



Direct Seeding with Forage Seed Crops

Most producers would be quick to agree that forage crops are good for our soil resource. Forages are also beneficial in that they remove CO₂, one of the harmful green house gases from the atmosphere. However, there are 2 big factors that hinder an increase in forage acres. One of these is economic. Is there a market for the forage products and what are the economic margins? The other factor is the management techniques needed for production of forage products. One of these special techniques is getting forages established. Another is terminating them to move back into annual crop production. Traditionally these procedures have involved intensive tillage. As the percentage of direct seeded acres grows, producers growing forage crops look for lower disturbance methods of getting into and out of forage crops in their rotations. This fact sheet relates the experiences of two producers in establishing and terminating forage crops in their rotations.

Gord and Cindy Pearse farm 15 miles north of Tisdale in the Silver Stream district on a 4th generation farm. Gord and his dad, Terry, have had more than 20 years of experience growing forage crops for seed production. Gord is pleased with the high potential return of forage seed but recognizes the big production and marketing risks associated with these crops.

The Pearses first tried to make direct seeding work back in the late 80's. Gord now seeds with a Concord and uses a 3 inch spread tip with a seed diverter which gives him 2 rows of seed. He places dry fertilizer with the seed and dribbles liquid fertilizer down behind the shank in between these 2 rows of seed.

Figure 1 shows a 45 acre field of wheat in the spring of 2004 seeded directly into the stubble of Green Needle Grass. This field produced 6 crops of grass seed. The last crop was harvested late in July 2003. Gord sprayed 1L/ac of Roundup Transorb® on Sept 10th that fall. The fall of 2003 was a long, warm fall and by freeze-up, Gord says the grass looked pretty much dead. A few sprayer misses certainly showed up. He seeded this field May 11, 2004. He emphasizes that it was important to keep his seeding speed down. At 3.8 mph, the sod wasn't flying around too much and the seeds were being covered quite well. This is quite a bit slower than Gord's average annual crop seeding speed of 4.5 mph. Part of the old grass field received a pre-seed application of 0.5 L/ac of Transorb® on May 9. At that time, some of the



Figure 1. Direct seeding wheat into Green Needle Grass stubble on the the Pearse farm.

grass plants were coming back in the 1 to 2 leaf stage. The other part of the field received glyphosate post-seed on May 14. Gord says he was very happy with emergence except where there were foxtail barley and Kentucky blue grass (KBG) patches. The poor emergence in those patches is due to the creeping rooted nature of the KBG and the deeper rooting nature of the foxtail barley. When seeding into these areas where these grass species have been terminated, the ground comes up more soddy and seed row cover becomes an issue.

The remaining acres in this quarter section were in canola in 2003. To control the wild oats on this part of

the wheat field, Gord used Harmony® in-crop. Wild oat control was not needed on the old grass field. Gord's farm received 19 inches of moisture in the summer of 2004. Wheat yields were great with the grass termination at 46 bu/ac compared to 51 bu/ac on the canola stubble. However, the wheat from both fields weighed 54 lbs/bu due to an early and severe frost Aug. 20th.

Gord has had experience growing a number of different forages and several legumes. One of the issues that determines which species Gord will grow is the practice necessary to terminate the stand to get the field back into annual crop production. For example, Gord had a field of hard fescue that he found could not be terminated economically with glyphosate. He made 2 passes with a tandem disc, then harrowed it smooth enough to spray and applied glyphosate. He is not pleased that he had to go back to tillage on this field.

He has found that brome grass will need 2 applications of 1.5 L/ac glyphosate, one shortly after harvest and another later in the fall. Likely another 1.5 L/ac will be needed next spring as a pre-seed application, too. Because smooth brome is creeping rooted Gord says wide openers like his do not do the best job. A narrow knife opener is better and disc openers are even better. Coulters in front of knife openers would help make hoe openers work better. Because meadow brome is a bunch grass, it is easier to seed through, but just as difficult to control with glyphosate. Slender wheat grass is shallow rooted and quite easy to kill, so it is easy to terminate this grass and seed into the terminated stand next spring. Crested wheat is a bunch grass, though it is deeper rooted than the slender wheat grasses. Gord took a field of Crested wheat out of production with 2.5 L/ac of glyphosate in 3 applications over 12 months and then seeded fall rye into it. He was pleased to get a yield of 70 bu/ac on this rye field.

Gord has also grown Alsike clover. This is a short lived perennial which Gord manages for 1 year of seed production. Prior to harvest, the clover receives an application of Reglone®. An application of either Lontrel® or Target® in the succeeding crop does a good job of terminating the Alsike. However, there will be



Figure 2. Wheat seeded into green needle grass stubble at flag-leaf stage.

volunteers in future years. Gord emphasizes the good tillth that a stand of Alsike gives the soil the following year. He also says it is important to do a good job of chopping and spreading the residue. To establish a stand of Alsike clover, Gord uses a companion crop. In 2004, he planted it with wheat at an angle to the seeding direction of the wheat. One of the major considerations for an Alsike clover field is that the in-crop weed control options cannot be too hard on the Alsike. On years with more moisture, harsher herbicides can give better weed control and the Alsike can recover; but in drier years, it could be wiped out.

To establish grass seed crops, Gord says that a nurse crop is not recommended but in reality, because growers hate to give up a year of crop production, his recommendations are species- specific, depending on the strength of the seedling and the price of the seed. For example, he suggests never seeding Russian Wild Rye and Kentucky Blue Grass with a nurse crop. Better results may be achieved with a nurse crop together with Timothy or the wheat grasses, and he strongly recommends a cover crop for perennial ryegrass. If a nurse crop is seeded, Gord would recommend CPS wheat as there is less straw and more light will get through to the grass seedlings. The field should not be managed for maximum grain production as that will reduce forage potential. Taking the crop off for silage would have a very good fit. Gord suggests that the best crop to precede a grass crop is canola or wheat. Barley will probably volunteer too much. Another tip Gord has is to mix light fluffy grass seeds with granular fertilizer to avoid bridging in the air

tank.

For forage seed production, Gord says it is critical to know which weeds are present, how they clean out, and which ones will require roguing. Grass seedlings usually take 7 to 12 days to emerge so there is an opportunity for timely post-seed glyphosate application to get extra weed control. In-crop weed control for wild oats in the seedling year includes Achieve®, Puma®, Hoe-Grass®, and for some grasses, Assure®. For broadleaf applications, wait for the 3rd leaf stage of the grass, especially with harsher chemicals. Fall weed control of winter annuals is particularly important for weeds such as American Dragonhead, and Stinkweed. Winter annuals are easy to control in the fall and can be sprayed right up to Oct 10th.

To achieve successful forage grass establishment, aim to seed the forage in the spring, after the annual crops have been seeded. If there is a need to wait for wild oat control, then seeding can be done later, even into July. However, there must be enough moisture to get that shallow seeded forage crop growing. Ideally, seeding will not be delayed past June 25. Watch for one inch of rain coming and seed. Gord says, “You can do everything else wrong, and if the right amount of rain comes at the right time, you will get an establishment. However, the reverse is also true! You can do everything right, and have an establishment failure if the weather does not cooperate.”

Sheldon Dowling farms with his dad Bill south west of Prince Albert between MacDowall and Red Deer Hill. They have been producing seed alfalfa and running the accompanying leaf cutter bee operation since the late 1960’s. At present, they maintain about 500 acres in alfalfa seed production and annually crop another 1900 acres. They are in the black soil zone and their land is lighter, ranging from light loam to fine sandy loam. The last time they terminated alfalfa with tillage was in the late 80’s. Since then they have rotated 5 or 6 alfalfa fields back to annual cropping with direct seeding.

Dowlings routinely apply Reglone® to their alfalfa prior to harvest. Sheldon says preharvesting seed alfalfa with glyphosate poses too high a risk of germination damage



Figure 3. Direct seeding wheat into alfalfa stubble on the Dowling farm.

so they do not start termination until spring. Sheldon likes to begin termination with an application of Eclipse® with an extra 0.5 L/ac of Vantage Plus® about mid May when there is a couple inches of green alfalfa growth. He says this will stop the alfalfa growth and give the annual crop a chance to start. He recommends seeding a cereal and using Spectrum® in-crop. He says Spectrum is good because the 3 ingredients are hard on alfalfa. Curtail® also has clopyralid (Lontrel®) so it gives the alfalfa a pretty hard hit, too. Usually after this in-crop treatment, the alfalfa is terminated. Of course many producers would like to seed canola but Sheldon says they have found the land is quite deficient in Sulfur after alfalfa and it is hard to get good shallow seed placement with such a small seed using hoe openers. The Dowlings seed with a Harmon on 12 inch row spacing. They use liquid fertilizer. The drill they used before this one had disc openers and Sheldon says they could do a better job of seeding canola with that drill. Canola is a good crop to put in the rotation the next year. They would not seed peas until the third crop after termination because of the clopyralid residue. They usually preharvest the first crop. This will catch alfalfa that has come back but more importantly, take care of grass and thistle patches that have gained a foothold in the alfalfa and weren’t at the right stage to catch in the spring.

Sheldon says they had one wreck when the spring was so dry they could not get wheat to germinate on sprayed out alfalfa. The next year, with better moisture, the crop did fine. Alfalfa does use up subsoil moisture and Sheldon says timely rains are needed for decent production with a crop direct seeded into terminated alfalfa. The field in

Figure 3 produced its last seed crop in 2002. The spring of 2003 was so dry that the Dowlings could not see getting an annual crop going after spraying out alfalfa growth so the field was left for one cut of hay. The hay was preharvest terminated on June 29/03 with 2 L/ac Vantage Plus. The high rate of glyphosate was used to get patches of rough hair grass. Sheldon maintains that 1 application of glyphosate will not kill alfalfa even at 2 L/ac. To control growth that came back on this field they applied 1 L/ac Vantage Plus® in combination with 350 ml 2,4-D on September 3. When they came to seed wheat in this field on May 15, 2004, it was brown with very little growth. The crop was so clean that they did not need to spray in-crop, either. Sheldon does comment that seed fields are thin to promote good seed production so hay production is pretty low. The deciding line for Sheldon on going ahead with a crop or leaving time for a partial season of chem-fallow is that they have enough moisture to get germination.

Sheldon says that he must have clean fields where he is establishing alfalfa. He preharvests the fall before establishment to help accomplish that. He is particularly vigilant in getting rid of perennials such as quack grass and Canada Thistle. Clearfield® canola, cleavers, and lambs quarters are other bad weeds. The Dowlings establish alfalfa with a nurse crop. They seed the alfalfa in every third row at 1 lb/ac and the nurse crop in the other 2 rows. Their options for the nurse crop are flax or wheat and the preference is for flax. Alfalfa seedling tolerance to the in-crop weed control is a major consideration. With flax, Sheldon uses either Pardner® or Bucril M®. He says Pardner® is hard on the flax and Bucril M® is hard on the alfalfa. He also says that they will even take out the nurse crop to save the alfalfa. Other pests that they have had to contend with in the establishment year are grass hoppers and cutworms.

Alfalfa requires more sulfur so Sheldon uses elemental S, liquid ammonium thiosulfate and sometimes ammonium sulphate. He applies about 10 lb/ac elemental sulfur (Tiger 90®) and another 10 lb/ac of ammonium thiosulfate (liquid 15-0-0-20) blended with the nitrogen (28-0-0) every year in the annual cropping rotation. Sometimes this is topped up with 20-0-0-24 (dry) to ensure adequate sulfur for the annual crops.



Figure 4. Wheat emerging from alfalfa stubble on the Dowling farm.

Sheldon suggests that alfalfa in the rotation and direct seeding change the nitrogen mineralization potential of his soil. He has observed that he can grow more bushels with less N than called for by soil tests or his annual cropping experience. He also has seen better water infiltration. He is also often pleased with the crop that he is able to grow in the termination year of alfalfa. His record is 70 bu/ac of barley on same year seed alfalfa termination. He says for their soils, that is a very good crop. The bottom line is that he says tillage exposes too much of their dirt to wind erosion. They do not like to see drifts of soil in the ditch!

For More Information

1-800-213-4287 or www.ssca.ca

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