

The Bio-Ag News!

Fall 2021 Edition

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From The President

It is hard to believe, we are almost in 2022. I may be a bit premature in noting this, but 2022 is a special year. Once we get there, that means Bio-Ag will be celebrating its 40th anniversary!

When Murray started Bio-Ag he wanted to share what knowledge he had discovered. He wanted to share how things could be better for farmers. Overtime people started to see, understand, and experience the value that improved nutrition could bring to their livestock. Bio-Ag started to get busier and busier. Murray slowly expanded the company's offerings and capabilities.

As the company expanded, Murray's knowledge was slowly transferred and absorbed by many wonderful people who still work with Bio-Ag today. Many farmers over the 40 years have enjoyed success working with Bio-Ag. It is my hope that many, many more farmers will enjoy success working with Bio-Ag.

While our products and services have changed overtime, we still offer a comprehensive list of products and services that other companies cannot compete with. Many of our unique products are sold internationally. We are also the sole Canadian source of several leading-edge products that are sold globally.

Not only that, but we also have the capability of producing small batch premixes¹ that can be customized for your farm. After all, your farm is not a carbon copy of your neighbours. Your livestock are not identical either. Wishing you abundance this harvest season,

~ Parry Bast, President

¹Minimum 5 bags or 125 KGS.



Reflections on the Joy of Farming

I've been thinking a lot lately about what regenerative means in the broadest sense. I attended a workshop over several weeks in July and August with an organization called "nRhythm." Along with a group of cohorts from many parts of the world, we explored the underlying principle of regenerative, which is creating life. We delved into the conditions, behaviours, structures, and work needed to create the ultimate outcome of abundance. My exploration of abundance landed on three key words – Reverence, Presence, and Mystery. These words came more clearly to me as I was reading John O'Donohue's "Eternal Echoes". While O'Donohue's writing is about finding inner divinity, I found that these qualities resonated with my thoughts around the need for us to re-connect with the natural world, re-connect to each other, and re-connect to something much larger. These are greater than the functional aspects of life, like work that changes the form of raw materials into something we place a value on. Abundance is organized around life and the unlimited potential for transformative change. In my opinion, to be present to the mystery of nature and to engage in nature with our whole selves, body, mind, and spirit is the ultimate abundance. Reflecting on the context of farming, this abundance will be the transformation and the resiliency we need to adapt and shift with the turbulence of climate change, and conflicts in our social, economic, and political systems. These are all connected and farming has a big role to play.

For example, from a small little fragment of those thoughts, I think many farmers can relate to this abundance when they share their joy of farming. The joy of farming re-connects us to the rhythm of nature, re-connects us to our inner world, and re-connects us to our outer world. I cherish the many moments that farmers have shared their joy.

In contrast to farming as joy, a misconception that many of us trip on is the meaning of hard work. I reflect on the meaning hard work in two ways: manual labour and doing what is difficult. This idea came to light when I attended a farm event this week. I had an interesting conversation with a young person about manual work. I asked about their experience and where they developed their ideas about manual work. They had never done any manual work and perceived it as difficult, and well, hard. Much to my delight, my daughter who was spending the day with me shared her experience of enjoying the physical stimulus of manual work as well as the gratification of achieving something while doing the work and when it is completed. We discussed the farm work that it takes to bring food to our table while caring for the land and generations to come. It takes manual

work and it sometimes is a difficult path to take and keep on.

Hard work is not just manual or physical work. It's also hard work working with people and all the other stuff that can be so distracting, I say in jest, and yet essential. Working with people is also challenging to the mind and heart. And finally, doing what is difficult is often in our path as we seek purpose and the abundance I spoke of earlier. Sometimes just getting and keeping clarity about our purpose is difficult.

All of these thoughts and many more are present as I share my reflections with you here. The discussion of joy in farming and the joy of farming is such a welcome relief to what we often focus on. I invite you to have those conversations with yourself and with the people around you.

Now, back to the theme of agronomy and what guidance I can offer you at this time of year. I will cover them briefly

Gratitude: Before leaving the essence of my earlier words, I believe gratitude for the harvest is top of mind.

Gratitude for the difficulty that is sometimes in our path to abundance is also something to think about.

Reflection: Think about what worked for you this season and what can you improve next season. Is there something curious that you observed that presents an opportunity to study further? If something didn't quite work, in what way can you modify? Are your efforts addressing the causes or symptoms?

Monitoring: Soil, feed and forage tests are helpful information to gather at this time of year, especially if you haven't completed any tests during the season. You can use this information to evaluate and modify your fertility and feed plans. The tests give you numbers for a baseline that you can chart your progress and develop meaningful knowledge.

Planning: Using the results of the monitoring and your reflections, how will you adapt plans for next year to make improvements?

Sharing: Share what you are learning and curious about with others. This has been a challenge during the pandemic distancing, so make some notes for the discussions we will have in the near future.

And most importantly - Share your Joy!

Feel free to share your comments. Have a safe harvest!! Ruth

Mycotoxins

Mycotoxins are toxic chemicals produced by (fungi) molds.

Modern farming practices are depressing the plant's immune systems and microbiome, making them more prone to severe fungal infections. Mycotoxins can develop in the field pre-harvest and during storage post-harvest. Post harvest mycotoxins develop when high moisture feed is not stored properly. If consumed by livestock these chemicals can have toxic effects on the animals. Cleaning moldy grains can help reduce levels of mycotoxins, as the fines usually have the highest amounts. Mycotoxins rarely occur in isolation; Additive and synergistic effects can make seemingly low levels of mycotoxins dangerously detrimental to animal health.

Heat treatments and processing DO NOT inactivate mycotoxins. Don't forget that finished feeds with and without by-products can be a significant source of mycotoxins. Some feed mills have better quality control than others.

Preventing Post-Harvest Mycotoxins

Poor storage and inadequate bunk feed-out are two controllable variables in the reduction of mycotoxins for silages. Aeration mycotoxins and refermentation mycotoxins can be very dangerous to animal health. Farmers must make sure as little air as possible gets into the bunks when scraping off feed and must keep moisture out.

Keep grain stored cool and dry. Clean out bins before new crop
Silage- prevent air from penetrating when taking off the face of a bunk or bag. Use a defacer or similar. Harvest at right moisture and ensure silage is packed tight enough and use a forage product to ensure proper fermentation...Bio-lac/Seaweed/Sugar.

Testing

Visual inspection is not reliable. Mycotoxins are tiny molecules they are not visible. On the other side...the presence of visual molds does not always mean mycotoxins are present. There are 1000+ Mycotoxins out there. Bio-Ag now offers a test called Myco 7 which tests for the presence of 7 common mycotoxins. Mycotoxins almost never occur in isolation. If you have one mycotoxin chances are you will have more accompanying it. Additive and synergistic effects can make seemingly low levels of mycotoxins dangerously detrimental to animal health.

Signs and Symptoms of Mycotoxins in Poultry

1. Immune suppression symptoms
2. Gut disturbances/oral erosions
3. Uneven growth patterns
4. Ruffled feathers

Turkeys are more sensitive than broilers • Young birds are more sensitive than older birds.

Mycotoxins Change Gut Microbiome

Mycotoxins damage intestinal cells and gut environment. Beneficial bacteria are killed off. Gut immunity is compromised and parasites such as coccidia can take over. Clostridia thrive in mucoid environment induced by chronic inflammation.

Reproductive system – Always keep in mind when presented with reproductive issues, this includes egg quality in layers!

Immune system – All mycotoxins affect immune system and suppress it, should be on the list when having disease outbreaks.

General Signs

Most other symptoms come from indirect cause of which immunosuppression is the main sign. This means increased susceptibility to disease and vaccine failure.

Often times waxing and waning symptoms and growth are a sign that there is a problem. This will present as variability in uniformity of bird weights.

Ruffled feathers from compromised nutrient absorption and protein synthesis.

Oral lesions can be visible as mycotoxins are caustic. The feed particles sit in mouth. Lesions can occur in esophagus as well. Look for a rough appearance and can ulcerate and bleed. Lesions can go all the way down to gizzard and proventriculus and contents will reflux upwards.

Condemnations of liver. Aflatoxins are especially hepatotoxic but many other mycotoxins also damage the liver. Pancreatic enzymatic activity harmed by aflatoxin and so feed isn't digested properly. Mycotoxins can impair kidney function. Swollen kidneys, urates and dehydration.

Gastrointestinal tract is damaged. Mycotoxins kill rapidly dividing cells, these include intestinal cells and immune cells. See signs such as enteritis, diarrhea, slick feces, and shiny feces from fat malabsorption.

Specific signs

Fusarium toxins can cause bowed legs and knocked knees in turkeys.

Ergots can cause claws and combs to become black and fall off.



Signs and Symptoms of Mycotoxins in Dairy Cattle

1. Gut disturbances
2. High SCC
3. Low Milk

Freshening cows are at highest risk for developing illness due to mycotoxin exposure. They have the highest stress. When a cow doesn't eat (drop in feed intake at calving) the gut loses integrity and becomes leaky allowing mycotoxins to be more easily absorbed. Mycotoxins will damage the gut lining. Rumen microbiome and fermentation becomes dysfunctional when molds are ingested. Think of how penicillin is an antibiotic. Colostrum and even milk can contain mycotoxins, calves can become sick when drink this milk. High SCC, Mastitis and Metritis can also be a sign of mycotoxin issues because of the immune suppressive effects.

General Signs

- Gastroenteritis
- Bloody stool
- Inconsistent manure quality is frequently a sign
- Reduced Dry Matter Intake
- Suppressed immune function
- Reproductive failure

Mycotoxin Specific Signs

Aflatoxins -goes into milk- 5ppm is legal limit -calves fed milk will become ill as well -carcinogenic -reduced feed intake and impaired liver function -luckily this isn't a huge issue in our climate...for now.	Zeralenone -vaginitis -poor repro performance -estrogen activity -heifers with mammary gland enlargement -do not offer fermented feeds -abortions if level is high enough -decreased DMI
DON -reduced feed intake – palatability -decreased milk production -decreased protein synthesis in rumen -500ppb is when milk starts to drop	Fumonisin -DMI drops- milk drops -mild liver disease -works synergistically with other mycotoxins to cause more devastating effects
T2 -prevalent in south western Ontario -gastroenteritis, diarrhea -intestinal hemorrhage -bloody feces or black feces -ulcers -potentially fatal -in pain, dull fresh cow	Penicillium -storage toxin -direct antibiotic effect on rumen bacteria ----- Ergots -circulatory issues -destroys capillaries- ear tip necrosis -lameness due to coronary band break down

Signs and Symptoms of Mycotoxins in Swine

1. Gut disturbances
2. Fertility issues
3. Failure to respond to veterinary treatment

All mycotoxins have an impact on growth and immune system. Combinations of mycotoxins can make symptoms unpredictable.

Immune System Depression

- Vaccines don't work
- High rate of disease
- Lack of response to medical treatment (antibiotics)

Mycotoxin Specific Signs

Aflatoxins -damage liver -fatty liver syndrome -residues in meat and milk to piglets	Zeralenone -big one in swine for fertility -pseudopregnancy, nymphomania - affects cycling, poor conception -abortion -decreased number of piglets -infertility – small ovaries -swollen vulva and mammary glands -poor semen quality in males, small testicles -piglets born with splaylegs and swollen and red vulva and teats
Ochratoxin -target kidneys and urinary tract -blood in urine and feces -diarrhea -increased water consumption	Fumonisin -very toxic for swine -respiratory symptoms-severe lung edema, heart failure -more chronic- immune system depression
Trichothecenes (DON and T2) -oral and dermal lesions -digestive disorders -reduce feed intake and refusal...if have to eat then vomit and diarrhea -retarded growth	Ergot -low milk production, lack of colostrum -small udders -stillbirths and poor piglet survival -ear tail and hoof necrosis- affect small capillaries -black kernels and spots on kernels...hard to see in processed feed. In no till the spores invade next crop.

Upcoming Product Specials

See calendar for details



Please check your Bio-Ag calendar for the promo code of the month to take advantage of these discounts!

Dates To Remember

September 06– Bio-Ag CLOSED for Labour Day

October 11– Bio-Ag CLOSED for Thanksgiving

2022 is Bio-Ag's 40th Anniversary!

In preparation for our 40th anniversary Bio-Ag is looking for your stories! If you'd like to share any fond memories you have with the company or the Bast family, please send them to:
nicole.kuyten@bio-ag.com

Please include:

Your name or farm name.

One product you were most impressed by.

A short story of you experience with the company and why you continue to support us.

We want you to know how much we appreciate your patronage and continued support, especially through this unprecedented time.

Thank You!



Recipe Of The Season

Zucchini Fudge Cake

1 Cup of butter or margarine, softened
2-1/2 cups sugar
4 eggs
2 teaspoons vanilla extract
3 cups all purpose flour
1/2 cup baking cocoa
2 teaspoons baking powder
1 teaspoon baking soda
3/4 teaspoon salt
1 cup buttermilk
3 cups shredded zucchini
3-1/2 cups prepared chocolate frosting



In a mixing bowl, cream, butter and sugar. Add the eggs, one at a time, beating well after each addition. Beat in vanilla. Combine four cocoa, baking powder, baking soda and salt; add to the creamed mixture alternately with buttermilk. Stir in zucchini. Pour into three greased and floured 9 inch round baking pans. Bake at 350 for 25-30 minutes or until cakes test done. Cool for 10 minutes; remove from pans to wire racks to cool completely. Frost between layers and top of sides of cake.
Yield: 12-14 servings.

Alternatively you can bake this in a cake pan and put chocolate chips on top instead of frosting.

Service with fresh tea or coffee and enjoy!



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