JANUARY 2016

CORN GUIDE

CHANGE PAYS OFF

FOR TYLER VOLLMERSHAUSEN, NEW SOIL TACTICS YIELD IMMEDIATE CROP GAINS PG. 3

+

MAKING SENSE OF NEW NEONIC RULES .....PG. 7

TWO NEW DISEASES MOVE NORTH .....PG. 10

WEST'S CORN NEEDS HOTTER NIGHTS .....PG. 11

PHILIP SHAW ASKS: SHOULD YOU GO BIG WITH CORN IN '16?.....PG. 14

MATCHING HYBRID TO YOUR SOIL .....PG. 16

GENERATIONS OF BEING

FIRST *in the* CORN FIELD

Selecting the right corn seed for your soil conditions is pivotal for a high yield, high profit potential crop. We'll help custom select the seed you need for maximum growing success.

QUARRY SEED 888-274-9243 **www.thunderseed.ca**

Change pays off today

For Tyler Vollmershausen, a high-tech focus on soil health is producing benefits that boost this year's crops

By Ralph Pearce, CG Production Editor

Change may be inevitable, but that doesn't mean it's always welcome. On the farm, in fact, there are times when change can be greeted with suspicion, reluctance and sometimes even with disdain.

Then there's Tyler Vollmershausen, a sixth-generation farmer who works with his father Larry, his uncle Brian and his grandparents Doug and Connie on Vollmershausen Farms near Innerkip, northeast of Woodstock, Ont.

It was only a few years ago that Tyler was considering a career outside agriculture. He was looking at something different, perhaps in engineering. Then he joined the family operation and began attending workshops, seminars and gatherings like the Southwest Agricultural Conference and SoilSmart.

It was during one of those meetings that he first heard from a person who has become an inspiration on his family's farm.

"Three years ago, I listened to a guest speaker who completely changed the way I view agriculture," Vollmershausen, recalls, citing a presentation by Dr. Jill Clapperton.

Clapperton worked for 16 years with Agriculture and Agri-Food Canada in Lethbridge, Alta., before moving to the Montana ranch of her husband's family several years ago. Then in 2011, she co-founded Rhizoterra, based in Reardon, Wash., and she continues to work on soil health issues.

Vollmershausen was intrigued as Clapperton spoke about the soil food web, and about cover crops and biomimicry. He spoke with Clapperton after the session, giving her a brief description of his cropping practices, and she convinced him that the road to establishing better soil health on their farm would come from abandoning plowing and unnecessary tillage.

Back home, it was relatively easier to convince his father than his grandfather

Continued on page 4

PHOTO CREDIT: DAVID CHARLESWORTH

Continued from page 3

that this would be the right way to go, but the results are already becoming visible, and they are definitely encouraging.

Vollmershausen has posted photos on Twitter of a patch of one field where little used to grow (he actually referred to it as "bald patch"). It's been one of his reclamation projects, and sported a healthy stand of corn last summer.

Vollmershausen gives credit to Clapperton's theoretical approach.

"She explained with great clarity how we can use agriculture to integrate with natural patterns," he says. "In order to accomplish this, we need to stimulate soil biology by bringing biodiversity back to our soils and maintaining living plant roots at all times."

"It makes sense," he says. "This is how soil was meant to function — and it works."

Vollmershausen has also been delving into the world of mycorrhizal fungi, trying to understand more of the fundamentals of soil health, and he uses a catchphrase on Twitter: "The more I learn about soil, the less I treat it like dirt."

> "We need to stimulate soil biology by bringing biodiversity back."
> — Tyler Vollmershausen

ON THE FARM

Since that epiphany, Vollmershausen has moved the family farming operation to a strip-till/no-till/cover-crop system that gets the most out of their rotation of corn and dry beans followed by a winter cereal, either wheat, oats or rye.

But a farm has to be sustainable economically too, so the family tries to be flexible with rotations to react to market opportunities, sometimes shortening their rotation to corn and beans or even continuous corn. What doesn't change, however, is their commitment to improving their soils, for instance with strip tilling and the GreenSeeker technology the family has used for two years.

"We strip till both our corn and dry beans," he says. "Our strip tiller is a Soil Warrior, which is a fall (deep) and/or spring (shallow) pass system. The majority of our soils are light-textured, and only require a single spring pass ahead of planting."

Continued on page 6

Dow Seeds™

Confidence is built on a foundation of solid genetics

Dow Seeds brings you our very best traits, genetics and seed performance. We've dramatically increased investment in global R&D and performance testing in our local Canadian growing conditions. Boldly investing in superior genetics is one way we can all move forward.

I work for Dow AgroSciences.
I am Dow Seeds.

dowseeds.ca

@DowSeedsCA

DOW® **Dow AgroSciences**

Solutions for the Growing World

Continued from page 4

The family incorporated the GreenSeeker technology believing it would complement the strip-till system as they moved their focus towards improving the overall soil health, which they're addressing via nutrient cycling with cover crops and by limiting soil disturbance.

"GreenSeeker gives us the ability to fine-tune nitrogen rates with later or multiple applications, and to take advantage of what the soil is supplying naturally," says Vollmershausen. "We also integrated several precision agriculture technologies into our operation to improve efficiencies and limit production costs: RTK guidance, swath control on the sprayer, individual row clutching and automated row-unit down-force on the planter, high-resolution soil mapping (SoilOptix) for variable-rate lime applications and variable-rate seed and fertilizer prescriptions. We're also keeping a close eye on the development of multi-hybrid planter technology which we think would be a profitable fit for our variable soil types."

The majority of the farming operation's crop planning is done during the winter months. There's always a general template that they follow, but there's also some fine tuning to be done in winter. As the complexity of their systems and their goals for both their cropping system and their soils have increased, Vollmershausen has turned to a third-party advisory company, Premier Crop Systems, based out of Iowa, to help make management zone decisions and analyze their data.

At the same time, Vollmershausen can often be seen scouting his fields with his iPad in hand. Between the advisory service and his own observations, it gives the family the confidence to move forward and build a better understanding of what works best on their farming operation.

"And last year, we've learned that our soil health strategies are paying off," he says, noting that 2015 was the most severe drought his family has experienced in decades. Farms within a few miles received timely rains but the Vollmershausen operation saw far less, yet any damage was mitigated due to many of the practices put in place. "It was all about creating a soil environment that allowed the crop to root deeply, without restrictions, and to maximize moisture retention. Also, our variable-rate seed prescriptions helped to decrease plant stress."

Think of a corn plant as a water pump, says Vollmershausen. What he tries to do is to match the right plant population to the water-holding capacity of the supporting soil type.

"The more I learn about soil, the less I treat it like dirt."
— Tyler Vollmershausen

PRESENT AND FUTURE

Anybody is capable of change, says Vollmershausen. All that's needed is an open mind, which he has found on his home farm and beyond. His father allowed Vollmershausen the freedom to envision the family farming operation under a new soil management regimen, and his many contacts, through Twitter and other networking opportunities, have created a community of like-minded producers from around the globe.

"Twitter has been a great communication tool to stay current on agricultural news and to connect with others," Vollmershausen says. "It's helped instill confidence in our new system as we've made the transition. Meeting international producers through Twitter has been very rewarding and it's been a pleasure hosting Nuffield scholars for farm tours."

Those provide other worthwhile opportunities for learning and the exchange of ideas.

The adoption of precision agriculture systems also has been an important feature. In a relatively short period of time, Vollmershausen has created a new opportunity for ongoing learning and the creation of efficiencies and, at the same time, he's actively engaged in enhancing the soils on his family's farm.

"Precision agriculture is an important driving force that will propel our industry forward," he notes. "It's given us the ability to accelerate our decision-making process, and it's made it easy to quantify and measure details of our operation that couldn't be done in the past."

Finally, as a farmer, Vollmershausen believes it's his responsibility to practice responsible land stewardship. Soil organic matter levels in Ontario are continuing to slide, and erosion rates in many areas are on the rise. This, he says, is directly related to how agriculture is managing soil, and it is also impacting our water quality.

"Full surface tillage is deteriorating the natural resilience of soil by oxidizing organic matter," says Vollmershausen, who's building for the future along with his girlfriend, Courtney Roefs. "Cover crops combined with limited soil disturbance have helped us keep the soil covered and anchored in place. Our goal is to keep soil and nutrients in the field, where they belong." **CG**

All that confusion on seed treatments

Some implications of Ontario's new neonic regulations are stunning

By Ralph Pearce, CG Production Editor

As the calendar has turned to a new year, the news from seed and chemical companies is that there is considerable confusion about seed-applied treatments. Growers, they're finding, have been left with a mixed bag of information about the options available to them, much of which is flat out wrong.

Some growers believed they had no seed-applied options at all, while others were confused about the levels of neonicotinoid seed treatments they could use.

Some thought they could use 50 per cent, while others thought neonics had been banned altogether.

It turns out the facts are a little more straightforward. In 2016, farmers will have four options:

Option 1 — if planting untreated seed or fungicide-only treated seed, nothing has changed and there are no regulations requiring self-declarations or assessments.

Option 2 — growers can apply a new seed treatment, a non-Class 12 (non-neonicotinoidal) product called Fortenza Maxim Quattro from Syngenta. There's no paperwork required and it can be applied to 100 per cent of corn acres (it is not registered for use in soybeans).

Option 3 — a grower can plant up to half their acreage for corn and half their acreage for soybeans with neonic-treated seed, but they must file a self-declaration by completing a two-page form in advance of planting.

Option 4 — a grower can plant 100 per cent neonic-treated seed but they must obtain a documented soil-pest assessment for each property as defined by its municipal roll number.

In 2017, the rules will change again. Option 3 will be gone entirely, and in order to use 100 per cent neonic-treated seed, growers will need to complete an integrated pest management (IPM) course and have IPM training certification to show the seed company as proof. In addition, the grower will need to sign a form saying they have considered IPM principles. That's over and above the required soil-pest assessment.

The requirement for an independent pest assessment does not take effect until 2018, depending on the county where the grower lives.

It's important to note that farmers can do their own soil pest assessments in this first year (2016). However, the paperwork must be in order and may be subject to audit.

> "A slow and science-based approach to a phase-in of changes and policies is survivable."
>
> — Dave Baute, Maizex Seeds

In future years, farmers will be required to conduct their own pest assessments under the supervision of a qualified pest assessor. Every second or third year, the assessment must be done by a qualified pest assessor. It's also important to note that a grower can use neonic seed treatments after qualifying with a plant-loss assessment. These assessments must all be done by a CCA.

The primary online source for all of this information is www.ontario.ca/neonics.

STORM CLOUDS WITH A SILVER LINING?

Farmers are losing the option to freely treat both corn and soybeans with neonic-based treatments, and the cost could be significant. Yield losses in corn have been documented at anywhere from two or three bushels per acre to 20 on light-textured soils and in continuous corn operations.

On top of that, they will also be losing some of the benefits of no-till planting and of early season planting, since neonic-based seed treatments have helped open up those opportunities in the past 10 years.

On the other hand, the changes do mean that agriculture is having to look at other methods to control insect infestations — and there are some possibilities.

Indeed, this is where best management practices (BMPs) and IPM guidelines could be a potentially useful refresher course of sorts.

But the industry is warning there's no magic wand.

"I don't think that we're naive; we recognize that sustainability is going to work its way into our industry in a significant way — and that's fine," says Dave Baute, president of Maizex Seeds near Tilbury, Ont. "Most growers will agree that a very slow and science-based approach to a phase-in of changes and policies is survivable. But if science isn't in the mix, we're in trouble."

Baute is also concerned that fungicide treatments and Fortenza Maxim Quattro sometimes get pointed to as a viable substitute for neonic seed treatments. While Fortenza provides excellent activity on cutworm, European chafer and wireworm, for instance, it is registered for use on corn only, not on soybeans.

CONFUSION REMAINS

For Stephen Denys, it's essential to clear up the confusion that's been created by what he calls a combination of poor government communications and a lack of foresight, on the one hand, as well as unfounded rumours about neonics.

"Coming into the fall, there was a percentage of farmers who were keeping track of this whole thing, but I would say the majority were not," says Denys, vice-president of sales and marketing with Pride Seeds in Pain Court, Ont. "Some farmers were waiting to see if this was

Continued on page 8

Continued from page 7

going to be a reality and some were relying on their suppliers, seed companies and retailers, and asking, 'What am I going to do?' Despite some efforts by the government, the majority of farmers just didn't understand the impact that this is going to have on their operation."

From Baute's viewpoint, those numbers shake out with a third of farmers who know little or nothing of the situation, a third who are aware but haven't attended one of the information sessions, and the final third, often the larger-scale producers, who are relying on the seed sector for help and direction.

"There's a big range, and everyone has different ideas as to what they want to do or need to do," says Baute. "It has really fallen into the laps of the seed companies to do the job of the government."

IN HINDSIGHT

The province did hold a number of information sessions, but not to Denys's liking. He believes more of an effort could have been made to communicate to growers at the grassroots level, including on a county level instead of just three or four meetings across the province.

"We do know — some would say by design, some would say by coincidence — that when the consultations for these regulations were happening and when input was needed, farmers were planting," says Denys. "And the experts are saying you can do the pest assessment in the fall but the best time to do it is in the spring, when insects can do damage to the seed or seedling, and at that point it wasn't a law. So farmers have been put behind the eight ball because of the timing."

The long-term impacts beyond 2016 or 2017 are also not well understood, according to Denys. In spite of what he refers to as a "common goal" with the minister of the environment and climate change (i.e. leaving the land in better shape than when it was found), he says the respective approaches are completely different. Instead of bringing regulations which are manageable from the producer's standpoint — as has been done before — he charges that the government instituted a ban without calling it a ban.

"There was no consideration of the impact this has had outside of the mechanics of controlling insects," Denys alleges. "In other words, we asked the government repeatedly, 'Have you thought about the impact this will have on crop insurance, long-term? Have you thought about the impact this will have on what growers will have to use as alternatives?' And repeatedly, we were looking into blank stares from people across the table."

Crop watchers say new regulations on neonicotinoid seed treatments could cause a reduction in no-till farming and early planting, and result in lost yield potential.

Baute agrees, and says the science shows that the key issue is unintended dust-off at planting. It's a concern, he says. It's even a "red flag," but he says it's also being addressed and it's fixable.

"It's unfortunate that politics and public opinion rule the day," says Baute. "Our focus should be on best management practices, and that's all we need when planting any treated seed, to limit unintended exposure to the environment. We're light-years down the road from where we were in 2012 when this whole mess started."

It's also worth mentioning that many issues have been addressed. Seed coatings and polymers have reduced seed treatment losses, and there's also the fluency agent with its guidelines pertaining to negative pressure (vacuum) planters, and deflector kits that are now available — both as factory-installed units and in after-market kits. Best of all, the response was quick and it was initiated and carried out within the agri-business industry.

"What's really significant — and nobody talks about this — is that for the first time, growers recognized that there was something coming off their planter that impacts things downwind," says Baute. "Growers do the right thing — there's not a grower in the province who would intentionally impact a bee colony if they knew it was there, and if whatever they were applying was blowing towards them."

Baute has talked about this at meetings, yet there is no comprehensive means of identifying and monitoring the location of beehives in Ontario. That opens the possibility that growers will refuse to allow beekeepers to locate hives on their land. But that's not a real solution either.

If we could go back in time, Baute says, and if there was awareness of where the beehives were, and who the beekeepers are, growers would ensure there is a dialogue and some form of advanced notice as to when planting is taking place.

That way, beekeepers could cover their hives for two days, and likely see little if any impact. Or they could use an idea of Baute's, to fund some sort of marker — say a candy-cane post supplied by beekeepers — and they put that at the field's edge nearest where they have hives. That would be the universal sign that there are beehives in the area.

ONE FINAL NOTE

Baute is also hearing a sad and disturbing statement from growers, usually through his staff: for older growers, this may be the tipping point that convinces them to leave the industry. And the implications of this aren't well understood by those outside of the agri-food sector, including politicians.

"There's not a day goes by," Baute says, "that somebody on our team doesn't hear a 65-year-old, 200-acre farmer say, 'You know what? I'm done; I had been planning on going for several more years, but if it's this difficult and if the general public don't appreciate what we're doing, I'm done.'" **CG**

Two new diseases in corn

The flow of sub-tropical diseases continues in the the North American heartland

By Amy Petherick, CG Contributing Editor

It has been an interesting year for field crop pathologists in the U.S. Although many seasons often pass without the discovery of any new diseases, this year they were treated with not just one but two new corn diseases in the country.

Tar spot and bacterial leaf stripe were both discovered late in the growing season — too late, in fact, to have any economic significance for producers in the affected areas. But next year?

WHAT EXACTLY IS TAR SPOT?

Early in September, Dr. Kiersten Wise and Gail Ruhl at Purdue University positively identified Phyllachora maydis in the U.S. for the first time.

This fungus is among the pathogens commonly known to cause tar spot, and had only been known to exist in the cooler, humid, higher elevations of Mexico, Central and South America and the West Indies.

Now that samples collected in Indiana by Monsanto breeders have been positively identified, plant pathologists are asking farmers and agronomists to be vigilant for symptoms in other regions too.

The overwintering form of corn rust and many saprophyte fungi that feed on dead corn tissues can be confused with tar spot, so now isn't a great time to be looking for the disease.

In Mexico, tar spot is best found about two weeks before flowering but can show up as early as the eight-leaf stage, and it usually peaks about four weeks after flowering. Black, oval or circular lesions appear to sink into the leaf surface and really do look like tar. Small flecks may be the first to appear but lesions are able to merge and form blotched up to three-eighths of an inch across. Wise says one of the more distinctive signs of the disease is that an infected leaf will feel bumpy if you run a finger over the surface.

Though they're easier to scout, don't expect to see spots on husks or upper leaves first. The disease will start on the lowest leaves of the plant and work its way up, since it prefers 16-20 C and a mean relative humidity of 75 per cent or higher. Rain is not as conducive to infection, as it tends to wash spores off the leaf, but six to seven hours of dew or leaf wetness during the night is particularly good for breeding the disease.

If the temperature goes below 10 C or above 20 C, spore germination drops off, which has many disease watchers questioning whether tar spot can even overwinter in Illinois or Indiana.

"We suspect it's not going to be able to overwinter, but we have to do some research to really understand that," Wise says. "The good news is, even if it is maybe able to overwinter, we've only found a fungus that's not reported to cause economic damage in the areas where it's endemic."

Where tar spot is prevalent, there are actually two pathogens which cause the disease and Monographella maydis, the worst of the two fungi, was nowhere to be found in the U.S. this year. Where both fungi are found, the USDA Research Service estimates yield losses average eight percent, although they can get up to 30 per cent in Mexico.

Albert Tenuta, field crop pathologist for the Ontario Ministry of Agriculture, Food, and Rural Affairs, says that the areas where tar spot would be most likely to appear first, if it ever came to Ontario, would be along the north shores of Lake Ontario, Lake Erie and the St. Lawrence. He says a good general rule of thumb would be to assume tar spot would thrive anywhere that white mould thrives, since the diseases enjoy the same environmental conditions.

"If we have a good white mould year, there's also good potential for tar spot but we don't have an inoculum source around here," Tenuta says. "Spores would either have to be blown in or brought in on some contaminated product."

AND LEAF STRIPE TOO?

Burkholderia andropogonis is a bacterium that can infect corn, Johnson grass, sorghum, rye, clover and other plant species. The bacterial leaf disease was confirmed for the first time in Champaign County, Illinois and was found even later in the year than tar spot was found in Indiana. The discovery was made so late in the growing season that there really is very little known about how much impact it has really had on the 2015 crop where it was found. But bacterial leaf stripe has been seen in the U.S. before, having been observed in South Dakota, Iowa, Kansas, Nebraska and Michigan between 1973 and 1975, when it appeared to cause no significant yield losses during.

"Bacterial leaf stripe has been detected wherever corn is, including Canada, but it's not a big concern," Tenuta says. "The key with bacterial stripe is that it is often confused with other diseases."

The only way to really tell bacterial leaf stripe from Goss's wilt and Stewart's wilt is by lab testing.

"Neither tar spot or bacterial leaf stripe were detected in our annual surveys," Tenuta points out.

Tenuta says Ontario is well positioned to detect and respond quickly because of those annual surveys. On average, the scouting team they form with Agriculture and Agrifood Canada collects samples in 175 to 200 commercial and seed corn fields every year throughout Ontario and into Quebec. Since most cases of corn diseases have historically started in this area, he says they've learned to keep a watchful eye out for new diseases. But with environmental changes come changes in pest pressure. Goss's wilt is a disease that has bucked the trend, establishing in Manitoba and southern Alberta while still undetected in Ontario.

Josh Cowan, Grain Farmers of Ontario, says their primary interest in helping to sponsor this annual survey is to follow changes in northern corn leaf blight.

"We entered this project because of the evidence that susceptibility to northern corn leaf blight was increasing in corn hybrids and the pathogens seem to be overcoming the resistance of the hybrids," Cowan explains. "It also helps us understand the geographic extent where the resistance is breaking down so farmers get an understanding whether or not they need to pay attention to this if it's in their area or not." **CG**

It's not just heat units

New shorter-season hybrids are just part of the Prairie corn picture. Just as important will be the local research to fine-tune how they'll fit into the production system

By Gord Gilmour, Associate Editor

As the life-science companies begin to deliver on their promise of shorter-season corn for the Prairies, another challenge arises.

Typically corn is grown in rotation with soybeans in a far wetter climate in a corn-soybean rotation. How will it fit in a drier landscape, and in rotation with wheat, pulses and canola? There aren't many row crop options in the West, so growers will need to figure out how to include corn in minimum-tillage systems.

Some changes will be obvious but others will be subtle and harder to quantify, says a researcher heading up a major research effort at the University of Manitoba.

"We know from experience that whenever you grow a new crop in an area, this kind of basic agronomic research also needs to be there," Yvonne Lawley told Country Guide. "We're working on pulling together the agronomy package to go with the seed package."

Lawley is lead researcher in a multidisciplinary project that includes soil science and fertility, agro-meteorology, plant science and even the economics of corn production for the region. Funding agencies include the Manitoba Corn Growers Association, the Western Grain Research Foundation, and the Manitoba and federal governments through the Growing Forward II program.

"We've also benefited from some funding through Western Economic Diversification and MCGA to purchase row crop equipment," Lawley said.

This is perhaps the best indication of where the basic foundation of agronomic research for this crop currently sits — even the most basic research infrastructure was lacking until recently.

ROTATION

Just where corn is going to fit into Prairie crop rotations is a big question. It fits well with soybeans in the U.S. Midwest and in Manitoba's Red River Valley, but how will it fit with canola?

Corn needs lots of phosphorus, and relies on a symbiotic relationship with mychorrhizal soil fungi, which function like a conveyor belt transporting nutrients to the roots. Lawley says the plants need the fungi to get enough nutrition to thrive, especially in the early part of the growing season. Canola, on the other hand, is non-mychorrhizal, which means reduced fungi populations in the season following canola.

"In the first corn crop following a canola crop, there appears to be an effect on the maturity," Lawley said, adding that other issues will probably be identified. For example, corn will be seeded into colder soils than it's typically sown into, and that will probably have some effect on its early development. But until a few seasons of research work are done, knowing all the effects will just be guesswork.

Other major challenges will include residue management for corn, which pro-

Continued on page 12

Preliminary research suggests strip tillage is an option for exposing enough soil to get it warm enough to plant corn in Western Canada.

PHOTO: USDA

Continued from page 11

duces an enormous amount of biomass relative to cereals, and how to incorporate the crop into conservation-tillage systems.

University of Manitoba soil scientist Don Flaten, along with grad student Magda Rogalsky, is looking at this question, along with other soil- and fertility-management strategies. Flaten says after just one year of field trials, one reassuring trend has appeared. It would seem that strip tillage — the practice of disturbing only the row that's being planted into and leaving the rest of the field untilled — doesn't appear to have a statistically significant effect on plant growth or yield.

"Often when you're talking about research, getting no result is disappointing, but in this case I think for most people no news is good news," Flaten said. "It suggests that farmers will be able to grow corn without totally abandoning all the benefits of zero tillage and minimum tillage."

"GROWTH HANGOVER"

University of Manitoba agro-meteorologist Paul Bullock is working on the climatic questions arising from bringing corn into a new environment that it's not by nature suited to.

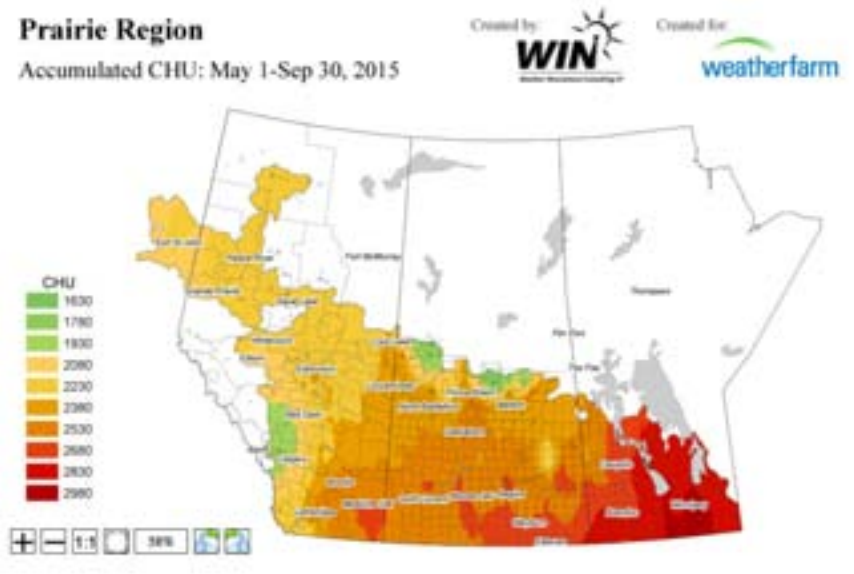
Corn is a long-season crop that normally likes more heat and moisture than are typically available on the Prairies. The plant also uses a different type of photosynthesis called C4, which allows the plant to continue the process in the dark.

"C4 photosynthesis is more efficient and generally results in more robust plants with higher biomass and grain yield, but it requires generally warmer temperatures to work," Bullock said.

As newer and better hybrids are being developed, the crop is pushing into non-traditional areas. Research is needed into how well they adapt, and how risky they will be for farmers, which may not be measured in the traditional way.

"The basic unit of measurement for corn adaptation, one that's been used for decades now, is the corn heat unit or CHU," Bullock said. "It was developed years ago in Ontario, where they don't have the same sort of cold overnight temperatures we do, which can upset a tropical plant and cause what's known as a 'growth hangover.'"

Anecdotal reports suggest a cold night could potentially disrupt the plant's growth for up to three days after temperatures rebound. Bullock's research will attempt to quantify this, giving growers a better understanding of how they can use CHUs to determine the risk of growing the crop.



Corn heat units from May 15 to September 30, 2015. While the 2300-plus areas suggest enough total heat for corn, cooler nighttime temperatures may negate some of the daytime warmth.

> "In the first corn crop following a canola crop, there appears to be an effect on the maturity."
>
> — Yvonne Lawley, University of Manitoba

Much of the fieldwork by graduate student Justice Zandah, a Zimbabwean with a lot of experience with the crop, has shown a significant variability in how the crops mature. He and technicians planted the same hybrids at seven sites — five in southern Manitoba and two in southern Alberta — and found as much as a month difference in their maturity dates.

That might in part be down to differences in the growing season, but when the weather data, generated on-site by carefully calibrated weather stations, was compared there was also a difference in maturity when compared to heat units of up to 500 CHU.

"What we found was there was a central point that represented the hybrid well, but then there was a 200 to 250 CHU variation on either side," Bullock said. "What caused that, we're not exactly sure, but it could be related to available moisture, as one of the sites was under irrigation in southern Alberta and the other was a dry site at Roblin (Manitoba), which also raises the question whether that meant clearer, and cooler, nights."

It will be several seasons before any reliable results are available, but this early data does suggest there may be some pattern at work that needs to be fully understood.

FERTILITY QUESTIONS

Flaten and Rogalsky are also looking at a few fertility questions that need to be answered for corn on the Prairies.

They're comparing an unfertilized check against 27-pound and 54-pound per acre phosphorus applications. Both rates are made as a side band (2" x 2") in the spring, and also deep banded in the fall at about 5" in depth. All of the treatments are sown into both conventional and strip-tillage plots. A similar study is testing phosphorus and zinc at the same rates, but on canola and soybean stubble, respectively.

"We can see a difference between the check and the starter phosphorus, especially in the plots on canola stubble," Rogalsky said.

The differences were especially pronounced early in the season, with developmental differences of one to three days observed in the field. By harvest time, however, the effect had virtually disappeared, suggesting it's going to be especially important in the event of an early frost.

"Last year was an open fall, so it does make you wonder what that would look like in a different growing season," Flaten said. "It really emphasizes that we're at the very early stages of this research." **CG**

Corn market 2016

How big to go with corn this spring? The answer may be very big indeed

By Philip Shaw

Change is our only constant in agriculture. It seems only a few short years ago that corn farmers in southwestern Ontario used to hope to get 150 bushels per acre come harvest. In fact, much of that hope was confined to the southwest where corn was first grown in the province.

In 2015, Ontario grew approximately 2.1 million acres of corn and the average yield is likely to be at a record level above 165 bushels per acre, up from 2013 and 2014 when the provincial corn yield rang up 160.5 and 160.9 bushels per acre, respectively.

Gone are the old yield paradigms when it comes to corn. Clearly, corn has a solid place in the crop mix for Eastern Canada.

As we look into 2016, there are many factors to measure with regard to the corn market. In Ontario in 2015 there were approximately 600,000 wheat acres. Going into 2016 there are approximately one million wheat acres, so there will be 400,000 to 500,000 acres available for new production in 2016.

Ontario producers will need to weigh the options on whether to put that into corn next spring. Surely some of that will depend on weather but it will also depend on the dynamism within the corn market going into 2016.

2015 was not a good year for corn prices. In fact it has been a long slow march down in corn prices since August 2012 when corn futures reached $8.49 a bushel. Since that time corn production has increased around the world, but also in the U.S. where large corn crops have become consistent over the last few years. For instance, even after the horrendous wet season in parts of the eastern American Corn Belt in 2015, farmers managed to produce their third-largest crop in history at approximately 13.655 billion bushels. This was at an average yield of 169.3 bushels per acre, which was the second-highest yield ever recorded in the U.S.

With these yields being achieved in a somewhat difficult production year in the U.S., it makes farmers north of the border contemplate how much bigger the corn yield could have been if weather had been benign across the whole American Corn Belt.

This big crop in the U.S. contributed to the erosion in corn futures prices. The nearby corn futures price by mid-November was hovering around $3.55 per bushel, a far cry from those record levels in 2012.

It had not been straight down, however. In fact, prices bottomed out in October 2014 at $3.18 per bushel, with a lot of essentially sideways movement over the last year.

But, of course, as we look toward 2016, nobody wants to keep going sideways.

What must happen for us to see better futures prices?

The simple answer is that there needs to be some type of production calamity in the corn market in order for prices to go a lot higher.

Of course, that is not really a secret. Nor is it a secret that nobody really wants it to happen to them! We know that our American friends will likely plant approximately 90 million acres in 2016. If they have some type of production nightmare next summer, prices will move up.

However, between then and now it might take some seriously bad production news in South America to give a little bit of fresh momentum to the futures market. Brazil continues to be a tough competitor to the U.S. in the corn market, and with its opposite growing season any production hiccup in their fields will be watched closely by the futures market.

Meanwhile, we need to recognize that there are lots of headwinds for corn, with the big global supply being one of them. The value of the U.S. dollar is particularly high, which does hinder futures price appreciation. If the U.S. Federal Reserve decides to raise interest rates into 2016, this likely will increase the value of the U.S. dollar, which will be another negative

for futures prices. In fact, commodities as a whole have been suffering from the high greenback.

For the Canadian corn farmer, the futures market is one thing, but the cash market is a completely different animal and it must be watched very closely. For instance, in November 2014 the nearby December futures were $3.81 per bushel. There was a plus $.25 basis for a cash price of $4.16 to the producer at local elevators in southwestern Ontario. In November 2015, the December futures price is $3.55 per bushel (26 less on futures than 2014) but there is a plus $.90 basis giving a cash price of $4.45. The difference is partly the Canadian dollar, which even in mid-November 2015 was approximately US$.75 versus November 2014 when the Canadian dollar was at US$.8854.

That is the power of the Canadian dollar. Foreign exchange can make up such a difference in cash prices to the farmer.

The value of the Canadian dollar going into 2016 will be key. Of course the question can be asked, is the low value of the Canadian dollar helping us or fooling us? There is no question it is helping us get a better price in Canadian funds, but it might be fooling us in that the lower value of the Canadian dollar means that it will take more corn bushels to buy inputs such as fertilizer, fuel and equipment priced in American dollars.

This paradigm really never changes for Ontario farmers, but it's one to consider. As we look into 2016, the value the Canadian dollar will remain a very significant factor.

It will be significant because if there is any futures price rise in corn, the low loonie means there will be an exponential rise in cash price to eastern Canadian corn farmers. To some extent on corn it is a straight conversion on basis. As futures prices move up from their contract lows, that conversion will add dollars and cents to our corn price.

This will be a significant market factor to keep in mind as we price our corn and make our marketing and production plans for 2016.

Of course corn basis in Ontario and Quebec is not totally a conversion of the Canadian dollar. The price of corn in Eastern Canada is totally related to the replacement value of U.S. corn that may be imported. Ontario cash corn prices usually bottom out with harvest basis. Sometimes Ontario corn is moved into the U.S. at harvest simply to make room. As corn is used up in Ontario and the price approaches replacement value from the U.S., American corn will be brought in, which essentially raises the basis. There is always a balance and it doesn't always quite work this way.

The rapid rise in yields, combined with the outlook for a weak loonie, means corn deserves a close look.

However, in 2016, like always, the Ontario cash price for corn will always be related to the value at which it can be replaced by U.S. corn.

There are variations on the theme in eastern Ontario and Quebec depending on their crop size. In 2015, the corn crop in both eastern Ontario and Quebec is very good and it is likely that some will be exported at Quebec saltwater ports.

In 2016, eastern Canadian farmers will find themselves facing these local market conditions and it will be important to measure just where they are in the market and how that might affect their profits.

For instance, looking again at bids through the fall, in mid-November we were seeing new crop basis bids range from plus $.65 to +$.85 over the December 2016 futures for delivery to an elevator in the fall of 2016. FOB bids would be even higher.

If there is any rise in the December 2016 corn futures price currently trading at $3.87, $5 cash corn is entirely possible in some parts of Eastern Canada.

Every corn farmer must measure whether they go big in corn acres or not. Corn's productivity yields rewards. In 2016, with good weather, that productivity should be even higher. **CG**

Multi-hybrid planters may not be in widespread use, but there's no reason why other parameters can't be adjusted, such as plant populations according to different soil types.

The right hybrid for your soil?

Pat Lynch says there are other ways to maximize production — and they're more realistic

By Ralph Pearce, CG Production Editor

It's always high on any list of recommendations. No matter which researcher or agronomist you talk to, choosing the "right" hybrid for your field is always near their top of their Top 10 list for growing a more productive crop of corn.

With precision ag systems, however, is it possible to determine which hybrids perform best in specific soil types?

In an ideal world, the answer would be yes, says Pat Lynch, an independent certified crop adviser (CCA) who has spent more than 40 years helping farmers grow crops in Ontario. But since we don't live in an ideal world, it may be better to turn to other more efficient and readily available management practices to achieve similar benefits.

"Part of the issue is the fact that hybrids have such a short life — we really can't figure out where a hybrid's best soil type is until it's too late," says Lynch, noting that typically, three years of research are required to determine the best fit. "But the average life of a hybrid is less than three years, so getting that information on soil types will be limited. And I realize the corn seed companies will give information on which are adapted to heavy soils or which are best adapted to light soils, but those are based on a root system. So we've got some information, but it's not as good as we could get."

Instead, there are other management practices that farmers could and should be implementing, and first on Lynch's list is population. The seed companies are largely in agreement on specific hybrids for specific populations on specific soil types, or on population according to a specific situation in a field.

"And many Ontario fields have variable soil types. It's not uncommon to go from really light, to a bunch of soils in between to really heavy — that's typical of Ontario," explains Lynch. "Rather than switching hybrids, which means you would need two or three, just switching the populations would be worthwhile. That's one way we can go in 2016. The other thing — if we had the equipment that was capable of doing it — would be to plant hybrids with different seed treatments, and this year, the neonic situation really brings that to the forefront. If you have light soil, you'll always have wireworms there, so if we could switch hybrids, we would be putting 'this hybrid' treated with a neonic on 'this part of the field' and then not treat it with neonic on another part of the field."

> "We really can't figure out where a hybrid's best soil type is until it's too late."
>
> — Pat Lynch, independent CCA

This isn't to say the technology for multi-hybrid planting doesn't exist. Lynch agrees it does. But models such as the Monosem or Vaderstad multi-hybrid

Continued on page 18

DON'T MISS THE SHOW IN 2016!

Plan to be at **Ag in Motion** – Western Canada's only outdoor farm expo!

July 19 – 21, 2016 15 min. NW of Saskatoon

Join us at the second annual **Ag in Motion** – a unique opportunity to get up close and personal with today's agricultural technology. Experience live demonstrations of field equipment, crops, livestock and services all together on 320 acres near Saskatoon. Come to the farm show where there's room to see it all – and how it all fits together.

Ag in Motion™

Western Canada's Outdoor Farm Expo

SEE Technology **TOUCH** Innovation **BE** Empowered

www.aginmotion.ca

Continued from page 16

planters aren't widespread throughout Ontario or Eastern Canada. Most growers are still governed by economic multi-functionality, possessing a planter (gravity-feed or vacuum) for corn and a drill for soybeans and cereals (or the planter for corn and soybeans and the drill for cereals).

Instead of waiting for multi-hybrid planting to get more popular, Lynch contends that it's possible to combine existing planter application and variable-rate technologies with liquid insecticides, particularly one chemistry that's due to come to market within the next 18 months.

"There are products in the pipeline that we could soon have, so we'd have a liquid insecticide for wireworm," says Lynch. "When you hit a part of the field where wireworm is a problem, you turn on the liquid insecticide, and all of the seed on the light part of the field would be treated for wireworms."

Unlike the multi-hybrid planter technology, Lynch believes adjusting planter applicator systems to do this would be fairly straightforward. It would be a matter of using the liquid starter equipment on the planter and merely substituting the insecticide.

"There is a product available, if the registration were to come through, that could be used in 2016," he adds, noting that such a scenario is still quite a long shot. "Hopefully it would be available for 2017, and in my vision of where we're going, it would be closer to where we're going in the future. So that we will have areas of a field that need an insecticide for wireworms, areas of the field where the nematodes have been awfully bad, and we'll put a nematicide on the seed through that area of the field so that we will, in effect, be doing seed treating as we plant."

Rather than switching hybrids, growers will be switching the treatments that go on the seed, and that, states Lynch is not only exciting, but more realistic and plausible. The same thing is possible in soybeans as well. Varying population is another simple response to varying soil types, and there's a new nematicide registered in the U.S. with consistent yield increases, solely based on its activity on nematodes. Even in the near future, Lynch believes that science and agronomists and advisers will get a better handle on specific pests in a field.

"Rather than switching hybrids, which means you would need two or three, switch the populations."
— Pat Lynch, independent CCA

"Right now, we are using broad-spectrum pest control, believing that if we have an insect or nematode in a certain part of a field, it's through the whole field, and that is absolutely not the case," says Lynch, noting pest management favours more of a protective approach. "Each of these pests tends to have its own favourable environment, and it could be throughout the whole field, but in parts of the field, the levels are so low as to not be a concern. And there's the cost of the treatment: if you only have to treat a quarter of the field it's going to cost you less than treating the whole field."

The same is true with corn, and Lynch believes the industry is just getting started on root stimulants. At this early stage, there's admittedly some frustration with how they work in some circumstances but not in others, and that may be a matter of not knowing all of the influences involved. Once those are determined — where in "this" part of the field you're going to get a yield advantage, but over "here" it might be a detriment, and that if you do the entire field, maybe it's a break-even — then we have a better idea. But Lynch theorizes that such a point is still eight to 10 years away. Yet wireworm or nematode control is something that could be addressed in 2016.

It isn't a statement against "big data" or advanced precision ag systems: their validity isn't really open to debate. But in the race to incorporate these systems, many growers, agronomists and advisers may be overlooking the agronomic and management fundamentals. It's similar to the question of shifting practices to improve on-farm efficiencies: do you try to improve one facet 10 per cent or is it easier — and better overall — to work towards improving 10 facets by one per cent each?

It still comes back to the idea of switching hybrids on-the-go and meeting with the reality that the bulk of the acres are planted using equipment that can't make those hybrid switches efficiently.

"We did the planter clinic at Canada's Outdoor Farm Show in 2015, and in one case, the tractor and planter amounted to a value of about $500,000, and in parts of the demonstration strip, they didn't plant deep enough," says Lynch. He adds that the response from those conducting the planting was essentially, 'Yeah, we know, but that's reality.'

"The point is, you can have a half-million dollars in planting equipment, but if you don't have the basic agronomic understanding of what you're doing, then it's not going to work," Lynch says. "In this case, the speed was right, the seed drop was right, the spacing was right, but it was an inch too shallow. All of these tools are good but only if put together with agronomic experience and wisdom." **CG**

EARLY RISER

NSC Reston RR2Y

Get consistent yield performance early!

NSC Reston RR2Y is one of the most consistent-yielding soybean varieties for the early maturing soybean category. With its tall stature and exceptional podding, this bean will give you confidence in growing soybeans.

At NorthStar Genetics, we know beans.

www.northstargenetics.com

NorthStar Genetics

genuity
ROUNDUP READY 2 YIELD SOYBEANS

Boxes and Bulk:
Your Choices for Seed-Handling Versatility

Seed Pro® Box Tender — delivers two (model 200) or four (model 400) 50-unit seed boxes to your planter or drill

Seed Runner™ patented self-loading bulk tender — delivers 275 bulk-seed units (model 2750) or 375 bulk-seed units (model 3750) to your planter or drill

Both styles feature:

- 18′ steel-tube conveyor with 5′ telescoping downspout for 30′ total reach; optional 10′ downspout reaches to 40′; 21′ conveyor on model 3750XL
- Patented intake prevents seed from back-flowing for reduced damage
- 60″ of vertical height adjustment for filling the widest variety of planters and drills
- Large collapsible canvas seed hopper for no-spill filling
- Standard wired on/off and raise/lower control; optional 2-, 3-, 6- and 7-function wireless remote, depending on model
- Optional scale packages; auto shut-off version for Seed Runner models for planter-filling accuracy

Bulk-seed handling your way. See your nearest Unverferth dealer today for complete details or visit our website at **www.umequip.com.**

Unverferth
Manufacturing Company, Inc.

P.O. Box 357 • Kalida, Ohio 45853 • (419) 532.3121 • unverferth.com