Direct Seeding on My Farm

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We purchased the three quarters that has remained the home farm in the spring of 1962 in the Aneroid district which is located in the dry brown soil zone 100 kilometers southeast of Swift Current, a year of drought and grasshoppers. We harvested 300 bushels of spring wheat off the three quarters-what a way to start out farming!

The home farm is situated in a large basin, the lower drainage areas are constantly white with sodium salts or alkali as we all refer to it. The land we own and rent some six and twelve miles away varies in topography from gentle slopes to very steep hills and has a similar range in soil texture and type. Some is silty clay, silty loam, and fox valley clay with much of it gravelly and stony.

Farming the wide range of soil types and topography has many challenges to conventional farming but has many more in conservation tillage with direct seeding practices.

We began farming with a Massey Harris 44 gas tractor and a twelve foot Case discer and diamond harrows for packers. My father-in-law loaned us his Model K double standard eight foot Noble blade to summerfallow and we used my tractor on his ten foot Massey Harris Model 60 Combine to harvest.As time progressed we purchased more equipment and made land payments with my teachers salary.

Soil conservation has always been a priority in our area as this was one of the first shelterbelt projects established in the province where there was severe soil drifting during the dirty thirties. We planted shelter belts the first year we started farming.

When we rented more land from a neighbour in 1967 and purchased his equipment we summerfallowed with two eight foot Model M Noble blades and gradually moved to a 35 foot Model 5000 Versatile wide blade cultivator and eventually to a 47 foot cultivator.

The salinity challenges were many on the home farm and we had many set backs as we experimented with the different Altai grasses as interceptors but none survived the drought years which seemed to cycle every four years in varying degrees. It takes many years to get grass and alfalfa established, but one dry spring can set you back several years in salinity control.

In 1975 we began to experiment with different grasses and alfalfa in test plots under the guidance of the Swift Current Research Station. We used different seeding methods using disk and hoe drills seeded into plowed and burn off strips. These were all met with varying degrees of success but it was progress. Later we had a surface water table analysis conducted by Wheatland Conservation Area Inc. and water table monitoring wells drilled. We found the water table to be only twenty two inches below the surface on one of the lower level forage plots and over a five

year period it only varied about one-half inch with a mineral count exceeding four thousand grains of hardness.

We purchased our first air seeder in 1985, a CCIL Model 1150 mounted on a twenty seven foot 807 CCIL cultivator with no packers behind. A home built coil packer cart was attached to the cultivator which created problems in short cornering and in transport. We used different styles of sweeps starting with the standard low profile to disturb as little soil as possible but found the seed was being blown and mixed with soil above the seeding depth. Holes were drilled in the seed boots to bleed off air but the problem still persisted. We eventually went to a high profile sweep to provide more air space in front of the seed boot, which helped keep the seed at the seeding depth. However, with the wide range of soil types and switching to trailing on-row packers that would not stay on row, we had real problems with the seed bed. This was a single tank single shoot system so it meant incorporating fertilizer first with what now would be considered a crude opener that left wide furrows allowing the soil to dry out. Other problems with these openers were they had to be in too deep to make sure the fertilizer was covered, but the soil disturbance was too high. When deep banding fertilizer was followed with the high profile sweeps on the air seeder soil disturbance was high with little residue left on top to minimize soil erosion. This was costly in time, valuable soil moisture and input costs.
We had the opportunity to buy a two compartment Blanchard air tank which held a total of 60 bushels. This was a great improvement over the CCIL tank but it had problems with not enough air, an overheating orbit motor and a drag chain to deliver seed and fertilizer to the air distribution compartment. The heating orbit motor affected air flow causing seed hoses to plug. Portions of the drag chain would often plug with fertilizer, partially blocking off seed and or fertilizer. These were not easily noticed and the crop came up in streaks and patches.

I was at a point where the former conventional practices were looking better all the time when our son began the four year opener rotation study on our farm which included a Bourgault air drill with mid row banders. This earlier tow behind model had problems with the main hoses to the air drill separating on cornering and plugging when going straight due to the excessive downward loop needed to prevent separating on cornering. The midrow bander scraper springs caught and held straw against the coulter causing it to slide and plugging occurred. However, it was obvious that the air drill was the way to go but the cost was too high for us to finance at that time.

It was at this time we switched to the Generation I Barton angle disc openers mounted on the CCIL cultivator on nine inch spacings and a Flexicoil 1720 air cart. This was a great improvement in seed and fertilizer delivery. The soil disturbance was minimal but they weren't trouble free in the wide variance of soil types and crop residue. Hair pinning and plugging were a problems where straw was not spread enough. There wasn't enough friction to turn the discs in loose soil. Under very dry conditions, the discs also bounced over gravel or stony land leaving the seed uncovered. We also couldn't get enough penetration in hard soil areas. Over-all, the Barton was better than the air seeder with sweeps as it didn't disturb the soil and the weeds grew only in the slit of the disks. However this method of direct seeding brought with it a new dimension and that was the burn off before seeding. Glyphosate was around $15.00 per liter and Roundup had no competition in our area. We complicated matters as this was the time we seriously got into pulse crops. This meant rethinking the three year rotation of summerfallow-

durum-barley and bringing into the rotation chickpeas first then peas and later lentils in a four year rotation with no summerfallow. It also brought with it new management practices, increased costs and retired equipment as we rarely used the cultivators but added a land roller. With chickpeas in the rotation more planning and record keeping was required as crop insurance demanded a four year time lapse before seeding chickpeas on the same field. Consideration had to be given to what soil type and topography was best for pulse crops. The water in our area is very high in mineral content and not suited for glyphosate and access to soft water is limited to dams and dugouts, bringing with it problems when filtering water in and out of the nurse tank. We use the sweeps where the burn off was less than perfect and some weed growth remains but not dense enough to warrant second application of glyphosae.

With such varying soil types we found the Barton was not suited for our operation and we switched back to a C shank with narrow openers two years ago with the purchase of a 49 foot Morris Maxim air drill with 7.5 inch spacing and a 7180 air cart with a third tank. We use the Bourgault knock-on clips with their 1.75 inch wide 200 series vertical hoe knife openers and seven inch sweeps.

Pulling such a wide drill in sharp hilly land causes the tractor to spin out so it means seeding down these slopes. The 7.5 inch spacing are a bit narrow where trash is heavier and particularly in the 4010 silage pea stubble where the vines have a tendency to grow along the ground in dry years and the mower conditioner can't lift the vines enough even with crop lifters. Seed depth and rates are easier to control in the stoney land and we have a more even crop establishment over the farm as a whole than in the past. There are still challenges with the knock-on openers prematurely wearing out and when finance allow we will replace them with a knife opener of some type with carbide tips. Until that time, I have hard-surfaced the points of each opener to extend the acres I can get out of them. Our soil is quite abrasive and when we were using 2.25 inch spoons, we could barely get 600 acres out of them.

There are many challenges with saline soils, residue management, in-crop weed control, especially in chickpeas and lentils where there is no tank mix to control a wide range of broadleaf and grassy weeds. Combine all this with such a wide variance of soil types and topography and differing moisture conditions on the various land located some 12 miles apart, creates many soil and crop management challenges that are not easily overcome. Timeliness is critical, but when it rains in seeding or harvest time or windy conditions when trying to spray where we are working and not at the other locations, there is not much we can do about the delay.

We have found continuous cropping and direct seeding challenging, particularly when dry years and low commodity prices are combined like this last year and very low reserve moisture for the coming season. Couple this with a dismal forecast for any increase in prices or product movement plus the ever increase in input costs, particularly in fuel and fertilizer, continuous cropping needs to be flexible. This is the time we resort to flex cropping practices where chemfallow and annual legumes for forage are part of the management strategy. However it is not easy to keep a rotation with so many variables. Soil type, topography, input costs, market prices and product movement, moisture conditions, weather and equipment costs all have to be part of the equation.

We introduced annual legumes for forage into the rotation two years ago with 4010 silage peas, but when our silage contract was cancelled after seeding last year, we swathed and baled the silage peas for green feed and cut some for seed. The 2004 crop was very good, about 5 dry tonnes per acre, but 2005 was only 1.5 tonnes. However the nitrogen fixed was about the same. Adding the 40-10's into the rotation provides more options; desiccate the 40-10 silage peas for a source of nitrogen (greenfallow), cut it for feed or let the crop mature and harvest the seed.. If desiccated before the July crop insurance deadline it is classed as summerfallow for crop insurance purposes. Silageing the 40-10's is the most economical, providing the haul distance is short, as the producer has no direct harvesting costs as there is with baling or harvesting for seed.

Direct seeding is not new, as we used a six foot John Deere tiller in the late 1940's and direct seeded into summerfallow, as we did through out the 50's and 60's only with diskers. The technology and management has changed in direct seeding but soil conservation remains the main focus.

Direct seeding may not suit all farms in all situations, but I am positive the objective remains the same and that is soil conservation. Farming practices have come a long way from the "mine the soil" attitude and SSCA has been a big part of changing that attitude.
Now with carbon credits a reality in Canada more land will likely involve direct seeding and SSCA is out leading the way with their carbon gas monitoring projects and lobby efforts to keep the value of the soil carbon in the hands of farmers.

I am convinced SSCA has led the way in promoting soil conservation through direct seeding and conservation tillage. It has also brought about the evolution of air drills, openers and air tanks. Look at all the drills that are available now. Flexicoil, Bourgault, Conserva Pak, Seed Hawk, Seed Master, Harmon, John Deere, etc., each with their own special features suited for the different soil types or conditions. Add to this the numerous modifications to these drills and the home built types. There has been a virtual explosion of opener types! Flexicoil, Bourgault, Dutch, Gen, Atom Jet to name a few. Add to this the ones built and marketed by farmers like Vic Wickstrom, a farmer near Swift Current.

All of these developments in drills, air tanks and openers come from farmers' demands to design one that best suits his or her needs and the industry has responded.

I believe this rapid growth in direct seeding implements would not have occurred if soil conservation groups like SSCA had not lead the way in educating farmers and manufacturers alike through workshops, seminars and field days. Also through applied research and field demonstrations of what works best in that particular soil type, whether it be openers, crop varieties or rotation demonstrations.

SSCA can be justly proud of their accomplishments in soil conservation through direct seeding. You have had a great impact on changing farming methods and crop diversification. You have had an immeasurable impact on improving farm viability.