

pulse beat

Spring • No. 80, 2017

Be Careful When Applying Dicamba on Xtend Soybeans

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RESEARCHER PROFILE

Anfu Hou, Research Scientist

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The Bean Report

**Keeping the
Soybean Honeymoon
Alive – Part Two**

**Preventing Glyphosate
Resistance**

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Cover photo courtesy of Dennis Lange, Manitoba Agriculture

Manitoba Pulse & Soybean Growers – 2017 Board of Directors and Staff

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Vice Chair – John Preun – *St. Andrews*
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Ben Martens – *Boissevain*
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Melvin Rattai – *Beausejour*
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Dennis Lange, Manitoba Agriculture
Yvonne Lawley, Department of Plant Science, University of Manitoba

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Director of Research and Production – Laryssa Grenkow
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Production Specialist – Cassandra Tkachuk
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On-Farm Specialist – Greg Bartley
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2017 Annual General Meeting Highlights



BRYCE MACMILLAN IS a young, bright farmer from Marquette. And MPSG is proud to welcome him as its newest director.

He was elected by acclamation to the Manitoba Pulse & Soybean Growers (MPSG) board during the association's annual general meeting (AGM) in Winnipeg on Feb. 15 at the Victoria Inn. Rick Vaags, Ernie Sirski, Frank Prince and Albert Turski were re-elected by acclamation during the meeting, and 2016 appointed board member Melvin Rattai was also elected by acclamation.

Approximately 100 people attended the meeting, which took place in conjunction with Manitoba's annual CropConnect conference.

Dale George from George & Associates Chartered Professional Accountants Inc., presented MPSG's audited 2016 financial statement. His message was positive. MPSG is in good financial shape to tackle the continued growth of the pulse and soybean industry in Manitoba.



2016 MPSG Financial Reports are available online at www.manitobapulse.ca

Executive Director François Labelle then gave a briefing on the state of each crop, and spoke about the time sacrifice board members make to ensure the association remains truly farmer-led.

He also spoke about the work MPSG does on market development and many important policy files such as maximum residue limits (MRLs), transportation and pesticide regulation.

Labelle's message was clear: we do a lot at MPSG. And everything we do is motivated by delivering more value to farmers.

Labelle also spoke on the importance of collaboration among crop associations: "How much more would we be able to do for you if we worked in collaboration with all our provincial commodity groups?"

His question functioned as a fitting tie-in to MPSG Chair Jason Voth's message.

"Things need to move forward," said Voth. "Collaboration is a step towards ensuring all commodity groups have the resources and skills needed to tackle the issues affecting all farmers."



MPSG's Director of Research and Production Laryssa Grenkow also gave a report, introducing the new

R&P team: On-Farm Specialist Greg Bartley will be overseeing an increase in MPSG's On-Farm Network capacity; and MPSG's new Production Specialist Cassandra Tkachuk will be taking over *The Bean Report*, and she will oversee the development of research priorities and production resources.

"MPSG invested just over \$1-million in 22 new research projects in 2016," said Grenkow. "Considering on-going project commitments and leveraged funds, MPSG supports more than 60 projects valued at \$11-million."

No resolutions were brought forward in advance, and no other business needed to be discussed. The meeting was adjourned shortly after Grenkow's report.

"I'm full of hope for 2017," said Voth. "It'll come with change. The unforeseen will jostle us in new ways. But, as a farmer, I'll continue to put one foot in front of the other. And at MPSG, we'll do the same." ■

2017 MPSG COMMITTEES AND REPRESENTATIVES

MPSG COMMITTEES – *The first named is chair*

Executive – J. Voth, J. Preun, E. Sirski, F. Labelle

Governance/HR – F. Prince, E. Sirski, F. Labelle

Finance – J. Preun, M. Rattai, F. Labelle, S. Robinson

Resolutions – C. Penner, M. Rattai, B. MacMillan

Nominations – C. Penner, M. Rattai, B. MacMillan

Communications/Member Relations/Market Development – E. Sirski, R. Vaags, C. Penner, B. MacMillan, F. Labelle, T. Dyck, C. Tkachuk, S. Robinson

Research – F. Prince, B. Martens, A. Turski, J. Preun, C. Penner, F. Labelle, L. Grenkow, C. Tkachuk, W. Voogt, industry advisors

MPSG REPRESENTATIVES

Canadian Grain Commission Pulse Sub-Committee – F. Labelle

Grain Growers of Canada – B. Martens

Keystone Agricultural Producers – R. Vaags, C. Penner, F. Labelle

• **General Council** – F. Labelle

• **Pulse/Oilseed Sub-Committee** – F. Labelle

• **Commodity Group** – R. Vaags, C. Penner

• **Safety Group** – F. Labelle

MCVET – L. Grenkow, D. Lange

PGDC/PRCPSC – B. Martens, L. Grenkow, D. Lange

Pulse Canada – R. Vaags, B. Martens (alt), F. Prince (alt)

• **Sustainability** – F. Prince

Soy Canada – E. Sirski

Western Canadian Pulse Growers Association

• **WGRF** – Corey Loessin (SPG)

• **CGC Western Grain Standards Committee** – E. Sirski
(exp. 2018) *This is a four-year term that rotates between APG, SPG and MPSG.*

Message from Board Chair

Jason Voth, Chair

WHAT IS NEXT for Manitoba Pulse & Soybean Growers? Sitting around the board table, this is the question we ask ourselves.

Soybean acres have exploded across the province in the last three to four years and they are expected to keep doing so. The edible bean market has been stable and the pea market has moved up and down. But the future of peas in Manitoba looks bright with the announcement from Roquette of a pea processing facility starting up in Portage la Prairie.

MPSG members, directors and staff have done a tremendous job keeping up with the growth, providing value to the farmers on many different levels and being fiscally responsible with their money.

SO, WHAT IS NEXT FOR MPSG?

There are many different opinions for how we should continue to add value to your farms. Some think that we should reduce our check-off to a point where we can maintain the services we currently offer and nothing more. Some think that we should have a check-off cap so that the large farms pay less. Others pose the question of whether to make the check-off non-refundable. And then there are those who say we should leave it the way it is: refundable.

I do not believe that reducing our check-off to maintain our current level of service is a step in the right direction. Governments are cutting back agriculture funding. In the last number of years, there has been a tremendous decrease in the amount of staff in provincial and federal ag departments. This means that there are gaps in the system that are not being addressed.

We may feel like we are still getting the services we are used to, but in reality we may only see the results of



the downsizing 10 years from now. Work on breeding takes time. It isn't an overnight process.

The discussion about whether to have a cap

on check-off has been going on for a number of years. It is like buying a new piece of machinery. If you spend the half a million dollars on a combine, you expect it to perform and help you get your crop off in a timely manner. If you spend money on a grower organization, are they providing you with a good return on investment?

I would encourage you to have a conversation with your agronomist and ask them if they are looking at MPSG agronomy research to aid in the growth of your farm. I suspect they are doing so.

Also, do your soybeans or pulses get shipped internationally to be processed? The answer is yes. We in Manitoba are exporters. MPSG and its sister organizations work on transportation, chemical residue levels, and many more issues that affect your bottom line. It is a very complex system from when your beans leave your farm to where they get processed. These are all things your check-off supports.

If check-off became mandatory, we wouldn't have to worry about the refunds, and budgeting would be easier. We've learned that Saskatchewan is split on this issue. It's tricky. But, whichever direction this conversation goes, rest assured that for everything we do at MPSG, we first ask ourselves: will this deliver value to Manitoba farmers? If the answer is yes, then we move forward. It keeps reckless spending at zero. We don't spend money for the sake of spending it.

Lastly, there is the question of whether Manitoba producer organizations should join forces to make your farm more successful. These talks on collaborations and mergers came about because of the way farming in Manitoba has changed. There are fewer farmers and they are farming more complex farms than ever before. I am an advocate for looking at how to make our farms sustainable. We need to stop promoting one crop over another, or promoting crops over livestock.

Yes, there may be some specific things lost with collaboration, but think about how many more things are gained. Currently, in the province the emphasis is on soybeans and on how many acres and how good it is

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Soybean Scout

What are these soybean root problems that caused stunted, yellow top growth?



A



B

Answers can be found on page 43

Do you have a production question related to pulse or soybean crops? Maybe you're looking for an opinion or advice?

Write to us! Email: cassandra@manitobapulse.ca

Message from Executive Director

François Labelle, Executive Director

TO BLINK IS to miss a season. They roll by so quickly. Time hastens and we get older and hopefully wiser. The common subject over time is change, and the key to success is adapting to this change. As MPSG adapts, it must remain focused on delivering maximum value to you, its members.

How are we doing at this?

STAFF

Would it not be great if we could get employees that would stay for years and years? As society evolves, this is no longer the norm, so we see people come and go. The important point is to hire the best people for the jobs and get them to give us top-quality work to advance the association. Someone who makes a positive mark in a short time is more important than a seat warmer.

With Kristen moving to the University of Manitoba, and our outreach coordinator Lindsey leaving, as well, it has caused a shuffle in our staff. Laryssa has stepped up to take over



the senior role in production and research, and this is working out very well. Cassandra Tkachuk has been hired as our new production specialist, and we

expect some great things from her. We are still working to fill our extension coordinator position.

ROQUETTE

One of the more exciting developments in our industry, in Manitoba and Canada, is Roquette announcing plans to build a \$400-million pea-processing facility in Portage la Prairie. This will open up some value-added jobs, and very skilled jobs in our province. It's a great development. Roquette will be a new local buyer for our Manitoba-grown peas. When there is a local market, it's easier to attract acres.

The challenge we now have is producing enough peas in Manitoba to meet the needs of this new facility. Pea acres have been showing some comeback in the last few years, partially due to the price, and partially due to how cost-effective the crop is to produce – lower seed cost and less fertilizer inputs.

For peas to continue in Manitoba, we will need a price that is economically

competitive with other crops. Otherwise they will not be considered in the rotation. If the economics are there, we will need to have the weather cooperate and agronomic information to ensure farmers are able to maximize profitability on pea production.

We also need to work with Roquette to make certain the peas we produce will meet their needs.

MPSG will be supporting production agronomy for peas whichever way possible and we will identify any further research that needs to be done.

CROPPING DECISIONS AND SYSTEMS

Soybeans have been a real success story for Manitoba farmers. Can we keep it that way? As our acres grow, when do we reach a point where production levels are not agronomically sustainable? At which point will we reach a problem – with diseases, weeds, fertility – or are we there already? Tight rotations or even a snow rotation are a recipe for problems to come.

I have heard it a number of times in the last year: "My beans are not producing as they should but others in new areas that were not traditional areas are getting much better yields than I am. Why? Is it the weather?" It could be, as we are even seeing last year that some soybeans, even if they seem to have

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for Manitoba. But what will happen after five years of tight rotations and disease pressure? Soybean acres will then decline, and what will you grow then? These are the things we need to be working on now, together, with everyone in the room.

I grow a variety of crops, and I need to support the associations behind each one of those crops to ensure they remain a profitable and long-term part of my rotation. The same applies to the hog and cattle industries. They buy my crops. I need to support them, too.

We are in the process of gathering information from all the producers in the province on how they would like us to proceed on this topic. The board of

directors has planned a mini strategic planning session to discuss a lot of these questions going forward. There was also some dialogue at CropConnect this year, which will be very helpful in guiding us into the future. There will be a survey requesting input on this and other issues going out in spring of 2017, so please fill it out and return it to us.

Farmers need to work together to get the good news story to the public that we are stewards of the land and we are not out to destroy the environment. This message needs to be the echoed across all groups.

As soon as we farmers take our foot off the gas pedal, we will start going backwards. If you look at the way you

farmed five years ago to the way you farm today, it is incredible the changes that have taken place. Whether it be technology in the fields, governments, here and internationally, the general population's view on farming or the environment, these are all things that need attention. If we as farmers don't speak up, we will get trampled on. As commodity groups, we need resources to tackle these issues, and we need to find ways to do so together.

Here's to a successful and prosperous 2017 for the entire farm. ■

— Jason

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snorkels to survive excess moisture, were getting flooded out. In 2015 we had some really hot weather in August. Did that blast flowers? Possibly.

This is something we need to find out. Why some beans are not doing what is expected.

WEED PROBLEMS

Resistant weeds are encroaching on Manitoba. It's only a matter of time until they are here. There is no silver bullet here, no new miracle chemical that will knock these back. In parts of the U.S., it's only steel or physical labour that will set these weeds back. Yes, I said set them back, because once you have them they are there to stay.

Going forward, MPSG will need to add a focus on ensuring the sustainability of soybeans, and all our crops. In the past few years, we have been focused on the growth of soybeans, which has been a real success to Manitoba growers. Now, we need to work together to make certain it's a sustainable crop for years to come.

This may mean a shift in focus in our research and production activities.

ASSOCIATIONS

Farmers have said they are growing soybeans because it makes economical sense. They have also said they are not growing this or that crop because there is no money in it. Interesting, though, that most farmers grow several crops and they would like them to all be profitable. How can associations and farmers make this happen?

We have built a world of silos where each crop has a group representing them – and every group is protective of their domain. Is this what is best for you, the Manitoba farmer? Can we knock down some walls and still get success for all commodities? Answers may seem obvious, but it's a difficult discussion.

MPSG is different in that we represent several crops. When we reflect on the past, originally we had peas and beans in the province. Peas started in the 1940s and beans in the

'70s. In the early '80s, when Manitoba Pulse Growers Association was formed, the bean growers were struggling. They were not supported by the risk management programs at the time and there was little to no local research. The bean growers around the board table asked for help from the pea growers to pay for a plane ticket to go lobby in Ottawa. It was not a simple discussion, but it was agreed upon – a decision that prompted the funding of some local bean research. The bean industry grew. Later came the lentils – same story – needed some support so peas and bean growers supported them. Then one day someone wanted to do research on soybeans. After some discussion, that too, was supported.

The evolution of crops and cooperation from growers is a great one. Today, when looking at where to put our efforts, it's what is best for our industry. Unfortunately, we as associations are still focused on *our* crops. What could

continued on page 6



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all be done if we did not have these silos and focused on what was best for your entire farm?

MPSG is supportive of more collaboration and better use of resources for all commodity groups and would like to hear what you, our members, have to say. Let us know. Let other groups know.

GOVERNMENT

Change. It affects us as people and us as an association. But it also affects the government and the many programs and activities MPSG is involved with. With the changes in the provincial government, we are very hopeful they will be able to give us as much if not more support than in the past.

We have talked in the past about the next Policy Framework – *GF3 or to be determined*. MPSG has given feedback on what we would like the program to look like. We have invested a lot of time in getting support for research programs that will benefit Manitoba farmers. We are working with three

groups at the national level for this – Pulse Canada to support the pulse crops, CFCRA (and Soy Canada) to support soybean research, and WGRF to support multi-crop integrated agronomy work. We will not hear about how this new policy framework will look for another 12 months, but the goal is to have it all in place by April 1, 2018.

We must continue working on several issues, and most of these are in collaboration with our national sister associations. One such issue is neonics. We have some pulse and soybean working groups that are looking to make certain that good proper science is being used to make decisions regarding the fate of neonics. We want to be certain we have access to these chemistries if at all possible, while making certain we are all good stewards of our environment. These types of working groups take time and resources, and we must be at these tables representing the industry,

otherwise we could be left behind with others making decisions without us. This initiative also serves as yet another example of where working across commodities would be beneficial to all farmers.

These are just a few examples of how MPSG works with government and other groups to advance and protect our crop sector.

I have not touched on research and production. You will read about those topics in this issue of *Pulse Beat*. Rest assured, it's still the area where MPSG invest most of your dollars.

Your association – this association represents you in a lot of areas. We cannot cover every subject, as time and resources limit us, but we do and will always focus on where we see the best potential returns for you, our members. As always, we value your feedback.

Have a great growing season! ■

— François

Meet Cassandra



Manitoba Pulse & Soybean Growers is pleased to welcome its new production specialist **Cassandra Tkachuk**.

Cassandra is no stranger to MPSG. You may have seen Cassandra present her research at a recent Getting it Right soybean production meeting and at SMART Day. She joined MPSG in February after defending her Masters' thesis in the Department of Plant Science at the University of Manitoba. Her project studied the effects of soybean seeding rates, planting dates and soil temperatures on emergence, growth and yield.

"We are very pleased to have Cassandra join the research and production team," said Laryssa Grenkow, MPSG's director of research and production. "The depth in soybean production knowledge she brings from her recent research and her experience in agronomy will be a great resource for farmers."

Cassandra grew up on a commercial beef cattle farm in southeast Manitoba, where she first became inspired to pursue an education in agriculture. She also holds a Bachelor of Science in Agriculture with a major in agronomy.



As MPSG's production specialist, Cassandra will spend this summer in the field, responding to production inquiries, scouting and participating in field days. Her eyes and ears will gather information to feed into the development of MPSG research priorities.

She will also lead the development of MPSG

production resources and keep you informed about upcoming issues via *The Bean Report*.

"I am excited about continuing my involvement with soybean agronomy and being able to deliver valuable information to farmers and agronomists," said Cassandra. "I am looking forward to building connections with counterparts in Manitoba and other soybean growing regions."

Connect with Cassandra!

➤ Invite Cassandra to scout your pulse and soybean fields this summer, or contact her with your production questions.

cassandra@manitobapulse.ca
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We Should be Working Together

A view to collaboration among commodity groups

Jason Voth, MPSG Chair

THERE ARE TOO many commodity groups. We're operating in silos, often wanting similar things; often doing similar things. We should be working together.

Together, our voice as farmers could be smarter and louder. Our dollars as farmers could be better spent, ensuring my farm and your farm are as profitable as they can be.

This association began in the spirit of collaboration. It was each pulse crop for itself until the Manitoba Pulse Growers Association was formed. And then soybeans came along.

The model works. At the farm level, I collaborate all the time. I work together with my neighbours and friends to find efficiencies. I know others on the MPSG board farm this way, as well.

Farming has changed over the years. There are fewer farms than there were, say, 10, 20 years ago, and they have gotten quite a bit larger and more complex. And looking ahead 10 years, I'm certain the number of farms and farmers will be at record lows. Collaboration is a strategy for commodity groups to anticipate and tackle this future; a future where

directors may be in short supply; a future where the agronomic needs of our farmers are broader than any specific crop.

There is now a basic understanding among farmers that in order for our operations to be sustainable, we can't promote one crop over another, or crop production over livestock.

As mainly a soybean, corn, and edible bean farmer, I need to support wheat growers to make wheat profitable so that I can use it in my rotation for the long term. Similarly, I need to support the hog or cattle industry, both of which provide a feed market for my corn.

Farming has changed and it will continue to change. What does the future look like for commodity groups?

Over the course of the past year, MPSG has taken part in many collaboration-related meetings and discussions with the other commodity groups.

The process has been slow and frustrating. Action. We need action. We need to put one foot in front of the other. This has been my thought process.

But these things take time. These talks on working together have been a lesson in patience, which is a good thing. Every person operates at a different pace, and every voice at the table needs to be heard.

That said, after more than a year of discussions, we need to start making forward progress. Some have expressed fear over the possible outcome of commodity groups merging. To rule that out entirely would be naïve and dishonest, but for MPSG merging is not the explicit intention of these talks. It's collaboration.

As commodity groups, we need resources to tackle all the issues affecting Manitoba's farmers, and we need to find ways to do so together.

In the meantime, as Manitoba commodity groups continue discussion on working together, we must also look at ways MPSG can collaborate with its sister organizations across the prairie provinces.

As Chair, I welcome your feedback on this issue. This spring, MPSG will be circulating a member survey, which will give you an opportunity to provide feedback on collaboration, as well as many other things related to how MPSG can continue to deliver value to your farm.

I also encourage you to share your thoughts on collaboration with MPSG directors, and the directors of the many other commodity associations.

Thank you!

— Jason

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25 by 2025: Pulse Canada's New Demand Target



PULSE CANADA IS aiming high to accelerate growth and generate significant new demand for pulses and pulse ingredients. The Pulse Canada Board of Directors recently set the *25 by 2025* target as part of the association's strategic planning process. The association's focus will now include uniting the industry around the bold new goal.

The *25 by 2025* goal will aim to create demand in new use categories for 25% of the Canadian pulse industry's productive capacity by 2025. Snack foods, tortillas and breakfast cereals are just a few product categories that represent growth potential for pulse ingredients, which offer food manufacturers protein, fibre, slowly digestible starch and an unparalleled environmental sustainability story.

The demand target comes as Pulse Canada considers its sustainable growth strategy. The Canadian pulse industry continued to expand production in 2016 to meet strong demand with a 28% increase in lentil production and a 51% increase in pea production over last year.

"Our traditional markets will always be a top priority for us and we'll continue to invest into improving

service and product quality for Canada's long standing customers," said Lee Moats, Chair of Pulse Canada and member of the Saskatchewan Pulse Growers Board of Directors. "Pulse ingredients are also attracting a lot of attention from non-traditional markets and we need to ensure that we sharpen our focus on that new demand in order to diversify our options and deliver the value we know that pulse ingredients can add to a wide range of new food products."

Pulse Canada's demand target, announced on Global Pulse Day (January 18), proved timely as European ingredient company Roquette also revealed its plans to build a pea processing facility in Portage la Prairie, Manitoba on that day. Global Pulse Day was recognized across the globe during over 200 events in 63 countries which generated over 36 million social media impressions.

"Global Pulse Day and the 2016 International Year of Pulses have been incredibly successful platforms that have helped create awareness for pulses and the contribution they make to human health and environmental sustainability. We believe we can continue to build momentum and turn

that awareness into increased demand and higher consumption," said Moats.

In 2016, the number of food products containing pulses launched in North America grew by approximately 30% with the fastest growth coming from the snack foods category.

"Roquette's announcement along with other investments into value-added processing that have been made by Canadian companies and other foreign investors to date is a strong signal that the industry is well positioned to serve an expanding food and ingredient market," said Greg Cherewyk, COO of Pulse Canada.

Reformulating food products to include pulse ingredients can significantly increase their nutritional quality while lowering their environmental footprint. For example, a reformulation of traditional durum pasta to include 25% lentil flour can increase fibre content by 100% and protein content by 25% while lowering its carbon footprint by up to 26%.

"As we look ahead, the definition of food quality will include social indicators like health outcomes, environmental indicators like greenhouse gas emissions and economic indicators such as affordability," said Moats. "Our journey to *25 by 2025* aligns well with the future of food and we're looking forward to working with our partners at home and around the world to meet the needs of customers of today and customers of tomorrow." ■

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SOY CANADA Update

Jim Everson, Executive Director, Soy Canada

THIS YEAR IS shaping up to be a very big one for the soybean sector as we wrapped up 2016 with record high production levels and entered into our ninth consecutive year of industry growth.

One of the largest market access issues before the Canadian soybean sector this year will be responding to the Pest Management Regulatory Agency's (PMRA) recent proposal to phase out over three to five years the use of neonic pesticides containing imidacloprid actives.

Soy Canada has been consulting and working with our industry partners at examining the information and data used in the PMRA study to ensure that the decision to regulate the use of imidacloprid products takes into account the most up-to-date data and is rooted in sound science.

Soy Canada has submitted a response to the PMRA as part of its open public consultation process commenting on the importance of providing growers access to the latest crop protection tools and seed treatments. We have worked to ensure that all members of the soybean value-chain have a voice on this important issue by bringing their concerns to the regulatory agency.

Soy Canada has also been coordinating research priorities across the soybean value-chain as our industry prepares for the next five-year Government of Canada funding program through the upcoming 2018 agriculture policy framework. In June 2016, Soy Canada brought together members from across the soybeans value-chain and research community to align the sector on a common set of

goals and priorities such as increasing protein levels in western Canada.

We also have a number of market development initiatives underway. Soy Canada's new Director of Market Development Jim Millington will be leading our market development activities including trade missions, marketing plans for whole beans, oil

and meal soybean products, market research studies, and other initiatives. Jim can be reached by phone at 704-344-4429 or by email at jmillington@soycanada.ca.

To learn more about the Canadian soybean industry visit our website at www.soycanada.ca or contact us at info@soycanada.ca. ■



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FMC

New Year, New Look

Fiona Cook, Executive Director,
Grain Growers of Canada



THIS YEAR WE celebrate Canada's 150th birthday. It is an opportunity to reflect on the past, as well as look towards the future. We've taken that to heart here at Grain Growers of Canada (GGC).

While the original GGC logo has served us well for many years, it was time for a refresh. That is why we were pleased to premiere our dynamic new look on February 16th, the Canada's inaugural Agriculture Day. We have taken our brand from a simple stalk of grain to an image that represents the breadth of our industry. The clean blue and harvest gold of the original logo were maintained for continuity and we added the iconic maple leaf,

incorporating one of our organization's greatest strengths – the fact that we are truly pan-Canadian.

At the same time, GGC was thrilled to launch our brand new website to the public. Drawing from the five focus areas of GGC (sustainability and sound science, transportation, trade, safety nets/BRM and research), we have laid out the website to have a little something for everyone. Our aim is to support the work of our members and be the go-to resource for grain policy development in Canada.

The Policy section provides a comprehensive overview of GGC's positions. As a policy focused association, it is important that decision-makers and media are

able to find information about our industry quickly. New developments and legislative issues will be updated on a regular basis, so be sure to check in often.

Because GGC is run by and represents you, the farmer, we have created a Farmer Feature with quotes from our directors that help explain how government policy affects them. As the national voice of grain farmers in Canada, it is important to us that our members are the ones telling their story. That is also why our new blog will present the perspectives of our farmers. We strongly encourage GGC members to provide content and look forward to including updates from MPSG.

As the general public becomes increasingly engaged on issues related to food production, our brand new Resources section is on hand to provide key facts and links with relevant information about our industry. A recent study by the Canadian Centre for Food Integrity found that farmers are the most favourably viewed source of information. That is why it is so critical that member voices are at the forefront. The success of the growing Agvoacy movement has demonstrated the collective power of agriculture and we have drawn on that for inspiration in this section. While GGC remains a federal policy driven organization, the overlaps in public trust and regulation cannot be underplayed.

In addition, agriculture and agri-food is increasingly being recognized by the federal government as a leading sector and opportunity for economic growth. We will be spreading this message and looking for opportunities to position the Canadian grain and oilseeds sector as innovative, sustainable and the key driver for many rural communities. There are challenges but the future is bright and it is important that we present a unified voice and work on behalf of all farmers across Canada.

We hope you will love our new logo and website as much as we do. If you have any comments do not hesitate to contact me directly! ■

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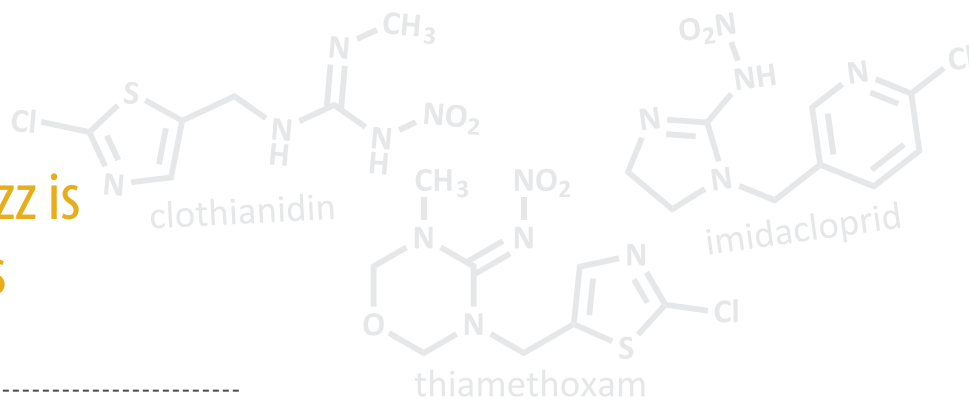
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Neonics: The New Buzz is Aquatic Invertebrates

Gord Kurbis and Nevin Rosaasen



IF YOU CAN'T pronounce neonicotinoids, understand their neurotoxicological pathway, describe their potential impact on pollinator, human, bird or invertebrate health, you are in good company. It seems the international scientific community is still uncertain on exactly what the impacts in some of these areas are. Neonicotinoids (including imidacloprid, thiamethoxam and clothianidin here in Canada) are currently the most widely used insecticide in the world.

Neonics were the promising new technology that was a less toxic

alternative to its predecessors including lindane and other less effective, non-selective foliarly applied insecticides. Products that are registered on pulses or soybeans that contain these active ingredients include Stress Shield 600, Alias 240SC, and Sombrero 600FS (all imidacloprid) and Cruiser 5FS, Cruiser Maxx Beans, Cruiser Maxx Pulses, Cruiser Maxx Vibrance Pulses, and Endigo (all thiamethoxam).

Health Canada's Pest Management Regulatory Agency (PMRA) conducts in-depth science reviews for all pesticides before they can be sold or used in Canada, and then does periodic reviews, usually after they have been on the market for 15 years. While neonics continue to be much safer to people than earlier insecticides, neonics may not be as benign as first thought to other organisms, as the PMRA suggests there may be some risk to aquatic invertebrates.

A risk to invertebrates? Yes. Much easier to rally the celebrities to save the bees, the whales or changing climate. But what about water fleas? Despite being 'harder to love,' aquatic invertebrates do play a vital role in ecological community health, nutrient cycling and play other important roles in ecosystems.

Nearly every agricultural sector, from greenhouses, ornamentals, commercial vegetables, potatoes, vineyards, corn, canola and yes, pulse growers too, use neonics in some way. The PMRA is proposing a phase-out of the neonic imidacloprid, with signals that thiamethoxam and clothianidin are likely soon to follow. Imidacloprid and thiamethoxam are important seed treatment products for soy, pea, lentil, faba, chickpea and dry bean growers

in many parts of the prairies. For example, there are very few effective tools for managing cutworms and wireworms within pulse crops and other cereals and oilseeds, and there are no alternatives to thiamethoxam for pea leaf weevil management. The Canadian pulse industry has lost the use of three other insecticides including Sevin (carbaryl), Lorsban (chlorpyrifos) and Agrox (diazinon) for use in pulse crops which has limited growers' ability to rotate modes of action and limit insects' ability to develop resistance.

While industry groups that are vocally contesting PMRA's new perspective on neonics are not questioning the importance of aquatic invertebrates, they are questioning PMRA's proposed revaluation decision after decades of safe and effective use, as well as the approach used in making the decision, the robustness of the data modelling, and the gaps in data used to develop the models. These are the important steps that have led to this decision.

A pulse value-chain group led by Alberta Pulse Growers and including Manitoba Pulse & Soybean Growers, Saskatchewan Pulse Growers and Pulse Canada will be providing stakeholder input on the PMRA's recent re-evaluation decision. The group will highlight the lack of viable alternatives for managing resistance and emphasize our commitment to working with agronomists, growers and registrants to mitigate our impact on the environment and ecology by using Integrated Pest Management and best practices, as well as following safe handling procedures and applying pesticides in a responsible and sustainable manner. ■

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Soybean Acres Filling Up MASC's Insurance Test Areas

Manitoba Agricultural Services Corporation

IN 2013, THE Manitoba Agricultural Services Corporation (MASC) expanded its AgriInsurance coverage on a trial basis for dry edible beans, lentils, grain corn, open pollinated corn, soybeans and sunflowers into all of agro Manitoba. For four years now, the *Insurance Test Areas* (ITAs) have provided coverage in previously uninsurable areas.

Due to the expected riskier conditions in these production areas, ITA coverage was initially set at 80% of the lowest coverage offered in the province (in the case of soybeans, would be Soybean Area 3), with the earliest established seeding deadlines for that crop. The relative premium rate charged in the ITA was also set at equal to the highest of all existing insurance areas.

Now with four years of cropping in the ITAs, MASC has enough data that it can begin to examine how production in the ITAs compares to production in other regions.

"Uptake for most crops in the ITAs has increased since the first year," said Doug Wilcox, Manager of Research Administration. "But by far, the increase in soybean acres has outpaced that of other ITA crops."

In 2013, producers seeded 20,978 acres in the soybean ITA. Seeded soybean acres in the ITA jumped to 55,110 in 2015, and a remarkable 99,011 acres in 2016.

"Of course, soybean acres also increased across the rest of Manitoba in that time," explains Wilcox, "But the jump in ITA soybean acres was

significantly higher than Manitoba's overall increase."

In 2016, relative to the average acres in the previous three years, the increase in ITA soybean acres was most notable in the rural municipalities (RMs) of Grahamdale (242% increase) and Swan River (235% increase). The RMs of Gilbert Plains and Minitonas-Bowsman saw the most ITA soybean acres seeded in 2016, with 14,561 and 9,917 acres, respectively.

Seeded acres for other ITA-insurable crops have also increased since 2013. "Grain corn seeded in the ITA increased from 2,110 acres in 2013 to 3,389 acres in 2016," said Wilcox, "But by far, the jump in soybean acres is the big ITA story."

continued on page 17

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How well soybeans have performed in the ITA has most likely influenced their uptake. “MASC’s coverage for soybeans in the ITA was initially set at 80% of coverage in Soybean Area 3,” explained Wilcox. “In the first year of the ITA that was a reasonable level, but in the last couple of years, soybean yields in the ITA have exceeded 90% of yields in Area 3.” For 2017, MASC will be offering coverage in the ITA at 87% of coverage in Soybean Area 3.

Like soybeans provincially, MASC’s premium rates for soybeans in the ITA have decreased every year since 2013, mainly due to good experience with soybeans overall, as the ITA premium rate is factored from the rate for Soybean Area 3. The soybean premium rate in the ITA has dropped from 24% in 2013 to 16% in 2017.

“MASC will continue to monitor the results in the ITAs,” commented Wilcox, “But we will need more years of data before making any ITA changes.” Such caution is necessary, especially when the change would affect roughly 100,000 soybean acres.

One early indicator of this need for caution is that 2016 was the first year of data that captures any significant adverse cropping event. Of the 99,011 soybean acres grown in the ITA, 2,287 acres (2.3%) have remained out overwinter and will need to be harvested in spring (or destroyed).

“Up until 2016, the soybean ITA averaged only 0.1% unharvested in fall, which corresponds well to the rest of Manitoba,” explained Wilcox. “In 2016, though, the ITA’s 2.3% unharvested soybean acres is significantly higher than the provincial average of 0.9%.”

For now, MASC will continue to offer ITA coverage for areas outside traditional areas for soybeans, dry edible beans, lentils, grain corn, open pollinated corn and sunflowers on a trial basis.

“Production in the ITAs is encouraging,” summarized Wilcox, “But more monitoring and experience under a wider range of growing season conditions is needed to fully evaluate these areas.” ■

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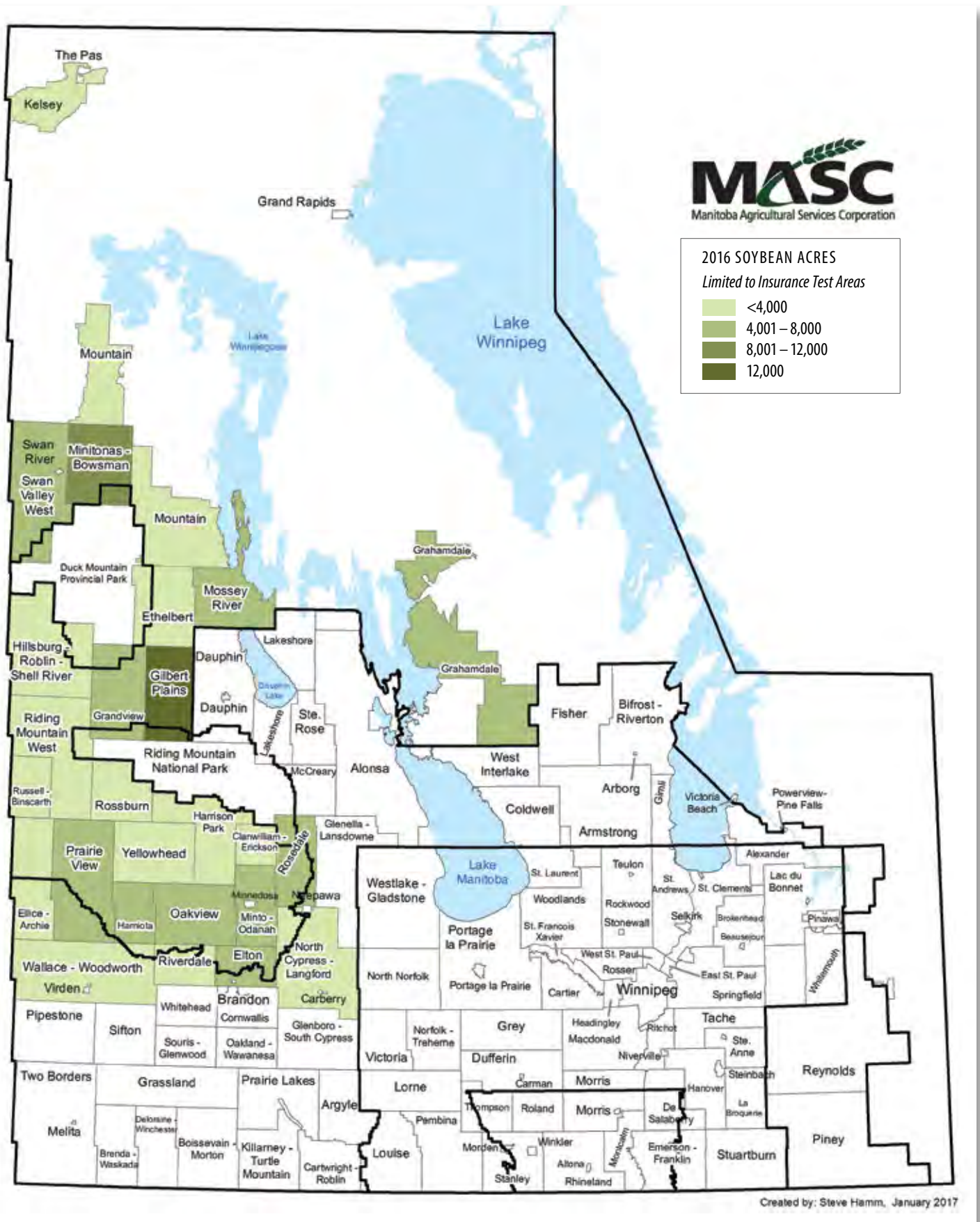
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Clancey's Stats

Brian Clancey, Senior Market Analyst and Publisher,
STAT Communications

DISAPPEARANCE FOR DRY edible beans have been trending upward since 2011, but average annual production in the North American free trade zone has not grown quite as fast. The net result is the stocks-to-use ratio has trended downward.

Annual variations make it hard to see these trends from one crop year to the next. It is clearer when you look at the rolling five-year averages for production, usage and ending stocks. Of the three numbers, the most significant is the stocks-to-use ratio. This tells you how many days worth of beans are on hand at the end of the marketing.

In recent years, that ratio has dropped from an average of 16% or 59 days between the 2006 and 2010

to 14% or 53 days in the previous five marketing years. This season is expected to finish with a stocks-to-use ratio of only 7%, or enough beans to cover 26 days of demand.

Combined plantings in Canada, the United States and Mexico should rise this year. Even so, if yields return to their recent average, production will likely remain just behind projected demand, resulting in a further reduction in ending stocks.

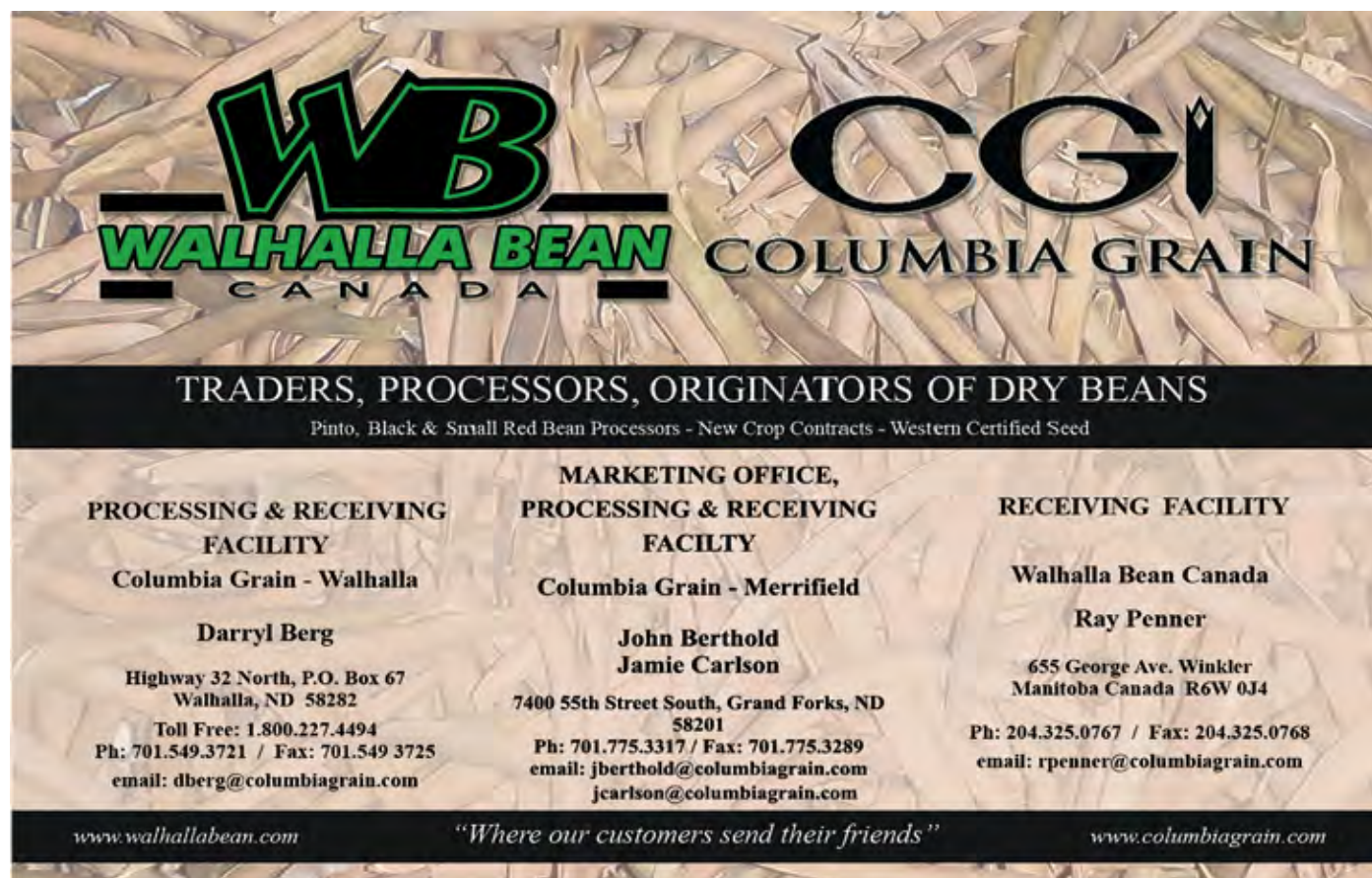
Competition for acres, especially in the United States, may not be as intense. Acreage in grains, cotton and oilseeds is expected to drop from 254.3 to 252.7 million acres. By contrast, land in chickpeas, sunflower, and possibly peas and lentils has the potential to rise. This suggests that while there will be less competition for acreage between pulses and other crops, there could be increased competition within the pulse category.

Area in peas, lentils and chickpeas has been climbing in Montana and

North Dakota. That helped lift last year's U.S. lentil area from 493,000 to 933,000 acres; peas from 1.14 to 1.38 million; and chickpeas from 207,500 to 331,000 acres. Historically, these crops have not directly competed with beans for land use. But, that is changing as growers gain experience and as they watch the price and movement performance of those crops.

Montana provides a good example of the evolving emphasis on pulse crops. The U.S. Department of Agriculture (USDA) reported that area in all classes of beans jumped from 49,000 to 103,000 acres. However, land in dry edible beans slipped from 8,400 to 7,000 acres, while chickpea area more than doubled from 40,000 to 96,000. The shift in North Dakota, which produces most of North America's pinto beans, was less dramatic with chickpeas advancing from 7,100 to 13,000 acres, while other classes of beans dropped from 647,900 to 612,000 acres.

continued on page 20





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Chickpea area will continue expanding in 2017. Some processors in the United States think it could double, as more growers in Montana, North Dakota, Nebraska and other areas shift land from dry edible beans and other crops.

Looking at prospective gross returns versus corn, wheat and soybeans, results from both chickpeas and lentils are above average. This is also the case versus other pulses, suggesting that where farmers have an option, they might look at switching to those crops. Looking at the growth of chickpea area and experience in Montana, it is obvious North Dakota has untapped potential.

Expansion of other pulses is of critical interest to domestic packagers and canners because North Dakota grows 31% of the U.S. crop and almost all the pinto beans. It is worth noting that production in that state averaged 36% of the U.S. crop between 2006 and 2010. Seeded area averaged 686,000 acres during that period, compared to the recent five-year average of 610,000.

There is reason to believe North Dakota's status will decline, but competition for land use among pulses is increasing as new varieties become available. This phenomenon is nothing new to Manitoba's industry, which faces stiff competition for land use from

soybeans. Area has not yet peaked in the province, but growth in area should slow because of the risks of expansion in new areas and rotational issues in existing areas.

That was emphasized by Manitoba Agriculture's Industry Development Specialist – Pulses, Dennis Lange in a presentation at the Manitoba Agronomists Conference in December. He expects soybean area to reach two million acres this year and average around 2.7 million in the coming decade. There might be years in the future where area reaches three million, but he does not believe that is sustainable because more farmers would be seeding crops in higher risk zones.

Some of the shifts underway in Manitoba, Montana and parts of North Dakota are partly a reflection of the structure of the North American dry bean market. The market is not as transparent as peas and lentils, which, in turn, are not nearly as transparent as soybeans. Similarly, soybeans are generally easier to market than peas or lentils, which are typically easier to market than dry beans. For growers, these are important factors when markets are strong because without the ability to sell, high prices are meaningless.

Looking forward to the coming crop, most classes of beans are putting in a better gross income performance than peas. But disappearance is not as strong. If the USDA stocks in all positions reports are accurate, 53% of the available supply of peas disappeared between harvest and December 1, compared to 51% during the same period last season. By contrast, inferred lentil disappearance dropped from 80% to 62% of the available supply.

The implication is peas are one of the easiest pulses to market, which partly offsets some of the impact of lower gross income potential relative to other pulses. Market performance over the next couple of weeks will go a long way to determining the final mix of pulses sown and the degree to which dry bean expansion is limited by interest in other pulses and soybeans. ■



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Getting it Right Another Success!

SOYBEAN PRODUCTION MEETING

Manitoba Pulse & Soybean Growers (MPSG) held its third annual Getting it Right (GIR) – soybean production meeting at the Canad Inns Destination Centre in Portage la Prairie on Feb. 2, 2017. Approximately 120 participants spent the day learning about soybean agronomy, and, to a lesser extent, soybean marketing challenges and opportunities.

In an effort to provide participants with unbiased, reliable production information, MPSG invited speakers from public institutions to present their research results and recommendations. This farmer-exclusive event was an opportunity for MPSG to share results from its investment in soybean and pulse research, as well as bring in expertise from other soybean growing regions.

In addition to being an educational event, GIR also provided participants and presenters an opportunity to network. After the morning presentations where attendees heard from North

Dakota's Dr. R. J. Goos and Dr. Aaron Daigh, as well as Soy Canada's Jim Everson and Manitoba Agriculture's Dr. Jeanette Gaultier, participants had time to attend four of the eight Table Talk stations.

Each Table Talk ran for 25 minutes and offered an introduction or demonstration on one particular topic led by experts from MPSG, U of M and elsewhere. Participants were broken up into small groups (5–20 people), facilitating a comfortable, engaging environment where farmers could learn and ask questions or initiate conversation with the others in the group. MPSG received excellent feedback from participants who found the discussion and exchange of ideas valuable.

MPSG would like to thank *Growing Forward 2* for funding support, as well as Top Crop Manager for sponsoring the GIR networking session. And thanks to everyone who attended. It was a great event, and we hope to see you all next year!



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Be Careful when Applying Dicamba on Xtend Soybeans

Tom Wolf, Agrimetrix Research & Training, Saskatoon and
Jason Deveau, Ontario Ministry of Agriculture, Simcoe

BY NOW YOU may have heard cautionary statements about the use of dicamba on Xtend soybeans. There appears to be a lot of concern about spray drift. What is this all about?

The herbicide dicamba has been a part of Canadian agriculture for two generations. First discovered in 1958 and introduced into the U.S. in 1967, dicamba has been known as Banvel and Banvel II in Canada (Banvel and Clarity in U.S.), and is a common ingredient in both agricultural and lawn weed control products. The original forms of dicamba, the dimethylamine (DMA, Banvel) and diglycolamine (DGA, Banvel II) salts are known to be volatile, with the DGA salt a three-fold improvement on the DMA salt.

Dicamba has now been re-introduced as two new formulations with the advent dicamba-tolerant Roundup Ready 2 Xtend soybeans. **XtendiMax with VaporGrip** by Monsanto is the DGA salt with a vapour-reducing adjuvant. It has been tested by Monsanto and their data show it has significantly less vapour losses than the original DGA formulation. The product is licensed to DuPont under the name **FeXapan herbicide plus VaporGrip**

Technology, but its availability is unknown at this time.

BASF's new low-volatile formulation of dicamba is **Engenia**. It's a new low-volatile salt; bis-aminopropyl-methylamine, BAPMA for short. It has significantly less vapour losses than the DGA salt, about a three-fold improvement according to Dr. Kevin Bradley, University of Missouri.

The underlying problem with the use of dicamba is the high sensitivity of conventional soybeans to the product. Work by Dr. Bradley in Missouri and others has shown that soybeans can show visual damage symptoms at 1/20,000 of the field rate, and yield losses from vapour and particle drift at 1/1000 and 1/100 of the label rate, depending on the soybean growth stage. The vapour aspect is being managed by these new dicamba formulations, and it will be illegal to apply the older products (Banvel, Banvel II) to the new cultivars.

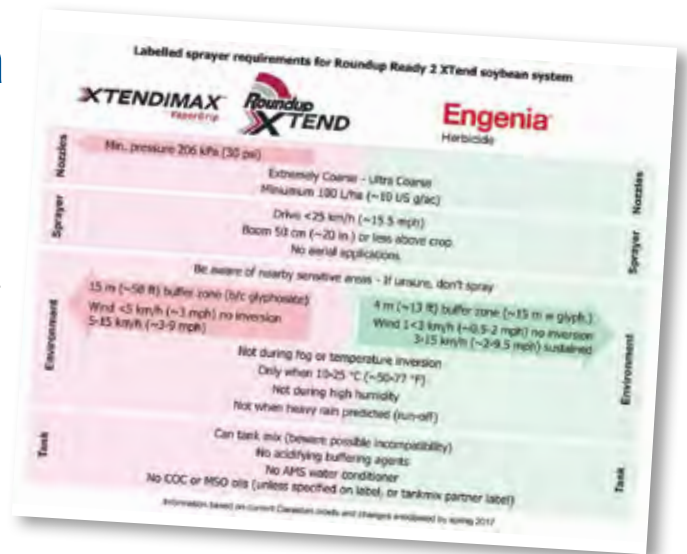
Despite the new dicamba formulations, spray drift will remain an issue. While these formulations reduce vapour

drift, they do not change particle drift. Let's review the four ways that non-dicamba tolerant soybeans can experience dicamba damage.

1. PHYSICAL OR PARTICLE DRIFT

All spray nozzles produce some driftable fine droplets. Low-drift nozzles produce fewer fines, and in Canada, the spray quality recommended for dicamba on Xtend beans is Extremely Coarse (XC) and Ultra Coarse (UC). Nozzle manufacturers publish their products' spray qualities, and a good selection of nozzles from all major manufacturers are available. These and other limitations can be reviewed in the label information above. Note that the U.S. labels are different. Those currently only allow the TeeJet TTI 11004 nozzle at 60 psi or lower to be used.

continued on page 24



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2. TEMPERATURE INVERSIONS

These atmospheric conditions appear on most summer nights. They begin at dusk, persist and grow overnight, and begin to dissipate after sunrise, and are popular with some applicators because of the associated calm conditions. The main issue with inversions is that they allow the long-distance movement of a drift cloud without reducing its potency. The resulting damage, which can be the result of particle or vapour drift, has no apparent pattern, having the same severity throughout an affected field. Under turbulent conditions, normally when it's sunny or a bit breezy, the spray drift cloud dissipates quickly with distance and damage is limited.

3. VOLATILITY

Volatile products can evaporate, even from dry deposits, for several days after application. The vapour loss depends on temperature, and may be exacerbated by moisture for some products. We're

hopeful that the vapour aspect of dicamba damage can be managed with the new formulations. But their performance can be undone with some additives. The new labels prohibit the use of acidifying buffering agents or AMS water conditioner, for example, as these have been shown to increase volatility. Remember that the use of the older, more volatile formulations of dicamba is illegal on the dicamba-tolerant soybean cultivars.

The underlying problem with the use of dicamba is the high sensitivity of conventional soybeans to the product.

4. SPRAYER CONTAMINATION

With even a tiny amount of dicamba capable of causing significant soybean damage, it will be important to thoroughly clean a sprayer after dicamba use and before entering non-dicamba tolerant soybeans. Experiences in Missouri showed that just 250 mL of tank mix left in a tank, presumably diluted in 800 to 1200 gallons (a 12,000 to 18,000-fold dilution), was enough to cause significant soybean yield loss. Minimizing the remainder volume, then triple or quadruple rinsing with detergent, and also checking screens and flushing boom ends, will be necessary. Check Sprayers101.com for a handy dilution calculator that shows how effective your rinse is.

The stakes are high. Let's be careful out there. And remember to check Sprayers101.com for any information relating to spray drift, inversions and tank cleanout. ■

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Rye Grass Seed, Perennial
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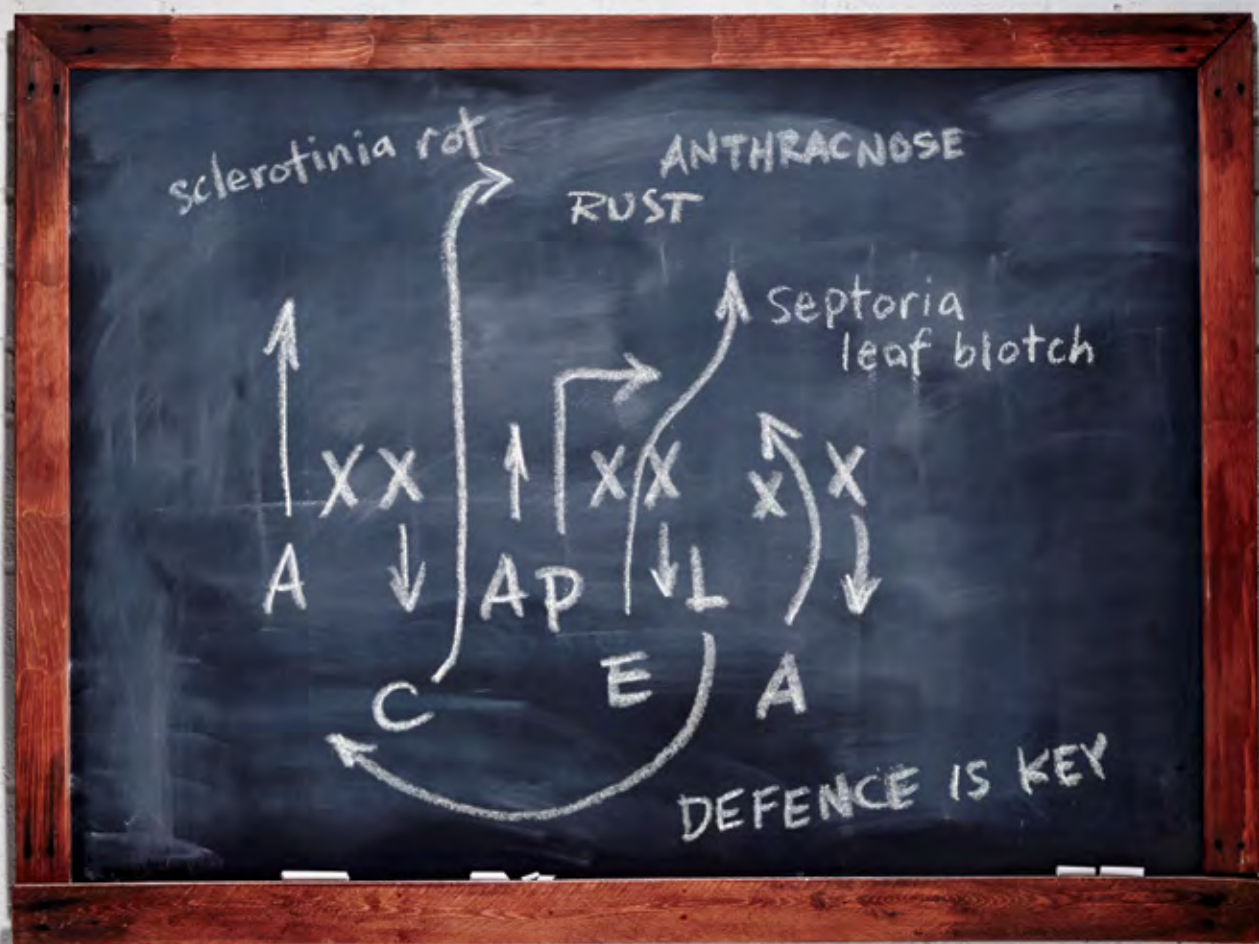


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Researcher Profile

Anfu Hou, Research Scientist, AAFC

Toban Dyck, Director of Communications, MPSG



IT TAKES ABOUT 10 years to develop a new bean variety. And the process involves high-level science, sexy gadgets, and a lot of brainpower.

Meet Dr. Anfu Hou. He is a research scientist with Agriculture and Agri-Food Canada (AAFC) and an advisor on the Manitoba Pulse & Soybean Growers (MPSG) Board of Directors.

Hou is stationed at the AAFC Research Centre in Morden, Manitoba, where he specializes in bean genetics and breeding, making varieties better suited to our climate and soil. He is passionate about what he does.

How did you become interested in plant breeding?

Breeding, variety development, and genetics – these are a big part of agronomy and agriculture. It's a very important discipline.

I studied horticulture – in general vegetable science at Shandong Agricultural University in China from 1982–1986. From there, I became very interested in plant breeding and genetics.

I moved to the U.S. as a visiting scientist in 1994, where I worked with the USDA for just longer than a year, learning molecular markers, breeding, and genetics. Then I became so fascinated with all the new research in the new areas, and, of course, the language.

I have always been very interested in language. I liked the culture. I liked the language. I thought, why not stay longer to learn these things.

After completing my PhD at Texas Tech, my wife, daughter and I moved to Ontario. I became a visiting fellow at AAFC. We were looking for more permanent opportunities. I moved to the University of Arkansas in 2005, working

with their soybean breeding program. That's where I learned about bean and soybean breeding, specifically. Then, this job opportunity came up.

It was 2008 when I moved to Morden. Soybeans were already big in Arkansas, but had yet to take off in Manitoba. There was soybean acreage here, but not much.

There was probably about 200,000 acres across Manitoba at that time. For a few years it was this way, then all of a sudden the numbers started to soar.

The acres have increased to more than a million in the last three or four years.

What is your focus at AAFC?

My focus is mostly edible beans, but there is a component of soybean work within this program – with MPSG and GF2 funding.

When you grow a new variety and it works, what happens next?

It can then be used as breeding material in the development of new varieties. To do so, we combine different genetics. We use different materials from various genetic backgrounds to develop varieties with a bunch of positive traits.

This is very interesting, and I want to make sure I get this right. Walk me through what it means to breed a plant.

You want to develop a good variety. What's a good variety? First, it should yield well. Otherwise, farmers will not grow it.

So, with a good yield, you also look at many other traits. Yield is not the only purpose for breeding. You also want the right plant height. It can't be too short. A short plant wouldn't yield well. It can't be too tall. It would then be prone to lodging. The plants have to grow upright for machine harvesting without loss due to lodging.

And we look at maturity. Later maturing plants tend to have higher yield, but they wouldn't be able to mature here in Manitoba.

We also consider the seed size. There are small, medium and large seed sizes. Each one is used for a different purpose.

There is a soybean type called natto bean. It's for the Japanese market. Natto is a traditional Japanese dish. It's sticky.

It's tasty. And people just love it. The seed has to be a very small size. When they ferment these beans, the seeds have to produce the right colour, the right taste, the right texture.

Larger soybean seeds are often used to produce tofu, soymilk or



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soy sauce. These seeds usually produce more protein.

The medium-sized soybean seeds are usually used for crushing. And for crushing, the market isn't as picky about hilum colour as some other types.

So, you have to look at all these traits, and disease resistance.

When you create a new variety, you pick and choose the traits required for it to flourish in a specific environment. This material has resistance to bacterial blight, anthracnose or other diseases. This material has very good seed size, and it yields well. Then, you put all these materials together.

How does that process work?

It's very technical. My technicians usually do it. You collect the pollen from the anthers of one plant and introduce it to the stigma of the receiving plant's flower. This fertilizes the plant, which will then produce hybrid seeds.

Do you typically only introduce one trait per year when you're developing a new variety? Or, can you introduce multiple traits on one pollination?

It's not that simple. There are many ways. By combining these two traits, you've created a hybrid. This hybrid will have both traits. The next year, if you combine another trait with, say, resistance to cyst nematode and resistance to root rot, then you've effectively combined four traits.

You then take these seeds, grow them, and make breeding selections.

So, you have these seeds, each one carrying various traits specific to healthy growth in our region, then you plant these seeds. Do you physically walk in that field and select the plants that best exhibit the traits they were bred to carry?

We call it making breeding selections. Say you grow 500 plants. They all look different. You walk through the field and say, 'I like this plant. It has good plant height, good yield potential.'

And all these traits are controlled by genes. Some of these traits are controlled by single genes. For instance, flower colour can be controlled by a single gene. Whereas other traits are controlled by multiple genes. In cases where traits – like height and many more – are controlled by multiple genes, it can take the plant a long time to stabilize. That's why we need to work with many generations in order to purify the variety.

So, of the 500 plants, you probably select 50 or 75 to grow again the following year. You grow them again and repeat the process.

Typically, it takes about 10 generations to develop a variety, which is often about 10 years.

Some researchers grow multiple generations per year, either by doing so in controlled environments or sending seeds to research stations in South America during our winter months.

We used to do this during the development of our edible bean varieties. We would send our bean seeds to Chile.

Since you've been here, have varieties developed at the Morden Research Centre been released to the market?

A few years ago, in 2010, we developed and registered a variety called the Portage navy bean. It's very upright. And it's the first navy bean variety around here that has resistance to bacterial blight. We have seen consistence with this variety. It has good resistance. It's very early, as well. And it has a very respectable yield potential.

We have developed another variety called the Carman Black. It's another early variety, and it has good adaptation to cold and wet conditions.

I was involved with breeder seed production for the Portage navy. I developed the variety and produced breeder seed.

And this year, we're working on one really promising cranberry bean variety. It's slightly later than the one we have in production. But it has extra disease resistance and extra yield.

This new variety has resistance to anthracnose, which was lacking in previous varieties. We are working at introducing this variety into local production.

Have you come across a scenario where the trait you are looking to develop does not yet exist in plants?

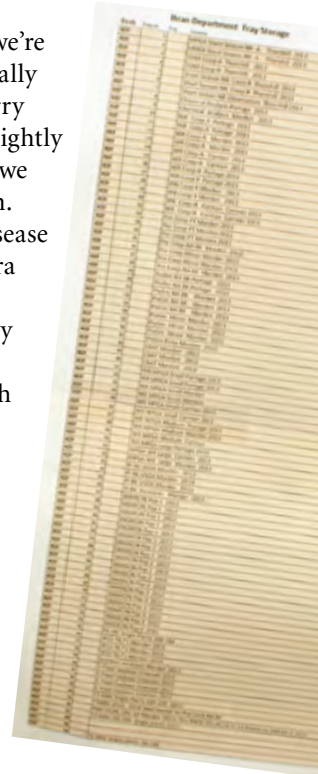
Every trait you could ever want already exists. But if we don't have a particular trait on hand, we have to find it. We have to look for the germplasm.

We have materials from Michigan, Ontario, Colorado and Nebraska. These are longer season varieties, but we want to use them, so we cross them with our shorter season varieties. And sometimes we want to extend a plant's maturity.

Introducing a trait that extends maturity three or four days could mean a yield increase of up to 10 per cent. We are growing later and later maturing varieties here now.

How do you decide which traits to introduce?

This is very simple. Yield. It's always our primary focus. Then disease resistance, concentrating on all of the diseases we have in this area – bacterial blight, white mould, anthracnose, root disease. I work closely with our plant pathologist Dr. Bob Conner to make sure varieties have disease resistance.



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We also take into consideration seed quality and appearance. It's an end-use consideration. The consumer decides.

For breeding, we have to look ahead; considering trends today and hoping the varieties we begin developing today will be relevant 10 years from now.

We develop lots of germplasm here. And I've memorized most of what we have to work with and the traits each one carries. I think, "this material might marry well with that material." And then we will try them and see what happens.

What projects or varieties are you working on right now?

A large portion of Manitoba's edible beans are used for canning. Many of our navy beans are exported to the U.K. for canning. You have to make sure the beans meet their canning requirements.

One project my postdoc has been working on is to improve edible bean seed hardness. When I came here, one complaint I received was that stone seeds appeared in some of our samples.

When people cook their beans, they usually soak them first. Normal beans would hydrate during this process. Some samples of edible beans from our area wouldn't hydrate. They would stay hard, even after cooking. We call those stone seeds.

This is a bad trait, which is genetically controlled. We select traits of beans that can hydrate.

We use molecular markers and try to study the genetics of this trait that keeps the seeds from hydrating and getting soft. We call this genetic mapping.

We determine the genes that control stone seeds using molecular markers. We have mapped one major gene and that gene controls the stone seeds. We've also mapped two extra genes that modify this major gene. Together they control the stone seeds trait.

For each chromosome, there are hundreds if not a thousand genes. You have to figure out which gene it is. It's so interesting. I'm so glad we've made progress on this.

We are putting the data together, drafting the manuscript to report the findings. But we still have work to do.

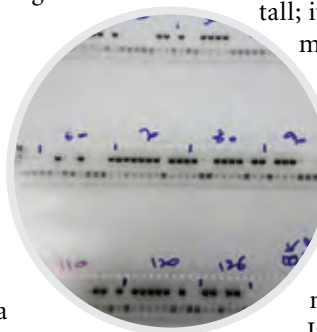
When you say genetic or molecular marker, what do you mean?

Traditionally, when you look at a variety, you just see what appears to you. It grows to be this colour; it's this tall; it has this kind of leaf; and many more observable traits. This is conventional genetics. It's a visual inspection.

We can now extract the DNA and detect the genes. Each time we associate a DNA sequence to a phenotypic trait, we create a marker.

If you have two varieties. This one has a whiter colour. That variety

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doesn't. You can see the difference. The white colour is a marker. Now, on a DNA level, using instruments, you can detect the difference.

They look like dots.

What will plant breeding technology look like 10 years from now?

That's tough to say. Recently, we've been working on chemical analyses. In the past, we didn't know the chemical makeup of seeds.

Now, with MPSG support, we are working with the Canadian Grain Commission on 20 major breeding materials, analyzing their components: starch, protein, fibre, minerals and more. How can we use them? This one has higher calcium. How can we use it?

We have new ways to analyze these different traits.

I'm involved with a project with Dr. Nancy Ames working on a food science project related to nutritional values and the corresponding traits. We are looking at the digestibility of different beans. They have this machine that imitates the animal digestive system.

You put the bean in, and it goes through the chemical processes of animal digestion. This new tool exists. And if we can combine its potential with plant breeding, then will be able to do things we haven't even imagined yet.

It's the new era of breeding, but in the end we have to put that into the field. You still have to develop a variety that grows well, producing high yields and exceptional quality.

Are you working with any new market classes?

There are many different bean types we haven't even seen here. But we have to make sure there is market demand. A few years back, there were no yellow beans around here.

We started working with people to develop yellow bean types. Now, there are a few hundred acres in production.

There is also the slow darkening pinto bean. Years ago, pinto beans darkened quickly after production. This new pinto will look very bright and fresh for more than half a year after production. We've been working on this.

I submitted a proposal this year that was funded by MPSG. I'm trying to develop azuki (or adzuki) bean varieties for our region. It's a very popular bean in Asian markets, and there are about 20,000 acres in Ontario.

I've grown this bean for two years here in Morden. It has done very well. Now, we have to make selections. It's a three-year project. I hope, by the end, we'll have one or two varieties for farmers to choose from.

I've been working on getting mung bean in production. There is huge market demand for this crop type.

Talk about the work you are doing with soybeans.

I've been working on soybeans for quite a number of years now. I've been working with a breeder in Ottawa making selections based on protein levels and seed size – food grade types. We also look into the protein content

variation when soybeans are grown at different places. We grow the same materials in Morden and Ottawa.

For two years now, Morden protein levels have been two per cent lower than in Ottawa. We have one more year of this trial, before we compile our three-year data. However, to report reliable results, it has to run for a longer period of time. This will only be a preliminary report.

We will seek to report soybean protein discrepancies across all regions in Canada. Then we will have to work further, asking ourselves why the difference? Are there ways we can improve?

We have materials with higher protein, but we also need to consider yield.

We have all the yield, but now we need to start paying attention to other things – namely, protein. We need to improve the average protein to more than forty per cent in Manitoba-grown soybeans.

We're working on it now, and people will be working on this stuff for many, many years down the line. We are developing our own materials and becoming less reliant on using materials from other places, like, say, Ontario, where they've been growing beans for much longer than us.

Whatever we generate here in Morden, Manitoba farmers can use. And that is exciting. ■





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on-farm network

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A network of on-farm research related to soybean and pulse crops that is fully funded and directed by Manitoba Pulse & Soybean Growers. All research in this network is based on three important principles:

1. **Participatory** – Conducted on-farm with farmers, involving you in the research process
2. **Precise** – Data produced is unbiased, accurate and robust
3. **Proactive** – Results delivered to guide management decisions and improve profitability of farmers in Manitoba

BENEFITS

As a farmer, you benefit from producing results directly on your farm and applying the knowledge to guide management decisions that will increase your profitability. MPSG benefits from producing reliable results across a wide range of environments, allowing us to make robust production recommendations for all pulse and soybean farmers.

REQUIREMENTS OF THE FARMER

- Keep in contact with the research partner on timing of field operations and field records
- Be equipped with GPS technology
- Establish replicated strip trials comparing the treatments as outlined in the protocol
- Harvest strips into MPSG weigh wagons for accurate results
- Must be a member in good standing with MPSG

RESPONSIBILITIES OF THE RESEARCH PARTNER

- Provide technical and logistical support to farmer
- Be present at seeding (or spraying) and harvest
- Take all field measurements required
- Provide the farmer with a full report
- Keep data confidential
- Minimize work for farmers

2017 TRIALS

All trials listed have been approved for 2017 and are open for farmers to participate. These trials are replicated strip trials where yield differences are measured using an MPSG weigh wagon.

1. Soybean Potassium Fertility Trial

- Compare sideband (60 lbs/ac) or broadcast (120 lbs/ac) potash vs. no fertilizer
- Field must have soil test K level <150 ppm

2. Soybean Inoculant Trial

- Compare inoculated vs. uninoculated seed
- To participate in this trial, you must have a field that has had at least three well-nodulated soybean crops, with the most recent in 2014 or later

3. Western Manitoba Soybean Inoculant Trial

- Compare seed applied vs. seed applied + in-furrow inoculant
- To participate in this trial, you must have a field that has had at least two well-nodulated soybean crops, with the most recent in 2014 or later

4. Soybean Foliar Fungicide Trial

- Compare soybean sprayed (Acapela, Priaxor or Delaro) at R-1 vs. unsprayed

5. Soybean Seed Treatment Trial

- Compare treated vs. untreated seed
- Seed and seed treatment will be sourced

6. Western Manitoba Soybean Seeding Rate Trial

- Compare your normal seeding rate vs. lower seeding rate (30,000 seeds/ac less)

7. Dry Bean Fungicide Trial

- Navy or pinto beans sprayed vs. unsprayed

8. Field Pea Fungicide Trial

- Compare field pea sprayed at early flower vs. unsprayed

- To participate in the trials, sign up at www.manitobapulse.ca

For more information, please contact Greg Bartley
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Keeping the Soybean Honeymoon Alive – Part Two

Preventing Glyphosate Resistance

Kristen Podolsky MacMillan, MSc, PAg, Applied Soybean and Pulse Agronomist, University Manitoba

GLYPHOSATE RESISTANT KOCHIA

has been confirmed in five Manitoba municipalities (Figure 1) – is yours one of them? Waterhemp is also a new weed in our province and is suspected to be glyphosate resistant. While herbicide resistance is not a new concept or problem, it seems that resistance to glyphosate attracts more attention and creates more urgency – likely due to its non-selective, *invincible* nature combined with its wide use and dependency. Either way, it's a problem that is here and will continue to spread unless we take action. We are told from industry that there is no new mode of action expected to be available for at least 10–15 years, so we need to preserve the tools we have. We've also always been told by weed biologists that it's

only a matter of time, and here it is. Glyphosate resistance earns a spot in this series discussing the issues we need to be aware of and prevent to keep the soybean honeymoon alive and well in Manitoba.

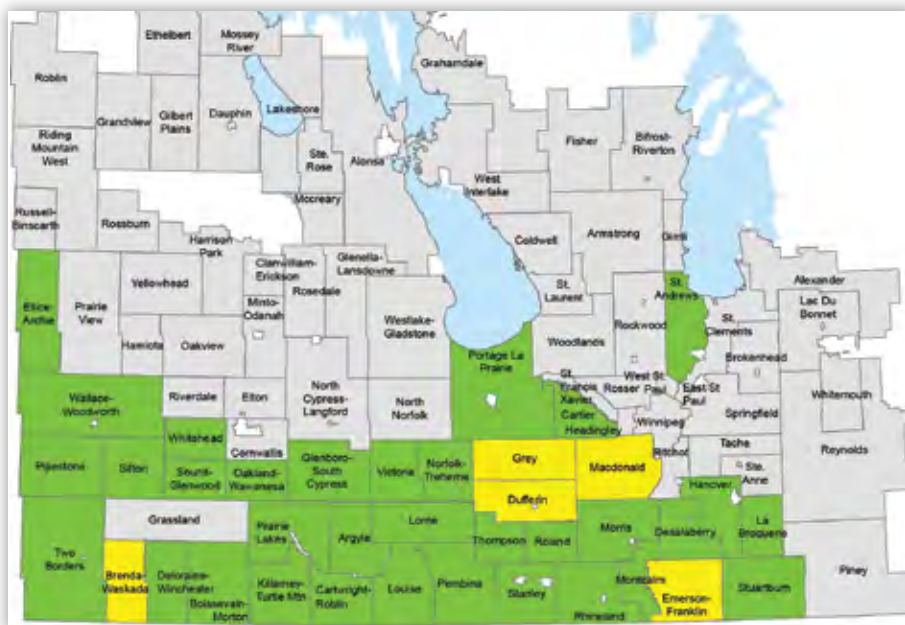
CURRENT SITUATION AND WHAT TO EXPECT

There are currently five glyphosate resistant (GR) weeds in North Dakota and Minnesota – giant ragweed, common ragweed, kochia, Canada fleabane and waterhemp. It only took seven years for these weeds to spread across two states (Figure 2). In Manitoba, the first confirmed case of GR kochia was in 2013 and a suspected case of GR waterhemp was detected in the Red River Valley in 2016. The

next four years will be critical for us to change our management practices and prevent the rapid spread seen down south. Flooding in the Red River Valley is a potential source of weed seed entry from the U.S. and farmers with adjacent cropland should scout carefully. Monitoring the situation in the U.S., surveying weed populations, knowledge of weed biology and current cropping practices can help predict what could be next. A prairie-wide weed survey in 2016 revealed the most common weeds found in Manitoba soybean fields (Table 1). When considering weed biology, relative abundance and cropping practices, weed scientists have listed wild oat, green foxtail and wild buckwheat to be the most likely to develop glyphosate resistance next, all of which are included in the top 10 most abundant weeds in Manitoba soybeans. Many farmers already manage group 1 resistant wild oats and group 2 resistant kochia – what if those weeds also became resistant to glyphosate?

▼ Figure 1. Glyphosate resistant kochia confirmed (yellow) and tested (green) throughout Manitoba (Source: Manitoba Agriculture)

GLYPHOSATE-RESISTANT (GR) KOCHIA DISTRIBUTION (2016)



HOW AT RISK IS YOUR FARM?

If you are reading this, I am assuming you grow Roundup Ready soybeans, corn and/or canola in rotation. Any farm that uses glyphosate or herbicides for that matter, has the potential for herbicide resistance to develop, but the level of risk can vary significantly depending on cropping practices. To gauge your level of risk, ask yourself the following questions:

- Do you grow Roundup Ready crops one in two years?
- Do you often apply glyphosate alone?
- Do you apply glyphosate multiple times per year?
- Have you noticed a shift in weed species on your farm?

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Table 1. Top 10 most common weeds found in soybean fields in 2016 (Source: AAFC and Manitoba Agriculture)

1	Canola/rapeseed
2	Wild buckwheat
3	Barnyard grass
4	Dandelion
5	Redroot pigweed
6	Spring wheat
7	Green foxtail
8	Yellow foxtail
9	Wild oats
10	Broad leaved plantain

This self-assessment is critical to help you as farmers and agronomists understand the risk factors involved with development of GR, the more responses with “yes,” the higher the risk for developing GR. The consequences of which can include increased herbicide costs, reduced yields, management complexity and limitations to the crops you can grow.

WEED RESISTANCE RISK ASSESSMENT

To complete the full risk assessment for weed resistance, visit www.weedtool.com

SOYBEAN PRODUCTION TIPS TO PREVENT GLYPHOSATE RESISTANCE

- **Don't just use glyphosate** – Investing in a pre-emergent herbicide, especially with residual activity, is a good option to manage early season weeds and take the pressure off the subsequent glyphosate application. Think about how often glyphosate applications are late due to wet conditions – if you include a pre-emerge, you can have more flexibility in the timing of the first glyphosate pass if there are weather delays. Several broadleaf herbicide options are available to tank-mix with glyphosate to reduce in-crop selection pressure.
- **Consider row spacing, seeding rate and fertility** – Risk of GR developing in soybeans is particularly high due

to their slow early season growth, which makes them poor competitors with weeds. Planting soybeans on narrow rows allows the canopy to close sooner, which is important for weed competition (better yield too). Planting at higher rates and low residual N can also reduce weed competition in some cases.

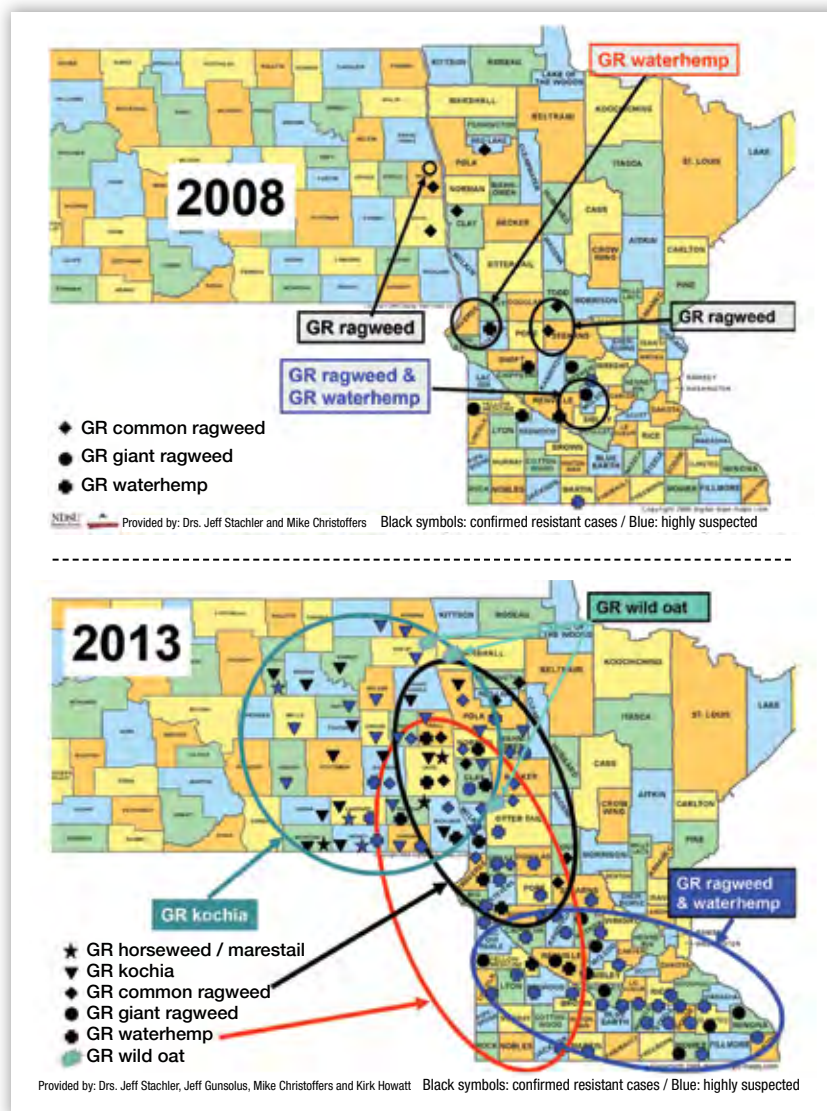
- **Diversity in rotation and herbicide systems** – Wheat, barley, oats, canola and forages are very competitive crops and they require different herbicides. All Manitoba crop rotations should include competitive crops and ideally,

a mixture of cereals, oilseeds and legumes. In my mind, crop diversity is the secret ingredient that western Canadian farmers have compared to our friends down south fighting major GR challenges. Like canola, we also have diversity in herbicide systems for soybeans which can be utilized – Roundup Ready (glyphosate tolerant), Extend (dicamba and glyphosate tolerant) and conventional or non-GM.

- **Practice zero tolerance** – If you notice weed escapes and suspect herbicide resistance; document the occurrence,

▼ Figure 2. Spread of glyphosate resistant weeds in North Dakota and Minnesota from 2008 to 2013 (Source: NDSU)

GLYPHOSATE-RESISTANT WEEDS IN NORTH DAKOTA AND MINNESOTA



continued on page 34

submit a sample to Pest Surveillance Lab in Winnipeg and develop a plan to prevent the weeds from setting seed. Zero tolerance also includes managing field borders, ditches and cleaning equipment.

- **Regular scouting and proper weed identification** – Knowledge of weed species, density and growth stage helps determine appropriate herbicide strategy and scouting after application allows for early detection of potentially resistant populations. Misidentification is commonly a problem for kochia vs. biennial wormwood vs. ragweed, green vs. yellow foxtail and redroot pigweed vs. waterhemp.
- **Develop a detailed integrated weed management strategy** – Based on your farming system and weed challenges develop a weed strategy that includes chemical, cultural and mechanical strategies for each weed and crop year (Table 2). ■

Table 2. Weed management strategies for problem weeds and crop rotation

	Year 1 – Soybean	Year 2	Year 3	Year 4
Ex. Kochia (2, 9 resistant)	• Avoid problem fields or areas with salinity • PRE herbicide (14 or 3) • Narrow row spacing • Scout after herbicide application to assess efficacy • Utilize fall or spring seeded cover crop • Tillage or mowing • Extend soybeans – dicamba (4) + glyphosate (9)			
Ex. Wild oat	EXAMPLE			

Do you know about *The Bean Report Scouting Network*?

The Bean Report Scouting Network is a representative sample of farmers from across the province that allows MPSG's production specialist to survey their fields throughout the summer, as well as monitor crop conditions and pest pressure.

To join the network for 2017, contact Cassandra: cassandra@manitobapulse.ca



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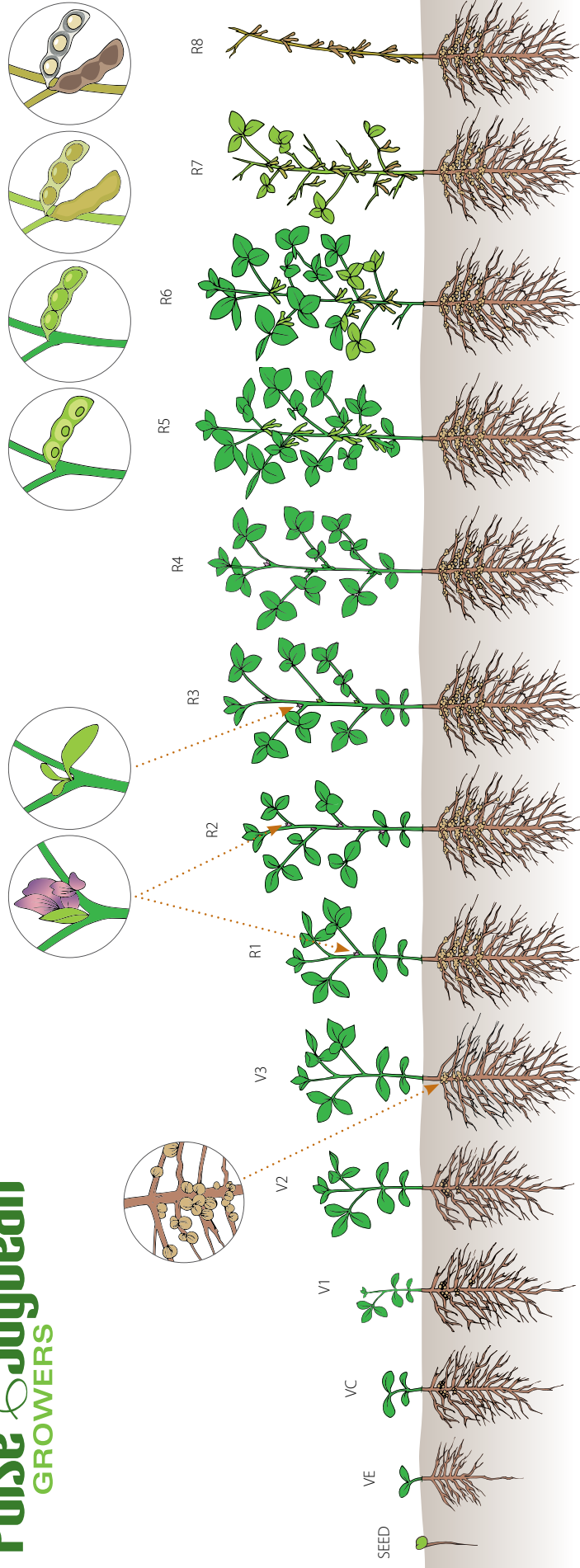


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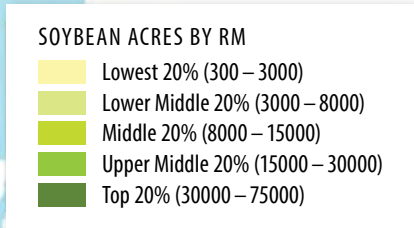
..... Seed development in uppermost part of stem



SEED	VE	VC	V1	V2	V3, V4...	R1	R2	R3	R4	R5	R6	R7	R8
Average days from planting (range)	10 (7-21)	20 (20-30)	25 (25-30)	30 (30-35)	35 (35-40)	45 (40-50)	50 (45-55)	60 (50-70)	70 (65-75)	80 (75-85)	90 (85-95)	110 (105-115)	120 (105-125)
	May		June				July			August		September	

KEY CROP SCOUTING ACTIVITIES

Weed control													
Plant population													
Iron Deficiency Chlorosis													
Root rots and soil insects													
Foliar diseases, defoliating insects and aphids													
Max height, biomass													
Maturity													
Stem diseases													



20 0 20 Kilometers

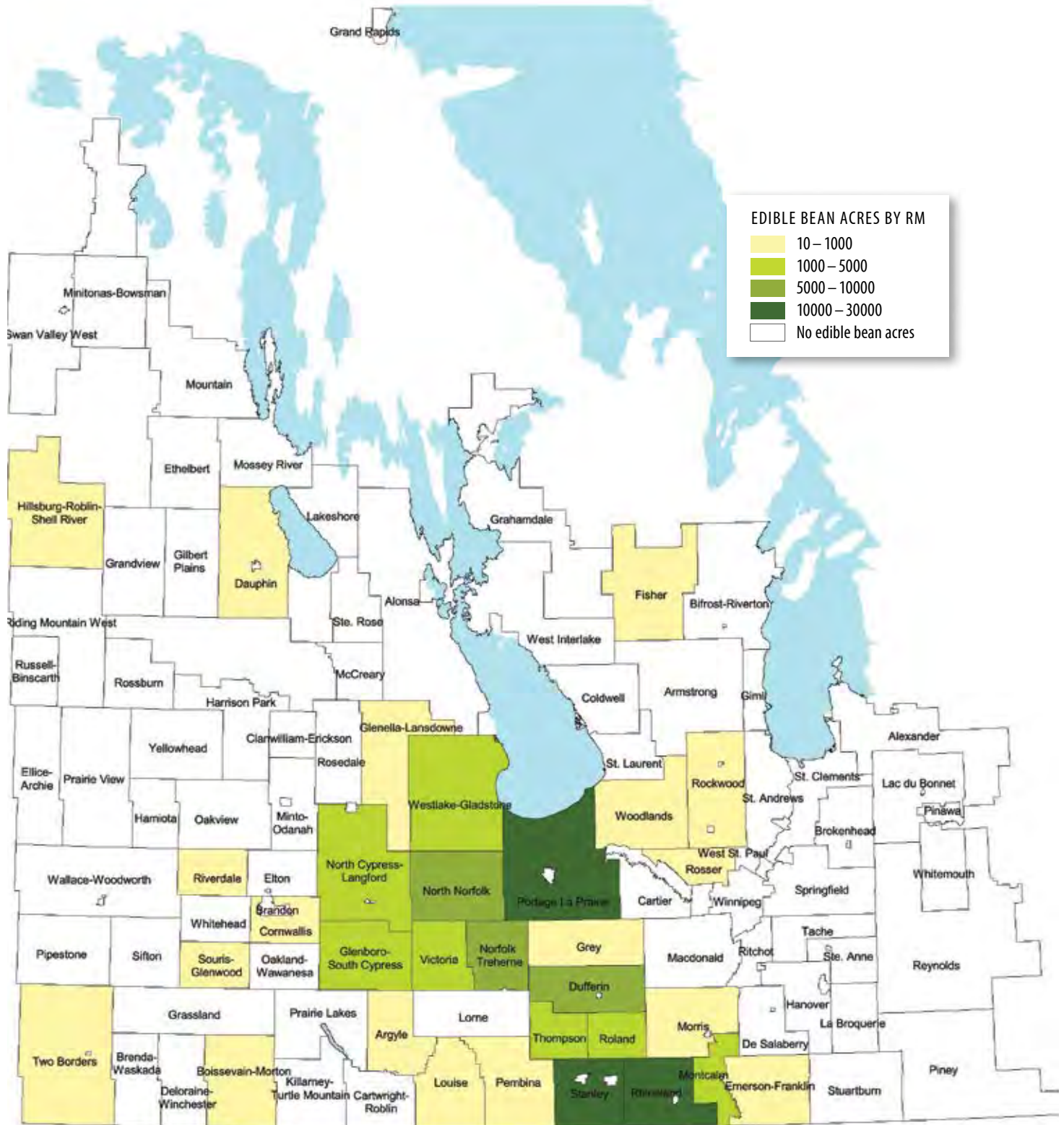
MANITOBA
Pulse Soybean
GROWERS



2017-02-01

Data Source: MASC Crop Insurance

2016 Edible Bean Acres by Municipality



20 0 20 Kilometers

1:2250000

MANITOBA
Pulse Soybean
GROWERS



2017-02-01

Data Source: MASC Crop Insurance

Soybean Special Inputs On-Farm Trial

HAVE YOU WONDERED if additional nitrogen (N) fertilizer or other products could squeeze an extra few bushels from your soybeans? MPSG's On-Farm Network collaborator, Brent VanKoughnet of Agri-Skills Inc. completed the final year of a two-year project to test just that: whether supplementary N or other specialized products applied at various timings could provide a cost-effective yield increase to soybean production in central Manitoba.

NSC Richer certified soybeans were seeded on 30-inch rows, at 170,000 seeds per acre with a 1x rate of liquid inoculant and planted on May 25th in

2015 and May 18th in 2016 in a field near Carman, MB. Products, rates, application timing and placements are listed in Table 1. Treatments 3 and 4 were applied on July 13th in 2015 and July 18th in 2016. The sites received rainfall soon after the UAN treatments were applied, therefore, we assume that N losses due to volatilization were minimal.

YIELD RESULTS

Average seed yield across all treatments in 2016 was 46.7 bu/ac, which was slightly higher than the provincial average (42 bu/ac). Seed yields of individual treatments ranged from

46.2 to 47.3 bu/ac, but yield differences among treatments were not statistically significant (Table 2). Similar results were observed in 2015, with an average seed yield of 34.5 bu/ac and no statistical significance between treatments (Table 2). Because none of the fertilizer treatments increased soybean seed yield relative to the untreated control, economic analysis was not conducted.

Possible explanations for the lack of response to additional starter N or phosphorus (P) fertilizer could be due to adequate nodulation and soil test N and P levels providing the crop with a sufficient nutrient supply throughout the growing season. ■

Table 1. On-farm trial special input treatments

Treatment	Product ²	Nutrient Analysis (% N-P ₂ O ₅ -K ₂ O)	Product Rate Applied (US Gallons/ac)	Nutrient Rate Applied (lbs/ac N-P ₂ O ₅ -K ₂ O)	Application Placement/Timing
1	Untreated Control	—	—	—	—
2	Alpine G22	6-22-2	2	1.3-4.7-0.4	In-furrow
3	UAN	28-0-0	3	8.9-0-0	Dribbled above closed row at seeding
4	UAN	28-0-0	8	24.0-0-0	Dribbled between rows at R3
5	Bio-forge	2-0-3	250 ¹	0.01-0-0.02	Foliar application at R3

¹250 mL/ac Bio-forge applied in solution with 10 US gal of water. Rate was 2x in 2016

²Product Density (lbs/U.S. gal): Alpine G22, UAN = 10.7, Bio-Forge = 9.6

Table 2. Mean seed yield of applied treatments

Treatment ²	2015	2016
5	34.5 ^a	47.3 ^a
2	35.1 ^a	46.9 ^a
3	34.5 ^a	—
4	34.3 ^a	46.4 ^a
1	34.2 ^a	46.2 ^a
Mean	34.5	46.7
CV%	4.7	5.0
F Value	0.44	0.49
P>F	0.7755	0.6932

^aMeans within a column followed by the same letter are not statistically different at a 95% confidence interval

²Treatments were replicated seven times in 2015, six times in 2016



<http://www.statpub.com>

Optimizing Soybean Plant Density for Different Planting Windows in Manitoba

Cassandra Tkachuk, MSc Student with Dr. Yvonne Lawley
Department of Plant Science, University of Manitoba

SOYBEAN YIELD AND economic return can be improved by optimizing soybean plant density and planting date. Currently, there are no recommendations on how to adjust target soybean plant densities if you have an opportunity to plant early or if you are forced to seed late in Manitoba. Research conducted in the United States

has found yield benefits from increased soybean seeding rate by 20% for early planting due to cold soil, and by 20% for late planting due to shorter plants (Heatherly and Elmore, 2004). However, we don't know if this recommendation will hold true for soybeans in our short growing season environment in Manitoba.

The first goal of this study was to identify the soybean plant densities that maximized yield on early, mid and late planting dates. The second goal was to calculate the soybean seeding rates that maximized economic return for each planting date. To calculate the economic maximum seeding rates, we factored soybean seed cost, commercial soybean grain price, and seedling mortality into our calculations.

The two-year field study consisted of six target plant densities: 80, 110, 140, 170, 200 and 230 thousand live plants ac^{-1} . With the late arrival of spring in 2014, there were only two seeding date treatments: mid (May 26) and late (June 9). An early spring in 2015 allowed for three seeding date treatments: early (May 4), mid (May 22), and late (June 10). All experiments occurred at the University of Manitoba Ian N. Morrison Research Farm in Carman, MB. This experiment was also conducted under weed-free conditions; an important consideration when interpreting results.

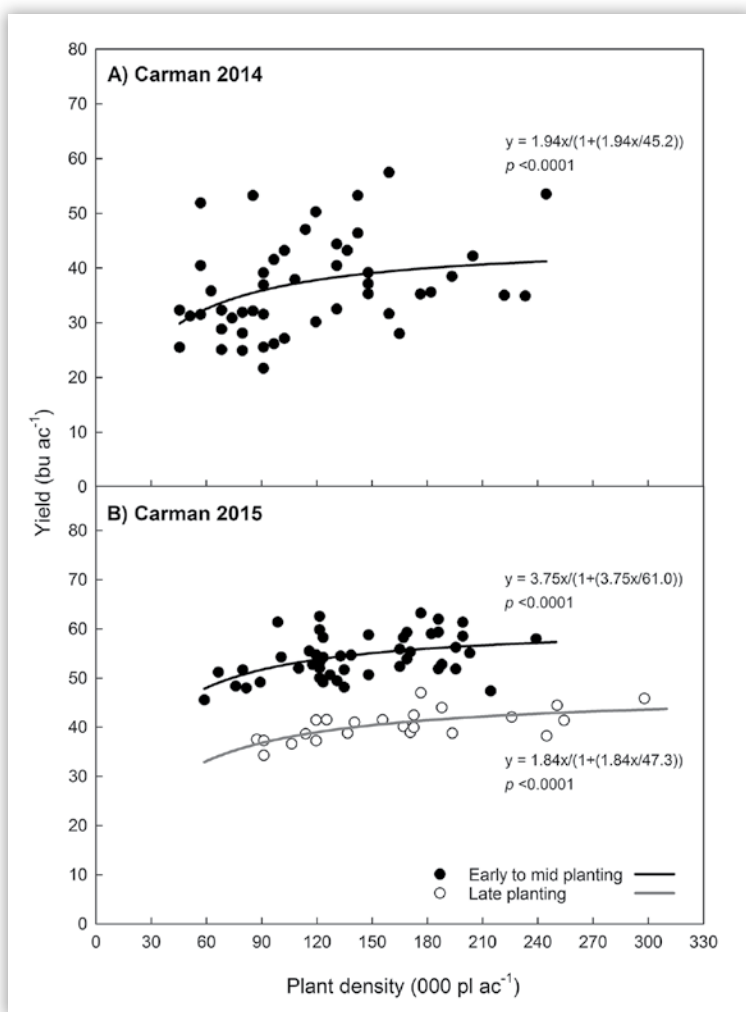
MAXIMIZING SOYBEAN YIELD

As you would expect, soybean yield increased with increasing plant density for all planting date treatments. And interestingly, soybean yield did not decline under the highest plant densities, suggesting a lack of intraspecific competition among soybean plants.

Based on soybean yield-density trends, we used statistics to group similar planting dates together. Soybean yields were similar for mid to late planting in 2014, and early to mid planting in 2015 (Figure 1). However, late planting in 2015 was not grouped due to its lower maximum yield than early/mid planting (Figure 1).

The plant densities that maximized soybean yield were 442,000 plants ac^{-1} for mid/late planting in 2014, as well as 309,000 to and 489,000 plants ac^{-1} for early/mid and late planting in 2015. Despite the numerical difference in plant densities that maximized yield for the two planting date groups in 2015, they were not statistically different ($p < 0.05$). This suggests

▼ Figure 1. The relationship between soybean yield and plant density at (A) Carman in 2014 for combined mid to late planting dates, and (B) Carman in 2015 for combined early to mid, and late planting dates. Note: Each planting date (group) is described by the rectangular hyperbola model ($y = lx/(1 + (lx/a))$).



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◀ Figure 2. Soybeans nearing maturity on September 4, 2015 at the University of Manitoba Ian N. Morrison Research Station in Carman, MB. Left to right: block of plots from the first replicate seeded on early (May 4), late (June 10), and mid (May 22) planting dates in 2015.

▼ Figure 3. Weed competition with soybeans at the unifoliate stage on June 10, 2015 at Carman, MB. Note: Row spacing was 14 inches.



that there is no yield benefit from increased target plant densities for late planting in Manitoba. But, additional site years are needed to validate this recommendation under a broader range of environmental conditions. The plant densities that maximized yield in these experiments are much higher than the current recommended level of 160,000 live plants ac^{-1} (Mohr et al., 2014), and current targets for commercial production in Manitoba. However, it is also important to consider soybean seeding rates that maximized economic return.

ECONOMIC IMPACT

Marginal cost analysis was used to calculate the soybean seeding rate, or seed density, that maximized economic return per acre. Assumptions for economic calculations included a soybean seed cost of \$50 per unit, soybean grain price of \$10 bu^{-1} , and average seedling mortality for each site year.

In this study, we found that the soybean seeding rates that maximized economic return were also lower than the current recommendation of 160,000 live plants ac^{-1} . For mid/late planting in 2014, the economic maximum seeding rate was 138,000 seeds ac^{-1} . In 2015, economic maximum seeding rates were 143,000 and 159,000 seeds ac^{-1} for early/mid, and late planting, respectively.

Seed cost and grain price are always changing, and assumptions about seedling mortality will be specific to each farm. Rather than adopting these findings as a specific recommendation, the best use of data from this experiment for farmers and agronomists in Manitoba will be to incorporate results into a decision-support tool, like the MPSG Bean App.

There are other important management factors for soybean seeding rate decisions, such as weed competition, that could not be incorporated into the marginal cost analysis. Results from this study are reported under weed-free conditions. However, it is important to remember that soybeans are naturally poor competitors against weeds. With the increasing threat of herbicide resistance, the value of increasing soybean seeding rates to improve competition against weeds was a limitation of the analysis. This would be a logical next step to build on the findings of this project.

SUMMARY

- There was no yield benefit from increased soybean plant density for late planting, based on the two years of this experiment. Additional site years are needed to test this finding under different environmental conditions.

- Soybean plant densities that maximized yield were very high, ranging from 309,000 to 489,000 plants ac^{-1} .
- Soybean seeding rates that maximized economic return were lower than current recommendations, ranging from 138,000 to 159,000 seeds ac^{-1} .
- Since economic assumptions of seed cost and grain price change continuously, these results will be most useful in the MPSG Bean App.
- The next research step would be to broaden the scope of the analysis to consider the value of soybean plant density for weed suppression. ■

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Manitoba Pulse & Soybean Buyer List – March 2017

COMPANY	EDIBLE BEANS	FABA BEANS	LENTILS	PEAS	SOYBEANS	PHONE	LOCATION	CGC REGULATED
Agassiz Global Trading	✓				✓	204-745-6655	Homewood, MB	
Agri-Tel Grain Ltd.				✓	✓	204-268-1415	Beausejour, MB	✓
AGT Foods	✓		✓	✓	✓	306-525-4490	Regina, SK	✓
• SaskCan Pulse Trading – Parent Division	✓		✓	✓	✓	204-737-2625	St. Joseph, MB	✓
All Commodities			✓	✓		204-339-8001	Winnipeg, MB	✓
B.P. & Sons Grain and Storage Inc.					✓	204-822-4815	Morden, MB	✓
Belle Pulses Ltd.				✓		306-423-5202	Bellevue, SK	✓
Besco Grain Ltd.	✓	✓	✓	✓	✓	204-745-3662	Carman, MB	✓
Best Cooking Pulses Inc.			✓	✓		204-857-4451	Portage la Prairie, MB	✓
Brett-Young Seeds				✓	✓	204-261-7932	Winnipeg, MB	
BroadGrain Commodities Inc.	✓	✓	✓	✓	✓	416-504-0070	Toronto, ON	✓
C.B. Constantini				✓		604-669-1212	Vancouver, BC	✓
Canadian Grain Inc.	✓	✓	✓	✓	✓	905-257-6200	Oakville, ON	✓
Cargill Ltd.				✓	✓	204-947-6219	Winnipeg, MB	✓
Delmar Commodities				✓	✓	204-331-3696	Winkler, MB	✓
Farmer Direct Co-operative Ltd.	✓	✓	✓	✓		306-352-2444	Regina, SK	
Fill-More Seeds Inc.			✓	✓		306-722-3353	Filmore, SK	✓
G3 Canada Limited				✓		204-983-0239	Winnipeg, MB	✓
Gavilon Grain LLC					✓	816-584-2210	Omaha, NB	✓
Global Grain Canada	✓					204-829-3641	Plum Coulee, MB	✓
Hensall District Co-op	✓					204-295-3938	Winnipeg, MB	✓
Horizon Agro					✓	204-746-2026	Morris, MB	
ILTA Grain Inc.	✓	✓	✓	✓	✓	604-597-5060	Surrey, BC	✓
J.K. Milling Canada Ltd.				✓		306-586-6111	Regina, SK	✓
Knight Seeds			✓	✓		204-764-2450	Hamiota, MB	
Kalshea Commodities Inc.				✓		204-272-3773	Winnipeg, MB	✓
Lansing Olam Canada Commodities ULC					✓	877-747-7599	Chatam, ON	✓
Linear Grain	✓			✓	✓	204-745-6747	Carman, MB	✓
Louis Dreyfus Company Canada ULC					✓	403-205-3322	Calgary, AB	✓
Masterfeeds				✓		403-327-2555	Lethbridge, AB	
Marina Commodities Inc.			✓	✓		204-937-2300	Roblin, MB	✓
Maviga NA., Inc.		✓	✓	✓		306-721-8900	Regina, SK	✓
Monsanto					✓	–	Winnipeg, MB	
Natural Proteins					✓	204-355-5040	Blumenort, MB	✓
North American Food Ingredients					✓	204-272-5510	Winnipeg, MB	✓
Nutri-Pea Ltd.				✓		204-239-5995	Portage la Prairie, MB	
Nu-Vision Commodities	✓					204-758-3401	St. Jean Baptiste, MB	
Parrish & Heimbecker Ltd.					✓	204-987-4320	Winnipeg, MB	✓
Paterson Grain				✓	✓	204-956-2090	Winnipeg, MB	✓
• FeedMax Corp.				✓		204-523-0682	Killarney, MB	✓
Providence Grain Group	✓	✓	✓	✓	✓	780-997-0211	Fort Saskatchewan, AB	✓
Quarry Seed					✓	204-467-8877	Stonewall, MB	

continued on page 43

COMPANY	EDIBLE BEANS	FABA BEANS	LENTILS	PEAS	SOYBEANS	PHONE	LOCATION	CGC REGULATED
Remillard Seed Farm					✓	204-737-2376	St. Joseph, MB	
Richardson International				✓		204-934-5627	Winnipeg, MB	✓
• Richardson Pioneer Ltd.				✓	✓	204-934-5627	Winnipeg, MB	✓
• Tri Lake Agri				✓		204-523-5380	Killarney, MB	✓
S.S. Johnson Seeds	✓			✓		204-376-5228	Arborg, MB	✓
Scouler Canada Ltd.	✓	✓	✓	✓	✓	403-720-9050	Calgary, AB	✓
Seaboard Overseas		✓	✓	✓		306-565-3934	Regina, SK	
Seed-Ex Inc.					✓	204-737-2000	Letellier, MB	✓
Shafer Commodities					✓	204-822-6275	Morden, MB	✓
Simpson Seeds			✓			306-693-2132	Moose Jaw, SK	✓
Southland Pulse			✓	✓		306-634-8008	Estevan, SK	✓
Sunrich LLC					✓	507-446-5642	Hope, MN	
Thompsons Limited	✓		✓	✓		519-676-5411	Blenheim, ON	✓
Vanderveen Commodity Services					✓	204-745-6444	Carman, MB	✓
Viterra Inc.	✓	✓	✓	✓	✓	Contact your local Viterra sales representative		✓
Walhalla Bean Co. (Canada Ltd.)	✓					701-549-3721	Walhalla, ND	✓
• Winkler Receiving	✓					204-325-0767	Winkler, MB	✓
Wilbur Ellis	✓		✓	✓		204-867-8163	Minnedosa, MB	✓
Zeghers Seeds Inc.			✓	✓		204-526-2145	Holland, MB	✓

The Canada Grain Act requires some elevators and grain dealers to have a Canadian Grain Commission (CGC) license and post-security to cover their liabilities – what they owe to farmers. Grain dealers and operators of primary, terminal and process elevators in Western Canada are licensed by the CGC. Seed cleaning plants that do not purchase grain and feed mills do not have to be licensed. The pulse and soybean crop buyers listing includes only companies that are licensed and secured by the CGC (or exempted by regulation), and who are registered to submit check-off to MPSG. It is the responsibility of the farmer to ensure the company they are dealing with is reliable. Questions regarding licensing and security should be directed to the CGC at 1-800-853-6705 or 204-983-2770. To be included on MPSG's pulse and soybean crop buyers list, contact the MPSG office at 204-745-6488 for the buyers registration package.

Soybean Scout ANSWERS



A – Soil Compaction

Stunted, yellowing crops, often spotted in high traffic areas, require inspection of roots and soil. A crop suffering due to surface soil compaction (left) can be characterized by a deformed lower stem, restricted taproot and lateral roots growing

just below the soil surface. Compacted soils can also exacerbate iron deficiency chlorosis (IDC) and root rots due to excess soil moisture caused by poor water infiltration and limited root growth, which restricts water and nutrient uptake. Wetting and drying cycles can alleviate surface soil compaction over time, but prevention of compaction is the best management solution. Avoid field traffic when soil moisture is at field capacity and reduce axle loads.



B – Soybean Cyst Nematode (SCN)

SCN-affected plants mimic foliar symptoms of soil compaction, IDC, root rots and excess moisture. Careful inspection of the roots is therefore necessary to diagnose SCN-infected fields. Scout

for SCN in July–August, when levels of cysts are most abundant. Cysts look similar to rhizobium nodules; however, cysts are much smaller and lemon-shaped. Roots may also appear stunted with few nodules. High-risk fields include those with a long and frequent history of soybean, and those situated near the U.S. border or along the Red River. Scout for SCN in areas of possible introduction: high traffic areas, drainage ways and depressions.

Recipe Corner

Ultimate Can'Eh'Dian Salad

- 1 cup cooked black beans
- 1 cup cooked green lentils
- 1 cup cooked chickpeas
- 1 1/2 cups cooked pearl barley
- 2 cups baby arugula (or spinach)
- 1 1/2 cups diced red bell pepper (1 whole pepper)
- 1/2 cup dried cranberries, chopped
- 2 Tbsp finely sliced green onion (approx 1 whole onion)

Directions

- 1 Toss prepared pulses, barley, arugula (or spinach), pepper, cranberries and onion together in a large bowl.
- 2 Whisk all vinaigrette ingredients in a small bowl until fully combined.

Vinaigrette

- 1/4 cup apple cider vinegar
- 1/4 cup canola oil
- 2 Tbsp whole grain mustard mixed with salt and ground black pepper to taste.

Garnish

- 1/4 cup toasted sunflower seeds



- 3 Toss the prepared vinaigrette with salad.
- 4 Season with salt and ground black pepper to taste.
Garnish with toasted sunflower seeds and enjoy!



Falafel

Serves 5

- | | |
|--------------------------------|--------------------------|
| 2 cups cooked chickpeas | 2 tsp cumin |
| 1 small onion, roughly chopped | 1 tsp ground coriander |
| 1/4 cup chopped fresh parsley | 1/4 tsp black pepper |
| 3–5 cloves garlic | pinch of ground cardamom |
| 1 1/2 Tbsp flour | canola oil for frying |
| 1 3/4 tsp salt | 1 egg |

Directions

- 1 Add onion, garlic cloves, parsley, flour, salt, cumin, ground coriander, black pepper and cardamom to food processor. Pulse together until mixed, then add chickpeas and pulse again. Scrape the sides of the processor bowl to ensure proper mixing, and then blend until the mixture becomes a thick paste. Do not over process.
- 2 Empty the processed mixture into a large bowl, briefly stirring ingredients to even texture throughout. Cover the bowl with plastic wrap and refrigerate for 1–2 hours.
- 3 Fill a skillet with 1 1/2 inches of canola oil, and heat slowly over medium heat. Add 1 egg to the processed mixture to combine. With wet hands, form approximately 2 tablespoons of the falafel mixture into round balls or small patties.
- 4 Fry the falafel balls or patties in the oil and brown each side for 2–3 minutes (5–6 minutes total). It should not brown quicker than that, and if it does then your oil is too hot. Fry the falafel in batches of 5–6 at a time.
- 5 Once done cooking, drain the falafel from the oil using a slotted spoon or strainer scoop and place on paper towels.
- 6 Serve fresh and hot with hummus, tahini sauce or a pita.

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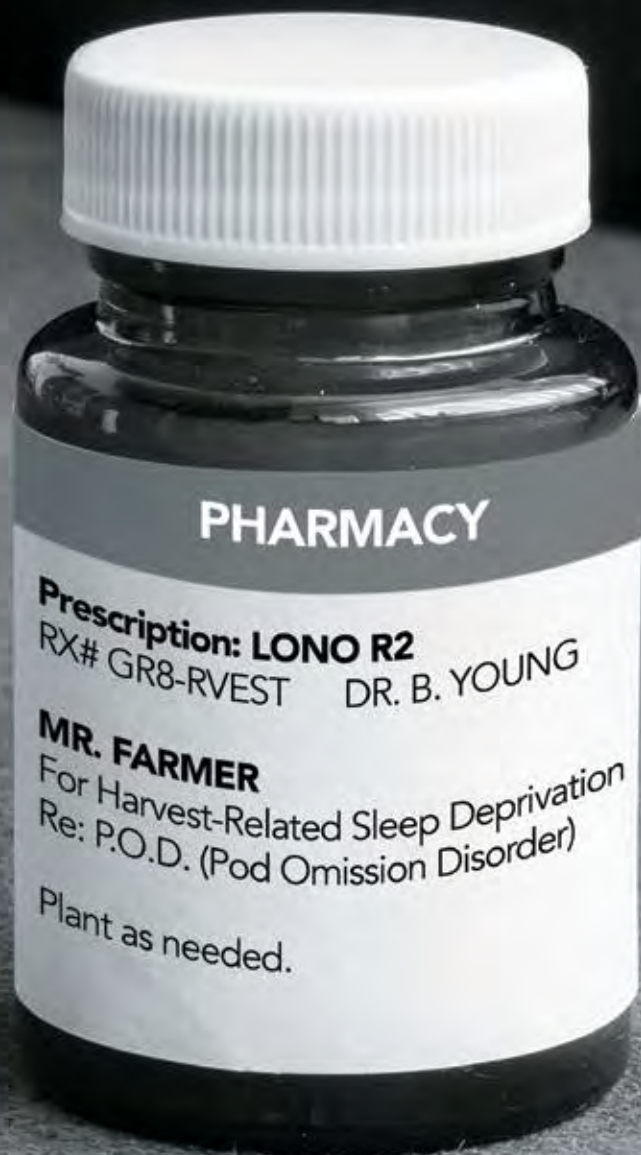
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