

FARMING SMARTER

Fall 2012 Edition



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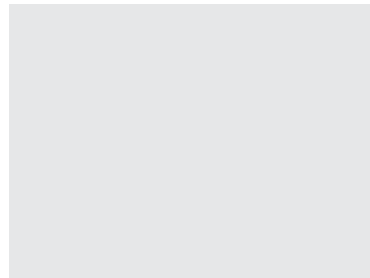
Growing new ideas.



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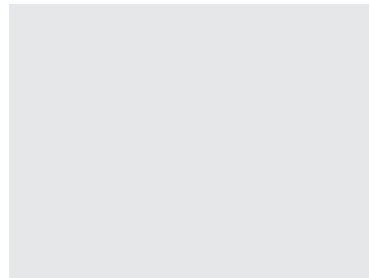
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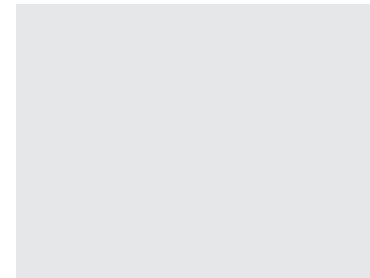
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Editorial Board: Ken Coles, Brent Nicol

Editor: Sarah Sutton





Farming Smarter ramps up its ag events

A very successful year with tremendous growth

Welcome to the fall edition of the Farming Smarter Magazine. Our newly joined SACA and SARA now bear the same name as our magazine has for many years. We now are closing in on our first full season under the new Farming Smarter name and it's been a very successful year with tremendous growth. I would like to thank Ken and all his staff for another great year and all of their hard work. I would also like to thank our board for all their efforts this past year in helping run such an important organization for Southern Alberta.

Farming Smarter will continue to promote and spread the information and knowledge we gain each and every year from research and demonstrations. We are a farmer-directed organization with a primary focus on giving unbiased information to

help farmers make profitable decisions for their operations.

2012 was another challenging year for southern Alberta, with early moisture followed by hot and dry weather in July and August. This has left a lot of variability in the yields and most farmers have found it to be all over the board from terrible yields to some very good or above average crops. With above average prices for most of the crops, the year looks to be a good one for most.

I encourage anyone to attend or read up on the many events we host throughout the year. Events like the field walks and the Crop Diagnostic School are great ways to see firsthand how crops are reacting to every condition. This past year, we also went on a trip to South Dakota to visit a research farm and some actively progressive farms, and to attend the Dakota Ag Exchange show. I

know all that went, including myself, had a great time and learned a great deal. Not only did we learn from our American friends but also from the people on the trip itself. Small group trips like this are a great way for information and collaboration to occur and I enjoyed this exchange as much as the trip.

I hope everyone had a great harvest and I look forward to seeing you all at the agriculture events planned over the fall and winter. The Farming Smarter Conference is in Medicine Hat this year on December 4 and 5. Please check our website (www.farmingsmarter.com) for any past or current information needed, and please plan to attend our Annual General Meeting at Ag-Expo in March.

Thanks,
Kent Sande
Chairman, Farming Smarter



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A year to remember

New projects, exciting events and the next step forward / BY KEN COLES

I love my job! How many people can truly say this unless they're in agriculture? What an action-packed season for us!

I'd truly like to thank our dedicated crew for getting us through one of our best seasons ever. Especially since this was our first season as Farming Smarter. Thank you to Jamie, Mike, Kristina, Toby and Elizabeth. I'm very proud of your efforts and hope we can keep you here for a very long time.

I'd like to also personally thank all of our funding partners and collaborators. I feel we are making significant contributions to the agricultural industry by growing new ideas and we certainly couldn't do it alone.

In particular I'd like to thank Brian Beres, Bob Blackshaw and Kelly Turkington with Agriculture and Agri-Food Canada, Rick Taillieu and Ward Toma from the Alberta Canola Producers Commission, Ron Howard, Mike Harding, Ross McKenzie and Dale Kaliel with Alberta Agriculture, Jason Storch

from Cypress County, Darcy Kirtzinger from the Alberta Barley Commission, Jenn Walker and Duane Ransome from the Alberta Pulse Growers, Autumn Holmes-Saltzman of Ducks Unlimited, and Rick Istead of the Alberta Wheat Commission. Your support and willingness to collaborate has been invaluable.

We were privileged to sink our teeth into some new and exciting projects this year such as inter-row seeding, night spraying herbicides and variable rate management. Preliminary results have been very interesting and likely impactful for many farmers, which is the very reason we are in business. We're currently wrapping up projects in winter pulses and fusarium head blight management while new proposals hope to look at fungicide night spraying and dribble banding liquid fertilizers.

Another highlight for the year was an extremely rich extension season. We initiated and helped deliver Western Canada's first Precision Ag Conference and Tradeshow in

Calgary, where producers and industry shared ideas and connected with some true innovators. I personally participated in 20 days of field tours and am encouraged by the attendance and meaningful dialogue that took place. It's really the fun part of the job to share knowledge, challenge ideas and be challenged by such passionate and brilliant individuals and organizations.

Lastly I'd like to welcome Claudette Lacombe to our complement of dedicated staff. So much of what we do is based on effective communication and we're very excited to have a true expert on board. Claudette is no stranger to organization and served as our magazine editor for many years. Her new role as communications manager will help us continue to develop our Growing Knowledge objectives.

Have a great winter!

Ken Coles

General Manager, Farming Smarter

Get off the rows

/ BY KEN COLES

Farming Smarter continued its work in 2012 studying the potential value of seeding in between the rows of previous stubble using accurate GPS guidance. This idea certainly has the interest of growers as they try to justify the added costs associated with enhanced GPS systems such as RTK (real time kinematics).

Our findings after two years of study have shown clearly what may seem obvious: don't seed on the rows! We saw a 12 per cent reduction in plant stand in 2011, and an 18 per cent reduction in 2012, when canola was seeded directly on top of the stubble row.

However, even when trying our best, we were unable to seed plots entirely on the

rows. In fact, as much as we tweaked our system, the drill seemed to prefer to seed between the rows the majority of the time. Even without guidance in our check plots, we achieved high levels of "inter-row" seeding resulting in no statistical yield difference among treatments.

This should not discourage growers from striving for perfect inter-row seeding as we've shown that it does improve plant stand establishment. We encourage it if it is economically justifiable and lines up with other objectives in precision agriculture.

However, we also advise caution, as sometime when we have our eyes too focused on one target, we can completely miss a bigger opportunity.



Seeding on top of stubble rows results in reduction in plant stand. PHOTO: FARMING SMARTER

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Extensive events bigger and better

Looking forward to another year of exciting extension events



Farming Smarter continues to improve and impress with its exciting extension activities. The organization provided valuable research and cropping information to more than 600 participants at 11 events throughout the year, in addition to an ag tour to South Dakota. Be a part of Farming Smarter’s biggest extensive event, its annual conference, on December 4 and 5 in Medicine Hat!

Some of the comments from this year’s field school:

“ Excellent, keep it up!”

“ Very happy with job you did!”

“ Always a good time & informative.”

“ Covered trailer was awesome!”

“ Another great field school. Thanks!”

Event	Date	Topics	Attendance
Farming Smarter AGM	February 29, 2012	Review of Farming Smarter, Winter Wheat, Computer technology	48
Winter Wheat Crop Walk	May 31, 2012	Night Spraying & Winter Wheat	44
Insect Crop Walk	June 7, 21012	Insects	36
Canola Crop Walk	June 13, 2012	Canola & Canola agronomy	46
Pulses Crop Walk	June 21, 2012	Winter Pulses/ Pulses	53
VRT Crop Walk	June 28, 2012	Variable Rate	51
Farming Smarter Field School	July 10, 11 & 12, 2012	Cereal & Pulse Fungicide Applications, Winter Wheat, Kochia, Crop enhancers, Fertility, dribble banding	191
Ducks Unlimited Tour	July 26, 2012	Winter Wheat & Night Spraying	47
SeCan Tour	July 31, 2012	SeCan plots, SeCan member only tour	22
Medicine Hat Field Day	August 1, 2012	Caranata, Winter Wheat, Canola, Pulses	53
Disease Crop Walk	August 9, 2012	Cereal and Pulse Fungicides, Fusarium, Scelerotinia, black leg,	26
Total			617



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Economic storm is here

Three-wave firestorm spreading across the agriculture sector / BY LES BROST



Across rural Canada, rumbling thunder stills the meadowlark's song and drives the hunting hawk to seek cover. The economic storm that's been building on the horizon of Canada's primary agriculture industry is here.

This firestorm has three waves, and the first is already here and having a serious impact. The technology-driven growth of consumer power is dramatically changing buying patterns. Social media has exponentially ramped up the consumer's power to organize and act. Today's consumers are voting with their wallets for food reflecting their social values and health concerns.

Anyone doubting that power needs look no further than the recent abject surrender of Tim Hortons. When faced with a consumer boycott due to their pork and egg buying practices, Tim Hortons quickly waved the white flag. "Timmer's" surrender statement stated that the company now "intends to give preferred sourcing to pork suppliers who have clearly documented plans to phase out the use of gestation stalls, and egg suppliers working to phase in enriched hen housing systems."

Canada's shifting demographic intensifies this dramatic power shift. The days of urban Canadians regularly going out to Grandpa's farm are now folksy legends. Young urban Canadians no longer share the Boomers' pastoral illusions of life on the farm. Most of them have little or no emotional connection to Canada's farms and ranches. Driven by their values and the impact of media commentary on industry practices, they quickly organize and act.

Stabilization program at risk

Another wave of the economic firestorm is even more worrisome. Reports persist that Canada's cash-poor federal government, seeking ways to balance the government books, has the Farm Income Stabilization Insurance program under its paring knife.

Loss of this program, previously used as an economic "backfire" allowing the industry

time to regroup and re-energize, would be a body blow to primary agriculture. It would also tear up the unwritten "Cheap Food Contract" between generations of Canadian politicians and farmers. By the unwritten terms of that agreement, Canadian governments supported our primary producers in times of need in return for a commitment by those producers not to limit production and ultimately drive up prices.

This is an issue where Canadian consumers share common interests with Canada's farmers. Both want and need national food sovereignty, and both consumers and farmers gain from government policies that keep food very affordable.

Young urban Canadians no longer share the Boomers' pastoral illusions of life on the farm. Most of them have little or no emotional connection to Canada's farms and ranches.

Food safety

The storm's third wave currently threatens Canadian agriculture's key competitive edge—its' international reputation for food safety. Federal budget slashers are eyeing the Canadian Food Inspection Agency, as reports persist of a new approach "radically" altering food inspection. These rumored design changes would convert food inspectors to food systems inspectors. Current commodity expertise would disappear, as inspectors for commodities such as fish and meat meld into a single class of systems inspectors.

There are also continuing reports that the federal government intends to hand off a "big role" to industry associations in enforcement

of food safety requirements. These potential changes present huge risks for farmers. Muddying the waters of responsibility for regulation and enforcement didn't work very well for Alberta's energy industry, and it won't work for food producers.

Why? Food safety is a key issue concerning every Canadian. Any perceived weakening of Canadian food safety standards will meet consumer rejection, erode political support from urban Canadians, and destroy a significant part of our international competitive advantage. For Canadian food producers and consumers, a safe food supply perceived by consumers to be safe is truly "a hill to die on."

Managing the threats

So how do Canada's primary agriculture producers cope with these added threats to industry viability? Will their organizations take the bold action necessary to meet the threats inherent in the rumoured cuts? And what would such action look like?

They could start with an unequivocal public statement that they regard national food safety as the sole responsibility of the Canadian Government, and that industry associations would have no role in food safety enforcement. Next, they could call on Canadian consumers to join them in insisting that the federal government live up to its responsibilities for ensuring a secure and safe national food supply. Primary food producers could then invite consumer organizations to join them in a dialog aimed at creating a new Canadian strategy to ensure a safe and secure national food supply.

These actions might sound a bit dramatic for an industry rooted in the ongoing cycle of nature and isolated from direct dialog with consumers. Yet the dramatic global changes underway show us that in both nature and global economies, rapid and powerful change is underway. The time for action—brave and bold action—is now. It is a time of stark choices, and industry survival is at stake. —

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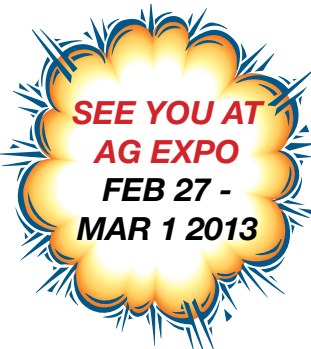


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Farming Smarter tackles private contract work

It makes sense for companies to test out their products regionally / BY DONNA TROTTIER

The cost of operating research divisions within private companies is very high. In fact, many companies have closed their research divisions and as an alternative, contract out required research. That is where Farming Smarter steps in.

It is not practical for companies to have a field research team with all of the necessary equipment and facilities in each of the regions they want to test their products. It makes sense for companies to hire Contract Research Operators (CROs) with the ability to test their products in their target market regions, do the assessments and analysis, and care for the trials on a day-to-day basis.

While the majority of the work completed by Farming Smarter is project-based work for federal contracts, in recent years, Farming Smarter has expanded their research work to include contract research work for private companies such as Agrisoma, Dupont, and Becker Underwood. Farming Smarter also receives core funding from an Ag Opportunity Fund grant and raises funds from projects done for producer groups, through the field school and from the Farming Smarter conference.

“The private contract work helps to keep the association afloat by generating income from sources outside of our regular funding flow,” explains Ken Coles, general manager of Farming Smarter.

Private companies may need research conducted to assist them in meeting a registration requirement for the Canadian Food Inspection Agency (CFIA) or the Pest Management Regulatory Agency (PMRA) or the research may be more exploratory in nature to determine how a product or crop performs in specific environments. It is a benefit to the private companies to have their products, which may have been developed elsewhere in the world, tested in the local regions where they are trying to market their products.

In some cases, the private company informs Farming Smarter of the type of data that they require and then Farming Smarter designs a



Farming Smarter's private contract work can help companies test their products, which may have been developed elsewhere in the world, in the local regions where they are trying to market their products.
PHOTO: FARMING SMARTER

program, conducts the research, gathers the information and provides the company with the requested data. Other companies are more direct and provide Farming Smarter with specific protocols to follow when conducting the research and collecting the necessary data.

Farming Smarter is the southern Alberta CRO for Becker Underwood, an ag-biotechnology company that develops yield-improving biological products and products that suppress or control plant diseases and insects. Becker Underwood develops the products in-house but is more scientific at the development site, spending less time on the practical applications of the product. The practical application and testing of their products is outsourced to CROs.

“Becker Underwood has taken the position that we like to see our products validated through independent research and assessment organizations such as Farming Smarter. We want to keep our distance from the data and provide a practical point of view,” explains Piran Cargeeg, technical lead (Canada) for Becker Underwood.

“Farming Smarter conducts trials that assists Becker Underwood in meeting CFIA and PMRA requirements, providing the level of attention to detail that we demand,” states Cargeeg. Becker Underwood supplies the protocols based on the regulatory requirements and Farming Smarter carries out all the required tracking and field assessments. “Farming Smarter's competency is shown across all stag-

es of the program from specific seed treatment processes and procedures, to the husbandry of the crop. They generate precise data, on time and very professionally,” comments Cargeeg.

“Because of the short growing season, there is only one opportunity to test our products in the northern hemisphere each year. We need to hire a CRO that we can rely on to get results and capitalize on the narrow window of opportunity to do the testing. Having a high level of confidence in the results generated by the researcher is really important to Becker Underwood,” explains Cargeeg. “It's also crucial for us to know that if one of our products does not work in a research trial, it has been trialed in the proper way.”

Cargeeg expressed strong confidence in all of the research and trial results that Farming Smarter generated for Becker Underwood and trusts that the work is accurate and complete.

“Ken Coles has an extensive network of farmers and cooperators that he works with and is therefore capable of offering a wide variety of sites with varying insect, weed and disease pressures and diverse soil types and environments. Ken locates sites with the characteristics that the private companies want to include in their protocols and is flexible and willing to undertake trials with whatever variables we request,” states Cargeeg. “Farming Smarter provides services that go beyond what the average CRO offers, and have staff that are engaged and passionate about agriculture and research.” —

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No clear winner in FHB treatments

Combo of fungicide and timing of irrigation may offer some benefit / BY LEE HART



While the differences haven't been earth shattering, so far a three-year southern Alberta study looking at the effect of different treatments on wheat shows the combination of using a fungicide and timing of irrigation might have a slight benefit in reducing fusarium head blight (FHB).

Results of the third year of the project in 2012 still have to be tabulated, says Kristina Halma, a research assistant who coordinated the project for Farming Smarter in Lethbridge. But, the first two years showed some benefit of the treatments, even though there were no dramatic yield or quality differences.

"We looked at two different treatments over nine farms in southern Alberta," she says. One part of the study was to evaluate the effectiveness of fungicides in controlling FHB, and the other part was to evaluate timing of irrigation

water application, and the effect that might have on disease development. Aside from the treatment component, a third aspect of the study involves a random survey of fields.

"Depending on the year and the farm, there was some response, but nothing consistent or significant," says Halma. "In some cases, we did see where the combination of using a fungicide, as well as limiting the amount of water applied to the crop just as it was flowering, did have some benefit in reducing the disease. Once the data is processed from this year's growing season, we'll be able to write the final report."

Valid questions

The study looked at two good questions. Do three of the more common fungicides marketed to protect wheat crops against FHB work? And, can the risk or degree of FHB develop-



Field surveys across southern Alberta evaluate the level of disease on both irrigated and dryland crops and compare that with farming practices on those fields. PHOTOS: FARMING SMARTER

Continues on page 16

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ing in the crop be reduced by eliminating irrigation during the critical two- or three-week flowering period? Farmer's participating in the study were asked to use any of three common fungicides—Caramba from BASF and Folicur and Prosaro from Bayer Crop Science—to see if a product, applied at the recommended 75 per cent heading to 50 per cent flowering stage, had an affect on development of FHB. Halma says it wasn't a trial comparing the effectiveness of the individual products. The study compared the effectiveness of treated versus untreated crop on a field scale basis.

The nine participating producers are spread across a large area of southern Alberta from Bow Island in the east, west to the Carmangay area and north to Duchess.

"There is a lot of variability in that area," says Halma. "Growing conditions vary and the level of FHB varies as well. Overall, I would say there was some benefit to using a fungicide. In one case in 2010 there was a 4.1 per cent reduction in the amount of kernels affected by fusarium."

On untreated crop, the level of infection was 6.4 per cent, and on treated crop, it was reduced to 2.3 per cent. Halma says looking at the fusarium tolerance levels for various grades in amber durum, the fungicide treatment would have made the difference of the crop grading a #3 to #4 or coming in a grade lower, a #5.

In the 2011 study year, the most notable improvement between treated versus untreated was a 2.4 per cent reduction of fusarium in spring wheat.

Irrigation timing

On the other side of the study, looking at the affect of irrigation timing, the objective was to adjust the timing of the water application to avoid the peak flowering period, which is when the crop is most susceptible to disease infection.

"We didn't want to reduce the amount of water the crop received, but rather just adjust the timing to avoid that critical two- or three-week period, which is likely in late June and early July," says Halma. "So producers were asked to pick a portion of a field, and perhaps top up irrigation just before flowering, avoid

watering during flowering, and then resume after flowering."

Again, the first two years of the study showed no significant difference on most farms between full water and limited watering sites. However, in one case there was a 3.9 per cent reduction in disease on a field where irrigation was stopped during the flowering period.

"We also had a producer who saw a slight benefit from both treatments," says Halma. The farmer reported a 1.3 to 1.8 per cent reduction of fusarium in crops that received the adjusted water application, as well as a 0.5 per cent reduction in disease on wheat treated with fungicide versus no fungicide."

"So far we are not seeing any significant benefit of the treatments, so a lot may depend on the degree of disease pressure on a particular farm," she says. "The benefits aren't significant but there may be a slight yield advantage and perhaps also opportunity to increase the quality of the crop by a grade or two."

"The benefits aren't significant but there may be a slight yield advantage and perhaps also opportunity to increase the quality of the crop by a grade or two."

Good to know

Bow Island-area producer Will Van Roessel, who has participated in the study for the past three years, says he really hasn't seen any advantage of either treatment in his crops.

"In one sense, the results have been a bit disappointing, but on the other hand at least you know whether something makes a difference or not," says Van Roessel.

"Farmers in southern Alberta are realizing that fusarium head blight is becoming more of a problem and we need to look at whatever tools are available. These treatments haven't made a difference on my farm, but they may work for someone else depending on where they farm and their specific conditions."

Van Roessel says there was "minimal" yield or quality difference in crop he treated with fungicide versus untreated. "And we also did some comparisons of fungicide on our own, outside of this particular study," he says. "The benefits were pretty marginal, and not enough to pay for the cost of the fungicide. To me, if I'm using a crop protection product, I need to see a 2:1 payback." He estimates the cost of the fungicide application at about \$20 per acre.

He also saw no great difference in disease levels or quality improvement in a field of durum wheat where the timing of water was adjusted during crop flowering. "Not irrigating during flowering is probably a good practice, but I didn't see a great difference," says Van Roessel.

He also says it is a bit more difficult to measure differences too because water is being adjusted on a quarter of a circle, so when combining he has to know where that pie-shaped area is in the field. And even though the pivot starts and stops spraying over that quarter circle, it isn't necessarily an exact line in the crop either "so it may not be a perfect trial", he says.

Field surveys too

A third component of the Farming Smarter fusarium project involves a random survey of fields across southern Alberta, evaluating the level of disease on both irrigated and dryland crops and comparing that with farming practices on those fields.

In this part of the project, Halma selected 25 fields in an area that includes Lethbridge, Forty-Mile, and Newell counties and the Municipal District of Taber.

In each of the three years of the survey, she selected 25 fields at random, collecting 300 wheat head samples from each field. She did a visual inspection and also sent a sample away for testing. And along with that, she interviewed the producer to get background on cropping history, variety used, fungicides used, and other production practices.

"We hope from this part of the project we may see some trends or common farming practices that may affect the level of the disease in cereal crops," says Halma. —



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Capturing yield potential with dribble banding

Splitting up nitrogen application can help manage risk / BY DONNA TROTTIER

Interest in applying in-season fertilizer to growing crops is increasing as farmers look for opportunities to capture yield potential after the crop receives rain.

When spring soil moisture conditions are poor, applying only a portion of the crop nitrogen requirements at seeding can be an effective risk management tool. When moisture conditions improve during the growing season, farmers may want to consider applying liquid fertilizer to the post-emergence crops.

The question becomes, when should the rest of the nitrogen be applied, and with what application method, to achieve optimum crop yield and quality?

Typically, Western Canadian farmers place all of their nitrogen with the seed at the time of seeding. Predicting the amount of rainfall that their crops will receive is near impossible, so generally they apply a conservative rate of nitrogen with the seed based on conservative wheat yields such as 30 to 40 bushels per acre.

The advantage of placing nitrogen with the seed is realized the most in a dry year because the nitrogen is available in the soil for the seed and roots to easily access. If it doesn't rain, that nitrogen is still available to the seed. If, however, the crop receives good moisture and increases the yield potential, the nitrogen supplied at the time of seeding may not be enough to give the crop the boost it needs to achieve those higher yields.

Bridging the gap

Phil Needham, of Needham Ag Technologies LLC in Kentucky, is promoting the use of dribble banding to take advantage of the increased yield potential. Dribble banding refers to the application of liquid nitrogen with stream bars and is a concept that Needham brought from Europe.

He suggests placing a base amount of nitrogen with the seed to produce an acceptable,



A producer uses a large self-propelled sprayer equipped with stream bars to apply liquid nitrogen. Post applications such as these are targeted to reduce risk and apply nitrogen to feed the yield potential, rather than putting all the nitrogen down at seeding time. PHOTO: PHIL NEEDHAM

“Dribble banding helps to bridge the gap between what you see for yield potential at seeding time and what you see as yield potential after it rains...”

average crop yield. Then, if rainfall advances the yield potential, apply further nitrogen to the crop with dribble banding to boost and possibly capture that yield advantage.

“Dribble banding helps to bridge the gap between what you see for yield potential at seeding time and what you see as yield poten-

tial after it rains,” explains Needham.

Needham recommends the use of stream bars for best results with in-crop nitrogen applications. Many producers now own and operate high clearance sprayers, which can be configured with stream bars and used to quickly deliver liquid nitrogen onto growing crops.

Stream bars are advantageous because they deliver vertical streams with no overlap, which means that the application pattern is consistent and more uniform regardless of boom height. Needham explains that even on breezy days the stream bars still apply uniform rates of nitrogen by delivering large drops vertically down into the crop canopy. The large droplets bounce off the leaves to reduce leaf damage from crop burn. The large

concentrated droplets produced by stream bars have also been found to reduce losses from volatilization, compared to broadcasting nitrogen with flat fan nozzles.

Application timing

Timing is everything when post-emergence nitrogen is considered. Understanding the pattern of growth and nutrient uptake of crops is essential to determine post-emergence nitrogen application timing. Needham suggests that the timing for a dribble band application of nitrogen depends on the development of the crop. If the plants are lacking tillers and are small, he recommends dribble banding early, at the 3- to 4-leaf stage. If the plants are large with lots of tillers, then Needham suggests applying the dribble banding between jointing and early stem elongation.

When considering in-season fertilizer applications, there are a few other points to keep in mind. Rain is required within a week

of dribble banding to move the nitrogen into the soil for uptake by the roots. There is a potential for nitrogen losses from volatilization of liquid fertilizer. If volatility loss are a concern, growers can tank-mix products such as Agrotain. If applying urea ammonium nitrate (UAN), ensure there is enough time left in the plant's growth to allow for the urea and ammonium to convert to a useable form (nitrate) for the plant. It takes two to three weeks for the conversion. There is a risk of burning the leaves with the liquid nitrogen, causing infection sites for foliar diseases. Dribble banding between the rows with a stream bar helps to reduce the risk.

Ken Coles, general manager of Farming Smarter, is cautiously optimistic about the use of dribble banding in southern Alberta. "The method is used extensively in Europe, but we need to keep in mind that they have a much longer growing season than we do in Alberta," says Coles. In Europe, the application of additional nutrients to the growing

crop leads to increased grain development.

"We need to test the system in Alberta to determine the best crop stage to apply the additional nutrients and to ensure that it improves grain development under our environmental conditions. We still have a lot to learn about the utility of the practice in southern Alberta," explains Coles.

Farming Smarter is planning to set up a Letter of Intent to do some research on dribble banding in southern Alberta. The research would test an assortment of nozzles, a range of rates, apply the nutrients at different stages of crop growth, and a number of different crops will be looked at to compare and test to find the optimum combination for dribble banding in Alberta.

In-season dribble banding of fertilizers is a consideration for producers wanting to fine-tune their nitrogen management. Careful planning and application timing will be important factors in the effectiveness of in-season fertilizer programs. —

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Winter pulse seed available soon

Alternating two winter crops with two spring crops gives each crop an edge over weeds / BY HELEN MCMENAMIN

A few seed growers in southern Alberta have winter peas and winter lentils in the ground to produce commercial seed. The crops can produce yields 50 per cent higher than spring varieties as well as extra soil nitrogen and rotational benefits.

“Winter pulses are very promising, but we need new varieties before it can be more than a niche crop,” says Alberta Agriculture pulse specialist, Mark Olson.

He’s tried winter lentils, peas and faba beans across the province, but he’s only had sporadic success at most of his sites. “We need more winter hardiness. The only place we had consistent overwinter survival was Lethbridge,” says Olson.

Ross McKenzie, who has the most experience with winter pulses, agrees.

“I see winter peas and lentils as a great fit in a small area around Lethbridge to Bow Island,” says the Alberta Agriculture agronomy research scientist. “Winter peas and lentils do best seeded in the first part of September into moist soil. Dryland farmers need a good rain at the right time, but winter peas and lentils could be a great fit for irrigation farmers.”

“We hope to have some seed available for farmers next year. Once people try these crops, we’ll see new ideas evolve.”

Winter peas would be ideal before winter wheat, according to McKenzie. Winter peas or lentils can be mature as soon as the end of July or early August, leaving a month to accumulate some soil moisture for the following winter wheat. Two winter crops in succession would disrupt weed cycles. Following those with spring crops would help in gaining the upper hand over weeds, cutting down the need for herbicides and the risk of resistance.

Any practice, repeated, sets up an environment where some type of pest can thrive. Indian rice farmers hand weed their crop, recognizing a weedy wild rice by its pink color. Even so, a white-stemmed wild rice that looks just like a rice plant has developed. Alternating two winter crops with two spring



Winter pulses are a great fit for southern Alberta.
PHOTO: FARMING SMARTER

crops gives each crop an edge over weeds, as does shifting from cereals to broadleaf crops. McKenzie suggests winter peas or lentils, winter wheat, canola and malt barley.

For every bushel pulses yield, they leave the equivalent of half to three-quarters of a pound of nitrogen in the soil for the following crop. It may not show up on a soil test, but the nitrogen, tied up in organic material, is mineralized the following year. An 80- or an 85-bushel crop, which Olson believes is quite doable under irrigation, leaves the equivalent of 40 to 60lbs of nitrogen.

“At \$0.90 a pound, that’s \$36 to \$54, may be enough to help winter lentils or peas compete with other irrigated crops,” says Olson. “And, peas bump the protein in winter wheat by one percent.”

“Look for the best winter wheat crops,

odds are they’re on pea stubble. And, on zero-till with moisture, the soil is mellow and loaded with earthworms. When we look at that great crop of wheat, we should attribute some of its yield and quality to the peas that preceded it.”

On dryland, peas have an additional benefit. Pea roots penetrate only to about two feet, leaving soil moisture below that to support following crops such as wheat that roots to about four feet.

McKenzie sees potential for winter peas or winter lentils after potatoes. The peas grow several inches of shoot before freeze-up if it has the moisture it needs. The shoot freezes off over the winter, and in spring the plant regrows from ground level. So far, plants in McKenzie’s trials seem to escape serious damage from pea leaf weevil.

McKenzie has grown winter pulses for several years and next year, he’ll add one more year to his seeding rate, seeding date trials. He advises seeding in the first two weeks of September at about 50 percent higher rates than for spring pulses to compensate for the winter crops’ smaller seeds. He’s also growing about 15 acres for seed that will be available to growers to test. Farming Smarter has also done some herbicide trials.

Morton red winter lentil looks like an excellent variety that fits the human food market. The peas may only make the feed market, but high yields should compensate for the quality. Although buyers, knowing they don’t have to actually follow through, have said they look good enough for human consumption. Windham winter pea looks to be the type for irrigation. Specter grows too tall under irrigation, but it does better under dry conditions.

“Fall moisture is the crucial element for winter pulses,” says McKenzie. “Seeded into good moisture with a little phosphorus and a good seed treatment, winter pulses can be spectacular.”



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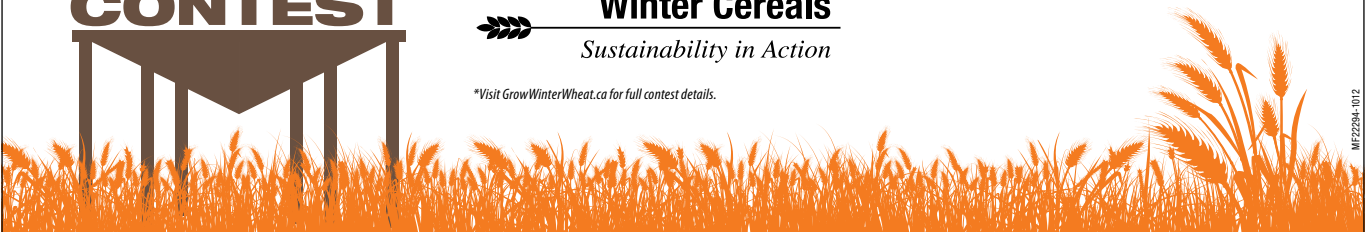
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MF2294-102

Spraying at first light may cost you herbicide efficacy

Mid-day application sees best results / BY HELEN MCMENAMIN

Autosteer allows you to do anything at any time,” says Ken Coles, Farming Smarter manager. It’s not far from that thought to figuring that spraying in the dark should give better results.

“It’s cooler, so herbicides remain on the leaves and are absorbed better,” says Coles. “And maybe the stomata that close during the heat of the day are open at night, possibly allowing more herbicide absorption. And there’s no risk of photodegradation with chemicals that can be degraded in sunshine.”

Currently Farming Smarter is looking into the benefits of nighttime spraying. By assessing both in-crop and pre-seeding burn-off herbicides, and separating out the ingredients of premixes, they’ll be able to see which ones might be affected by changing conditions of mid-day, midnight and dawn spraying. So far, Coles has been “astounded” by the results.

It seems, unexpectedly, that from one year of comparisons of spraying times that most herbicides are most effective when sprayed in the middle of the day, as opposed to spraying late at night or early in the morning.

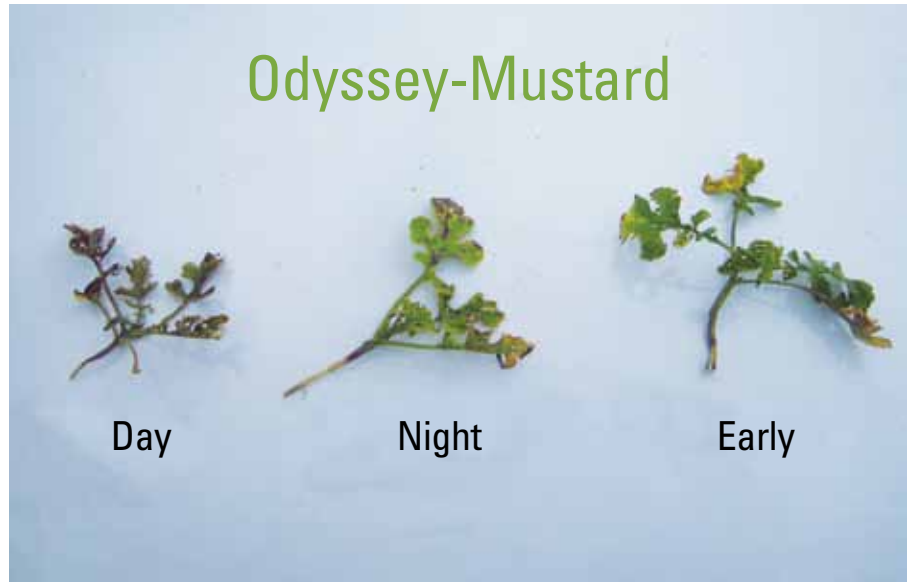
Early morning least effective

As part of its project, Farming Smarter looked at herbicides as pre-seeding burn-off and in-crop. The pre-seeding trials looked at glyphosate alone (Vantage Plus), saflufenacil (included in Heat), carfentrazone (included in CleanStart) and fluorasulam (included in Prepass). Early in the season, each one was used at 75 per cent of the rate in the recommended rate of the commercial mixture so the herbicide would have less than ideal conditions that would highlight small differences in effectiveness.

Later, when weeds were bigger, the researchers figured that would be enough of a challenge for the herbicides.

The researchers were surprised to find the least effective spray time was at 4 to 5 a.m.

“Two weeks after spraying, the early morning-sprayed plots were definitely the worst,”



Effects of spray timing on mustard.

“We were astounded to see such big differences. We don’t often see such clearcut differences as we saw in this trial.”

says Coles. “We were astounded to see such big differences. We don’t often see such clearcut differences as we saw in this trial.

“CleanStart (carfentrazone) was the only herbicide that didn’t show big differences. Its performance in the early morning was very similar to when it was sprayed at noon or midnight. Maybe we saw a loss of activity for that chemical sprayed at mid-day when it can be degraded by the sunshine.”

Differences among the three times of day were even bigger when weeds were cut from each plot 35 days after spraying.

Vantage Plus performance dropped by as much as 19 per cent when sprayed between 4 to 5 a.m. Prepass ingredient, fluorasulam,

was around 13 per cent less effective in the early morning and saflufenacil (the Heat ingredient) lost four or five per cent early in the morning. Carfentrazone (Heat ingredient) had similar activity at all three times.

Weather around the time of spraying, of course, has a huge impact on herbicide efficacy. This spring was generally cool and very humid, so that at the coolest, most humid time of the day (the 4 to 5 a.m. spraying time,) plants would be thoroughly chilled. At the first spraying for the Farming Smarter trial, May 4, the temperature was 2 C. The second burn-off spray day, May 22, wasn’t so cold, but the pattern of herbicide performance was similar.

In-crop performance

Farming Smarter and applied research associations at Bonnyville and Falher also compared the performance of in-crop herbicides sprayed at the same three times. Liberty-Link canola was sprayed with Liberty (glufosinate) or Lontrel and Select (clopyralid and clethodim) and Roundup Ready canola



with Vantage Plus (glyphosate). Peas were treated with Odyssey (imazamox and Imazethapyr) or Select (clethodim). Four herbicides or tank-mixes were tested on wheat: OcTTain XL (fluroxypyr and 2,4-D). Axial and Infinity (pinoxaden, prasulfotole and bromoxynil), Everest (flucarbazone) and Barricade (thifensulfuron and tribeuron).

The herbicides in the trial include chemicals from Groups 1, 2 and 4, as well as 6, 9, 10 and 27. Rates of all chemicals

were cut to 75 per cent to highlight differences in performance.

Coles and the other researchers haven't analyzed their results yet. But their preliminary reviews of the in-crop herbicides don't show the clear differences they saw in the burn-off chemicals.

Even though some chemicals were as much as 19 per cent less effective when sprayed at dawn in this trial, the difference may mean little if label rates are used.

"Herbicides are formulated to perform well

at label rates under almost any conditions," says Coles. "But, at least for most of the burn-down chemicals, it seems you don't need to be out at first light."

Rather than looking to autosteer to allow herbicide spraying in the dark, as originally planned, Coles is now looking to spraying technology for better herbicide performance.

"With low-drift nozzles, we can now spray in winds over 20 km per hour," he says. "So, getting out early, before the wind comes up, is becoming much less important." —

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Growing new ideas at this year's conference

Guest speaker Vik Maraj takes a fresh look at leadership / BY JAMIE PUCHINGER



Join us and other savvy producers for this year's Farming Smarter conference in Medicine Hat on December 4 and 5. PHOTO: FARMING SMARTER

Farming Smarter's annual conference and tradeshow has grown into a substantial farm management conference, attracting more than 250 attendees each year.

This year's event is on December 4 and 5 at the Medicine Hat Exhibition & Stampede. Inspired by the new structure of Farming Smarter, this year's theme is "Growing New Ideas". Join us for presentations on marketing, weed and disease management, diversifying crop rotations, producer and federal investments in research, just to name a few!

With its roots in reduced tillage, the conference first appeared under the Southern Applied Research Association (SARA) in 1993. Today, as SACA and Southern Applied Research Association (SARA) have merged into one entity as Farming Smarter, the conference continues to thrive.

The conference is held on alternating years between Lethbridge and Medicine Hat, where there are two days of fantastic speakers, along with a tradeshow where businesses can be showcased and you can network with some of the most innovative farmers in Southern Alberta.

This year's speaker line-up includes Mike Jubinville, Dennis Dey, Dave Sauchyn, Bob Blackshaw, Perry Miller, Guy Lafond, Jeff Stewart, Ralph Lange, Brian Beres, Richard Gray, and a number of other special guests and presenters.

We will continue our partnership with the Southern Region 4-H, as we allot time for regional speech contest winners and host a live and silent auction on 4-H's behalf. Last year, the auction raised more than \$10,000, which provided much needed funding for regional judging competitions. The auctions are part of the social evening on December 4, where special guest Vik Maraj, a specialist in communications and human behaviour, will deliver a fundamentally penetrating message: everything you think, take for granted, and hold "true" about human performance is at risk in his talk.

To view the agenda, get more information or register, visit www.farmingsmarter.com or call Jamie at (403) 308-9344. Don't miss out on your chance to be part of the Farming Smarter Conference!

Comments from the 2011 conference include:

"Can't think of a thing to suggest—it was just great!"

"Just another great program!"

"Great work! Excellent! Very informative and entertaining."

"Our team was extremely impressed with the show. Congrats on its success and all the work you have put into it. We look forward to working with you next year."

"Excellent focus on technology and new issues to agriculture. Very forward looking—Keep it up!"

"Everything discussed this year was extremely relevant and something we all need to pay attention to. Well done!!"

"4-H Social was awesome!"



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CWB is another player on the marketing team

With grain handling agreements in place, the former Canadian Wheat Board is ready to do business in an open market / BY LEE HART

With a new mandate, a new look, and a more streamlined organization, the new CWB is drawing good response from Western Canadian producers as an all-round grain and oilseed marketing company, says a CWB official.

“We have done a lot of preparation as we move into the new environment,” says Ward Weisensel, chief operating officer at the CWB in Winnipeg. “We have resized the organization and refocused in terms of the business model we want to develop. I believe we are well positioned in this new marketing era to offer producers a range of programs and ser-

vices as a grain and oilseed marketing company.”

With an announcement in August of a handling agreement with Richardson International, the CWB heads into the fall of 2012 with more than 170 locations across Western Canada where farmers can deliver grain to CWB.

Richardson International brings 40 more elevator points into the CWB network. The handling agreement between CWB and Richardson also extends to its port facilities at Vancouver and Thunder Bay.

Richardson joins Viterra, Cargill, Louis Dreyfus, Mission Terminal, West Central

Road and Rail, South West Terminal, Delmar Commodities, Linear Grain and Agro Source as CWB grain-handling providers. The CWB expects to have additional agreements with the remaining Prairie grain companies in place later this year.

“Right now we are focused on deadlines for our pooling accounts,” says Weisensel, in a late September interview with Farming Smarter Magazine. The Early Delivery Pool deadline was September 28 and the Harvest Pool deadline is October 31.

“We are pleased with the sign up we have seen so far,” says Weisensel. “Producers are looking at the CWB as a marketing alternative—another company to consider as they market their grain and oilseeds.”

“With harvest done early in Manitoba and just wrapping up in Saskatchewan and Alberta, we feel sign up by producers has been good for both pools,” he says. In its first program in an open-market system, the CWB Harvest Pool covers a wide range of wheat and durum, two-row malting barley and also a pool price for canola.

While pool accounts may not interest all producers, the CWB points out

a CWB pool contract covers sales planning, execution, foreign exchange and risk management, which means farmers won’t be left chasing market highs or settling for the bottom of the market.

“And, along with the pools we are active in the cash market for wheat, durum and canola, as well,” says Weisensel.

Smooth transition

While southern Alberta farmer Rod Lanier isn’t planning to use CWB marketing programs this year, he is glad the new company is there.

“We are very pleased the CWB programs are there for any producers looking to use a pooling program,” says Lanier, who farms near Lethbridge. “We are so impressed on our farm with how smoothly this transition to an open



CWB still in the game, with more than 170 locations across Western Canada where farmers can deliver grain PHOTO: FARMING SMARTER

market place has gone, and how well the new system is working.”

Lanier, who farms along with his father, Ike Lanier (himself a long-time advocate of an open market system in Western Canada), says “we find it hard to believe how well the transition has gone.”

The Laniers, who have done their own marketing leg work, say they are getting “exceptional bids for our grain, in our yard, and full payment within 24 hours...it’s great” says Rod.

He really noticed a difference this year with the value of winter wheat. They were able to sell the crop directly off the combine, at or near the same value as hard red spring wheat. Other years there was usually a large price spread between the two.

“I don’t know if we will ever use a pooling program, but if we did I would certainly consider the CWB program,” says Lanier. “I am glad that option is there. We are just so pleased with the new system, and it probably should have happened 10 years ago.”

Unfolding process

At the University of Manitoba, economist Milton Boyd says while there was some expected uncertainty about the new marketing system, he feels the transition to an open market has gone well.

“Changes are roughly as expected, though there has been a learning curve for both farmers and grain companies,” says Boyd. “But the sky has not fallen. Most farmers and grain companies seem able to cope with the changes so far, without major problems. Despite the learning curve, today’s farmers are very innovative and well informed, and are likely to adapt fairly quickly to any future challenges.”

Boyd says overall, the process appears to be working, as grain companies are offering contracts and farmers are signing up. “Some farmers may be reluctant to sign for contracts, or may delay, as this is a relatively new marketing approach for them,” he says. “They may be waiting to see how and what future changes unfold, and the size and qual-

ity of their crop.”

Boyd says it is difficult to predict what share of the crop the CWB will have this year. “The CWB work force will be reduced from the earlier 400 employee level to 100 by December, according to the CWB. This indicates retaining 25 per cent of employees, so it may be that the CWB isn’t expecting a large market share of the wheat crop. There could be possibly a reduction to around a 25 per cent share of the crop from the past 100 per cent share under the monopoly, based on these estimated future employee numbers.”

Boyd says with increased interest from foreign firms in Western Canadian grain companies, this would point to the possibility of increased competition for the farmers’ grain, “which is good news for many farmers,” says Boyd.

“In the longer term, it will be important to ensure strong competition and sufficient regulation in the grain handling and transportation system, so that farmers face fair and efficient marketing opportunities,” he says. —

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Precision ag doesn't have to mean high tech tools

Raj Khosla says precision ag can be applied at any level of technology and at any field scale / BY HELEN MCMENAMIN

Raj Khosla, the Monfort Professor and professor of precision agriculture at Colorado State University, has been called the godfather of precision agriculture, but he says good use of the five Rs is more important than high tech tools and computing power.

"Precision farming is not just using new technologies," says Khosla. "It's an information revolution, made possible by new technologies, that results in a more precise, higher level of farm management. To this end, precision farming can be applied at any level of technology and at any field scale."

Khosla holds professorships in Saudi Arabia and China, and consults around the world, so he takes a much more global view of agriculture than most precision ag fans.

In less developed parts of the world and in science circles, the high tech tools we associate with precision farming are not the real concern. Precision agriculture in those areas might be considered basic crop management in Alberta.

"Seeding, applying nutrients and pesticides and other inputs need to be done at the Right time, in the Right amount and the Right place from the Right Source and in the Right manner. For precision nutrient management, Right manner refers to nutrient in the soil – broadcast, banding, dribbling, injecting, etc. Just because those are not the first considerations in this region, doesn't mean that we can't improve on our current standards," states Khosla.

Precision agriculture in the developed world started with advanced and innovative technologies and now it's even more sophisticated and complex. But, Khosla still sees it as an art as well as a science that uses advanced technologies to enhance the efficiency, productivity and profitability of agriculture production systems in an environmentally friendly way. And, you can get into precision ag without great expense or committing to the steep learning curve some



Raj Khosla - the "godfather of precision agriculture."

pioneers of the technology worked through.

Varying nitrogen fertilizer based on black-and-white aerial photographs and your management experience is a low cost way into precision farming. Other than the time to get the photograph and to identify the high and low yielding areas on it, there's very little investment involved in creating a prescription nutrient map. Precision farming can and does pay for itself.

The next step, says Khosla, is to identify the variability in productivity and its cause, quantify variability and its scale, record variability and its location, and map the variability so that it can be managed. The tools to do this range from basic smart sampling – taking soil samples within each management zone, yield mapping, or assessing soil texture. Or, you could use electrical conductivity (EM38) mapping or remote sensing.

However it's done, Khosla is convinced that the initial investment is more than repaid through better productivity and profitability. A study from Colorado State Univer-

sity showed as much as \$71 per acre better returns than traditional management.

As for any technological tool, you have to assess which tool or technique would bring the most benefit to your farm. A "one-size-fits-all" approach does not fit in with precision farming.

"It's not the physical implementation of precision farming that's difficult, it's opening one's mind to change," says Khosla. "There is a steep learning curve with precision farming. But, once it's in place, it can make your farming operation easier. Consider the benefits."

Khosla considers each part of the field as a potential investment and advises focusing inputs on areas with high yield potential.

To help farmers develop their skills in working with precision farming tools, Khosla has developed a network of farmers with on-farm trials like producer clubs. Khosla's staff provide training in the design, implementation and analysis of field scale farm trials. Farmers share data that helps them in their farm management and gives them a competitive advantage. For the scientists, they can document the adoption of the technology and access the geo-referenced data from farm fields as a resource for their research.

Khosla sees the precision practices differing from one place to another, depending on the creative mindset of farmers and others and their areas of interest.

"Research in precision agriculture must focus on improving outcomes, not necessarily the tools that best meet the needs of farmers," he says. "Precision agriculture has the potential to contribute to increased production in diverse agricultural environments and conditions across the globe. Will we be able to overcome the future challenges and seize them as opportunities? Precision agriculture management coupled with genetic improvements in crop traits will play a crucial role in meeting global demand for food, feed, fibre and fuel in the near and distant future." —

Optical sensing – a new tool for your precision farming toolkit

Greenseeker may find a place in precision ag / BY HELEN MCMENAMIN

Optical sensing may be the best “do-it-yourself” mapping system to develop your understanding of variability in each of your fields.

The Greenseeker is an optical sensing system of six boom-mounted units that measures light reflected off the crop canopy, measuring the “greenness” and the density of vegetation under it. Its computer records the information and maps it. A nifty technology, it emits light of specific wavelengths, one near infra-red and the other red, and the crop reflects the light back to the sensor.

The reflection from the crop indicates the crop’s density and its color. These values are combined into NDVI (normalized differential vegetative index), which can be mapped. The sensors are generally mounted on a sprayer boom, so you can map the crop as you spray herbicide or other pesticides.

Terry Aberhart of Langenburg, in southeast Saskatchewan, is using a Greenseeker to map his crops.

“We usually have to apply fungicide at the flag leaf stage,” he says. “Mapping the vegetative index at that time gives us a better idea of the yield potential of the crop and helps us make marketing decisions. It shows us the real potential of every part of the field. It will be another layer in our field mapping systems and gives a more accurate idea of the potential of each area of the field. A yield map only shows grain yield. If we have a patch of wild oats, the Greenseeker shows a higher vegetative index, a yield map shows lower yield in that area. The Greenseeker map can help show us certain things that a yield map will not and vice versa.”

Aberhart may use the Greenseeker to apply variable rates of fungicide or desiccant, putting on more chemical where the canopy is most dense. For his 10,000-acre farm, he’s happy to have another source of information about his crops. “It’s a data collecting tool,” he says. “We’re still finding uses for it.”

Rick Pattison of Lemberg, Saskatchewan, who sells Greenseeker, sees its in-season map-

ping ability as a major feature.

“You have an in-season record of the field every time you drive across it,” he says. “Some farmers find that valuable for planning crops. Variable rate fungicide application is attractive because fungicides are costly and you may not need the full rate across the whole crop.”

Agriculture Canada research scientist Guy Lafond has been looking at the Greenseeker as a way to apply only part of your nitrogen fertilizer at seeding and apply the balance only if the crop gets off to a good start.

He’s been developing algorithms for the Greenseeker at Indian Head, SK. These equations enable him to estimate the yield potential of a crop with the Greenseeker and calculate the nitrogen fertilizer needed to support that yield. Greenseeker has developed this capacity for U.S. regions, but prairie conditions likely need different amounts of fertilizer.

The plan is that at seeding you apply about two thirds of your normal nitrogen fertilizer. On one strip through the field, you apply 120 to 150 per cent of your normal fertilizer.

At the 5-6 leaf stage of cereals or between the start of bolting and the start of flowering, no more than 10 per cent flowering, for canola, you compare the vegetative index for the two rates of fertilizer. You drive along the border of the heavily fertilized strip so that

three sensors read the vegetative index for the main crop and three read the strip with extra fertilizer. The Greenseeker computer will use Lafond’s equations to calculate the crop’s potential and the nitrogen fertilizer needed for that yield.

You can then dribble band that amount, or the percentage of it you choose, as 28-0-0. The supplemental fertilizer needs to be applied before cereals start to elongate.

It takes a huge number of plots and treatments to develop these equations to calculate the supplemental nitrogen to apply to a growing crop for each level of difference in the vegetative index. Lafond and his crew have been working on this project since 2003.

“This system could help farmers allocate their nitrogen fertilizer resources more effectively across a field based on yield potential,” says Lafond. “You do have to remember to move your high fertilizer strips every year.”

Lafond is still working on algorithms for winter wheat. The figures for spring wheat don’t work. Research scientist Brian Beres, who has winter wheat trials at eight sites across the Prairies, is also collecting data for this project.

“I believe the Greenseeker has a lot of potential as a tool,” says Lafond. “It could help us do a lot better than we’re doing in allocating fertilizer.” —



PHOTO: FARMING SMARTER

CFIA dropping fertilizer efficacy and quality regulations

Cost-savings measures create 'buyer beware' situation for producers / BY MADELEINE BAERG

Starting next spring, producers will have to get a whole lot better at searching out the fine print. As of April 2013, the Canadian Food Inspection Agency (CFIA) will stop requiring fertilizer and crop supplements to have proven efficacy and quality. The new 'buyer beware' rules are a cost savings measure in the face of government cut-backs, and will require producers to be a lot more wary, says Grain Growers of Canada executive director, Richard Phillips.

"The reality is that the CFIA's budget was being cut. Do you want to cut food safety? This was the other option," says Phillips.

Until the CFIA finalizes new regulations, foreign trial data, scientific literature and other minimum evidence requirements will be accepted as proof of fertilizer and crop supplements' efficacy and quality. Once the new regulations are in place, however, no efficacy and quality data will be required at all. Instead, so long as fertilizers and supplements are labelled correctly and proven safe to people, animals, plants, and the environment, they can be sold in Canada.

According to the CFIA, the change will allow the agency to focus on fertilizer and supplement safety, and will give the industry more input flexibility, and less regulatory cost and red tape. The CFIA also asserts that the changes will more quickly allow producers access to new, safe and innovative products that are available in other areas.

Unfortunately, points out Phillips, "Anything that sounds too good to be true always is."

The Canadian Fertilizer Institute (CFI) backs Phillips' perspective. Their official statement on the regulation shift is: "The system of science-based efficacy or guarantee has worked for a long time in Canada. CFI believes that the existing system was working and did not see a need for drastic change. The government has made a decision and we are working with the CFIA, our customers and stakeholders to make a smooth transition to



New fertilizer regulations coming down the line next spring. PHOTO: FARMING SMARTER

a deregulated market. These changes will not come into effect until 2013, and we are working to ensure standards are in place to protect Canada's farmers."

Despite his reservations on the regulation change, Phillips believes that careful farmers will still be well served by the fertilizer industry.

"It takes a long time to build a good reputation in a business, but it doesn't take long to lose it. We have a reasonable amount of faith that if you're dealing with credible businesses, they'll be making reputable claims."

"I speak from personal experience. My family had a fertilizer and chemical dealership for 25 years, so I understand both sides of the business," says Phillips. "At the end of the day, in our business, we never would have told our local farmer customers something other than what was absolutely true about the product. The vast majority of fertilizer dealers are going to be the same."

If there is any doubt about a product, opportunities to obtain good efficacy and quali-

ty information are readily available these days.

Given today's easy access to information, web savvy producers can get all kinds of information on any product, which was not possible even a decade ago.

Producers also have the option to send a sample to a lab for analysis.

"If your fertilizer bill is between \$50,000 and \$100,000 a year, a couple of \$50 tests makes sense," points out Phillips.

For farmers feeling left in the cold by the changing regulations, all is not lost. The CFI is currently looking at creating voluntary standards, which would allow companies who can provide specific efficacy and quality data the benefit of a stamp or seal, similar to a Better Business Bureau style stamp.

All told, says Phillips, the regulation change is unlikely to negatively impact many producers. Ideally, perhaps the CFIA's assertions regarding easier and earlier access to new and innovative products will prove true. In the meantime, keep one rule in mind: caveat emptor (buyer beware). —

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Increased producer research funding necessary for cereals viability

You need to invest to compete / BY MADELINE BAERG

Over the last decade, producers and producer groups have watched with increasing concern as government ag-research dollars have slowly declined. Without adequate government funding, many wonder how Canadian cereals can remain competitive in the international marketplace.

Instead of pointing fingers at government's declining spending, perhaps it's time for producers themselves to assume greater responsibility for the long-term viability of the industry.

"While there are certainly parts of agricultural research that spill over to the general public, the most direct beneficiary is the producer. And, they haven't invested very much," says Richard Gray, a professor of bio-resource policy in the department of business and economics at the University of Saskatchewan.

According to Gray, there is an enormous cost-benefit ratio to agricultural research: for every dollar invested, he calculates a benefit of at least a 10:1 return and, at times, as much as 20:1. Research results in variety development, which leads to better pest and disease resistance, and quality and yield improvements.

"You get what you pay for," says Rick Istead, general manager of the newly created Alberta Wheat Commission. "If you look at what's happened in terms of technology in corn, soybeans, cotton and canola, you can see that, regardless of where the dollars come from, the more you invest the more you get. Those crops are really successful in terms of what they've been able to do in the areas of pest resistance, variety development, and even things like water and nutrient efficiency. Wheat research, on the other hand, has been underfunded for about twenty years."

Consider this: approximately \$20 million dollars are currently invested into wheat research in Canada each year. Comparatively, the similarly sized Australian wheat industry invests \$80 million – four times as much money – into research annually.

For the most part, Australia's research dol-



New grower groups starting to collect check-offs for innovative research. PHOTO: FARMING SMARTER

lars come directly from Australian producers' pockets. All Australian wheat, barley, canola and sorghum producers pay a non-refundable levy of 1.02 per cent of the farm gate value of their crops into a research specific fund. Farmers in South Australia are additionally subject to a refundable levy of \$0.35 per tonne to support other, primarily research-focused grain industry funds.

"Australian producer groups were very much behind the non-refundable research levies," says Gray. "The industry woke up and said, if we're going to compete, we're going to have to invest."

Canadian producers who want industry growth and innovation will have to likewise invest, since new dollars will not come from any other source. As government continues to widen their portfolio, increasing agriculture-oriented spending on areas like food safety and environmental sustainability, only fewer dollars will be available to agricultural research. Meanwhile, private firms will continue to stream their funding towards crops like hybrid canola and corn where there is a significantly better return on their research investment.

"[Canadian producers] can wait until the industry hits a crisis point, but there is also the argument that in better times, you can more easily afford to invest in research. This could be

a good time to take some of the surpluses of today and invest for tomorrow," says Gray.

On August 1, both the new Alberta Wheat Commission and the new Alberta Oat Growers Commission began collecting a mandatory/refundable check-off, with most of the collected funds slated to go towards innovative research.

"The discussion surrounding the creation of the Alberta Wheat Commission started with the concern that the two pre-existing commissions (Alberta Winter Wheat Producers Commission and Alberta Soft Wheat Producers Commission) only represented five per cent of the wheat acreage in the province, which meant limited dollars to invest in research. We could never afford to fund what needed to be funded. If you want to be a partner, you have to put your share in. Now, we expect to collect three to four million dollars in annual revenue, of which roughly 60 per cent will go towards funding innovative research and market development initiatives," says Istead.

However, he adds, a key part of getting the most from your research dollar is collaboration.

"Until the industry can develop an innovation strategy for wheat, I'm not sure we're making the best investment," says Istead. "We need to think carefully about how we can move wheat to the same shelf as canola, and what we have to do to regain market leadership. I think it's do-able, but it's going to take some champions to do it, and we'll need to build some good networks to bring to light a public-private-producer collaborative effort."

Gray sums up his position with a warning to producers.

"In the absence of any action, unless they do something drastic, we're going to be left with the status quo. We're going to continue to underfund research for cereals, and our crops will become less and less competitive," says Gray. "The industry, including farmers, needs to send a clear message to politicians that it wants better. You can't get a 20:1 benefit unless you put in a dollar in the first place." —

Glyphosate-tolerant kochia spreads along the tumbleweed trail

More cases identified in southern Alberta and Saskatchewan / BY HELEN MCMENAMIN

The first glyphosate-resistant weed on the Prairies—kochia—showed up in southern Alberta last summer and now reports and samples of it are coming in from across southern Alberta and Saskatchewan. The tumbleweed is already resistant to Group 2 herbicides and now some of it can grow unfazed through a shower of everybody's favorite herbicide.

This isn't an isolated problem. It's a blow to zero-till farming, a call to up our game to deal with one of the Prairies' fastest spreading weeds—now, or soon, with glyphosate resistance.

The first sightings of the weed were around Warner—wandering trails of healthy kochia plants across clean chemfallow trace the rolling of seed-laden tumbleweeds. Fortunately, one savvy person called weed expert, Bob Blackshaw.

"If he hadn't called and raised a red flag, we could have missed these kochia for a few years," said Blackshaw. He confirmed it was true resistance last winter.

In the United States, glyphosate-resistant kochia was first confirmed in Kansas in 2007 and has since spread to Nebraska, Colorado, Montana and South Dakota.

Joint effort

Agriculture Canada weed scientists Blackshaw and Hugh Beckie, and Linda Hall from the University of Alberta, are working together on the problem. They're looking for project funding to find answers to many of the questions sur-

rounding this challenge.

U.S. weed scientists have shared their experiences, giving the team a head start. Blackshaw and Beckie are working to confirm that the sample plants sent to them this summer really are resistant to glyphosate.

The weed scientists suspect the glyphosate-resistant genotype of kochia may have been around for some years. Herbicide resistance, even for a low-risk chemical like glyphosate, is all about the number of applications, particularly where weed control depends entirely on one chemical. Each year the risk of resistance is low, but over a number of years the risk increases.

"Many chemfallow fields have had 30 or more glyphosate applications," says Blackshaw. "They've been in chemfallow for 25 or 30 years. And, for quite a few recent years, most have had glyphosate alone."

The weed scientists have worked on this problem, but they don't have any results yet. Blackshaw will present his results at the Farming Smarter conference on December 4 and 5 in Medicine Hat, and at Agronomy Update in January.

Doug Brodoway, Farming Smarter board member and agronomist with UFA in Medicine Hat, has seen plenty of kochia not controlled by glyphosate around Etzikom, Medicine Hat, and up to Fox Valley and Richmond in Saskatchewan. Most has been in chemfallow, but he's also seen kochia in cropped fields. Some has survived glyphosate and Express or ExpressPro (group 2) treatments.

"I've seen escapes before, but always in lines or linked somehow to sprayer performance," he says. "This year, you can see wandering trails, or random plants, quite different from a sprayer miss."

New chemistry

Brodoway has had some success with new chemistry that's become available lately. Distinct—diflufenzopyr (DFFP) (group 19) and a high rate of dicamba (group 4) has worked, so have products that combine group 14 herbicides with glyphosate—Cleanstart—carfentrazone and glyphosate, and Heat—saflufenacil and glyphosate.

"We need to be proactive and plan to use chemicals with different modes of action to deal with resistance," he says. "People have been cutting back on water rates too. Sometimes you can get away with cutting spray volume, but to get kochia under control, you need to increase water volumes."

"Maybe it's time to rethink chemfallow. It costs about \$25 an acre, more with the new chemistry. You can put in a crop for as little as \$100 and we have more options for in-crop weed control.

Just 10 bushels of wheat at \$7.50 covers the extra costs. It's pretty good odds, that you'll end up with the price of 15 or 20 bushels in hand."

Blackshaw agrees. Diversity in crop sequences open up more weed control options. "Crop management plays a role in weed management." —



Healthy kochia plants following the path of rolling seed-laden tumbleweeds across a clean chemfallow field. (kochia) Producers learn about glyphosate-resistant kochia at a Farming Smarter field school module. PHOTO: BOB BLACKSHAW, FARMING SMARTER

Riparian buffer zones are a farming asset

Increase water and soil conservation on your farm / BY LEE HART

PHOTO: FARMING SMARTER

A grass or shrubby strip of cropland left along a creek, lake or other permanent water body is not wasted farm land, says the executive director of the Alberta Cows and Fish program.

That grass strip, properly referred to as a riparian buffer strip, is actually playing an important role in water and soil conservation on your farm, says Norine Ambrose, of Lethbridge.

“Probably most people don’t realize a grassy buffer strip between your cropped land, for example, and the actual riparian area, helps to protect water quality, as well as water quantity,” says Ambrose. “A producer might see that strip of grass or shrubs as unproductive land using water, but it is actually helping to store water. That stored water may eventually move into the water source—the creek or pond—to help maintain water levels, but it can also move laterally out into the field for several metres to benefit crop production.”

“There hasn’t been a lot of research on this, but studies in the U.S. monitoring healthy buffer strips along side riparian areas over 30 years showed they helped increase water storage capacity by four fold, so they are extreme-

“...most people don’t realize a grassy buffer strip between your cropped land, for example, and the actual riparian area, helps to protect water quality, as well as water quantity...”

ly important,” she says.

Ambrose is clear to make the distinction that a buffer strip is not the same as the riparian area. A riparian area is an ecological zone with specific vegetation and soil type. In general terms, the banks and grassy, treed area including flood plain along a creek or river, or around a pond, is the riparian area. And most crop and livestock producers are well aware of the importance of not farming there, or allowing cattle to disturb the riparian areas.

“The buffer strip is an area bordering but outside the riparian area,” says Ambrose. “It could be a natural area of grass and brush, or it could be a developed and managed strip of forages that is not farmed every year.”

The width of the buffer strips can vary, but in general terms, the buffer strip should equal the width of the flood plain of the water-course it surrounds. A 10-meter wide buffer

strip is considered a minimum, while a 30- to 100-metre wide buffer strip is preferred, and it may need to be wider in steeper areas.

“The requirements can differ for every farm,” says Ambrose, noting so much depends on the function of the buffer strip, the type and density of vegetation, the soil permeability, soil structure, slope and drainage.

The Cows and Fish program is a common name for the Alberta Riparian Habitat Management Society. It is a non-profit society striving to foster a better understanding of how improvements in grazing and other management of riparian areas can benefit the environment, and crop and livestock production.

Several benefits

“The buffer strips have several production benefits,” says Ambrose. “They help conserve moisture, and this is moisture that will move

into the watercourse and may move downstream, but it is also moisture that helps replenish water sources on the farm for livestock or domestic use. These buffer strips also help to hold and store moisture, reducing the risk of soil erosion, so they help to save your actual land from being lost.”

Aside from these direct production benefits, buffer strips help to contribute to the overall health of the riparian area, which contributes to the biodiversity and sustainability of the farm.

“Perhaps this is looking at the bigger picture, but a farm or land base with properly maintained buffer strips along riparian areas has more value,” says Ambrose. “A healthy riparian area contributes to improved water quality, there is more wildlife and more diversity of wildlife, and soil isn’t being eroded. This all reflects on the sustainability of the farming operation. It is more appealing to the landowner and it is more appealing to anyone coming to look at your farm. It has a value.

And we are also in an era where we are talking about ecological goods and services (EGS) and where these good, sustainable farming practices could be rewarded. So a properly managed riparian area with a buffer strips is an asset.”

Ambrose says ideally the buffer strips should be created or left around any permanent water source or wetland. Creeks, rivers and lakes are obvious water sources or wetlands, but a wetland can also be more semi-permanent potholes in the middle of a field.

“There are always low spots in a field that collect standing water, depending on the year,” says Ambrose. “And these aren’t necessarily wetlands. But you may have a slough or semi-permanent wetland area where you have a vegetation change different from the rest of the field. If possible, this is an area that should be also protected with a buffer strip.”

A good indicator of a wetland is vegetation such as cattails and willows. The water may not be there every year, but if you see willows

growing, or in years when water is present, there are cattails. This is nature’s indicator that the area is a natural wetland.

Ambrose says on land that is annually cropped, the riparian buffer zone could be natural or seeded forages that are allowed to grow. This doesn’t mean the area can’t be pastured, but the buffer zone shouldn’t be farmed or tilled to the edge of the riparian area.

For more information on riparian area management and buffer zones, contact your local agricultural service board, or the Cows and Fish office in Lethbridge. Visit their website at www.cowsandfish.org, email riparian@cowsandfish.org or call (403) 381-5538.



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Ranking agri-environmental issues

Nutrient placement at the top of the list / BY DONNA TROTTIER

Producers from Southern Alberta assisted Farming Smarter in identifying the most important crop production related agri-environmental issues they face each year.

Through a survey, Farming Smarter helped identify and prioritize the agri-environmental issues of crop production for southern Alberta farmers. Jamie Puchinger, Farming Smarter's Growing Stewardship Coordinator, lead the project, beginning with the development of a stewardship committee. The committee consisted of experts from various knowledge bases, including municipal agricultural staff such as ag fieldmen, experts from Agriculture and Agri-Food Canada, Alberta Agriculture and Rural Development, the Agri-Environment Services Branch, producer groups, universities and private agri-businesses.

Puchinger developed a categorized survey in which the stewardship committee members were asked to list the most prevalent issues relating to each category. Initial topics included pesticides, crop rotations, energy resource development, carbon emissions, protecting sensitive land, nutrient management, pest resistance, soil quality, groundwater contamination and water quality. The results of this survey of experts were compiled and grouped to form a list of the 30 most prominent issues to include in the producer survey.

Respondents to the producer survey were instructed to rank each of the 30 agri-environmental issues on the list from 1 to 5, with 5 being the most important and 1 not important. The top issues were identified based on the number of respondents ranking the issue as a high priority. The survey was available on the Farming Smarter website and was answered by a number of producers, with the following agri-environmental issues of crop production in southern Alberta ranking the highest:

1. Nutrient placement (rate, timing, method and type)
2. Resistance (resistance to pesticides and weed resistance)

3. Nutrient efficiency
4. Soil structure/quality/organic matter
5. Water use efficiency
6. Elimination of beneficial insects and bioaccumulation
7. Cropping and tillage practices
8. Water contamination
9. New pest introduction
10. Lack of protection for sensitive areas (riparian, wetlands)
11. Pesticide accumulation (residue and carry-over)

"Farming Smarter will try to address the majority of issues on the prioritized list through field research and extension of information on each of the identified issues," states Puchinger. "If there is an issue that rated high in the survey, then we will do our best to get information on that issue out to the producers."

Because nutrient placement ranked as the number one issue in the survey, it will be the first priority for Farming Smarter to address with their research and extension. "We are doing some trials with nutrient placement and variable rate technology based on soil and yield mapping. We will share the results from these trials with producers, along with other information on nutrient placement that we gather," says Puchinger.

The survey indicated to Farming Smarter that pesticide resistance is the second highest issue of concern to southern Alberta farmers. Farming Smarter has conducted research related to this issue through trials with glyphosate tolerant kochia.

The presence of glyphosate tolerant kochia has been confirmed in southern Alberta resulting in the need for changes to weed management strategies. Farming Smarter plans to develop and test new strategies on resistant weeds and will gather information to share with producers in an attempt to tackle this issue.

"First we want to ensure that producers are



Farming Smarter plans to use results to focus future research and extension efforts towards the issues that are most important to southern Alberta farmers. PHOTO: FARMING SMARTER

aware of resistance issues through our extension program, and then we want to help them formulate and implement solutions to the issue by assisting with crop selection and effective application rates and timing," states Puchinger.

There are beneficial management practices and strategies available to help producers deal with the issues identified through the survey, however Puchinger commented that the information seems to be spread out in a multitude of locations. Farming Smarter is working on compiling the available resources on the issues and associated beneficial management practices into one database of information that will be easy for producers to access and comprehend.

Farming Smarter plans to use the results from the survey to focus future research and extension efforts towards the issues that are the most important to the people they are trying to help and support—southern Alberta farmers. —

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