

Walking Your Fields®

Welcome to the fifth issue of *Walking Your Fields®* newsletter for the 2015 growing season. On behalf of your DuPont Pioneer Agronomy team, we will be producing this newsletter on a monthly basis through to October. For more detailed agronomic information, please feel free to contact your local Pioneer Hi-Bred sales representative or check out www.pioneer.com.

Managing Overmature Corn for Beef Cow Grazing

Many corn crops in 2015 across the prairies have produced wonderfully, despite the early season drought. With an early seeding date and adequate corn heat units, corn in many areas may mature to physiological maturity or blacklayer. This is favorable if the intent is for grain, however this may pose risk if not managed properly for grazing. Below are some key points to help manage through grazing over mature corn.

Hybrid Choice and Ideal Maturity

Ideally, producers should choose a hybrid that is roughly 150 – 200 days longer than your corn heat unit area. The goal is to have corn freeze and thus be grazed about the R5 (dent) – R5.5 (1/2 milk line) stage. Choosing a later hybrid will help ensure the crop does not mature too much and will not produce black layer corn. This will reduce issues associated with acidosis, due to high starch accumulation in more mature corn. This will also ensure higher

Inside this issue:

- 1 **Managing Overmature Corn for Beef Cow Grazing**
- 3 **Managing Silage Quality During Unfavorable Growing conditions**
- 5 **Soybean Aphid**
- 7 **Scouting Your Canola Fields at Harvest**

AUGUST 2015 Volume 25 Issue 5



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Continued from page 1

palatability of the whole plant, leading to more effective grazing and reduced residue on the field. However, of course, we can't predict the frost and thus management will be crucial with an unexpectedly long growing season.

Management Considerations

Know the Maturity of Corn and Killing Frost

Kernel milkline may be the most widely used indicator for determining maturity of corn. This will allow the producer to manage accordingly. Take a whole-plant representative feed sample and have a feed test analysis completed. A feed test will allow you to compare the feed analysis to the requirements of cows grazing and provide supplements if necessary for a balanced feed ration, such as added fibre, protein and minerals.



1/4 milk line



1/2 milk line



3/4 milk line



Full milk line

Cow History and Grazing Management

Remember that naïve cows will need time to adapt to a winter grazing system. Since corn is a high quality feed, especially if fully mature, take the time to slowly adapt cows to the grazing system by allowing them entry to the field with full rumsens, supplying additional feed (ie., hay, green feed) and only allowing a small grazing paddock initially (2-3 hours of grazing).

If cows are transitioned from a poor quality fall pasture, ensure they are fed good quality hay or green feed for 2 weeks prior

to grazing corn to help adapt rumen. Know and manage the cow age by limiting winter grazing to the main cow herd. Older or younger cows may not be able to graze as effectively as the main cow herd.

Grazing Management

Limit graze the animals on a 2-3 day rotation. This will ensure they have access to new feed every 2-3 days for proper nutrition, but will also ensure they clean up the stalk/stover of the crop to limit residue. It is preferable to leave no more than 2000 kg/ha (1786 lb /ac) of residue behind. You want to make sure the cows are cleaning up the feed material, however you want some material to be left to ensure they are getting enough to eat or in other words fed ad libitum (allowed to eat according to their appetite – not limit fed). Ensure good, clean, adequate water supply. Ensure a proper mineral package is provided (2:1 Ca/P ratio, trace mineral and salt). This should be determined based on the feed test to insure proper minerals are being supplied to maintain herd health. Provide a source of shelter in the form of natural bush, if available, or windbreaks. Use electric fencing with a high quality energizer to divide paddocks. One suggestion is to clear alleyways through the corn for the fencing before turning the cattle unto the corn. Rebar (concrete reinforcement bar) makes good posts and can be hammered or drilled with a cordless drill into the ground before freeze-up. Always have an extra fence available, in order to fence the next paddock ahead of the cows before they enter a new grazing paddock. Cows will back graze the previous paddock to clean up residue.

Over Mature Corn

If corn is over mature, there are two main considerations to be aware of. Digestive upset or acidosis may occur if not managed properly and stalk/stover clean up of corn may be poor as palatability of corn stover will decrease with maturity. Supplementation of additional fiber, such as hay, will help combat both these issues. Firstly, as stated before, proper transition and pre-grazing nutrition with high quality supplementation will be critical. Once cows are allowed access to corn, continue to supplement with forage, such as hay, or hay / straw blend. One strategy may be to place bales on part of field and allow cows to graze back and forth from corn to bales. With an over mature corn field, it will be very important to limit graze on a 3-4 d rotation so the cows are limited to the amount of grain they can consume.

Once a paddock has been grazed animals will continue to back graze, however supplemental feeding, such as shredding bales on top of grazed area will ensure better residue cleanup.

Additional Benefits!

REMEMBER:

The mature cow produces 60 lbs of manure (0.4%N and 0.2%P) and 20lb of urine (1.1%N and 0.01%P) per day!

One benefit to an extensive grazing system is the nutrient from urine that you would lose if you spread that manure from a corral.....80% of what a cow eats is excreted, so there is a lot of nutrients that are recycled in a grazing system.

This means increased nutrient input back into the soil, increased organic matter and better soil health!

How Many Grazing Days Per Acre?

- On average research has shown between 150 – 300 cow days per acre.
- For example, 200 cows with a desired grazing period of 30 days:
- 30 days X 200 cows = 6000 cow grazing days
- Based on 200 cow days per acre you would require:
- 6000 cow grazing days ÷ 200 cow days per acre = 30 acres of corn to winter 200 cows for 30 days

Managing Silage Quality During Unfavorable Growing Conditions

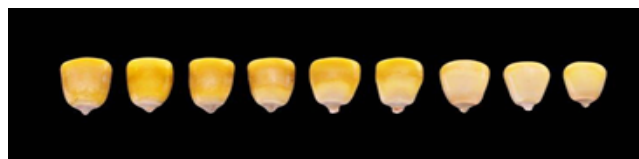
With unfavorable growing conditions due to low moisture conditions, maximizing the value of the 2015 crop will be critical. Understanding and executing on proper harvest techniques will help producers maximize yield and maintain quality of their high value crop.

Harvest Maturity

Corn must be ensiled at the proper moisture for ideal fermentation for good preservation of the crop. But, determining when to harvest corn at the right whole plant moisture is difficult. Each storage structure properly ensiles at slightly different moisture optimums. Harvesting corn too wet for the storage structure will result in reduced yield, souring and seepage of the ensilage, and low intake by dairy cows. Harvesting too dry may increase yields, can cause mold to develop, and lowers digestibility, protein and vitamins A and E. Kernel milkline may be the most widely used indicator for determining when to harvest corn for silage. However through experience it has been found that milkline is not accurate because of the variation of dry down between different hybrids and environmental conditions. But, it may be able to use it as a “trigger” in that once a corn hybrid reaches a certain kernel milkline stage, farmers should begin testing the field for whole plant moisture.

Silo Structure	Moisture for Ensiling	Kernel milk line
Horizontal silos	62 - 68%	¼ - ¾
Bagged	60 - 68%	¼ - ¾
Upright stave	62 - 68%	½ - ¾
Upright Sealed	62 - 65%	¾ - blacklayer

Once kernel milkline begins to move, measure moisture of fields intended to be harvested for silage. Taking a chopped sample from the intended field, a Koester® moisture tester or microwave can be used to determine whole plant moisture. Use an estimated 0.5 – 1.0% percent drydown rate per day to predict the date when the field will be ready for harvest and storage in your silo, bag or bunker.



¼ milk line



½ milk line



¾ milk line



Full milk line

Uneven Maturity

Uneven maturity of the crop due to uneven emergence from dry seeding conditions will make it very difficult to assess proper silage timing. Some plants will be mature and ready to silage, and some may still be very immature. In order to determine proper timing, the producer will have to estimate the amount of plants that are at proper maturity (1/2 milk line) and those that are below maturity. Once 50-70% of the field appears to be close to proper harvest stage a whole plant chop on average number of plants will give a guideline for harvest timing. If there are fields that have more even emergence, one strategy may be to harvest a poor field in combination with a good field and layer the forage into the silo during the filling and packing process.

Stage	% of Max Yield		Moisture Content %	
	Grain	Whole Plant	Grain	Whole Plant
Silking	0	50 - 55	–	80 - 85
Blister	0 - 10	55 - 60	85 - 90	80 - 85
Late-Milk	30 - 35	65 - 70	60 - 80	75 - 80
Early Dent	60 - 75	75 - 80	50 - 55	70 - 75
½ Milk Line	80 - 95	100	35 - 40	65 - 70
Mature	100	95 - 100	25 - 35	55 - 65

Source: Journal of Prod. Agriculture 6:94-99. 1993.

Frost damage

It is difficult to know when to harvest frost-damaged corn because we cannot use the “kernel milk line” guidelines as an indicator of moisture content as in normal silage. The moisture content will vary with the stage of grain maturity and the degree of freezing. Corn that experiences a killing frost in the blister and milk stage of development will likely contain moisture content in excess of 75%. Although the loss of leaves gives the appearance of rapid dry down, most of the moisture is in the stalk and grain. Immature, frozen corn does not dry down significantly faster than unfrozen corn, and may require several days of drying to reach the correct moisture content. Allow the plants to dry down to below 70% before harvesting or add dry materials like ground straw, ground hay, dried beet pulp, etc. to dilute the moisture content to below 70%.

Immature frost damaged corn that has dented can make good silage. In general, immature corn silage will have higher fiber (NDF) and crude protein and lower starch levels than normal corn silage. However, fiber and starch digestion may actually be higher in immature corn silage so the overall Net Energy value will typically be 80-90% of normal corn silage. Very immature corn silage (blister/milk) may only have 75 to 80% to energy value of mature corn silage and should be fed to animals with lower nutrient requirements.

Chop length and Crop Processing

When deciding on chop length you need to balance meeting the effective fiber needs for the rumen with the ability to pack the silage to ensure efficient fermentation. If the silage is dry and chopped too long, it will be difficult to remove all the oxygen thus allowing molds, yeast and other spoilage organisms to grow. Theoretical Chop Length (TLC) should be set between ¼” and ¾” depending on conditions. Having sharp knives and a well-conditioned shear bar will minimize shredding and keep cut length as consistent as possible.

Kernel Processor Checklist:

Check roller mill wear

- ~400 hours unless chromed roller mills ~1000 hours, However manufacturer guidelines should be referenced for actual life expectancy of the roller mill.
- Roller mill gap set at 1-3mm for adequate kernel damage.
- Do not set chop length over 19mm (3/4”)
- Set shorter (17mm) if you do not need the peNDF (physically effective NDF; also known as scratch factor) because all choppers will do a better job of processing at shorter chop lengths
- Set shorter as the crop gets dryer.

Check the roller mill differential

- Typically desire between a 20-30% differential
- More aggressive differential speed required if more aggressive processing is needed when roller mill is already set at 1 mm clearance
- It is a good idea to monitor performance of the kernel processor during the day. Use the Pioneer Silage Processing Cup to measure a representative silage sample. Throw it on a flat surface and count undamaged kernels. If you are finding more than 1-2 undamaged kernels, the processor needs to be adjusted.

Filling Storage Structure

Fill rapidly to reduce respiration losses, but yet not too fast that results in less ideal packing of the forage. Rate of fill is very important and needs to be orchestrated with pack tractor capacity so the silage has time to be packed properly before new silage is brought to pit. With large chopper capacity, producers will need to ensure silage is not brought into pit too fast. Fill bunkers from back to front, not bottom to top. Length of ramp depends on rate of input.

Packing

Remember ... oxygen is the enemy. Packing is key to limiting losses due to spoilage.

Rule of 6 and 800:

Limit packing to not more than 6 inches of silage at time on the pile and use 800lbs of tractor per ton of silage per hour. So, 100 tons of silage per hour would require 80,000 lbs. of tractor (or tractors) on the pile per hour.

Testing for Whole Plant Moisture

- Test with a microwave, Koster tester or NIR—most of these methods tend to predict moisture lower than what comes out of a chopper. Add two to three points of moisture to your test result.
- Grab Test method (Hicks, Univ. of Minnesota) using a handful of chopped plant material squeezed as tightly as possible for 90 seconds.
 - 75-85% moisture if juice runs freely or shows between fingers
 - 70-75% moisture if ball holds its shape and hand is moist
 - 60-70% moisture if ball expands slowly and no dampness appears on the hand

Soybean Aphid

Pest Facts and Impact on Crop

Latin name is *Aphis glycines* Matsumura

Importance:

- Origin in Asia
- First detected in US near Lake Michigan in 2000
- Major outbreaks in 2001, 2003, 2005
- Untreated economic infestations frequently reduce yields by more than 10 bu/acre

Development:

- Overwinter on buckthorn, move to soybeans in July and back to buckthorn in the fall
- Host plants include a wide range of legumes (soybean, alfalfa, clovers)



Causes of Yield Reduction

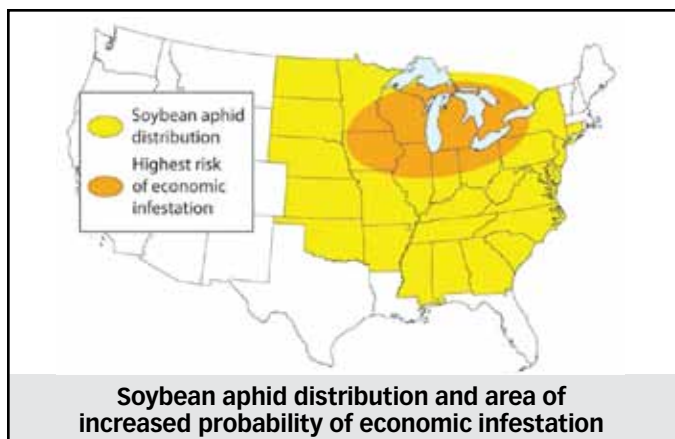
- Removal of moisture, nutrients needed for grain production
- Honeydew on leaves where sooty mold grows, which reduces photosynthesis
- Transmission of viruses



Pest Symptoms/Injury ID

- Shortened plant height
- Curled leaves, often yellow on outside (similar to potassium deficiency)
- Excessive honeydew on leaves, which promotes sooty mold growth
- Presence of ants, which also feed on the honeydew

Distribution



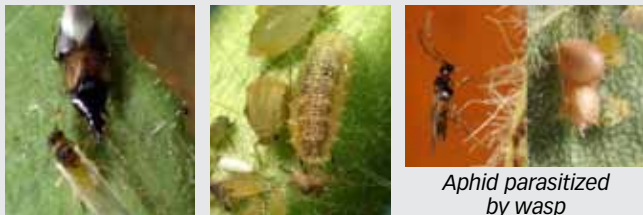
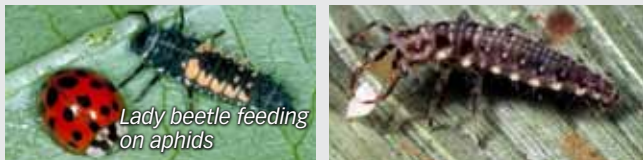
Plants infested by soybean aphid are shorter (left)



Aphid-infested soybean leaves

Natural Enemies

- Asian lady beetle – adult or larvae
- Chrysopa/Lacewing – adult or larvae
- Syrphid fly – larvae
- Predatory bugs – Minute pirate bug, Big-eyed bug, Damsel bug, etc.
- Bio-control agent = Parasitic wasp – *Binodoxys communis*
- Various fungal diseases



Pest ID

- Soybean aphids are small
- Less than 1 mm in length
- Oval or pear-shaped
- Color is typically light green
- Adults may or may not have wings
- Winged adults have black head/thorax
- Cornicles are distinguishing characteristic
- Black “tail pipes” projecting from the rear of the abdomen
- Aphids develop by gradual metamorphosis in three stages:
 1. Egg (fall and winter only)
 2. Nymph (resemble small adults)
 3. Adult (may or may not have wings)



Soybean aphid nymphs and adults

Management Practices

Population factors

- Consider using seed treated with a nicotinoid insecticide to delay soybean aphid population establishment, especially in late plantings
- Temperatures in the low to mid 20's promote longevity and reproduction (doubling time is less than two days)
- Allow lady beetles, insidious flower bugs, and other beneficial insects to suppress populations



Right side = unsprayed



Left side = sprayed

Management Practices

Scout fields in July -

- Use economic threshold of 250 aphids per plant to justify insecticides

Insecticide control -

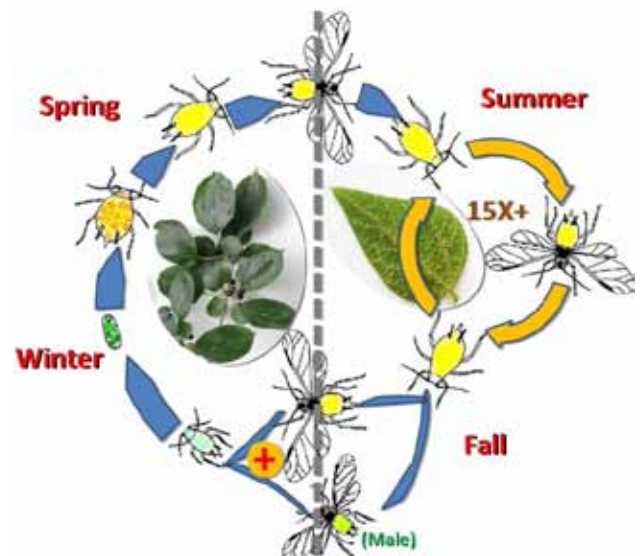
- Spray fields before aphids reach 1,000 per plant and plant stage R5.5

Plant resistance -

- Natural antibiosis – Monitor varieties with least antibiosis first
- Natural antixenosis
- Future Pioneer® brand varieties with array of Rag genes may reduce need to spray

Life Cycle of the Soybean Aphid

(*Aphis glycines Matsumora*)

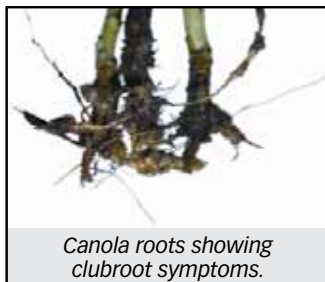


Scouting Your Canola Fields at Harvest

We often spend time in the spring scouting our fields for weeds, diseases and insects, but do we spend the time we need scouting our fields at harvest? Fall evaluations of the field can help us prepare for a successful year, and may help us adjust our crop rotations and seed purchasing decisions necessary for that success.

As you are swathing or combining your canola, it is a great time to take note of a couple of items. Did you achieve your desired plant population? Is your residue being spread evenly and is your drill going to be able to penetrate the trash to properly position canola seed into that field in the spring? At this time, you also have a great opportunity to note disease pressure in the field. Diseases such as clubroot, sclerotinia and blackleg are easier to identify at harvest and through identification you will be better able to plan ahead to allow higher canola yields on those fields in the future.

Clubroot (*Plasmodiophora brassicae*) can be scouted for by digging out plants and evaluating the roots. Roots will appear deformed with galls. Galls may range in size from small nodule sized galls to to large galls covering much of the root. Prior to swathing the galls will appear white. If sampled after swathing the galls will appear greyish brown and will soften and appear peaty as they begin to decay. If areas in the field are noticed at the time of swathing that appear prematurely ripened these are key areas to sample. Typically clubroot moves into a field starting with areas near the field entrance. For a general scout of canola fields, the areas near the field entrance and to the right of the field entrance should be sampled first. If clubroot is identified, consider rotations and using Protector clubroot hybrids in the future. Information on scouting for clubroot can be found at <https://www.youtube.com/watch?v=hcniv0U8M9k>



Canola roots showing clubroot symptoms.

Blackleg (*Leptosphaeria maculans*) can result in yield loss in canola so management of the disease is important. Scouting for blackleg is best at the time of swathing. To scout for blackleg pull 50 or more plants from a W pattern throughout the field. Clip near the base of the stem and look for blackened tissue inside the stem. The amount of black (if any) observed indicates the level of infection. At the time of swathing, look for early maturing plants to identify areas you may want to have a closer look to identify why.



Blackleg showing decreasing severity from left to right.

Sclerotinia stem rot (caused by *Sclerotinia sclerotiorum*) has the potential to cause significant loss of yield in canola. Due to the variability of incidence from year to year, it is often difficult to understand how to best, and most economically manage the disease. Sclerotinia symptoms develop late in the season and are most visible as sclerotinia infected plants ripen prematurely and show up in the field amongst healthy plants that are still green. After swathing or combining, Sclerotia bodies from infected plants are either removed from the field with the seed, or deposited back into the field through plant stems that have shredded and lodged to the ground prior to harvest, or through the breakdown of stubble left behind after harvest. Sclerotia bodies left behind in the field can remain viable for five years or more. Under ideal environmental conditions in a given year, some sclerotia bodies will germinate to produce spores or mycelium that can infect plants directly, while others will remain dormant.



Premature ripening on canola as a result of sclerotinia. Premature ripening has resulted in early shatter and yield loss.



Shredded and lodged stem.



Sclerotia bodies returned to the field through the stubble left behind after swathing.

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Mandziak Ag Corp.

Kelliher (306) 795-7510

Full Throttle Farms Ltd.

KerRobert (306) 460-0078

Pearl Creek Ag Ltd.

Kilally (306) 720-0324

B & B Ag Solutions

Kindersley (306) 460-4903

Sproat Agro Ltd.

Kipling (306) 550-2247

Gerwing Ag Ventures Inc.

Lake Lenore (306) 231-9364

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