Walking Your Fields®

Welcome to the third issue of *Walking Your Fields®* newsletter for the 2013 growing season. On behalf of your DuPont Pioneer Agronomy team, you will be receiving this newsletter on a monthly basis through October. For more detailed agronomic information please feel free to contact your local Pioneer Hi-Bred sales representative or check out ***www.pioneer.com***.

Risk Factors for Sclerotinia in 2013

Soil moisture conditions and late June precipitation in most areas in Western Canada are again above normal. Combined with three years of inoculum build up, the risk of infection is high. With 2012 infections ranging from 5 to 70+%, the most critical question growers need an answer for is, "How do I manage risk of a disease I can't see?"

There are a handful of practical risk factors growers should consider before spraying their canola fields:

1. Level of infection in their own and neighbouring canola fields over past several years
2. Amount of precipitation 10 to 14 days prior to first flower
3. Plant density
4. Rotation
5. Long range precipitation forecast
6. Proper timing of fungicides

Sclerotia bodies can produce apothecia with as little as ½ inch of rain. Recent rains have placed many areas well above the ½ inch mark. Healthy, dense, actively growing crops seeded into canola fields provide a next to ideal micro climate for apothecia to germinate. Canola fields having average to above average crop densities, short rotation and frequent showers during the 1st two weeks of flowering points toward a high risk of infection.

Apothecia. Picture courtesy of David Vanthuyne, Saskatchewan

Continued on page 2

Inside this issue:

ALBERTA

1 Risk Factors for Sclerotinia in 2013
2 European Corn Borer
4 Flowering: The most sensitive growth stage of Canola
5 Factors Influencing Weed Resistance to Herbicides
6 Protect Your Investment – Keep Scouting your Canola
7 Managing Irrigation in Corn
8 Scouting Your Canola For Clubroot

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Continued from page 1

Fungicides and genetic resistance are agronomic tools that minimize the impact of sclerotinia infection. When risk factors are high a combination of these tools will dramatically reduce to level of infection. With or without genetic resistance, fungicide timing becomes the most critical factor to maximize a grower's profitability. Recent experience has taught us this.

Maximum pod formation takes place in the first 10 to 14 days after flowering starts. Petal drop starts generally between 6 to 9 days after flowering begins. This coincides with a plant that is approximately at the 30% bloom stage. After this point, pod formation will then start to taper off while canola plants continue to produce flowers to full bloom (60% flowering).

Canola petals are the food source for the sclerotinia spores to grow on. When infected petals fall off the floret and land on the leaf or stem axels of a plant, the sclerotina (white mold) can then flourish and infect the stems and branches. This can result in premature ripening and yield loss.

Field with sclerotinia infection. Picture Courtesy of Canola Council. www.canolacouncil.org

In order to get maximum protection from this disease, growers want to target as many open petals as possible before they start to fall off the floret. This usually occurs at around the 30% bloom stage. The picture below on the left shows a plant at the 30% bloom stage with all its petals still on the florets, while the picture on the right with the red circle shows petals fallen off a plant at 40% bloom. Keep in mind that a field with good moisture and warm temperatures can move from 10% bloom to 40% in as little as 6 days.

30% bloom *40% bloom*

Pictures courtesy of Canola Council, Robin Morrall and BASF Canada bloom stage guide. www.canolacouncil.org.

European Corn Borer

The European corn borer (Ostrinia nubilalis) is one of the most damaging insect pests of corn throughout North America. It was first discovered in North America in 1919, and was first found in Manitoba in 1948. Corn borer reduces the yield of corn by chewing tunnels in the stalks as well as the ears of the corn. Tunneling in the corn stalk reduces the size of the ears, the test weight and can also result in stalk breakage. European corn borer larvae can feed on any above ground parts of a corn plant.

Life Cycle:

Mature larvae overwinters in cornstalks, corn ears and plant residue. In the spring (late June or early July) the adult moths emerge from pupae and mate. The female then lays eggs on the underside of corn leaves near the mid-rib. Egg masses typically contain 10-40 eggs. A female moth can lay up to two masses of eggs per evening for up to 10 days. Eggs hatch in 5-7 days and the larvae begin feeding. Once the larvae reach 11/16 inches in length, they begin to tunnel into the stalk to prepare to overwinter.

White egg mass

Egg mass about to hatch

Corn borer larvae 1-5 instar

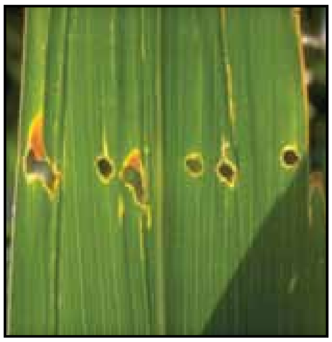
Identification:

Initially the egg masses appear white. Just prior to hatching, they appear black due to the color of the larvae heads. Newly hatched larvae appear whitish with black heads and are very small in size (about 1/10 inch). As the larvae mature the color darkens to a tan color with black spots and they can grow up to about an inch in size.

Symptoms:

Newly-hatched European corn borer larvae will feed on the young leaf tissue without eating all the way through the leaf. This feeding injury is sometimes called “window paning”. When feeding occurs inside a newly developing leaf whorl, it can result in typical “shot hole” damage. Shot hole damage is typically one of the first symptoms observed. The larvae can also tunnel inside the mid-rib of the leaf. As the corn plant matures, the older larvae can tunnel into stalks, ears or ear shanks. Tunnels can interfere with nutrient movement resulting in reduced yield. Mature larve may also feed on the silks, kernels and cobs. Under heavy infestations, the tunnel effect can result in stalk breakage prior to harvest or ear drop. These two types of damage can result in the most severe losses.

“window paning” damage



“shot-hole” damage

Scouting:

Scouting for European corn borer should begin in early July. At 5 locations throughout the field (starting well into the field), examine 20 plants for egg masses or hatched young larvae. Continue scouting every 5-7 days until the end of July. For each event, calculate the number of corn borers/plant. It is also important to pull open the whorl to check for larvae that are feeding inside the whorl.
The table below indicates an economic threshold chart provided by Manitoba Agriculture, Food and Rural Initiatives (www.gov.mb.ca)

Economic Threshold (Corn borers/plant)

Control Costs [1] ($/Acre)	Crop Value ($/Acre)					
	150	200	250	300	350	400
6	1.00	0.75	0.60	0.50	0.43	0.38
9	1.50	1.12	0.90	0.75	0.64	0.56
12	2.00	1.50	1.20	1.00	0.86	0.75
15	2.50	1.88	1.50	1.25	1.07	0.94
18	3.00	2.25	1.80	1.50	1.29	1.13
21	3.50	2.63	2.10	1.75	1.50	1.32
24	4.00	3.01	2.40	2.00	1.72	1.51
27	4.50	3.38	2.70	2.25	1.93	1.70

[1]Control costs = insecticide price ($/acre) and application costs ($/acre)

Control:

There are three primary methods of control to reduce the damage in corn from European corn borer:

- Mechanical damage to the stalks in the fall through tillage, mowing or chopping the stalks for silage can reduce the overwintering larvae populations.
- Insecticide applications. Timing of insecticide applications should target the young larvae (first and second instar) prior to the third instar larvae when they begin tunneling into the stalks.
- The use of resistant (Bt) corn hybrids. When using Bt corn, a refuge of at least 20% of the corn acres should be planted to a non-Bt hybrid to reduce the risk of developing resistant populations of European corn borer.

Biological control of the European corn borer occurs through feeding on the larvae by lady beetles (adults and larvae), hover fly larvae and green lacewing larvae.

Bt corn:

Bt corn is a genetically modified corn that has DNA from the bacterium Bacillus thuringiensis. The Bt corn has insecticidal properties in selective groups of insects that are activated inside the insects stomach when they ingest the bacterium in the corn plant. Because the insects need to consume the plant material for control, Bt corn does not control most insects other than European corn borer and sometimes suppression of black cutworm. Bt corn has little to no impact on beneficial insects.

When growing Bt corn, it is very important that a refuge of non-Bt corn is also grown to reduce the opportunity for the European corn borer to develop resistance. Pioneer® brand corn products that are identified by “AM” (Optimum® AcreMax®) indicate a refuge of 5% built into the bag of seed. Optimum® AcreMax® technology provides control of European Corn borer and other key insect pests such as black cutworm, fall armyworm and Western bean cutworm.

Optimum™ AcreMax™ ABOVE

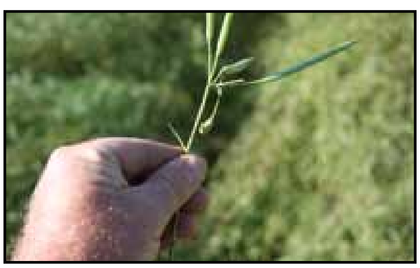
DuPont Pioneer offers a variety of Bt corn products in the product portfolio. Several of the Pioneer® brand Bt corn products you may be interested in include 39D97, P8107HR, 39B94, P8193AM, P8210HR, 39V07, 39Z69 and two new corn products P7632HR and P8016AM.

Flowering: The most sensitive growth stage of Canola

Seeding, weed spraying, bug monitoring and sclerotinia assessment are all key times in the life cycle of canola. Even though many of us need some much required time off in July from spraying weeds, diseases and insects, we need to make sure NOT to forget about our canola crops. Why? The flowering period in canola is critical and it's the last step leading into the development of your potentially big yields at harvest.

We have all heard and know canola is a very plastic plant and recovers from many stresses including stress during flowering. Flowering is one of the most sensitive times of the year and by looking at the main raceme or branches after flowering you can see stress periods. Canola typically will throw out more flowers than it can support, however the first 15 days of flowering can be very critical to maximize yield. A flowering period of 20 days is no cause for concern unless the pods are short. However, a flowering period of 28 days causes questions to arise about what happened in that time period. If a stress occurs and pod set does not occur in the first few days typically the plant will add more flowers on at the end of flowering to get the right number of pods that it can support. Keep in mind that if flowering is extended due to early stresses the late forming pods typically may be smaller, contain less seed and have smaller seed size.

When the first canola pod is formed on the main raceme, the seed inside the pod sends a message via hormones to the root system saying "I am here and I get fed first" and every subsequent seed gets in line to be fed. When you look at your main raceme you see that the pods gradually get shorter and shorter as the plant senses that it is near capacity for seed retention. Nutrients and water play a significant role in this as well.



Environmental stress-cold conditions for a few days shown on canola pods. Picture courtesy of Doug Moisey

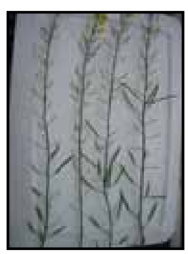
When a stress occurs, sometimes the reaction does not show up for several days so you will see sometimes good pod development a series of blanks then new pods formed above. A good example is a late herbicide spray application where buds are potentially exposed or flowering has started. The reaction to the late herbicide spray may be immediate where no pods form in the first few days of flowering or a few flowers will form a pod then subsequent flowers do not form. Another example is heat above 25 C or cold conditions below 10 C you may not see the affects for a few days (see frost stress photo below). Even though a heat or cold period occurred you may see pod formation for a few days, then a section where no pods form. The hormonal response to the stress may take a few days to show up and several days to clear up. Canola at flowering can be best described as a teenager and typically a teenager over reacts to the littlest of stresses.

0 degrees Celsius at flowering. Picture courtesy of Doug Moisey

When stresses occur, look at the flowering period. You may see flowers with the male parts (stamens) below the Pistol (female) which typically means no fertilization thus no pods.

Causes of missing or short pods can be nutrients (Sulphur and Nitrogen), heat, cold, insects (a magnifying glass can help in determining whether heat or insect damage) or events like heavy rains. The key is to be in the field at flowering and monitoring.

Differentiating between nutrient deficiencies versus an environmental stress is simple in some respects. When a plant is deficient in nutrients it will have fully developed pods but will contain few seeds. Also with nutrient deficiencies, the canola plant will set quite a few pods then quit flowering and typically no blanks are observed as the plant is in setting seed mode and wants to fill all remaining seed. Flowering stresses usually result in pods formed with blanks representing the stress period and then the canola plant forms new pods again.



Cold stress at flowering. Picture courtesy of Doug Moisey

One key point to remember is that when stresses occur and pods are not formed, canola will compensate and flower later which can predispose the plant to Sclerotinia. This can delay maturity leading to a reduction in seed quality and yield loss. The key is to be in the field at flowering in order to diagnose, correct or understand what is happening to this key crop in your rotation.

Factors Influencing Weed Resistance to Herbicides

Weed resistance to herbicides has been a management challenge for nearly as long as herbicides have been used for weed control. Herbicide resistance is defined as the inherited ability of a plant to survive and reproduce following exposure to a dose of herbicide normally lethal to the wild type. The use of herbicides, however, does not induce resistance in weed species, rather it simply selects for resistant individuals that naturally occur within the weed population. The more one particular herbicide active ingredient is utilized alone for weed control, the greater the likelihood of encountering a resistant individual in a field. (Jeschke, 2007)

When a resistance gene has occurred within a weed species population, failure of the herbicide active ingredient can spread fast. The percentage of weeds in the population that are resistant gradually increases at an imperceptible rate and then makes a logarithmic jump to become more than half the weed population. This is why fields typically go from adequate control (>90% control) to failure (<50% control) in one year.

Logarithmic Progression of How Weeds Develop Resistance to Herbicides*

Treatment	% Resistant Weeds in Total Population	Weed control
0 Application	.0001	Excellent
1st Application	.00143	Excellent
2nd Application	.0205	Excellent
3rd Application	.294	Excellent
4th Application	4.22	Excellent
5th Application	60.5	Failure

*Hypothetical model data. The actual time to occurrence depends on many factors. (Martin, A. U. of Nebraska)

Growers need to be diligent in scouting for weed resistance after herbicide spray applications. If resistant weeds are found early they can be managed to reduce the spread. The main risk factor for herbicide resistant weeds to develop are continuous application of herbicides with the same mode of action (Beckie, 2010). Continuous glyphosate applications can lead to a shift in the weed community toward species that are naturally able to survive or avoid exposure. Annual weed species that occur at high population densities, are widely distributed, prolific weed seed producers, and have efficient gene (seed or pollen) dissemination have a higher likelihood of developing resistance.

Kochia at the Lethbridge Agriculture Research Center in Canada where glyphosate-resistant plants were discovered. Picture courtesy of Lethbridge Agriculture Research Center, Lethbridge Alberta 2012.

Kochia seed (shown in above photo) is spread by plants that become detached after their growing season is over, and roll across fields with the wind. "Tumbleweed" effect shown above, shows how a single glyphosate-resistant plant can roll through a field, spreading its seed. At least some of these seeds will also produce glyphosate-resistant plants. (Farm Progress, 2011)

Some weed species are naturally less susceptible to glyphosate. Other weed species can avoid glyphosate application by later emergence. Weed species that were previously well-controlled may increase in prevalence under continuous glyphosate use.

The risk of glyphosate resistance can be decreased by reducing the selection pressure placed on the weed species by glyphosate applications. Combination or rotation of herbicide modes of action is the most effective means to reduce selection intensity on weed species. Crop rotation and tillage can decrease herbicide selection intensity by reducing weed populations; however, effectiveness can vary among weed species. Development of new herbicide resistance technologies in crops may provide new options for dealing with herbicide resistant weeds. New herbicide technologies are short-term solutions to manage new resistant weed problems that may develop. So we still need to rotate between herbicide groups and use multiple modes of action where both active ingredients have activity on the particular weed species that growers are targeting. Many of the weed species in which glyphosate resistance has already developed may also be resistant to other herbicides. Weed species that are resistant to multiple herbicide groups will limit the grower's alternative weed control options.

References:

Jeschke, M. R. 2007. Weed Community Responses to Cropping System Factors in Glyphosate-Resistant Corn and Soybean. Ph.D. Thesis. Univ. of Wisconsin-Madison.

Beckie, H.J. 2010. Predicting Prairie Weeds at Risk of Glyphosate Resistance. Poster

http://farmprogress.com/story-glyphosate-resistant-kochia-identified-alberta-canada-9-58841 Glyphosate-Resistant Kochia Identified In Alberta, Canada, Farm Progress 2011 Accessed June 25, 2013

Martin, A., 2000, Logarithmic Progression of How Weeds Develop Resistance to Herbicides, U. of Nebraska

Protect Your Investment – Keep Scouting your Canola

As your canola fields reach bolting stage and beyond, the investment into those crops in seed, fertilizer and herbicide has already been made. It is essential to continue scouting canola fields every few days to prevent insects from robbing you of returns on those investments. Here are some considerations as you head out to scout your crops.

Insect populations can vary from field perimeter to interior. Relying on a few observations at the field edge can be misleading. While some insects disperse quickly and evenly throughout the field, others may congregate in patches or along field edges. Getting into fields with dense canopies can be challenging, so establish some scouting pathways (e.g. quad tracks) at early bolting to minimize trampling but allow easy access into fields. Corner to corner to form an X, or a W across the field are recommended sampling patterns.

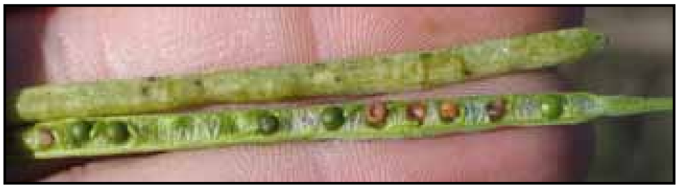
Check entire plants for insect damage. Insect feeding inevitably causes some type of damage to the plant, but depending on the insect it may be subtle or hidden. Larvae of insects like diamondback moth or bertha armyworm chew on the leaves, stems, buds, etc. causing obvious loss of plant tissue. Cabbage root maggot feeding causes tissue loss as well, but it is hidden below ground. You have to dig up the plant and inspect the roots to see the tunnelling, but since recent trends of both tight rotations and lower seeding rates/plant densities can favour this insect, it is worth the time to look. When it comes to sucking insects like lygus bugs, the only sign may be small pinholes oozing a little sap or small dark spots as wounds heal. For insects like these, routine scouting for the insect itself may be a better strategy than watching for damage.

Photo shows two darker larvae (almost ready to pupate) feeding on pod and then three of the cocoons with pupated diamondback's above the thumb.

The root maggot has pupated already (the larvae that does the feeding is a white maggot) but this is a good example of tunnelling.

Mature Bertha Armyworm larva

Lygus bug feeding on pod



Lygus bug punctures on pod and shrunken seed beneath

Use thresholds for control based on appropriate crop stage and proper scouting technique. For example, taking ten 180° degree sweeps (each spaced a pace apart) through the top of the crop canopy using a standard 38 cm diameter sweep net is the proper way to scout for both lygus bug and cabbage seedpod weevil (CSW). Average counts from 10 locations determine if populations exceed threshold for foliar insecticide. But the ideal time for control of CSW (if counts exceed 20-30 in 10 sweeps) is at the beginning of flowering, while thresholds for lygus are targeted at late flowering or podding stages and differ for each stage.

Use available online resources. For many larvae thresholds are based on population/unit area (e.g. number/ m^2). But the bertha armyworm, diamondback moth and imported cabbageworm all produce small green larvae (worms). The threshold for diamondback ranges from 150 to 300 per square metre, about 10 times the threshold for bertha armyworm, while cabbageworms feed on foliage and almost never require spraying. Use online resources available at www.pioneer.com, www.canolawatch.org and provincial agriculture department websites to ensure you are scouting properly for specific pests. This will ensure foliar insecticide is only applied when odds of an economic benefit are high, and help preserve beneficial insect populations that keep our pests in check and improve the pollination and yield of our crops!

Pictures courtesy of Canola Council, taken by Derwyn Hammond. www.canolacouncil.org

Managing Irrigation in Corn

Many growers in Western Canada grow their corn under sprinkler irrigation. Although the ability to irrigate can reduce water stress on your crop, understanding how much water and the most critical timing of water needs will lead to 1) more efficient use of your irrigation system, 2) reduce extra water applications and crop stress from over watering and 3) reduce the costs associated with over or under application. It is also important to manage our water resources responsibly. Understanding how much water the crop is using will aid in proper scheduling of irrigation, will ensure your system can keep up with crop demands, will reduce nutrient loss from overwatering and ensures that water is available at the most critical stages for optimizing yield potential. A typical corn crop requires 500-550 mm of moisture for optimum growth.

To determine how much to water depends on 4 main factors: 1) amount of available water in soil, 2) crop needs 3) rainfall and 4) the effectiveness of irrigation system.

To determine how much water is available in the soil there are 3 factors we need to understand:

1. Field capacity: Field capacity is the amount of water a soil can hold after being fully saturated and allowed to drain. The moisture remaining would be considered 100% field capacity.
2. Permanent wilting: Permanent wilting point is defined as the point in which a crop can no longer remove any more water from the soil.
3. Available Moisture: Available moisture is the difference between field capacity and permanent wilting point. A corn crop will begin to express stress if water levels in the soil drop below 50% of available moisture.

Average corn water use inches/day

	Weeks after Emergence																	
Temperature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
10-15	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.09	0.1	0.1	0.1	0.09	0.07	0.06	0.05	0.04	0.03
15-20	0.02	0.03	0.04	0.06	0.08	0.09	0.11	0.12	0.13	0.15	0.14	0.14	0.13	0.11	0.09	0.07	0.06	0.04
21-26	0.03	0.04	0.05	0.07	0.1	0.12	0.15	0.16	0.17	0.19	0.19	0.18	0.17	0.14	0.11	0.09	0.07	0.05
27-31	0.03	0.05	0.07	0.09	0.13	0.15	0.18	0.2	0.22	0.24	0.23	0.22	0.21	0.17	0.14	0.11	0.09	0.06
32-37	0.04	0.06	0.08	0.11	0.15	0.18	0.12	0.24	0.26	0.28	0.27	0.26	0.25	0.2	0.17	0.13	0.11	0.07
Stage		3 leaf			8 leaf			1 st tassel	silk		blister kernel			early dent	dent			

To determine the amount of water in your soil a simple "squeeze" test has been developed. Refer to Figure 1. To fully understand the amount of water available it is also important to only assess the portion of soil that the roots are able to access. Full root extension is not reached until around the start of tasseling (Refer to Fig. 2). Approximately 70% of crop required moisture is taken from the top 50cm of the root zone.

On average corn will use 1-2mm/day from establishment through to the 3 leaf stage. From 4-6 leaf daily usage is 2-5mm/day. The most critical period to maintain soil moisture levels is from tasseling through to the end of silking. During this time a crop can use 5-6mm/day. Water stress at this point is the most common cause of yield loss. Water is also critical at this time because it is plant moisture that pushes the silks from the ear to the end of the husk where they come into contact with the pollen. Corn silks are 99% moisture and if they start to wilt due to lack of moisture pollen will not be able to travel to the ovule resulting in unfertilized kernels. After pollination, water requirements will continue to drop off until a black layer is formed, at which point no more energy is transferred from the plant to the kernel. It is important to maintain adequate moisture after pollination to reduce risk of poor grain fill resulting in low test weight grain.

Now that you know when and how much water your crop requires it is time to setup your irrigation schedule. Here are 3 factors needed to aid in accurate scheduling.

- **Evapotranspiration** – evapotranspiration is the combination of moisture lost to the environment through plant respiration and soil evaporation.
- **Monitoring** - monitoring the amount of water output from the irrigation system to ensure that the unit is applying the amount of water it is set to or is expected.
- **Timing** - timing the water to ensure that soil moisture does not drop below 50% of available water requires attention to crop needs, evapotranspiration and the ability of irrigation equipment to apply and keep up to crop needs.

Often because of the limitations in the irrigations system, you will not be able to provide all the crops moisture requirements on demand if rain is absent. You may need to add more water than the crop is using to ensure that the soil profile is full enough going into the most critical water stages to ensure that the system can keep up. This is commonly seen as growers keep fields at almost field capacity as their crop enters tasseling.

To take your irrigation scheduling to the next level there are a number of tools that can be placed in the field to monitor soil moisture. Most common are neutron probes, EC blocks and tensiometres. Some units can send data directly to your computer so you can have an extremely accurate view of what's going on in your fields and when and how much water to schedule to optimize water use efficiency and yields.

Scouting Your Canola For Clubroot

The roots and stalk of clubroot resistant hybrid (left) are healthy and unaffected compared to the clubroot susceptible hybrid which exhibits the characteristic galls (right).

Clubroot is a soil-borne disease that affects cruciferous crops. In canola, it causes swellings or galls to form on the roots. These galls inhibit the ability of the roots to take up water and nutrients, which ultimately causes premature death of the canola plant.

The best time to scout for clubroot symptoms on the roots is late in the season, approximately two weeks before swathing, since root galls should be easy to identify at this time. Field entrances are often where clubroot shows up first as the disease in primarily moved in soil and can be transferred by equipment. Although initial scouting for clubroot can easily be done by driving by, it is strongly recommended to get out and look at the field. When scouting for clubroot, look for patches of premature ripening and areas where weeds may have invaded due to lack of crop competition. Depending on local conditions and timing of infection, clubroot infected canola may look very similar to canola suffering from other diseases or environmental stresses. Patches of prematurely ripening canola due to clubroot infection could be confused with other diseases such as sclerotinia, blackleg or fusarium wilt, or environmental stresses such as drought conditions or waterlogging. To determine the actual cause of these of poor growth areas of the canola it is important to view these patches more closely.

When entering a field that is suspected of having clubroot there are a few precautions that should be taken. First, do not drive into the field with a vehicle as soil can stick to tires and spread the disease. Park in a safe place and walk into the field. Secondly, it is a good idea to wear disposable footwear while in the field. This will keep from spreading clubroot on footwear. Since above-ground symptoms of clubroot may be incorrectly attributed to moisture stress or to diseases such as blackleg, fusarium wilt or sclerotinia, proper diagnosis of clubroot should always include digging up plants to check for gall formation on the roots. In heavily infected areas of the field, the roots may snap off and need to be dug out with a shovel. It is a good idea to have the roots DNA tested to confirm the presence of the disease. Testing Lab information is available on www.clubroot.ca website. Remember to properly dispose of booties and to properly clean any tools before leaving the field.

Further information about clubroot management is available on the following websites:

www.canolacouncil.org/clubroot/about_clubroot.aspx#clubroot_overview
www.youtube.com/watch?v=H8Jk0zQ3JA&feature=player_embedded
www.youtube.com/watch?v=gxB55xQSHX0&feature=player_embedded

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