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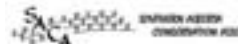
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Editorial Board: Ken Coles, Brent Nicol
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Chairman's message

» By Richard Fritzler, Chairman Southern Applied Research Association

Welcome everyone to the fall edition of the *Farming Smarter Magazine*. It's been a challenging year with a cool, wet spring and a hot, dry fall.

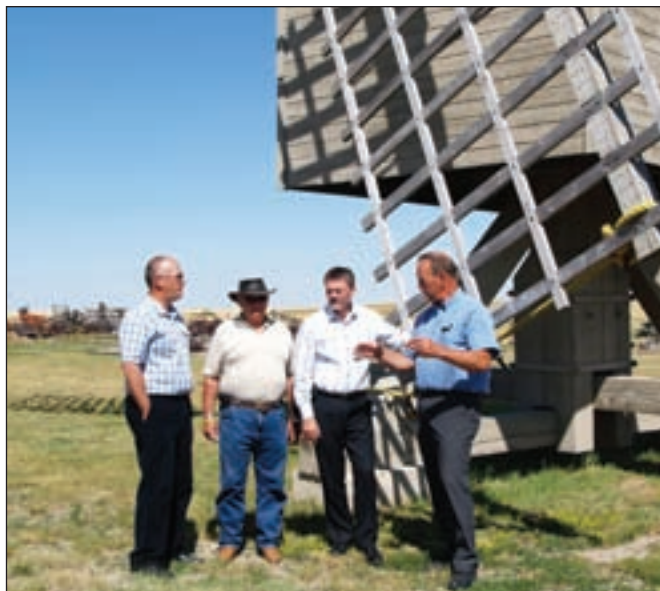
I would like to thank the SARA and SACA board of directors, Ken and all the staff for their work this year. I would also like to thank all our members and partners for your valued support. SARA continues to play a bigger role in plot research, field trials and getting information out to farmers.

SARA hosted a very successful Diagnostic Field School at the Lethbridge College site, a great tour at the County of Cypress site and several other crop walks this past season. There always seems to be something new to learn each year that helps us in our operations.

Look for new and improved Farming Smarter branded events and information in 2012 as SARA and SACA hope to streamline operations by amalgamating to form southern Alberta's Farming Smarter Association.

Have a great fall and winter and I look forward to seeing you at some of the great events planned for this winter!

Yours truly,
Richard Fritzler,
Chairman Southern Applied Research Association



From left: Farming Smarter (FS) Manager Ken Coles, FS Chair Richard Fitzler and Doug Horner listen to Len Mitzel explain the workings of the wind powered grain mill that dominates the field at the Etzikom Windmill Museum.
CREDIT: C. LACOMBE

GM's report

» By Ken Coles, General Manager, Farming Smarter



Ken Coles who sees a future so bright he has to wear shades! CREDIT: C. LACOMBE

Despite many weather related challenges that seem to be the norm these days, I am very pleased with this past season. SARA and SACA have had yet another facelift with a significant change in staff, some new board members and a continually expanding workload.

The new Farming Smarter team, comprised of a number of young, skilled and passionate individuals, is working hard to deliver three core programs: Growing New Ideas, Growing Knowledge and Growing Stewardship in southern Alberta's production agriculture.

Look for new ways to learn as we expand our efforts in precision agriculture, communication, agronomy and stewardship. You can find this information by joining our email list to receive our monthly e-newsletter,

by following us on twitter and facebook or by checking out our new and improved website www.farmingsmarter.com set to re-launch in December featuring a video library of our events and online version of the *Farming Smarter* magazine.

Have a great winter and we look forward to Farming Smarter with you for years to come!

Ken Coles
General Manager
Farming Smarter

Here comes Hollywood

» By Les Brost



Western Canadians have always been a wee bit envious of our American cousins when it comes to Hollywood's treatment of our respective histories. Let's face it — Custer's Battle of the Little Big Horn and the exploits of American outlaws have generated a lot more popcorn sales than the Batoche Rebellion or the goings-on at Fort Whoop-up. We've been the boring cousins of the exciting Americans — until now.

Now, Western Canucks could have their own blockbuster in-waiting, "Gunfight at the Wheat Board Corral." Part nail-biting drama, part tragedy, with elements of farce and fantasy, it has all the ingredients of a mega-hit.

The story begins with the creation of Canada's Wheat Board (CWB), by the federal government in the 1930's to placate prairie farmers furious at their treatment by the grain companies. CWB gave those farmers a measure of control over their own destiny.

Yet CWB has long been a magnet for criticism as persistent as gophers in the short-grass prairie. The criticism centered on the monopoly marketing powers granted the CWB. Even former Prime Minister Pierre Trudeau bluntly asked farmers, "Why should I sell your wheat?"

Over the years, unhappiness with the CWB deepened. Many grain farmers, particularly those close to the 49th parallel, saw marketing opportunities dangling in front of them like plump B.C. cherries. Those opportunities were so near — and yet so far, for the CWB's rigidity stifled their entrepreneurial desires. Other grain farmers, especially those operating further away from the border or having no desire to tap into American markets, remained tinkled pink with the status quo. Yet despite the unhappiness, the CWB debate remained a typical Canadian disagreement - polite, well mannered, and boring.

Astute readers will by now be asking, "Les, that's all nice, but you promised a blockbuster. Where is the drama you promised?"

The calm was shattered when the Political Dogma Bunch came galloping over the hills trailing dust, sweat, and general commotion. Range war erupted as the left versus right political goofiness infecting today's political environment swept up the CWB debate.

The federal Progressive Conservatives tried to avoid the debate; leaving it to the Combine Posses shooting it out in the hills. Aside from Ralph Goodale, most federal Liberals were trying to figure out what kind of nail you used on a CWB. New Democrats were



Dualing smart phones is the closest we come to a shoot out around here! Ken Coles (left) and Brent Nicol Tweet activities from the field. CREDIT: C. LACOMBE

strident supporters of the CWB monopoly.

Things changed when Conservative Stephen Harper took over the government reins. His Agriculture Minister, Gerry Ritz, vowed to introduce legislation dismantling the CWB single-desk marketing monopoly without holding a farmer vote. Meanwhile, across the prairies, one heard a very loud "click" as each side tuned the other out.

Pro-Board information meetings across the west gave Board supporters a chance to unload their deepest fears, and the CWB held its own plebiscite. With 56 per cent of producers voting, 62 per cent voted to keep the current Board monopoly in place.

Mr. Ritz's premature intervention was a strategic blunder leaving questions still crying for answers. Why couldn't CWB management develop the kind of internal flexibility that would better support in-house marketing choices and value-added grain processing? What lessons could grain farmers learn from the American trade response to Canadian beef producer's BSE crisis? Do grain farmers expect to opt in and out of whatever remains of the CWB at their pleasure? And if Mr. Ritz busts the CWB monopoly, will the Canadian taxpayer subsequently assume the burden of maintaining what's left of the CWB?

That's the real tragedy. There are no winners in this scenario, only losers. If Gerry Ritz removes the CWB monopoly, Canada's grain farmers lose a powerful tool in dealing with international grain traders. If by fate and chance the CWB emerges unscathed, progressive farmers who see future profit opportunities in adding value to their own bulk product will continue to navigate expensive and tedious bureaucratic hurdles.

That's why Agriculture Minister Ritz's intervention is so regrettable. Instead of directing grain farmers to resolve the issue themselves and be responsible for the outcome, Papa Ritz continued the paternalistic behaviour that has failed abysmally with Canada's First Nations. He said, "Government knows best," and squandered an excellent opportunity to reduce government involvement in the governance of the agriculture industry.

Yes, "Gunfight at the Wheat Board Corral" has blockbuster movie written all over it. Soon, it may be in a theater near you. Movie industry scutbutt says that James Cameron of Titanic renown is buying the screenplay, with Brent Butt of "Corner Gas" fame earmarked for the Gerry Ritz role. Personally, I like Steve Martin for the Ritz Role. Regardless — move over, General Custer — here comes Showdown! —

Precision farming conference for farmers

Conference to focus on site-specific farming » By Helen McMenamin

Set aside a couple of days in February for a mini-vacation in Calgary and attend a conference dedicated to site-specific farming from a farmer's point of view. The Western Canada Precision Ag Conference and Tradeshow takes place at the Deerfoot Inn and Casino February 22 - 23, 2012.

"It seems conferences on precision ag always target manufacturers or consulting agronomists," says Farming Smarter manager, Ken Coles. "Farming Smarter directors and ARECA thought it was time to put producers at the center of discussions on using this technology.

"Farmers own some of the equipment, and many of them are finding novel ways to use it in their operations, but all the discussions are among the experts rather than the people using it and paying the bills. So we think we've got the first conference on precision farming in western Canada dedicated to the end users."

The organizing team found experts far and near. There's Raj Kholsa from Colorado State, who researches the best way to divide a field into management zones. He also works with a network of farmers who share their successes and disappointments with geo-referenced farm management.

Terry Griffin from the University of Arkansas works on the economics of farm management and studied the use of precision farming techniques in real life, particularly in row crops.

Ross McKenzie will address the soil and its variability as well as what you can do about it. One of his current research projects involves a sample of spots across a full quarter section field, tracking all its variations and changes over time.

Paul Fixxen of the International Plant Nutrition Institute will bring his big picture view of the entire Great Plains area to address the challenge of intensifying production that all farmers will likely face over the coming decades.

Both afternoons of the conference will feature five breakout sessions. These will give you an opportunity to discuss various topics in a smaller group. Planned sessions include 10 topics related to applying GPS locators and variable rate technology.

At the end of the conference, Brent Vankoughnet will bring it all together and highlight the parts of the conference he believes will really help you run your farm more profitably.

To register, call **780-416-6046** or go to www.Precision-Ag.ca. —



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Pulses receive Energy Star rating

» By C. Lacombe

If you want to make a significant reduction in your on-farm carbon footprint, all you have to do is add pulses to your rotation.

Farming Smarter's Mike Gretzinger explains that the 2011 Energy Project clearly shows that the nitrogen fixing property of pulses dramatically reduces overall energy consumption in crop production because of the freedom from fertilizing with nitrogen.

The project had two goals. The main goal studied the carbon footprint of various crops through their energy consumption and a secondary goal evaluated the benefits inter-row seeding.

This project builds on the 2010 project that piqued interest among growers and *Farming Smarter* hopes to continue trials in 2012.

Gretzinger says evidence from the two project years shows that zero till production overall uses less energy than tillage. He explains that this may in part be due to the shallower seeding depths typical of zero-till production as the trials show that deeper seed depths increase the horsepower needed and fuel consumed at planting.

"In terms of carbon foot print, in all cases the no till takes less energy to produce a crop," says Gretzinger.

The project experimented with camelina, canola, barley and peas in both zero-till and tilled fields. In each case, the tilled fields took more fuel to seed than the no-till fields even though it took more horsepower to plant in the no-till plots. The project didn't show any significant difference between crops for fuel consumption during seeding.

The big savings in fossil inputs came from savings on nitrogen

fertilizer in the pulse crop, peas in this case. When calculating the nitrogen (and phosphorus) fertilizer inputs in terms of Mega joules per acre, barley and canola used 3577 MJ/ac. and the peas used 97 MJ/ac. (phosphorus only). Camelina used 2707.

The project recorded machinery use, fertilizers, pesticides and production methods. Small differences in fossil input percentages for camelina, canola and barley showed up. For instance, when the project calculated Mega joules of energy required to produce one kilogram of crop (MJ/kg) tilled canola used 2.71 MJ/kg and zero-till canola used 2.49 MJ/kg. Gretzinger explained that this might seem a small difference until you multiply it by a total field yield.

As the project report says, "The crop carbon footprint refers to all of the fossil energies used in the production of the crop. It begins with the energy associated with producing machinery, then the energy of fuel used for seeding, the energy of producing seed, seed treatments, applying herbicides and harvesting."

At the end of the second year, Gretzinger feels confident enough to say, "If you look at increasing efficiency, the biggest thing you can do is throw pulses into your rotation. If you look at the fossil inputs for peas, it's about a quarter of the energy inputs as all the other crops."

In this sense, planting peas is almost like taking a year off from crop inputs in that field. Also, by including pulse crops and lowering overall energy input, you take a step toward sustainable farming. Sustainable farming is a selling point with consumers and this advantage will only increase in the future. —



Michael Gretzinger and Brent Nicol weigh the fuel tank between seeding plots as Ken Coles watches from the tractor. PHOTO: TL

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Take a walk on the information side

Crop walk informative, learning experience » By Lee Hart

It may not be a walk on the wild side, but taking a few hours for a crop walk sponsored by southern Alberta's applied research organization, Farming Smarter, is always a walk on the informative side



Ross McKenzie talks to a group of farmers about winter canola.

Even for an old non-farmer like myself, I always learn something. And if you're a progressive, leading edge, farmer-type looking for new ideas and, perhaps even of greater value, advice on what doesn't work, make a point to pencil in time for the 2012 Farming Smarter crop walks offered during the growing season.

One of the early walks I attended this year was the winter pulse crop walk. It was a combination of field trials being conducted by Farming Smarter, as well as other trials that were part of the Alberta Agriculture research program. There is a lot of collaboration between the two agencies.

The early June Crop Walk was a good way to get the 2011 season started. At a time when spring grain, pulse and oilseed crops were

barely seeded in the soggy soil across much of Western Canada, in field plots east of the Lethbridge Research Centre you could see green robust stands of winter peas and lentils. They may not fit in everyone's rotation, but seeing these plots at least opens the possibility to options other than spring seeded pulses.

Ken Coles, Farming Smarter research manager, explained the range of seeding dates and seeding rates tried at various locations to achieve optimum stand establishment. In this, the third year of province-wide trials in conjunction with Alberta Agriculture, yields of both winter peas and lentils were coming in higher than spring seeded crops. Farmers on the tour learned growing winter pulses is sort of a wash out in the Edmonton area, although they did quite well at Brooks and

It did the heart good on a sometimes overcast, early June afternoon, to see vibrant plots of winter canola in bloom

Lethbridge. And 2011 trials were also being conducted at Bow Island, Lacombe and High River. Seed treatments and herbicides were also discussed.

Research so far wasn't suggesting every farmer should run home and seed the farm fencepost to fencepost with a winter pulse, but there was solid information they could be a viable option for some growers. Seed is available for winter varieties in Washington State. Find some seed and try 20 or 40 acres.

And while the event was billed as a winter pulse crop walk, they weren't the only crops on the agenda. Across the road near the Lethbridge Correctional Centre, Ross McKenzie, Alberta Agriculture research scientist showed a dozen or more farmers some of the work he is also doing with winter canola, pulse and other specialty crops.

It did the heart good on a sometimes overcast, early June afternoon, to see vibrant plots of winter canola in bloom. A visit to these plots came with a strong warning, "don't try this at home folks," because research into winter canola being lead by the University of Alberta is still very preliminary. However, it opens your eyes to options coming down the research pipeline. Viable varieties and production practices for winter canola in Alberta may never materialize, but at the same time, where there are waist high plants in bloom in June, there is hope.

The Alberta Agriculture plots also showed if you've been dreaming of growing winter faba beans, pick another dream, because they just don't survive. On the other hand winter safflower (and who knew there was winter safflower) was actually showing some potential.

During a stop at Alberta Agriculture winter pea and lentil plots McKenzie and Alberta Agriculture agronomist Rob Dunn shared many details on seeding rates, seeding depths, and seeding dates which have been tried and tested to arrive at the best agronomic advice for growing winter pulses. Producers still need to try it on their own farms, but Farming Smarter and Alberta Agriculture field research can help shorten the list of unknowns.

Other crop walks during the summer included research trials into canola stand establishment, and the pros and cons of inter-row seeding (is there value in seeding this year's crops between the standing stubble rows of last year's crop?). On another walk, a couple hours were spent looking at what's new in dry field bean crop production, nitrogen trials, disease and fungicide applica-



Winter faba beans don't work very well in Alberta.

tions and row spacing (potential for solid seeded bean crops). And still another walk had a number of specialists on hand to talk about crop diseases — what to look for and how to control it.

The Crop Walks are geared to cover two or three hours so the whole day isn't committed. And with smaller groups it is also a good opportunity to learn from researchers not only what's happening with crops, but get a handle on disease and insect issues, as well as facts about growing conditions you probably didn't know.

And as long as the budget holds out, I figure any event that also serves free Tim Horton's coffee and donuts, is time well spent, even if we never leave the parking lot. —

Lee Hart is a long-time agricultural writer based in Calgary.

Mark your calendars!

Informative presentations and business-oriented farming info » By Helen McMenamain

Take advantage of the learning available at the 2011 Farming Smarter conference, Weathering Agriculture Together. This is the SACA conference under its new banner.

As always, there are some talks aimed at improving your farming practices, but this year, there's a distinctly business attitude to some presentations. Farming Smarter manager, Ken Coles, hopes the line-up of business-oriented and nuts and bolts farming presentations will entice many farms to have both or all the partners attend the sessions. This conference offers a wide range of angles to help you tie everything together.

The conference kicks off with Jolene Brown, a farmer and a professional speaker with a farm consulting business. She's learned a lot of strategies for helping farm families move their business to the next level. The crucial step is often personal relations among the family. She uses a direct approach to the business practice and she's found the four invaluable tabletop tools for this work — a box of tissues, a mirror, a roll of duct tape and a 2x4. Farmers often vote her presentation among some top-rated speakers.

Greg Gartner is a leading expert in agricultural tax as well as a lawyer who lectures on law and taxes at the University of Alberta and for other groups. His presentation promises to highlight the top 10 things your accountant should tell you. He acts as a consultant on business reorganizations, sales and purchases and succession planning in cross border and Canadian environments.

The mud on the boots farming people will be speaking as well. Dwayne Beck, of Dakota Lakes Research Farm in South Dakota will present a fresh

view of new and old challenges of farming. Without doubt, he'll have some unique solutions that can work as well here as in his environment.

Paul Thoroughgood, prairie region agrologist for Ducks Unlimited Canada will talk about wetlands as a valuable asset to your farm. Bernie Kotelko, will share his experience in developing a biogas facility at his family's feedlot — turning an environmental challenge into an asset.

There's a talk on managing crop diseases that can go beyond individual fields to affect a whole community. Kevin Hursh will discuss the opportunities and the challenges he sees for grain farmers. There's information on using your phone and your laptop and ways to save time and money with variable rate technology.

The conference begins both mornings with breakfast meetings for producer groups. The Alberta Canola Producers on Tuesday morning have Gary Pike as a speaker. The Alberta Winter Wheat producers have invited Rob Dunn to speak on Wednesday morning.

The tradeshow will give everyone a chance to catch up with suppliers you haven't seen in a while and maybe someone who has something to interest you. Winners of 4-H speech contests will present their speeches. Tom Droog will tell the story of his success with Spitz sunflower seeds. Over the social time, there's a silent auction to benefit 4-H followed by an ethnic dinner and the presentation of the Orville Yanke Award.

Mark December 6 and 7 on your calendar for the Farming Smarter Conference at the Lethbridge Lodge. Call now to register. Call 403-381-5118 or go to www.farmingsmarter.com.

Agriculture covers it all

Back in August, Farming Smarter (FS) had an opportunity to sit with Doug Horner, now Alberta's Deputy Premier, and conduct a brief interview.

FS asked Honer how agriculture could have a higher profile in the provincial legislature.

Horner believes that agriculture will enter discussions in the legislature because it's one of those topics that touch three important boundaries.

"We have a seismic shift in global economic power. It used to be the U.S.; it's going to shift to emerging markets in Asia, South America & Brazil. There are only three things those markets are going to be looking for: energy/environmental solutions, food and health care innovations. Agriculture actually covers all three."

Horner said that Alberta and its agricultural producers could focus on providing the solutions to these issues through various research and on-



From left: Farming Smarter Manager Ken Coles, Chair Richard Fitzler and Doug Horner & Len Mitzel at Etzikom Windmill Museum.

farm projects that will prove technology and processes we can then export to the emerging economies.

"Alberta should focus on these three areas and it isn't good enough just to put money into research. You've got to put money into the capitalization and commercialization of that research."

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Dirt: The Erosion of Civilizations *By David R. Montgomery*

Book review » By C. Lacombe

There is a difference between knowing a fact and understanding something deep in your bones. David Montgomery's book *Dirt* fosters an understanding regarding human induced changes on global landscapes that go beyond human lifetimes and into the bones of civilizations past and present.

As a geologist, Montgomery brings a millennial perspective to landscape change that is impossible for any one human to experience because our lives are too short. These insights could have profound effects on the way we live, farm and treat our landscapes if enough people understood what this book could teach.

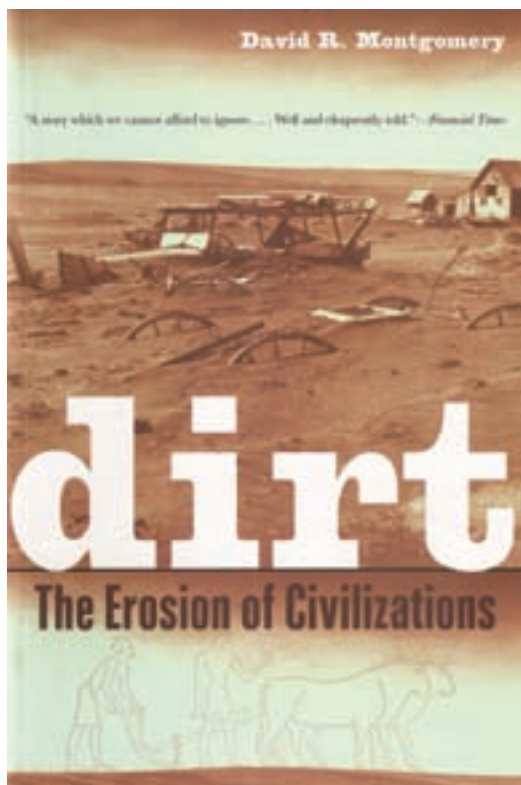
For me, it's another case of our society having scientific evidence that the way we operate will eventually lead to our own demise. But because it requires change on a large scale, it is difficult for individuals to adopt sustainable practices without incurring an unfair disadvantage at least for a little while. Also, the adoption of sustainable agricultural practices world-wide requires chemical companies to completely change.

Soils can't sustain the chemical reliance of today's agriculture as the large scale mono cropping depletes the soil too far according to Montgomery. He recommends a hybrid of ancient traditional and modern organic to feed the world into the future.

Montgomery argues that we need to return to optimum yield instead of maximum yield and that in fact optimum yield is only slightly less than maximum and far more sustainable. Further, he argues that diversity on-farm produces more food in the long run while guaranteeing lasting production capability. He laments the loss of the mixed farm.

"It now seems as likely that medieval farmers knew that keeping land in pasture restored soil fertility, but impatience and economics made the required investments unattractive to folks perpetually focused on maximizing this year's harvest," Montgomery writes in chapter Five entitled "Let Them Eat Colonies."

That chapter title shows how Montgomery moves through eco-



Dirt: The Erosion of Civilizations By David R. Montgomery
ISBN# 13:978-0-520-25806-8

logical time and civilization's evolution to his profound and highly cautionary punch line that we are slowly moving toward an inevitable global famine.

When modern agricultural practices have mined the soils all over the planet to the point where yields can no longer support population, the world will starve en masse. The soil challenges are what make the difference between Haiti and the Dominican Republic and are what is behind the current famine in Somalia. He also points out that every famine throughout history has always meant that the poor starve while the rich continue to operate business as usual.

When farmers farm for profit instead of local food supply, we set up the situation for poverty and famine. Now, humans farm that way everywhere on the planet with the same unsustainable practices that mine and deplete soils at rates that ensure future global famine. How fast soils erode has every-

thing to do with climate, slope and agricultural practices.

Montgomery offers this example, "Modern farmers in Peru's Colca Valley still use ancient terraces cultivated for more than fifteen centuries. Like their ancestors, they maintain soil fertility through intercropping, crop rotations that include legumes, fallowing and the use of both manure and ash to maintain soil fertility. ... (they) do not till the soil before planting; instead they insert seeds into ground using a chisel-like device that minimally disturbs the soil."

Hmm ... sounds like zero-till farming with pulse crops in the rotation! Montgomery uses the term Agroecology "based on biology and ecology rather than chemistry and genetics." He calls it, "farming with brains rather than by habit or convenience."

I highly recommend this book to all farmers. Montgomery offers examples and mechanisms to protect soils and achieve optimum yields while staying profitable.

A YouTube video of the author talking about his books. <http://www.youtube.com/watch?v=KU798vbc6hM>. —

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Yes you can learn at any age

Your brain is very capable of learning something new. Will you let it? » By Lyndsey Smith



People learning together about leafcutter wasps at Farming Smarter Diagnostic Field School July 2011. CREDIT: C. LACOMBE

Mario Trono wants you to give yourself a break. He also wants you to stop telling yourself you're too old to learn something completely new. Trono, an associate professor of English and Cultural Studies at Calgary's Mount Royal University, spends much of his time learning how people learn. He wants you to know that our brains are just as capable of learning now as they were when we were younger.

"It's called neuroplasticity," Trono says. "It's the ability for our brains to rebuild and to relearn things no matter our age. It's why a stroke victim can relearn speech or even how to walk." It also means that fully grown men and women can, in fact, learn new technology in the tractor, or a new language or new finance software.

The key to learning, at any age, Trono says, boils down to three things: a restful, emotional state; an open mind to your own limits and abilities; and, finally, time. How many adults do you know that can say they have all three? Very few, of course, and that's why Trono believes that adults believe in the myth of not being able to teach an old dog new tricks.

Children learn at an incredible rate, it's true, Trono says, but it's not because their brains are significantly different than ours — it's that they are absolutely unselfconscious, have no stress and have all the time in the world. Allow an adult the same luxury of uninterrupted time and you'd be amazed what they can learn.

The reality is adults have mortgages to pay, work to do, a house to run and, more often than not, have already decided what they are good or not good at. "We often have settled opinions about our abilities, true or not," Trono says. These self-imposed limits create a barrier to learning

even before we try. "You need to give yourself a break and stop telling yourself what you're not good at," he says.

Trono adds that, as we age, our brains are required to store more and more information, so don't be surprised if it seems harder to remember things than it used to. "Younger learners have less to remember in total," Trono says, "and that means they find it easier to rehearse and reinforce everything they know." What it doesn't mean, however, is that adults can blame a "fading memory" on their ability to learn.

The bottom line is that adults are just as capable of learning new skills and changing their ways as younger adults, Trono says. The key is whether or not adults give themselves the credit they deserve to learn something new, as well as take the time out from their schedules to learn. "When time is short and demands are high and we're put on the spot to fix a problem, we'll do it, but that learning won't become part of our long-term memory unless we reinforce and play with new ideas and information beyond immediate problem solving," Trono says. As an adult, he says, you have to decide to learn — and stop blaming your brain if it feels harder than it used to. —

Editor's note: *Plan to attend the Farming Smarter conference, slated for December 6 and 7, 2011 at Lethbridge Lodge Hotel and Conference Centre. Mario Trono will be on hand to discuss why farmers are missing out by not accessing the information academics cultivate. Professors are able to research topics free from corporate or political bias, and regardless if the topic is unpopular or controversial. Mario's presentation will feature key examples of research topics and findings that directly affect Alberta farmers and ranchers.*

Program empowers students to care for our watersheds

Program encourages students to submit improvement ideas » By Donna Trottier

The Caring for our Watersheds program turns students' ideas on how to improve local watersheds into realistic environmental solutions. Caring for our Watersheds is an educational program geared towards Grade 7-12 students, with the mission to instill environmental stewardship in the next generation and at the same time, improve the quality of community watersheds. The program weaves together the combined strengths of industry, environmental organizations and communities to engage students in preserving and improving local watersheds.

Agrium Inc. founded the Caring for our Watersheds program designed with the help of conservation groups and Alberta teachers. "The program has been devised to compliment the school curriculum, but has the advantage of getting the students into the community and exposed to the local environment. It's a powerful hands-on way for students to influence positive change," states Lindsey Metheral, Agrium Program Co-ordinator.

Students enter the program by submitting a proposal of approximately 1,000 words answering the question, "What can you do to improve your watershed?" Students can work individually or as a team to research their local watershed, identify an issue impacting the health of the watershed and come up with a realistic solution. The Caring for our Watersheds program empowers students to imagine, develop and create solutions in their local watersheds and encourages them to take action. So instead of just sitting in a classroom and talking about different concerns that might exist in the watershed, it asks them to actually look at everybody's actions and understand how those actions impact the environment. Then they identify what can be done to make a positive difference in their communities.

A set of community judges review proposals and select the top 10 finalists. Judges look for innovation, environmental impact, comprehensive scope, communication, budget, realistic solution and visuals. The top entries compete in a five minute verbal presentation to a panel of judges and a public audience. Finalists compete for the top prize of \$1,000 for themselves and also rewards \$1,000 to the student's school. This year students in the Southern Alberta program compete for \$6,000 in rewards and Agrium also has \$10,000 funding available to help implement ideas.

"We have found that students are very innovative and have incredible ideas, providing new solutions to old problems. The students demonstrated that they genuinely care about their watersheds and

"We have found that students are very innovative and have incredible ideas, providing new solutions to old problems."



Cam Reed installs bat boxes and bird houses on Calgary golf courses as part of the Caring for our Watersheds program PHOTO BY: AGRIMUM INC.

their place in them and want to see changes and improvements happen in their watersheds," explains Metheral.

Cam Reed was one of the students who won \$1,000 in the contest that was followed up with a \$4,000 donation from Agrium Inc. to implement his idea. Reed's idea was to install 50 bat boxes and 150 bird houses on golf courses in the Calgary area as a natural pest control. Reed worked with Agrium Inc., eight Calgary golf courses and community partners such as Ducks Unlimited Canada and the Calgary Bat So-

Continued on next page...



Agrium representatives, Lindsey Metheral and Rose Lecky, accept a 2011 Alberta Emerald Award for the Caring for our Watersheds program. PHOTO BY: AGRIMUM INC.

Continued from previous page...

ciety to support this project. "It's a natural way to combat insects," Reed says. "If you do get any bats in the vicinity of your golf course, they eat around 1,200 insects per night. They're pretty darn helpful.

I've learned that golf courses aren't the bad guys and they are very open to ideas to protect our watershed. And, my project was another way to add to their environmental stewardship," Reed commented.

Other successful projects from the program include the development and installation of trails and signs along the Milk River, solar powered watering troughs for cattle, protection on cottonwood seedlings to promote growth, promoting rain barrel use, implementing a youth conference on the State of Watershed and installing willow wattle fences to prevent erosion.

Caring for our Watersheds is currently offered in Canada within Alberta, Saskatchewan, Manitoba and Ontario; in the United States within Colorado, California, Virginia and Washington, DC; and in Argentina within San Antonio de Areco. It's a global program that offers students the opportunity to participate in a network of students from all over the world who want their voice to be heard and who are working together to improve their watersheds.

To register for this year's contest go to www.CaringForOurWatersheds.com. Entries must be submitted no later than April 13, 2012. If you have any questions about the Southern Alberta Caring for our Watersheds program, please contact the Program Co-ordinator: Marlis Eaton at (403) 476-4354 or email at rkp@calgary.ca. —



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Exhibition Park, Lethbridge, Alberta

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brent@farmingsmarter.com

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Profits from on-farm sustainability

Toward reducing inputs and recycling more on the farm » By Donna Trottier



Anaerobic digesters at Highland Feeders Ltd. capture added value from manure, producing 2.5 Mw of electricity. PHOTO BY: MIKE KOTELKO

Farmers have long been stewards of the environment but with increasing concerns over energy use and environmental problems resulting from farming, we see a shift toward reducing inputs and recycling more energy, materials and waste on the farm. Highland Feeders Ltd. near Vegreville, Alberta is among Canada's largest feedlot operations and takes recycling to a higher level with one of North America's largest anaerobic digesters.

Ten years ago, the Kotelkos initiated Highmark Renewables, a company focused on developing technologies for dealing with agriculture industry waste. Initially, the drive focused on the sustainability of livestock and food processing operations. "We knew that we had to find a way to add more value to manure and that it was not simply a waste product," explains Mike Kotelko, vice-president of Highland Feeders Ltd. Using anaerobic digesters to process organic wastes such as manure is a practical option that reduces potential contamination while producing energy.

Anaerobic digesters are specially designed tanks used to facilitate the anaerobic digestion process under a controlled atmosphere. The anaerobic digestion process starts with manure, spoiled grain and dead stock that are fed into the digester. Naturally occurring anaerobic micro-organisms break down the carbon in the organic materials and convert it to methane and carbon dioxide, also known as biogas. Internal combustion engines convert the biogas that is produced into electrical energy and heat. Highland Feeders Ltd. uses the 2.5 megawatts of electricity produced from the anaerobic to operate the feedlot, the bio-digester and sells surplus to the Alberta power grid.

"We also take waste material from the hog processing industry and add it to the mixture going into the bio-digester. It reduces the hog production footprint by taking care of its waste and it lowers the cost of production," states Kotelko. The hog processors pay a tipping fee when they bring waste to the farm, but it is a minor cost compared to the alternatives for dealing with the waste.

The ultimate setup that makes full use of the energy potential from biogas is to incorporate ethanol production in with the bio-digester system. The Kotelkos have decided to integrate ethanol production

into their feedlot-bio-digester operation.

Here's how the continuous loop model will work at Highland Feeders Ltd: Feedlot cattle manure processed through the anaerobic digester produces biogas. The biogas fuels electrical generation and steam used to produce ethanol from high starch wheat. The grain by-products from the ethanol production become wet form cattle feed. Because the bio-refinery gets most of its energy from the anaerobic digestion of cattle manure from the feedlot, it is a cost and energy efficient method of producing fuel ethanol.

"Thirty percent of the energy used by typical ethanol plants is used to dry out the grain by-product to ship and feed to cattle off-site. With the three operations working together at one location, we can eliminate the step of drying the by-product because the cattle are right there at the same location. There is a 30 per cent energy savings from feeding the by-product to the cattle in wet form," explains Kotelko.

"The system works well because it reduces the carbon footprint, reduces the cost of production, mitigates many of those issues that intensive livestock operations have with local residents and reduces the environmental impacts from feedlot operations. The integrated approach also addresses the food versus fuel debate, the concern over using a food product to manufacture an energy additive since the by-product from the ethanol manufacturing process will be fed to the feedlot cattle, which eventually go to a meat packing plant and become food products," states Kotelko.

Construction of the ethanol plant has just started at Highland Feeders Inc. and is expected to begin producing ethanol in October 2012. The ethanol plant will use 110,000 tonnes of high starch wheat to generate an annual 40 million litres of fuel ethanol and 10,000 tonnes of nutrient rich, odorless, weed-seed-pathogen-free bio-fertilizer.

The Kotelkos demonstrate that innovation and ingenuity can contribute to agriculture industry sustainability by recycling what is normally considered a farm waste into a valuable farm product.

For more information on the Kotelko's operation visit www.highlandbeef.com and for information on the bio-digester technology visit www.highmark.ca.



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Stewardship can be part of feeding the world

Demand for food, fuel and fibre continues to grow » By Helen McMenam

By 2050 farmers will face demand for food from 9 billion people, an increase of 40 per cent in 40 years, and more than half of these people will live in cities.

That may sound like a scenario you've been waiting for all through your farming career, but at the same time, farmers' stewardship of the world's resources, particularly wildlife habitat, is being challenged. And, as other resources are also in great demand, input costs will likely be much higher too.

"Farmers will be called on to intensify production as the demand for food, as well as fuel and fibre, increases," says Tom Jensen, Great Plains director for the International Plant Nutrition Institute. "That means using all the technology we have to increase production, working responsibly to minimize adverse impacts on the environment and leaving marginal areas for the environment — wildlife."

To a great extent, Jensen says, farmers are doing things that fit those goals — producing winter wheat, for example. Winter wheat has a lot of agronomic benefits like better yields, lower chemical needs, non-chemical weed control to delay herbicide resistance and spreading the workload. It also provides a safe habitat for early-nesting bird species, particularly waterfowl, so they can raise strong broods undisturbed by seeding operations.

Alberta farmers generally use the four Rs of fertilizer use, says Jensen, because it makes economic sense to use nutrient resources in ways that give the biggest advantage to the crop. It also minimizes the loss of fertilizer from fields — good environmental stewardship.

The four Rs are the right form of fertilizer, in the right place, at the right time and in the right amount. Sometimes it's difficult to get things exactly right, especially in the last few years, when weather patterns seem to have switched to a wetter cycle. But, at some point, the more usual too dry conditions will return. Under those conditions any extra fertilizer in southern Alberta usually stays in the soil until the next crop can use it. "Leaching and denitrification aren't the common problems they are in some other areas," says Jensen. "Even when we use high rates, just to make sure the soil has all the nutrients a specialty crop like potatoes might need, we use it up with the following crop."

"I hope we can keep up with population growth by intensifying cropping on the more productive land that's already being farmed. I



Local wildlife takes advantage of food and habitat sources provided by humans. CREDIT: C. LACOMBE

think we can intensify our production and minimize leakage of nutrients as well as making good use of irrigation.

"The real challenge for farmers in this country is not so much to get more productivity without nutrient leakage into the environment, but to tell the story to the 97 per cent of people who aren't involved in farming. Agriculture has a good story, many good stories, but most people aren't hearing them."

For example, non-farmers are not aware of all the benefits of zero-till — reduced equipment needs, so less manufacturing and steel use, lower fuel use, better soil health, better use of rainfall, reduced erosion and usually less chemical use. And, there's natural carbon sequestration and storage in soil organic matter.

Fertilizer use, decried by some critics of intensive agriculture, supports high yields of crops so that other areas can be left undisturbed for wildlife habitat. Seeding GMO crops allows better yields

with less use of chemicals and fuel. Bt crops, it protects wildlife from widespread insecticides that kill beneficial and pest insect species. Modern varieties increase yield, and/or provide protection from pests that might otherwise require spraying — midge-resistant wheat, rust-resistant wheat.

You might think of rotations as part of maximizing your returns from cropping. But they also provide environmental benefits — healthier soil, less dependence on herbicides, fungicides, and an opportunity to spread manure and reduce fertilizer needs. Some livestock operations have split their animal facilities into smaller units to put the animals and their manure closer to the fields where manure can be spread at the right levels that don't run the risk of losing nutrients to creeks and rivers.

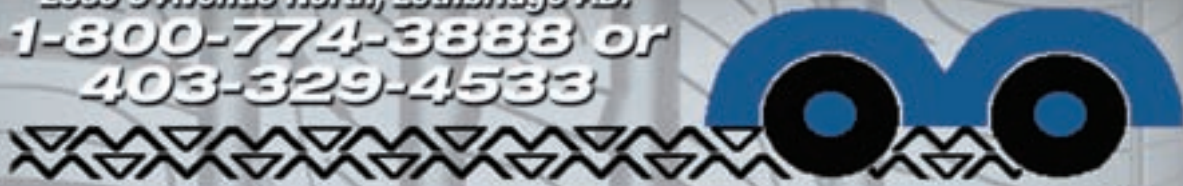
Every farm has a unique suite of environmental stewardship activities in its operations, says Jensen. It might be positioning a barn to maximize natural ventilation or using other energy-saving features in farm buildings, leaving potholes to provide short-term homes for migrating ducks or capping an abandoned well.

"Every farmer has a story of environmental stewardship as an integral part of their operation," says Jensen. "It's just a matter of looking at the farm and your practices from a different viewpoint. And, being ready to share that story." —

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Working successfully with eligible Alberta producers to maximize their carbon payments » Advertorial

Before Terra Verde Emissions Credits Inc. sold its' first carbon contract in 2008 to a large emitter in Alberta, the company's president, Anthony Weisshaar, made it the company's objective to be the best marketing choice for producers in Alberta to market their carbon credits through. Mr. Weisshaar decided that producers should reap the majority of the payment eligible to producers, instead of the aggregators and project developers that had sprung up in the market overnight. "In some cases, commission rates and contract costs were exceeding 50 per cent of a farmer's potential payment," Mr. Weisshaar states. In response to this, Terra Verde fixed its' low commission rate early and kept contracting costs only to those directly associated with verification.

With a maximum commission rate of 15 per cent and verification costs of roughly two per cent of the gross selling price per tonne of carbon, Terra Verde has effectively offered producers in Alberta the highest net price option in the market place and has done so in each of the eight previous contracts it has sold to emitters. Other project developers offer a credit component to their payment or may include additional contracting costs, including data collection costs. Terra Verde offers a straight up net payment with the terms clearly laid out in its' producer contract.

In 2007, Alberta Environment implemented an environmental carbon emission reduction program, designed to limit industrial emissions from Alberta largest CO₂ emitters. The program encourages large final emitters (LFE's) to either reduce their carbon footprints or to invest in projects in non-regulated sectors of the economy that would contribute to net reductions in carbon emissions within the province. Alberta put the program in place ahead of what the province anticipated would be a similar federal program, to be rolled out by 2010. To date, this has not occurred, leaving the provinces to voluntarily enact their own programs unique to each of their own environmental circumstances.

"Terra Verde has effectively offered producers in Alberta the highest net price option in the market place..."

In Alberta, the trade in carbon credits between regulated and non-regulated sectors of the economy has continued to flourish. To date, well over 30 carbon reduction projects have been developed and over five million tonnes have been traded between emitters and project developers. Although the price of carbon has been fixed at \$15/tonne since 2007, emitters continue to be interested in purchasing offsets whenever they can, especially if they can buy them at between \$12 and \$13 per tonne.

Carbon offsets from minimal tillage projects have been the backbone of the carbon market trade in Alberta since 2007. Where the overall trade from tillage credits accounted for more than 60 per cent of the volume a few years ago, other projects have combined to eclipse the volume to the point where tillage now makes up about 30 per cent of the overall trade. However, only about half of the estimated 10 million tonnes of eligible offsets from minimal tillage in Alberta have yet to hit the market!

As of December 31, 2011, historical carbon credits generated from minimal till cultivation practices will no longer be acceptable under the Alberta GHG emission reduction program that was initiated in Alberta in 2007. Starting in 2012, large final emitters (LFE's) in Alberta will only be able to purchase credits generated in 2012 or later for compliance years 2012 and later.

Producers in the Parkland region of Alberta are eligible for .16 tonnes/acre/year. Producers in the Dry Prairie region of the province are eligible for .089 tonnes/acre/year. Producers can expect to be paid approximately \$11/tonne (depending on final sale price achieved). A 3,000 acre farm in the Dry Prairie could net approximately \$30,000 for all 10 years combined and a producer in the Parkland region could expect to receive approximately \$52,000 for all 10 years combined.


"As of December 31, 2011, historical carbon credits generated (before 2011) from minimal till cultivation practices will no longer be acceptable under the Alberta GHG emission reduction program..."

Producers who have not yet contracted their eligible credits still have time to sell their 2002 to 2011 credits to LFE's in time for the 2011 compliance year. Terra Verde Emissions Credits has just completed the verification and sale of its latest contract, Series VIII and has just opened its Series IX program to producers wishing to sell their 2002 to 2011 credits.

"If you have not yet contracted any, or all of your eligible credits, Terra Verde urges you to do so now before the opportunity is gone," Mr. Weisshaar says. There are no liabilities attached to land from which credits are sold and the program only allows for retroactive credits to be eligible for sale. "There is no downside to producers who sell their historic 2002 to 2011 offsets. The only question is whether or not producers will seize the opportunity, or lose it after the end of the year. —

For more information, please contact Terra Verde Emissions Credits Inc. at 1-866-949-1962 or visit us on line at www.terraemissions.com.





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Terra Verde is marketing tillage offsets in their SERIES IX contract. Terra Verde continues to offer producers low commission rates, no extra contract costs and the highest net returns per acre.



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Social media: The new coffee-row for farmers

Farmers are finding ways to make social media meaningful » By Donna Trottier

At first glance, social media and farming seem to be as opposite as night and day, but a closer look reveals that farmers are finding meaningful ways for Twitter, YouTube and Facebook to complement farming operations. Coffee row has evolved into cyberspace, offering farmers a larger community to share their viewpoints on topics that are very similar to the topics that they would discuss at good old coffee row: the weather, the price of grain, what's growing, new technologies and agronomic practices.

Dynamic social media tools are available to farm managers for sharing information, ideas and solutions and for learning from other farmers, ranchers and agri-business owners. It is a long way from the perception of being, "Just about what people are having for lunch." Social media now provides quick, responsive networks on important emerging issues, putting social media users at the forefront of information. "When farmers are busy with harvest or seeding, it can be extremely valuable to see what other farmers are doing and how they are overcoming challenges," states Shaun Haney, owner of RealAgriculture.com.

Another advantage of using social media is that it broadens farmers' networks, allowing them to communicate with other agriculturalists on a local, national and global scale. "Its not tied to geography and therefore farmers are associating and talking with people that they wouldn't have normally. Instead of asking the same people at coffee row 'What do you think barley prices are going to do?' it expands this network, giving the farmers access to more comprehensive opinions," states Haney.

Producers are also using social media sites to market their farm and ranch products. They are connecting and interacting with consumers by having conversations and developing relationships with them on the social media highway. Through social media, farmers are promoting their industry among the public to educate them about the farm and to project a positive message about how farms are operating, allowing an often-unaware public to more easily relate with them.

Twitter is a popular social media tool that offers wide-spread farmers the opportunity to follow each other via short messages or questions. Since Twitter messages or Tweets are short and focused, it provides a very efficient method of sharing information in real time. "From a news perspective, Twitter not only shares the headlines with us almost instantly but it also allows us to get a vibe on what people are saying about the headlines. To benefit from Twitter, it is a good idea to follow farmers from other parts of the country and even the world, to get a more diverse perspective and to expand your knowledge base," states Haney.

Facebook has also become a popular social media outlet for farmers



Social media tools at work in the field at the Farming Smarter DFS July 2011.
CREDIT: C. LACOMBE

Producers are also using social media sites to market their farm and ranch products. They are connecting and interacting with consumers...

and agricultural organizations. Many agri-businesses have Facebook accounts to make it easier to communicate directly with their clients and to make it easy for farmers to ask questions and get product information. Farmers who sell directly to consumers can use Facebook pages to stay in touch with their loyal customers, to attract new ones and to promote new products and services.

Pairing mobile technology such as smartphones and tablets with social media will improve the farmer's efficiency even further. Mobile devices have been programmed to be simple, user-friendly and intuitive making them handier and easier to use so the farmer is able to make management decisions while on the move. "If you found a cellphone beneficial, then adding instant access to email, contact databases, websites, and social media with a smartphone or tablet will be game changing for your farm," states Haney.

Some producers are reluctant to engage in social media because they have the perception that it is just for younger people, they don't have time, they don't understand the technology and they desire privacy. It comes down to attitude — progressive farmers of all ages understand how valuable their time is and how important it is to have the appropriate information at hand to enable the right decision and to have it available to them wherever and whenever they need it. It's not necessarily age that is the barrier — it's more about how willing the producer is to learn and put innovation to use on their farm. —

Wondering who to follow for relevant agricultural news on Twitter? Haney suggests to start by visiting the Twitter page @realagriculture, view the lists and follow the list @shaunhaney/Canadian-agriculture-8.

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Alberta needs a society to champion for societies

Local groups essential to building communities » By C. Lacombe



Bow River Basin Council (non-profit) executive director with students during a water field day led by another non-profit, organized by a third non-profit, financially supported by a fourth non-profit and attended by about six other non-profit representatives to add their expertise. Funded by a local citizen. CREDIT: C. LACOMBE

**In every Alberta community,
the work of non-profit boards
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They are the groups that support local environmental initiatives, local agricultural research, local fire protection and emergency medial assistance, community center management and citizen activity programs for all ages.

They hold suppers, golf tournaments, bottle drives and as many other fund raising activities as they can to put a little money into the coffer to improve the services they offer local communities.

When you consider how vital many of these tasks are, it surprises me that they receive very little support from our governments. Some get annual basic funding, but many are simply a group of local citizens trying to address a need they see in the community and they get very little support of any kind from anyone.

Continues on page 30 »



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Continued from page 29...

Over the years I've worked on, with and for non-profit boards in Alberta (which is a much higher number than I'm going to mention here), the challenge I see in that is that every single non-profit board, including school districts and municipalities, struggles to do its job because of time and money constraints. If you are surprised to see municipalities and school boards in there, consider the state of rural municipalities and school boards since the cut back days of Klein.

In order to be a non-profit organization in Alberta, a group of no less than five people have to get together, create a mandate and vision and apply to the government for Society status.

I will admit that at least those organizations get core funding from the province to keep the lights on and have someone around to answer a phone. This is a luxury most Alberta non-profits would love to have. Although there are many corporations that offer funds for all kinds of non-profit boards, no one wants to fund office work or space. They want to see trees planted, kids on the ball diamond, off-stream water systems adopted, but they do not want to pay for an organization to have a person that coordinates those activities. That's where the bake sale comes in handy. However, you have to sell A LOT of cookies to pay someone to manage a watershed stewardship group or an agricultural research program.

This leads to what many call creative financial reporting. This is to me one of the greatest injustices we allow in our society. We take the leaders of our communities; the dedicated people who actually care enough to do something and put them in a situation where they have to 'fudge' numbers and exercise intense creative writing skills to cover the costs of projects through the available funding sources.

While I'm on a bit of a rant about funding sources, I took part in my first casino last year. This is where I learned we take those same community leaders and put them to work for society's money laundering underbelly to fund community projects. There they are, the best of our communities, exchanging \$5,000 in chips for people not born in Canada, but clearly intelligent enough to figure out a money making system better than what Alberta offers its non-profit organizations. I find that very hard to stomach.

In order to be a non-profit organization in Alberta, a group of no less than five people have to get together, create a mandate and vision and apply to the government for Society status. As a registered society, they can apply for whatever grants they think they can get. Many of these folks have no idea of the risks and responsibilities they accept by agreeing to be on a local board.

During my time with the Board Development Program; which is one way Alberta offers support to non-profits, I learned just how huge the risks are that we ask average citizens to take on behalf of a cause they champion. As a board member of a registered society, you accept complete responsibility for the financial functions of that organization. Every penny that comes in and every penny that goes out can be scrutinized through an audit and any shortcomings are the responsibility of the board members.

Board members are also completely responsible for any legal issues related to the registered society. If you hold a picnic and someone chokes, the family can sue the Board as a collective and as individuals. We live in a time where more people look to legal action than ever before. I have often been amazed at the attempts to sue I hear about. Even if the Board wins the case, the legal fees can be a real burden. Generally I find Boards have an "it will never happen to us," attitude toward this risk and I wish them well with that. Of course the other aspect of this is that well organized societies spend some of those hard come by grant funds to insure board members, hire accountants and generally ensure risks are minimal for board members. Farming Smarter is one of those organizations. But for many of the small community organizations that need it most, the money is just not there.

The greatest misfortune I see in all this is the missed opportunities for social benefit caused by lack of non-profit capacity. Our communities miss out on funds, activities, improvements and events because the support system for non-profit organizations in the province needs reworking.

Really, isn't it ironic that we pay taxes, but don't see our local improvement groups supported by those dollars? This spring, the Alberta Government talked about moving the Lottery Fund monies into general revenue. This means that pool of money for non-profits became far more obscure and much easier to hide from the public. As far as I know, no one stopped them. —



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Cover of darkness may offer better chemical uptake

Don't be afraid to do it at night » By C. Lacombe

Don Boles isn't afraid to do his field spraying at night. In fact most years, he applies herbicide and other crop protection products to about half of his 5,000 acre farm near Three Hills, AB after dark.

Boles isn't a supporter of night spraying because he likes to take afternoon naps, but he says often there is a more suitable window for applying herbicides after the sun goes down, and at times he may even see improved uptake of herbicides — more effective weed control — with night time spraying.

"I don't know if I would tell people they should be spraying at night, but I think my message would be don't be afraid to do it," he says. "I have been spraying between one-third and half of my crop at night for the past six or seven years, rarely is there any disadvantage, usually it is just as good as spraying during the day, and sometimes I believe

"I have been spraying between one-third and half of my crop at night for the past six or seven years, rarely is there any disadvantage, usually it is just as good as spraying during the day..."

there is actually an improvement in weed control."

Boles says he began night spraying a few years ago after discussing the pros and cons with long-time Agriculture Canada weed specialist Bob Blackshaw, who is based at the Lethbridge Research Centre. While there is no specific research comparing the effectiveness of night spraying with treatments made during the day, he says the cooler, sometimes moister conditions (because of dew on leaves)

in theory allows for more chemical to be absorbed by weeds.

"What I was seeing here is that sometimes you plan to spray mid-day, the sun is out, it may be hot and dry, the wind may be blowing, and either you can't spray because of the wind, or if you do apply a product it dries on the leaves almost immediately," says Boles. "If you spray in the evening or at night, often it is calmer and with cooler conditions that wet product sits on the leaves longer."

Boles points out, obviously it was the advent of GPS and auto-steer technology on field sprayer equipment that made night spraying a viable option. With fence lines on his farm, often he makes the first pass on the outside edge of the field during the day because much of that first pass has to be made with manual steering. He'll leave the rest of the field for an evening treatment.

"I rarely if ever spray mid-day anymore," he says. "I will spray fields earlier in the day, stop for the afternoon, and then spray again starting at nine or 10 at night."

Boles and Blackshaw described their experience and theory on the value of night spraying to several hundred producers earlier this year during Diagnostic Field Schools in Lethbridge, offered by Farming



Bob Blackshaw talks to producers at the July FS field school with Don Boles by his side. CREDIT: C. LACOMBE

Smarter (former SARA) and Alberta Agriculture. In support of the talk, Blackshaw had a demonstration site where different herbicides were applied in after-dark applications.

"The first thing I can say is there is no research on the value of night spraying, so I have no data," says Blackshaw. "But from what I've seen and in theory, there shouldn't be any real adverse affects. The point of our presentation wasn't to promote it as the best time to apply herbicide, but simply to raise nighttime spraying as a possibility.

"If a producer was under the impression that it was absolutely something you shouldn't do, we simply wanted to say that night spraying is an option. From what I've seen it can be just as effective as spraying during the day and at our demonstration site we saw in some cases it may provide slightly better weed control. So I can't say it is better than daytime spraying, but it is an equally good time to spray."

Continues on page 34 »

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Blackshaw says while there are a couple concerns about night spraying producers should be aware of, there are sound reasons why it makes sense, too.

Primarily there is an advantage from the standpoint of getting more herbicide into the target weed. “Very little of the herbicide applied during field spraying actually gets into the plant, so the longer you can expose the chemical to the plant the better,” he says. “For the chemical to penetrate into the leaf it needs to be in a solution form. If you apply a product on a hot, dry day, with a little bit of wind the droplet dries quickly on the leaf. If there is a little moisture later it may rehydrate the chemical, but that all has to happen within a relatively short period — about 24 hours.”

So he says by applying herbicide when the humidity is a bit higher, or if there is dew on the weed leaves, the cuticle of the leaf is more hydrated and it is easier for the herbicide to be absorbed by the leaf.

One concern about night spraying is the risk of an inversion layer where the soil is actually warmer than the air. This can cause air to move upward. “So if we are spraying and the idea is to get the chemical to go down and air is moving up, there is a chance the spray could

just sit there and there is greater risk of drift,” says Blackshaw. “Most people are familiar with an inversion. It is those times you might see dust raised but it just sits there in the air, it doesn’t move. That is an inversion.”

The other concern about night spraying is a situation of too much dew. Blackshaw says it is not a common occurrence, but there could be a situation if there is particularly heavy dew, when the herbicide is applied, the spray droplets combine with the dew and moisture just rolls off the leaf.

While there is potential under night spraying conditions to get more herbicide into the weeds, it also means the crop will be taking up more herbicide as well. Blackshaw says while some producers questioned if there would be more herbicide injury to the crop, he says as long as the crop is healthy and growing it will overcome any adverse affect of the herbicide.

He did caution about spraying under very cool conditions. As temperatures get down to the 2 C to 3 C range or cooler, the plant metabolism slows down, which means it is slower or less able to metabolize herbicide applied at those temperatures, which could result in crop injury. “To be safe if temperatures are dropping down to 5 C or cooler you may want to stay away from night spraying,” he says.

Aside from those cautions Blackshaw says he considers night spraying a viable option. “I haven’t seen any case where it was a worse situation,” he says. “And I would describe it as being neutral or equal to spraying at other times of the day.” —

“Very little of the herbicide applied during field spraying actually gets into the plant, so the longer you can expose the chemical to the plant the better.”





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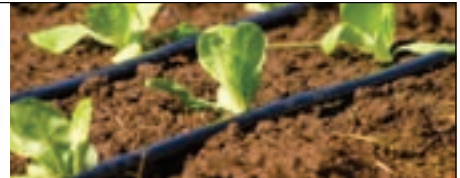
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Winter pulses could fit well in southern Alberta

Winter peas and lentils show promise » By Helen McMenamin

Winter pulses are finally ready to graduate from experimental small plots to field scale trials in the real world of functioning farms. Alberta researchers hope to look in fall 2012 for farmer-cooperators to seed winter peas and winter lentils in southern Alberta.

Winter peas and winter lentils have shown promise over several years of plot trials in southern Alberta. This year, plots at Lethbridge looked spectacular in spite of the long cold winter and finished flowering by early July.

A whole team of researchers has been working on the project, Dr. Ross McKenzie, Dr. Manjula Bandara, Dr. Deng Jin Bing led by Mark Olson, pulse specialist with Alberta Agriculture, are the principle investigators. Dr. Kevin McPhee, of North Dakota State University provided seed for the project and advised the team.

Like other winter crops, winter peas and lentils establish and develop a well-nodulated root system in fall, but above-ground parts freeze off and the plant regrows from the growing point below the soil surface. The established root system gives the plants a running start as soon as the ground thaws out, so they can take advantage of early spring moisture — an advantage whether it's too wet or too dry that year. The plants develop early so they flower earlier than spring seeded crops, before the hot winds of July blast flowers and end flowering prematurely. That generally allows for higher yields and winter peas and lentils have produced yields up to 40 per cent higher than those of spring-seeded crop.

There also have been complete crop failures with winter pulses, but following the Decision Support System (DSS) developed by this team of researchers should ensure the growers' best chance for success. The DSS is a checklist you can use to figure the chances of success for a winter pulse crop in a particular situation.

As well as spreading out your workload, the higher yield of the fall crop could mean higher organic nitrogen reserves in the soil. And, a



Winter pulses growing in the demonstration plots at Lethbridge. CREDIT: C. LACOMBE

fall crop in your rotation has rotational benefits, breaking disease cycles and suppressing spring-germinated weeds without chemicals.

With information from four years of small plot work across southern Alberta, the team will look for farmers in Alberta's dark brown soil zones, preferably south of No. 1 Highway, to put in winter pulse demonstration plots. The research has seed multiplication plots in place and if they survive they'll be able to have some demonstration plots.

"We've had good winter survival at Brooks, High River and Lethbridge in most years," says Mark Olson, leader of the winter pulse team. "We've learned a lot from our small plots across the south, but, what we see in a plot can be very different from what happens in a field. You never really know how a crop will work out until you grow a whole field of it."

At Lethbridge the plots have been consistently impressive but further north, winter survival hasn't been dependable. Although last winter was long and cold, soil temperatures at the Lethbridge plots only

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went below -4 C for a few days. No plots have survived at Edmonton in the three years of testing, although some crops have survived at Lacombe, but it's usually colder in Edmonton, the soil temperatures are generally a couple of degrees colder than at Lacombe.

The window for seeding winter pulses is narrow and critical. Olson advises seeding between September 1 to 15 for winter peas and September 1 to 23 for winter lentils. He also doesn't recommend seeding varieties other than Specter or Windham peas or Morton red lentil. Good soil moisture is essential at seeding. Pulse seeds, being relatively large need to imbibe a lot more moisture than winter wheat to start germination. Winter peas and lentils also need good moisture for development of good, well-nodulated root systems before freeze-up.

Ideally, Olson says, seed at about an inch and a half, but you can seed peas to moisture but you probably don't want to go more than 2-1/2 to three inches deep. In the research trials, researchers have used a granular inoculant and Apron Maxx seed treatment with Odyssey for weed control. The field should be clean cereal stubble, preferably treated with preharvest glyphosate with low (under 20 lbs./acre) nitrogen levels and no manure application in the last five years.

Giving the crop the strongest agronomic package possible gives it the best possible chance of success – particularly important for a new crop. To give the crop a better chance to overcome winter annual weeds Olson tested higher seeding rates, aiming for plant populations 1.5 and two times normal rates of seven to eight pea plants per square foot and 10 or 11 plants per square foot for lentil.

Winter peas can be smaller than current spring varieties, so it is less costly to raise target populations than when using spring varieties. The seed size is variable so it's important to check 1,000 kernel weight and calculate seeding rates. The small seed size compared to spring varieties — a drawback when it comes to marketing — allows for higher seeding rates without raising costs. And higher plant populations have helped the crops out compete weeds.

There are drawbacks to winter pulses. The seeds are smaller and less desirable for food uses than spring types, but they can grade human food quality. The pea varieties Olson and his team are testing have a tendency to "ghost," or have their seed-coat come away from the cotyledon, potentially downgrading the crop.

The winter pulse varieties Olson is testing were developed at the



Peas growing in the demonstration plots at Lethbridge. CREDIT: C. LACOMBE

USDA research centre in Pullman Washington by Fred Muehlbauer (now retired) and Kevin McPhee, who is now a plant breeder at North Dakota State University. He is developing new lines of winter pea and lentil with good winter hardiness, higher yields and better quality (larger seed size and no ghosting).

So far, there isn't a Canadian source for these varieties. Olson hasn't found any other sources of winter pulses that can overwinter successfully. He's working to access some of McPhee's newer lines. He's also tested winter faba beans using French and German sources of germplasm with very little success.

In 2010 Alberta reached a million acres of pulses, and Olson found much greater buyer interest in the province's pulse crops. He's hoping the option of winter pea or lentil will make pulses with their rotational benefits more attractive to farmers. —

Agriculture and Food Council, Alberta Pulse Growers and Alberta Crop Industry Development Fund contribute monies directly to this project and enhanced and extended funds for a fourth and final year of this project. As well, numerous organizations provide in kind support, making their expertise and products available; North Dakota State University, Alberta Agriculture and Rural Development, Agriculture and Agri-Food Canada, Syngenta, Novozymes, BASF, Monsanto, University of Alberta, University of Saskatchewan, Drs. Gerard Duc and Pascal Marget, French National Institute for Agricultural Research (INRA), Agri-Obtentions and Dr. Wolfgang Link, Georg-August Universitat of Gottingen, provided germplasm.

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Variable rate irrigation makes debut

More efficient use of water » by Helen McMenamin

Variable rate irrigation could be as big a boost to water use efficiency as the switch to low pressure pivots from our old high impact sprinklers that used 60 p.s.i. to shoot water up into the air.” That’s the opinion of Dana Williams-Freeman, manager of Oliver Irrigation in Lethbridge.

“It lets us avoid over-application of water,” he says. “That means better crops, and more efficient use of water, maybe 30 per cent savings, just by not over-watering.”

Williams-Freeman foresees situations where this technology would save enough water for a farmer to have a good case for asking to irrigate more land. That will take water-metreing at the farm, but that is becoming feasible with pipelines and accurate electronic metre systems.

The amount of water each part of a field can use is as variable as fertiliser needs or the ideal seeding rate. Now you can set up a pivot to apply just the amount of water each part of the field needs.

Some pivot systems allow you to load a field map into the control panel and apply the ideal amount of water to each part of the field.

Digital control panels and GPS units on the end of pivot arms have allowed farmers to alter the amount of water a pivot puts on a particular segment of a field without having to be there at the right time to change the settings. Most people used this feature to have the pivot run dry over a part of its circle, or apply different amounts of water on the crops seeded each side of a split circle.

A few people have developed their own computer programs to achieve more complex watering patterns, but they’ve been limited to changing the amount of water on a segment of the pivot circle.

Now, you can irrigate a field to match soil type and topography, no matter how the various zones are aligned compared to the pivot arm.

Most of a field might be sandy, but with low-lying soils that need less water. The program for a basin might gradually decrease water application on the slopes, going down to 50 per cent on the bottom.

Continues on next page »



CREDIT: C. LACOMBE

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The new pivot systems have control boxes mounted on the support towers. Each box controls four to 10 valves, each one controlling water flow to a sprinkler. The control box on the tower sends signals to the valves to cycle them on and off to adjust the volume of water applied.

The Valley variable rate irrigation system can adjust a quarter-section pivot to apply water for up to 145 zones. The actual number of zones depends on the number of control valves — it's a different number for each field, depending on the variability of the land and the farmer's needs. Programming the system is part of pivot setup, not something you'd need to change when you're busy with field work.

"We work out all the details as we configure the system," says Williams Freeman. The company set up some variable rate pivots last winter.

"We don't know yet how well they worked," he says. "We need to look at the yield maps and talk to the farmers."

Williams-Freeman sees better crop quality as the main benefit from the precise control of moisture levels. The big gains could be in high value crops like potatoes, but also beans, where disease or cosmetic changes that can downgrade the crop are more likely in low areas that hold too much water.

The system saves water that might be put where the crop can't use it. The environment benefits too from reduced runoff or percolation that can carry crop nutrients and pesticides.

The set-up process starts with an air photo or other information on the field and the farmer's description of each part of the field, which areas hold moisture. Yield maps can also be layered into the field map.

In the U.S., some irrigators make a soil texture map using an electromagnetic instrument that detects changes in soil texture dragged behind an ATV. Williams-Freeman is not convinced this is worthwhile, especially as costs here have been almost \$30 an acre, rather than under \$10 that the service cost in the U.S.

"I suspect a farmer driving around for an afternoon with a handheld GPS could provide enough information for most situations," he says. "I think we can get 85 per cent of the value of these systems from information farmers already have. It's hard to justify the cost of soil texture mapping for that other 15 per cent of benefit."

"But this technology is still in its infancy. We don't have enough of a track record to establish a pool of knowledge to help us judge the best way to do things."

Williams Freeman sees huge potential for these systems as they develop and as farmers and irrigation companies learn to use them effectively.

So far, he's found very few farmers are interested in precise control of irrigation according to a detailed soil map. Far more see the value of variable rates based on mapping broadly defined zones. Others see the option of shutting off the system over non-irrigable areas as the greatest value of such a system. —

Making prescription-building easy key to variable rate success

The process of translating the information you have about your fields into a prescription program is probably the biggest hurdle facing farmers looking at ways to use geographic information systems to farm better. Kevin Abt figures his company, CropMetrics, has a system that delivers the information you or your crop consultant need to easily develop management plans for your farm.

"It's a turnkey system based on sound science," says Abt. "We have professional agronomists working on data before we process it, so it's not garbage in, garbage out."

The data starts with em38 map, developed by dragging an electromagnetic instrument around the field behind an ATV with an RTK GPS system that records elevation hooked into a laptop computer. The em38 is the same tool used to measure salinity, but it can be calibrated to measure soil texture. That gives you a topographic map of the field showing the soil texture — which is related to the soil's water-holding capacity.

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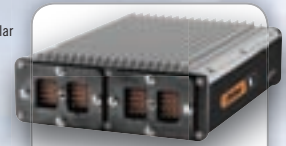
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The worry jar

Dealing with today's problems in agriculture » By Jolene Brown

What shall we worry about tonight? Weather, markets, economy, equipment, livestock, crops, bills, employees, future, past, technology, health, debt, kids, in-laws, marriage, death. Take your pick. One thing is for sure, in these turbulent times for agriculture, we have lots of choices!

During my 25 years of speaking and consulting, I've come to realize that every individual in agriculture has a problem, is a problem or has to live or work with a problem. It's this daily pile up of problems that turns to worries. This accumulation of worries has a big effect on our health, relationships and profitability. Dr. Charles Mayo, co-founder of the Mayo Clinic says, "I have never known a man who died from overwork, but many who died from worry and doubt."

So, how can we deal with the daily worries in turbulent times? I'm suggesting you get a worry jar. Mine happens to be an old chipped and cracked cookie jar that once belonged to Grandma Great, my husband's grandmother. I discovered this treasure as I helped her sort through belongings in the retirement home. Inside were random scraps of paper. Most had phrases written on them, some just one word. But each contained a worry that had been bothering her.

Here's how it works. When you find yourself unable to correct a problem or if you are consumed by doubts and fears, write down that worry. Drop it into the jar. Continue doing what you must do. Then, once a year dump out the worry jar. Grandma Great said, "You know, after 93 years of living, I've learned I have had many worries and fears in my life, very few of which have ever come true." She was a wise woman.

Perhaps you've heard the saying: Worry is like a rocking chair. It gives you something to do, but gets you nowhere. So, what can you do when the rocking chair worries have you immobilized?

Write down your fear, then ask:

What's the worst that can happen if this fear comes true?

Change and uncertainty often kick our imagination into high gear, resulting in a quick-fire, crisis response. Instead, before you jump into the depth of despair, ask yourself this simple question: Does this involve blood, guts and gore? If not perhaps it's time to step back, take a breath, gather resources and ask for help.

Is the fear something that has happened in the past? Can I change something now that will affect the past?

Perhaps you've heard that phrase... "If you always do what you've always done, you will always get what you've always gotten." I disagree. I think if you always do what you've always done, you and I may be out of business! It's important to build on the past, not live in the past. All great leaders and achievers are constant learners and unlearners. They study, analyze and question everything, shifting when the need arises.

Are you worried about something that you feel you have no control over? Are you sure you have no control over it?

There's nothing more stressful than "sitting on the fence" waiting for

the wind to blow you one direction or another. The problem is without owning the action, you rationalize the result in one of two ways... "See I told you something bad was going to happen!" or "It worked out. I was just lucky!" Neither gives you a foundation of accomplishment or a lesson learned for the next time. Doing is so much better than drifting. Also, if you truly have no control, then you must have good stress coping skills and learn to take essential mini-breaks for your mind and your body!

Can you make a change to alleviate this worry?

- Define the outcome you'd rather have (positive goal) and write steps to make it happen.
- Write out the risks and pros and cons of the new outcome.
- Prepare yourself — build a support network of family, friends and advisors.
- Begin — You can't just wish away your fears. Sometimes you just have to start scared.
- Evaluate — you may need to change directions.
- Celebrate your victories — dump out the worry jar and celebrate all those mountains you've climbed.

And there's one more thing Grandma Great taught me. She said, "When the darkness closes in at night, just turn your worries over to God. He's going to be up all night anyway."

JOLENE BROWN is a farmer, professional speaker, author and champion for agriculture! She's from West Branch, Iowa, U.S., and travels worldwide sharing leading-edge best practices that have the power to increase productivity, profitability and peace of mind. www.JoleneBrown.com.

Jolene Brown will present her fun-filled, eye-opening keynote, *When Pigs Fly!* December 6, 9:45 a.m. at the Farming Smarter conference. Regarding her keynote, she says... "Especially in turbulent times, you must look for the possibilities. Opportunities abound for agriculture once we realize that the pace, the people, the process and the products have all changed. Have we?" With lots of laughter and keen insight, she'll share what today's customers are really buying and learn how to reach a demanding market. We'll also learn that working as a community toward common goals results in positive engagement and acceptance. With innovation, technology, and careful stewardship of valuable resources, we'll recognize that opportunities require building on the best of the past as we welcome the future. And by the way, I really have seen a pig fly!"

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Partnership results in tailor-made advice

Farming can be a solitary business, but these farmers are putting partnership to work for them » By Lyndsey Smith

Does it really pay to apply fungicides on cereals? How much nitrogen is enough for maximum canola yields? Is variable rate technology worth the investment? The answer to each of these questions is typically, “It depends.” The answer, as many agronomists or farmers will tell you, is always dependent on your own farm’s specific details — soil type, climate and machinery used. How do you get answers custom made for your farm?

The answer is, in part, by running your own on-farm field trials, but one trial over three years, for example, doesn’t necessarily produce a clear answer. What if you could have 30 trials in three years in your own area to compare?

That’s a major premise behind a research and extension group like Farming Smarter. Farmers willing to partner with the group, like Josh Fankhauser and Kevin Auch, are not only instrumental in getting trials done, but they also reap tangible, custom-made research results for their farms.

Fankhauser, who farms east of Claresholm, has nearly always done his own on-farm trials, but partnering with Farming Smarter has meant adopting slightly different protocols that he says have only improved the results. “The group is also a great sounding board for ideas, questions or problems,” he says.

Farm-specific benefits

Fankhauser appreciates that information gleaned from Farming Smarter trials is scientifically sound, area specific and unbiased. “I get results that I know, with confidence, reflect conditions on my farm,” he says. “Sometimes advice you get from the government is too general to really help me make a decision. By running my own trials and partnering with other farmers doing the same, I get results that I can count on.”

Kevin Auch, who farms near Carmangay, says that trials he’s done with Farming Smarter have definitely changed a few practices on his farm. For one, he’s ready to commit to penciling in a fungicide treatment every year for his cereal acres unless it’s extremely dry. If he had only done his own strip trials, it could take decades to amass enough data to determine, with confidence, that this was the right place to spend his input dollars.

That’s just one of the results you have to expect — trial results may not always save you input costs, but they may make you more money. Fankhauser says it’d be great to say he saves all sorts of money because of trial results, but that’s not entirely true. “What I do know, without a doubt, that I am putting my money where I should,” he says. Having confidence in a decision or not sacrificing yield is still worth something. Because Fankhauser works within a farming partnership, he often has to convince his partners that spending the money on fertilizer, for example, is worth it. “Now, when I go to the table with 30 site-years of research data in my hand and say we should be increasing our fertilizer budget they listen.”

Trade-offs

Both Fankhauser and Auch say that performing on-farm field trials does take a bit of extra time, either to learn about a new technology or software or to set up the trial according to the required protocol, however both say the time is minimal. “I’m willing to take the extra hour or two at seeding to get a trial set up,” says Auch. “If it took a day or two, I don’t think I’d be up for that.”

Those involved with Farming Smarter realize this, of course, and are often on-hand to help set up a trial in the spring. There’s an understanding that farming just is too time-sensitive to expect a huge time commitment. “They understand that I’m a farmer with other responsibilities, not a researcher who does this full time,” Auch says.

That said, Auch has learnt a thing or two about how to improve on his own on-farm trials through following the Farming Smarter research protocols. “I’ve been doing my own trials since I started farming, but every now and then I’ll read over how they want me to set something up and think ‘Oh yeah, that’s a great idea!’”

Depending on the trial, members of the Farming Smarter team are usually on-hand at seeding or set up of the trial. They may also come back during the year to do monitoring or scoring. It all depends on the trial, however Auch and Fankhauser both agree that for the most part participating in the trial is not a hardship or huge time commitment.

What you need

On-farm trials aren’t only for those with the newest technology or the most gadgets either. Auch says that his GPS-equipped combine and yield monitor are really the only automation necessary for him to run the most of the trials.

Fankhauser has had a keen interest in precision farming for years and is heavily involved in some variable rate trials, however he says that he’s got older equipment that he retrofitted that works just fine. “You don’t need the newest of everything to be involved.” He’s also found that as long as one or two people on the farm are well versed in the technology you’re using, not every employee has to be overly trained. “It’s important to have a keen interest in learning, but with the automation available these days, I’ve had guys seed or spray trials without even knowing it.”

Fankhauser says it likely takes about a half day total during harvest to compile all the data for the year. Auch says, for him, the extra time in the fall to monitor yield and take samples hardly takes any time at all. “I always send a yield map as well, but it doesn’t take much time to keep track of the yield numbers while I’m in the combine cab.”

In many ways, Fankhauser says that running these trials is something he’d do anyway. “There has been a trial or two that I wouldn’t have thought to do on my own, but for the most part the trials I participate in involve questions I’ve had on my own. But now, at the end of a three-year trial I have access to 30 site years of data versus just my own three in making my decisions. Personally, I’ve uncovered five or six ‘errors’ in either seeding or spraying that I was making that I would have never known if I wasn’t a part of this partnership.” —

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