



GIVE PEAS A CHANCE A BRIEF GUIDE TO PULSE CROPS THE DAKOTA LAKES STAFF

WHAT ARE PULSE CROPS?

A hot topic this year in central South Dakota is pulse crops especially peas. One meaning of the word pulse is **the edible seeds that come from legumes**. Included in this category are peas, lentils, chickpea, black-eyed peas, mung beans, faba beans, lupins, and all the edible beans (pinto, navy, kidney, etc). If you have not heard this explanation before, you are now ready to be a lifeline on **Who Wants To Be A Millionaire**. We will attempt to explain what all the fuss is about.

What pulse crops are of interest to producers in Central South Dakota?

Peas, lentils, and chickpeas are probably the crops (for grain) of most interest to dryland producers in this part of South Dakota at this time. There may be more in the future that find use as either grain or forage crops.

Where do they come from?

Peas, lentils, and chickpeas originated in the near and middle east, same area of the world as wheat and have been a primary source of protein and energy in human diets in this region for all of recorded history. This region provides a major export market for US production. There have been (and probably will be) substantial movement of US pulse crops into PL 480 (food for peace) channels as the result of the conflicts in the middle east and the tidal wave in the Asia-NE area.

How did they get here?

Peas were brought to the US and the Midwest by European settlers. If you read the Laura Ingalls Wilder books carefully, you will find references to peas being used to feed the horses and cattle. Peas at this time had very long vines and tended to lodge badly. This is the factor that probably led to their disappearance as a grain crop from most farms in the Midwest when mechanization began. Long-vine types continued to be used alone or in combination with oats as a forage crop.

When did South Dakota start growing peas, lentils and chickpeas again and why?

There was an attempt in the 1980's to introduce chickpeas (garbanzo beans) as a crop. This effort was carried out by SDSU using grant funds from Standard Oil of Ohio. The

crop was grown at many locations in the State and performed quite well. However, substantial effort was going to be needed to fully develop the needed management practices. Standard Oil decided to terminate the program in the mid-1980's.

Some researchers at SDSU were interested in pulse crops because they might provide a means of diversifying crop rotations. In other words they were initially interested in the beneficial impacts growing these crops might provide for the major crops like corn and wheat. This is especially of interest in no-till systems. No-till provides more moisture, less erosion, better water quality, etc. but requires use of more diverse crop rotations. This is the primary reason chickpeas were grown for a few years at the James Valley Research Center near Redfield in the late 1980's. This work expanded when the effort of that station was transferred to Pierre in 1990. Peas, lentils, and/or chickpea have been grown at Dakota Lakes almost every year since it started. Other pulse crops have been grown as well. Research at Redfield indicated that no-till could be very successful if the right rotations were used. Soybeans were used as the primary broadleaf component in the rotations there with substantial success.

Growing soybeans under dryland conditions at Pierre was going to be much more difficult because of the hotter and drier August another option needed to be developed. In addition, winter wheat was a primary crop at Pierre (spring wheat was more common at Redfield). Soybeans and other warm-season broadleaf crops like sunflower and safflower are often harvested later than the optimum seeding date of winter wheat and leave little moisture to assure a good start on the wheat. It was felt that winter wheat should make up 2/3 to 3/4 of the wheat grown at Pierre. Using summer fallow as a precursor to winter wheat was an option (the most common one at the time) but in no-till fallow is costly, doesn't compete with weeds or cycle diseases well, and can increase saline seep problems. Peas and lentils are harvested early enough in the year to provide time for some moisture recharge before winter wheat seeding time. Chickpeas are harvested later than peas but earlier than soybeans or sunflowers.

If SDSU's Dakota Lakes Research Farm started growing them so long ago why haven't more farmers begun to grow them?

Several farmers have been growing these crops successfully since the early 1990's. There are several reasons there has not been wider acceptance until the last few years.. As with any new crop there is a whole host of details that need to be worked out. There were few weed control programs labeled for use in South Dakota 15 years ago. With the help of Leon Wrage, the SD Pulse Growers, and the SD Department of Ag. there are now a number of acceptable programs labeled for use in these crops. The long-vine types that were the only ones available at first made harvest challenging. It took some special equipment, patience, and luck. That created resistance. The more upright, semi-leafless types that are available now make this much less of an issue. Insects and diseases in peas have not been a problem (lentils and chickpeas are more challenging).

The main reason more have not been grown is there was no loan rate. Without a loan rate many producers (and bankers) were not willing to take the price risk. That changed with

the last farm bill. Peas, lentils, and small chickpeas now have a loan rate. This puts them on par with other crops like flax, canola, etc. in terms of reducing the price risk. Producers should check the South Dakota Pulse Growers web site and the FSA for details. The loan rate is for feed peas. As a result you could sell peas into the human consumption market for a price well above the loan rate and still collect a LDP.

There will be production risk for a few years since a grower has to develop yield history to obtain crop insurance. NAP is available but offers minimal coverage at the present time.

Are there different types of peas, lentils, and chickpeas?

It is very important to know what type of market you are trying to fill and understand their requirements. With lentils and chickpeas it is important that you know all of these factors before you buy seed. These crops are not profitable if you don't make the required grade and consequently need to use them for feed. They make good feed but it is expensive. Peas normally yield well enough that it is not a total disaster if you need to use them for feed but it could be a wasted opportunity. **BE VERY CAREFUL OF YOUR SEED SOURCE ON CHICPEAS SINCE SEED CAN CARRY DISEASE. ALSO CHICKPEAS ARE CONSIDERED TO BE A FRUIT OR VEGETABLE BY THE FSA AND CANNOT BE GROWN ON A BASE ACRE.**

The peas grown here are either green or yellow. They are used for human consumption as split peas (pea soup) and as flour. There are some colored peas also but these are used for forage. Yellow peas normally yield more and are less prone to bleaching. Bleaching occurs when certain combinations of moisture and sunlight occur after the peas are mature but before they are harvested. Green peas yield less and are more likely to bleach. Bleached peas are not suitable for human consumption. It does not hurt their feed quality. Because they are more difficult green peas often sell for a higher price IF human quality grades are made. Feed pea price is the same for both.

When are pulse crops seeded?

It depends on the crop. Some need to be seeded early, others are planted later in the year. Most of the work in South Dakota on grain crops has been on the cool-season types. Peas and lentils are seeded as early as possible (mid-March to early April) to help them avoid the heat. Peas and lentils do not like it hot.

Generally peas like it cool and moist, lentils like cool and dry, and chickpeas like it warm and dry. This means that the pulse crop used will depend on which part of the State is involved. Most areas will be able to grow at least one of these crops quite well.

Chickpeas are seeded a bit later and mature during the hot part of the summer. They like it dry during maturation (because of disease concerns). Other pulse crops like cowpeas are seeded very late because they need warm soil conditions.

When are they harvested?

This again varies with the crop. Crops like peas and lentils mature quite early. Harvest usually occurs very soon after winter wheat harvest. Differences in variety will have an affect as will management options. These crops fit workloads very well. Chickpea harvest falls after wheat but before millet and summer crops like corn or soybean.

What should be done during harvest?

Great care needs to be taken on setting the combine and handling the crop if it is intended to go to a quality sensitive market (human food). During harvest, samples should be taken and sent somewhere for grading. This can be done quickly. Once a grade is assigned, it makes it possible to market the crop easily. Be prepared to send samples directly to a buyer if they want them. The South Dakota Pulse Growers web site has a list of pulse crop buyers. South Dakota normally has the first new crop pulses in the market. This sometimes provides an opportunity.

Unfortunately, most of the human edible product grown in South Dakota must go elsewhere to be processed and packaged for export or domestic sale. That will probably change quite quickly as the industry develops if we continue to produce the excellent quality product we have become known for.

What do I do if my crop does not make human grade?

A majority of the peas grown in South Dakota will probably end up being used locally for feed. That will be the result of their excellent value for use in this manner. The pulse crops have 20 to 25% protein and energy roughly equivalent to corn. Research being done at SDSU, NDSU, U on Nebraska, and in Canada continues to improve the understanding of how valuable they are in rations and how this value can best be captured. Buyers wishing to use peas in the human market will have to outbid the value they have for feed. The fact that this crop can probably be produced in most areas of the State make it an attractive alternative to transporting feed ingredients into protein and energy deficit areas. These crops also have excellent binding qualities. This makes them a good ingredient in cake and pellets.

Making the “grade” is extremely important for some of the other pulse crops. Chickpea, lentils, and the edible bean types (pinto, navy, etc.) can have very high value if they make the appropriate class. The reason for this is that they are difficult to grow and human edible quality is not easy to attain. Since they do not produce a large volume of seed as compared to peas, but have roughly the same value as feed, the gross revenue per acre difference between making human quality and not making it is very large. In addition, seed and other input costs for the “specialty” pulses are normally higher.

Is that all there is to know?

This just touched the surface. These are new crops so there is a need to learn many things all at once. Imagine the problems you would have if you know nothing about winter wheat and were going to grow it for the first time. The internet provides a tremendous resource in gathering the information you need. Go to the South Dakota Pulse Growers web site www.sdpulsegrowers.com to find all the links you need regarding production, utilization, and marketing.

How does this impact other crops I grow?

The good part of growing peas is what they do for the crops that follow. Peas and lentils are an excellent precursor to winter wheat or corn/sorghum. In a long-term rotation study conducted on the Stanley-Lyman County line, wheat seeded into pea stubble yielded 2 bushels/acre more than that seeded into fallow. Fallow is not used in the Hughes County research but comparisons of peas to other crops as a replacement have shown peas to be superior to crops like canola and flax as a precursor to winter wheat most years. In some years differences are dramatic. In 2002, winter wheat behind peas yielded 56 bu/acre while that grown behind canola and chickpea yielded 28 bu./acre. That large of a difference is not normal but it is normal for it to yield better. The exception is when severe winter-kill conditions occur. In that situation the vertical residue architecture of canola, flax, and spring cereal are a benefit.

It is not possible to cover all aspects of pea production in this short format. Talk to experienced growers, go to www.sdpulsegrowes.com, and start small enough so that you can afford to make a few mistakes. Do enough so it encourages you to take it seriously and do a good job.

The procedures planned for peas behind wheat this year at Dakota Lakes are as follows:

Late summer and fall 2005:

- Harvest Wheat
- Spray roundup post-harvest
- Spray Spartan 2.6 oz/acre (post-harvest intercrop label)
- Clean peas

Winter

- Order inoculum
- Make sure seeder operates properly for peas

Spring (March or very early April)

- Bring seed into shop to warm
- Seed and inoculate peas
- Spray 1.3 oz/acre Spartan + 4 oz Sencore + 16 oz. Roundup 1 week post seeding
- Spray post-emergence grass herbicide (if necessary) at proper weed stage.

Summer (July)

- Spray Roundup 10 days before harvest (if necessary)
- Harvest and Sample
- Collect LDP then sell, store, or feed the peas.