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A father, a son, a family farm and a conflict over chemicals

Chicago Tribune

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A father, a son, a family farm and a conflict over chemicals

Sunday, December 13, 2015

By Patricia Callahan

HASTINGS, Iowa — Jon Bakehouse, who grows corn, soybeans and a little alfalfa in a setting worthy of a landscape painting, is talking fervently at the dining room table once again. About chemicals and death.

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Jon is quoting Gabe Brown, a North Dakota farmer and rancher with radical views on the most responsible way to grow crops.

"He said he found himself going out and saying, 'What am I going to kill today?'"
Jon says. Brown realized he needed to flip that, Jon explains, "and say, 'What are we growing today, and how can we help it grow?"

Bach counters: "You help it grow by killing what's interfering with it."

Father and son love each other and love to farm, but there's tension between them. The son wants to cut back on farm chemicals and figure out a more natural way to ensure the rich, black soil thrives decades from now. The father remembers what it was like to farm without effective weedkillers and knows how easily a farmer can lose his land if he loses sight of this year's profit.

"He's thinking long term," Bach says. "But my thing is you've got to think short term as well. Otherwise, somebody else is going to be doing this for you. You've got to make it pay. You have to pay the bills."

Jon dreams. Bach keeps Jon grounded. On Maple Edge Farm, as on many family farms around the country, this push and pull between idealism and realism is a point of contention at the supper table and in the fields.

Not every farmer is as passionate about the environment as Jon Bakehouse, but a visit here shows why American farming's chemical dependency is growing rapidly even as consumers are becoming more demanding about how their food is grown.

Weeds are evolving so that today's most popular weedkillers can't kill them, and in response the chemical industry is doubling down. Dow Chemical and Monsanto are genetically modifying corn and soybeans so that farmers can soon spray entire fields with chemical mixtures that include herbicides from generations past, wiping out the so-called superweeds without killing the crops.

Their advice to farmers: Don't just replace one chemical with another; add more. The resurgence of these older, more toxic weedkillers introduces new risks to America's food, water and air.

When public health activists decry chemical farming, they attack some of the practices — genetically modified crops, synthetic fertilizers, weedkillers — that have helped Maple Edge Farm prosper and remain in the family while so many others have sold off to larger operators. Jon and Bach farm about 700 acres that Jon's great-great-grandfather J.D. Robbins carved out of the southwest Iowa prairie in the 1880s.

People who romanticize American agriculture envision just this setting — a white gabled Victorian farmhouse overlooking gently rolling fields, home to generations



Jon Bakehouse, shown with son Anderson, and his father farm 700 acres in southwest Iowa. The two men have dueling philosophies about weed control.

working together to raise America's food.

Jon and his wife, Tina, restored the historic house, with its wraparound porch and four fireplaces, and are raising their 5-year-old son, Anderson, there. Bach and Nancy, his wife of 48 years, live next door in the house where Jon grew up. A herd of 33 cattle graze in the fields, and Shyla, a Labrador-German shepherd mix that the Bakehouses adopted from a shelter, greets every visitor.

Jon and Bach have planted genetically modified corn and soybeans for more than a decade. They say these crops have allowed them to eliminate the spraying of insecticides and to reduce the amount of soil blowing or washing into the nearby West Nishnabotna River, a tributary of the Missouri.

Yet, the idea of ratcheting up old herbicides for new genetically modified crops strikes Jon as the wrong way to go. To Jon, it's only a matter of time before the weeds evolve and become immune to those chemicals, too. And then what? "There's all these warning signals that Mother Nature is giving us that this is not sustainable," Jon says.

Bach has no qualms about genetically modified crops but isn't eager to plant Dow's next-generation corn and soybeans, which would allow farmers to douse their fields with a combination of glyphosate and 2,4-D, a World War II-era weed-killer linked to cancer and other health problems. Still, at the dining room table, Bach tells Jon he would plant those crops if evolving weeds threatened the farm.

"If that's what it takes to grow a good crop of soybeans, and other things aren't working, I'd be inclined to try it," Bach says over lunch.

Jon fires back: "Something's wrong if that's what it takes to grow a good soybean crop."

Jon may sound like an ideal candidate for the organic movement. But he isn't.

Organic farmers control weeds with heavy equipment that slices at the ground. More than a decade ago, Jon switched to no-till farming, which helps prevent erosion by leaving the soil — and the earthworms in it — as undisturbed as possible. Iowa on average is losing its topsoil 10 times faster than it's being regenerated, according to Iowa State University agronomist Richard Cruse.

The downside of no-till methods is that the farmers depend on herbicides to kill weeds. Jon wants to find a way to use less chemicals while still preserving the soil.

If Jon can do that and still make a profit, he can show Bach that these moves don't just help the environment, but they also make economic sense. Fertilizer and weedkillers are Maple Edge Farm's biggest cash expense.

So Jon began experimenting, a few acres at a time. The first success came when



Jon Bakehouse, right, and father Bach, center, haul seed at their farm. Jon wants to cut back on farm chemicals; Bach recalls the grueling days of farming without effective weedkillers.

he and Bach changed the way they fertilize corn — injecting smaller amounts of liquid nitrogen into the soil twice a year when the plants need it most, rather than spreading granules all at once. So far, they're using at least 10 percent less, and Jon hopes to cut back even more.

His biggest experiments involve cover crops. Unlike cash crops that are sold and eaten, cover crops are planted to anchor and improve the soil after corn and soybeans are harvested in the fall. Their roots help rain deeply infiltrate the ground, and some varieties can scavenge excess nitrogen that could pollute waterways.

Cover crops are also nature's weed fighters. Many types are planted after the harvest, go dormant during the harsh Midwest winter and re-emerge in the early spring. A thick stand can out-compete weeds that would otherwise take hold in bare fields and come back even stronger the next year.

Farmers often use an herbicide to kill the cover crops before planting the money-makers, but the dead plants can reduce the need for weedkillers later in the season by forming a thick mulch between rows of corn and soybeans.

Managing cover crops, however, is tricky. Modern technology has taken the guesswork out of maximizing corn and soybean yields with farm chemicals. A software program uses GPS data gathered on the combine during harvest to map out precisely how much fertilizer Jon and Bach need to apply every 80 feet. The labels on herbicides tell Bach which weeds the chemicals will kill and exactly how much to apply.

There's no such playbook for cover crops. Figuring out which cover crops will suppress weeds — or even grow at all — often comes down to trial and error, and Jon is the first to admit that much of it has been error.

Still, he keeps trying.

"We need to be finding different ways to control these weeds because what we're doing is not working, and we just can't keep waiting for the industry to provide another oh-my-gosh technology to save the day again," he tells Bach. "Well, how long is that going to last?"

Man vs. nature

The father's first encounter with herbicides was in Vietnam.

At Bien Hoa air base in 1969, Bach snapped a photo of hundreds of empty barrels piled on their sides. He was told they were Agent Orange, likely true given the orange bands visible in the shot.

The infamous herbicide, a combination of 2,4-D and 2,4,5-T, made forests drop their leaves, depriving the enemy of cover. Americans would later learn that the 2,4,5-T was contaminated with dioxin, a highly toxic compound that caused devastating health problems.

At the time, though, Bach and other servicemen didn't know this. He had an eye for a good photo and an ear for a sharp joke. Back in the states, Smokey Bear was beseeching Americans, "Only you can prevent forest fires." Bach riffed off of these ads when he sent the shot of the barrels to Nancy. His caption: "Only we can prevent forests."

Bach had no inkling that his life's work would be farming — and that he would need herbicides to keep the farm alive. He was a jet engine mechanic, the son of a teacher and a secretary. The land now called Maple Edge Farm belonged to the family of his University of Iowa college sweetheart, Nancy, an English major whose passion for the environment was so strong that her farmer cousins teased her for liking animals more than people.

When Bach got out of the Air Force in 1971, he and Nancy decided to move to her family's farm with their new baby: Jon's older sister, Jeanne-Marie. Bach planned to help his father-in-law, Lorance Lisle, while giving himself some time to figure out which career to pursue.

Bach's first year of farming was nearly his last. The weeds choking one 20-acre soybean field were so thick that Bach, Lorance and a hired man had to crawl through the field every day for a week hacking them down by hand.

Lorance had sprayed an herbicide on the field — but only a 7-inch wide band in every 38-inch row. He was haunted by his family's loss of a third of the farm during the Depression, so he cut costs whenever he could. And weedkillers were expensive. In the end, Bach and Lorance prevailed with muscle.

"I swore I wasn't going to be a farmer," Bach recalls. "That was the worst thing I've ever done."

Ultimately, though, Bach decided he liked the solitary aspects of farming, and his skills as a mechanic proved useful, extending the life of much of the farm's equipment.

Decades later, technology has transformed life on the farm. Perched high above the fields in the glassed-in cab of a combine, Bach steers through the haze of harvest dust while a computer screen tells him how many bushels of corn the 17-ton



Bach Bakehouse applies a weedkiller mixture prior to planting. He has no qualms about genetically modified crops but isn't eager to plant Dow's next-generation corn and soybeans.



Jon Bakehouse and his wife, Tina, restored the Victorian farmhouse that Jon's great-great-grandfather built. They are now raising their son, Anderson, there. Jon's parents live next door in the house where Jon grew up.

machine is cutting, threshing and cleaning six rows at a time. Some acres yield more than 200 bushels — double what the typical Iowa farm produced when Bach started.

Better seeds, better equipment and, yes, better chemicals have boosted yields, Bach says. Now 71 years old, Bach has tended the farm through droughts and dismal economic times that condemned many family farms to the auction block. The past decade has been among the most prosperous, but prices are dropping, and superweeds are creeping closer to the farm.

And now his 42-year-old son is questioning everything.

When anyone talks about farming with less chemicals, Bach's memories of himself in that soybean field — mired in mud, sweat and exhaustion — flood back. For his son, however, it's the image of farming with more and more chemicals that fills him with dread.

Bach and Nancy raised Jon to be an independent thinker. In the Bakehouse family, two rules are unassailable: Everybody goes to college, and nobody farms unless it's his or her life's passion. Nancy's father went to law school before he took over. Jon got a journalism degree at Drake University and worked in Des Moines for a carpenter before realizing he longed for the farm.

Jon, who inherited his mom's environmentalism and a smidgen of his dad's contrarian ways, worries that in growing corn and soybeans decade after decade, he and his family are destroying the soil that sustains them all. He also knows that every farm's decisions have an impact beyond its borders.

"As hard as it is, I think we have to be thinking about what we want our landscape to look like 10 years, 100 years, maybe even 1,000 years from now," Jon says. "Do we want it to look like it is now with our Gulf (of Mexico) hypoxia, with nitrates showing up in water, with the estimates of where 2,4-D is going to show up if we have such a drastic increase in use?"

In the history of American farming, Jon picked one of the hardest times to try to dial back their use of chemicals. Around the country, weeds are developing immunity to the glyphosate in Roundup, the herbicide that has dominated American agriculture since the 1990s, when Monsanto introduced genetically engineered crops that survive being sprayed with it.

While they haven't seen superweeds on their farm, Jon and Bach know the wind eventually will carry those seeds to their fields. The Bakehouses alternate between crops genetically modified to withstand Roundup and those that can survive glufosinate, an herbicide that attacks weeds differently. If a weed develops resistance to Roundup and emerges the next year, the glufosinate should kill it.

Still, Bach isn't taking chances. He uses six different weedkillers, depending on the crop and the time of the planting season. Among them is 2,4-D, which he sprays

to clear soybean fields before planting.

Dozens of 2½-gallon jugs pile up on the shed floor in late spring as Bach mixes the chemicals wearing elbow-high gloves. He knows the health risks. "Warning, right there," he says, pointing to the bold capital letters on a jug of Verdict, an herbicide he sprays before planting corn.

Even with all the spraying, some weeds get by him. During the 2014 harvest, Jon and Bach debated over dinner at Jon's house the reasons waterhemp was such a problem, its green spikes towering above the soybeans. That was a wet spring, and Bach thought the rain had interfered with the herbicides.

"Regardless of the amount of chemicals we use, we have to use less in the future," Jon says.

"OK, Rachel," Bach says, a little sharply, referring to the late environmentalist Rachel Carson, whose 1962 book "Silent Spring" condemned the indiscriminate use of pesticides.

Though Carson is one of his wife's heroes, Bach doesn't mean that as a compliment.

"Sometimes we agree to disagree," Bach explains later. "As far as the chemicals are concerned, I'm probably the final say in that. I've been using them a long time. I'm a little familiar with them. Jon, his thing is the seeding, the planting."

'A eureka moment'

This division of labor worked well for many years, but Jon has come to realize that seeding, soil health and chemicals often go hand in hand.

In the fall of 2013, Jon went to a speech by the man who got him thinking about chemicals and death. No-till farmer Gabe Brown explained how he had eliminated synthetic fertilizer and slashed weedkiller use after adopting a diverse mix of moneymaking crops and cover crops, along with grazing cattle, chickens and sheep, on 5,000 acres in Bismarck, N.D.

Most Midwest farmers plant corn in a field one year, then soybeans the next. What Brown was describing — shaking up that corn-soybean rotation — was radical thinking to an Iowa row cropper.

"The gut feeling I had out spraying or out tilling (years ago), that gut feeling that I wasn't doing something right — to hear him articulate all those things that I couldn't put my finger on, it was a eureka moment," Jon recalls. "I got home and I couldn't sleep."

Jon already had been planting a smattering of cover crops. He decided then to get serious about using these plants to cover more of his bare fields, a key way Brown suppresses weeds.

Though some farmers hire planes to drop the seeds between rows of standing corn and soybeans, Jon doesn't, because the plants won't emerge if rains don't come at the right time.

Instead, his tractor pulls a steel contraption that pokes the seeds into the ground after harvest. In 2013, he was able to seed only 50 acres of cover crops before it was too late to plant. Even then, many didn't come up as thickly as he'd hoped by the first frost.

Last year Jon began planting early-maturing corn and soybeans on part of the farm so he could harvest sooner and plant the cover crops earlier. This year, he seeded 271 acres with cover crops, about 40 percent of the farm.

So far, however, the crops haven't lessened the need for weedkillers. Last year, as Bach drove the sprayer through a soybean field thickly blanketed with cover-crop mulch, he made a split-second decision. There was no sign of weeds, so he turned off the boom for about 50 feet to see how that section would fare without herbicides. By harvest, the waterhemp had exploded.

"We didn't find many beans in there," Bach says. "A lot of weeds but not many beans."

To make matters worse, the early-maturing corn has yielded 10 fewer bushels per acre than the conventional corn.

Harder to quantify is the benefit to the soil. Last year Jon, the introvert, found himself standing in front of 60 farmers in a 4-foot-deep pit he'd dug into a patch of soybeans and old cover crops. Practical Farmers of Iowa, a nonprofit group, had asked Jon to share what he had learned from his experiments. A state soil scientist pointed out the deep layer of topsoil, the root structure and signs of beneficial microbiological activity. The farmers were impressed with how well the ground had absorbed the inch of rain that fell the night before.

This spring, when rains pounded Iowa, Jon was relieved to see miles of cover crops — cereal rye this time — soaking up the deluge rather than bare earth being washed away. "This probably will never tie into yields," Jon reflects, "but you can't plant corn on rocks either."

Eventually, Jon would like to break free from the rigidity of the corn-soybean rotation. Bach reminds him that these crops pay the bills, but he did agree to let Jon convert 8 acres of prime farmland into a diverse pasture of cover crops, each chosen for its particular soil benefits.

The deal was to let their livestock graze there for two years, then return the enriched plot to corn and soybeans.

In the summer of 2014, Bach walked through the field when the cover crops were in bloom and was tickled to see cattle eating the heads off of sunflowers, which Jon planted as part of the mix.

"There were so many pollinators out there, you couldn't hear yourself think for the buzzing," recalls Bach, who keeps bees as a hobby. "It was interesting, yeah, not only the honeybees but the native bees and the flies, the butterflies. It was just full of life."

When the grazing was done, Jon planted triticale, a different cover crop that would hold the soil over winter and regrow in the spring. And he decided to take the experiment a step further.

Rather than kill the triticale with Roundup, as Bach did with the rest of the cover crops this past spring, Jon wanted to turn his cattle into natural weedkillers. On his North Dakota ranch, Brown says, he lets the livestock eat a third of the cover crops and trample the rest, leaving a carpet of mulch. As they graze, their manure fertilizes the field.

Not only does he avoid those chemicals, but, Brown says, the approach also saves him money and labor because he doesn't have to buy fertilizer or bale as much hay for the animals to eat.

Jon would need a lot more livestock to do that on his farm, and Bach was dead set against adding to their herd. But what if Jon could use this 8-acre pasture to show that their small herd could do the work of an herbicide?

Adding animals to farm experiments, Jon knew, could complicate things. His plan to enlist chickens for natural pest control and fertilizer — they eat bugs and excrete soil nutrients — went awry this year when the family dog in one day killed seven of the 10 hens.

Jon expected his livestock to eat and trample the triticale the way Brown's animals do. Then he could plant the cover crop mix that drew all of the pollinators. To Jon, it was a win-win-win: There would be a spring pasture for grazing, the cattle manure would fertilize the soil and he'd avoid spraying Roundup there.

After a week of grazing this spring, though, the animals looked a little listless to Jon. The triticale wasn't thick enough to sustain them. And the field, Jon said, was a



Jon Bakehouse has been experimenting with cover crops and livestock grazing to reduce reliance on herbicides. A thick stand of cover crops can out-compete weeds that would otherwise take hold in bare fields.

sloppy mess. Undeterred, he planted the summer pasture there and waited for the thick mix of cover crops to return.

Instead, up came the weeds.

Dejected, Jon went to Bach and asked him to spray Roundup.

"I had all these ideals and all these scenarios of how awesome it was going to be," Jon says. "I'm standing out there realizing not only is it not working but also realizing it was doomed from the beginning."

Jon figured out that he had planted too few triticale seeds in too big an area. He also set the livestock loose on the field when the ground was too wet, and they compacted the soil.

The weedkiller, on the other hand, worked beautifully.

Jon started over and planted new summer cover crops more thickly. His seed supplier ribbed him by labeling the bags "annual pasture seeding mix, second try."

As the cover crops grew, Jon took Tina and Anderson on a two-week road trip to the Smoky Mountains to clear his head. When he returned, the sorghum-sudangrass and millet were 5 feet tall, and the cattle were lined up at the gate like cats hearing the sound of a sardine can. "They loved it," Jon says.

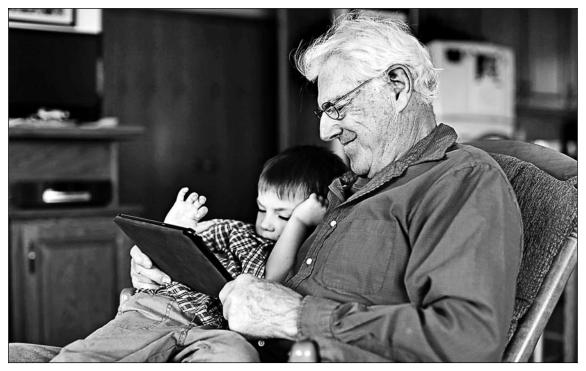
Next year was to be the year to convert that pasture back to cropland. But it was Bach who suggested they wait. He wanted to give Jon a second chance to get the seeding right for the cattle in the spring. Maybe then they could avoid that shot of Roundup.

A lesson

On a crisp October day, Jon hooks the seed drill to the tractor and winds up and down the rows planting his cover crops into the stubble of corn and soybeans. The signs that he is running out of time are above him.

Thousands of blackbirds gather to form a huge cloud, then disperse into black ribbons stretching across the sky. Jon looks forward to seeing the migrating birds, but he knows it means winter is coming. He'd like to seed all his acres with cover crops, but at a certain point, planting is futile. They won't have time to grow.

Over lunch with the family that day, Jon confides that he is worried about far more than bags of unused cover crop seeds. Anderson is the sole member of the



Bach Bakehouse reads to his grandson, Anderson, during a break. Anderson's father, Jon, believes that farmers need to carefully consider how current practices will affect the health of the land and future generations.

next generation. If he doesn't want to farm, will whoever takes over continue Jon's experiments?

"My great fear is that maybe next year I'll keel over from a heart attack and whoever comes along after me will be like, 'Well, eh,' "Jon says.

Bach responds: "You can't think that way. You just do the best you can while you're here."

Nancy jumps in. "We just have our little second in time," she says, "and you can't take responsibility for beyond that."

"You have to," Jon says, his head hung low as he returns to the combine.

Nancy worked as a high school English teacher, and this conversation reminds her of an exercise she gave students based on an H.G. Wells short story from 1897. In the story, a star is hurtling toward the Earth.

"I said, 'Well, OK, the Earth is going to be demolished, but we have a spaceship, and we can put a lot of people on it, and it will be big enough that we can grow our crops, but we'll have a finite amount of water, a finite amount of fresh air,' " Nancy recalls telling her class.

"'And we'll be hurtling through space about 60,000 miles an hour. What are you going to do? Are you going to take care of each other? Are you going to fight? Are you going to kill each other?' "

As she gets older — Nancy just turned 70 — the metaphor for our planet's predicament seems fitting and frightening: "How can we keep demolishing the atmosphere?"

She lets out a long breath.

When Nancy finishes cleaning the dishes, she asks Anderson to join her for a walk. After retiring, she and Bach became Anderson's caregivers when school isn't in session and Jon and Tina are working. (Tina works as a communication studies instructor at Creighton University and consults for corporations.)

Deep in the fields, Nancy and Anderson stop at the combine, which Jon has idled while it unloads about 4 tons of corn into a grain cart. Nancy helps the child climb the steep steps. Anderson hops into his dad's lap and pretends to steer, sheer delight on his face. After the corn is transferred, Jon helps his son climb down so the harvesting can resume.

Ever the teacher, Nancy is finding ways to instill her love of nature in the next generation — just as she did with Jon. As they follow a worn path, Anderson stops when a garter snake slithers between the soybean fields. Sensing the child's apprehension, Nancy shares a lesson in how an unlikely creature can help the farm.

"We like garter snakes," she reassures him. "They're good snakes."

Anderson asks, "What do they do?"

"They eat bugs," she says. "He's thinking about a good place to go for winter."

Anderson watches — more curious than afraid now — as the snake disappears into the soybeans. Then he and his grandmother walk hand in hand back to the house that his great-great-great-grandfather built.