

How I Direct Seed on My Farm

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Our farm is located near Alameda, approximately 35 miles East of Estevan in South East Saskatchewan. My family - wife Marilyn, and sons, Logan and Riley, are part of a larger family farm operation. I share equipment and labour with my Dad, Harold, and my youngest brother, Jason. Ours is a mixed farm operation with approximately 2400 seeded acres, plus forage and pasture land. The farm runs approximately 80 cows, most of which are Jason's.

Our soils are generally loam to clay loam in texture, leaning a little more to the heavy side. Climate wise, we are located in a transition zone, being in "Moist Dark Brown Soil" on the new soil maps. The 30 year average rainfall for May, June, and July is about 7" though as you well know this can be quite inconsistent. Total annual moisture is about 16".

Prior to conversion to direct seeding, we followed fairly conventional farming practices. We seeded with a Flexicoil 700 Eclipse with an 1100 Aircart. We were on 12 inch rows, using 14 inch sweeps, single shoot delivery, and no on-row packing. The land had to be fairly mellow for this airseeder to have consistent penetration and as a result, everything was worked ahead of the seeding operation. A harrow packing operation was made following seeding. Historically, summerfallow acres were at least one third of the seeded acres and "black was beautiful". Over the years, fewer tillage operations were made, chemfallow was introduced, and crop rotations slowly lengthened and diversified.

Fertility practices were relatively straight forward and simple. We typically tried to band our nitrogen in the fall as we were realizing the loss of soil moisture and valuable time with spring banding. There were years, however, when banding N was deferred to the spring. It was this practice more than any other that drove home the need to change our farming practice. I can distinctly recall two recent years where we had very good spring moisture to begin with and yet we very nearly had crop disasters if it were not for some timely spring rains. Because of the two tillage operations, once for fertilizer/seed bed preparation and once for seeding, the seed found itself stranded in dry dirt in large patches of the fields.

In the spring of 2002 we changed over to direct seeding and now perform the following practices:

Stubble Height.

We try to leave at least ten to twelve inches of stubble. To minimize problems during seeding, it is recommended to keep stubble height equal to or less than seed row width. Differences between air seeder types could allow you to leave taller stubble. I suggest doing some strip trials rather than ¼ section experiments until you are comfortable with your equipment, not to mention differing moisture conditions.

Straw and Chaff Management.

At direct seeding conferences, you will hear it emphasized just how important it is to effectively manage your straw and chaff. The concentration of crop residues will compound a number of crop growth problems including hindering emergence, tying up nutrients and increasing the risk of crop disease. The combine, if properly equipped, is the most efficient way to manage your straw and chaff. On the new combines, the manufacturers are realizing what direct seeders are requiring and have made improvements. For older combines, there are many after market products that can be acquired to better spread chaff and straw.

Heavy Harrowing.

I admit we are on a bit of a learning curve with this operation. Unless the straw is really heavy, I would prefer to skip this operation to save the expense and to protect the fragile crop mulch. Our seeding operation tends to leave the field rough, relatively speaking. We are trying to determine if leveling the field is necessary to ensure a good seed bed the following year. Another consideration is that our land has not yet “matured” with direct seeding. If the spring is at all dry and the winds are blowing, the land still cracks leading to soil moisture losses. To “seal” the soil, we perform a heavy harrow operation. The soil tilth is improving but each field has its own characteristics and time is required for the land to improve.

Pre- and Post-harvest Glyphosate.

To date, we have used custom applicators to do any pre-harvest work and we have been selective in the fields needing treatment. We consider weed populations, seed requirements and crop rotation. Fields rotating into pulses usually are treated and we typically take advantage of the open canopied crops such as peas and flax for better spray penetration and to facilitate harvesting. I prefer pre-harvest as the weeds have not undergone the stress of cutting and trying to re-establish in sometimes hot, dry conditions. Post-harvest glyphosate operations have been performed but the success rate is not as great.

Spring Burnoff.

This operation is very important to direct seeding but is evaluated with each field, each year. In 2002, the cool spring did little to encourage weed germination and so very little pre-seeding burn off was performed (about 15% of seeded acres). As a result, in crop herbicide use became more crucial. In 2003, conditions were very good for early weed growth and all our acres received a burn off treatment. An important benefit was realized later in June as some cereal crops did not need treatment for wild oats. We have made some pre-emergent glyphosate applications where the sprayer has not been able to stay ahead of the seeder. I try to avoid this operation if at all possible. Our seeder moves a lot of soil and weeds become covered in dust. This can be a real challenge for glyphosate to work properly. In addition, there is the risk of poor spraying weather prior to crop emergence.

Crop Nutrition.

Crop nutrition is one of the cornerstones to crop production and provides little room to cut corners. Without balanced and adequate fertility, the crop is limited in its potential and the cost per bushel goes up. With direct seeding, the importance of crop nutrition requirements is further emphasized, as soil building will be taking place until a “new balance” is established. The experts say this could take at least five years. With the high cost of fertilizers, it is important for

me to get the best bang for my fertilizer dollar. On our farm, essentially all fields are soil tested and a crop nutrition plan prepared for each. I fertilize for maximum economic yield and where logistics allow, we try to cater to individual field requirements for N, P, K and S. This was made easier by having a good amount of manpower available and having two competing fertilizer blending plants within eight miles of home. Times are changing however, and we are no longer able to store fall purchased product at the plants. Farm fertilizer storage and massaging of blends to meet different cereal and oilseed requirements is a new reality.

Seeding.

We direct seed with a 40 foot Morris Maxim Air Drill equipped with double shoot delivery. We seed on 10 inch centers using the Morris paired row gumbo boot. We are generally satisfied with the seed cart and tool bar but have some concerns with the openers in our soil. As previously mentioned, our soils have not yet undergone much of the beneficial changes associated with direct seeding. Some of our land can still be quite “hard” at seeding and with our current opener, a lot of soil fracturing can take place. As a result, the desired seed placement can be difficult to achieve. Seed can be found on the shoulder of the fertilizer trench (as targeted) but also at varying depths into the fertilizer trench. Canola provides the greatest challenge but for some reason we do have good success with flax (perhaps explained by seed shape and seed rate). In an area prone to Fusarium threats, good and even emergence is an important step in managing disease risks and after two years of trying, we will be changing openers for the 2004 crop. Over time, our land will become more mellow and the soil will flow around the openers more easily.

Crop Rotation.

We try to follow the classic rotation of cereal-oilseed-cereal-pulse with the individual crop selection being influenced by year-to-year market opportunities. Other considerations include cattle requirements, weed populations and types, herbicide rotation and risks from crop disease and various insect pests. To the best of my knowledge, we do not currently have a herbicide resistant weed problem. With glyphosate being so important to direct seeding, I try to reserve it for burn off and pre-harvest weed control only.

By alternating between cereals and oilseeds and pulses, crop residue management is simplified as you are alternating between high residue and low residue crops.

A typical crop seeding order on our farm is peas, canola, barley, oats, wheat/durum/canary seed and finally flax. Research tells us that crops seeded early generally produce better and I agree but we need to be practical. Our normal practice goes a long way towards harvest management. In typical years, we are finished harvesting one crop just as the next is ready. The peas, canola, barley and oats respond well to the earlier seeding while the later seeding of the wheats may avoid some Fusarium risk. Canary seed and flax have been left to the end as poor harvest weather does not seem to impact these crops as readily. I have been trying to introduce winter wheat to our crop mix but the recent falls have not been conducive for crop establishment.

Weed Issues

Our greatest weed challenges will come from the perennials. With the general movement toward fewer tillage operations, Canada Thistle, Perennial Sow-thistle, and Dandelion seed seems to be drifting around the neighbourhood a lot more than it used to. The prudent use of glyphosate is by

far the cheapest way to keep these weeds in check over an extended crop rotation. In speaking to long time direct seeders in my area, Quackgrass does not seem to be a major problem. The spring and fall use of glyphosate combined with less tillage operations (that used to spread the rhizomes) is keeping Quackgrass under control.

I believe it is too early to comment on any changes in annual weed pressure. The spring burn-off operation can be a tremendous cost saving if spring conditions encourage early Wild Oat germination. Our seeder also contributes to weed suppression. A significant amount of loose soil is pushed between the seed rows. This thick layer of soil, quickly dries out and produces a big challenge to young weed seedlings trying to compete with the crop. The weeds are effectively starved of sunlight, moisture and nutrients with the seeding operation.

With cattle being part of the farm, we will be investigating how rotating forages can contribute to cheaper long term weed suppression.

Our Experiences

Time.

We have seen significant time savings on the big tractor. Seeding and fertilizing are completed in one pass and we have no summerfallow acres. A trade off is having the added stress of performing spring burn off work. Seeding may go slower for you as you should keep your speed down to let the openers do their work (about 4-5 mph). Seeding rate may also be slowed as you are seeding and fertilizing in one pass and may require more time filling the air cart.

Timing.

As spring approaches, farmers get anxious to get on the land. Be patient and be selective on the fields you go out on. We have a crop seeding order but the quality of the seedbed must be kept foremost in mind. If the soil is too wet, it will not flow around the openers as intended, leaving the seedbed exposed and drying out. As well, the soil may pack too tightly, hindering crop emergence.

Time Management.

Less time spent in the tractor will create other opportunities. Depending on what stage you are at, you could have time for off-farm work, custom work, expanding the farm and/or family time. We each have our own goals and priorities; being a good steward of the land will help us achieve them.