pulse beat

Spring • No. 77, 2016

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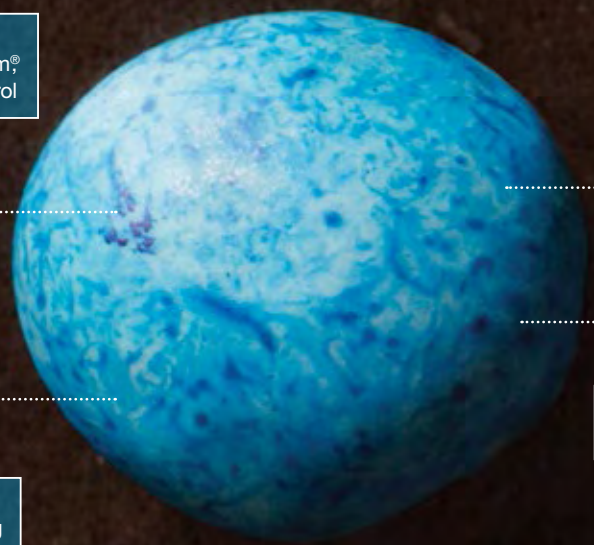

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Cover photo courtesy of Kristen Podolsky – Manitoba Pulse & Soybean Growers

Manitoba Pulse & Soybean Growers – 2016 Board of Directors and Staff

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Approximately 100 people attended the 2016 MPSG AGM on February 10 in Winnipeg.

MPSG executive director François Labelle answers member questions.

Outgoing board members were recognized for their contributions and two new board members elected during the Manitoba Pulse & Soybean Growers (MPSG) annual general meeting (AGM) on February 10 in Winnipeg.

The AGM, held in conjunction with the annual CropConnect Conference, drew approximately 100 farmers and industry representatives.

Joining the MPSG board of directors are Selkirk-area farmer John Preun and Calvin Penner, who farms near Elm Creek. Members also returned Jason Voth from Altona and Dugald-area farmer Rick Vaags to the board. Their terms had expired but they let their names stand for re-election.

MPSG production specialist Kristen Podolsky reports on MPSG research and production activities to members.

Outgoing chair, Kyle Friesen, told members he's enjoyed an "awesome time on the board," and encouraged the new slate of directors to continue the momentum enjoyed in the last few years and remain forward-thinking.

Altona-area grower Joni Sawatzky also stepped down from the board. First elected in 2011, Sawatzky is pleased with the growth of the organization and the addition of the *On-Farm Network*. "I've met lots of new people and had the opportunity to see a whole other side of our industry," she says.

The new board will convene in early March to organize, select a new chair and committee members, and begin discussing goals and strategies for 2016–2017 and beyond.

The 2015 audited financial statement, presented by Dale George from D.F. George Chartered Accountants Inc. showed the association is in strong economic shape. The financial report can be viewed on our website, www.manitobapulse.ca/about-us/association-history/association-business/.

"The key in every spending allocation is to return value to producers' pockets," Friesen said, while encouraging members to bring forth any new ideas to the board or MPSG staff.

In his report, MPSG executive director François Labelle noted both new opportunities and challenges. "Cuts in government spending have reduced capacity, especially in research," he said. "We have increased staff to either do the studies ourselves or oversee other research projects." Labelle stressed the need to continue lobbying the Manitoba and new federal governments, pointing out that he has met with the provincial agriculture minister at least six times in the past year on issues including funding, research and a soybean processing facility.

New events, new staff and leveraged check-off dollars were highlighted in the production report. MPSG production specialist Kristen Podolsky told farmers that an investment of close to $1.4 million towards 27 new research projects was made in 2015. That equates to less than $0.89 for every soybean and pulse acre seeded in Manitoba but the positive impact from that research, on a farmer's bottom line, can be more than $20.00 per acre.

Podolsky said because MPSG has been extremely successful in acquiring program funding, the research and production team has been expanded by two to meet the increased administrative and reporting demands.

Members also accepted the resolution to adopt amended by-laws, during a special meeting held during the AGM. Amendments officially recognize last year's name change from Manitoba Pulse Growers Association. "The new by-laws allow us as an organization to stay current with the times and in compliance with corporate regulations," said Friesen.

A new video highlighting the MPSG strategic plan was also premiered. The video, an executive version of the strategic plan and the new by-laws can all be found on the MPSG website at www.manitobapulse.ca. ■

Outgoing MPSG board members Joni Sawatzsky and Kyle Friesen were presented with engraved momentos.

2015 MPSG Financial Reports are available online at www.manitobapulse.ca

MESSAGE FROM BOARD CHAIR

Kyle Friesen
Chair

With mixed emotions I am writing my final *Pulse Beat* report as the president of the Manitoba Pulse Growers Association, as it was called when I began my tenure here nearly six years ago. Looking back on those years it is almost unfathomable where we have come over that time. If I recall correctly, when I began on the board, we were working with a budget of around $600,000/year; the vast majority of that was being contributed by dry bean production here in Manitoba; and we had two full-time staff members. We now employ six people full-time and conduct leading-edge research; our current contributions to research alone exceed the entire budget from 2010 when I joined the board. Our overall current budget exceeds $2 million and our association is in excellent financial health to continue leading not only the pulse industry but agriculture as a whole into the future.

I cannot take any of the credit for the tremendous growth that our association has achieved. I only had the opportunity to help guide its activities as the pulse industry reaped the rewards of forward-thinking board members of the past. It is these board members, with the foresight to invest in opportunities and ideas, who have provided farmers with another economical crop option for nearly every growing region in Manitoba and, increasingly, across western Canada.

Looking forward and attempting to anticipate what the future may hold for agriculture is truly what our farm associations must strive to achieve. In an increasingly global economic marketplace we must anticipate how changes beyond our borders and well beyond any of our control or influence will impact our industry and what we can do to prepare for these changes and view them as opportunities rather than threats. In the meantime, we must also seek to understand local and domestic consumption habits, consumer preferences and influence, that have the potential to drastically affect our decisions in the way we operate our farms. As society becomes increasingly distanced from the farm, the people involved in agriculture have a critical responsibility to educate and inform the public about our industry and the role we play in providing a safe, secure, nutritious food supply now and in a future world filled with 9-billion-plus people. Remember, that a disengaged population has voting power with the potential to influence public policy in ways that may impact how we operate our farms. To counter this, every individual involved in agriculture must educate themselves in order to be confident in conversations with friends, families and neighbours; to educate people not only on the facts but also the emotion, passion and commitment of farmers and people who have chosen agriculture as a way of life.

Another consideration is how long we can sustain the current model of multiple associations providing overlapping representation to the same membership. When I look at the various groups and associations that represent agriculture, I see a great opportunity to improve efficiency of grower levy funds through collaboration, communication and possibly consolidation of groups. The goal is to accomplish more, collectively, than we are able to accomplish individually. This means the ag industry will have to change from a position of individuality – where all commodities in each jurisdiction have the desire for their own unique voice – to a position of community where we develop consistent objectives, brought forward by an overarching group representing a broad spectrum within the industry. This will require a change in perspective as we leave behind the protectionist ideals of individual commodities and embrace the concept that, in order for one segment of agriculture to be successful, we must have all segments thriving and successful.

For instance, in the cropping world, we need to have numerous profitable and sustainable choices to allow farmers to rotate crops and avoid various challenges that arise in a mono-crop style production system. In turn,

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Soybean Scout

What caused these symptoms on soybean seedlings during spring 2015?

A

B

Answers can be found on page 51

Do you have a production question related to pulse or soybean crops that you just can't find the answer to? Maybe you're looking for an opinion or advice?
Write to us! Email: **kristen@manitobapulse.ca**

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the crop segment requires a thriving livestock industry to create long-term demand for the feed grains we grow. Moving forward, when we take public positions, we must be sure that they are not compromising other segments of agriculture that are critical to our own survival.

During a trade mission to China with the federal Deputy Minister of Agriculture and a prestigious group of leaders in Canadian agriculture, I was able to experience the immense opportunities available in the vast export markets present around the globe. As a resource and export-based economy, we must prioritize competitive access to these markets and ensure we have consistent and reliable trade arrangements that allow us to maximize the potential that these markets provide. Enriching these opportunities does not solely consist of trying to export the most raw product into these markets at the best price but developing an agricultural export strategy to increase both the return on our exports and the value that we contribute to the Canadian economy. An example would be tapping into China's immense demand for protein. As much as I wish pulses would fill this demand, a large portion will likely be filled by the pork industry and there have been efforts to export Canadian production knowledge, Canadian genetics and Canadian feed grains to the Chinese to feed these animals. Instead of this fragmented approach, why not develop a strategy where we export the finished meat products and retain the economic benefits of value-added production. In addition, there are numerous environmental benefits to be realized, such as reducing the volume of product that must be freighted to the export markets and utilizing the manure by-product as fertilizer to nourish the crops that we are growing. This can improve sustainability, reduce our carbon footprint and create economic growth in regions of the country that may currently be experiencing employment hardships. There may be obstacles that prevent this specific example from being realized but we need everyone around the ag table to engage in broad, high-level thinking to realize the potential of our opportunities.

As agriculture and the world in which we operate continue to evolve, we must adapt our thinking and approaches to maintain pace and, ideally, stay far enough ahead to influence these changes, supporting and encouraging our best and brightest to engage in leading our industry into the future.

On a personal note, I want to thank all the passionate, dedicated people serving the pulse and soybean industry. During my time on the board, I have enjoyed meeting and working alongside many of these individuals and I look forward to maintaining and building these relationships in the years ahead. Thanks to you for making my time on the board productive and fulfilling. ■

MESSAGE FROM EXECUTIVE DIRECTOR

François Labelle
Executive Director

As winter fades into a memory – and not a bad one – everyone is anxious for spring. Those first signs of green growth always raise our spirits and quickly focus attention on the task-at-hand: to grow another crop in the best way we can with the weather cards we are dealt.

Spring unfolds in a similar way at MPSG. Each new year brings new planning, activities and resolve as we work to provide industry leadership and advance the growth and prosperity of pulse and soybean farmers in Manitoba.

In 2016, we have lots of research activity planned, are collaborating on some interesting programs for the United Nations-declared *International Year of Pulses*, and will continue working with governments to increase our research capacity.

CROPS

All looks good for increased acres of pulse and soybeans this year.

Peas continue to surprise, in a good way. We forecast over 100,000 acres of peas this year, a remarkable turn-around from a low of under 20,000 acres in 2011. Markets look solid – depending on weather in southeast Asia – but it's great to see acres return to Manitoba. Let's make certain we watch our rotations going forward, as buildup of disease pushed peas out of some areas in the past.

Soybeans speak for themselves: yields have been good; new growers in western regions are seeing quality returns; expect to see more acres in Manitoba in 2016. Let's hope the markets remain strong.

How about them lentils? Yes, there is new interest in growing lentils sparked by a belief that we may be heading into a dry cycle. From the late 1980s until about 1992 we grew substantial acres of good quality lentils in Manitoba with great returns but wet weather pushed them out. Will we see a resurgence if it's dry again?

And, don't forget the fababeans. Expect acres to grow a little again this year. They are a good crop for some areas, and good protein source for feed and fractionation for food. I hope they are here to stay.

RESEARCH

MPSG's research projects continue to grow with some exciting work in 2016.

We are adding resources to our *On-Farm Network*, where research specialists work with farmers to test new products and practices right on the farm. We anticipate adding summer staff to meet increasing farmer interest as we lay important groundwork for exciting projects in the coming months and coming years.

MARKET DEVELOPMENT

With 2016 being the *International Year of Pulses*, we have a great opportunity to highlight these important crops. You will be hearing a great deal about pulses being nutritious, healthy and great for the environment.

On the environmental side, the nitrogen-fixing benefits of soybeans and pulses are part of the solution to reducing greenhouse gases. We need to make sure governments and the public realize this important fact so that our industry gets the credit due.

The quest to establish a soybean crush facility in Manitoba is continuing, as we work closely with the provincial government to stimulate interest within the private sector. It is a long-term project and results will not come overnight. However, we expect a focusing of efforts this year to move this file forward.

Many of our efforts on market development are joint ventures with both Pulse Canada and Soy Canada. This is important – we want to get the most efficient use of everyone's resources without duplicating efforts.

MAXIMUM RESIDUE LIMITS (MRLS)

All farmers must be aware that MRLs are a critical factor in marketing our crops. Testing today can detect chemicals in ratios as low as parts-per-billion. We cannot afford to have our harvest rejected from a major market over MRLs.

MPSG continues to represent farmers on some major efforts to make certain that we do not have an incident. As a primary producer, you need to make certain that the products you are

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using are acceptable in the markets to which you will be selling. Follow label directions on rates and pre-harvest intervals.

Testing will continue to become more sensitive and more important as countries adopt or change their MRL guidelines. This has the potential to be a real trade issue – so be careful when applying crop protection products.

LOOKING FORWARD

MPSG continues to invest a major portion of your check-off dollars into research. Final reports and results will be published and presented as they become available. Our goal is to answer the questions that come from farmers and industry with scientific results to improve the farmer's bottom line.

International Year of Pulses presents a similar opportunity to advance our crops and pulse-based foods into many markets, helping consumers understand that pulses are good for people and good for the planet.

As always, if you have issues, concerns or want to know more about what MPSG is doing for you, please give the office a call or send us an e-mail. ■

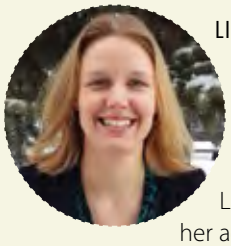
– François

2016 MPSG COMMITTEES

The new board will convene in March and select committee members and chairs. That listing will be available on the MPSG website – www.manitobapulse.ca – and published in the next issue of *Pulse Beat*.

MPSG Welcomes the *Bean Team*

Two university graduates have been hired to travel the province and increase awareness and consumption of pulses, as part of MPSG initiatives during *2016 International Year of Pulses*. The *Bean Team* began work in mid-January and will spend the next five months visiting schools, community groups and public events.



LINDSEY ANDRONAK is at-ease presenting to small groups or large assemblies. With a Master's Degree in Soil Science and a Bachelor's Degree in Agroecology from the University of Manitoba, Lindsey previously worked as research and development coordinator with Western Ag Innovations. She has organized, conducted and assisted with a range of scientific research projects ranging from denitrification in clays to pesticide concentrations in atmospheric deposition and control of Dutch Elm Disease.

Lindsey has teaching experience at the elementary, high school and undergraduate levels through her academic work, Manitoba Envirothon and Agriculture in the Classroom. She is a published researcher, co-authoring several articles, and has won awards for creative presentation and communications in competitions in Canada and the United States.

BRANDON CLAYTON joins Lindsey on the *Bean Team*, offering extensive experience in community engagement as both a volunteer and employee. Brandon has a Bachelor of Science in Geological Sciences (Hons) from the University of Manitoba and remains close to the program as instructor and program facilitator in geological sciences with Career Trek.

As a lifeguard and swimming instructor employed by the City of Winnipeg, Brandon has connected with people of all ages. His enthusiasm and professional approach to public service is immediately obvious. In addition to working as assistant geologist with the Manitoba Geological Survey, Brandon has volunteered with several organizations including Rainbow Resource Centre, University of Manitoba Rainbow Pride Mosaic, Lifesaving Society of Manitoba, and Camp Aurora. He is an accomplished public speaker, winning both an interprovincial and national quiz competition in geosciences.

The Bean Team *is based in Winnipeg but will engage with people throughout the province. A major component of their outreach will be visiting elementary, middle years' and senior years' schools, presenting information on pulse production, nutrition and sustainability. Public events, including the annual Ag in the City held March 18–19 at The Forks in Winnipeg, will round out a busy schedule for MPSG's* Bean Team. *Watch for the* Bean Machine *in your community.*

Welcome to Lindsey and Brandon! You can contact them directly at **lindsey@manitobapulse.ca** or **brandon@manitobapulse.ca**.

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MPSG ADOPTS NEW STRATEGIC PLAN

Collaborative. Positive. Informative. These words are front-and-centre in the *2015–2017 Strategic Plan* approved by the Manitoba Pulse & Soybean Growers (MPSG) board of directors in December last year.

The *Strategic Plan* is a roadmap to success for the member-directed and funded MPSG, guiding advancements in all phases of the provincial pulse and soybean crop-growing industry. The key elements of the strategic plan are the Vision, Mission Statement and Strategic Goals:

VISION

Profitable farms sustainably producing quality pulse and soybean crops.

Reflecting a growing and vibrant industry, MPSG is collaborative, positive and informative in providing industry leadership. Advancing the growth and prosperity of Manitoba pulse and soybean farmers, MPSG assists government in developing policy and takes a lead in setting priorities in research and extension initiatives. By investing in future farm leaders, MPSG grows opportunities in pulse and soybean research, marketing and processing.

MISSION

To provide production knowledge and market development support to Manitoba pulse and soybean farmers.

MPSG is supported by a mandatory, refundable levy on sales of commercial pulses and soybeans in Manitoba. A board of directors, elected at the corporation's annual general meeting, provides oversight and governance. Reporting to the board, the executive director is responsible for executing the corporation's strategic plan.

STRATEGIC GOALS

1. MPSG will be a high-functioning organization, the pride of Manitoba pulse and soybean farmers, and highly regarded by grower associations and the agricultural industry.
2. MPSG research programs will operate at full capacity and will advance pulse and soybean crops for the benefit of farmers today and into the future.
3. MPSG will be the primary source for pulse and soybean production knowledge and extension initiatives.
4. MPSG communications will advance awareness among farmers, industry and the public.
5. MPSG market development and policy initiatives will advance the interests of pulse and soybean farmers.
6. MPSG governance, HR and finance policies will exemplify best business practices.

Also included in the *Strategic Plan* is a research strategy designed to benefit farmers by building capacity and triggering new collaborative opportunities. MPSG invests more than $1 million each year into soybean and pulse-related research in Manitoba.

MPSG is also excited to take part in the *2016 International Year of Pulses*, a global collaboration, supported by the United Nations, to heighten awareness of the nutritional benefits and sustainability of pulses, encourage use of pulse-based proteins, increase global production and address challenges in the trade of pulses.

For more information or to view a video about the *2015–2017 Strategic Plan*, please visit the MPSG website at www.manitobapulse.ca/about-us/association-business/. ■

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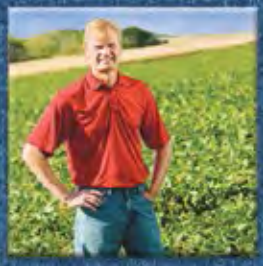

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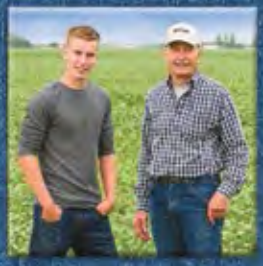

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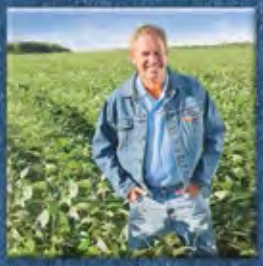

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COURTING THE WORLD'S LARGEST FOOD MARKET

Glen Kirby
Communications Director, MPSG

More than 2,000 years ago, the people of China began building fortifications against invasion and attack. The Great Wall would continue to grow through the centuries to nearly 9000 kilometres in length; a testament to that country's efforts to not only protect its borders but to control trade.

In recent years, China's trade walls have been replaced – figuratively and literally – by invitation and opportunity. As the world's most populated country, China is also the largest consumer market for food and beverages, growing at unprecedented rates and presenting enormous potential for foreign brands and suppliers.

"China is an incredible market development opportunity," says Kyle Friesen, past chair of Manitoba Pulse & Soybean Growers (MPSG), "and the Chinese are eager to do business with us."

As part of a Canadian government Trade Mission, Friesen travelled to China in June, 2015, to meet with existing and potential Chinese buyers and investors.

"I found the Trade Mission valuable," says Friesen, "if only for new understanding of China's food demands. The middle class wants more dietary protein from both animal and plant sources. Soybean is already their largest plant source so we need to figure out how to supply soybeans and soybean foods to this growing market which represents almost one-fifth of the world's entire population."

Friesen joined about 60 Canadian delegates for meetings and events in Shanghai, Chongqing and Beijing. Former Agriculture and Agri-Food Minister Gerry Ritz was unable to take part in the Trade Mission but Deputy Minister Andrea Lyon attended in his place.

"These organized seminars, events and meetings provided an excellent networking environment," says Friesen, "and opportunities to meet with not only the Chinese but other Canadian association representatives and government officials."

Among Friesen's objectives for participation in the Trade Mission:

1. Answer questions about soybean and pulse crop production in Manitoba and export markets;
2. Gauge investors' interest in a new soybean processing facility in Manitoba using the 2015 feasibility study conducted by MPSG;
3. Investigate potential trade blocks including maximum residue limits (MRLs), pesticide use, the importance of protein content in Canadian soybeans and value-added pulse processing opportunities in Manitoba;
4. Strengthen relationship with federal government representatives and Canadian Trade Mission participants from various agriculture sectors; and

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5. Develop working relationships with Chinese soybean and pulse crop associations.

"Canada's current export strategy is focused on raw product," observes Friesen. "During the Trade Mission, I saw first-hand our opportunity to do more value-added processing. There's huge opportunity for turning the right crops into the right foods."

Friesen suggests that, because China uses specific soybean varieties for specific end-use purposes, "Our next step is collaborating with them to determine what varieties they prefer for soy food products, adapting those varieties to our western Canadian environment, then producing for export."

Value-added processing, including soy milk and tofu, could be lucrative markets for the Manitoba industry. Friesen points out that freight costs are often less for food products compared to raw product, due to reduced weight. In addition, import regulations are stricter for commodities – "another reason we should be processing here in Canada and exporting finished food products," says Friesen.

Current Chinese regulations support Friesen's case. In Shanghai, he met with food-grade soy importers bound by regulations which require 100% non-genetically modified (GM) purity in imported soybeans. However, imported food is subject to a 95% purity standard.

In Beijing, Friesen talked with the Chinese soybean association about importing varieties into western Canada to begin the adaptation process; using specific varieties for specific purposes.

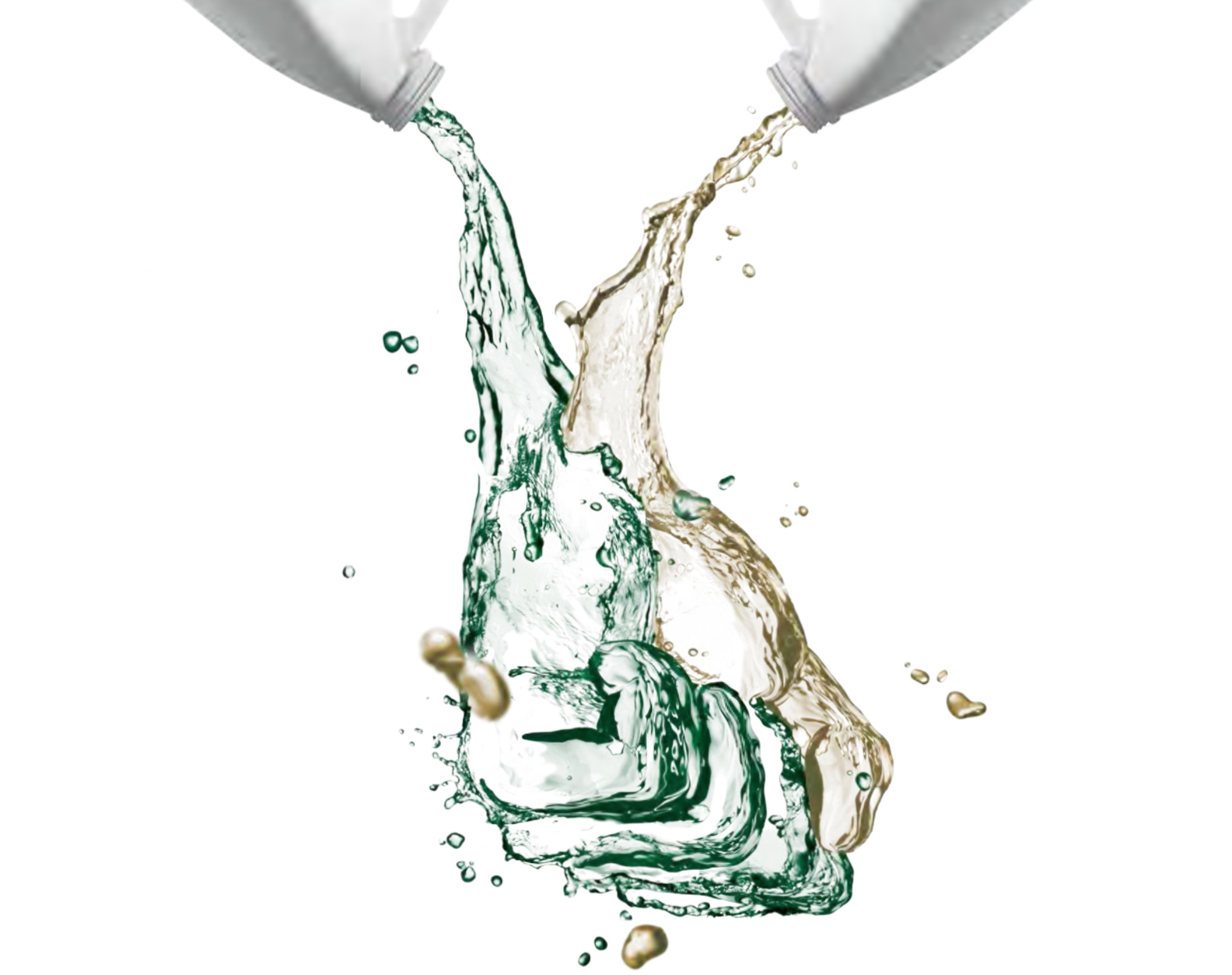
"Soybeans dominated the discussions," says Friesen, "although I did speak with a representative from China National Cereals, Oils and Foodstuffs Corporation (COFCO) about importing peas."

Canada already exports one-million metric tonnes of peas to China annually, most of which goes to the noodle industry. China is now looking to use pea fractions to improve food quality, and Pulse Canada and the Canadian International Grains Institute (Cigi) are conducting a pulse milling project to help move this forward.

Friesen says Manitoba pulse and soybean farmers are well-positioned for future opportunities with China thanks to the Canadian brand: maple leaf-branded products are perceived to be premium due to Canada's relatively clean environment and sustainable agricultural practices – in sharp contrast to perceptions by the Chinese towards their own lands and farming methods.

"There is opportunity to increase market share of Canadian soybeans in China," says Friesen. "We have the potential to adapt Chinese varieties to our growing regions and supply new markets with that crop, in addition to the value-added processing."

MPSG's participation in the *Agriculture and Agri-Food Canada Ministerial Mission to China* was made possible by funding from the Governments of Manitoba and Canada through the *Growing Forward 2*, *Growing Actions Program*. ■



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Are Manitoba Growers Ready to Merge Groups, or At Least Parts of Their Groups?

François Labelle
Executive Director, MPSG

There has been plenty of discussion and even media attention lately on the need for commodity groups to not only work together but merge in the name of efficiency. The idea is simple – every separate organization comes with a cost and fewer organizations should cost less. Sounds enticing to farmers weary with check-off fatigue.

One large organization – let's call it *Grains Manitoba* – could theoretically offer resources and services that smaller ones can't, and require less funding to operate. Economy of scale is something that farmers know all about.

So far, so good. Now let's dig a little deeper.

Fair representation is one point that generates strong opinions whenever a *Grains Manitoba*-style organization is discussed. Virtually every farmer grows several crops and is therefore receiving communications and representation from several growers' groups. Would some groups miss the autonomy to pursue separate issues and initiatives, or is the idea of one single annual general meeting appealing? This could take the annual CropConnect conference, which hosts meetings from various groups, to a new level.

Grains Manitoba would require directors able to steer an all-encompassing growers' group. Finding eight to ten directors sounds easier than recruiting the dozens currently required by existing groups, although the time commitment remains an issue. Farmers already busy running their own farm businesses would be hard-pressed to dedicate 15 to 30 days each year towards board activities.

The dwindling number of farmers represents another challenge. Right now, we have about 14,000 farmers in Manitoba running operations of 160 acres or more. What will happen in the next ten years? 7,500 farmers? 5,000? Whatever the number, it will be less than today and that will compound problems including more check-off per farm and a smaller pool of available directors.

It's tempting to say "fewer associations is the answer" but who will do the work that is done now? In past years, the provincial and federal governments supplied a great deal of research and support. Today, we see less direct contact between the remaining government employees and farmers. Grower associations are shouldering roles traditionally filled by government including variety trials, product testing, fertilizer usage, updating agronomic information, on-farm research, market access, market development and advocacy. We do lots of extension work, too.

If associations merge, can the system be improved to offer better agronomic support and research? Can we enhance regional support and speak with a stronger voice to government? Strategic plans may need to be realigned and objectives refocused. Staff possibly may feel threatened but good people will always have a place in a good organization.

To succeed, *Grains Manitoba* must be led by a strong board charting the overall direction for the association, supported by crop advisory groups giving direction on research and agronomics necessary for their individual crops. A management team will be tasked with developing a plan to meet the individual and collective needs of all involved.

How does today translate into that future scenario? As in any business, assessments would determine what is working and what can be done better; what should continue and what should end.

Change is hard. Relationships are hard. Freedom. Compromise. Sharing the work. Sharing a vision. *Grains Manitoba* would be a major change designed to improve our industry. Are you ready?

You need to tell others where you stand. You need to tell the associations funded with your dollars where you stand. Getting together is one thing. Staying together is another. ■

MPSG MISSION STATEMENT
To provide production knowledge and market development support to Manitoba pulse and soybean farmers.

NEW GOVERNMENT, TRADE MISSIONS, AND MORE MARKET ACCESS!

Jim Everson
Executive Director, Soy Canada

Soy Canada is hard at work and preparing for what is sure to be a promising year for the soybean industry. We've been meeting with members of the new federal government, participating in international trade missions, engaging in foreign market research projects and so much more. We have an ambitious agenda ahead of us and have wasted no time getting started.

Soy Canada started this year with a series of meetings with new members of the federal government. We've engaged with members of parliament and other government officials at an early stage and introduced the national soybean sector to new decision makers in Ottawa. We are making Ottawa aware of our priorities. From a reading of the Minister of Agriculture's mandate letter, it is clear that most Liberal priorities are not much different than those of the previous government. Both support trade and science-based policy and regulation and these merges have been evident at recent meetings. One area where the agriculture community can expect more attention is climate change and environmental issues and Soy Canada will be watching this file closely. We're excited about what we can achieve together and know that a strong relationship with our government is key to keeping the soybean industry growing for a ninth year in a row.

Recently, Soy Canada travelled to Korea and Japan to participate in a series of industry stakeholder meetings aimed at building relationships, tearing down trade barriers and heightening trade access for members of the Canadian soy value-chain. The trade mission, spanning from February 15–19, commenced in Korea and included meetings with major Korean agriculture companies and trade associations. Korea, of course, is an important market for the soybean sector and is forecasted to see more growth stemming from the recent conclusion of the Canada-Korea Free Trade Agreement. The treaty is expected to boost overall Canadian exports to South Korea by over 32 percent. It delivers a tariff-free environment for soybeans and soy products.

Similarly, Japan continues to be a priority for the Canadian soybean industry. In 2014 alone, Canadian soybeans and soy products exported at a value of nearly $300 million to the Japanese market. Soy Canada employed these and other key statistics to showcase the export strength of the Canadian soybean products when participating in meetings with Japanese industry groups and associations.

Building on this experience, we are also actively pursuing research projects into new and emerging markets. We have identified both Taiwan and

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TIME FOR CANADA TO MOVE FORWARD WITH THE TPP

Bryan Rogers
Executive Director,
Grain Growers of Canada

Canada's agriculture and agri-food sector is one of the world's most trade-dependent. Well over half of everything we produce, worth over $50 billion annually, is exported. In practical terms, over 90 per cent of Canadian farmers are reliant on trade for their livelihoods.

It is with these facts in mind that Grain Growers of Canada looks favourably towards free trade agreements, and the Trans-Pacific Partnership (TPP) is no exception. We have been a strong advocate in Ottawa of an ambitious and plurilateral outcome in the TPP, working closely with the Canadian Agri-Food Trade Alliance (CAFTA) and its members to support Canada's participation in the deal as a founding member.

We believe that the TPP will offer a variety of new trade opportunities for Canada's agricultural sector, while keeping us on a level playing field with our global competitors.

The 12 Pacific Rim countries included in the TPP have a combined population of over 800 million, representing 40 per cent of the world's economy, making this the most significant trade deal for our country since NAFTA. This includes some of the largest and highest value importers of grain, oilseed and pulse products, such as Japan, which imports more than $2 billion worth from Canada annually. It also includes emerging markets, such as Vietnam, Malaysia and Singapore, with growing economies and middle-class consumers demanding the kind of high-quality that Canadian farmers can deliver.

These are lucrative markets for our products, and according to CAFTA, the potential benefits for pulse and soybean growers are significant.

For Canadian pulse farmers, the agreement will maintain access into existing TPP markets, while creating new opportunities as Canadian pulse crops become subject to lower tariffs than those from several key competing export countries. Combined, TPP member countries represent Canada's third-largest market for pulses, currently valued at $340 million.

Soybean farmers and exporters could see new opportunities with the elimination of tariffs on soybean products and a more secure and equal trade environment free of tariffs and quotas. Canada currently exports over $884 million in soybean products to TPP countries.

Negotiations on the TPP concluded in early October of 2015, during the federal election campaign. At the time of this writing, the new Liberal government, while supportive of an aggressive free trade agenda, has not yet committed to signing the agreement. They have launched a robust public consultation process, and have pledged to bring the deal before Parliament for study and debate. These are very reasonable steps, and Grain Growers of Canada is taking an active part in those processes.

We have encouraged the Government of Canada to sign and ratify this historic agreement as soon as possible, and we will continue to work closely with CAFTA and other stakeholders in supporting this position.

In our view, standing on the sidelines of TPP is not a realistic option, and there would be much to lose if our competitors were able to reap the benefits of preferential market access. Canadian grain, oilseed and pulse producers would be at a significant competitive disadvantage to other agri-exporting nations. ■

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Indonesia and prospective hot spots for Canadian soy products where demand continues to grow. In consultation with industry representatives, we've tailored both projects to address information gaps in each market. The outcomes will provide the soybean community with valuable information about target customers abroad and help shape the objectives of future trade missions to the region. This information gathering approach has served the association well in the past and provides our members with exclusive access to market characteristics.

Paramount to enhanced market access are reduced tariffs and duties. That's why, in close proximately with members of the Canadian Agri-Food Trade Alliance, Soy Canada recently announced its support for Canada's participation in the Trans-Pacific Partnership (TPP) agreement. As member nations sign onto the landmark treaty that secures equal tariff treatment for all 12 member states, we've been advocating for its adoption and have urged the Government of Canada to sign and ratify the deal at its earliest opportunity. The TPP agreement fosters fair competition for market access in the Asia-Pacific region. The treaty eliminates both tariffs and quotas on all soybean and soy products, providing unrestricted access to over 800 million customers representing 40 percent of the world's economy. In 2014, the soybean industry exported over $884 million worth of products to TPP member countries and will now have new opportunities to grow and increase market share. All members of the soybean value-chain looking to expand and reach new customers will benefit from this overarching agreement that increases the competitiveness of soybeans against other brands of oilseeds and oilseed products.

As always, Soy Canada welcomes all to learn more about the industry and the goods and services our members have to offer. Visit us at www.soycanada.ca or email us at info@soycanada.ca for more information about Soy Canada and the soybean industry. ■

IF IT'S STILL BROKE...?

François Labelle
Executive Director, MPSG

Temperatures have been mild. Snow has been light. On the rail lines, grain is moving in record volumes. All is fine in the land of agriculture.

Grain companies are reporting sufficient numbers of railcars and, at times, are challenged to get them loaded on-time. The rail companies' ability to provide cars during the week in which they were requested – the so-called "want week" – was high during week 23. Canadian National (CN) delivered on 95% and Canadian Pacific (CP) hit 74%.

Are the problems of 2013–14 gone? No. Has the rail system changed for the better? No. The railways' increased attention to grain is due to a slow-down in other commodities including oil and minerals.

Ironically, grain helped earn the railways record profits in 2015. CN and CP surpassed the previous high volume set in 2013 by 7%. Both also collected more from grain shippers than allowed by the Canadian Transportation Act's maximum revenue entitlement. Oops.

So with much interest, we await delivery of the federal government's review of the Canadian Transportation Act (CTA). Conducted over the past 18 months, the review provided an opportunity to consider how the national transportation system can best be leveraged to support Canada's economic growth. A number of agriculture and transportation industry groups made submissions during the cross-Canada review including the Agriculture Transportation Coalition (ATC), a coalition of associations working to enhance the competitiveness of the agriculture supply chain.

The CTA report has been in the government's hands since before Christmas, and the Minister of Transport, Marc Garneau, has 30 parliamentary sitting days to review it before tabling in the House of Commons. We could be waiting until April before the report is public and we finally have the opportunity to assess the government's direction. Only then can we say whether we support the changes or need to lobby further.

In the meantime, the ATC continues monitoring rail services and issuing a weekly report which first started during the 2013–14 year when service was poor. The rail report was developed to chronicle rail services from the viewpoint of the farmer unable to move grain and the grain industry unable to get railcars for shipping.

ATC's rail report now represents 95% industry participation, who in turn receive information on their own performance regarding car supplies. This report has been made possible by government, grower association and industry funding; however, the government funding expires at the end of March, 2017.

The grower associations involved in ATC – including Manitoba Pulse & Soybean Growers – believe this report is important going forward, and we need funding for it to continue. Building the report into the accurate, weekly synopsis that we have today has taken a long time and it would be a shame to lose the good work and momentum, especially if future lobbying requires such detailed information. Efforts will be made to find funding.

We could possibly see a long-term funding commitment as part of the CTA review. However, maintaining the rail report as timely, public, non-politicized information beyond the manipulation of others will be a key objective.

Another rail issue that we are expecting to hear more about is the government's changes to interswitching regulations. Interswitching is a commercial agreement between railway companies whereby one railway will carry traffic for the other railway company to ensure that customers (shippers) with only one choice of railway have fair and reasonable access to the rail system at a regulated rate. Railway companies are fully responsible for reimbursing each other on a yearly basis.

Back in 2014, the federal government increased the interswitching zone from a 30-kilometre radius to 160-kilometres. This was seen by many as a way to increase competition between carriers. CP legally challenged this change all the way to the Supreme Court of Canada, arguing that extending interswitching was politically motivated, arbitrary, beyond CTA jurisdiction and would cost the railway more than $13 million per year in unrecoverable costs. In January, the High Court dismissed CP's appeal of a lower court ruling. We'll see what happens next as several grain companies have expressed interest in using this option.

Much still needs fixing when it comes to the rail system in the land of agriculture. Let's make certain that we do not let up on the pressure. We must keep politicians active on this file and make certain all players in the industry, position this as a priority item.

Some things can remain broken even when times are good. A wise move is to make repairs before the next storm. ■

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AG MINISTER HELPS LAUNCH 'PULSES YEAR' IN MANITOBA

A crowd of approximately 75, including farmers, industry, government and the public, launched MPSG's *International Year of Pulses*, on January 6.

The crowd was at capacity. The food, fabulous. Manitoba Pulse & Soybean Growers (MPSG) launched a province-wide, year-long campaign on January 6 to deliver the message that pulses are good for people and good for the planet.

The provincial kick-off to *International Year of Pulses 2016* drew approximately 75 pulse farmers, industry representatives, consumers, and both the Minister and Deputy Minister of Agriculture, Food, and Rural Development. Minister Ron Kostyshyn even took the *Pulse Pledge*, promising to eat pulses at least twice a week during the coming year.

"Pulse crops are nutritious, popular food choices as they are low in fat, high in fibre and a good source of protein, packed with essential nutrients," Kostyshyn told the crowd. "Manitoba's 3,800 pulse crop producers have created an industry valued at over half a billion dollars and are playing an important role in building the province's agriculture industry."

MPSG chair, Kyle Friesen, used the noon-hour event in Winnipeg at McNally Robinson Booksellers to outline several initiatives planned in 2016 to educate and encourage Manitobans of all ages to improve their health and help the environment by eating beans, peas and lentils.

The *Pulse Pledge*, on the MPSG website, asks people to join a global movement by committing to eat pulses twice a week. Pledgers have the opportunity to learn more about pulses through online 'learning modules' developed in collaboration with Pulse Canada and Ag in the Classroom. MPSG plans to visit more than 200 schools and public events in 2016. The *Bean Team* (introduced on page 6) will tour all parts of the province from March to the end of July, speaking directly with school-age kids and adults. Joining the team is *Kid Bean*, a six-foot high, sneakers and baseball cap-wearing kidney bean mascot.

Sugars Mascot Costumes

Since the 1950s, Manitoba pulses have been enjoyed locally and around the world in prepared foods and as cooking ingredients. Several new collaborations during *International Year of Pulses 2016* will see MPSG working with new and existing partners on research, pulse products production and promotion.

Discussions are underway with several companies within the Manitoba Food Processors Association, a not-for-profit industry organization promoting 'Manitoba-made' products. Kathleen Sanders, president of The Great Prairie Co., attended the MPSG January 6 launch with samples of a new line of pulse-based cookies and other snack

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foods that she will bring to market in April.

"Pulses have great health benefits and are gluten free," said Sanders. "With their great taste, it is difficult to think of a reason not to use them!"

The crowd at the January launch also enjoyed pulse-based puff snacks provided by the Manitoba Agri-Health Research Network. Chicken bites in red lentil and chickpea flour, Thai bean soup, Romano bean dip and two kinds of crackers made from pulses were prepared by chefs at Prairie Ink, the restaurant located in the McNally Robinson bookstore.

"Eating about a half-cup of pulses every day could reduce a person's chance of heart attack or stroke by 7%," said Dr. Peter Zahradka, principal investigator at the Winnipeg-based Canadian Centre for Agri-Food Research in Health and Medicine. At the launch, Dr. Zahradka discussed upcoming studies at the Centre which will examine the role pulses can play in controlling obesity and blood sugar levels.

Friesen received a spontaneous round of applause when he told the crowd that MPSG is sponsoring the annual pea soup competition at this year's Festival du Voyageur. The popular *Rendez-vous des chefs*, held on closing day of Festival, draws hundreds of spectators to sample the soups created by local restaurant chefs.

In late February, MPSG was front-and-centre for Canadian Agriculture Literacy Week, partnering with Ag in the Classroom on both media events to raise awareness and presentations in classrooms throughout the province featuring MPSG board members, farmers, *Kid Bean* and the *Bean Team*.

In April, MPSG plans to unveil a new pulse and soybean exhibit at the Bruce D. Campbell Farm & Food Discovery Centre, located a short drive south of Winnipeg on Highway 75. The installation will present visitors with information about production, domestic consumption and exports of Manitoba pulses and soybeans.

Ag Minister Ron Kostyshyn, with MPSG board chair Kyle Friesen, pledges to eat pulses twice a week.

"We are taking an active role in *International Year of Pulses 2016*," says François Labelle, MPSG executive director. "In addition to initiatives announced at the January launch, we plan a number of other events and activities to reach new audiences and expand market share for Manitoba-grown pulses. Watch for announcements all through 2016." ■

MISSION: IMPULSEIBLE
STUDENT FOOD DEVELOPMENT COMPETITION

RED RIVER COLLEGE TEAM TOPS AT MANITOBA PULSE FOOD COMPETITION

With fabulous-tasting sauces and a saucy marketing campaign, Red River's culinary team creation, *Sensible Sauces*, captured top spot in Manitoba's annual *Mission:ImPULSEible* food product development competition.

Vien Salimbacod, Hilary Michelle Collins, Brittany Peto and Mattaus Buelow (pictured with MPSG judge Glen Kirby) beat out four other teams from the University of Manitoba and Red River College with their trio of condiments called *Sensible Sauces*, featuring red-hot lentil, chickpea pesto, and black bean BBQ.

Other entries included lentil-filled ravioli, pulse-filled perogies, chocolate-coated beans, and a white bean dip/spread. You can find more information about the food and competition, held in mid-December at the Red River College-Paterson Global Foods Institute in Winnipeg, on the *Mission: ImPULSEible* Facebook page.

The team earned the opportunity to match recipes with the best in Canada at the national *Mission:ImPULSEible* competition during the Canadian Institute of Food Science & Technology National Conference in Vancouver. Results will be published in the next issue of *Pulse Beat*.

Mission: ImPULSEible began in 2009 as a novel opportunity for university and college students to use pulses in the development of new food products. Participation is open to post-secondary students in a food science, related discipline or culinary arts program at a university, college, technical college or culinary school. MPSG is an active supporter and presenting partner for the Manitoba competition. ■

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PULSE FEAST SETS THE STAGE IN CANADA

2016 INTERNATIONAL YEAR OF PULSES

Pulse Canada

For the Canadian pulse industry, the wait is finally over. A Pulse Feast event in downtown Toronto kicked off the *International Year of Pulses* (IYP) in Canada on January 6.

The event was hosted by Chef Michael Smith, and attracted over 180 Canadian journalists, bloggers, dietitians and members of the food industry who connected with Canadian farmers and pulse industry members. It was one of over 140 Pulse Feast events held in in 36 countries around the world on January 6.

While guests enjoyed passed pulse hors d'oeuvres and dishes from the bean, pea, lentil and chickpea food stations, Allison Ammeter took the stage to speak about the role pulses can play in addressing global health, nutrition and environmental challenges, and the role that consumer choices play in food production. Ammeter grows pulses on her farm in Sylvan Lake, Alberta, and is also the chair of the committee responsible for planning IYP activities in Canada.

Echoing her enthusiasm, Chef Smith encouraged guests to start thinking of pulses as a food staple. He emphasized that pulses are an affordable, sustainable and versatile source of protein and fibre for billions of people around the world. Guests were able to see the versatility of pulses firsthand in the range of pulse-based dishes served at the event.

Throughout the night social media was buzzing about pulses. The hashtag #LovePulses ranked fourth on Twitter's trending topics in Toronto and eighth in Canada. Pulse Feast also received national media attention from CBC's *The National*, the *Globe and Mail* as well as in various *Sun Media* publications. Prior to the event, Chef Michael Smith also appeared on *Breakfast Television Toronto* and was interviewed by several local CBC radio shows. Several media articles continued to be published in the days following the event.

A number of IYP Canada initiatives also made their debut on January 6. Pulses: The Ideal Partner, an interactive exhibit developed by the Canada Agriculture and Food Museum was featured at the Toronto event and will travel to various venues and events around the country throughout 2016 to teach Canadians why pulses are the ideal partner for our health, environment and economy. After Pulse Feast, the exhibit travelled west to appear at CropSphere in Saskatoon and FarmTech in Edmonton. Other cities confirmed for 2016 include Ottawa, Quebec City, Montreal and Calgary. Stay tuned to www.iypcanada.ca to see when the museum exhibit will be coming to Manitoba.

Also launched on January 6 was an educational program developed by Agriculture in the Classroom Canada. The program includes a series of lesson plans that link pulses to a variety of subjects – such as science, geography, health and home economics. Pulses will also be highlighted in schools across the country during Canadian Ag Literacy Week in March.

The IYP Canada committee also broke ground on its domestic food security initiative in January with a new partnership with Community Food Centres Canada, a national organization

Host, Chef Michael Smith

dedicated to addressing the root causes of food and nutritional insecurity in Canada. Community Food Centres go beyond providing food handouts to individuals in need, and also include educational programs that enable people to build up their knowledge and skills with respect to healthy food. The organization's umbrella includes six Community Food Centres and nearly 100 partner organizations across Canada, including the Greater Vancouver Food Bank Society and Food Matters Manitoba. The IYP Canada committee will be developing a series of pulse-based recipes and educational resources that Community Food Centres of Canada can use and share with its partners.

Other upcoming events include Practical Use of Pulses in Healthy Foods, a three-day short course on pulse processing for food industry which runs from April 26–28 at the Canadian International Grains Institute in Winnipeg. This event is part one of the two-part Pulse Ingredient Workshop Series taking place in 2016. Part two will take place from September 21–23 at POS Biosciences in Saskatoon.

Following a successful start to 2016, Pulse Canada's goal is to sustain this momentum throughout the year as more IYP events and activities unfold. For more information, visit iypcanada.ca and iyp2016.org. ■

#LovePulses

PULSES RECIPES IMPRESS AT TASTE TESTS

The air is thick with the smell of doughy goodness. The sunny tables, street-level in Red River College's culinary arts building cafeteria, filled with the noon-hour crowd. Contentment is everywhere.

"Mmmmmmmm," says one man, taking a healthy bite of a delicious, golden perogy. His table-mates nod in agreement. "This is exactly what I need!"

The deal is too good to pass up: free food prepared by a famous chef in exchange for a simple critique. On this particular day in January, more than a hundred people take part in consumer taste testing of perogies made with 30% bean flour; the recipe developed by Red River College (RRC) in collaboration with Manitoba Pulse & Soybean Growers (MPSG).

Chef Gordon Bailey registers tasters.

"By supplementing the traditional wheat flour with navy bean flour, we increase nutrition but have little to no effect on the taste," says Chef Gordon Bailey. "It's a win-win situation."

Bailey is no stranger to culinary success. A native Winnipeger, Bailey moved to Prince Edward Island in the late 1990s, opening the nationally-acclaimed restaurants *Day Boat* and *Lot 30* before returning home in 2014. He now spends weekends sharing food through *The Sentruhl Project*, a part-time restaurant, and can be found on weekdays instructing young cooks at RRC.

Over three days, Bailey puts three RRC/MPSG recipes to the test: bean-flour perogies; pinto bean and chia seed 'Power Balls'; and almond and chocolate espresso cupcakes made with black bean flour. His taste tasters are students, nearby office workers and Winnipeg foodies who have discovered the cafeteria in RRC's Paterson GlobalFoods Institute on Main Street serves sensational food at prices that are hard to beat.

"The consumer testing is Part Two of our recipes project with MPSG," says Mavis McRae, research manager for Applied Research & Commercialization at RRC. "Part One was developing recipes a year ago with Chef Brad Gray. Now, we are conducting taste tastes with the public."

In 2014, MPSG contributed almost $12,000 towards RRC's $16,200 development of ten recipes in which edible bean flours and purées replaced wheat flour. The follow-up $12,770 consumer survey will gauge opinions and consumption, including popular misconceptions that pulses are difficult to incorporate or affect the taste of a food product.

In addition to the surveys, RRC has sent the recipes to a certified lab for nutritional testing. All this information becomes invaluable in marketing pulses and pulse-based foods to consumers, manufacturers and restaurateurs increasingly interested in the health aspects of food.

McRae says Portage la Prairie-based Best Cooking Pulses, Inc. donated the black bean and navy bean flours for the recipes, recognizing the importance of working with industry groups and food researchers to promote the functional and health benefits of pulses.

"This type of research is growing in the industry," says McRae. "Many food companies have staff dedicated to this sort of work."

RRC's Mavis McRae spearheaded the development of new pulse recipes and consumer taste testing.

"It's integral to product development," says Chef Bailey. "As a chef, you love the opportunity to create innovative dishes but it's also important to work with established foods. This feedback lets us know if we are missing the mark or onto something special."

An important goal with the RRC recipes was to boost protein and fibre content without losing taste and so-called functionality, which is simply how the ingredients interact with one another during preparation. Pulse flour is rich in fibre, protein, vitamins and minerals; low in fat and gluten-free.

"For me, the biggest surprise is I don't think that one single person could tell us there was a pulse product in these foods," says Chef Bailey. "The 'Power Balls,' for instance, had 50% pinto bean purée as opposed to 100% peanut butter and our taste testers loved them."

"Everyone is really interested in this work," says McRae. "The word is getting out about pulses."

Results are expected in the spring of 2016. You can read more about the consumer taste testing and the development of pulse recipes at *www.manitobapulse.ca/mpga-funded_projects/consumer-taste-testing-of-recipes-containing-pulses/*. ■

GREAT Tastes OF MANITOBA

Missed the first show?

Culinary Creations with Pulse Flours and Purées will be shown again on **Saturday, May 14, 2016 6:30 pm–7:00 pm** on CTV Winnipeg

The featured recipes – **Perogy Dough** (using pinto bean flour), **Pinto Bean and Chia Seed Power Balls**, and **Almond and Chocolate Espresso Cake** (with black bean flour) – showcase how to incorporate pulse flours and purées into familiar foods to increase nutritional value without compromising taste. They are sure to get people inspired to cook and bake with pulse flours and purées. Manitoba Liquor Marts will also be there to select wines, beers or spirits to pair with each dish.

For recipes featured on the show visit **greattastesmb.ca**

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Brian Clancey
Senior Market Analyst and Publisher

Land in pulses will be up significantly in Canada and the United States this year, but dry edible beans are not expected to join the party.

While prices paid to farmers in the United States and Canada for peas and lentils have been setting new record high levels, grower bids for dry edible beans languished until recently.

This is clearly reflected in the indices for U.S. and Canadian pulses. The U.S. index is heavily weighted toward dry edible beans and so far this season is down 13% over its 2015–16 average. By contrast, the Canadian special crop price index, which is more heavily weighted toward peas and lentils, is up 4%.

This has created a bias in favour of peas and lentils over dry edible beans in areas where farmers have a choice. However, dry edible beans should see some recovery in interest from growers based on optimism about Mexican and Brazilian demand.

The net result is that there could be little change in overall planted area for dry edible beans in Canada and the United States. Average yields could see production rise slightly from last year's 1.61 million metric tons to a potential 1.62 million. Ending stocks should be down over last summer; with the result the available supply of dry edible beans could be 1% lower at 1.87 million, but still above the previous five-year average for the third year in a row.

Higher production is a response to market strength between 2011 and 2014 stemming from a sequence of problems in North America, China and Argentina. Those limited available supplies of strategic classes of beans.

Production issues are starting to emerge because of weather events linked to the strong El Niño event. It is expected to unravel later in the year, but that is too late for crops in Africa and other southern hemisphere locations.

El Niño is blamed for drought conditions in several parts of Africa. The most obvious impact is a severe reduction in this year's prospective dry edible bean harvest in South Africa. Instead of planting an intended 51,500 hectares, land in beans will sink to just 25,500 hectares because the soil in many areas was too dry to risk planting the crop. Government forecasts in the country think yields will be up from last year, but production is still expected to plunge from 73,390 to just 35,150 metric tons. If realized, it will be the smallest harvest since 1992, when production was also around 35,000 MT.

Production at this level will have an impact on import demand in the coming months. South Africa should import at least 90,000 MT of dry edible beans, with China supplying the largest fraction. This is welcome news to China, which has struggled with underlying weakness in demand and prices.

continued on page 30

Dry edible supply situation in the NAFTA region.

Area (acres)	2012	2013	2014	2015	2016
Canada	305,000	240,000	305,000	260,000	256,000
United States	1,534,600	1,139,000	1,486,500	1,554,900	1,564,600
Mexico	3,852,000	4,336,000	3,954,000	3,917,000	3,716,000
Total	**5,691,600**	**5,715,000**	**5,745,500**	**5,731,900**	**5,536,600**
Production (MT)					
Canada					
– Coloured	158,800	140,700	195,400	168,500	155,000
– White	115,600	65,400	77,700	75,000	72,000
Cdn Total	**274,400**	**206,100**	**273,100**	**243,500**	**227,000**
United States					
– Pinto	614,000	385,000	449,000	433,000	481,000
– Black	170,000	115,000	178,000	254,000	194,000
– Navy	223,000	154,000	194,000	207,000	206,000
– Great Northern	55,000	69,000	108,000	42,000	75,000
– Other	235,000	230,000	255,000	223,000	237,000
U.S. Total	**1,297,000**	**953,000**	**1,184,000**	**1,159,000**	**1,193,000**
Mexico	**1,080,857**	**1,294,634**	**1,200,000**	**1,129,000**	**1,072,000**
Total Production	**2,652,257**	**2,221,914**	**2,657,100**	**2,531,500**	**2,492,000**
Opening Stocks	148,000	461,000	427,000	485,000	366,000
Total Supply	**2,800,257**	**2,682,914**	**3,084,100**	**3,016,500**	**2,858,000**
Exports	387,000	381,000	426,000	315,000	407,000
Domestic	1,952,257	1,874,914	2,173,100	2,335,500	2,125,000
Ending Stocks	461,000	427,000	485,000	366,000	326,000
Average Domestic	2,058,000	1,968,000	1,921,000	1,973,000	1,980,000

BASED on data from USDA, Statistics Canada and STAT Communications. Excludes chickpeas.

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Any further reductions in average yields would be expected to add to import demand. But, if international markets for dry beans shows upward momentum because of worries about production levels in Mexico and Brazil, as well as prospective seedings in key exporting countries, domestic usage could slip, reducing import needs.

Dry edible bean production in South Africa has always been focused on domestic and regional demand. By contrast, Ethiopia has been an active exporter of beans, with shipments of "kidney" beans averaging 143,205 metric tons per year between 2010 and 2014.

However, Ethiopia's agricultural outlook is "very grim," says Amadou Allahoury, FAO representative for the country. "After two consecutive seasons of failed crops, the success of the main cropping season that starts now will be critical to preventing conditions from worsening.

"Continued drought throughout the beginning of 2016 also means pasture will become even more scarce, which will negatively impact livestock keepers that rely on those grazing lands and water points for their food security." he says.

Under the current El Niño, crop production in Ethiopia has dropped by 50% to 90% in some regions and failed completely in the east. There is no breakdown of impact by crop. But the situation suggests both land in dry edible beans and output will be affected this year, resulting in reduced exports through the end of the year.

That will reduce competition for available demand in a year, which might also see reduced white bean production in Argentina. Changes made by the new government regime are expected to see grains and oilseeds compete more effectively with pulses for land use. That could make it hard for the country to maintain edible bean production levels over the short term.

On the other hand, processors there expect strong black bean demand from Brazil, which appears to be having some problems with the current pinto-type bean harvest. Imported black beans normally cover those shortfalls, with Argentina typically dominating the market, followed by China. If supply gaps remains, North American shippers often see limited demand from Brazilian buyers.

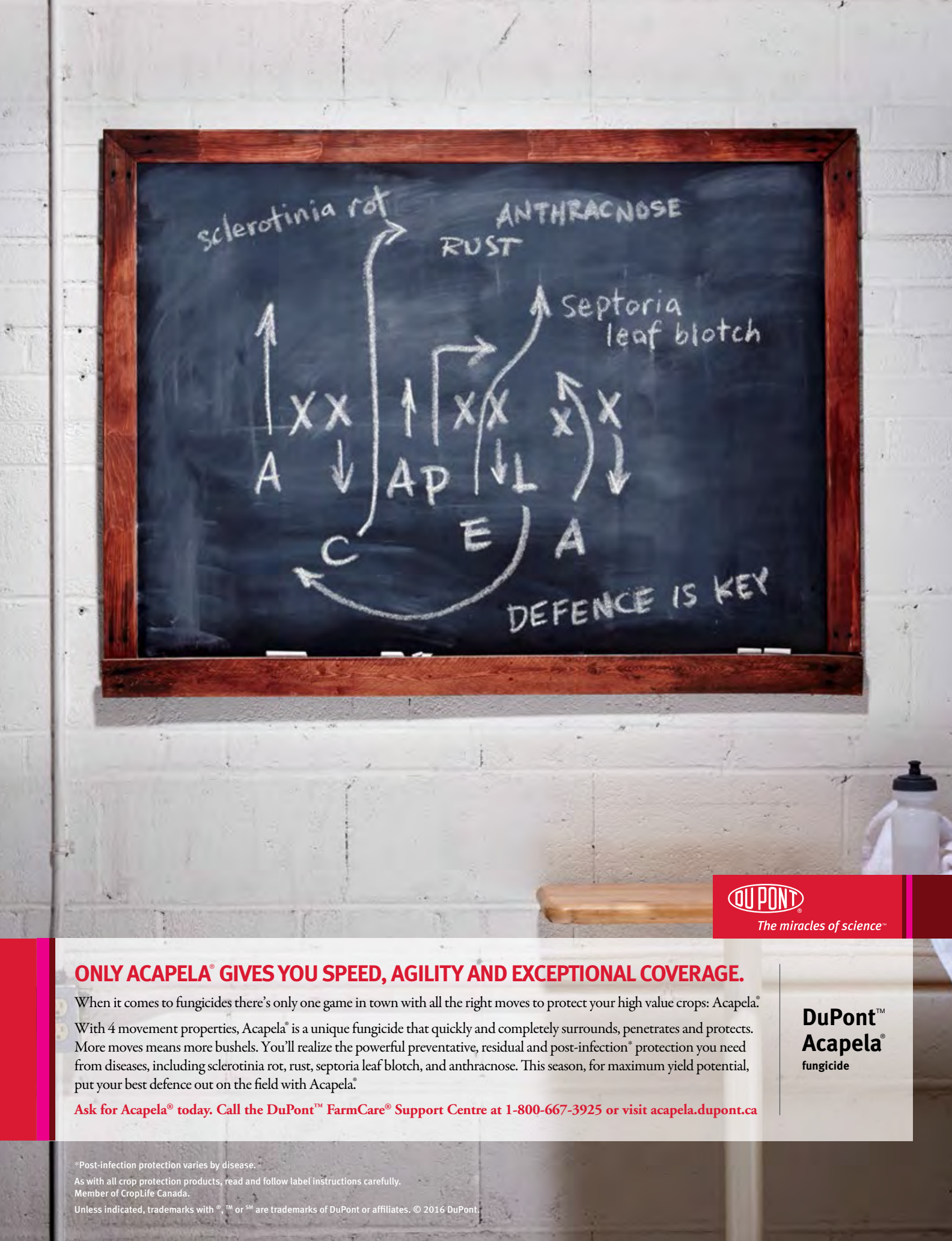
Clearly, events that could lead to an upward trend in dry edible bean prices are starting to compound. However, markets are responding slowly, with buyers unwilling to follow prices higher and some exporters still eager to move unsold inventory. ■

DATES TO REMEMBER

2016

SMART Day – Carman, MB
Wednesday, July 20

Canadian Pulse Research Workshop (CPRW)
Winnipeg, MB – October 26–28



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on-farm network

Call for Farmers to Participate

Are you interested in testing the use of inoculants, fungicides or seed treatments on your soybean fields this year? Do you want to learn how to perform simple, reliable research on your farm?

Join the MPSG On-Farm Network...

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** – Delivers results to guide management decisions and improve profitability of farmers in Manitoba

BENEFITS

As a farmer, you benefit by producing results directly on your farm and applying the knowledge to guide management decisions that will increase your profitability. MPSG benefits by 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
- Make this minimum work for farmers

2016 TRIALS

All trials listed have been approved for 2016 and are open to farmers to participate. These trials are replicated, randomized strip trials where yield differences are measured using an MPSG weigh wagon.

1. Soybean Inoculant Trial NEW!
- 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 soybean crop in 2013 or later

2. Soybean Foliar Fungicide Trial
- Compare soybean sprayed (Acapela, Priaxor or Delaro) at R-1 vs. unsprayed

3. Soybean Seed Treatment Trial
- Compare seed treatment (CruiserMaxx Vibrance or Evergol + StressShield) vs. untreated seed.
- Seed and seed treatment will be sourced

4. Western Manitoba Soybean Seeding Rate Trial
- Compare your normal seeding rate vs. lower seeding rate (30,000 seeds/ac less of normal)

5. Soybean Iron Deficiency Chlorosis (IDC) Trial NEW!
- Compare untreated vs. treated with SoyGreen iron chelate product for prevention of IDC in high risk fields

6. Edible Bean Fungicide Trial NEW!
- Navy or pinto beans sprayed vs unsprayed

› **To participate in the trials or for more information regarding the on-farm network, please contact Kristen Podolsky at 204.745.6488 or kristen@manitobapulse.ca**

Getting it Right...Again!

MPSG's second annual *Getting it Right* soybean production meeting was a great success, with 40% of participants attending this event for a second straight year. Nearly 150 farmers participated, representing 146,000 planned soybean acres for 2016 from all corners of our province. This event is farmer-focused, providing reliable, unbiased production knowledge directly from researchers and extension specialists to farmers.

"The chance to be one-on-one with specialists at the table talk sessions was a good opportunity to ask questions that a farmer may not ask in a room full of people."

– Albert Turski, MPSG Director

Farmers heard MPSG-funded researchers Dr. Yvonne Lawley and Dr. Don Flaten present results of their trials regarding seeding soybean at various soil temperatures and seeding rates and phosphorus fertility for soybean rotations. Invited speakers Dr. Michael Wunsch and Chris Gaesser, from North Dakota and Iowa respectively, discussed risk assessment and management decisions for white mould control and experiences from participation in the Iowa On-Farm Network.

"The table talk session brought a whole new level of networking with producers and speakers in a small group setting."

– Rick Vaags, MPSG Director

The afternoon table talk session provided a new and unique experience where small groups gathered at stations hosted by specialists from U of M, MARFD and MPSG to discuss a range of topics including residue management, crop scouting, crop rotation, variety selection, data interpretation, herbicide efficacy, non-GM soybeans, field pea agronomy or inputs for soybeans.

MPSG thanks *Top Crop Manager* for sponsoring the Networking Session.

PROFITABLE SOYBEAN PRODUCTION IN 2016

Kristen Podolsky, MSc, PAg
Production Specialist, MPSG

Which crop inputs and management practices contribute most to profitability? At the *Getting it Right* soybean meeting, farmers were encouraged to critically assess profit and probability when thinking about products and practices for soybean production. Profit takes into account an expected yield response and the cost to implement it. A yield response is generally an average of multiple observations, which can vary by little or a lot, making probability important. Probability is expressed for you to understand how likely you are to see a positive response. Here is an example:

- The average yield response to fungicide on soybean in Manitoba is 1.2 bu/ac
- This average is based on 21 observations, which range from -0.4 to +3.2 bu/ac
- The cost of application is $20/ac
- The probability of seeing a yield response that exceeds the cost of application is three out of 21

This article will outline eight important management areas for soybeans that warrant attention (or not) in order to maximize profitability.

1. SEEDING RATE

When determining the most economical seeding rate for soybeans, my philosophy is "begin with the end in mind." In other words, you need to think about how many actual plants you want in the field before you figure out your seeding rate. Based on $10 soybeans and a seed unit cost of $65 (includes seed and inoculant), the most economical target plant population is 140,000 live plants per acre. How do you get there? On-farm studies have determined that the average seed survival is 71% for air seeders and 81% for planters. Taking this into account, we suggest a seeding rate of 200–210,000 seeds/ac for air seeders and 170–180,000 seeds/ac for planters. To customize this to your farm, use the MPSG Bean app, available free for download in the App store.

"Seed survival" refers to the percentage of seeds planted in the ground that actually germinate, emerge and contribute to an established plant stand. To calculate "seed survival", you need two numbers; seeding rate and plant stand.

Ex. Seeding rate = 1.5 units/ac or 210,000 seeds/ac

Plant stand measured = 150,000 plants/ac

Seed survival = (150,000 / 210,000) x 100 = 71%

Seed survival is affected by germination and seed quality but especially equipment, handling and soil conditions etc. It is unique to farm and field. You should always assess your plant stand to get an idea of the seed survival you are achieving.

2. INOCULATION

Double inoculation is an absolute must for first and second time soybean fields. Inoculant studies conducted in 2014 and 2015 showed an average yield increase of 10 bu/ac for inoculant treatments over the untreated control at sites with no history of soybean. At those sites, we also compared inoculant rates and formulations (see the study results on page 44.)

But do we always need to "double inoculate"? Sure it is "cheap insurance" for first and second time fields, but with granular inoculant costing $10–15/ac, this double inoculation strategy may not be necessary for mature soybean fields. To address this question, we conducted on-farm trials comparing double vs. single inoculation on 25 fields in eastern Manitoba from 2013–2015. All fields had at least a two-year history of soybean. In this study, double inoculation was seed-applied liquid plus in-furrow granular OR seed-applied liquid plus liquid in-furrow. Economic analyses are conducted individually to reflect the differences in cost of liquid and granular inoculant. Overall, a significant yield response to double inoculation occurred in two out of 25 sites (8% of the time) and the average yield response across all sites was 0 bu/ac. The two sites that showed a significant yield response were both in 2013 and were non-GM soybeans. This robust data set indicates that single inoculation is more economical for fields with a frequent history of soybean. If certain fields on your farm meet the following requirements, single inoculation will likely provide you with a higher economic return:

"Double inoculation" is a term used by agronomists to describe the use of two types of inoculant, either two formulations (liquid, powder, granular) or two placement techniques (seed applied, in-furrow). Most often it is the combination of a seed-applied liquid inoculant and an in-furrow granular inoculant, but it can also mean seed-applied liquid and liquid in-furrow. "Double inoculation" is used as insurance to ensure rhizobium survival and successful nodulation of soybean plants.

"Single inoculation" refers to the use of a one inoculant only, usually seed-applied liquid.

- At least two previous soybean crops
- Previous soybean crops were well-nodulated
- Last soybean crop within four years
- No significant flooding or drought

3. SEED TREATMENT

Options for soybean seed treatment include bare seed, fungicide only, or fungicide + insecticide. While seed treatment can be an important tool, new research is showing that it is not always an economical input for soybeans. Unlike flea beetles to canola, soybeans do not have an insect pest that is threatening on an annual basis, making the effect of seed treatment difficult to measure and predict. In 2015, ten on-farm trials were conducted comparing treated vs. untreated soybean seed; the results are shown in Figure 1. The seed treatments tested were CruiserMaxx Vibrance and Evergol+StressShield. A significant yield increase from using a seed treatment occurred in four out of 10 trials (40% of the time). There was no specific factor that correlated to the four responsive sites, again making it difficult to predict when a seed treatment should be used. We would have expected increased crop establishment with the use of a seed treatment but this was not the case; crop establishment was the same between treated and untreated. Other factors

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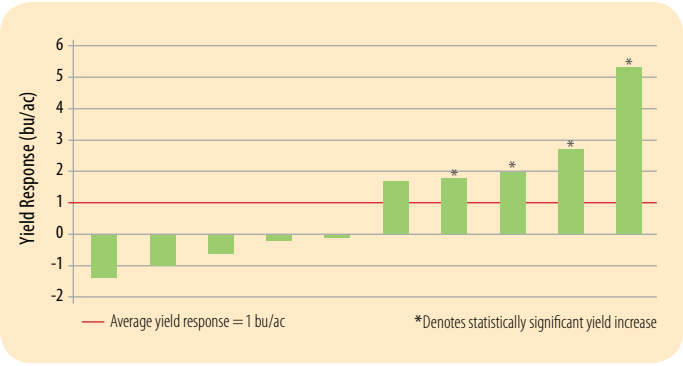

Figure 1. Yield response of treated versus untreated soybean seed across 10 eastern Manitoba on-farm trials in 2015.

such as seeding date, stubble type and seed treatment brand also varied. This study will be repeated in 2016. Generally speaking, seed treatments should be considered in fields with a history of wireworms, frequent soybean in rotation or when planting into cool, wet soil conditions. Use our *Seed Treatment Risk Assessment Guide* to assess each soybean field, available online at www.manitobapulse.ca.

4. WEED CONTROL

Timely weed control is often underestimated and can increase profitability without extra money spent. Soybeans are weak competitors with weeds (like flax) due to very slow early season growth. Based on Ontario data, the "critical weed-free" period for soybeans is known to be from emergence to the third trifoliate, which in Manitoba lasts to about July 1. Keeping the crop clean for this duration of time requires a well-thought out herbicide strategy. Crop scouting should take place weekly beginning at seeding to monitor weed height and density. North Dakota studies have shown that if weed removal is delayed to when weeds are 2–8" high, yield loss can range from 2–4 bu/ac. Think about how well your weed control has been in previous soybean crops – have you had trouble finding your soybeans among the weeds? Then you likely need to be out there earlier. Are you always able to get on the field when you need to? If not, consider a pre-emergent herbicide with residual activity.

5. NARROW ROWS

Research data from Manitoba and most other growing regions (North Dakota, Iowa) is quite consistent and points towards a yield gain for soybeans planted in narrow rows (<15"). After all, narrow rows do a better job utilizing the free farming input – sunlight! The yield gain has been said to increase as we move northward in order to promote rapid canopy closure in our shorter growing regions. From 2011–2013, 20 site-years of research were conducted throughout Manitoba comparing narrow and wide rows in soybeans. Narrow rows always yielded the same or higher than wide rows. Yield differences were more pronounced when row spacing was 8–12" compared to 27–30", ranging from 1.5 to 11 bu/ac. Yields were more similar when comparing 8–12" to 16–24" rows. Looking at Table 1, you may wonder why the profit for narrow rows is only $5/ac? Generally speaking, when using an air seeder system, you need a higher seeding rate due to lower seed survival compared to when using a planter. Thus, the increased seed cost can offset a yield gain with narrow rows, resulting in similar economics. Factors related to equipment that influence seed survival include handling, metering, depth control et cetera.

6. VARIETY SELECTION

This is the easiest way to increase profitability, particularly for soybeans where we have so many varieties on the market. As farmers and agronomists, we need to learn how to use the *Variety Evaluation Guide* to our advantage and filter out those with the highest yield potential and best agronomic characteristics. There were 57 Roundup Ready soybean varieties tested in Manitoba in 2015, with yield potential varying by 5–20 bu/ac within each maturity zone. Take some time to learn how to use the guide!

At the *Getting it Right* soybean meeting, we also discussed management areas that require "less attention" – these were "extra" fertilizer and fungicide applications. Based on multiple field demonstrations and two on-farm studies, we have not seen a yield response to additional nitrogen in Manitoba soybeans. On-farm fungicide trial results were discussed earlier in this article.

Remember, profit and probabilities are dynamic! Don't expect Table 1 to be the same in six months or two years from now. Profit is calculated according to market prices of soybeans and crop inputs. Probability can also fluctuate as new research is conducted and datasets become larger. For example, at $14 soybeans, suddenly fungicide and seed treatment become more attractive. Or alternatively, as you continue to grow soybeans on the same piece of land, the response to inoculant will be reduced. ■

Table 1. Profitable soybean production practices for 2016.

Practice	Yield Response	Profit ($10 soybeans)	Probability of positive response
1. Inoculation	+ 10 bu/ac	+ $80/ac	High
2. Timely weed control	+ 2 bu/ac	+ $20/ac	High
3. Variety selection	+ 2 bu/ac	+ $20/ac	High
4. Narrow rows	+ 2 bu/ac	+ $5/ac	Medium
5. Seed treatment	+ 1 bu/ac	- $3 /ac	Medium
6. "High" seeding rate	0 bu/ac	- $15/ac	Low
7. Fungicide	+ 1.2 bu/ac	- $13/ac	Low
8. Extra nitrogen	0 bu/ac	- $15/ac	Low

ON-FARM NETWORK TRIAL UPDATE

Have you wondered if nitrogen (N) fertilizer or other products could help squeeze an extra few bushels out of your soybeans? MPSG's on-farm network collaborator, Brent VanKoughnet of Agri-Skills Inc. initiated a project in 2015 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 1.5x rate of seed-applied liquid inoculant on May 25th at Carman, Manitoba. Products, rates and application timing and placements are listed in Table 1. Treatments 4 and 5 were applied on July 13th. The site received rainfall relatively soon after both treatment application timings took place (7.3 mm May 28th and 9.2 mm July 15th), therefore we assume that N losses due to volatilization were minimal.

YEAR ONE RESULTS

Average seed yield across all treatments at this site was 34.5 bu/ac, which was slightly lower than the provincial average (39 bu/ac). Seed yields of individual treatments ranged from 34.2 to 35.1 bu/ac and differences among treatment means were not statistically significant (Table 2). Because none of the treatments increased soybean seed yield relative to the untreated control, economic analysis was not conducted.

Table 1. On-farm trial special input treatments.

Treatment	Product	Nutrient Analysis (% N-P_2O_5-K_2O)	Product Rate Applied (US gallons/ac[z])	Nutrient Rate Applied (lbs/ac N-P_2O_5-K_2O)	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 R-3
5	Bio-Forge	2-0-3	250[y]	0.01-0-0.02	Dribbled between rows at R-3

[z] Product density (lbs/U.S. gal): Alpine G22, UAN = 10.7, Bio-Forge = 9.6

[y] 250 mL/ac Bio-Forge applied in solution with 10 US gal of water

While the Carman site received timely rains and growing conditions were relatively good, the soybeans at this site may not have had a high enough yield to encourage a response from the supplemental fertility. However, soybean are generally not responsive to N fertilizer if nodulation is adequate. This trial will be repeated in 2016. ■

July 13, 2015 – late UAN and Bio-Forge application

Table 2. Mean seed yield of applied treatments.

Treatment[z]	Yield (bu/ac)
2	35.1[a]
5	34.5[a]
3	34.5[a]
4	34.3[a]
1	34.2[a]
Mean	34.5
CV%	4.7
F Value	0.44
P>F	0.7755

[a] Means followed by the same letter are not statistically different at 95% confidence interval

[z] Treatments were replicated seven times

Grown in the Deserts of the Great Northwest

Seed from Great Northwest Seeds is well-suited for the plains of central Canada and the United States. This seed is bred and developed by Idaho Seed Bean Co. in Twin Falls, ID, produced by Central Bean Co. in the arid desert region of Quincy, WA and distributed by Buchholz Enterprises, Inc. of Wahpeton, ND. With tall upright structures and strong yields, the premium quality of our seed is readily apparent. Whether your need is for navy, pinto or black bean seed, Great Northwest Seeds can provide you high quality seed that fits best with this climate and growing season.

- *Jet Black*
- *Cascade Navy*
- *Teton Navy*
- *Sequoia Pinto*
- *Max Pinto*

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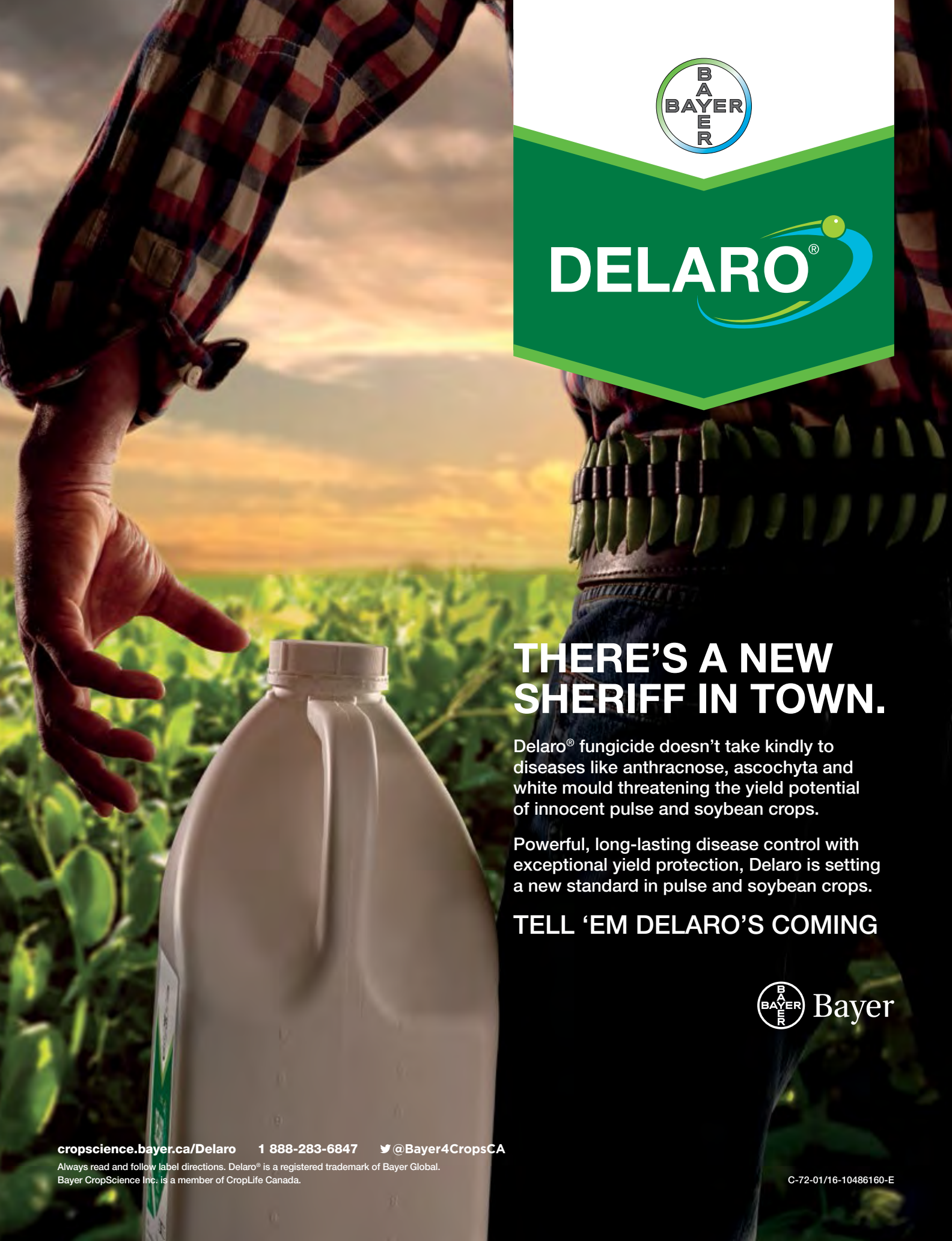
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FARMING SYSTEM CO-DESIGN: A NEW APPROACH TO FARM PLANNING

Joanne Thiessen Martens, MSc
Natural Systems Agriculture Lab
University of Manitoba

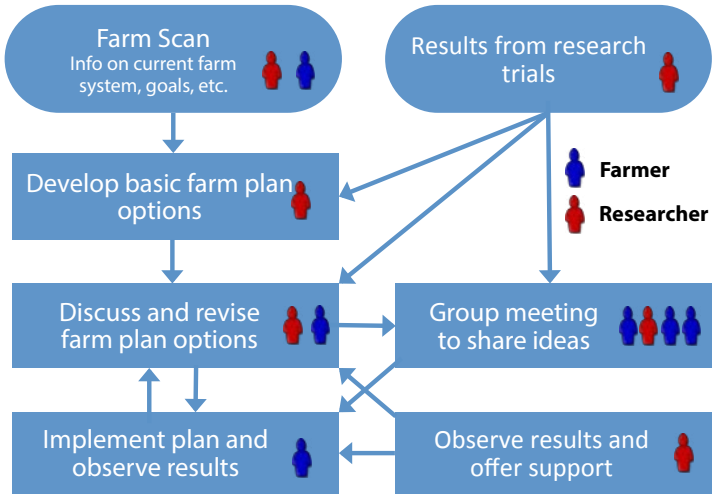
A small group of farmers in Manitoba tried something new last year. It wasn't the most recent app or most sophisticated equipment. It wasn't a new variety or an innovative weed control method. In fact, it wasn't something newly discovered at all. Rather, it was simply a new way of trying something new – an approach that brings farmers and researchers together in the farm planning process, particularly when changes are afoot.

This approach is called "farming system co-design." The premise is simple: a farmer and a researcher work together to develop an individual farm plan. The researcher brings his or her knowledge of research results and theoretical principles. The farmer brings his or her knowledge of the intricacies of the farm – everything from soils, equipment, and market access for crops to labour resources and goals for the future. Together, the farmer and researcher come up with several scenarios that could help meet the farmer's goals. Then, with the support of the researcher, the farmer chooses a scenario, possibly tweaking it along the way, and tries it. Both the farmer and researcher observe what happens, learn from experience, and adapt the plan accordingly.

NEW RESEARCH MODEL IN THE U OF M'S NATURAL SYSTEMS AGRICULTURE LAB

In a unique project, the University of Manitoba's Natural Systems Agriculture Lab is using farming system co-design to support farmers who want to grow organic soybeans. Soybeans are no stranger to Manitoba, and organic farming has been around even longer, but organic soybean production presents some unique challenges and opportunities. Organic soybeans can be difficult to grow because they require careful weed management. However, they provide their own nitrogen (N) and the price and demand for organic soybeans is very strong. This can make soybeans a good fit in an organic crop rotation for farmers who have good management skills.

Figure 1. Farming system co-design follows a process that brings farmers and researchers together at almost every step. This helps to ensure that plans are relevant to farmers and are based on sound science. Observation and adaptation help to continually improve farm plans.



Eight farmers from Manitoba participated in this new project in 2015, with their sights set on growing organic soybeans at some point in the next few years. Some of those are organic farmers who want to diversify their rotations. Others are conventional farmers who want to explore organic crop production. All of them want to grow productive, high-value crops. I was privileged to lead this project in 2015, with support from the rest of Martin Entz's Natural Systems Agriculture Lab.

MAKE A PLAN. IMPLEMENT IT. OBSERVE. REPEAT.

The farm planning process began with a farm scan (see Figure 1). In this step, farmers told me about their current farm operation and their future goals. All farmers aimed to grow organic soybeans (or edible beans) but the specific goals for each farm were very different. Some farmers wanted to focus on growing high-value crops to improve the economics of farming a small number of acres. Others wanted to produce more of their own feed grains. Still others wanted to diversify their rotation and gain experience growing different crops. For organic farmers, the general goal was to develop a crop rotation that would suppress weeds and create good conditions for organic soybeans and other crops. For conventional farmers, the plan

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began with a crop rotation designed to transition a portion of their acres into organic production; soybean was a target crop for one of the first certified organic years.

The next step in the process was to develop farm plan scenarios. Using each farmer's information, along with research results from U of M and elsewhere, I devised several options for each farmer to consider. The farm plan options included general crop rotation guidelines, such as how often to plant a green manure crop for N fertility and where to place soybean in rotation. The options also included several specific crop rotations the farmer could try, depending on the crops the farmer wants to grow and weeds and fertility levels in each field.

I then sat down individually with each farmer to discuss and revise the plan. During these conversations, it often became fairly clear which scenarios might work and which might not. Farmers were free to pick and choose ideas in the farm plans and modify them to fit their operations. Many new ideas were generated during these meetings!

A group meeting held in March, with all the participating farmers and a few researchers and other resource people, helped to solidify plans and spark new ideas. All farmers left that meeting indicating that they would use their farm plans either as they were or with further modifications.

In spring, farmers started putting their plans into action. Their task was simply to implement at least part of the plan and observe what happened. This winter, we are revising the plans together, learning from what we saw, so that in spring of 2016 the farmers can apply what they have learned and continue improving their farm systems.

LEARNING IN COMMUNITY

A unique aspect of this project is the relationships that are formed while learning together. At the end of the group meeting, farmers indicated that the personal connections with other participants were the most valuable part of the project. Most other aspects of the project weren't far behind. We are excited that this community will grow a little larger this year. About eight more farmers will join the project in 2016.

Farmers also valued having someone to call or email with questions and more ideas. I was able to visit many of the farms in the project this summer, walking the fields and talking about what we saw. One farmer commented that it felt like having their own personal researcher.

This project does not include test plots and data or even crop or soil samples taken on farms. Instead, the results of this project are found in a group of farmers with the resources and the confidence to try something new. Thanks to the Manitoba Pulse & Soybean Growers and Western Grains Research Foundation for facilitating this exciting work. ■

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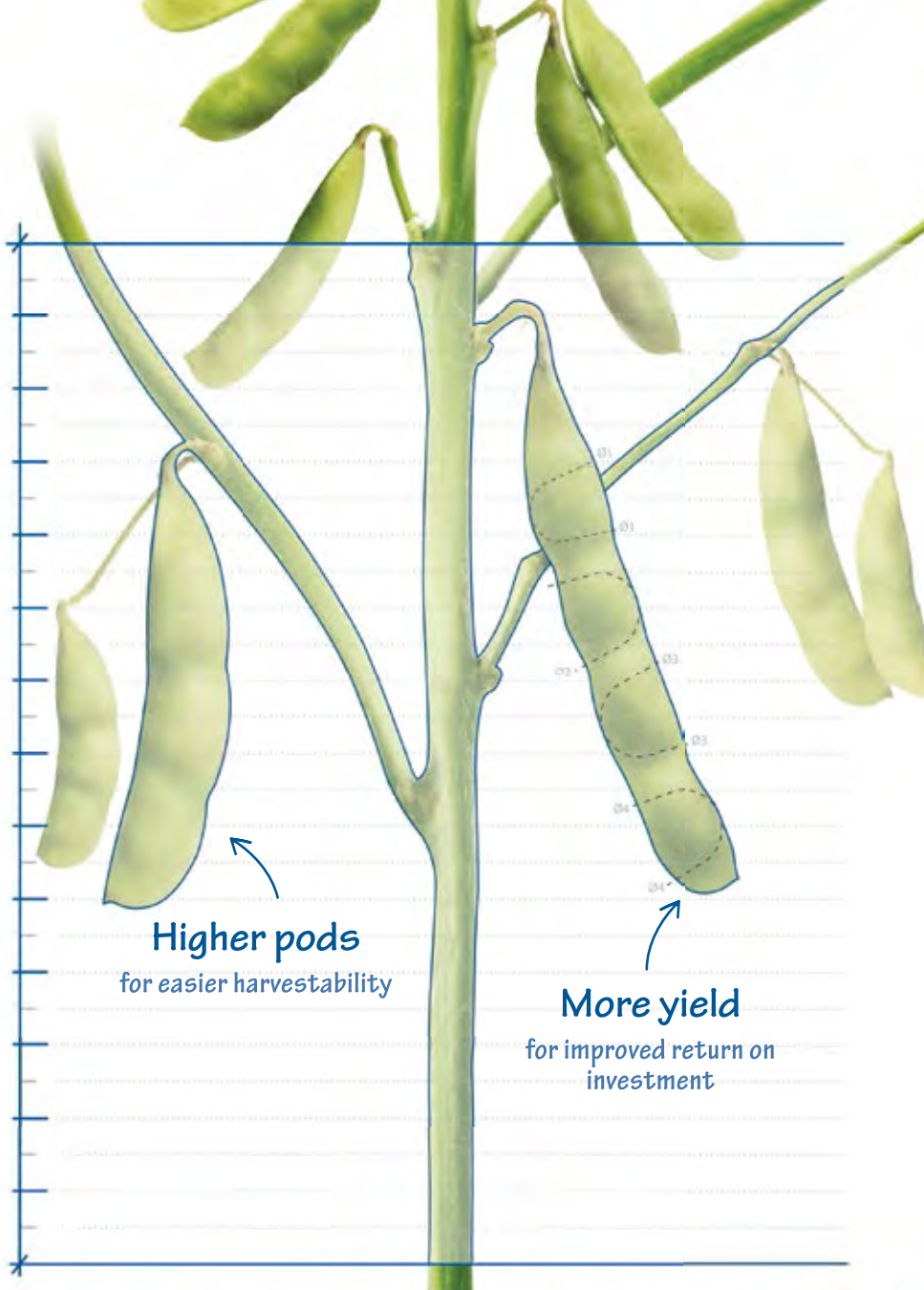

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NON-GM SOYBEAN VARIETY TESTING UNDER ORGANIC CONDITIONS

Michelle Carkner, MSc student with Dr. Martin Entz, *Department of Plant Science, University of Manitoba*

Organic and food-grade soybeans have been experiencing high, stable demand from local and international markets. This is because the vast majority of food-grade soybean buyers (such as Japan) are demanding clear-hilum non-GM (genetically modified) varieties. Additionally, organic farmers cannot plant GM seeds or use synthetic herbicides or fertilizers. The majority of organic and food-grade soybeans are produced in Ontario and Quebec, where non-GM soybean acreage accounts for 25% and 30% of total soybean acreage, respectively. When we compare this to Manitoba, where about 0.75% of soybean acreage in Manitoba is non-GM, there is certainly room to expand acreage. With the continued effort to introduce new short-season non-GM varieties and gain production knowledge, farmers in Manitoba can take advantage of the market opportunity.

One of the main challenges for organic farmers in particular is reliable, appropriate varietal performance data. Organic farmers looking to conventional trials for soybean yield data have a hard time relating what they see back to their own farm. While organic farmers face the same challenges as conventional farmers (crop nutrient requirements, disease, insect, and weed pressure), the way they combat these problems is very different. Some strategies include the use of nitrogen-fixing cover crops, increased seeding rates, careful rotation planning, and tillage practices. How different soybean varieties respond to these different management strategies has never been evaluated before in Manitoba.

The aim of this study was to evaluate the performance of 12 non-GM soybean varieties on organic farms across southern Manitoba (varieties and seed sources are listed in Table 1). The study consisted of eight trials conducted at five sites across Manitoba from 2014 to 2015. The sites included the organic land at the Ian N. Morrison Research Farm in Carman, as well as four organic farms in St. Pierre-Jolys, Somerset, Woodmore, and one transitional farm in Elie, Manitoba. Soybeans were seeded at a rate of 220,000 seeds/acre, with 12-inch row spacing. Weed control involved a pre-emergence tine harrow and one inter-row cultivation pass approximately one month after seeding.

Woodmore, Manitoba, August 31, 2015

One variety characteristic under evaluation was weed competitiveness. One of the biggest challenges in organic farming – if not the most challenging – is weed control. Organic farmers rely on tillage, late seeding, higher seeding rates, and crop rotation to control weeds. Varietal choice is another important aspect of weed control, so having varieties that are shown to be competitive with weeds is important. However, soybeans are not competitive with weeds at early growth; the presence of weeds' impact on final yield run from emergence to 60 days after emergence (approximately at stage R-5). Weed interference can result in yield losses of up to 55%. In this study, we chose to practice minimal weed control (as mentioned above) to give the varieties a good chance of performing, while giving us the ability to assess their relative weed competitiveness.

Organic soybean yields were comparable to conventional non-GM soybean yields at different sites, ranging from 45 bu/ac to 22 bu/ac. (Table 2). The weed species, weed density, soil type, weather, and soil nutrients varied widely across sites causing inconsistent outcomes. For example, an early killing frost at Somerset in 2014 reduced yield of some varieties dramatically, and only two of the earliest maturing varieties (Tundra and SK0007) were able to reach maturity by September 12, 2014. This outcome demonstrates the need for more early-maturing non-GMO varieties in Manitoba. Another

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Table 1. Average days to maturity, plant height, pod height, protein and oil content, and seed source.

All data is presented as an average across all site-years.

	Average					
Variety	Days to Maturity	Plant Height	Pod Height	Protein Content	Oil Content	Source
Tundra	102	53	14	41	19	Semences Prograin, Quebec
OAC Prudence	106	55	15	43	20	SK Foods, North Dakota
SK0007	106	58	13	43	19	Robert Wiens, Domain, Manitoba
Toma	108	63	13	42	21	Semences Prograin, Quebec
DH 863	109	60	13	46	18	SG Ceresco, Quebec
OAC Petrel	109	60	13	43	20	Sevita International, Ontario
DH 401	110	64	15	46	17	Sevita International, Ontario
Jari	111	73	15	46	18	Elite Le Coop, Quebec
Savanna	112	60	15	42	20	Homestead Organics, Ontario
Auriga	116	65	14	41	20	Elite Le Coop, Quebec
Krios	116	59	14	45	18	Elite Le Coop, Quebec
SVX14T0053	117	58	14	44	19	Sevita International, Ontario

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Table 2. Yield indices of 12 non-GM soybean varieties at eight site-years.

Variety	Average		Carman		Elie	St. Pierre-Jolys	Somerset		Woodmore	
	2014	2015	2014	2015	2014	2014	2014	2015	2014	2015
Tundra	87	96	93	97	90	81	106	105	103	85
OAC Prudence	82	100	87	105	91	99	97	98	83	93
SK0007	85	100	97	98	97	71	95	110	95	95
Toma	127	112	102	117	N/A	106	N/A	103	N/A	111
DH 863	90	98	93	96	107	91	90	93	111	106
OAC Petrel	91	95	82	94	110	112	121	102	83	93
DH 401	127	92	106	88	N/A	101	N/A	93	N/A	99
Jari	128	97	111	92	N/A	98	N/A	102	N/A	102
Savanna	103	113	119	120	114	102	118	100	114	113
Auriga	98	93	111	92	90	134	113	92	99	95
Krios	92	97	92	97	103	115	84	95	105	98
SVX14T0053	89	106	105	104	99	91	77	105	108	110
Average Yield bu/ac	26.6	31.7	36.1	45.2	34.1	29.2	14.3	22.17	26	27.7

Varieties should only be compared within each column. Yield index is the percentage of the average yield of all varieties grown in a test area (refer to the bottom of each column for that site-year's average yield).

example of inconsistency can be seen in 2015, where the same area (Somerset) experienced heavy wild mustard and wild oat pressure, causing below-average yields.

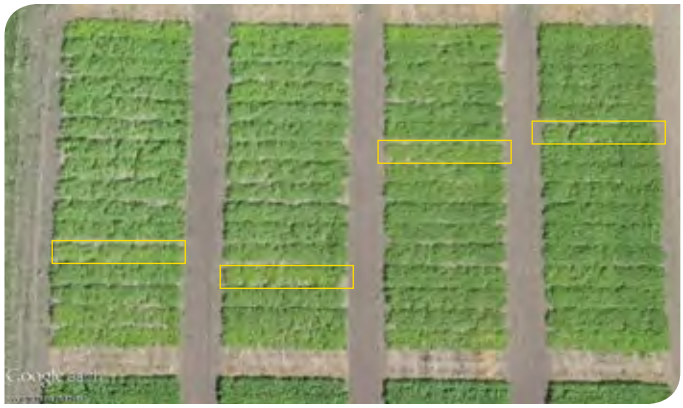
Within each site, traits associated with higher yielding varieties were: total soybean biomass accumulated, height, and maturity rating (agronomic qualities can be found in Table 1). Historically, the longer a soybean takes to mature, the higher the yield. This is because the soybean has more time to accumulate biomass throughout the season and transfer that biomass to the seed, resulting in higher yields. At the majority of sites, later maturing varieties did yield better than early maturing varieties, however, this was not consistent. While varieties like Savanna and Toma performed above the average yield at all sites, Auriga and SVX14T0053 performed inconsistently. This could possibly relate to the varieties' abilities to compete or withstand weed presence. Since longer-maturing varieties usually yield more than early, we wouldn't be surprised if Tundra and SK0007 (the earliest maturing varieties) were outperformed by the later-maturing varieties. But at the majority of sites, this was not the case. The earlier maturing varieties performed the same if not better than the average at some sites, especially at Somerset in 2015, where weed pressure was very heavy. This is good news for farmers, especially in areas where the risk of an early September frost is high.

Because non-GM soybeans are usually grown for the local and export food markets, oil and protein are very important as they increase your ability to market soybeans for the food market. If the soybeans are of low protein and oil, or poor quality (immature green seeds due to frost, for example), the soybeans will often be down-graded and sold for feed, which commands a lower price. The general minimum protein threshold for food-grade soybeans is around 35% on a dry matter basis (approx. 40% at 13.5% moisture). All the varieties tested were bred for the food market, so hitting that higher protein content threshold should not be an issue for the varieties tested. The protein content ranged from 41% (Tundra) to 46% (Jari, DH401, DH863) on a dry matter basis, and all varieties consistently met food-grade protein content.

It's important to keep in mind that the days to maturity reported is an average across all sites tested, which ranges from +/- 1.5 days reported in Table 1. Days to maturity is also affected by the season in which the varieties were grown, and 2015 was an abnormally warm year which hastened maturity. In general, for farmers in shorter seasons (around 99–105 days to maturity), SK0007 is a very good option. The variety is vigorous at early growth, able to compete and tolerate weeds, and has very good pod height. For farmers in the mid-season range (approximately 105–112 days to maturity), Jari and Toma stand out for having high yield potential, being highly weed competitive, and having relatively stable performance across a wide range of environments. Savanna yielded very well across all sites, however, the length of season required is not advisable for many Manitoba growers at this time due to the high frost risk. ■

Choosing an inoculant for your soybeans can be overwhelming, considering the product, formulation, rate and combination options. In complement to the On-Farm Network Inoculant Trial (see *The Bean Report*, page 34 for trial results), Manitoba Pulse & Soybean Growers (MPSG) also invested in small-plot research trials to evaluate many inoculant strategies simultaneously in Manitoba.

The complete list of inoculant strategies tested, listed in Table 1, were selected to address four specific objectives: is there any additional yield benefit to 1) using in-furrow granular (instead of seed-applied liquid) inoculant 2) double inoculating (seed-applied liquid + granular in-furrow), 3) increasing the rate of inoculant (from 1x to 2x) or 4) using "enhanced" inoculant products?



Melita, 2015. Untreated control plots yellowed mid-season.

WHAT ARE 'ENHANCED' INOCULANTS?

All inoculant products used in this trial contain *Bradyrhizobium japonicum* – the soybean-specific bacteria which causes nodule development on roots and biologically fixes nitrogen (N) within the nodules. In this trial, treatments termed 'enhanced' are those formulated with additional molecules or living organisms which claim to improve nodulation, early crop development or plant nutrition.

Both the Jumpstart (+ liquid Cell Tech) and the granular TagTeam treatments contained a phosphate-solubilizing rhizopheric fungus, *Penicillium bilaii* in addition to the *B. japonicum* bacteria. *P. bilaii* lives in the rhizosphere (soil immediately surrounding the root) and may increase soil phosphorus (P) solubility and hence, plant uptake, by secreting organic acids that acidify the soil or chelate P molecules, protecting P from precipitation or adsorption to soil.

Nodulator N/T is formulated with *Bacillus subtilis*: a plant growth promoting rhizobacteria which may increase soybean growth and nodule formation resulting from co-inoculation with *B. japonicum*.

Optimize is formulated with the lipo-chitooligosaccharide (LCO) molecule. Nodulation requires both the plant root and *B. japonicum* bacteria to send and receive signals for the process to initiate. The bacteria migrate towards roots, attracted by root exudate (root to bacteria signals); these exudates cause the bacteria to produce proteins called Nod factors (LCOs). The LCO molecules (bacteria to plant signals) in Optimize may hasten the process of nodule development.

PRELIMINARY TRIAL RESULTS

Field sites selected for this trial at Melita (2014 and 2015), Roblin (2015), Carberry (2015), had no history of soybeans, while the field site at Carman (2015) last had soybeans planted in 2007. Inoculant treatments were applied to NSC Reston seed (without seed treatment) and seeded at 210,000 seeds/ac on narrow row spacing (7.5–12 inches) into cereal or flax stubble. Liquid inoculants were seed-applied and granular inoculants were applied in-furrow.

Due to the limited history of soybeans in rotation at selected field sites, we expected to see a yield response to inoculants at all site-years; therefore, data from all five site-years was combined for statistical analysis. Unsurprisingly, inoculant treatments increased soybean yield by 10.5 bu/ac, on average, compared to the non-inoculated soybeans (Table 2).

There was, however, no statistical difference in seed yield between individual inoculant strategies (Table 2). For example, there was no difference in seed yield between in-furrow granular inoculant compared to seed-applied liquid inoculant, nor was there a difference between single versus double inoculation treatments (Table 2). Similarly, there was no yield difference between 1x and 2x rates of liquid or granular inoculant (Table 2). In addition, 'enhanced' inoculant treatments did not result in higher yields compared to the standard *B. rhizobium* inoculant of equivalent formulation (Table 2).

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Table 1. Soybean yield (bu/ac) of each inoculant strategy, averaged across all five site-years.

Treatment	Yield (bu/ac)
Untreated	31.7
Liquid Cell Tech	43.2
2x Liquid Cell Tech	45.4
Liquid + Granular Cell Tech	41.3
Granular Cell Tech	42.7
2x Granular Cell Tech	42.1
Liquid Cell Tech + Jumpstart	38.0
Liquid Optimize	43.1
Granular TagTeam	39.9
Granular Nodulator	42.2
2x Granular Nodulator	43.6
Liquid Nodulator N/T	42.4
2x Liquid Nodulator N/T	41.3
Liquid + Granular Nodulator	43.7
Mean	41.6
CV %	20.6
F value	2.46
P>F	0.0124

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Table 2. Difference in soybean yield (bu/ac) between various inoculant treatments, averaged across all five site-years.

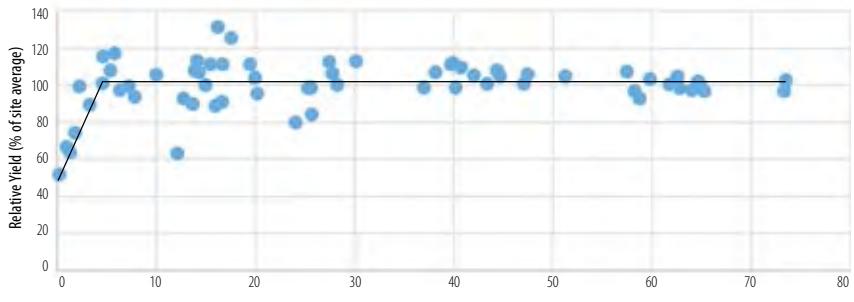
Treatment 1	Treatment 2	Difference between Treatment 1 – Treatment 2	
All Inoculant Treatments	Untreated	10.5	*
Liquid Cell Tech	2x Liquid Cell Tech	-2.2	NS
Liquid Cell Tech	Granular Cell Tech	0.5	NS
Liquid Cell Tech	Liquid + Granular Cell Tech	1.9	NS
Granular Cell Tech	2x Granular Cell Tech	0.5	NS
2x Granular Cell Tech	Liquid + Granular Cell Tech	0.8	NS
Liquid Cell Tech	Optimize	0.1	NS
Liquid Cell Tech	Liquid Cell Tech + Jumpstart	5.2	NS
Granular Cell Tech	Granular TagTeam	2.8	NS
Liquid Cell Tech	Liquid Nodulator N/T	0.8	NS
Liquid Nodulator N/T	2x Liquid Nodulator N/T	1.2	NS
Liquid Nodulator N/T	Liquid + Granular Nodulator	-1.3	NS
Granular Nodulator	2x Granular Nodulator	-1.3	NS

* Difference between treatment means is statistically significant at P<0.0001
NS Difference between treatment means is not statistically significant

Although there was no benefit to double inoculation in this trial (in-furrow granular inoculant in addition to a seed-applied liquid inoculant), MPSG still recommends double inoculating soybeans when grown on fields with two or less soybean crops grown previously (for more information regarding inoculant recommendations, see *The Bean Report*, page 36). There are several possible explanations for the lack of response to double inoculation in this trial which cannot always be guaranteed under field conditions:

1. **Soybeans were seeded into ideal soil conditions.** These trials were all seeded in late May/early June, when soil conditions were relatively favourable for crop emergence and inoculum survival. Unfavourable soil conditions, i.e. cooler and wetter soil, often encountered with earlier seeding dates may reduce the viability of your inoculant; therefore, using a granular inoculant in addition to the seed applied inoculant may ensure adequate rhizobium populations are present.
2. **Inoculants were properly stored, handled and applied.** Inoculants should always been kept in a cool, dry environment, should not be frozen, used before the expiration date and opened only just before using. Ideally, seed treated with liquid inoculant should be planted within the same day as inoculant application (although planting windows for seed-applied inoculants vary – read individual product labels).
3. **No compatibility issue with seed treatment.** Fungicide and/or insecticide seed treatments may affect the effectiveness of seed-applied liquid inoculant (check product compatibility for various product combinations); however, in this experiment seed treatment was not applied in an effort to standardized inoculant application and avoid potential differences in treatment compatibility.

Figure 1. Relationship Between Number of Nodules per Plant and Soybean Yield



HOW MANY NODULES SHOULD A SOYBEAN HAVE?

Regardless of your chosen inoculant strategy, you should assess the success of your inoculant on every field every year to not only evaluate inoculant effectiveness but also ensure your crop will have adequate N during critical growth stages to maximize yield. Count the number of nodules per plant on at least 10 plants from representative areas in the field when soybeans are at the R-1 to R-4 stage. At R-4 to R-5, N fixation and N requirements for soybean have reached a maximum. Results from all sites in this inoculant trial showed that at least five nodules per plant were required to reach the average yield at each site (average yield ranged from 35 to 49 bu/ac) (Figure 1).

This trial will be repeated in 2016.

MPSG thanks collaborators from WADO (Melita), CMCDC (Carberry), PCDF (Roblin) and the U of M (Carman). ■

MPSG is now contributing to SPG's Variety Release program. Breeder pea seed is now available to Manitoba Select Growers.

P MANAGEMENT FOR SOYBEANS: WHAT DID WE LEARN?

Gustavo Bardella, MSc student, John Heard, MSc and Dr. Don Flaten
University of Manitoba and MAFRD

Soybean acreage in Manitoba has increased dramatically during the last decade, bringing along many questions about nutrient management, including phosphorus (P), in soybean cropping systems. In response to these questions, a collaborative study was conducted over 28 site-years, from 2013 to 2015, to assess soybean yield response to P fertilizer and the risk of reduced plant stand and seed yield due to seed-placed fertilizer.

Treatments included different P fertilizer rates (20, 40 and 80 lb P_2O_5/ac) applied in side band, seed-placed or broadcast, plus a control which did not receive P fertilizer. Sites varied in soil texture and seeding equipment, which are important factors that can affect the risk of fertilizer toxicity. Also, 50% of the sites had soil P test in the very low – low range of sufficiency (0–10 ppm Olsen P), in which many crops would have high probability of response to P fertilizer (Table 1).

Four weeks after planting, plant stands were reduced by seed placed P at six of 28 site-years, but usually only at a rate of 80 lb P_2O_5/ac (Table 2). Seed placed P at rates of 20 and 40 lb P_2O_5/ac reduced emergence at one and two site-years, respectively. At maturity, seed yield was decreased in only two site-years. In both cases, fertilizer had been applied at 80 lb P_2O_5/ac seed placed and the plant stand was reduced below 100,000 plants per acre (replant threshold). Seed yield was not increased by the fertilizer applied at any site in any year, regardless of rate, placement or soil test P (Table 3).

Soybeans have a great ability to take up P from the soil, even at very low levels of soil test P. Control plots in sites with soil P levels as low as 3 ppm Olsen P yielded up to 60 bu/ac and did not yield less than the P fertilized treatments. Furthermore, there was no early or mid-season response to starter fertilizer (eg. 20 lb P_2O_5/ac in the seed row).

Complementary to the study on P rates and placements, another project looking at the soybean yield response to soil P instead of P fertilizer was conducted over seven site-years. Results reinforced the findings of the previous study, with no yield increase to higher soil test P or starter fertilizer spring applied as side band.

Considering the findings of this study, the recommendation for the maximum safe rate of P_2O_5 applied in the seed row according to the *Manitoba*

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Table 1. Site characterization according to soil test P, soil texture and equipment features.

Site	Olsen P (ppm)			Soil Texture	Row Spacing	Seeder Opener
–	2013	2014	2015	–	Inches	Type
Roseisle	N/A	4 (VL)	4 (VL)	Sandy Loam	8	Knife
Melita	3 (VL)	5 (L)	7 (L)	Sandy Loam	9.5	Knife
Brandon	5 (L)	6 (L)	5 (L)	Clay Loam	8	Knife
Carman	N/A	15 (H)	7 (L)	Sandy Clay Loam	8	Knife
Roblin	7 (L)	22 (VH)	8 (L)	Clay Loam	9	Knife
Beausejour	8 (L)	13 (M)	7 (L)	Heavy Clay	9	Disc
Arborg	14 (M)	22 (VH)	14 (M)	Silty Clay	9	Disc
St Adolphe	23 (VH)	25 (VH)	71 (VH)	Heavy Clay	7.3	Knife
Portage	34 (VH)	18 (H)	10 (L)	Clay Loam	12	Disc
Carberry	44 (VH)	11 (M)	15 (H)	Clay Loam	12	Disc

Note: VL = very low, L = low, M = Medium, H = High, VH = Very High

Table 2. Frequency and intensity of plant stand reduction caused by fertilizer toxicity.

	2013	2014	2015
# Sites	8	10	10
Range of plant stand of control ('000 plants/ac)	83–261	116–258	70–302
# Sites with plant stand reduction @ 20 lb SP	0	1[a]	0
# Sites with plant stand reduction @ 40 lb SP	0	2[a,d]	1[b]
# Sites with plant stand reduction @ 80 lb SP	2[c]	2[a,d]	1[c]
% Stand reduction	39–71	39–52	40

[a] At Portage in 2014, seed row placement of P fertilizer reduced seedling emergence for all rates of P, compared to the control, at 5% level of probability.

[b] At Roseisle in 2015, seed row placement of P fertilizer reduced seedling emergence at a rate of 40 lb P_2O_5 per acre, but not at 80 lb per acre. Therefore, this reduced emergence may have been random error.

[c] At Melita and Carberry in 2013, and Roblin in 2015 seedling emergence was reduced only by seed row P fertilizer applied at a rate of 80 lb P_2O_5 per acre.

[d] At Carberry in 2014, seedling emergence was reduced by seed-placed fertilizer at 40 and 80 lb P_2O_5 per acre.

Table 3. Soybean seed yield response to P fertilizer.

	2013	2014	2015
# Sites	8	10	10
Mean yearly seed yield (bu/ac)	46	42	51
Seed yield for control (bu/ac)	23–66	18–60	37–65
# Sites with yield increase with P fertilizer	0	0	0
# Sites with yield decrease with P fertilizer	2*	0	0
% Yield decrease*	29–36	0	0

* At Melita and Carberry in 2013, only the 80 lb P_2O_5/ac seed-placed treatment reduced seed yields compared to the control, at 5% level of probability.

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Soil Fertility Guide (10 lb P_2O_5/ac) probably underestimates the soybean's tolerance to seed-placed fertilizer in most situations. However, it is difficult to define a new value for the maximum safe rate since there are many factors that can increase the risk of fertilizer toxicity and should be considered when determining the rate of P applied in the seed row, such as:

- Soil moisture (drier soils can increase the risk)
- Soil texture (medium to coarse soils have lower water holding capacity)
- Seeder opener type (disc openers spread fertilizer and seed less than knife or shovel openers, increasing the fertilizer concentration close to the seeds)
- Row spacing (wide spacings between seed row increase the fertilizer concentration in each seed row)
- Fertilizer rate (higher rates are more risky)

Over the long term, P fertilizer or manure must be applied to replace what is being removed by the crop based on historic yields. If applying the fertilizer in the soybean year of the rotation, the best placement would be side banding since it minimizes the risk of fertilizer toxicity and applies the fertilizer concentrated close to the root zone and below the soil surface, preventing losses through soil erosion and run off.

Since there were no positive responses to P fertilizer in this study, another option for maintaining P fertility would be to apply larger than usual rates of P to other crops in the crop rotation, in a strategy called *rotational fertilization*. For instance, when banding fertilizer for cereals, apply extra fertilizer to account for the P removed by soybeans in other years. This strategy also enables non-legume crops to make the most use of the N that comes with most P fertilizers.

Another option is to fall band P fertilizer prior to a cereal crop or canola in the rotation, by attaching an air cart or fertilizer tank to a cultivator, and applying fertilizer during the fall or spring tillage operation. Banding the P under the soil surface is the best placement for maximizing crop uptake and reducing the risk of runoff losses.

We strongly recommend the use of the P balance worksheet posted on the MPSG website in order to check the P balance in your specific crop rotation (link below). This will indicate whether there is a surplus or a deficit of P in your rotation. That worksheet, along with a more detailed factsheet on P fertilization strategies for Manitoba cropping systems can be found at www.manitobapulse.ca/production-resources/phosphorus-fertilization-strategies/. ■

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Arborg Seeder – Disc Opener

Brandon Seeder – Knife Opener

CROP SEQUENCES AND SOYBEAN PRODUCTIVITY

Dr. Ramona Mohr, Dr. Debra McLaren, and Dr. Byron Irvine
Agriculture and Agri-Food Canada

Soybeans have become an integral part of the cropping mix on Manitoba farms, with soybean acreage expanding to nearly 1.4 million acres in 2015, up from just 100,000 acres a decade ago. Although soybean has become a key part of the rotation on many Manitoba farms, relatively little research has been done to date to determine how preceding crops influence soybean and, in turn, how soybean might influence the crops that follow it.

To better understand the short-term effects of preceding crops on crop yield, quality and disease under Manitoba conditions, small plot studies were conducted near Brandon and Morden, Manitoba.

Six three-year crop sequences were studied from 2011 through 2013 at the Morden Research Centre and from 2013 through 2015 at the Brandon Research Centre. Growing a crop sequence of canola-soybean-wheat was compared to soybean-canola-wheat to determine the effect of growing soybean one versus two years prior to wheat. A similar comparison was made for canola, with wheat-soybean-canola compared against soybean-wheat canola. In addition, the effect of growing canola versus wheat before soybean was assessed, with a crop sequence of soybean-wheat-soybean compared against soybean-canola-soybean. Yield and quality were measured for all crops in all years, and analysis is underway to measure nutrient uptake and removal by the various crop sequences. In addition, soybean root rot severity was assessed by rating 60 roots per treatment using a scale of 0 (no disease) to 9 (death of plant). Crop establishment, fertility, weed control and harvest in these trials followed generally-accepted management practices for the area.

At both Brandon and Morden, preceding crop sequence had little effect on wheat or on canola. Preceding crop sequence had no effect on wheat yield. Grain yield was similar whether wheat followed soybean-canola or canola-soybean in rotation. No effects of preceding crop sequence on test weight, seed weight or % protein were noted at either Brandon or Morden. Percent protein averaged 14.9% at Morden and 15.2% at Brandon regardless of treatment. In the case of canola, at both the Brandon and Morden sites, seed yields were the same whether canola followed wheat-soybean or soybean-wheat in rotation. Preceding crop had no effect on test weight or seed weight of canola, although % oil was slightly higher following soybean-wheat than wheat-soybean.

Crop sequence appeared to have some effect on soybean, although the reason for this is not clear. At the Morden site, soybean yields were similar whether soybean followed soybean-wheat or soybean-canola in rotation. No effects on root rot severity or test

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Effect of crop sequence on yield of wheat, canola and soybean, and on root rot severity of soybean (rating scale of 0 to 9).

Crop sequence			Morden			Brandon			
			Year 2 (2012)	Year 3 (2013)		Year 2 (2014)		Year 3 (2015)	
Year 1	Year 2	Year 3	Yield	Yield	Root rot (0–9)	Yield	Root rot (0–9)*	Yield	Root rot (0–9)
canola	soybean	wheat	1475	3761	–	1615	2.6	1616	–
wheat	soybean	canola	1878	1345	–	1570	3.1	1857	–
soybean	wheat	canola	3045	1346	–	2903	–	1965	–
soybean	wheat	soybean	2918	2804	2.3	2805	–	1836	3.6
soybean	canola	wheat	946	3589	–	1613	–	1541	–
soybean	canola	soybean	1045	2821	2.3	1813	–	1048	3.9

*Root rot severity in Year 1 of the crop sequence averaged 2.4 at Brandon.

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weight were noted, although seed weight tended to be slightly lower following soybean-wheat. At Morden, root rot severity was low at 2.3, both for soybean following wheat and for soybean following canola. These results differed from Brandon where soybean yield was lower following soybean-canola than soybean-wheat. The reason for this yield difference at Brandon is not known. Plant stands were similar for both crop sequences (32 and 30 plants/m^2 for soybean following soybean-wheat and soybean-canola, respectively). While root rate severity ratings at Brandon were slightly higher than at Morden, likely due to differences in environmental conditions among the sites, there was little difference in root rot severity between the crop sequences at Brandon (3.6 and 3.9 for soybean following wheat-soybean and canola-soybean, respectively). No differences were noted in seed weight or test weight, and the same management practices had been used for both soybean treatments. Because data is available from only two trials, it is not clear if the yield difference observed at Brandon was the result of the crop sequence itself, or of the specific conditions at the site in 2015. In looking at year 2 of the crop sequence study, it is interesting to note that soybean yields at Brandon were similar whether soybean followed canola or wheat, whereas soybean yields at Morden tended to be slightly lower where soybean followed canola rather than wheat although the effect was not statistically significant.

Because the current study looked at crop sequence effects over a relatively short duration of only three years, it is not necessarily surprising that effects on the crop were limited. Differences among rotations often emerge slowly over time, whether the result of a buildup of diseases, weeds or other pests, and/or due to changes in soil productivity and quality. In the current study, for example, soybean root rot severity was relatively low in the third year of each study. As with any rotation study, the impact of crop sequence and frequency on populations of root rot causing fungi tends to become an issue as time progresses because different root systems encourage different microorganisms, and pathogens build up steadily in soil when/if their favourite host plants are available.

In order to better understand the longer-term effects of rotation on crop productivity, a more in-depth rotation study was initiated near Brandon in 2014. This study includes five rotations: soybean-canola; soybean-wheat; soybean-wheat-canola; soybean-canola-wheat; soybean-soybean-wheat. Each phase of each rotation is present each year, so that the effects of year and rotation can be separated from one another. It is hoped that this study can be continued in the longer term to gain a better understanding of the relative performance of the various rotations, and their effects on disease development, nutrient cycling, and crop yield and quality. ■

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• SaskCan Pulse Trading – Parent Division	✓		✓	✓	✓	204-737-2625	St. Joseph, MB	✓
All Commodities			✓	✓		204-339-8001	Winnipeg, MB	✓
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Belle Pulses Ltd.				✓		306-423-5202	Bellevue, SK	✓
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CB Constantini				✓		604-669-1212	Vancouver, BC	✓
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Maviga NA., Inc.		✓	✓	✓		306-721-8900	Regina, SK	✓
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Quarry Grain Commodities					✓	204-467-8877	Stonewall, MB	

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COMPANY	EDIBLE BEANS	FABA BEANS	LENTILS	PEAS	SOYBEANS	PHONE	LOCATION	CGC REGISTERED
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• Richardson Pioneer Ltd.				✓	✓	204-934-5627	Winnipeg, MB	✓
• Tri Lake Agri				✓		204-523-5380	Killarney, MB	✓
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Seed-Ex Inc.					✓	204-737-2000	Letellier, MB	✓
Scoular Canada Ltd.	✓	✓	✓	✓	✓	403-720-9050	Calgary, AB	✓
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Simpson Seeds			✓			306-693-2132	Moose Jaw, SK	✓
Southland Pulse				✓		306-634-8008	Estevan, SK	✓
Sunrich LLC					✓	507-446-5642	Hope, MN	
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• Winkler Receiving	✓					204-325-0767	Winkler, MB	✓
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Zeghers Seeds Inc.			✓	✓		204-526-2145	Holland, MB	✓

To be included on our Manitoba Buyers List, companies should contact the MPSG office at 204-745-6488 to register.

NOTE – These companies are authorized to deduct and remit levy to MPSG. This list is provided by MPSG as a convenience to our members. **MPSG accepts no responsibility or liability for the accuracy or the completeness of the information provided.** It is your personal responsibility to satisfy yourself that any company you deal with is financially sound. Questions regarding licensing and security should be directed to the Canadian Grain Commission at 1-800-853-6705 or 1-204-983-2770.

Soybean Scout ANSWERS

A – Surfactant injury. When cloudy conditions predominate as they did in spring 2015, the leaf cuticle of soybean can be quite thin, making it susceptible to surfactant burn following glyphosate application. Surfactant burn can be confused with other brown leaf spots such as Septoria brown spot or sunburn. Surfactant burn will be limited to leaf tissue that was exposed to the herbicide and you can usually see the droplet pattern. New leaf tissue will not be affected nor should yield.

B – Frost injury. A late spring frost is not unusual in Manitoba. In 2015, frost hit overnight on May 29. Fortunately, the majority of soybeans had not emerged but some were affected. The growing point of soybean emerges above ground with the cotyledon leaves, making it susceptible to freezing temperatures. These seedlings were all collected from the same field two days after the frost event. You can see the extent of damage varied greatly. When assessing frost damage to soybean seedlings, you need to look at the hypocotyl (stem tissue below the cotyledon leaves). From left to right:

A) Healthy seedling

B) Main growing point has been killed but the hypocotyl and cotyledon leaves are healthy so re-growth will likely occur from the axillary buds

C) Some green tissue but the hypocotyl is shrunken near the top – no re-growth expected

D) Lethal injury – leaf tissue and hypocotyl are brown and necrotic, hypocotyl is shrunken

Recipe Corner

Pinto Bean and Chia Seed Power Balls

Makes 20 portions

3/4 cup (187.5 g) sunflower seeds, hulled

3/4 cup (187.5 g) blanched almonds, sliced

1 cup (250 g) rolled oats

1 Tbsp (15 g) chia seeds

1 cup (250 ml) pinto bean purée

1 cup (250 g) pitted dates

1/2 cup (125 g) dried cranberries

1 tsp (5 g) ground cinnamon

1/2 tsp (2.5 g) ground ginger

1 Tbsp (15 ml) liquid honey

Directions

1. In a blender pulse sunflower seeds, almonds, rolled oats and chia seeds until coarsely chopped and blended.
2. Remove contents to a medium sized bowl.
3. Add pitted dates, dried cranberries, cinnamon and ginger to blender and pulse until almost puréed, but still a few chunks left.
4. Remove contents and add to bowl of previously pulsed ingredients.
5. Add bean purée and honey to bowl.
6. Mix well and knead using clean hands.
7. Moisten hands with cold water, pull off piece of batter and roll into a ball (a bit smaller than size of golf ball).
8. Place on cookie sheet.
9. Cover with cling wrap and refrigerate until needed.

***Bean Purée**

Prepare beans by one of the following methods:

Method 1: Rinse and drain canned beans to remove extra sodium.

Method 2: Soak dry beans in water overnight. (ratio: 3 cups water to 1 cup dry beans). Bring to gentle boil for 1 hour or until seed coat is soft, and drain.

Place in food processor, add ¼ cup hot water, and purée until the mixture is very smooth, adding more water in small amounts to reach desired consistency, similar to baby food, about 5 minutes. Scrape down sides of the bowl as needed. Refrigerate or freeze unused bean purée for your favourite recipes!

Thick and Hearty Red Lentil Soup

Makes 8 servings (2-cups/serving)

2 cups (500 ml) dried whole red lentils

1/3 cup (75 ml) pot barley

10 cups (2.5 L) reduced sodium beef broth

1 large onion, chopped

2 large carrots, chopped

2 large stalks celery, chopped

2 cloves garlic, diced

1 lb (450 g) lean ground beef

1-28 fl.oz (798 ml) can diced tomatoes

1/2 tsp (2 ml) salt

1/4 tsp (1 ml) pepper

Pinch cayenne pepper

1 bay leaf, cracked

Directions

COMBINE lentils, barley and beef broth in large stock pot or Dutch oven.

BRING mixture to a boil, then reduce heat and simmer ingredients for 30 minutes.

MEANWHILE, prepare vegetables.

PLACE ground beef into large frying pan and place over medium heat. Cook until juices run clear.

ADD beef and vegetables, along with remaining ingredients, to the stock pot. Further break up tomatoes with wooden spoon.

BRING mixture to a boil and simmer, stirring occasionally, for 20 to 30 minutes, or until vegetables are tender and soup has thickened.

Recipe courtesy of Pulse Canada

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