CROP PRODUCTION NEWS #3 - JULY 7, 2015

Can't take the heat: Bud blasting vs Insect damage in canola

By: Barbara Ziesman, AAg, Provincial Specialist, Oilseed Crops and Danielle Stephens, PAg, IPM Agrologist

With high temperatures and low moisture conditions throughout most of the province, canola plants are under a lot of stress and may start showing symptoms. The symptoms resulting from environmental stress can be similar to those caused by nutrient deficiency and insect damage, especially as we move into flowering and crop maturity. It can be alarming to scout your field and notice deformed flowers, abnormal pods or blanks along the stem. Before deciding on a management strategy it is important to identify the cause and determine whether action is required.

Canola is a cool season crop and can be negatively affected by high temperatures (heat blast) with sensitivity being highest during early flowering. High temperature stress can shorten the flowering period and reduce the amount of time the flower is receptive to pollen, as well as lower pollen viability. This will reduce the number of flowers that are pollinated causing blanks along the stem. Plants subjected to high temperatures during flowering will also demonstrate abnormal pod and seed development with fewer seeds per pod. Yield loss due to heat blast results from fewer pods and seeds per pod as well as a lower seed weight. The most extreme symptoms will occur during hot days (above 29 C), warm nights (above 16 C) and dry conditions during early flowering. Cool nights will offer some relief and allow the plants to recover from high daytime temperatures. When nights remain warm there will be an increase in heat stress symptoms with more aborted flowers and blanks on the stem. Dry conditions alone can disrupt pod formation; however, symptoms will be worse when combined with high heat likely due to decreased evaporative cooling.

A canola floret that has fused closed due to swede midge larvae inside. Note the pods forming on the rest of the raceme.

Flower abortion and blanks in the stem can also be caused by other abiotic stresses such as poor fertility or herbicide damage. The important thing is to look at the entire plant. In the case of nutrient deficiencies and herbicide damage, the symptoms will not be isolated to flowers or missing pods and there will likely be foliar symptoms as well.

Potential biotic stresses to canola can include insect damage. Insect damage will not affect all the buds in a cluster, even if insect populations are high. If the damage is from insects you will see evidence of feeding:

Cabbage seedpod weevil (see Insect update) - damage to buds appears as small holes. If there are no feeding wounds it is not Cabbage seedpod weevil. Cabbage seedpod weevils tend to cluster together for mating so do not be alarmed if they are noticed in a patch. Use the economic threshold of 2 weevils per sweep, make 10 sweeps per area, and check multiple places in the field.

Lygus bugs - the damage they can cause to buds is more subtle and it is more difficult to distinguish from environment causes. Their piercing mouthparts create a smaller wound on the bud. Look for plant sap oozing from fresh bites or a pepper spot appearance on the buds, this indicates older feeding marks.

Diamondback moth - their damage is usually identifiable as they chew on buds, leaving feeding evidence.

Swede midge - symptoms vary with emergence of the midge, however the most recognizable symptom is visible in mid-flowering when a flower bud has not yet opened, despite the opening of other flowers on the raceme. Within the fused florets/urn shaped buds there will be small jumping yellow larva.

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Field Tour: Agronomy in Action 2015

By Shannon Chant, PAg, Regional Crops Specialist, Swift Current

Agronomy in Action 2015 tours participants around various fields in the Swift Current area, with stops at the Wheatland Conservation Area and Agriculture and Agri-Food Canada. The event is a joint effort between Wheatland Conservation Area, Agriculture and Agri-Food Canada, Saskatchewan Ministry of Agriculture and Sask Mustard. The event is also supported by Sask Pulse Growers and Sask Wheat.

Highlights of the tour include:

- Mustard variety trials including newly registered varieties
- Crop sequencing trials with pulses, cereals and oilseeds
- A presentation on herbicide options for mustard
- Pulse crop varieties and agronomy
- Fusarium head blight management trials in wheat
- Work on soybeans and faba beans
- Performance of camelina, carinata and mustard on pulse stubble
- New crop options including quinoa and hemp

When?

The tour is on Thursday, July 16. Coffee and registration is at 9:00 am and the tour begins at 9:30. The event wraps up by 4:00 pm and includes a catered lunch. Participants pay $20 at the door.

Where?

We will meet in the Conference Center at the Semi-Arid Prairie Agriculture Research Centre located at the southeast corner of Swift Current. Turn east off of Highway 4, enter Gate #4 and watch for signs.

Pre-registration

To make lunch arrangements and provide transportation we ask participants to pre-register for Agronomy in Action 2015 by calling the Ministry of Agriculture Swift Current Regional Office at 306-778-8285.

Thanks to Kevin Hursh, Executive Director, Sask Mustard for assistance with this article.

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Have You Met Your Regional Crops Specialist?

The Saskatchewan Ministry of Agriculture's Regional Crops Specialists are located in 10 offices across the province. For further convenience these staff members are also available by appointment in 7 addition satellite offices. We encourage anyone in the agriculture industry to call us with your questions. We are dedicated to getting you the information you need to make your farm successful.

Kindersley

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John has a Bachelor of Science in Agriculture from the University of Saskatchewan. He has worked in agriculture extension with a focus on crop production and farm management since 1987. His main areas of focus have been specialty crop production with an emphasis on lentils and canary seed. John is also pursuing how to assist producers in adoption of precision agriculture practices.

Swift Current / Shaunavon Satellite Office

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Shannon grew up on a grain farm southwest of Regina and has a Master of Science and Bachelor of Science in Agriculture in plant sciences from the University of Saskatchewan. Since joining Saskatchewan Agriculture, she has worked in various regions in western Saskatchewan. Shannon is especially interested in new crops, value-adding and providing producers with results from local research.

Moose Jaw / Assiniboia Satellite Office

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Shannon has a Bachelor of Science in Agriculture from the University of Saskatchewan with a major in Agricultural Biology. She worked in west-central Saskatchewan for several years as a retail agrologist prior to joining the Ministry of Agriculture in 2011. Since then, Shannon has worked out of the Weyburn and Moose Jaw regional offices providing technical information on all aspects of crop management and production to local producers and industry. In addition she works on the Crop Report and other technological initiatives.

North Battleford / Meadow Lake and Lloydminster Satellite Offices

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Erin has a BSc. in agriculture from the University of Saskatchewan with a major in crop science. She has worked in crops-related positions for private industry, as well as for the University of Alberta where she completed her Master's degree. As a Regional Crops Specialist, Erin works with producers and industry on weed identification, weed control strategies, crop production and crop pests.

Outlook

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Kaeley Kindrachuk is the Regional Crops Specialist based in the Outlook Regional Office. Kaeley grew up on a mixed farm at Speers, SK. She attended Lakeland College in Vermilion, AB where she received a Bachelor of Applied Science Degree in Environmental Management in 2010. Her work experience includes working as a Communications Coordinator with the North Saskatchewan River Basin Council, Sales Rep trainee with Viterra and most recently as a Sales Agronomist with the Saskatoon Co-op Agro Centre.

Tisdale

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Kim holds a Bachelor of Science in Agriculture, a Master of Science in Agricultural and Bioresource Engineering and a Master of Science in Environmental Engineering. Before joining the Saskatchewan Ministry of Agriculture he conducted agricultural research for the East Central Research Foundation in Canora. Kim works with producers to solve crop production problems, identify applied research opportunities and assist producers in adopting new crop production technology to make their farms and businesses more profitable.

Prince Albert

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Joanne graduated from the U of S College of Agriculture with a BSA and a MSc. in crop science and agriculture extension, focusing on the adoption of conservation practices in Saskatchewan. She has worked in various roles as Research Associate at the University of Saskatchewan, as an Agrologist and Communications Manager for the Saskatchewan Forest Centre, and as Development Consultant for a private consulting company. Her strong farm background and ties to the farming community will enhance her work for the Ministry as she assists producers with production inquiries and knowledge transfer activities.

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Sherri graduated from the University of Minnesota with a Bachelor of Science Degree in Agricultural Education with a minor in Agricultural Engineering. Growing up a diversified livestock farm in East Central Minnesota instilled in her a love of agriculture. She has extensive work experience in the horticultural industry as well as governmental weed control & inspection and teaching agriculture both at the high school and postsecondary levels. Sherri has a special interest in designing on-line learning strategies for producers and agricultural specialists alike.

Yorkton / Moosomin Satellite Office

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Lyndon has a Bachelor of Science in Agriculture from the University of Saskatchewan with a major in Plant Science. Lyndon started with the Ministry of Agriculture in 2009 and has since worked out of the Tisdale and Yorkton regional offices. Lyndon will provide technical information on all aspects of crop production and management. Lyndon is originally from a mixed farm near Mortlach, Saskatchewan and currently resides in Yorkton.

Watrous / Wadena Satellite Office

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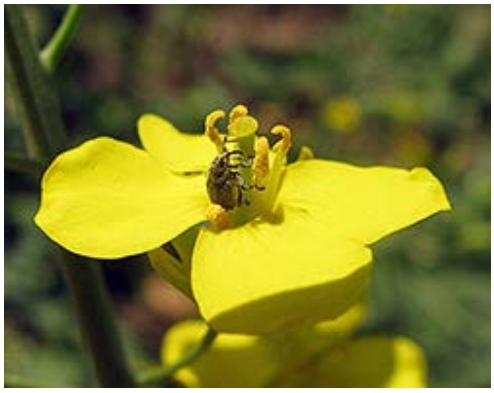
Cory grew up on a grain farm in southeast Saskatchewan in the Mutrie district. He has a both a Bachelor of Science and Masters of Science in Agriculture from the University of Saskatchewan. He has held various agronomy themed summer jobs in private industry and also has experience as a graduate teaching assistant at the University of Saskatchewan. Cory works closely with producers and industry to help alleviate current and future issues in crop production.

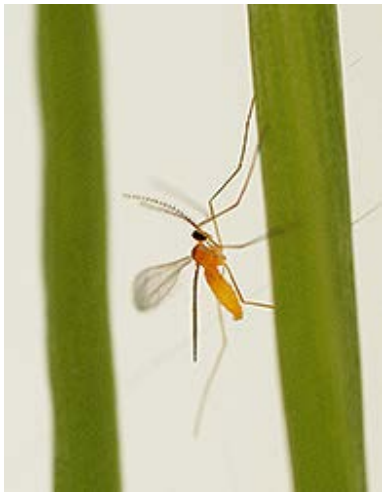
Insect Update July 7, 2015



The cabbage seedpod weevil continues to be a significant insect pest, often at economic levels in canola and brown and oriental mustard crops in southern Saskatchewan. The weevil has also established north of the South Saskatchewan River over the past few years. In addition to infestations in southern regions, reports of higher numbers of weevils were noted in the Riverhurst area this year. The northern extension of the cabbage seedpod weevil range has been noted in surveys conducted in late June and early July in recent years. Insecticide for the weevil has been applied in the southwest this year. However, due to variable crop stages across the area of weevil distribution, timing of control measures has differed considerably.

There is one generation of cabbage seedpod weevil per year with over-wintering adults emerging in the spring, migrating from cruciferous weeds into a host crop where they continue to feed and mate. Feeding on vegetative portions of the plant is not a problem butfeeding on buds may cause enough damage to reduce yield on dry years. The key is to prevent the females from laying eggs in developing pods. Keep in mind the female weevils require a seed pod (at least 18 mm or ¾ inch) to lay eggs.

Monitor seedpod weevil by using a sweet net, preferably using 10 locations within each field. At each location count the number of weevils from 10, 180 degree sweeps. Sampling locations should include both the perimeter and interior of the field. More sample sites provide a better estimate of weevil numbers throughout the field. Control is recommended when the number of weevils exceeds two per sweep on average and the canola crop is at 10 to 20 per cent bloom. Apply insecticides in the evening when beneficial pollinating insects are less active.



Wheat midge bioclimatic models suggest the start of emergence of the adult flies at the end of June for the southern Prairies. A key factor affecting wheat midge emergence this year is moisture. Research at Agriculture and Agri-Food Canada (Saskatoon) noted that in areas where there was less than 25 mm of precipitation prior to the end of May, a delayed and more erratic pattern of emergence would be expected. The southeast region, which had sufficient rain or snow and where high risk was identified in the 2015 Forecast Map, should have normal emergence.

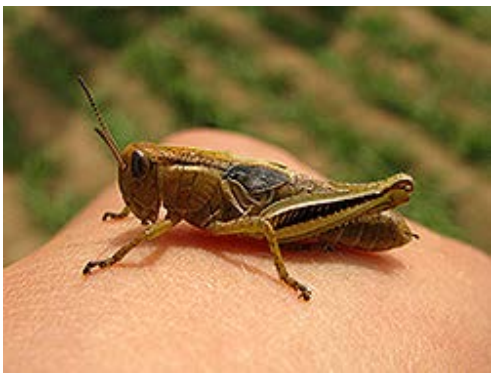
For the most current Degree day information on wheat midge emergence, Base 5 C, refer to the Prairie Pest Monitoring Network's blogspot - PPMN's Blog.

Conventional spring wheat should be monitored for wheat midge when in a susceptible stage - from the start of emergence of the wheat head from the boot leaf until flowering (anthesis). By this time wheat develops resistance to the midge larvae. Generally egg laying by midge females takes place after 8:30 p.m., when wind speeds are less than 10 km/h and the air temperature is greater than 15 C. This is the best time to monitor and make an insecticide application if necessary using economic thresholds as a guide for control decisions. During warm calm evenings, egg-laying may not occur until later in the evening and can continue into the night if conditions remain favourable. Parasites that provide biological control of the wheat midge are more active during the day and insecticides applied in the evening will also have less negative impact on these beneficial insects.

Action or Economic Thresholds:

1. Yield considerations - An insecticide application is recommended when there is at least one adult midge for every four or five wheat heads.
2. Grade considerations -If growing conditions are favourable for the production of No. 1 grade wheat, chemical control may be required when midge populations reach one adult midge for every eight to ten wheat heads.

With the higher temperatures and dry conditions, it is important to scout for grasshoppers especially in higher risk crops such as lentil and flax once podding and green boll formation commences.



Although there have been several wind currents capable of bringing diamondback moths into Saskatchewan this spring, pheromone traps have not indicated any significant numbers at any sites this year. The nominal economic threshold for Diamondback moth in canola or mustard is 100 - 150 larvae/m2 in immature and flowering fields and 200 - 300 larvae/m^2 in podded canola fields. Estimating larval numbers on a per square meter basis is a better reference for making spray decisions than considering two or three larvae per plant.

Bertha armyworm moths started to emerge from pupae in late June. To date, not one of the 110 traps have accumulated a count exceeding 300 bertha moths. Since the most recent outbreak, Bertha armyworm has declined and as a result is not expected to be a serious pest this year.

Root maggots were reported in canola in early July. There are no viable insecticide control options for this pest in canola and the effect from maggot feeding on the roots has shown variable results although higher numbers of larvae will often result in reduced yield. Management for this fly is through cultural measures - using higher seeding rates.

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Making Fungicide Application Decisions in Dry Conditions

By: Faye Dokken-Bouchard, PAg, Provincial Specialist, Plant Disease

There is a well-known concept in plant pathology, that in order to have disease, you need three things: a virulent pathogen, a susceptible host, and the right weather conditions. Any decision support system for fungicide applications will come back to the disease triangle. Plant pathogens need moisture, like all other living organisms. However, this doesn't necessarily mean rain alone. Moist conditions from a pathogen's perspective may be in the form of high humidity or dews, and thick crop canopies can create microclimates for disease too. The last few years of excess moisture have illustrated that stress causes plants to be susceptible to disease. However, while most plant pathogens thrive from the excess moisture that causes the stress on plants, dry conditions are more likely to prevent disease than facilitate it.

Watch the Weather

There is nothing more uncertain in Saskatchewan than the weather and the Roughriders. Don't write off disease and injury as a possibility until the season is over. If the weather suddenly turns wet, plant disease may still be a possibility. Also remember that while conditions remain dry, pathogens may produce resting structures, which may persist for years until the conditions are adequate for infection.

MYTH - Fungicides Boost Yields

Fungicides protect plants and save yield from disease pressure, they do not increase yields. If there is low or no disease pressure, the yield difference will be minimal. Some fungicides claim to benefit the health of crops by suppressing ethylene production, stating this will improve tolerance to stresses such as drought. However, keep the bottom line of the farm in mind. If the yield potential is low, then it will be more difficult to achieve a positive net return after the cost of the fungicide is accounted for. If a crop has been drought stressed all season, even rain won't necessarily make a difference if the yield has already been determined.

Expected net return per acre must be positive in order to justify a fungicide application.

Estimated Yield (unit/acre) x Estimated Yield Savings (%) x Selling Price ($/unit)
MINUS the Fungicide Application Cost ($/acre) = Expected Net Return ($/acre)

Read the Label

For any benefit of a fungicide to be realized in dry conditions, good choices must be made in terms of product selection, crop staging, and application. Choose an appropriate product for the disease of concern; apply at the proper time, at the recommended rate and with lots of water.

How much moisture do plant pathogens need to cause disease?

Optimum conditions listed below are a guideline based on information gathered from various sources. Pathogens may survive outside of the optimum conditions listed, and disease may occur but will likely be significantly less severe. Outside of the optimum temperature optimum, pathogens may require more moisture in order to cause disease.

Disease	Optimum Temperature*	Optimum Moisture*	Decision Support?
Fusarium Head Blight in Wheat *F. graminearum*	16 to 30°C 25 to 28°C	At least 12 hours of precipitation or high humidity (>80 per cent) for sporulation and infection.	Yes
Septoria in Wheat	15 to 27°C	Pycnidia form on necrotic infected leaves; wet pycnidia ooze spores that are spread through rain splash.	No
Tan Spot in Wheat	20 to 28°C	6 hours of leaf wetness to infect and colonize leaf tissue.	No

		Old lesions on wet leaves produce spores that become airborne when dry.	
Stripe Rust in Wheat	9 to 12°C	Favoured by intermittent rain.	No
Blackleg in Canola	13 to 18°C	During or several hours after >2 mm of rain or >80 per cent humidity.	Yes
Clubroot in Canola	18 to 25°C	High soil moisture (spores require free water to swim to roots).	No
Sclerotinia in Canola	15 to 25°C	Soil near saturation, humidity, or dew that leaves canopy wet most of day required for apothecia to form. Wet leaves required to infect stems.	Yes
Stemphylium Blight in Lentil	Above 25°C	High relative humidity (~85 per cent) or a >8 hours of leaf wetness; however, pathogen infectious even if wet conditions are interrupted by dry periods lasting 6 to 24 hours.	No
Grey Mould in Lentil	Cool	Wet	No
Ascochyta Blight in Lentil	10 to 20°C	Max disease after 24 to 48 hours of leaf wetness; rain splashes spores.	Yes
Anthracnose in Lentil	20 to 25°C	Rain splash for spore dispersal. 18 to 24 hours of leaf wetness	Yes
Mycosphaerella Blight and Ascochyta Leaf and Pod Spot in Pea	20 to 25°C	Over 4 hours of leaf wetness at optimum temperatures, or more than 6 hours of leaf wetness outside of optimum temperature range.	Yes
Pasmo in Flax	15 to 30°C	High humidity favours disease; rain splash required to disperse spores.	No

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Preparing to collect chaff

By: Ken Panchuk, PAg, Provincial Specialist, Soils

Finding chaff collection equipment may be difficult, so allow plenty of time to locate, adapt or manufacture equipment to collect chaff this fall. Due to low demand for chaff handling equipment some manufactures have discontinued these product lines. However, a little innovation can provide a method for collecting chaff.

Harvested wheat with chaff piles made using a home-made chaff box.

Chaff makes an excellent winter feed source while maintaining the standing stubble. The chopping and spreading of the straw maintains soil and conserves moisture in the field. Locate your livestock wintering sites near fields where chaff will be collected or make arrangements with a neighbor close to your wintering site for collection of chaff.

For more information look up the following sources:

- Chaff Ammoniation, Nutrition and Feeding and,
- Crop Residue Collection for Field Grazing, or
- Contact your nearest Forage or Crops Specialist and/or the Agriculture Knowledge Centre at 1-866-457-2377

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Saskatchewan Farmer's' Markets – Evolving to Meet New Demand

By: Glen Sweetman, Provincial Specialist, Greenhouse and Nursery Crops

The farmers markets' demographic in Saskatchewan is changing. Not long ago farmers' markets were largely attracting the older generation and 'foodies' who enjoy the quality of the produce. Now they are joined by young parents with strollers or children in tow. This new consumer demographic is seeking quality food, is increasingly aware of production methods, and is introducing the next generation to agriculture. It is important that youth make a connection with farmers who produce their food. Providing youth with the knowledge and tools to create healthy food choices is beneficial to all of Saskatchewan.

Many consumers are looking for a farm to table experience. It is now common to see signs on production methods, recipe cards, and multimedia updates with consumer feedback. Growers are becoming increasingly interactive, providing recipe cards to assist people as they introduce new food to their plate. While consumers continue to buy the staple greenhouse tomato and long English cucumbers, they now want more options. Greenhouse producers are diversifying to meet this challenge. Over the last few years the varying types of produce available at farmers' markets around the province is impressive. From mini cucumbers so sweet children love them to peppers so hot they have a warning label.

An increase in greenhouse vegetable production also enables the farmers' market to extend the season beyond field production. The greenhouse has the ability to supply their consumers with fresh local vegetables a few months earlier in the spring or even year round.

Farmers' markets themselves are evolving. In addition to baking, some markets have food prepared on site. This, combined with a wide variety of non-food venders, provides a dynamic market experience that appeals to a broad range of people. Locally sourced products like pickles and jellies have expanded and new products are constantly being introduced.

The introduction of new items and the supply of classic market goods create a promising future for producers. Not only have existing greenhouses expanded to accommodate the increased interest, new operations are starting up as well. The industry growth is promising to producers, and beneficial to the public who are eager to fill their baskets at the local market.

For more information contact your local farmers' market or Glen Sweetman for information on greenhouse production.

Scouting for herbicide resistance

By: Danielle Stephens, PAg, IPM Agrologist

Although most herbicide applications are near completion throughout the province it doesn't mean you should stop thinking about weeds. It is important to check your fields and evaluate your herbicide applications, especially if there is a tight herbicide rotation of Groups and/or there is heavily reliance on a specific herbicide Group for weed control.

As you scout fields, note which weeds were not controlled by the herbicide application although they were listed on the herbicide label. Take note of the pattern of weeds left behind, as well as the weed species and number of weed species. Are the patterns of weeds in angular and geometric shapes, with sharp edges, straight boundaries, or parallel lines? Are there multiple weed species in those areas? All of these things would suggest a sprayer miss, not herbicide resistance (Photo 1).

Photo 1: A clear spray miss, NOT herbicide resistance. Note the sharp boundaries.

Herbicide resistance will not have a sharply defined boundary to the weeds. Different patterns may be visible as seeds could have been spread by the combine, or tumbled in the fashion of kochia (Photo 2), or may just be a spreading patch within the field. There will only be one weed species in this patch as resistance generally does not develop among multiple species at the same time.

It is also important to check fields that have not been planted to crop and are under chemical fallow as using only one herbicide Group on these fields selects for herbicide resistance.

Herbicide resistance in Saskatchewan has been found in many different weed species and in multiple herbicide groups. Wild oat is the most common with cases of resistance against Group 1, 2, and 8 herbicides, as well as different combinations of the three. Weeds can develop resistance against multiple herbicides. If an operation relies heavily on one herbicide Group to control a weed and then once it fails moves to rely on another herbicides Group to control that weed, resistance to multiple Groups is more likely. To prevent herbicide resistance weeds, chemical Groups should be rotated, or better yet, multiple herbicide Groups should be used in a tank mix to control the same weed.

Other important weeds to watch are: kochia (Group 9), cleavers (Group 2, Group 4, and Group 9), and green foxtail (Group 1, Group 4 and combinations of the two). A full list of Groups and weeds that have found to have cases of herbicide resistance on the prairies can be found on page 41 of the 2015 Crop Protection Guide.

What to do if you find a weed patch you suspect is herbicide resistant? You can send in a large seed sample to the Crop Protection Lab for testing over the winter months. If you are confident with your assessment, you should take measures to cultivate the patch of weeds under or pull them by hand. Pulling a few weeds now can save you from a troublesome season next year and the spreading of the resistant weeds around your farming operation.

Photo 2: Glyphosate resistance in kochia on a chem fallow field. Note the pattern as the resistant plant dropped seeds as it tumbled across the field.