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# Field Notes

TOM HENRY

## **“No snakes”** How to write an employee manual that covers everything imaginable and some things not imaginable

“When making love, try to avoid shrieking.”

Is this a reasonable sentence to put in an employee manual for farm workers who also stay in our home?

My wife and I didn't think so.

Then a young couple moved into the downstairs suite.

Our home office is above the suite.

At night, but sometimes during their lunchbreaks, they did something that very much sounded like lovemaking. He howled, she shrieked or she howled and he shrieked.

(I could go into more detail, but this is not that kind of publication. At *Small Farm Canada*, we just talk about safe things. Like hatching eggs.)

It was distracting to work at the home office while horizontal gymnastics went on below.

I was on the phone with another farmer. “What’s that sound in the background?” he said. “New workers,” I explained. “They are washing a farm truck, having fun.”

“I’ll say!” he said. “I think I’ll wash my truck too!”

We never did confront that couple about the noises, but we amended our employee manual, in which we try, unsuccessfully as it turns out, to eliminate and limit those behaviours which have a deleterious effect on our lives.

We’ve had the manual for some years. It primarily covers farm work, but it includes expectations for staying with us. It is a work in progress. As time passes, some things are added, a few are deleted. No one uses a landline phone anymore, everyone has a cell phone. So we took out the section about spending too much time on the home phone. On the other hand, it seems like everyone smokes pot, so we added a section confining smoking to a place where it won’t eddy up and into our part of the house.

Our manual is based on a version developed by a smart, progressive farming couple, though when they handed it over it was with an unhearty endorsement. “It doesn’t work,” they said. “You can’t possibly think of all the things that can go wrong.”

At the end of the growing season one year, they returned from a day at a farmers’ market to find their fields covered in tents. A worker had gone to a music festival and decided it would be fun to ask everyone back to the farm.

“What made you think it was okay to ask everyone at a music festival back to our farm?” they asked. To which the

worker replied, “You didn’t say anything about it not being okay in the employee manual.”

That’s the trouble with attempting to limit, or control, behaviour. It just creates zones of prescribed conduct, suggesting that anything not laid out in those zones is okay.

We made it clear to another couple staying with us one summer that, because the electrical panel for the house was in the suite, we may have to access it when they were not there. One day, when my wife was alone, the chest freezer stopped working. After ruling out the plug she went to investigate the circuit breaker. She knocked and confirmed no one was in the suite and entered.

It was dark. Something moved. She turned on a light. Snakes.

Corn snakes. Slithering, sliding, shiny snakes.

When my wife finally calmed down, a month later, we crafted a new entry in the employee manual: “If staying in the home suite, no pets or animals, including bugs or reptiles of any sort are to be brought in without first talking to the homeowners.”

Some behaviours are easier to prescribe than others. You can tell someone not to park in front of the barn door, or not to barbecue on dry grass, or to put out their own recycling. You can’t ask people to be, well, normal.

A couple staying with us were good enough workers but they lacked qualities that seem to me as elemental as breathing. When we met them coming and going, as happened multiple times each day, they didn’t say hi, hello, good day or how are you. Nothing. Not a wave or nod. I may as well have been walking down Yonge Street, hundreds of unacknowledging faces passing every minute.

I asked them if there was a problem, had we upset them? No, all was fine, they said.

Their behaviour made life awkward for living in our own home, and which was so basically bad that it was hard to address. I mean, do we have to write in the manual: “Smile, be civil”?

It’s enough to make a fellow want to scream. Or howl.



## On turkeys, chickens and power outages

I am still behind on my reading for some reason so have only just finished the September/October issue while the November/December issue just arrived in the mail this week. Lots of good information, as is not uncommon, I had some thoughts come to mind about the poultry section in both.

On turkeys: I have raised a few over the years, and my neighbour used to raise them every year, until arthritis made butchering just too much work. (No poultry slaughterhouses here in the North Peace. You raise poultry, you kill your own).

We both found that turkey poults can be raised with chicks but need watching because if a turkey's pinfeathers get pecked, they bleed profusely. Some sort of isolation pen can be a necessity. The best anti-pick product I found was a bitter lotion that, here anyway, is no longer available, maybe because it stained everything it touched. But it stayed on and seemed to help stop bleeding. Certainly, it tasted awful so was very effective. The Vaseline-based products with cayenne in them melt off (birds are warm) and recent research indicates most if not all birds can't taste the cayenne anyway.

I agree that hen turkeys are easier, simply because they produce about a 10-14 pound carcass. But they are also easier to dress, especially if you aren't too experienced. The toms have air sacs in the lower neck/upper chest area which I found made dressing that area neatly tricky.

It can be really tempting to keep a tom and a hen or two as what, barnyard mascots? I've seen it happen often enough. Turkeys, when you get to know them, have tons of personality and a strutting tom looks pretty impressive.

But it is true – the commercial broad breasted turkey tom is a willing but completely inept breeder. And in trying to mate, he'll tear a hen's back terribly and possibly even cause hip and leg injuries. Better to get heritage breed turkeys. You'll also have hens who can handle setting and rearing without stomping on eggs or poults.

They'll also produce edible carcasses in convenient sizes. Dark feathers mean dark marks in the skin from

pinfeathers. On the other hand, the birds sure look handsome and few if any pinfeathers will be missed during butchering. (Turkey eggs can develop a distinctive flavour if the hens are foraging, but they're terrific for baking so go ahead and use any eggs not needed for incubation.)

In the Nov/Dec article on "Chicken Psychology 101", one thing that isn't mentioned is dust bathing. Chickens appreciate having a social life, adequate floor space and all the rest. But dust baths are a passion.

Wood ash has often been used. I found that a box of garden peat moss went over very well. It is dusty, but I never observed any adverse reactions and it also helped keep the litter from packing in the house and added weed-seed free humous when the litter was spread on the

garden or added to the compost. Also a handful or two of whole grain (wheat is best – gets cleaned up thoroughly) scattered on the floor provides ample entertainment to a flock. Treats such as stale bread, popcorn or overaged frozen vegetables also please their palates. Greens are good for them too, and help keep them occupied. Lawn clippings are iffy; power mowers bruise the

clippings so they lose palatability quickly and any lawn treatments could be toxic. A chemical-free lawn and a rotary mower could provide palatable greens. Also, feeding greens will improve the levels of "good" fats in the eggs.

Also, re power outages, one of the most useful tools I have is a single burner, butane fired "hot plate," the kind used for cooking or heating food in fancy buffets. They're inexpensive (often under \$30 from many hardware stores), don't take up much room (I plant mine in the middle of my electric stove top), set up in a minute or two and pack down low enough to be stored in a kitchen cupboard. Very handy for quick reheating of food or beverages, boiling a kettle or preparing a quick, simple meal.

A hot cuppa in a few minutes is a great morale booster.

Keep up the good work.

*Laura Lee Life  
Charlie Lake, BC*



## NUTRIENTS

# Oomph for N

## Envita nitrogen colonizer to be registered for sale in Canada

After launching their Envita bacterial nitrogen colonizer product in the United States last year, Azotic North America is in the process of registering the product for sale on the Canadian market. Azotic President and General Manager, Nolan Berg, says that the product, which can be applied in furrow or foliarly, colonizes into crops and draws nitrogen from the air, metabolizing it into a useable nitrogen for the crop.

“Most crops can’t do that naturally,” says Berg. “There is the odd crop like soybeans that have a natural ability and a symbiotic relationship with bacteria and can get some of their nitrogen needs out of the air. But crops like corn, wheat, barley and rice, the staple crops of the global food supply, can’t metabolize nitrogen out of the environment around them.”

Envita, technically known as *gluconacetobacter diazotrophicus*, (try saying

that once at any speed), was discovered in 1988. Members of the Azotic team studied it for 20 years to find the most durable and effective strain. One of the biggest challenges was finding a formulation that can survive until germination in order to be effective.

Berg says that Envita can replace 25-50 per cent of the nitrogen that a crop needs without compromising on productivity.

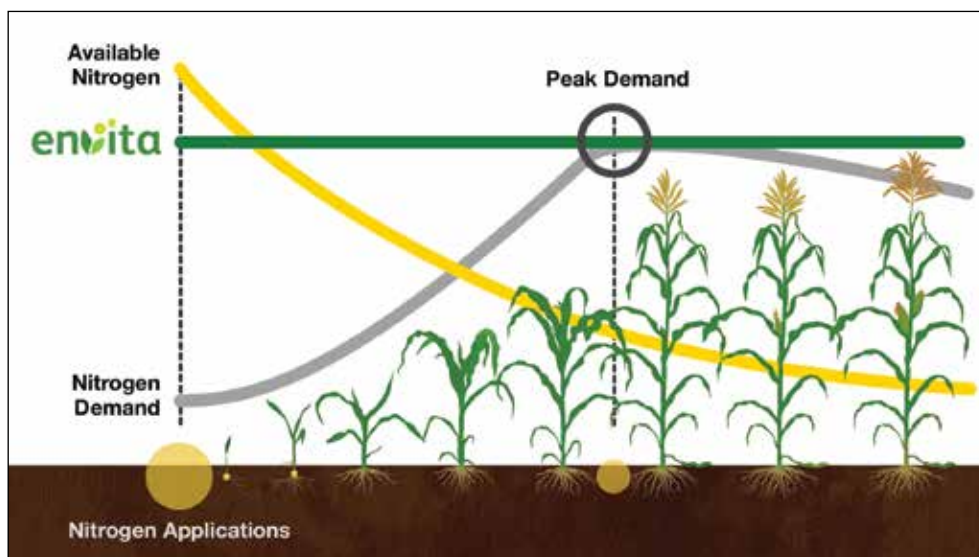
“One of the unique aspects of Envita is that we have yet to find a crop that it does not successfully colonize and have a synergistic impact on. This can have impact on everything from small acreages of corn, soybeans, wheat and so on, but also can be on turf. It works on vegetables, in a greenhouse if someone has a small glass house on their farm. It does wonderful things for tomatoes. You name it.”

*~Matt Jones*



Azotic President and General Manager Nolan Berg says that their Envita product can replace 25-50 per cent of the nitrogen that a crop needs without compromising productivity and that they have yet to find a crop that it has not been successful on.

This graphic by Azotic shows that as a crop grows, nitrogen demand rises and available nitrogen falls. Envita helps maintain a consistent level.





## LANGUAGE

### FOF (Found on Facebook)

Is your teen texting about sustainable gardening?

**OMG:** Organic Mushroom Farming

**WTF:** Where's The Fertilizer

**LMAO:** Left My Axe Outside

**LOL:** Lots Of Lettuce

**DTF:** Down To Farm

**WYD:** Weed Your Dandelions

**BRB:** Better Results Than Borlaug

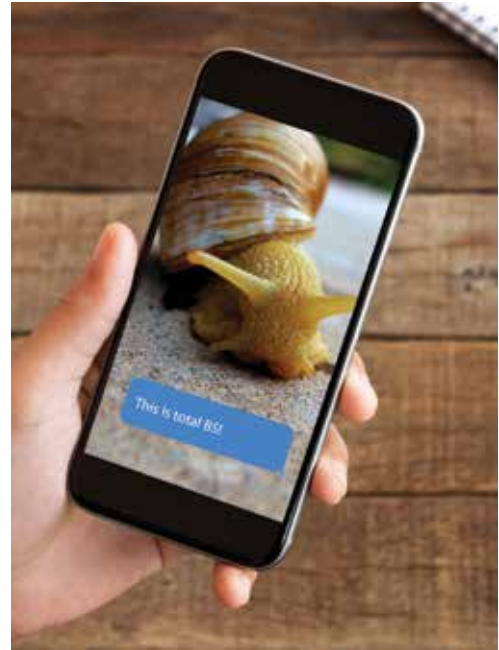
**TBH:** This Bountiful Harvest

**SMH:** Share My Harvest

**BTW:** Bring The Wheelbarrow

**ILY:** Increased Land Yield

**BS:** Big Snail



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## POLICY

### Manitoba small farmers looking for insurance options

A bad year is a bad year, no matter what size the operation

The Manitoba Agricultural Services Corporation (MASC), a crown corporation, provides crop insurance for farmers in the province at an affordable rate. In order to qualify for the program, producers must have at least three acres of the same crop. This has been challenging for some smaller-scale farms in the province who have struggled during a year with a very late spring, a dry summer and a very wet fall. These farmers are hoping that the minimum acreage rule could be adjusted or that MASC could introduce alternative crop insurance options for very small-scale farmers.



"We can make the best of a bad situation, but nevertheless, we would still appreciate that investment in our sector," says Justin Girard of Hearts and Roots (seen here with wife Britt Embry and dog Merle).



Extreme weather left Hearts and Roots' hoop houses mangled and in need of repair.

"We normally do a seasonal vegetable box program," says Bruce Berry of Winnipeg's Almost Urban Vegetables. "In October, we were unable to do that because of the effects of the water and so on. And it resulted in quite a reduction in what we could bring to the farmers' market in October. It's certainly thousands and thousands of dollars of impact, which for us is significant given the margins in this business."

Berry says that normally at this time of the year, they are preparing beds for next year, but the weather has put them way behind and spring planting could end up significantly delayed.

Justin Girard of Elie, Manitoba's Hearts and Roots farm says that his farm suffered a similar impact. In addition to being subject to the same weather patterns as Berry, one particularly fierce storm damaged the farm's four 100-foot hoop houses.

"We lost about 75 per cent of our annual summer crops," says Girard. "We're probably looking at a 60



per cent gross income loss for the season. We had to let go of our two full time staff, which made it a lot more difficult to do our jobs afterwards.”

Small-scale operators are in a very difficult position regarding insurance. They are unable to qualify for insurance through MASC, and because MASC is offering a federally subsidized version of crop insurance, there is no incentive for any private insurance companies to offer an alternative.

“It’s unfortunate that insurance isn’t an option,” says Girard. “I’ve heard about programs in the states and also in Quebec where you can insure your market garden for total crop loss if you have two acres or more. It’s frustrating. I don’t think small farms are taken very seriously even though we can grow a pretty high profit per acre because of our intensive practices.”

Doug Wilcox, manager for product knowledge and support for MASC, notes that they do insure small farms (those with between 50 and 60 acres make up roughly 10 per cent of their clients) just not very small farms. The program is designed to support commercial producers, with the theory that very small producers would be unlikely to make their living solely off their very small farm.

“I think that’s what the historic reasoning was, that when you’re so small, you’re not reliant or dependent on that production to the same extent the commercial producer is,” says Wilcox.

Wilcox also notes that while this issue has begun to receive some media attention, MASC has yet to receive any formal requests to insure very small farms.

“We’re open to meeting with them and getting their input and considering developing products,” says Wilcox.

Representatives for Direct Farm Manitoba, a cooperative which both Berry and Girard are members of, say that they are looking at sending a formal request, possibly in collaboration with other groups.

~Matt Jones



“We don’t see any bad intent,” says Bruce Berry of Almost Urban Vegetables on the Manitoba Agricultural Services Corporation’s lack of crop insurance options for very small farmers. “We would like to engage with them and have a dialog with them. Maybe there’s something that can be done.”

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## Climate Updates

### Milking the benefits of low-carbon farming

For dairy producers, what's good for the planet is also good for the bank balance.

Cutting Bessie's carbon footprint can pay off to the tune of more than \$1,000 per cow each year, according to a recent study.

Researchers from the University of Guelph teamed up with colleagues at Wilfrid Laurier University; the Ontario Ministry of Agriculture, Food and Rural Affairs; and Agriculture and Agri-Food Canada to scrutinize data from 142 Ontario dairy farms.

They categorized those farms as low-carbon emitters or high-carbon emitters based on everything from the greenhouse gases created in the

production and transport of feed all the way to manure storage. The differences between the two groups were striking.

On average, the highest emitters pumped out four times the carbon dioxide equivalent of the lowest emitters to produce a litre of milk. Meanwhile, low emitters earned more per cow — an average of \$1,200 per year. That's because many of the farming practices that cut emissions also enhance milk production and reduce costs.

On average, 44 per cent of a dairy farm's carbon footprint comes from enteric fermentation — the process of breaking down feed that occurs within the cow's digestive system, which

leads to methane-loaded farts. Using nutritionally balanced total mixed rations reduces farts and also increases milk production and growth rates.


Production and supply of feed were also hefty carbon contributors, accounting for roughly a third of greenhouse emissions. And as dairy farmers know very well, feed also makes up a hefty chunk of expenses. Growing your own cuts those costs, lets farmers control the quality and eliminates the emissions created by trucking it in from somewhere else.

Meanwhile, targeted feed-ing — adjusting rations to each cow's nutritional needs based on her stage in the lactation cycle — improves feed efficiency and shrinks the farm's carbon footprint. "Efficient use of feed has a big influence on total farm emissions," says the lead author of the study, Susantha Jayasundara.

According to Jayasundara, these results prove that dairy farmers don't have to choose between reducing greenhouse gas emissions and boosting their bank balance. And that's true for operations large and small. "Farm size is not important," says Jayasundara. "It's not necessary to be a big farm to be profitable."

~ Julie Stauffer






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## POLICY

### Sequester carbon, earn cash

An American startup is paying farmers to adopt planet-friendly practices

How you farm makes a big difference when it comes to global warming. Producers who till their soil, leave it bare over winter or rely too heavily on synthetic fertilizers are contributing to the greenhouse gas emissions that drive climate change.

However, by switching to practices like cover cropping and no-till, farmers can shift their net carbon balance, so their operations actually sequester more than they emit. That's because plants naturally capture carbon dioxide from the atmosphere through the process of photosynthesis and incorporate it into the soil.

These so-called "regenerative practices" aren't just good for the environment. They're also good for your bottom line. Adding carbon to your soil increases productivity and water retention and reduces the need for fertilizers. And now, it can also bring in a new revenue stream.

In June 2019, Indigo Agriculture announced it wants to pay farmers and ranchers US\$15 for every ton of carbon they sequester. The Boston-based company — which offers a line of products and services for farmers — launched the Terraton Initiative in June 2019.

Essentially, it works the same way as schemes that let airplane passengers buy carbon offsets to compensate for the greenhouse

gas emissions of their flight. The money comes from green-minded consumers, non-profit organizations, companies and governments that want to shrink their carbon footprint. But instead of using those dollars to plant trees or install solar panels, the Terraton Initiative pays farmers to sequester carbon.

Indigo estimates a typical member will earn US\$30–\$45 per acre each year. To make sure they're paying for real results, the company takes soil measurements, supplemented by data from farm equipment and satellite imagery to track each farmer's agricultural practices. Those numbers get plugged into their software model to calculate how much carbon has been stored.

As of November 2019, more than 12 million acres have been

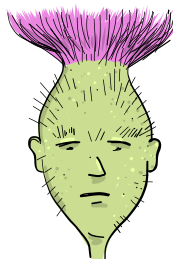
submitted to the Terraton Initiative. Any producer with cropland and pastureland in the United States can apply to participate, and Indigo hopes to expand internationally in 2020.

Ultimately, their goal is to sequester a terraton — a trillion tons — of carbon dioxide from the Earth's atmosphere. And they insist it's doable.

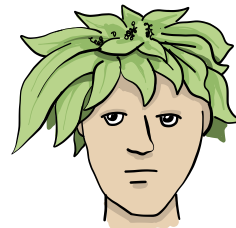
Carbon currently makes up somewhere between 0.5 per cent and 1.0 per cent of the Earth's soil. According to Indigo Agriculture, regenerative practices could boost that to at least three per cent. Doing that on the world's 12 billion acres of agricultural land would sequester a terraton of carbon — enough to restore carbon concentrations in the atmosphere to pre-industrial levels.

~ Julie Stauffer

#### If people were weeds



Canada Thistle



Eastern Black  
Nightshade



Dock

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## Painting livestock to repel flies

Low budget zoos and circuses have been known to paint stripes on donkeys and horses and claim these are zebras. It turns out the painted animals may benefit from this practice.

Japanese scientists recently discovered that painting white stripes on black cows deterred biting flies. They compared the incidence of flies landing on the striped cows compared to black cows painted with black stripes (to see if the paint alone had an effect) and unpainted black cows. The striped cows had half as many flies landing on their legs, and around a third as many flies landing on their bodies.

This doesn't mean, however, that Belted Galloways will have fewer fly



bites than solid white or black cows. Thick stripes are far less effective. Flies avoid landing on animals and surfaces with stripes with a maximum width of 5 cm (2 inches) or dots with a maximum diameter of 10 cm (4 inches). The theory is that the stripes somehow

confuse the flies just before landing.

The researchers suggest that livestock can be painted with stripes using paint that is now being used to mark livestock for other purposes (such as indicating animals that have received a veterinary treatment, or animals that have been bred). This paint doesn't last more than a month or two but can be used during peak fly seasons.

*Source: Kojima, T., K. Oishi, Y. Matsubara, Y. Uchiyama, Y. Fukushima, et al. Cows painted with zebra-like striping can avoid biting fly attack. PLoS ONE. 2019. Volume 14. Issue 10: e0223447.*

## Beached cows

When Hurricane Dorian hit land in September, 2019, it left behind a swath of destruction all the way from the Bahamas to Atlantic Canada. On an island off North Carolina, a herd of cows and horses were swept away by a huge wave. In the following days, dead horses were found washed up on beaches and it was assumed that many other animals were swept out to sea.

But there was a bit of good news. One cow was spotted on a distant beach the day after the storm. Three weeks later, two other cows joined it. They travelled 4-5 miles (6.5-8 km) in the water to get to Cape Lookout National Seashore. Cows are capable of swimming but have never been known to swim for miles. It is assumed that they were carried along with the waves and 'bodysurfed' their way to the national park.

The three cows appear healthy and have been grazing grass along the shoreline. Now the question is how to get them back to their home ranch.

*Source: Katz, Brigit. Three Cows Swept Away by Hurricane Dorian Have Been Found Alive. Smithsonian Magazine SmartNews. November 15, 2019.*

## The stress of watering

Simply spraying water on a plant's leaves can stimulate the plant's immune system. Researchers believe this happens because rain, particularly heavy rain, can create an unhealthy environment for plants in the short term. A greater risk of fungal disease is created by the humid conditions that follow rain, as well as the potential for soil to splash up on leaves and for water to drip off of diseased plants onto healthy plants. By releasing hormones that are part of a plant's defense system, the plant is better protected from these threats. Touching a plant can trigger similar immune responses, whether it be from a human or plants jostling against each other in the wind. In a greenhouse environment, growers can improve the resistance of plants to pests by stroking plants or allowing breezes to flow through.

However, there can be too much of a good thing. The immune response peaks 10-25 minutes after the stimuli and after an hour, hormone levels are back to normal. Repeated stimulation by wind, rain or humans can create too much stress.

*Source: Alex Van Moerkercke, Owen Duncan, Mark Zander, et al. A MYC2/MYC3/MYC4-dependent transcription factor network regulates water spray-responsive gene expression and jasmonate levels. Proceedings of the National Academy of Sciences. 2019. Pages: 1-12.*

## RESEARCH NOTES



### Trampling seedlings for a good cause

Stressing plants to create a healthier crop isn't a new process. According to a guidebook written in the 1600s (and recounted by Iida Hidetoshi in 2014), "Japanese farmers enthusiastically treaded seedlings in winter because they empirically knew that treading prevented spindly growth, strengthened the roots to grow and spread, shortened plant height, increased tillers and ear length and eventually gave a good yield."

The process is called 'mugifumi'; 'mugi' refers to wheat and barley, and 'fumi' means treading. The practice continues with farmers and children walking on grain seedlings on small farms and rollers pulled by tractors doing the work on larger farms. The process starts when seedlings have three leaves and is practiced several times every 1.5 weeks. Mugifumi is most effective in dry soil.

Scientists found that treading wheat seedlings by foot led to healthier seedlings and an increase in grain production by 54 per cent. The effect may be due to release of hormones in response to the stress. Another theory is that the wounds created by trampling lead to greater evaporation of water, and this makes the plants more cold-tolerant. Either way, trampling works as long as it's not too frequent, too excessive or at the wrong time (e.g., when the plant is too large).

*Source: Hidetoshi, Iida. Mugifumi, a beneficial farm work of adding mechanical stress by treading to wheat and barley seedlings. Frontiers in Plant Science. 2014. Volume 5. Page 453.*

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Shown with optional features. John Deere, the leaping deer symbol and John Deere's green and yellow trade dress are the trademarks of Deere and Company.

# An industry going to pot

## And forgetting about small producers

BY JEFFREY CARTER

A couple of years back I spoke with the lead grower of one of the Canadian-based marijuana companies which at that point had invested in two different production locations in southwestern Ontario.

He and his associates were at a college job fair, looking for employees. Anyone with a decent work ethic could find ground-floor employment at \$21 an hour, I was told.

That was just a few weeks after recreational use marijuana – the industry generally prefers the term cannabis – had been legalized. It was a time of optimism, and rising stock prices, for industry participants and their investors.

It's a different story today. Cannabis stocks have plummeted and retail prices have fallen.

In Ontario, a group of eight cannabis company CEOs, wrote to Ontario Premier Doug Ford in November, complaining of the lack of retail stores in the province.

“Our ability to continue to invest and sustain the jobs that we have created is being severely challenged by the province's current retail cannabis policy framework.”

They have a point. There were only 24 stores at that point while Alberta, with about a third of the population, had more than 300.

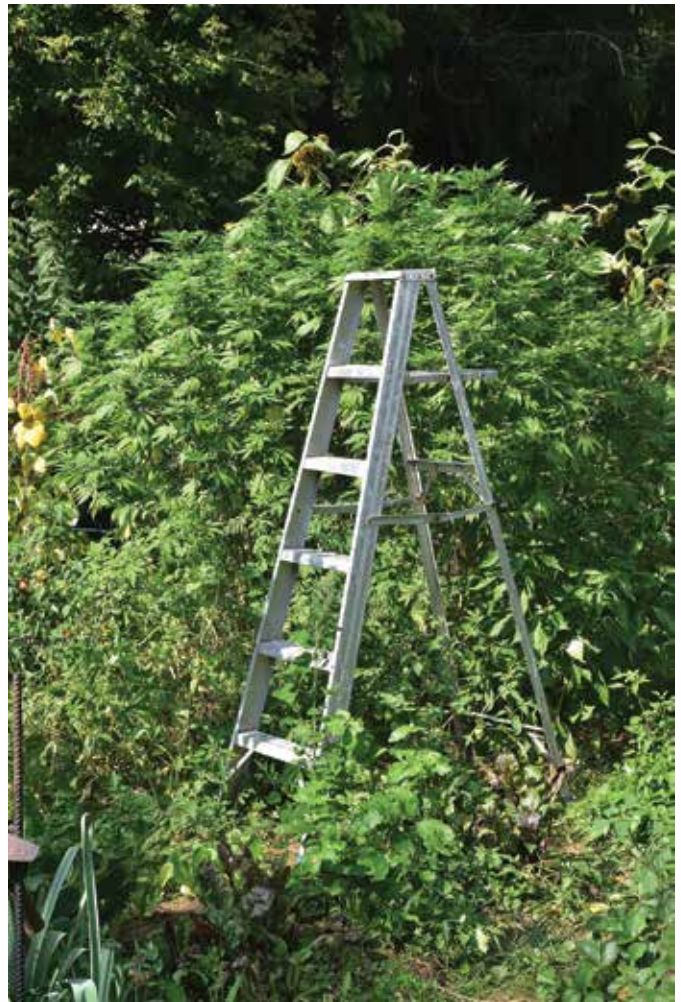
Yet the lack of retail opportunities is likely the least of the industry's challenges.

Companies – there's close to 250 with production – will be looking to streamline their operations or close their doors entirely. Others will be swallowed by a wave of consolidation as competition grows fiercer.

That competition is not just in Canada. A Deloitte study, estimates the global cannabis industry will be worth \$194 billion annually by 2025. Companies that have invested in Canada are also investing in other countries, including in outdoor operations in Jamaica and Europe where costs are far lower, and an international trade is already established.

Another consideration is what government likes to refer to as the illegal trade, the foundation for much of today's licensed production.

According to Statistics Canada data, 42 per cent of Canadians purchased at least some of their weed from outside the licensed trade and another eight per cent said they were growing their own, or getting their supply from someone who does.



The outdoor production of high-quality marijuana on a small-scale isn't particularly challenging with the right genetics and a bit of gardening know-how yet for recreational users, access to legal sources of seed is restricted and other than in Newfoundland Labrador seedlings are not available.

In my own backyard garden, two plants produced roughly 1.5 pounds or 680 grams of quality dried bud. At \$6.50 a gram, the starting price for many licensed producers, that adds up to a value of more than \$4,000 and with Ottawa's Cannabis Act, a household can grow as many as four plants.

Put all these factors together and it comes down to one thing. Too much supply.





While the federal government has legalized marijuana and it's been embraced by the corporate world and a growing number of farmers, opposition remains as evidenced by this sign posted in a rural area near Sarnia, Ontario.



Here's what Stephen McBride, chief analyst at RiskHedge and a contributor to Forbes Media, had to say: "In just a year after Canada's historic pot legalization, pot producers built up a massive surplus of pot. In fact, only four per cent of pot produced in Canada in July has been sold! . . . The rest has been stored in warehouses, just like crops during the Great Depression . . . Now there's more pot in Canada than folks will ever need and it's only getting worse."

McBride is on track. His view on the expanding production capacity of marijuana is reflected in unexpected source, a report from the Toronto-based advisory firm Posterity Group that was commissioned by Ontario's Independent Electricity System Operator.

Only eight per cent of 910 acres of greenhouse capacity was being used in 2018 and it's estimated will only be fully utilized in 2023. For indoor production, capacity was put at 82 acres in 2018 with only 16 per cent being used.

Add to that outdoor growing capacity in Canada which, arguably, is the way of the future anywhere the climate permits. Some prospective entrants have put their per gram costs as low as 20 cents a gram.

Government did the right thing with legalization but the regulatory system is lamentable, and it's not just employees who stand to lose their jobs.

Current rules make it difficult, if not impossible, for small players to enter the industry.

Robert Graham, a Guelph lawyer, has given consideration to the situation. "The fact is: It takes a lot of money and a lot of time to build a facility (indoor or outdoor) and to traverse the licensing process. I think we all have the right to try to enter into the industry. We should all have equal access rights. Practically, however, this doesn't equate to the right to be successful in such an endeavour."

The natural fit for marijuana production is with small stakeholders. Even a handful of plants could provide a lucrative return, supporting such enterprises as market gardeners and small farmers and still earn revenue for government through taxation on sales for the benefit of all Canadians.

Rather than supporting a bottom-up approach however, the focus has been to a significant degree on the corporatization of the industry which, ultimately, will result only in low-paying jobs for Canadians.

Another concern is the manner in which most of the weed is being produced through this model. Indoor and greenhouse production is inefficient from an energy-use perspective.

In a world waking up the crisis of climate change, why are fossil fuels being burned to grow weed?

Yet another concern relates to the federal government's four-plants-per-house rule. While that is allowed, the starting material – seed or small plants – is at best difficult to obtain from the licensed trade.

Graham weighed in on this point as well. He said the federal government, through Health Canada, has recognized that licensed producers will acquire their starting materials from either the "black" or "grey" markets.

"If Health Canada and the legal authorities are not going to commit resources to prosecute commercial growers for obtaining their cannabis outside the legal market, then they are certainly not going to encourage local or provincial police forces to invest resources in pursuing individuals who do the same."

Graham said he's spoken with individuals in law enforcement who have said that since late 2017, certain elements of laws have not been prosecuted or pursued, given the legal uncertainty of the situation.





# At Pasture

RAY FORD

## Day of the Triffids? No, it's Day of the Goldenrod!

Five ways goldenrod (or the undead weed on your own farm) is like a zombie movie.

For years it was just part of the scenery, a minor weed loitering in ditches and headlands. But of course, that's what goldenrod wants you to think.

The truth hit me one day in the back pasture, when, glancing over my shoulder, I thought 'Hey, where did all this goldenrod come from?'

Suddenly it was as if the yellow-headed hordes were mounting a slow-motion takeover, closing in with grasping, claw-like rhizomes, and . . . Yikes! Maybe this is the pasture version of a B grade horror flick, and I'm the hapless victim.

If goldenrod isn't a problem on your farm, chances are you have your own zombie weed – one that eats your profit and refuses to die. As the weed shuffles across the pasture, will you be the hero who survives until the credits, or the guy who, early in the flick, goes down into the cellar without a flashlight to check out that "odd noise"?

Read on to defend yourself:

All seems quiet, and then . . . they're everywhere!

Canada goldenrod (*Solidago canadensis*) doesn't just parachute downy seeds onto bare soil. It spreads underground, fed by roots that can reach 3.5 metres deep in a tallgrass prairie. Most clumps of goldenrod are actually clones of a single plant, able to persist for decades and in some cases, more than a century.

In short, this member of the aster family may be underground, but . . . it's



This photo shows the impact of late summer/fall mowing on Goldenrod. To the right, the headland of this field was mowed the previous year for hay in June. To the left, it was knocked down in late August, encouraging goldenrod to break dormancy and produce stalks. Note the dark green clumps of goldenrod clones emerging on the left side of the photo.

not dead. Goldenrod's "rhizomes can stay dormant under the soil for a very long period of time," says Ontario Ministry of Agriculture, Food and Rural Affairs weed specialist, Mike Cowbrough. "But as soon as you disturb the area and then leave it fallow, one of the first species to populate the area is goldenrod."

You can't kill them! (At least, not in the first half of the movie.)

Like Hollywood monsters, Canada goldenrod is not only tough to kill, it's endowed with special powers. Because it produces chemical compounds that suppress the growth of other plants (and make its own leaves and stem

unpalatable) it has a sort of "force field" to fend off competing plants and deter some grazing animals. And in case you want to come after it with torches and pitchforks, it actually likes fire.

Equally scary, when you hack it down, it grows better. Late summer and autumn mowing reanimates dormant rhizomes, encouraging them to turn skyward, emerge from the soil and sprout a cluster or "rosette" of leaves. The next spring that rosette will launch a new stalk, and you get just what you didn't want – more clones.

Wait, maybe you're the bad guy.

Plot twist folks: what if the people

are bad and the monster is good? (Or at least misunderstood?)

Leaving aside its debits as a forage for livestock, goldenrod is a major source of nectar and habitat for insects including pollinators. In 1948 a researcher counted insects using a goldenrod patch during the course of a year and catalogued an astounding 241 different species. (Also in the plant's favour: it doesn't trigger allergies.)

"Goldenrods are one of the components of tallgrass prairies in Ontario," says Wasyl Bakowsky, a vegetation ecologist with the Ontario Ministry of Natural Resources. Unlike the bromes, Timothy or bluegrasses farmers have introduced to Canada, native grasses have evolved to coexist with goldenrod. That's why the perennial "never forms massive clumps or spreads in tallgrass prairie," Bakowsky adds. "I only see large spreads in uncultivated fields, which have a high component of introduced species present."

Help! You need the advice of a scientist! (Or at least an actor in a white coat.)

If there's one benefit from a mis-spent youth watching old movies, it's realizing that whenever zombies, aliens or giant lizards go on the rampage, you need a scientist to provide a tidy explanation. Maybe nuclear testing has created giant mutant ants, (Them!) or the aliens want our water (Battle: Los Angeles) or a returning space probe has blown up in the atmosphere, bringing the dead to life. (Night of the Living Dead, and okay, that one strains credibility.) By analysing the cause of the problem, the scientist usually pinpoints the invader's weakness.

In my case, the guy in the white coat is Jack Kyle, grazing and pasture specialist with Gallagher's Passion for Pasture program. Kyle noted the fields



The villain: Canada Goldenrod

with the biggest goldenrod problems were also ones where I'd changed my management, as part of an effort to fight sheep parasites (and that, by the way, is another horror movie).

When I went from relatively intense production (cutting or grazing fields two or three times per season) to a single cut or grazing pass, the goldenrod was set free. To make things worse, a couple of wet years forced me to delay the first hay cut until late August, fueling goldenrod's expansion by forcing rhizomes out of dormancy. Within a few years, it was a regular goldenrod apocalypse. Even the neighbours started to notice.

Only you have the antidote.

It's tempting to nuke the invaders, but another movie lesson is brute force can backfire. (As in Independence Day, maybe you'll just flatten Houston and make the aliens really mad.)

Instead I'm taking a less costly (and admittedly less cinematic) approach: cutting and grazing more often. As Manitoba Agriculture's Weed Control in Pastures recommends, allowing goldenrod "to regrow to eight to 12 inches between mowing will eventually kill these plants." To boost competition against the weeds, I'll also be looking for ways to improve soil fertility and pH, and add more friendly legumes by frost-seeding.

Why not use tillage or herbicides? That may be an option on your farm,

especially if you have a regular crop rotation. In my case the problem fields are hilly, with deposits of sand and gravel that make for tough ploughing and easy erosion. And I lack a sprayer, so if weed control requires more than spot-spraying or hand-pulling, the default option is grazing and cutting.

"I think you could do a fair bit of control with grazing management. With really high stock density you might be able to trample it down. Over a period of time it will vanish on you," Jack Kyle predicts. "Between hay cutting and grazing and maybe spraying and frost seeding, in three years I think you'd be ahead of where you'd be with ploughing, at a lower cost."

As Alexander "Sandy" Smart, a South Dakota State University range-land specialist says, ranchers tend to get worked up about goldenrod because it often looks worse than it really is. But when Smart looked closely, he found Canada Goldenrod may not be a significant yield robber. Thanks to its deep roots, it may get most of its water and nutrients from deeper soils, rather than thieving from its grassy neighbours. "It might look bad, but it could be that goldenrod is really only covering one per cent" of your pasture, Smart says. Rather than ponying up for an aerial herbicide, "you'd be better off at buying some hay."

So I'm not out to kill every last goldenrod – just reduce it to a level the neighbours won't mention. (I hope.)

But to avoid future problems, vigilance will be the key. After all, most of the bad things that happen in monster movies happen to folks who aren't paying attention in the first 15 or 20 minutes. If you're really serious about heading off a zombie weed apocalypse, your best weapon is – you got it – your brraiins.







# Poultry

AMY HOGUE

## 2020 Hatchery Guide

### Where to get your chicks in Canada

It may not feel like it, but spring is on its way. This is the time of year when small farmers sit down at kitchen tables all across Canada and begin to plan and dream about what to grow in the coming year, everything from tender seedlings to fluffy yellow chicks.

For poultry farmers, sourcing the next year's flock isn't always an easy task. Finding a good hatchery is a bit like finding a good doctor – you want to hang on to them. Without these valuable industry partners, you may find yourself out of luck when it comes time to order your next batch of broilers or layers.

For those lucky enough to have a longstanding relationship with a local hatchery, chick season won't be an issue, but for others the hunt will be on to find a hatchery that meets their needs when it comes to timing of hatches, available breeds and location.

Of course, ordering from a hatchery isn't your only option: For intrepid do-it-yourselfers, hatching eggs can be a good choice if you have the time and energy to invest. This option definitely isn't for everyone, and the results are never certain. That said, it can be a lot of fun to watch a chick hatch, and a much less expensive way to hatch smaller quantities of poultry, particularly hard-to-find breeds.

If you aren't interested in purchasing chicks from a larger hatchery and would



like to locate a more local resource, your best bet is to reach out to your local agricultural society and/or feed store to see what they recommend. There are often small hatcheries operating in rural areas that aren't visible online.

The list below is not exhaustive (please forgive me if I've missed some-one) but should be fairly representative of the hatcheries that are available online in each province. This list should omit any hatcheries that don't cater to small farms. An internet search will turn up additional locations that don't have a website (and there are many across Canada).

It's chick season! These cute fluffy chicks are harder to source than you might think, particularly if you are looking for hard to find breeds and smaller quantities.

## Alberta

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### Miller Hatcheries

Box 5669, Westlock, AB  
T7P 2P6

1-877-344-2442

[millerhatcheries.com](http://millerhatcheries.com)

Breeds broilers, layers, dual purpose breeds and turkeys.

Ships only to Western Canada.

Minimum order restrictions apply.

### Rochester Hatchery

9420 109 St. Westlock, AB  
T7P 2R4

1-888-698-3965

[rochesterhatchery.com](http://rochesterhatchery.com)

Ships day old chicks.

Breeds broilers, dual purpose, turkeys, hybrid layers, pheasant and heritage breeds.

Some poultry breeds aren't available online.

Ships to Alberta and parts of B.C., Saskatchewan and Manitoba.

Minimum order restrictions apply.

## British Columbia

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### Beau Peep Farms

50526 Yale Rd. Rosedale, BC  
V0X 1X2

(604) 791-3695

[beaupeep@yahoo.ca](mailto:beaupeep@yahoo.ca)

[beaupeepfarms.com](http://beaupeepfarms.com)

Will ship to farm.

Breeds bantams, waterfowl, turkeys, guinea keets, quail.

Freedom rangers available 12

Hatcheries take a lot of care to ensure your chicks arrive healthy and sound, and with a good start to grow into mature birds.



months a year.

Order must be received a minimum of 30 days before hatch date.

### Grade Eh Farms

(no specific address available)  
Delta, B.C.

[gradeehfarms.ca](http://gradeehfarms.ca)

Breeders of extremely rare breeds of poultry.

Will ship chicks or meet for delivery (locally).

### True North Farm

4780 Sleepy Hollow Rd.  
Armstrong, BC

(250) 546-0106

[truenorthfarm.ca](http://truenorthfarm.ca)

Will ship day old chicks across Canada.

Breeds heritage layers, dual-pur-

pose breeds, pasture meat breed (Mistral Gris), mini-turkeys, and Pekin ducks.

### Western Hatchery

505 Hamm Rd.

Abbotsford, BC

V2T 6B6

(604) 859-7168

[westernhatchery.ca](http://westernhatchery.ca)

Hatchery services to government registered poultry farmers in B.C.

Offers pre-orders and pick-up for small farms and small orders.

Sells broiler and breeder chicks.

### Wild Acres

4686 North Grandview Flats Rd.  
Armstrong, BC

V0E 1B5

(250) 546-6561

[wildacres.ca](http://wildacres.ca)

# Poultry



Finding a good hatchery is a bit like finding a good doctor – you want to hang on to them.



**Discover our range of specialty products:** Available from our preferred suppliers

**Alberta**  
Miller Hatchery  
877-344-2442

**Manitoba**  
Berg's Hatchery  
204-773-2562

**Ontario**  
Frey's Hatchery  
519-664-2291

**Quebec**  
Couvoir Unik  
450-347-0126



Breeds dual purpose, heritage breeds layers, ornamental breeds and rare breeds, bantams, waterfowl. Some shipping services depending on breeds and location; please refer to the website. Ships hatching eggs, minimum order one dozen.

## Manitoba

Breezy Bird Farms  
Manitoba (exact address unknown)  
breezybirdfarms.com  
Ships hatching eggs and day-old chicks.  
Breeders of rare heritage poultry, ducks, geese, quail and guinea fowl.

## Berg's Hatchery

Box 547 Russell, MB R0J 1W0  
(204) 773-2562  
bergshatchery.com  
Breeds meat breeds, egg-layers, turkeys, waterfowl, guineas and specialty breeds.  
Will ship day-olds.  
Chicks can be picked up at retailers in Ontario, Alberta, Manitoba and Saskatchewan.

## New Brunswick

### Grant's Breeder Farm

2914 Rte 124 Kars, NB  
(506) 485-2930  
grantsbreederfarm.webs.com  
Sells hatching eggs, day-old meat and layer breeds, and ready-to-lay pullets (pullets delivered to Nova Scotia and new Brunswick and sometimes PEI)

## Les Farms Canada

2473 Route 134 Shediac Cape, NB  
E4P 3E4  
(506) 351-3276  
lesfarmscanada.wixsite.com Error 404  
Will ship across Canada.  
Sells day-old chicks and hatching eggs.  
Breeds heritage breed chickens, ducks and guinea fowl.

## Nova Scotia

### Atlantic Poultry Inc.

713 Belcher St. Port Williams, NS  
B0P 1T0  
(902) 678-1335  
atlanticpoultry.com

## Ontario

### Frey's Hatchery

80 Northside Dr. St. Jacobs, ON  
N0B 2N0  
(519) 664-2291  
freyshatchery.com  
Breeds chickens, turkeys, ducks, pheasants and ready-to-lay pullets.  
Will ship to farm or you can pick up at their location. Orders also available for pick-up at select feed stores across Ontario.



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to learn more



Chicken Farmers of Ontario

# Poultry

## Mill Pond Hatchery

555 Pipeline Rd., Grafton, ON  
K0K 2G0

(905) 349-3958

millpondhatchery.com Server  
not available

Hatches chickens, ducklings,  
turkeys, pheasants and goslings.  
Pick up on-farm or through feed  
mills in Eastern and Central  
Ontario.

No shipping option available.

## Webfoot Hatchery

6340 Wellington Rd. 7  
Elora, ON

N0B 1S0

(519)846-9885

webfoothatchery.ca

Breeder of Muscovy ducks, sells  
day-old ducklings all year long.  
Will ship across Canada.

## Quebec

### DC Heritage Poultry

552 4th Concession  
Clarendon, QC

J0X 2Y0

(819) 647-2118

dcheritagepoultry.com

Ships hatching eggs (no mini-  
mum) across Canada, will ship  
chicks.

Chicks can be picked up on-  
farm.

Breeds chickens, ducks and quail.

Breeder of rare breeds and orna-  
mental birds.

## Couvoir Unik Inc./Robitaille

222 Route 104  
Mont St-Grégoire, QC

J0J 1K0

450-347-0126

grouperobitaille.com/contact

## Saskatchewan

### Anstey Hatchery

2717 Cleveland Ave. Saskatoon,  
SK S7K 3R2

(306) 242-1033

ansteyhatchery.ca

Chicks can be shipped to farm  
or also can be picked up at select  
retailers.

Breeds meat birds, egg layers,  
turkeys, Pekin ducks and Emb-  
den goslings.



Hatching eggs  
are available  
for shipment from  
many hatcheries,  
and is one option for  
small farmers looking  
for smaller quantities  
of chicks and who don't  
mind doing some of the work  
themselves. Plus, it's fun to  
watch baby chicks hatch!



DAN KERR

## Delving into old tractors

### Powering the Massey Harris 101

When I got my Muskeg a friend of mine, Carl MacKenzie, dropped in to have a look, and with Carl being an admirer of track vehicles the conversation was on. He pointed out that the engine, a flat head Dodge inline 6 cylinder (IL6), was the same used in the Massey Harris 101 tractor. It turns out, that they were also used in cars, trucks, combines, pumps, generators and other industrial applications. Carl then directed me to Jeff Orr's farm where I found an excellent '101' example.

### History

Dodge started production of this engine in 1924, at 201 cubic inch displacement (CID) it produced 68 hp primarily for use in the automotive industry. By 1959 it had increased to 230 CID and 132 hp. 1960 was the last year for its use in automobiles followed by 1961 for the truck line but it remained in production until 1970, used in industrial and agriculture applications.

### The '101'

In 1938 Massey Harris chose this engine for their newly designed tractor – the '101'. With the 201 CID it produced about 30 hp governed, which was needed to keep it in tune with the equipment it would be operating. With this engine MH could boast a huge support network for engine parts availability, thanks to Dodge, and that it was the first tractor to have an electric starter and come equipped with an included muffler.

The two main differences between the tractor and auto configuration are the governor and the fuel system. The auto models have no governor and use a down draft carburetor with a mechanical fuel pump delivery driven off of the engine that has the exhaust to the rear going down. The tractor version uses an updraft carburetor with the fuel gravity fed from the tank through a shut off valve with the exhaust going up at the front. Both use the same manifolds, exhaust up for tractors; turn it over, down, for auto.

This engine is about as simple as they come and using only one 12 volt 15 amp wire to run it in the tractor, it's a joy to work on. In a Muskeg it's in a somewhat confined space. As I



Jeff Orr in front of his lovely MH 101

mentioned in the Nov/Dec issue, I rewired this engine which is a great first job if you are going to purchase an old tractor.

### Basic Maintenance

In the following issues I am going to cover some basic engine maintenance using this engine, however all aspirated gas engines with distributor points will basically be the same.

Now, let's start with some basic maintenance.

### Oil filter

I checked the oil prior to running the Muskeg and it was black, so first up was an oil change and oil filter. This engine, as a lot of the older ones did, uses an oil cartridge that drops into a canister. I stopped into Rankin Supply who have been helping farmers and alike in the north shore area forever, and he promptly pulled the filter off the shelf. The canister has a

*continued on page 24*



# Equipment



'IL6' in the Muskeg shows the down draft carburetor (on top) and down swept rear exhaust; the mechanical fuel pump on this side at front has been removed.



Not needed in this case but a great trick to know, doubling a box end wrench onto an open end for tight places and higher torque, here is removing the oil canister lid bolt



'IL6' in the MH101 shows the up draft carburetor (on the bottom) and the up swept front exhaust; also shown is the governor (belt driven at the front this of the engine).

drain bung and a lid needing a gasket which comes included with the oil filter. Having oil containment at hand I removed the bung and drained the oil from the canister. Then I removed the lid and pulled out the cartridge. The bottom of the canister would now need to be cleaned out as there was a ring of heavy sludge left behind.

In the box with the filter is a selection of gaskets. With the correct ones chosen I replaced the cartridge and the lid. I then cleaned the bung threads and corresponding threads in the canister with brake cleaner and re installed using oil rated Teflon tape on the bung. I then checked all connections, filter, filter mounts and lines for tightness.

With my first Muskeg the engine oil was drained via the bung in the oil pan. This meant crawling under the machine in between the tracks. This one requires a container to be manipulated alongside the block and the oil drained out a quart at a time from up above. On the tractors the bung is under the oil pan, which simplifies things.

I then cleaned and replaced the oil pan bung using the oil resistant Teflon tape. The oil of choice here is 10W-30, topped up to the proper level.

## Radiator

Next up is the coolant system. The radiator on the Muskeg is a biggie and the cooling is different than the tractors as the fan is backwards. Instead of sucking air into the front of the radiator and out the back it is reversed, drawing air

from the back of the transmission past the engine and out through the front. Why?

Because at a screaming half MPH traversing a bulrush and mosquito-infested swamp, using the traditional method would draw all that debris into the radiator plugging it in minutes; this way it blows the debris away from the radiator so the mosquitoes can get a good aim.

Using a radiator gauge I checked for the fluid's cold rating which was perfect and it had obviously been changed as its colour indicated (nice and green with no grit, and the radiator was newly re-cored). A fitting on the heater core was tightened and an engine run up indicated that the thermostat was operational at about 170 degrees which is good.

Note: if you are going to remove the radiator on your tractor and it doesn't leak, you may want to try a trick I used to clean it. Purchase several containers of rust/scale remover such as 'CLR' and with the holes plugged, pour the product in and let it sit. The rust/scale remover will do its job and remove the calcium build up in the small coolant tubes which plug up and burst under pressure.

Okay, there are two minor but important maintenance jobs looked after. If you do drain the radiator fluid and the hoses and clamps look tired, you may want to change them at this time while it's empty.

More to come in future issues.

Carl MacKenzie passed away in September, 2019 and our community lost a good person. He'll be missed.



A partial of Jeff's collection including MH models 22, 30, 44, and a 15 hp Pony, all in excellent shape



The oil canister on the opposite side with the silver bung shown at the bottom centre (note the anti chaff wrap on the wiring)



The oil filter kit with selection of gaskets



## DIY DISPATCHES

# What we learned from building a high tunnel

BY LILY JACKSON

The high tunnel is a ubiquitous piece of farm infrastructure for good reason. It extends the growing season and presents a versatile structure that can keep up with a farm's evolving production and storage needs.

So useful is the high tunnel that an overwhelming number of businesses and resources exist to help you get one, or build one of your own. Indeed, it is the do-it-yourself (DIY) approach to high tunnels that garners particular popularity with claims of dramatic cost savings (a high tunnel for \$150!), minimal labour (build it by yourself!) and low construction times (done in a weekend!).

But as with any DIY project, beneath the cheap-and-easy surface lie choices, challenges, surprises and setbacks that you will wish you knew before. If you're thinking about adding a high tunnel to your farm for the first time, you may wonder: What is it actually like to build one?

Over four months last year, my family answered that question when we constructed our first 14.5' x 32' high tunnel. The project was a success, but not without variables that affected the build time and cost, and which could have jeopardized the project's feasibility.

Our story can't determine whether a DIY high tunnel is right for you, but we hope it gives you the tools to arrive at the right answer.

### Identifying need, finding balance

My mom, Lorna Jackson, owns Ninebark Farm, a two-acre operation on southern Vancouver Island that raises chickens and sheep, produces plant-dyed silk ribbon and grows more than 30 varieties of cut flowers and shrubs. Lorna knew early on that, despite farming in a mild climate, she needed a high tunnel to meet florist demand for

specialty varieties early, and late, in the growing season.

But when she considered her options, she was flummoxed. To have a high tunnel shipped and fully assembled by a team from the manufacturer was out of her budget. She had no regular employees and couldn't count on consistent access to borrowed labour to assemble a kit (a shipment of most of the parts you need to assemble the tunnel) or build a tunnel from scratch. And other farmers, echoing her own knowledge, warned against investing in cheap products built from PVC pipe that wouldn't stand up to wind or snow.

She was stuck in a way that's familiar to Brandon Youst, founder of Bootstrap Farmer, which sells DIY greenhouse materials and kits in the United States and ships some materials to Canada. "It's about costing," he says. "I can't afford to buy something that's going to break or blow away in the wind, but I also can't spend a fortune (on a top-of-the-line high tunnel). How do you find that balance?"

Lorna found that balance by chance when I moved back to my home community late last year with my husband, Matt Gubernat, a methodical and keen handyperson with experience in metal fabrication. I don't know that a psychologist would recommend bonding with an in-law over a high-stakes construction project, but Lorna and Matt agreed that her needs and his cooperation meant that a high tunnel was finally feasible.

### Choices, materials

Youst knows that identifying a need for a high tunnel is just the first in a series of decisions that will affect the building's utility, and that only the farmer can make those decisions.



“We can provide the tools but there is no shortcut for learning your market, what your goals are, your crop planning. The farmer needs to decide. We’ll never have enough information to tell them what to do or what size they should build,” he says.

To define her needs, Lorna asked questions like: How strong are the winds in my area? Is wet, heavy snow likely? How deep is the frost line? How many stems of what varieties does my business plan say I need to produce in the next several years and how much room will that require? Do I need to use motorized equipment in the tunnel? What ventilation do I need so my flowers don’t cook? What size of tunnel will allow me to continue keeping livestock on my small field? How will a tunnel support my commitment to no-till growing?

Other important questions related to her physical abilities and her status as the farm’s sole operator.

“Some of the choices have to do with me being 64 years old with some body disintegration,” she says. “How will a high tunnel be easier for someone who wants to be independent and profitable for another 10 years?”

The answer was a high tunnel with a gothic-style roof built with galvanized top rail (metal pipe), a relatively small footprint and a design that could accommodate customizations such as sides that roll up via hand crank and end walls that hold double doors.

The degree of desired customization ruled out most high tunnel kits, and the ones left were too costly (the high end of kits in this size is around \$10,000). Lorna and Matt turned to DIY, intrigued by the many resources that claim it’s the best way to save time and money. Because this was Matt’s first time putting his skills towards a high tunnel, the DIY approach presented an acceptable trade-off; Matt would gain an engaging learning opportunity and modest compensation from Lorna, and she would benefit from his donated time for the bulk of the project.

They opted for a popular DIY method that involves purchasing a metal hoop bender – a tool that helps the user seg-



The team at Butternut Creek Flowers installs the cover of their 25' x 48' high tunnel.

Photo: Liz McLean



Butternut Creek Flowers built their 25' x 48' high tunnel from a kit.

Photo: Liz McLean





The inside of Ninebark Farm's high tunnel, with raised beds under construction using a no-till method. Black mesh is secured to the sides to protect crops from livestock and deer when the sides are rolled up.  
Photo: Matt Gubernat.

ment-bend 1 3/8" galvanized top rail to a consistent radius. Hoop bender manufacturers often include detailed instructions and a parts list to help customers tackle the rest of the build.

But after several days of research, they encountered a classic Canadian conundrum; they couldn't find a business in Canada that sold hoop benders. Instead, they sourced the tool from a large business in the United States. This meant they incurred extra costs from currency exchange and shipping rates, and received a detailed parts list that was not particularly useful, because it sourced all the materials from American wholesale companies.

This hiccup led to a time/money cost-comparison exercise that would follow Matt for the entire project. He spent a lot of time online and in stores, researching and sourcing the Canadian equivalent of each product and intuiting his own substitutions when a comparable product wasn't available. When he searched hard for the best prices, he found them at wholesale business that often weren't set up to sell, for example, 10 pieces of top rail to one person. He had to make several phone calls before he found a local fencing business willing to sell retail quantities of top rail at wholesale prices. Other times, he opted for the easiest solution, not the cheapest, because he was spending days researching prices and not progressing with the build.

With the time Matt spent sourcing materials, we wondered whether the problem could have been avoided by purchasing a kit. I asked Liz McLean, of Butternut Creek Flowers in Kingston, Ontario, after seeing her Instagram post of a 25' x 48' high tunnel frame that she built from a kit manufactured by a Canadian company.



A variety of sizes and designs of hoophouses, courtesy of Lost Creek Greenhouse Solutions. Above: Loy Robinson



# Advice for planning your DIY high tunnel

**We learned some valuable lessons from building our own high tunnel and speaking to other builders and experts. Here is a collection of tips to help you anticipate the unique challenges of your own project:**

## Understand realistic ways to save

“You can save up to as much as 70 per cent of a factory kit (by doing DIY). Not that every person is going to save that; a lot of country and city people have stuff laying around that could be used. The average saving is about 50 per cent.”

– Loy Robinson

“Big box retail stores are set up to sell small amounts of materials and they price those materials accordingly. A wholesaler or local supplier will save you money on the amount of product you require, but you should expect to spend extra time doing the research and legwork to find them.”

– Matt Gubernat

“There’s tons of advice out there on how to save money. Use an old trampoline frame to build your hoops, make the frame out of old scaffolding, buy a regular pipe bender and do all the calculations yourself. Understand that none of these are quick and easy fixes. Anticipate unique challenges and costs with all approaches.”

– Matt Gubernat

## Know your needs

“Be really sure about what your conditions are

and what to expect weather-wise. Don’t cheap out. Respect your climate. Don’t expect the snow not to fall just because you don’t want it to.”

– Lorna Jackson

“Build a small greenhouse. A 12’ x 24’ is an easy greenhouse to build. It’s strong and durable and costless to heat for a year or two. You learn how to build a greenhouse for a lot less money and you also learn how to manage a greenhouse. Say fifteen years down the road you’ve got 20 acres of greenhouses, you’ll always use the tiny one if, for nothing else, to start seeds in.”

– Loy Robinson

“Line everything up. Things like the wood for the frame and a whole bunch of little things that are similar whether you’re doing it yourself or whether you bought a kit.”

– Liz McLean

## Assess your DIY aptitude

“There’s some people, they don’t have the basic skills and are not DIY-minded people. They don’t have the motor skills and are too easily frustrated. If you don’t do DIY projects very often I would say you’re not suited for it.”

– Loy Robinson

“Watch a couple videos. If you can see yourself doing it, then once you’re familiar with the process it becomes fun. Then you’ll see all the possibilities you can do.”

– Brandon Youst

## Understand the challenges of labour

“Be honest with how available your labour is. If it’s volunteer labour, can they all be there on the same day? Be realistic about how much help you have available knowing that you may not be able to do it yourself.”

– Lorna Jackson

“One mistake I run across is a customer will come up and say, ‘I need everything by Friday because I’ve got ten people coming on Saturday.’ I’ve got to be honest with you, you can’t put up a greenhouse on a Saturday with ten people. For moral support and for physical assistance it’s always handy to have another pair of hands. But some people can get too many hands on board.”

– Loy Robinson

## Be generous with time

“Regardless of which approach you take, give yourself a lot of lead time. Give yourself a full season, even, to get it done before you start using it.”

– Lorna Jackson







The completed frame and walls of the high tunnel. The gothic-style peak of the roof is visible, designed to avoid the accumulation of wet, heavy snow. Photo: Matt Gubernat.

She thought that a kit would be the cheapest way to make her fast-approaching fall planting deadline and avoid scrambling to find labour and parts, but she was surprised to discover that the kit didn't include everything she needed.

"The company made it sound like [the kit] is everything you need to put it up," she says. "I didn't know I had to buy two-by-fours for a frame. I found that out when I looked at the instructions."

When she gathered two nephews and three neighbours to help assemble the kit, expecting to finish in a day, the complex and unclear instructions pushed back the completion date by weeks.

"It had the worst directions. It took all day to do the frame, and we still weren't really clear. We called the company and they gave us a YouTube video to watch and put it together. If I hadn't pulled up the video on my phone in the field they wouldn't have gotten as far as they did," she says.

Liz is happy with the final product, calling it a "game changer" for her business. However, she's disappointed at how the time and cost compared to her expectations. She estimates the kit cost her \$5,400.

"If I have to buy a second one, at least now I know what to expect. For the amount of money, I kind of thought this was just awful."

## Workarounds, expertise

The challenges for Matt and Lorna didn't end with sourcing the right materials. Because the parts were not designed for high tunnels specifically, Matt needed to perform workarounds to use them. For example, the galvanized top rail—

necessary to prevent corrosion and rust—is designed for fencing, and didn't fit inside the extension bars that came with the hoop bender. Matt spent two hours with a neighbouring farm's bench grinder to fix them.

Other workarounds were more expensive. Lorna's farm doesn't have a vehicle that can carry long and heavy materials, so she rented a van on two occasions to haul the top rail and lumber. Because her farm doesn't have a fully-stocked workshop, she and Matt had to borrow or buy a range of tools and materials.

From Lorna's perspective as the farm owner, these workarounds added a surprising amount of time that would have made the project infeasible if Matt was her paid, hourly employee. And even though he donated much of his time, there was still an opportunity cost to the hours he spent finding solutions to unforeseen challenges.

"The whole rest of the farm is still going," Lorna says. "You can't have all your labour going to [the high tunnel] because there's so much else to do. But it wants to take all your time."



A bent pipe on a second hoop bender, again mounted to a deck. This bender was designed for the sides of the high tunnel frame.





The ground posts of the high tunnel are complete, and Matt has begun erecting the arches. Black landscape fabric surrounds the structure to suppress weeds.  
Photo: Matt Gubernat.

A bent pipe on a hoop bender, which is mounted securely to a deck. This bender was designed for the peak of the gothic-style high tunnel. A different style of bender is used to create the sides of the tunnel.

Photo: Matt Gubernat



Drilling into the rounded, metal surface of the high tunnel pipe is challenging, so Matt uses a punch to create a registration mark before drilling each hole.



Wiggle wire secures the tunnel's plastic coating to the frame in a wire lock channel (also called a poly latch). The same wire can be re-used when it's time to replace the plastic.





The frame and walls of the high tunnel are complete, and the process of skinning the structure with 6mm greenhouse film has begun, starting with the end walls.  
Photo: Matt Gubernat.

workarounds he devised demanded a lot of his building knowledge and skills. “You need a realistic understanding of construction,” he says. “Can you build a deck? Do you know how to drill through metal? Then you can probably build a high tunnel. But you have to be able to figure out certain things on your own, intuit some of the steps and jump to your own conclusions.”

“You just bought a bunch of stuff that wasn’t even made for a high tunnel and now you’ve destroyed its original function. You can’t just re-use it and salvage the losses.”

### **“Was this because I was an idiot, or because even a smart person couldn’t anticipate these challenges?”**

Lorna asked this question as I helped her fill her new high tunnel with ranunculus, sweet peas and anemones. Now complete, the tunnel took around 40 hours of build time. Lorna paid Matt \$1,000 for that work, and the materials cost just over \$4,000 (what Lorna hoped to pay). The time they spent on research, the project’s learning curve, was donated and Matt’s driving time was donated, too, because he tried to combine materials shopping with other errands. The result is what Lorna needed to plant tender product that will be ready for Mother’s Day.

She and Matt have questioned the thoroughness of their research, the quality of the deals they found and the choices they made. They knew that others, like Liz McLean, encountered similar challenges, but was there a problem-free route they’d missed?

I called Loy Robinson, owner of Lost Creek Greenhouse Solutions in Mineola, Texas to find out. Loy invented a hoop bender and has helped DIY enthusiasts tackle their own high tunnel projects since 1994. His family-run business operates [buildmyowngreenhouse.com](http://buildmyowngreenhouse.com) and [hoopbenders.net](http://hoopbenders.net), supplying materials, tools and resources to





Ninebark Farm's completed 14.5' x 32' high tunnel, with sides rolled up. Photo: Lily Jackson

customers around the world.

I asked Loy if he fields many questions from people like us who encounter difficulties after starting a project.

"Every day," he says immediately. "I had one 65-year-old grandma, she built a 20' x 48' in upstate New York with the help of her 14-year-old grandson and she called me every day for three weeks . . . I would say for almost 100 per cent of these people it's their first time, that they've ever attempted a greenhouse, or they tried one out of PVC and they failed and they're nervous about trying it again. After sales help, it's a big part of our business."

So, these people encounter unexpected time costs like we did?

"I had a customer three or four days ago call and say 'I want to go into town and I want to get everything so I don't have to go get one item at a time.' You ain't going to get it all in one trip. It just ain't going to happen. But I itemized the list for him and sure enough he called me back a couple days later and said 'I've already been in town four times.'"

What about surprise expenses?

"I tell people, 'Tabulate all your costs and then add a minimum of 20 per cent to that. Calculate the time it's going to take to build the project, then triple that. Don't set that timeframe if you don't know, and if you haven't done it before you really don't know.'"

Loy made it clear; these are the inherent complexities of DIY, but it may still be a worthwhile approach for those who want to control expenses and build self-sufficiency. Plus, he points out, once you've built one high tunnel you have the skills and knowledge to build the next one faster, cheaper and better.

Lorna can already see needing another high tunnel in the not-too-distant future, and she believes DIY is still the best way to get what she needs, as long as she has a "handy, decisive and patient problem-solver like Matt" to shepherd the project. She adds that the challenges she and Matt endured, the complexities of DIY, are part of what it means to run a farm.

"No part of farming is anything but that. It's all about not being able to anticipate challenges, learning from mistakes, trial and error. That's why farmers are so bloody smart."





# Recipes

HELEN LAMMERS-HELPS

## Simply delicious

Yes, you really can bake with just three ingredients

Following the current minimalist trend, Ontario baker-extraordinaire accepted the challenge of creating 101 recipes that taste great but use just three ingredients.

Yes, you read that right. Just three ingredients.

Charmian, aka The Messy Baker, focused on ingredients, tools and pans with widespread availability. Although the book is called The 3-Ingredient Baking Book, the recipes in the book run the gamut from squares, to cakes, pastries, chocolate, creamy things, candy, ice creams and sauces.

I always try every recipe before including it in a column and only those that meet my criteria of being easy-to-make and delicious make the grade.

Sometimes a recipe becomes a new favourite as I find myself making it over and over again. These Buttery Oatmeal Squares are like that.

Of course, with just three ingredients and taking only minutes to make from start to finish, it's no surprise these squares with the taste of butterscotch are so appealing.

As a bonus, thanks to Charmian's improvements on an old family recipe, these squares hold together well making them ideal for packing in lunches for school or field.

If sending them in lunches, Charmian suggests wrapping individual squares in plastic wrap, and then placing them in a resealable freezer bag prior to freezing. This makes it easy to pop in-



Using Charmian Christie's book as a guide, SFC food columnist Helen Lammers-Helps whipped up these very satisfactory oatmeal squares. Image credit:

Photo by Lauren Miller

dividual frozen squares into lunch bags. (Charmian says the squares freeze well but I wouldn't know as they have yet to

*continued on page 35*

*With just three ingredients and taking only minutes to make from start to finish, it's no surprise these squares with the taste of butterscotch are so appealing.*



## Buttery Oatmeal Squares

Courtesy of The 3-Ingredient Baking book by Charmian Christie © 2019 [www.robertrose.ca](http://www.robertrose.ca) Reprinted with permission. Available where books are sold. Makes 16 squares

### Ingredients

- 2 cups (200 g) quick-cooking rolled oats
- 1/2 cup (115 g) salted butter, softened
- 3/4 cup (180 g) packed brown sugar

### Method

- Preheat the oven to 350°F (180°C)
- 8-inch (20 cm) square metal baking pan, lined with parchment paper
- Place the oats in a medium bowl. Set aside.

- In a small saucepan, heat the butter and brown sugar over medium heat, stirring constantly, until boiling. Boil, stirring constantly, for 1 minute. Pour over the oats, stirring to combine.
- Press the mixture firmly and evenly into the prepared pan.
- Bake on the middle rack of the preheated oven for 20 minutes. The mixture will bubble at the edges.
- Let cool in the pan on a wire rack for 15 minutes. Score with a knife into 16 squares. Let cool completely, then remove from the pan, using the parchment liner, and cut along the scored lines.

# RECIPES *continued*

last long enough at my house for me to get them into the freezer.)

For ease of use, Charmian includes sections in the cookbook on must-have kitchen equipment (including standard pan sizes), key ingredients to keep on-hand and the answers to her most frequently asked questions. Here is a sampling of those questions along with Charmian's answers:

I'm dying to see how things are going. Can I peek at my baking?

Curiosity killed the cat – and the cake. Most baked goods don't like to

be disturbed. It's tempting to open the door to see how things are going, but unless you need to rotate pans, let the oven do its job. Turn on the oven light and look through the window in the door. (If it's too dirty to see through, that's another issue.)

Why won't my cream whip?

Whipped cream likes the cold. If your kitchen is really hot and you're having trouble whipping cream, chill the bowl and beaters in the freezer for 10 minutes before whipping. This has saved me more than once during a

heatwave.

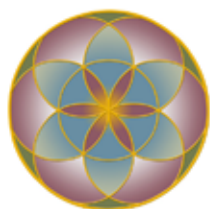
How important are wet and dry measures?

Very. Wet and dry measures are not the same. Swapping one for another can result in up to 26 per cent inaccuracy.

On page 34 is Charmian's recipe for Buttery Oatmeal Squares, a variation of her Great-Aunt Bess's recipe, which was sweet and crunchy but fell apart no matter how hard they pressed it into the pan. This version holds together better, thanks to heating the butter and brown sugar.



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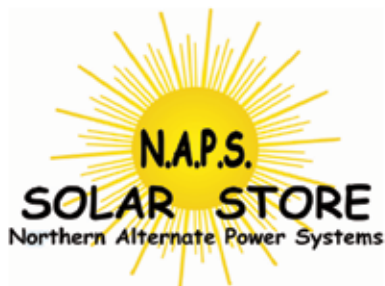
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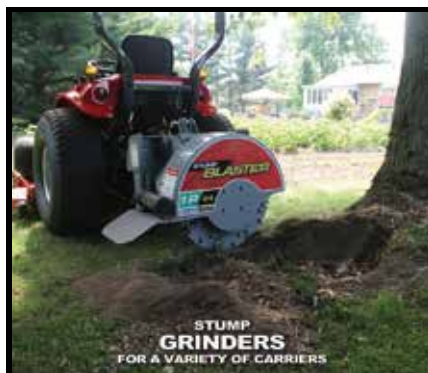
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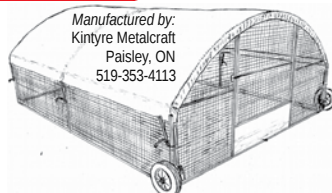
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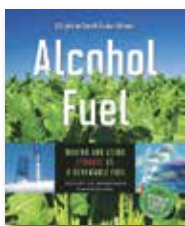


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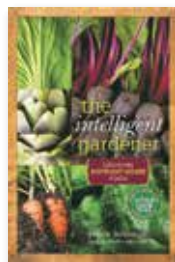


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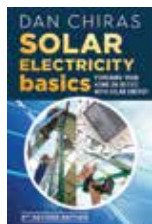


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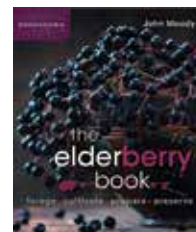


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# Notes from the Larkspur Supper Club

DAN NEEDLES

## Learning the art of sticking to it

"We don't have to do it fast Danny. But we do have to do it all today."

These words were spoken to me when I was twelve years old by one of the ancients in my farm neighbourhood. He was watching me fork manure onto a spreader and I was trying to impress him with my enthusiasm. His back was bent from thousands of loads of manure and much turnip hoeing and it amused him the way this boy tore into the pile. Eventually he said, "If that fork heats up on you and burns your hands, Danny, throw it down and I'll get you another one."

The ability to do endless repetitive work is not something the human species comes by naturally. It is learned behaviour and essential if we are to make anything of ourselves, whether it is in a field or garden or any number of soft professions in town, including writing. All of the residents in that rural community admired stick-to-it-iveness and my older brother was always in demand for the haying and threshing crews because he had plenty of it.

Me, not so much. I have a lateral mind and I am distracted by the wing of a butterfly. And I talk too much. I always lived in the shadow of my older brother who worked silently without complaint for days on end. I envied him his ability to stick at a thing and I wondered if it would ever come naturally to me. When I went off to explore the world after high school I got a job in a sawmill in northern B.C. piling lumber on the night shift. Heavy spruce boards came to me on a conveyor belt and my job was to pry them over a spike and make neat piles ten layers high and five feet across. The shifts lasted nine hours. The boards were heavy and rough and I wore through a pair of work gloves on the first night. To replace them cost me three hours of work. "This will be a test," I thought.

"Your hands toughen up," advised Ron, the foreman. "You get used to it."

I didn't buy any more gloves after that and my hands did toughen up, but I never got quite used to it. To make time fly, I recited poetry. One night I sang through the part of Rafe Rackstraw from H.M.S. Pinafore three times and eventually

turned around to find Ron and two crew members grinning their faces off at me.

I lasted three months at that job before I gave myself a passing grade on the tenacity test. I drew my pay and bought a plane ticket to Australia. The next year brought a succession of equally mind-numbing jobs, slugging hay bales, dagging sheep, cutting sugar cane and chopping pineapples in a canning factory in a cloud of wasps. It struck me then that so much of food production requires us to do the same thing over and over again for days and weeks on end. How is a person to endure it without getting sour?


Last year, our community welcomed a Syrian family and I was part of a fundraising effort to help them get established. At one point the family came out to visit the farm and after a few minutes the father noticed all the dandelions in the pasture and asked if he could pick some. About an hour later he came back with a clear garbage bag packed full of leaves. It would have taken me a day to pick that much even if I liked dandelion leaves, which I don't. The Syrians passed the tenacity test with flying colours and I had no doubt they would flourish at whatever they put their hands to.

I tell young writers that the difference between success and failure in this craft boils down to a willingness to sit at the desk longer than anyone else would. A natural gift for storytelling and language is certainly helpful but until you develop the habit of writing, it will be a struggle. The wealthiest people I know have all told me that the secret to their success has been ten per cent the ability to identify one thing that makes a profit and 90 per cent the willingness to do it over and over again.

The small landholder has a great advantage over the industrial producer because of the diversity of our work and the opportunity to change things up, often in the same day. I think this helps to explain why small farms still feed 70% of the world's population. They are places where a person still has the luxury of deciding that you don't have to work fast, as long as you are willing to do it all day.







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