...FROM THE DESK OF
SCOTT SCHAFFERT P.AG.
CCA 4R

Between the Rows

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Soil Moisture Update

According to the Alberta surface moisture ratings report of August 13 2024, the Peace country has the highest ratings in Alberta with 48% rated as good or excellent. Now that is down 11% from the report done the week before. Two things to consider here, this rating was done before we received significant rainfall on August 13 (28mm) and it is a rating for the entire Peace. When you do a deep dive into the rainfall some differences in within the Peace show up. Peace River received twice as much rain in June (117mm) than Fort Vermilion (40mm). Also the rainfall in Fort has been higher in the months of July and August, when this rainfall tends to come from thunderstorms, therefore can be widely scattered rather than general to the entire region. All this to say while our soil moisture levels are generally good for now, but the long dry spells of June and excessive heat in July have diminished this year's crop potential.

Going into fall, we are a bit behind the soil moisture levels we had at this time last year, but it always comes down to snow and how the runoff goes next spring for 2025's soil moisture.

Table 2: Alberta Surface Soil Moisture Ratings as of August 6, 2024

	Poor	Fair	Good	Excellent	Excessive
South	24.2%	40.9%	34.1%	0.7%	0.0%
Central	17.7%	44.8%	34.4%	3.1%	0.0%
North East	17.4%	41.6%	40.4%	0.6%	0.0%
North West	15.7%	39.8%	30.6%	12.4%	1.4%
Peace	3.7%	36.2%	51.2%	8.3%	0.6%
Alberta	18.0%	41.5%	36.8%	3.5%	0.2%
5-year (2019-2023) Avg	20.5%	24.3%	36.2%	14.8%	4.2%
10-year (2014-2023) Avg	18.7%	24.6%	37.7%	15.7%	3.3%

Source: AGI/AFSC Crop Reporting Survey

Table 2: Alberta Surface Soil Moisture Ratings as of August 13, 2024

	Poor	Fair	Good	Excellent	Excessive
South	30.4%	36.1%	32.8%	0.7%	0.0%
Central	34.2%	39.0%	26.2%	0.6%	0.0%
North East	27.7%	37.7%	34.1%	0.6%	0.0%
North West	32.7%	44.5%	21.3%	1.5%	0.0%
Peace	9.2%	42.4%	40.7%	7.4%	0.3%
Alberta	29.0%	38.8%	30.7%	1.5%	0.0%
5-year (2019-2023) Avg	22.3%	25.0%	35.1%	13.8%	3.8%
10-year (2014-2023) Avg	19.9%	25.3%	37.0%	14.6%	3.1%

Source: AGI/AFSC Crop Reporting Survey

Pre-Harvest Application Tips

A pre-harvest application of herbicides can aid in weed control and harvest operations. However, not all pre-harvest products act the same way or accomplish the same goals. The first step in a pre-harvest application is ask yourself "what is the goal of the pre-harvest application". Is it to speed up dry down, dealing with uneven maturity, ease combine operation or perennial weed control. Depending on your answer, different products are available to realize different goals.

One common fallacy I hear out there is that "I'm spraying glyphosate to desiccate my crop", Glyphosate is not a desiccant. A true desiccant by definition is a product that dries out the crop. Glyphosate does not dry out the crop. Glyphosate is a systemic herbicide that kills most weeds, leaving them to dry out naturally after death. So the drying out does not occur due to the glyphosate, but by nature after the plant dies. This can take up to 2 weeks or more depending on the weather, and the effectiveness of glyphosate to kill the existing weeds. One thing that fall glyphosate excels at is perennial weed control. Application of glyphosate either pre-harvest or post-harvest is an excellent management tool to kill perennial weeds as they prepare for winter. Getting the glyphosate down into the roots is key here. One other note on glyphosate is that it can't be used on crops you intent to keep for seed.

In terms of true desiccants, really only diquat is our option here. Reglone (or it's generic versions) acts as a contact herbicide, quickly disrupting the plant cells and photosynthesis causing quick death and cell disruption drying out both stems and leaves. However, diquat is not effective in killing perennial weeds since it does not translocate down into the roots. One application tip, apply ahead of sunny weather to maximize its effect.

Our third option is saflufenacil (Heat LQ) which must be tank mixed with glyphosate. This tank mix provides the same perennial weed control of glyphosate, put also speeds up dry down a bit. Not as fast as diquat, but you don't have to sacrifice perennial weed control.

Finally please note the PHI (Pre Harvest Interval) requirement for each option. The PHI is the number days from application to either swathing or straight cutting the crop. The PHI is important so we don't exceed the maximum residue limits of a chemical which could lead to loads being rejected at either the elevator or the port. Please check out Pre-Harvest Glyphosate Staging Guide - Keep it Clean .

Ergot and its affects on history

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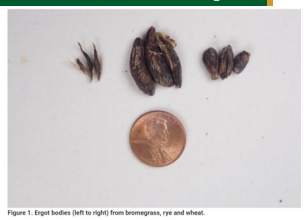

Figure 1. Ergot bodies (left to right) from bromegrass, rye and wheat.

Figure 2. Mature ergot body on the seed head of bromegrass.

Figure 5. (Left) Wheat spike with ergot body on uppermost spikelet and (Right) wheat spike with honey dew (yellow to orange sticky sap) indicating a successful infection by the pathogen.

Figure 1. Figure 4. Ergot bodies will germinate giving rise to mushroom-like structures (1/2 to 3/4 inch in length) that release spores.

Ergot (*Claviceps purpurea*) is a fascinating plant disease and it brings together 2 topics I love, plants and history. Ergot is most common in rye and forage grasses such as smooth brome, but sometimes can be seen on wheat, barley and triticale, but rarely in oats. The fungus gets into the plant by mimicking pollen, infecting the stigma and growing into the ovary. There is destroys the ovary and replaces the position of the seed with its own sclerotium body. As it grows it first produces a honeydew-like substance that actually contain more spores that attract insects to spread to other florets. After the sclerotium matures it either drops to ground or get harvested with the crop. This black body often resembles rat droppings. After dropping to the ground the sclerotium will remain dormant until rain next spring triggers it to produce a mushroom, releasing spores and starting the cycle over again.

The problem comes from sclerotium that are harvested with grain or hay and if they are ingested by mammals it causes a disease called "ergotism". Ergotism is comprised of several pathological disorders ranging from muscle spasms, fever, hallucinations, inability to speak, severe burning sensation of the limbs, and vasoconstriction of limbs leading to gangrene. Horses and cattle are known to actually lose hooves and limbs. Nasty stuff.

Ergotism was first noted in history around 600BC, when an Assyrian tablet referred to "noxious pustule in the ear of grain". Human poisoning due to ergot infested rye bread was common in the Middle Ages throughout Europe. In 994AD it caused 40,000 deaths in France. By the end of the Middle Ages a charitable Order of the St. Anthony monks set up hospitals to deal with ergotism known as "St. Anthony's Fire". In 1772 Russian Tsar Peter the Great was defeated by the Ottoman Empire after his army was struck by ergotism. In 1778 an epidemic in Solonge, France killed 8,000 people and the connection between infected rye flour and ergotism was first determined. It is also interesting to note that just a decade later after several poor wheat harvests (replacing rye) and skyrocketing bread prices, the French Revolution began. A researcher has even presented evidence that the Salem Witch Trials of the late 1690, was in fact caused by ergotism. Napolean's retreat from Russian in 1812 was also hampered by his retreated through an area that had a "bad harvest" that year that is rumored to have high levels of ergot, causing horses hooves to slough off. One also possible case of ergotism outbreak was in the summer of 1951 when a French village, Pont St-Esprit had a sudden outbreak of hallucinations, convulsions and swollen limbs. However some doubt it was ergotism and claim it was an LSD experiment by the CIA instead.

Agronomically there are no fungicides registered to control ergot. Some studies have found that adequate levels of copper will limit ergot by reducing the time the flower is open and susceptible to infection. Since rye is not often grown here, and its development in wheat and barley is rare it usually does not cause issues in our grain production. However in forage grasses, such as smooth brome the right environmental conditions can cause it to develop, Generally cooler and wetter weather at the time the flower is open can increase the risk of ergot. Infected grass should be either cut before the sclerotium develops or avoided for hay production.