

## Maybe This Year I'll Just Grow Wheat...

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Southern Alberta offers a reasonable climate for crop diversification. Low annual precipitation is a limiting factor, along with all too frequent droughts. To conserve moisture, our farm has practiced min-till with a variety of pedigree grain crops, canola, pulses, and sunflowers. Other than enjoying the challenges of something new on the farm, the primary motivation for diverse cropping is the economic return. Since 1976, we have had various research plots on our farm with the Lethbridge Research Center (Ag Canada) and Alberta Agriculture. The scientists and extension people with these plots gave the encouragement and advice to try different agronomic practices and crops.

We farm in the dark brown soil zone; our soil texture is a clay loam, a good drought tolerant soil. We have a relatively long frost-free period. At an altitude of 3200 feet, our days are hot but our nights are cool. This prevents the growing of some warm season crops but these cool, dry nights reduce the disease pressure on



various crops. We rarely spray for crop diseases in southern Alberta but the warnings signs are there. Many of the crops that we have experimented with are still in our rotation but there were a few failures, such as Canamaize, a dwarf grain corn.

Field peas are a great rotation crop for southern Alberta. Since peas tolerate cool soils, it is the first crop seeded in the spring resulting in an early harvest. Our peas were straight combined this year and in the bin by August 3, without the use of a desiccant. These peas were sold quickly, freeing up aeration bin space. The early harvest also allows a good chance for soil moisture recharge. There is good grassy weed control, and reasonable broadleaf control, with Odyssey, but kochia and wild buckwheat sometimes "escape". Of course, field peas fix nitrogen, but with our dry conditions the nitrogen release is slow from the organic degradation. This nitrogen release is timed for a protein boost in cereals, not necessarily yields, so we fertilize accordingly in the spring for the succeeding crop. For southern Alberta, field peas give good yields, (30-50 bushels), good harvest and market timing, good soil tilth, and added fertility to succeeding crops.

Chickpeas have been on a roller coaster ride of acreages and markets. Along with 5 farmers in the Carmangay area, we were some of the first to try chickpeas in southern Alberta. That has since evolved into No-Bull Marketing Ltd., a local business that exports chickpeas throughout the world. Because of its deep rooting depth, this crop has good drought and heat tolerance. The challenges of growing chickpeas have turned a lot of prairie farmers away from this crop. Under wet warm conditions, chickpeas are very susceptible to Aschocyta blight, a rapidly spreading fungal disease that can devastate yields. The frequent monitoring for disease and the cost of the fungicides have taken the fun and profit out of this crop, particularly in Saskatchewan. A farmer may have to spray fungicides up to four times a season at approximately \$18/acre. The kabuli chickpea is also indeterminate, which means the plant needs a period of drought stress to stop its vegetative growth and to set seed. Under wet fall conditions, the plant continues to produce pods and frost can hit the immature seed. The market tolerance for green seeds in chickpeas is very low (less than 1% for #1 grade) and the discounts are wide for poor quality seed (if you can even find a market). There is little broadleaf weed control in chickpeas; Edge and Sencor are the only options. Poast and Select easily control grassy weeds and cereal volunteer. The seed size is large (8-10mm) so to obtain the optimum seed population, the farmer must seed

120-150 # /acre. At \$.33/# and \$.12/# seed treatment, the farmer is budgeting for seed costs of a least \$54.00 per acre. Harvest can be a headache. The chickpeas indeterminate growth habit, with resulting green patches throughout the field, and possible high populations of 4-foot kochia and prickly lettuce make for combining nightmares. It does grow taller than lentils, so with a good straight cut header on the combine a farmer can leave 2" of stubble. With its deep rooting depth and long growing season, chickpeas dry out the soil profile up to five feet. Farmers have noticed that succeeding crops do not do well after chickpeas because of this moisture use. The four-year rotation between chickpea crops is critical for disease control. Our low humidity and cool nights help reduce the pressure from disease. Kabuli and desi chickpeas, although they are pulses and are inoculated when seeded, do not seem to add much nitrogen to the soil. Soil tilth is not great either. So why do we continue to grow chickpeas in southern Alberta? They have been my best paying crop, grossing \$375-\$450/acre. After 7 years of experience, there is a comfort level with weed control (and tolerance) and disease management. Marketers and processors of chickpeas have experienced many problems over the last three years. Many processing plants went into receivership, but the market was overbuilt. Canada is working towards a comfort zone for the marketing of chickpeas. Many reliable export markets have now been found and niche markets, both foreign and domestic, are being successfully developed. There are many value-added opportunities for chickpeas in the future that will help to stabilize this market. A personal observation is that field peas are a good crop to follow chickpeas. Plant diseases that are common to both are of different strains, so disease carryover is not a problem. Peas are efficient water users with a shallow root system, so peas cope well with shallow moisture penetration in the soil profile.

Lentils have many of the same challenges as chickpeas: poor weed competitors, little broadleaf weed control, indeterminate growth pattern, and are not friendly to straight combine headers. Lentils do have a shallow root



system, which makes this crop a better rotational crop than chickpeas. We have yet to grow a satisfactory crop of lentils on our farm after three attempts. If my wife can put up with another year of frustration, we will try again. Lentils can be grown successfully in southern Alberta.

Rob Dunn (Alberta Agriculture) approached me in 2001 for a test trial with Early Short Stature Sunflowers (oilseed) to test the agronomics of this crop. Dr. Tim McAllister and Darryl Gibb (Lethbridge Research Center-Ag Canada) found by using sunflowers in feedlot rations, rate of gain and efficiency of gain improved significantly. Feedlots were interested. Another study found that when sunflowers were added to dairy rations, milk production increased, cow health improved, and conjugated linoleic acid (anti-cancer properties) increased in the milk. With sunflowers, dairy farmers could reduce or eliminate the amount of tallow in their rations. Tallow is used to control dust in the rations and as an energy source. Tom Droog and his Spitz Company have a good market for confectionery sunflowers in the Bow Island area where there are more heat units. There are some smaller businesses dealing in the birdseed market, but it is a limited market. Freight costs are prohibitive to shipping sunflowers to the Dakotas for oil processing. Why? A B-train "loaded to the rafters" can haul only 27 tonne (a bushel weighs 30#). Most of my production in 2002 went to a dairy farmer in British Columbia, and they will continue to use sunflowers in their rations. The second feed trial from McAllister and Gibb gave disappointing results for rate of gain and efficiency. The one feedlot that did try the sunflower ration for a couple of pens was also disappointed with their rate of gain. Sunflowers have a good agronomic fit in Alberta and hopefully the dairy industry will provide the local market for this crop. Maltsters have no tolerance for sunflowers in malt barley, so malt barley growers must be extremely careful with contamination.

Even with the drought of 2001, yields varied from 800#/acre to 1334#/acre. Yields from plots seeded with a corn planter were significantly better than those seeded with an air drill. Because of these trials, we use a corn drill with 15" spacing. The corn drill gives precise placement and spacing of the seed. Conventional air drills can be used, but use the canola roller to eliminate twinning of the seed. Broadleaf weed control is again a problem, with Edge and a lower rate of Assert the only options. There are several options for grassy weed control. Sunflowers are a heavy user of nitrogen. A 2000# crop will require 100# of nitrogen. Sunflower seeds like warm soil, so seeding is done in late May. A field of blooming sunflowers attracts photographers from a wide radius. As yet, because of our climate, we have not had a problem with plants diseases, insects or migratory birds. Sunflowers need a frost in the fall for the heads to cure out, so harvest is usually in mid to late October. The Honeybee draper header on our combine works well. The only modification is to fill in the reel bats with plywood to prevent the sunflower heads from hooking on the bats and being tossed forward onto the ground. There is always a worry with combine fires, as sunflower dust is very fine and sticky, clinging to combine engine manifolds and other hot spots. The use of aeration bins speed up harvest, as the dry down in the field in October is a slow process.

In cooperation with the Southern Applied Research Association (SARA) and Bench Mark Seeds, we tried 23 acres of Sorghum-Sudan grass and 15 acres of Siberian millet this past growing season. Both are warm season annual forage crops and give good yields with limited moisture. After two glyphosate burn offs, these crops were seeded June 16 (a little late for dryland) into well-fertilized durum stubble. These crops are slow starters and do not compete well with weeds as seedlings. At least there are some broadleaf weed control options for these forages. The fields were silaged in late August with a yield of 1.96 dry matter tonne/acre for the Sorghum-Sudan grass and 1.42 dry matter tonne/acre for the millet. These crops can be cut as hay, but it has to be well crimped before baling. It has relatively good feed value. Sorghum-Sudan grass has crude protein of 17% compared to green feed oats of 14.8%. A swath-grazing system would work well with these crops. They also have a fit under irrigation, as the second crop after winter triticale is silaged in late June. The ultimate test is that the deer love it. Because we have no cattle, this crop is not a great option for our farm.

The following spreadsheet shows the economics of these alternative crops. There is two years of sunflower data to show that a "Cinderella" crop in one year can be the "Wicked Witch of the West" the next. I encourage everyone here to visit the Crop Diversification Center near you to see the various crops that can be grown



successfully in Alberta. On most days, I enjoy the challenge of growing these diverse crops and the potential economic reward from them (in spite of the economic risks). However, I must admit there are days when combining a mediocre crop of sunflowers on a cold windy day in late October that in my mind I think: "MAYBE NEXT YEAR I'LL JUST GROW WHEAT."

CROPPING ALTERNATIVES	CONTINUOUS CROP								
	Kabuli chickpea 2003	Spring wheat 2003	Clearfield canola 2003	field peas 2003	lentils 2002	Desi chickpea 2003	Oil sunflower 2002	Oil sunflower 2003	Sorghum sudan 2003
yield, # or bushels	1600	25	20	42	1100	1320	2050	900	4
expected price	\$ 0.25	\$ 3.95	\$ 7.75	\$ 4.50	\$ 0.17	\$ 0.14	\$ 0.16	\$ 0.12	\$ 20.00
<b>Expected revenue</b>	<b>400</b>	<b>98.75</b>	<b>155</b>	<b>189</b>	<b>187</b>	<b>184.8</b>	<b>328</b>	<b>108</b>	<b>80</b>
<b>Direct expenses</b>									
Seed (treated)	\$ 52.00	\$ 7.50	\$ 19.90	\$ 31.62	\$ 22.00	\$ 30.00	\$ 22.00	\$ 28.00	\$ 21.84
Fertilizer									
nitrogen	\$ -	\$ 18.00	\$ 18.00	\$ -	\$ -	\$ -	\$ 18.00	\$ 23.22	\$ 19.35
phosphorus	\$ 7.20	\$ 7.20	\$ 7.20	\$ 7.20	\$ 7.20	\$ 7.20	\$ 7.20	\$ 7.20	
sulphur			\$ 2.80						
Chemicals									
burnoff	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00	\$ 8.00
preseed	\$ 12.50				\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	
in crop		\$ 17.20	\$ 22.00	\$ 22.00			\$ 7.70	\$ 7.70	
other disease	\$ 28.00					\$ 28.00			
Crop insurance	\$ 6.54	\$ 6.30	\$ 9.01	\$ 2.32	\$ 4.60	\$ 6.30	\$ 3.65	\$ 3.65	
Fuel	\$ 5.00	\$ 5.00	\$ 5.00	\$ 5.00	\$ 5.00	\$ 5.00	\$ 5.00	\$ 5.00	
Repairs	\$ 12.00	\$ 8.00	\$ 8.00	\$ 10.00	\$ 8.00	\$ 12.00	\$ 8.00	\$ 8.00	
Other	\$ 12.00					\$ 12.00	\$ 15.00	\$ 15.00	\$ 32.00
<b>Total expense</b>	<b>\$ 139.24</b>	<b>\$ 72.20</b>	<b>\$ 95.91</b>	<b>\$ 82.14</b>	<b>\$ 63.30</b>	<b>\$ 117.00</b>	<b>\$ 103.05</b>	<b>\$ 114.27</b>	<b>\$ 81.19</b>
<b>Contribution margin</b>	<b>\$ 260.76</b>	<b>\$ 26.55</b>	<b>\$ 59.09</b>	<b>\$ 106.86</b>	<b>\$ 123.70</b>	<b>\$ 67.80</b>	<b>\$ 224.95</b>	<b>(\$6.27)</b>	<b>(\$1.19)</b>
<b>ASSUMPTIONS</b>									
>prices, yields, and costs from Alberta Agriculture, Statpub.com, and individual farms									
>contribution margin represents the amount a crop contributes to fixed costs, overhead, and return to owner's labor, management, and equity									
>60# actual nitrogen on canola and wheat @ \$.30/#									
>40# 11-52 phosphate @ \$.18/#									
>glyphosate burnoff with every crop									
> preseed on chickpeas and lentil 15# Edge									
> incrop chemicals: Odyssey (on peas, Odyssey on canola, Assert/broadleaf on wheat)									
>crop insurance..... 2003 individual rate @ 70 % coverage									
>other expenses are spray plane on chickpeas/custom seeding with corn drill on sunflowers									