



Wednesday, December 11, 2024

PLENARY SESSION – Room 172 Agriculture Building

- 8:25 **Welcome**
- 8:30 **Setting the Stage for MAC 2024**
- 8:40 **Power and Pitfalls of Genetic Resistance Testing**
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- 9:15 **Herbicide Discovery and Herbicide Resistance: A Case of a Tail Wagging the Dog**
Dr. Franck Dayan, Colorado State University
- 10:00 **Coffee Break & Poster Session – Agriculture Atrium & Room 138**
- 10:30 **Herbicide Resistance and Application Method**
Dr. Tom Wolf, Agrimetrix Research & Training
- 11:00 **Practical Organic Farming: Challenges and Techniques at Les Fermes Longprés**
Matthew Dewavrin, Les Fermes Longprés
- 11:30 **Integrated Weed Management in Dryland Wheat Production Systems**
Dr. Drew Lyon, Washington State University
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Tammy Jones, Corteva Agriscience
- 2:00 **Monitoring Insecticide Susceptibility of Flea Beetle Populations Across the Prairies**
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- 2:30 **Coffee Break & Poster Session - Agriculture Atrium & Room 138**
- 3:00 **Fine Tuning Your Fusarium Head Blight Management Toolbox**
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- 3:45 **Panel: Canola Diseases 2024 – Let's Talk About It**
Moderator: Sonia Wilson, Manitoba Agriculture
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- 9:00 **Designing Resource Efficient, Resilient Cropping Systems**
Dr. Martin Entz, University of Manitoba
- 9:30 **Tough Conversations to Have With Your Farmers**
Ron Tone, Tone Ag Consulting
- 10:00 **Coffee Break & Poster Session - Agriculture Atrium & Room 138**
- 10:30 **Reseeding and Late Season Decision Making**
Darren Bond, Manitoba Agriculture
- 11:15 **Record Breaking Wheat: Learnings from the Great Lakes YEN**
Joanna Follings, Ontario Ministry of Agriculture, Food and Rural Affairs
- 12:00 **Lunch - Room 204 Marshall McLuhan Hall, University Centre**

SOIL MANAGEMENT SESSION – Room 172 Agriculture Building

- 1:00 **The Logistics of Having Fertilizer in Place for Seeding**
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- 1:30 **The Role of Enhanced Efficiency Fertilizers in Nitrogen Fertilization**
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- 2:15 **No One-Size-Fits-All: Strategies for Crop Residue Management in Western Canada**
Ashley Ammeter, Manitoba Crop Alliance
- 2:45 **Coffee Break & Poster Session - Agriculture Atrium & Room 138**
- 3:15 **Landscape Agronomy: Restoring Productivity on Eroded Hilltops**
Curtis Cavers, Agriculture and Agri-Food Canada
- 3:45 **Does Occasional Tillage Undo No-Till Benefits?**
Dr. Humberto Blanco, University of Nebraska
- 4:30 **Closing Comments**

Thank you for joining us for the 2024 Manitoba Agronomists Conference! Please scan the QR code to complete an evaluation form.



Wednesday, December 11, 2024

8:30 **Setting the Stage for MAC 2024**

8:40 **Power and Pitfalls of Genetic Resistance Testing**

Dr. Martin Laforest, Agriculture and Agri-Food Canada

Crop production in Canada is greatly affected by herbicide-resistant weeds. Herbicide resistance is estimated to cost Canadian farmers tens to hundreds of millions in some provinces (e.g. Saskatchewan: \$43 to \$343 Million annually) due to increased use of herbicides and decreased crop yield and quality from weed competition. Traditional dose-response methods using weed seeds planted and grown in greenhouse to confirm resistance to specific herbicides in suspected weeds can take 6-12 months and results can only be considered for decision making purposes in the following season. Recently developed genetic tests use leaf tissues from suspected weed samples collected in fields and involve DNA extraction and analyses to determine the presence of mutations conferring resistance in the plant. This molecular approach renders resistance testing much cheaper and faster, hence more accessible to farmers. Test results can be communicated back to farmers within 1-2 weeks of sampling, allowing efficient, in-season decision-making and adjustments to weed management programs. Since 2015, multi-partner projects featuring collaborative networks of federal, provincial and private researchers continue contributing to a growing list of quick genetic test protocols for many concerning weed species. There are currently at least 94 developed and validated tests made available to regional service labs offering testing to farmers for 30 weed species covering 5 herbicide resistance groups. Thousands of genetic tests have been conducted commercially across many Canadian provinces. These services support information-based weed management decisions at field level through enabling farmers to detect issues early and make timely choices based on the presence of resistant weeds in their crops.

Biography: Martin Laforest, who graduated from Université Laval in 1999, began his career at DNA LandMarks, a subsidiary of BASF Plant Science. He joined Agriculture and Agri-Food Canada in 2015, where he uses molecular, genetic and genomic tools to study herbicide resistance and develop genetic tests for early detection of this resistance, helping farmers to adopt proactive strategies. He also works to create new methods of weed control.

9:15 **Herbicide Discovery and Herbicide Resistance: A Case of a Tail Wagging the Dog**

Dr. Franck Dayan, Colorado State University

“The tail wagging the dog” is an idiom that means something less important is controlling something more important. In this context, the misuse of herbicides is driving the rise in the number of herbicide resistance cases. To illustrate this, we will first review the history and current status of the agrochemical industry and describe

why the discovery and commercialization of new herbicides with novel mechanisms of action has decreased dramatically over the last several years. Then, we will survey a few startup companies utilizing novel approaches to provide new tools for weed management. These diverse new tools broaden the scope of discovery, encompassing advanced computational, bioinformatic, and imaging platforms, plant genome-editing and targeted protein degradation technologies, as well as machine learning and artificial intelligence (AI)-based strategies. These new technologies are needed to fulfill the need for more environmentally and toxicologically safe herbicides and to combat fast-growing herbicide resistance.

In the second part of this presentation, we will review how weeds evolve resistance to herbicides and differentiate target-site resistance (TSR) and nontarget-site resistance (NTSR) mechanisms. TSR often involves mutations in genes encoding the protein targets of herbicides, affecting the binding of the herbicide either at or near catalytic domains or in regions affecting access to them. Some herbicides bind multiple proteins, making the evolution of TSR mechanisms more difficult. In these cases, increased amounts of protein target, by increased gene expression or by gene duplication, are an important TSR mechanism. NTSR mechanisms include reduced absorption or translocation and increased sequestration or metabolic degradation. The mechanisms that can contribute to NTSR are complex and often involve genes that are members of large gene families. The vast array of herbicide-resistance mechanisms will be illustrated using examples from Palmer amaranth and kochia, two species with great evolutionary resilience to extreme selection pressures imparted by herbicides. These evolutionary processes drive herbicide and herbicide-resistant crop development and resistance management strategies.

Biography: Dr. Franck E. Dayan received his Ph.D. in Plant Physiology at Auburn University in Auburn AL USA in 1995. He was a research scientist with the USDA ARS Natural Products Utilization Research Unit from 1995 to 2015. He is now professor of Weed Science and Nutrien Distinguished Scholar of Agricultural Sciences in the Agricultural Biology at Colorado State University in Fort Collins, CO. His research focuses on herbicide mode of action and mechanisms of resistance in plants. He serves on the editorial board of *Outlooks on Pest Management*. He has published more than 200 research articles, 70 reviews or book chapters and has more than 40 patents.

10:30 **Herbicide Resistance and Application Method**

Dr. Tom Wolf, Agrimetrix Research & Training

It is generally accepted that any amount of pesticide application will amplify resistant biotypes. But if application is unavoidable, are there beneficial application practices or technologies that can minimize the harm? Yes there are. The avoidance of repeated sublethal dosing can delay the onset of polygenic resistance. We will discuss main causes of low dosing, including poor water quality and how to test for it and treat it, lack of turn compensation and the PWM options that provide it, as well as variable

deposition due to either canopy type, aerodynamic turbulence, or boom movement. We will also propose spot sprays as a means of more economically delivering multiple mode of action tank mixes. But no matter how well one applies products, the act of spray application is the single most detrimental action one can take for resistance development, and in the long run it will be worthwhile and necessary to pursue alternatives to pesticides.

Biography: Tom Wolf is a spray application specialist, based in Saskatoon. He grew up on a farm in Manitoba and studied agriculture at the University of Manitoba (BSA, M.Sc.) and the Ohio State University (Ph.D.). Tom has 35 years research experience in spray technology, starting with AAFC in 1989 and now as a private consultant. With Jason Deveau, Tom now hosts and writes for the world's number one sprayer website, Sprayers101.com. He is a past president and Fellow of the Canadian Weed Science Society and has been named Distinguished Agrologist with the Saskatchewan Institute of Agrology.

11:00 **Practical Organic Farming: Challenges and Techniques at Les Fermes Longprés**
Matthew Dewavrin, Les Fermes Longprés

This presentation delves into the innovative practices and strategic approaches implemented at Les Fermes Longprés, an organic farm spanning 615 hectares. Matthew Dewavrin, agronomist and co-owner of the farm, discusses the farm's evolution, mission, and values, emphasizing self-sufficiency, soil conservation, biodiversity, and vertical integration.

Key topics include:

- **Practices:** Ridge tillage, strip cropping, and double cropping techniques to enhance soil health and crop yield.
- **Sustainable Inputs:** Reliance on green manure for fertilization and reduced dependency on inputs.
- **Biodiversity & Ecosystem Management:** Shelterbelts, organic certification, and pollinator habitat initiatives.
- **Production Systems:** Integration of grain processing, food-grade crop production, and seed autonomy to improve operational sustainability.
- **Challenges:** Addressing GMO contamination, soil compaction, perennial weed management, and climate change impacts while navigating urban expansion and land value pressures.
- **Opportunities:** Capitalizing on consumer demand for transparency, organic products, regenerative agriculture and provincial support programs.

The presentation also highlights ongoing projects, such as organic corn hybrid testing, integrated pest management, and robotics integration, showcasing the farm's commitment to innovation and long-term sustainability.

Biography: Matthew Dewavrin is a Quebec-based farmer, agronomist, and advocate for sustainable agriculture, deeply committed to promoting eco-friendly practices and community engagement. As a board member of Quebec's Institute for Research and Development in Sustainable Agriculture and as the president of his local agroenvironmental club, he collaborates with other leaders to advance sustainable farming techniques, particularly in soil health and biodiversity.

Matthew's dedication to environmental responsibility is evident in his own operations, Les Fermes Longprés and Le Moulin des Cèdres, which focus on producing and processing certified organic grains. Through both his work in the field and his advocacy, Matthew exemplifies a balanced approach to farming that benefits both the environment and the local community, striving to make ecological and sustainable farming a norm within Quebec agriculture.

11:30 **Integrated Weed Management in Dryland Wheat Production Systems**

Dr. Drew Lyon, Washington State University

Herbicide resistance is an increasing problem for weed management. We have lived through a period when highly effective herbicides have allowed growers to almost rely on herbicides exclusively for weed management. Herbicide resistance and a rapidly dwindling pipeline of new herbicides are forcing growers to rethink weed management. Integrated weed management strategies can assist in the control of weeds and slow the development of herbicide resistance. I will discuss how herbicide resistance develops and how integrated management can be used to help manage some of our more troublesome weeds in dryland wheat production systems. The presentation will focus on the best management practice of using two effective herbicides with different mechanisms of action to manage weeds as part of an integrated weed management system. Although my examples will be taken from dryland wheat production systems in the US Pacific Northwest, the principles I will present can be applied to many agricultural systems in North America.

Biography: Drew Lyon is Professor and Endowed Chair of Small Grains Extension and Research, Weed Science at Washington State University in Pullman. His Extension and Research Program focuses on integrated weed management in dryland small grain production systems. Prior to his arrival at WSU in 2012, Drew served 22 years as the Extension Dryland Cropping Systems Specialist at the University of Nebraska-Lincoln Panhandle Research and Extension Center in Scottsbluff. He received his B.S. in Agriculture from the University of Illinois at Urbana-Champaign and his M.S. and Ph.D. in Agronomy/Weed Science from the University of Nebraska-Lincoln.

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1:15 Integrating Insights: Perspectives on Weed Control in Manitoba

- *Kim Brown, Manitoba Agriculture*
Biography: Growing up on a mixed farm in SW Manitoba, Kim was raised on 4H and curling, cultivating a lifelong love of all things farming! After high school she attended University of Manitoba first for an Agronomy Degree and then a Master's Degree in Soil Science, jointly with Ag Canada in Brandon. Over the last 30 years she has been fortunate to have been with Ag Canada as Research Associate, MB Ag as a Weeds Specialist and Ag Rep, MASC as both an adjustor and Insurance Agent, and in industry as a Regional Agronomist. Kim returned to MB Ag in 2021 as the Provincial Weeds Specialist, where she is involved in training and extension of new and existing weed issues. Kim has been a CCA since 1999, adding the 4R-NMS designation in 2019.
- *Jeanette Gaultier, BASF*
Biography: Jeanette earned a Bachelor of Science degree in Agronomy from the University of Manitoba, which led her to pursue graduate studies. After studying at the Universities of Manitoba and Saskatchewan, Jeanette received her Ph.D. in Soil & Pesticide sciences also from the University of Manitoba. She worked with the Crops Branch of Manitoba Agriculture for almost 10 years, first as the Pesticide Specialist and then and the Provincial Weed Specialist. Jeanette then joined BASF Canada as a Technical Specialist conducting field trials and providing agronomic assessments. She loves working with a variety of crops and farmers. Jeanette lives just outside of Notre-Dame-de-Lourdes, Manitoba with her husband and three kids, where they operate a U-Pick strawberry farm. When she's not working, she enjoys reading, coffee and weed identification. Except grassy weed id – no one likes that!
- *Dr. Rob Gulden, University of Manitoba*
Biography: Dr. Rob Gulden grew up on farms in Germany and Manitoba. He received a Master's degrees in nitrogen fixation from the University of Manitoba, a PhD on volunteer canola from the University of Saskatchewan and worked as a post-doc in corn-soybean systems at the University of Guelph before joining the Department of Plant Science as a faculty member in 2007. His research specializes in weed and crop ecology and ecophysiology, and development of weed and crop management strategies that minimize the effect of weeds on crop production while reducing the reliance on pesticides. His areas of expertise include applied plant ecology, weed seedbank dynamics, remote-sensing of weeds, agronomy and biostatistics.

- *Tammy Jones, Corteva Agriscience*

Biography: Tammy Jones has spent the past four years working with Corteva Agriscience, including three years as the Technical Sales Agronomist in Manitoba. She originally hails from a small farm near Napinka, MB. She earned a B. Sc. (Crop Protection) from the University of Manitoba, where she also taught weed identification labs and studied multiple herbicide resistance in wild oat. She has been involved in the industry for over 20 years, spending time in Manitoba and Alberta with roles in both private industry and government. Tammy continues to help with the family farm, as time allows.

2:00 **Monitoring Insecticide Susceptibility of Flea Beetle Populations Across the Prairies**
Dr. Boyd Mori, University of Alberta

Flea beetles (*Phyllotreta* spp., Coleoptera: Chrysomelidae) are major, economically damaging canola (*Brassica napus*) pests in Canada. Feeding damage to seedlings negatively affects plant establishment and growth. Insecticides are the primary means of management. To manage flea beetles, almost all canola is grown from insecticide treated seeds and, if needed, sprayed with foliar insecticides. We carried out three separate experiments to assess the susceptibility of crucifer (*Phyllotreta cruciferae*) and striped (*Phyllotreta striolata*) flea beetles to neonicotinoid seed treatments and foliar applied pyrethroid (deltamethrin) insecticides across the Prairies. Flea beetles were collected across Prairies in 2022-2024 and bioassays were conducted under controlled conditions. The results showed that there was significantly lower feeding damage and higher mortality when seeds were treated with neonicotinoid seed treatments compared to the controls. However, the level of damage and mortality varied among different flea beetle populations and years. Bioassay results also suggest that the seed treatments have a significant antifeedant effect on flea beetles. Finally, of the populations tested, no flea beetle resistance was found to foliar-applied pyrethroids.

Biography: Boyd Mori is an Assistant Professor and Natural Sciences and Engineering Research Council of Canada (NSERC) Industrial Research Chair in Agricultural Entomology at the University of Alberta. His research group focuses on developing integrated pest management (IPM) strategies for insect pests of field crops. By combining approaches that incorporate behavioural, chemical, and molecular ecology, his work seeks to understand and exploit the biology of insect pests and their host plants and natural enemies. His research has led to the discovery of a canola flower midge, an undescribed pest of canola on the prairies, and its parasitoids. He also has extensive experience studying pest monitoring, insecticide resistance, and biological control.

3:00 Fine Tuning Your Fusarium Head Blight Management Toolbox

Dr. Kelly Turkington, Agriculture and Agri-Food Canada

Biography: Kelly was born in Humboldt, Saskatchewan and raised mainly in Saskatoon, while spending most summers on his father's small grain farm near St. Brieux, Saskatchewan. Currently, he is a pathologist with Agriculture and Agri-Food Canada's Lacombe Research and Development Centre (AAFC), in Lacombe, Alberta. He received a Bachelor's of Science in Agriculture in Agricultural Biology in 1985, and M.Sc. and Ph.D. degrees in Plant Pathology from the Department of Biology at the University of Saskatchewan, while spending eight months taking a variety of courses at the University of Guelph in the late 1980s. Currently, Kelly's main focus is on diseases of barley and wheat, while he also works on canola as part of collaborative studies with colleagues from across Canada.

His first experience with fusarium head blight was in the early 1990's as a post-doctoral fellow at the Eastern Cereals and Oilseeds Research Centre, AAFC Ottawa, as part of a project investigating the impact of tillage and crop rotation on fusarium head blight of wheat and ear rot of corn. At AAFC Lacombe Kelly continued his work on fusarium head blight with projects related to monitoring for *Fusarium graminearum* in cereals, grasses and corn, as well as investigating shifts in the pathogen in the 2000's. In addition, his research has looked at the development of risk management strategies for fusarium head blight in relation to infected seed and feed as well as forecasting the potential distribution and severity of *F. graminearum* over the prairie region under dryland and irrigated production scenarios. Most recently, Kelly led two Wheat and one Barley Cluster CAP projects that focused on improving in-field management of fusarium head blight, while he is collaborating on new barley projects which have a fusarium head blight component and are led by colleague Dr. Hiroshi Kubota, AAFC Lacombe.

His research has ranged from helping to develop disease resistant varieties, studying pathogen variation, and the development and refinement of other management tools such as fungicide timing, rotation, and mixtures/intercropping. He is currently a member of the Prairie Recommending Committee for Oat and Barley Disease (PRCOB) Evaluation Team and the Prairie Recommending Committee for Wheat, Rye and Triticale Disease Evaluation Team, and coordinates the 2-row malting barley cooperative disease report for the PRCOB. Previously he was Chair of PRCOB as well as Chair of the Prairie Grain Development Committee, and is currently leading the Prairie Crop Disease Monitoring Network. Through his father Tom, his graduate student supervisor Robin Morrall, and his interactions with farmers, agronomists, industry staff, and research colleagues, Kelly has developed a passion for field-based plant pathology research and the development of practical solutions for effective crop and disease management.

3:45 Panel: Canola Diseases 2024 – Let's Talk About It

- *Evan Gillis, DL Seeds*
Biography: Evan is from a small farm south of Morden Manitoba where he is still actively farming today. After completing his degree in Agronomy and M.Sc in plant pathology at the University of Manitoba, Evan spent a short time in a chemical research role before moving into a plant breeding position at DL Seeds. This has evolved into a 14-year career in the canola breeding business including graduating from the Plant Breeding Academy at the University of California in 2016. He is currently located at the DL Seeds Morden Office where they focus on Canola and Pulse Breeding working closely with their distribution partners and the larger global breeding programs of DSV and NPZ in Germany. His work touches most aspects of Canola product development including parent and hybrid selection, field plot testing, disease resistance, trait introgression, breeder seed and contra season programs.
- *Chris Manchur, Canola Council of Canada*
Biography: Chris Manchur (MSc, P.Ag) is an Agronomy Specialist with the Canola Council of Canada. Chris received his BSc in Plant Biotechnology and MSc in Biological Sciences at the University of Manitoba, where he researched next-generation fungicides using RNA interference. Chris is the Sclerotinia, Blackleg and Research Lead for the Crop Production & Innovation team at the Canola Council, where he helps bridge the gap between researchers and producers by helping convert scientific findings to best management practices and help develop resources to manage canola's major production challenges. He also provides agronomic advice and support for growers and agronomists in the eastern half of Manitoba. When not chatting about canola, you can usually find him ice fishing or snowmobiling.
- *Meghan Rose, New Era Ag Research*
Biography: Meghan Rose is the manager of New Era Ag Research in Swan River, MB. She completed a B.Sc. in Plant Biotechnology and an M.Sc. in Plant Genetics at the University of Manitoba. Meghan began New Era Ag Research in 2015 with the objective of supporting the agriculture retail with local data on crop varieties and inputs. The research division quickly expanded into a full-service contract research organization. Currently, Meghan and her team offer services in all local crops in small plot, commercial field and grow room trials. Variety evaluations, pesticide efficacy and tolerance trials, and canola disease nurseries make up the majority of the research farm. Emerging biological products and fertilizer technologies are explored each year. The Swan Valley produces some of the highest canola yields in Manitoba and is an excellent area for studying disease challenges and assessing yield potential.

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8:30 **Field Pea and Soybean Breeding**

Dr. Tom Warkentin, University of Saskatchewan

The Crop Development Centre (CDC), University of Saskatchewan pea breeding program has the objectives to develop high yielding cultivars having good lodging resistance, high seed protein concentration, and good disease resistance. The program has released more than 40 cultivars over the past two decades, and these cultivars have occupied greater than 60% of the pea area in western Canada over the past decade. Improving root rot resistance is a key goal to allow for sustainable pea production. Improving seed protein concentration and quality will benefit the growing plant-based protein markets. The CDC soybean breeding program is younger than the pea breeding program, with the first cultivar release in 2024. The objectives of the program are to develop high yielding cultivars for the maturity group 00 and 000 regions.

Biography: Dr. Tom Warkentin is a Professor in the Crop Development Centre (CDC)/Department of Plant Sciences, University of Saskatchewan. Tom is breeding pea and soybean cultivars for western Canada, and together with graduate students, post-docs and technicians, he is conducting research to address the key challenges and opportunities associated with these crops. Tom and colleagues have published on research related to improving disease resistance, abiotic stress resistance, protein concentration and quality, and nitrogen fixation in pea, as well as research related to adaptation of soybean to the short season, frontier regions of western Canada. Pea varieties arising from the CDC program have greater than 60% market share in western Canada. The CDC pea and soybean breeding programs use a combination of conventional and molecular breeding approaches.

9:00 **Designing Resource Efficient, Resilient Cropping Systems**

Dr. Martin Entz, University of Manitoba

Cropping systems use both natural and human-made resources. The efficiency with which these resources are used dictates a system's profitability, and its resilience to abiotic (drought, heat, excess water, salinity, soil compaction) and biotic (eg., pest attack) stresses. The presentation begins by distinguishing between natural and "store-bought" resources. I begin with the efficiency of the big-ticket items like N fertilizer. What are options to reduce N fertilizer use in the hopes of increasing fertilizer efficiency? Spoiler alert – it involves more intensive use of legumes, smart manure management and even livestock integration. Today's spot spraying technology can increase herbicide use efficiency, but let's not forget the competitive ability of crops like oats, winter cereals, annual forages and others. I will review our early work on "Pesticide-Free Production", where the economics of herbicide use was improved by strategically skipping applications on certain crops. I will then shift to the "free" resources like sunshine/photosynthesis, rain/snow, wind and prevailing temperature.

What can be done to increase their efficiency and does it pay? Examples of systems that make better use of these free resources include winter crops; mixed and strip intercropping; agroforestry and vegetative barriers; and site-specific crop planting (called pixel farming). I will draw on our recent work from the Ian N. Morrison Research Farm where a 4-year no-till rotation that included 1) fall rye grain with cover crop; 2) corn/soybean grain intercrop; 3) pea/canola grain intercrop; and 4) a mixed species cover crop had the same profitability as a wheat-canola-soybean rotation when grown under severe drought but used half as much N fertilizer (see Curtis et al. 2024. Cropping system typologies perform differently under climate stress in Manitoba, Canada: multi-criteria assessment. *Canadian Journal of Plant Science* available on google scholar). I will end with some thoughts on “planning” vs “design”. Thinking of ourselves as designers instead of planners “improves our understanding” and provides a stronger foundation for the creation of more resilient and resource efficient cropping systems.

Biography: Professor Entz has always enjoyed the outdoors and working on the land. He received his BSc and MSc from the University of Manitoba and his PhD in crop physiology from the University of Saskatchewan. He worked as a farm manager and industry research agronomist before embarking on his academic career.

Martin currently conducts research in Canada and East Africa; past projects have been conducted in Central America and Asia. He is proud of the Glenlea long-term rotation, which just completed 33 years! In 2023, Dr. Entz was named the inaugural “Jarislowsky Chair in Natural Systems Agriculture for Climate Solutions”.

9:30 **Tough Conversations to Have With Your Farmers**

Ron Tone, Tone Ag Consulting

Working as an agronomist can be very challenging and very fulfilling. As a professional agronomist, you are dealing with new products, new technologies and new legal parameters. Using all my years of experience in the Manitoba Ag Industry, working with various crop and various situations, as given me a unique perspective when working with new and existing clients.

This presentation will hope to address some of the challenges and successes I have had in the industry and hopefully provide some guidance for new agronomist starting their career and maybe even help some of the more seasoned agronomists deal with “Tough conversations to have with your farmers”.

Biography: Ron Tone started as an Agronomist with his own company, Tone Ag. Consulting, back in 1996. At that time, he felt there was a need in his area to provided independent advice to farmers from someone who wasn't trying to sell herbicides, seed, or fertilizer. He built up his client base one farmer at a time mostly through word of mouth. Some of those early clients are still with Tone Ag today. Over the years and he was able to grow the company and eventually expanding to bringing on additional agronomists. Those agronomists have now transitioned into an ownership role of Tone

Ag, and now Ron works for them. He focuses on damage claims which includes herbicide drift, livestock damage to crops and product efficacy claims.

10:30 Reseeding and Late Season Decision Making

Darren Bond, Manitoba Agriculture

With the recent decrease in commodity prices and stubbornly high input costs, tighter margins have resulted in a cost-price squeeze. While we have seen cost-price squeezes before, we haven't experienced them in a high-cost environment like we're seeing today. Couple this with extreme weather events and the profit probability for crop reseeding and late seeded crops become even more questionable. Join Darren as he explores the relationship between reseeding/late seeding and creating a reasonable opportunity for profit while mitigating risk.

Biography: Darren Bond is a Farm Management Specialist with Manitoba Agriculture, specializing in crop production costs, risk management, and farmland rental, while also being responsible for the annual *Guidelines for Estimating Crop Production Costs*. He believes every agronomic production decision made on the farm must also consider the economic costs and benefits in order to make the best decision possible. True to this, Darren and the Farm Management Team has created many of the decision making tools and resources found at Manitoba Agriculture.

11:15 Record Breaking Wheat: Learnings from the Great Lakes YEN

Joanna Follings, Ontario Ministry of Agriculture, Food and Rural Affairs

This session hopes to provide greater insights into the key factors contributing to high yielding winter wheat in the Great Lakes region including but not limited to timely crop establishment, number of heads per metre square, total biomass, canopy closure, timely crop input applications and more.

Biography: Joanna is the Cereals Specialist with the Ontario Ministry of Agriculture, Food and Rural Affairs and is passionate about supporting growers with their cereal crop production challenges and opportunities. She is part of the Great Lakes Yield Enhancement Network (YEN) team in Ontario which is one of a global series of YENs that help local farmers better understand their winter wheat yield potential and what is contributing to that yield.

Thursday, December 12, 2024**1:00 The Logistics of Having Fertilizer in Place for Seeding**

Kevin Seavers, Federated Cooperatives Ltd

Fertilizer logistics and just in time deliveries, what's impacting supply, and how best to be prepared.

Biography: Kevin Seavers is the Senior Fertilizer Manager for Federated Cooperatives Limited. Together, the co-operative retailing system positions well over a million tonnes of fertilizer annually to co-ops and farm producers across Western Canada. Kevin graduated from the I.H Asper School of Business in 2012, and proceeded to spend the next eight years of his career in the province of Alberta working in Ag retail. With a passion for growing businesses, and helping producers succeed, his role at retail evolved from sales, to sales management, and eventually to Federated Cooperatives in 2021 as the Alberta Fertilizer Merchant. Being immersed in buying and selling fertilizer, Kevin quickly understood the importance of having a plan that manages pricing exposures but also logistic complexities. Today, Federated Cooperatives operates three state of the art fertilizer terminals in Brandon, Manitoba; Hanley, Saskatchewan; and Grassy Lake, Alberta. Managing the Fertilizer department, Kevin has a great lens on the Fertilizer supply chain across Western Canada.

1:30 The Role of Enhanced Efficiency Fertilizers in Nitrogen Fertilization

Dr. Rigas Karamanos

There are three major losses of nitrogen from the soil-plant system, namely, volatilization, denitrification and leaching. The presentation will concentrate on the first two with more emphasis on denitrification.

When it comes to volatilization, i.e., the loss of nitrogen to the atmosphere as ammonia gas (NH₃), of urea-based fertilizers several practices are recommended, such as the use of urease inhibitors, slow-release forms and irrigation shortly after application. However, going back in history the most common practice in western Canada has been deep-banding of nitrogen fertilizers. However, with the size of farms on constant increase shallow banding and broadcasting have been expanding. A number of factors will contribute to volatilization, such as moist soil, heavy dew, or high humidity, low amounts of rainfall, wind, high soil pH (>7.0), high soil temperature (>10 °C) or frozen soil, crop residue, perennial thatch or sod, low cation exchange capacity soil (sandy), poorly buffered soils (low soil organic matter, coarse textured, low bicarbonate content). The use of enhanced efficiency fertilizers (EEF) can be instrumental in reducing volatilization losses.

Denitrification losses have been shown to occur both during spring under a number of circumstances including snowmelt and under wet conditions. Factors affecting denitrification include soil pH, moisture, temperature, aeration and plant residue. A number of practices have been implemented to minimize losses, such as proper rates and sources - best placement and proper timing, nitrification inhibitors (to slow the

conversion of NH_4^+ to NO_3^-), slow-release N fertilizers in an attempt to release N over the growing season, matching availability and crop needs).

A number of products are in the market to address the above and their use, the duration of protection offered and effectiveness, where available, will be discussed.

Biography: Rigas holds a BSA from the University of Thessaloniki, Greece and an M.Sc. and a Ph.D. in Soil Chemistry and Fertility from the University of Saskatchewan, Canada. He taught at the University of Saskatchewan and McGill University for over ten years and has served as the Senior Research Agronomist with Esso Chemical Canada, Director of the Saskatchewan Soil Testing Laboratory and Enviro-Test Laboratories Saskatoon, ACES Manager, Manager of Research and Market Development and Manager of Agronomy with Westco and Manager of Agronomic Solutions for Viterra and Senior Agronomist of Koch Fertilizer Canada/Koch Agronomic Services in Canada. He is now retired.

Rigas has been an author or co-author in over 400 research, technical and conference proceedings publications covering an array of topics and has given 1040 extension talks to farmers, agronomists and government employees, thus reaching close to 52,000 audience, along with a number of radio and TV interviews and articles in popular magazines and newspapers.

He was recognized by his peers by being awarded a fellowship in the Canadian Society of Agronomy in 2013 and Distinguished Agronomist award in 2019 and he was inducted in the Saskatchewan Agricultural Hall of Fame in 2015.

2:15 **No One-Size-Fits-All: Strategies for Crop Residue Management in Western Canada**
Ashley Ammeter, Manitoba Crop Alliance

Management of straw and crop residue is a continuous challenge for farmers and agronomists. How crop residue is managed will impact long-term soil health, soil nutrient levels, soil erosion, soil moisture, as well as next year's crop seeding and establishment. With every farm operation comes unique crop rotations, equipment, growing environment, soil types and goals. There is no one-size-fits-all solution to crop residue management, so farmers and agronomists must weigh the pros and cons of each option as it relates to their cropping system, and be flexible enough to modify their approach as conditions change. This session will discuss what should be considered when weighing options for crop residue management, highlighting past and current research conducted in western Canada.

Biography: Ashley Ammeter is the Whole Farm Specialist with Manitoba Crop Alliance. Ashley grew up on a grains and oilseeds farm in Manitoba and received her B.Sc. in Agriculture, and M.Sc. in Plant Science from the University of Manitoba. In her role as Whole Farm Specialist, Ashley is responsible for providing knowledge and understanding of a whole-farm approach to crop production and extension of research results that are cross-commodity in nature.

3:15 Landscape Agronomy: Restoring Productivity on Eroded Hilltops

Curtis Cavers, Agriculture and Agri-Food Canada

Hilltops that have been impacted by soil erosion over many decades have characteristics that distinguish them from other parts of the agricultural landscape. Of particular importance is their consistently lower productivity, usually about 30-50% of the yield potential of more representative areas of a given field. Part of the challenge in addressing this problem is identifying the primary cause of the erosion (tillage) and assessing its historical and current annual rate of erosion, which may be higher than expected, given current perceptions on what is considered to be conservation, or lower-disturbance, tillage practices. And, if herbicide-resistant weeds continue to increase, many producers will be forced to rely more on tillage as a means of weed control at the expense of soil health due to increased tillage erosion.

Several management considerations to increase annual crop productivity on eroded hilltops are examined in this presentation. An assessment of their potential benefits and drawbacks will be discussed, in hopes of providing producers and agronomists with options and strategies to increase productivity on these sensitive landscape positions, increase overall field uniformity and address future challenges, in light of how to use tillage practices more effectively and sustainably.

Biography: Curtis received his Bachelor of Science in Agriculture (majoring in Soil Science) in 1992 and a Master of Science in Soil Science in 1996, both from the University of Manitoba.

Prior to joining Agriculture and Agri-Food Canada in 2007, Curtis worked for Manitoba Agriculture, Food & Rural Initiatives in Carman for over 10 years, leading programs pertaining to sustainable manure management, nutrient management, soil conservation, risk assessment of soils, water management, agronomy and climate change.

In 2007, Curtis joined AAFC as an agronomist in Carberry and later Portage la Prairie and Winkler, working on potato research and demonstration projects pertaining to nutrient management, soil salinity and improved management of inputs in potato crop production. More recently, the focus has shifted to crops such as corn, soybeans, wheat and canola.

Curtis has supervised the operations at the Portage la Prairie site since 2008, ensuring healthy collaborative arrangements between AAFC-Portage and industry, as well as collaborations with the University of Manitoba, provincial government and AAFC colleagues from across Canada. As a Certified Crop Advisor since 1998, Curtis served as on the Prairie Certified Crop Advisor Board. His research interests include agronomy, soils, tillage, moisture management and nutrient management in all crops grown on site.

3:45 Does Occasional Tillage Undo No-Till Benefits?

Dr. Humberto Blanco, University of Nebraska

No-till is an unparalleled farming system to reduce soil erosion, conserve soil and water, improve near-surface soil properties, and reduce production costs, among other services. However, no-till farming may come with some challenges, including the development of herbicide-resistant weeds, soil compaction, soil C stratification, nutrient (i.e., P) stratification, acidification, and nutrient runoff. Despite the use of companion practices such as cover crops and diversified crop rotations, some challenges can still persist under long-term no-till farming. This leads to the question: would one-time or occasional strategic tillage be a tool to ameliorate the challenges with long-term no-till management? Strategic tillage could be a potential tool, but the concern is that it could reverse all the benefits gained after many years of no-till adoption. It is well recognized that it takes decades, if not centuries, to rebuild soil and restore soil C and other soil ecosystem services. Thus, this presentation will discuss the implications of occasional strategic tillage of long-term no-till systems for managing weeds, soil C, crop yields, soil health, and other soil ecosystem services based on the available research information. It will specifically address: what does field research really say about occasional strategic tillage in long-term no-till systems?

Biography: Humberto Blanco is a Professor of Soil Management and Applied Soil Physics in the Department of Agronomy and Horticulture, University of Nebraska-Lincoln, USA. He got his B.Sc. in Soil Science from the Technical University of Oruro, Bolivia in 1990. Then, he received his M.Sc. in 1995 and Ph.D. in 2003 in Soil Conservation and Applied Soil Physics from the Univ. of Missouri, Columbia, USA. He worked at the Ohio State Univ. as a Research Scientist from 2004 to 2007. In 2008, he moved to Kansas State University as a faculty member. Since 2012, he has been working at the University of Nebraska at Lincoln. His appointment is 60% research and 40% teaching. He teaches courses in Soil Management and Applied Soil Physics.

His research work focuses on the characterization of soil physical health, soil health, water and wind erosion, water quality parameters, soil water management, soil C, and greenhouse gas emissions within the framework of soil ecosystem services under different management practices. Such practices include cover crops, cover crop grazing, biochar, conservation tillage (e.g., no-tillage, reduced tillage, strategic tillage), cropping systems, organic farming, crop residue removal for livestock and biofuel production, inorganic fertilization, conservation buffers, and dedicated biofuel crops (e.g., perennial warm-season grasses).

He has published over 200 peer-reviewed articles and four books with Springer, Wiley, and CSIRO. He has been invited to speak in conferences in several countries (Germany, Canada, Ukraine, Brazil, Argentina, China, and others). He is also frequently invited to speak in conferences within the USA. He is a Fellow of the Soil Science Society of America (SSSA) and American Society of Agronomy (the highest honor given by the societies). He has also received several other awards including the Shirley Phillips No-till

Award (Univ. of Kentucky), Best Paper Awards, and Young Scholar Award of the SSSA. He served as Chair of the Soil and Water Management and Conservation Division of SSSA. He is currently a Technical Editor for Agronomy Journal and serves as an Associate Editor for other major journals.