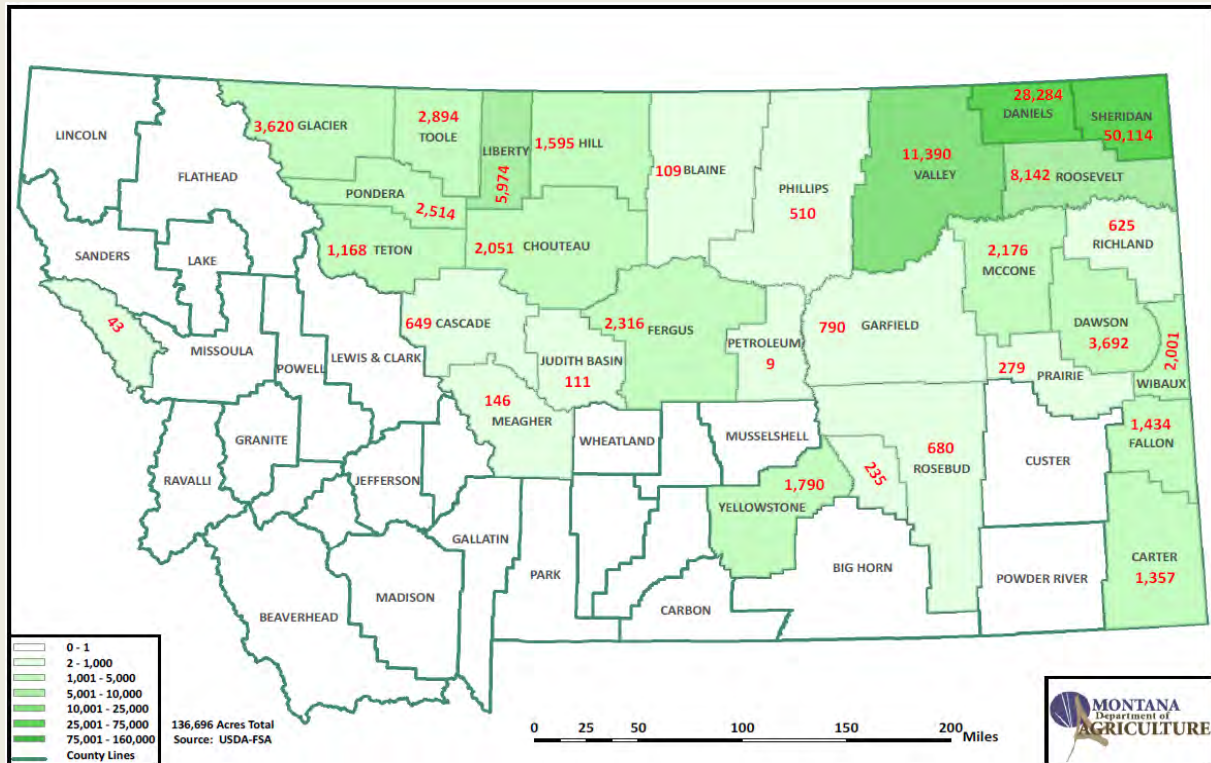
Lentils



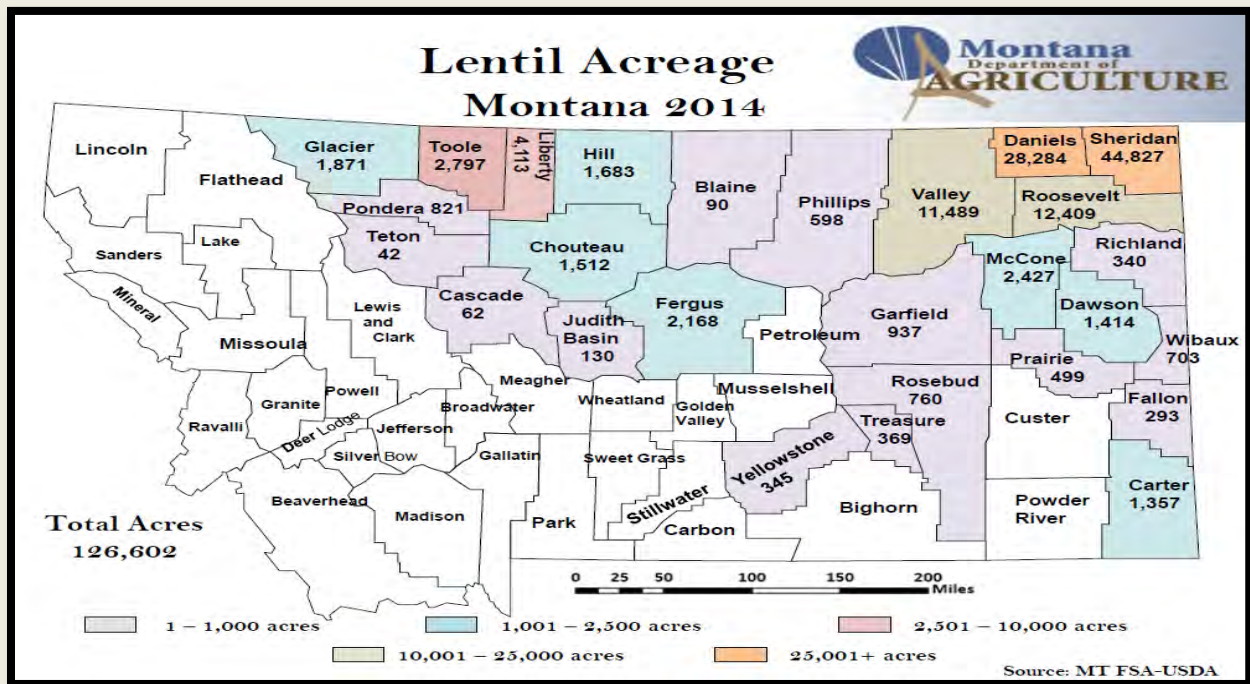
Lentil Acreage and Production

Year	Planted	Harvested	Yield
	(000) Acres		Pounds
2003	30.0	26.0	1,050
2004	78.0	72.0	1,400
2005	150.0	146.0	1,280
2006	142.0	134.0	600
2007	87.0	85.0	1,150
2008	83.0	79.0	770
2009	122.0	116.0	1,380
2010	260.0	247.0	1,360
2011	260.0	247.0	1,100
2012	205.0	195.0	1,100

2013 Montana Lentil Acreage



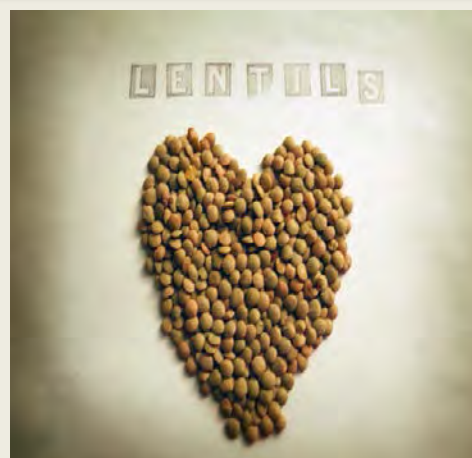
136,696 acres (55,318 hectares)



126,602 acres (51,234 hectares)

Grade and Grade Requirements for Lentils

Grading Factors	Grades U.S. Nos.		
	1	2	3
Defective Lentils			
Total 1/.....	2.0	3.5	5.0
Weevil-Damaged Lentils.....	0.3	0.8	0.8
Heat-Damaged Lentils.....	0.2	0.5	1.0
Foreign Material			
Total 2/.....	0.2	0.5	0.5
Stones.....	0.1	0.2	0.2
Skinned Lentils.....	4.0	7.0	10.0
Contrasting Lentils 3/.....	2.0	4.0	>4.0
Inconspicuous Admixture.....	0.5	0.8	1.0
Minimum Requirements for Color.....	Good	Fair	Poor
<p>U.S. Sample grade shall be lentils which:</p> <ul style="list-style-type: none"> (a) Do not meet the requirements for the grades U.S. Nos. 1, 2, or 3; or (b) Contain more than 14.0 percent moisture, live weevils, or other live insects, metal fragments, broken glass, or a commercially objectionable odor; or (c) Are materially weathered, heating, or distinctly low quality. <p>1/ Defective lentils total is weevil-damaged, heat-damaged, damaged, and split lentils combined.</p> <p>2/ Foreign material total includes stones.</p> <p>3/ Lentils with more than 4.0 percent contrasting lentils shall grade no higher than a U.S. No. 3.</p>			

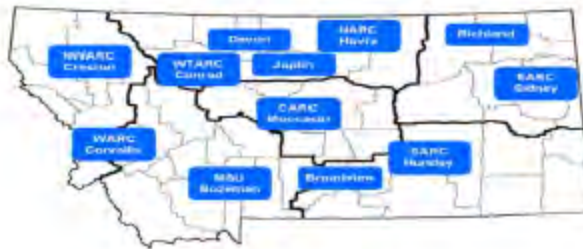


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2014 Montana Cool-Season Spring Pulse Variety Evaluations Report

Prepared By:

Yesuf Mohammed and Chengci Chen



**Montana State University
Montana Agricultural Experiment Stations**

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<http://ag.montana.edu/carc/>

To sustain the pulse production in the state, this information on management practices and variety development is needed for the production of good quality pulses preferred by national and international markets.

The objectives of these trials were to evaluate spring dry pea, lentil and chickpea commercial varieties and experimental lines for adaptability and yield potential in the diverse Montana environments. (2014 Annual Report)

Pinto Beans

Pinto Beans Acreage and Production

Year	Planted	Harvested	Yield	Production
	(000) Acres	(000) Acres	Pounds	(000) Cwt
2003	9.7	9.7	2,150	209
2004	10.8	10.6	2,380	252
2005	12.0	10.0	2,390	239
2006	10.7	10.5	2,230	234
2007	8.5	8.4	2,280	192
2008	8.6	7.2	2,420	174
2009	9.6	9.2	2,440	224
2010	12.5	11.8	2,330	275
2011	5.0	5.0	2,600	130
2012	9.0	8.5	2,500	213
2013	5.8	5.7	2,400	137

According to the United States Dry Bean Council, each American eats about 7.5 pounds of beans per year. Pinto beans, which are used frequently in Mexican food, are the most popular variety, followed by navy beans and great northern.



Yellowstone Bean Company, Bridger, Montana



Pinto beans are cleaned, sorted and graded at the Yellowstone Bean Co. facility in Bridger.



The irrigated farmland along the Yellowstone and Missouri rivers is prime real estate for pinto bean production, as the beans are especially well suited to the region's arid climate.

Southeastern and eastern Montana has a drier climate and the beans are very productive in drier climates.

Pinto beans are also very good for rotational purposes, because they are legumes and they put nitrogen back in the soil.

129 Grades and grade requirements for the class Pinto Beans.

Grade	Percent Maximum Limits of ---						
	Moisture ¹	Total Defects (Total damaged, Total foreign material, Contrasting classes, & Splits)	Total Damaged	Foreign Material		Contrasting Classes ²	Classes that Blend ³
				Total (including stones)	Stones		
U.S. No. 1	18.0	3.0	3.0	0.5	0.2	0.5	5.0
U.S. No.2	18.0	5.0	5.0	1.0	0.4	1.0	10.0
U.S. No. 3	18.0	7.0	7.0	1.5	0.6	2.0	15.0

U.S. Substandard shall be beans which do not meet the requirements for the grades U.S. No. 1 through U.S. Sample grade. Beans which are not well screened shall also be U.S. Substandard, except for beans which meet the requirements for U.S. Sample grade.

U.S. Sample grade shall be beans which are musty, sour, heating, materially weathered, or weevily; which have any commercially objectionable odor; which contain insect webbing or filth, animal filth, any unknown foreign substance, broken glass, or metal fragments; or which are otherwise of distinctly low quality.

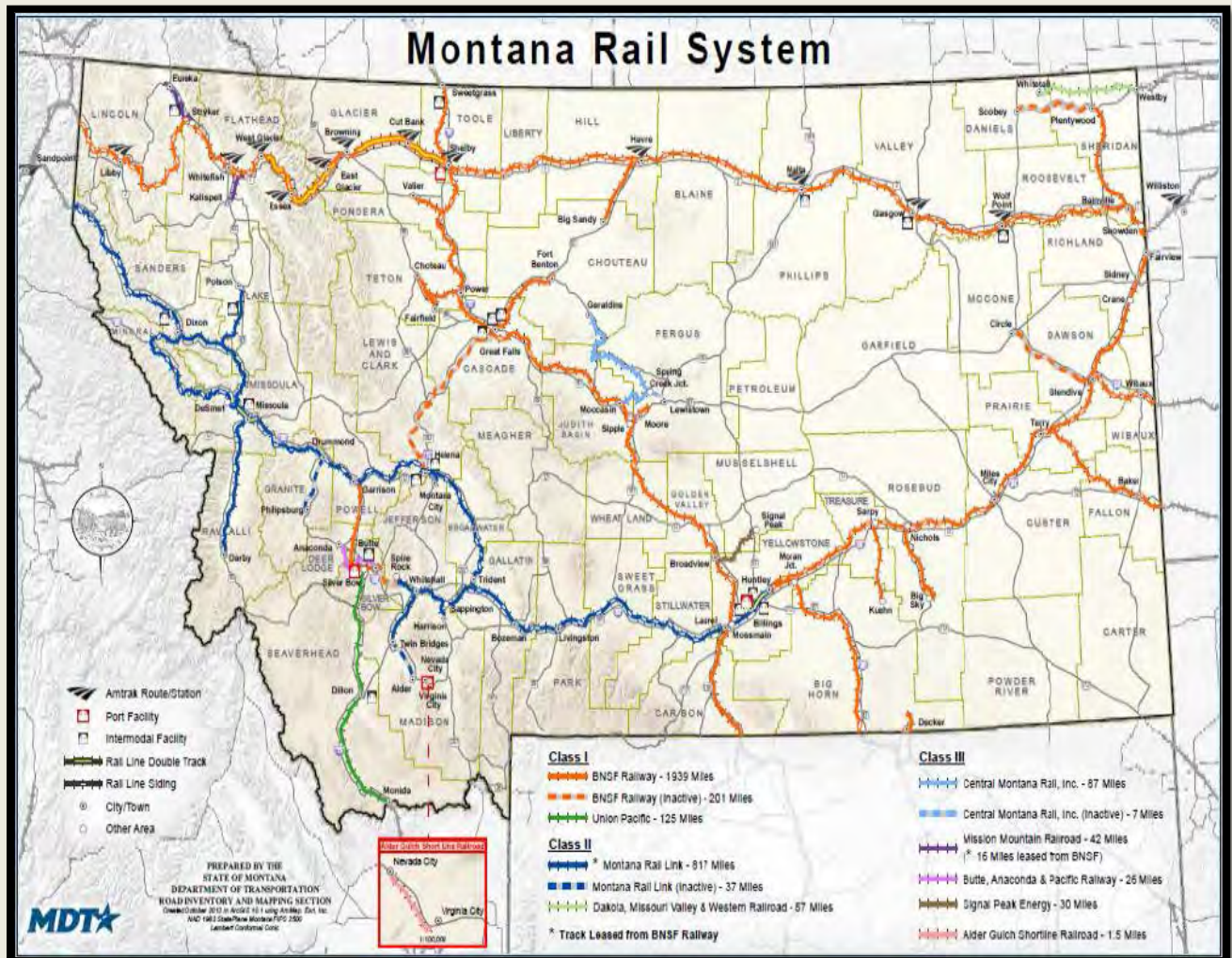
¹Beans with more than 18.0 percent moisture are graded High moisture.

²Beans with more than 2.0 percent contrasting classes are graded Mixed beans.

³Beans with more than 15.0 percent classes that blend are graded Mixed beans.

[47 FR 19311, May 5, 1982] [47 FR 20547, May 13, 1982] [60 FR 36030, July 13, 1995] [62 FR 52967, Oct. 10, 1997]
[69 FR 75504, Dec. 17, 2004]

Transportation



- Based on current reports, 75% of pulse crops are transported by rail.
- BNSF railway has 1,939 miles (3,121 km) of track in Montana.
- 65,000 car loads are shipped from Montana shippers annually.

2014 Montana Reported Crops 11/22/14 (USDA-FSA)

Total Production Acreage

<u>Beans</u>	<u>42,222.75 acres (17,086 hectares)</u>
Garbanzo, Large Kabuli(Chickpeas)	24,485.87 acres (9,909 hectares)
Garbanzo, Small Desi (Chickpeas)	8,061.69 acres (3,262 hectares)
Pinto Beans	5,640.67 acres (2,282 hectares)
Cranberry	31.6 acres (12 hectares)
Red Kidney	130 acres (52 hectares)
Fava	109.11 acres (44 hectares)
Great Northern	389.52 acres (157 hectares)
Green Bean	8.63 acres (3 hectares)
<u>Lentils</u>	<u>126,601.8 acres (51,233 hectares)</u>
<u>Peas</u>	<u>532,956.1 acres (215,679 hectares)</u>
Austrian	10,702.64 acres (4,331 hectares)
Chickling	567.77 acres (229 hectares)
Green	197,552.67 acres (79,946 hectares)
Snap/Sugar	12 acres (4 hectares)
Speckled Peas	3,819.46 acres (1,545 hectares)
Yellow peas	320,299.22 acres (129,620 hectares)
Grand Total	701,780.65 acres (284,000 hectares or 5547.4 square meters)