

Beginning Direct Seeding – Weeds to Expect

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The direct seeding area in Saskatchewan covers a huge geographical area! It includes 7 soil climatic zones. It is very difficult to generalize weed problems across such vastly different growing conditions. But, in simple terms, as annual crop production moved to continuous cropping and then low disturbance seeding the problem of winter annuals, perennial weeds, and volunteer crop significantly increased.

Different production practices promote certain weed species. Time of weed control, timing and amount of crop competition, herbicide chemistries available, and sanitation practices are the main variables that affect weed specie adaptations.

A personal survey of SSCA staff and direct seeders across the province indicates a number of weed species that have become more of a problem as producers cut out tillage in a low disturbance seeding (LDS) system.

DANDELION was mentioned as problem weed with LDS systems in all but the driest areas of the province. It can get a real start in perennial crops like alfalfa and from there spreads to annual crop land. It is a prolific seed producer and the seed is spread by wind. With LDS practices there is more surface ground cover so surface ground moisture is often higher. Small seeds like dandelions have a better chance to get started with such good moisture conditions. They germinate best on the soil surface in June or July which means that seedlings often escape in crop herbicide applications. Seedlings quickly develop tap roots and by late fall or early spring crowns can be well developed. They can grow late into the fall and start growing again in quite cool spring conditions. Dandelion plants are dormant or form a rosette in the summer months. Fall moisture conditions can affect the control that pre and post harvest glyphosate provides.

Tillage was often very effective against dandelion because it has a single tap root. Cutting this tap root off 4” below the soil surface which often happened during fall tillage was one effective control method. A shallow spring tillage often gave effective season long control because the crop had time to become competitive.

Research carried out by Sapsford at the CDC indicates that long term dandelion control needs more than a one-time treatment. Fall applications of Express, Express Pack, PrePass, and Spectrum gave the longest and most consistent control. They found that these products gave better control in Sept as compared to Oct. If fall application was not possible an early spring application would also benefit yields. PrePass was better than 1 L/ac glyphosate which was better than 0.5 L/ac glyphosate with Express.

QUACKGRASS became a problem as producers moved to more continuous cropping. Cutting out fall tillage increased Quackgrass problems. Many older producers claimed that they could sometimes get quite good quackgrass (and other perennial weed) control with a deep fall tillage if it was followed by hard frosts before an insulating snow cover. There are producers with one high disturbance pass seeding systems who claim they get enough weed control with one sweep

operation to get by without much glyphosate. Quackgrass can easily become worse under this production system as tillage tends to spread the rhizomes around. The use of some glyphosate with these seeding systems will reduce quackgrass problems. Over time LDS seeding systems pretty much eliminate quackgrass as a yield reducing weed because they are using enough glyphosate in their system to reduce the populations dramatically.

THISTLES have become a problem with more continuous cropping. In conventional till Canada thistle was controlled with tillage during the fallow year by keeping the land bare and starving out the root. Fall glyphosate is effective in controlling it in LDS systems because the plant is storing reserves in the roots and glyphosate applied at this time moves into the root. Sow thistle is being identified as a bigger problem in LDS production systems than Canada thistle. There are annual and perennial sow thistles varieties. **PERENNIAL SOW THISTLE** populations can be reduced by fall applications of glyphosate. In general, whenever there are weather and operational opportunities to try to control perennial weeds in LDS it is a good idea to take advantage of them. This certainly applies to perennial sow thistle. In crop products containing clopyralid will be another blow at trying to reduce populations. Pre-harvest may be effective if moisture conditions are encouraging growth and the crop canopy is open enough to get good penetration. Post-harvest glyphosate can be more effective if there is enough green growth after cutting and temperatures are warm enough for uptake. (Wait 2 days after frost up to -8°C, if plant is 60% green a high uptake form of glyphosate should deliver an adequate blow).

FOXTAIL BARLEY LDS producers in many parts of Saskatchewan are complaining about foxtail barley. It is a shortlived perennial bunch grass with a very fibrous root system that spreads by producing lots of seed. It gets established in saline areas or locations where the crop is not too competitive. Fall applications of glyphosate are an effective blow if there is enough moisture for green growth and temperatures are above 10°C. A 0.5 L/ac glyphosate burn off will be effective in controlling spring and possibly fall seedlings. In crop products include: Poast, Assure, and Sundance.

WINTER ANNUALS are a life cycle of plants that germinate in late summer or fall and form structures, usually basal rosettes, that hug the ground and can survive the winter under a snow cover. They take off very quickly in the spring and rapidly bolt or develop a flower shoot which gives them a huge competitive advantage and if left unchecked quickly deplete the soil of moisture and resources. In a conventional system these weeds can be dealt a direct blow with tillage. In direct seeding, after they bolt they are much more difficult to kill with herbicides. There are economical answers for most of the weed problems in LDS but timely applications are a must. Better management skills are definitely required with LDS.

Common winter annuals are: **STINKWEED, SHEPHERD'S-PURSE, FLIXWEED, COMMON PEPPER GRASS, and Narrow-LEAF HAWK'S BEARD**. The most efficient time to control these weeds is late fall after the middle of Sept to late Oct as weather permits. A good product to use is 2,4-D but there will be cropping restrictions.

DOWNY BROME and **JAPANESE BROME** are 2 grassy winter annuals that become problems with winter cereal crops. They can be controlled with ½ to ¾ L/ac glyphosate in late fall or early spring before heading.

Other annual plants germinating late in the season may survive the winter and grow early in the spring. Some examples are: cleavers, white cockle, round-leaved mallow, stork's-bill, and scentless chamomile.

NARROW-LEAVED HAWKS-BEARD is another winter annual that has been a drastic problem for some producers starting out in LDS. As with the other winter annual, this weed is much easier to deal with in late fall. Johnson, an AAFC researcher at Scott has done research on winter annual weed control. He has indicated that an application of 0.45 L/ac of 2,4-D (500 g/L) should do a great job. The 2,4-D residue would be too high to plant lentils or chickpeas the following spring but canola, flax, and peas should be OK. If the fall window is missed Express & 0.5 L/ac glyphosate, or 0.75 L/ac glyphosate before bolting should deliver an adequate blow. If it does get to the bolting stage 1 L/ac glyphosate or Prepass would be the best options. To get the jump on that cheap fall blow identification is important. Milky juice distinguishes Narrow-leaved Hawks-beard from stinkweed but not dandelion. Its cotyledons and first leaves may have more stalk or petiole than dandelion while the dandelion leaf is darker green.

WILD BUCKWHEAT can become a problem in LDS because the pre-emerge $\frac{1}{2}$ L/ac glyphosate won't do a good job of controlling it. Using Prepass or Express & glyphosate before seeding cereals will enhance activity on buckwheat.

A number of other weeds continue to be a concern with the move to LDS. These weeds are seen around the borders of fields, or in patches in fields but to date do not seem to have taken off in too many instances. Weeds that fit into this category are: common tansy, stork's bill, field horsetail, scentless chamomile, round-leaf mallow, absinth, wild tomatoe, and wild rose.

SCENTLESS CHAMOMILE is a prolific seed producer. Clark Brenzil, provincial weed control specialist indicates that a spring burn-off with glyphosate gives stage specific control. $\frac{1}{2}$ L/ac will get spring seedlings. 1 L/ac will get the winter annual plants before bolting. Once they bolt it is much more difficult to get good coverage and 1.5 L/ac will be required. In-crop products containing Lontrel will give suppression or control. Bromoxynil-MCPA tank mixes also provide seedling control. Refine Extra gives suppression. Ally also provides control but does have cropping restrictions.

Another option to help reduce the spread of this weed is to mow out ditches and patches just before the flowering stage. Mowing after flowering will likely just spread the seed as flowers severed from the plant have a very good chance of still producing viable seeds especially if weather conditions are wet. If a producer is starting to see just the odd plant it is certainly advisable to hand rogue. Care should be taken to collect the weeds and burn them to prevent the roots from becoming reestablished in the event of moisture, or the flowers from releasing viable seed.

FIELD HORSETAIL was a concern for direct seeders before 2001. It reproduces vegetatively or by spores. Spores will only germinate if they sit on standing water. Adult plants can only survive if root stock is very close to water. Brenzil explains that patches can be located quite far from wet soil but they will be attached by root to a "mother" patch located close to water. The

vegetative growth which is fern like is very sensitive to adjuvants in some of our herbicides. As a result top growth is burnt off quickly but the roots send up new shoots. Amitrol at very high rates does control field horsetail. Treat these mother patches with Amitrol. If this is done early there should be no cropping restrictions the following year.

COMMON TANSY has been seen in our ditches for some time now. Some producers are treating ditches to keep this weed from spreading. RM's have access to 2 industrial products that are active on common tansy. These products are Telar which used to be formulated as an agricultural product named Glean. The other product is called Escort. Ally an agricultural product contains the same chemical as Escort. One of the dangers with these products is soil residue. They are particularly hard on trees so must be kept away from the rooting zone of all trees.