THE HARMONY GROUP

HARMONY QUARTERLY

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THE FEATURE

The Proving Ground

On Jack Hjelmeland's farm, the family business shows its math.

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HARMONY QUARTERLY
Published four times a year by The Harmony Group and its family of brands: Solvix, Country Roads Ag, TerraGenomix, and BetterAcre.

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harmonygroup.ag

FROM THE FOUNDER

A Quick Note

Welcome to the first issue of Harmony Quarterly.

For years, the best conversations in this company haven't happened in conference rooms. They've happened across truck hoods, at field days, on the phone after a hard rain — anywhere our people and the people we serve compare notes on what's actually working. This magazine is our attempt to put those conversations on paper four times a year.

Inside you'll find what we hope becomes a familiar rhythm: news worth your time, a market report in plain English, advice from our agronomists you can put to work this season, and stories about the people who make this industry what it is — starting, in this issue, with the story of our own family of brands and why we believe they belong together.

What you won't find is a catalog. Our promise for these pages is the same one we make in the field: start with what the ground is telling us, recommend only what fits, and measure the result honestly.

This magazine will be better with your voice in it. Send us your questions, your photos, your news — and tell us what you'd like to see in these pages. You'll find every way to reach us on the back cover.

Thanks for reading, and for the trust you place in our teams every season.

Brent Hjelmeland
Founder, The Harmony Group

Brent Hjelmeland, founder of The Harmony Group.

Ag News & Notes

Photo: USDA

MARKETS

Soybean sales surge as China returns to the U.S. market

USDA's July 16 export report showed 65 million bushels of new-crop soybean sales in a single week — the largest weekly total in months. China booked more than a million metric tons, with another 625,000 tons to unknown destinations, as U.S. prices turned competitive with Brazil after China dropped tariffs. Corn exports are running well ahead of last year — 3.4 billion bushels versus 2.7 billion. For growers weighing new-crop marketing, the demand signal is the strongest it's been all season. *(USDA / Brownfield Ag News, July 16)*

Photo: Canva

POLICY

USDA opens $500 million fertilizer expansion program

Agriculture Secretary Brooke Rollins announced the FIELDS Program on July 1 — $500 million in competitive grants to build or expand domestic production of nitrogen, phosphate, potash, and sulfur. Grants run $15 million to $150 million and require a 50 percent private match; the application window closes in mid-August. The longer-term aim is squarely at the input-price volatility farmers have weathered since 2021 — more of the fertilizer supply made at home. *(USDA, July 1)*

Photo: Canva

INNOVATION

Precision ag hits a profitability crossroads

The 2026 CropLife/Purdue precision agriculture survey — running since 1996 — finds just 54 percent of ag retailers breaking even or better on precision services, down from 66 percent two years ago. The bright spots: soil sampling and variable-rate fertility remain the most profitable services, and drone offerings keep expanding. Half of dealers say they can't yet judge whether robotic weeding and machine-vision spraying will pay. The tools are multiplying faster than the business models — the edge goes to services with proven agronomic returns. *(CropLife, July 1)*

Photo: Canva

WEATHER & LAND

Heat leans on crops at the worst possible moment

USDA's July 20 Crop Progress report shows summer heat arriving right at pollination: corn slipped to 67 percent good-to-excellent with 59 percent of the crop silking, while soybeans held at 66 percent with two-thirds blooming. Spring wheat fell five points in a week to 53 percent. The hardest-hit number is pasture and range — just 29 percent rated good-to-excellent, 14 points behind last year. August weather across the Plains will decide whether the grain rally has more room to run. *(USDA NASS, July 20)*

THIS QUARTER

By the Numbers

67%
U.S. corn rated good-to-excellent at pollination (USDA, July 20)

$12.20
August soybean futures, July 21 — up 21% from a year ago

65M bu
New-crop soybean export sales in a single July week — the biggest in months

29%
Pasture & range rated good-to-excellent — 14 points behind last year

$5.13
On-highway diesel, up $1.32 from a year ago (EIA, week of July 20)

Photo: Al Toops

BUSINESS

Input costs stay stubborn even as grain rallies

The July rally in grain prices arrived alongside a cost side that hasn't cooperated. On-highway diesel is up $1.32 a gallon from a year ago, per EIA's weekly survey — a meaningful hit with harvest fuel demand still ahead. Fertilizer is the reason USDA is putting $500 million behind domestic production capacity (see Policy, left). For operations running the numbers on next year's plan, the spread between a stronger board and a stubborn input bill is where the margin conversation lives this fall.

Photo: Tucker Garrigan

CONSERVATION

NRCS puts $65 million behind on-farm innovation

NRCS has announced $65 million in Conservation Innovation Grants for fiscal 2026 — $50 million of it for On-Farm Trials, which pay producers incentives to test practices on working ground. The priorities read like this magazine's beat: soil health, nutrient management, irrigation efficiency, and grazing systems. The current application round closes as this issue goes to press, but On-Farm Trials open annually — worth a conversation with your local NRCS office about the next window. *(USDA NRCS, May 27)*

HARMONY GROUP

Proof in the dirt at the Pennsylvania No-Till Alliance

Chief Agronomist Al Toops spent time this July with the Pennsylvania No-Till Alliance at Ernst Farms, where board member Bill Chain ran a rain-simulator demonstration — a side-by-side look at how living plants and cover crops stop erosion before it starts. Watching water move across bare versus covered soil makes the case for soil armor better than any slide deck. A special tip of the cap to Dave Hunsberger of King's AgriSeeds, whose team helps growers build forage and cropping systems that are balanced and profitable.

Photo: Tucker Garrigan

COMMUNITY

Field day season brings growers back to the pasture

It was a busy summer for on-farm learning across our territory. Harmony Group teams turned up at the Midwest Advanced Crop Consulting Field Day, the Pennsylvania No-Till Alliance, the High Plains No-Till Conference, the Minnesota Soil Health Coalition's Soil Health School, and the Minnesota Soil and Water Conservation Field Days. The through-line at nearly all of them: soil biology moved from a niche session to the main stage. Two of those stops are covered in this issue — Al Toops's column on page 7 and the Soil Health School on page 11.

WORTH YOUR TIME

Mark Your Calendar

Aug 7 — FSA specialty-crop assistance (ASCF) application deadline

Mid-Aug — USDA FIELDS fertilizer-grant window closes

Aug 31 — FSA base-acre allocation review period ends

Sep 30 — Crop insurance sales closing, most fall-seeded crops (varies by county — check RMA or your agent)

Full events calendar on p. 15.

SEND US NEWS

Have news, a milestone, or a story worth sharing? Reach us at harmonygroup.ag.

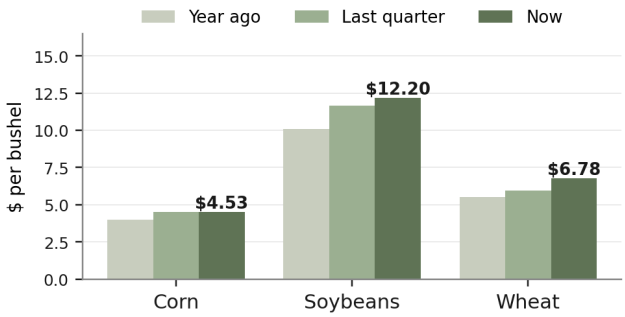
Market Report

QUARTERLY SNAPSHOT

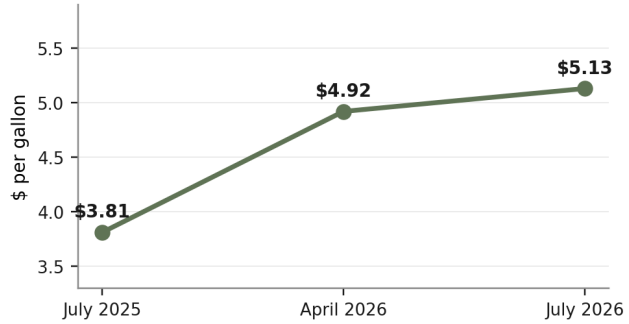
COMMODITY	CURRENT	LAST QUARTER	YEAR AGO	QTR TREND
Corn, Sep futures ($/bu)	$4.53	$4.52	$3.99	▲ 0.2%
Soybeans, Aug futures ($/bu)	$12.20	$11.66	$10.10	▲ 4.6%
Wheat, Sep futures ($/bu)	$6.78	$5.97	$5.50	▲ 13.6%
Live Cattle, Aug ($/cwt)	$226.67	$246.07	$224.97	▼ 7.9%
Lean Hogs, Aug ($/cwt)	$101.50	$101.72	$107.75	▼ 0.2%
Milk, Class III ($/cwt)	$15.76	$16.82	$17.32	▼ 6.3%
Diesel, on-highway ($/gal)	$5.13	$4.92	$3.81	▲ 4.3%

Futures settlements as of July 21, 2026 (CBOT/CME); Class III from CME futures, July 14; diesel from EIA weekly survey, week of July 20. Quarter-ago and year-ago figures from USDA AMS, CME/Brownfield archives, and EIA; diesel comparisons approximate.

GRAIN FUTURES, THEN AND NOW



DIESEL'S CLIMB (EIA, $/GAL)



The Analyst's Take: The story of the quarter is weather meeting demand. A hot, dry July across the western Corn Belt and Plains put a weather premium into grains right at pollination, and China's return to the U.S. soybean market — the biggest new-crop sales week in months — gave the rally legs. Wheat led the quarter, up nearly 14 percent. On the livestock side, cattle remain historically strong on the tightest fed supplies in a decade, though futures have backed off spring records near $246; hogs are steady; milk has softened as USDA raised production estimates. Two things to watch into fall: whether August heat trims yields enough to justify the premium, and diesel — up more than a dollar a gallon on the year — as harvest approaches. **— The insights team, Solvix** · This column is information, not marketing advice; talk with your advisor before making sales decisions.

SEASONAL ADVICE

From the Field

Al Toops
Chief Agronomist, The Harmony Group. Al presented on genomic microbial soil health profiling at the Pennsylvania No-Till Alliance this summer; this column is drawn from that talk.

What if the most important part of your fertility program isn't what you're applying — but what's already living in your soil?

This summer I had the chance to present at the Pennsylvania No-Till Alliance on genomic microbial soil health profiling, and the conversation centered on one of the most overlooked drivers of crop performance: soil biology. For decades, agriculture has focused on measuring nutrients. It's how we were all trained. But nutrients alone don't feed a crop. The soil microbiome is what transforms those nutrients into forms plants can actually use.

Genomic microbial profiling lets us move beyond the traditional fertility test and look directly at the biological engine underneath it — the community of organisms driving nutrient cycling, resilience, and overall soil function. It's time to shift the conversation from simply asking "What nutrients are present?" to asking "Is the biology functioning well enough to digest and deliver them?"

When growers understand the biology beneath their feet, the decisions get better across the board: more informed management, improved nutrient efficiency, and healthier, more resilient soils that hold up for the long term.

My thanks to the Pennsylvania No-Till Alliance for making room for the conversation — and to everyone who attended and pushed it forward with good questions.

START WITH THE BIOLOGY

- Baseline your biology — not just your chemistry — before fall decisions
- Sample consistently: same timing, same depth, season over season
- Read results as function, not just presence — what's cycling your N, P, and K?
- Match inputs to the gaps the biology shows; skip what it doesn't need
- Re-test to verify the trend, not the snapshot

Al Toops presents on genomic microbial soil health profiling at the Pennsylvania No-Till Alliance.

Rule of Thumb

Nutrients don't feed crops — biology does. A fertility plan is only as good as the microbiome that has to digest it.

Ask an expert: Send questions for a future column through harmonygroup.ag. Selected questions answered in a future issue.

SUCCESS STORY

The Proving Ground

The Harmony Group's programs serve dozens of crops across the country. When one fit the family's own corn and soybean ground, it faced the toughest audience in agriculture: the founder's father, running his own numbers.

BY KAYLA NORRIS · PHOTOS COURTESY OF THE HJELMELAND FAMILY

The corn on Jack Hjelmeland's place stands well over head-high by midsummer — 395 acres of it this year, rotated with 453 acres of soybeans across the ground of southeast Minnesota. From the road it looks like a thousand other well-run corn–soybean farms in this corner of the state. The difference is in the ledger.

Jack is the founder's father. The Harmony Group's teams work with dozens of crops, and not every program is a fit for the few the family raises itself. But when Brent Hjelmeland built the company around a conviction — that the biology in a soil, properly understood, can carry more of a crop's load than the input bill gives it credit for — his dad's corn and soybean ground was a natural place to put the program built for it to the test.

> *"The budget doesn't grow. It moves."*

That's the whole idea, in six words, of what BetterAcre built for Jack's operation: the most complete program the company offers, running on every acre — and an input bill that still came down. No new spending category. No leap of faith on yield. The same dollars, reallocated from habits to function.

OUT OF THE CONVENTIONAL PLAN	INTO THE BETTERACRE PROGRAM
− Dry phosphate & potash, cut to soil test	+ In-furrow biology & soluble nutrition
− Fall fertilizer application pass	+ Residue digester
− Gypsum	+ Foliar carbon & season-long nutrition
− Standalone fungicide package	+ Live algae biostimulant
− Herbicide adjuvants & planter talc	+ Fungicide protection built in
− Nitrogen right-sized to agronomic optimum	*— all riding passes the farm already makes*

Where the money moved: Jack's 2026 reallocation, from his BetterAcre program analysis.

Loading between passes at the bins — the program's products ride applications the farm was already making.

The Hjelmeland family in front of the corn.

The mechanics are on the previous page: working from soil tests rather than habit, the plan shed what the ground didn't call for and right-sized what remained. In place of the old line items came the biological program — riding passes Jack was already making, so the application bill didn't grow either.

The arithmetic landed like this: Jack's conventional corn plan penciled at $347.93 an acre. The BetterAcre build — corn program at $189.39 plus the retained essentials — came to $309.96. That's $37.97 an acre that stays in his pocket, an 11 percent cut, at the same expected yield. Across the full two-year corn–soybean cycle the program keeps $33.79 an acre — $16.90 per acre per year, roughly $14,000 annually across the operation's 848 acres.

Measured and verified on his own fields — not promised.

Year one is designed to be the boring year: same expected yield, leaner bill. The upside case starts in year three. As the biology establishes, the fields build improved soil structure, natural disease suppression, and greater water-holding capacity — resilience that lowers risk and can widen the savings over time. And because BetterAcre runs the soil sampling itself, those gains get measured on Jack's own ground, season over season, rather than promised from a brochure.

Jack, for his part, is blunt about why he signed on. "I didn't change because it's my son's company — if anything that made me harder to sell," he says. "I changed because the soil tests said I was buying things my ground didn't need. The yield stayed put and the bill came down. That's not loyalty, that's arithmetic."

The farm has become a family proving ground in more ways than the ledger. This summer, Jack's grandson Hayden spent a day alongside Country Roads Ag's Ryan Winter, running fungicide passes over these same acres by drone — three generations and the newest tool in the shed, on ground the family has worked for years. (That story, and the pictures, are on page 15.)

It also explains something about how the company sells. The pitch to a stranger is easier when a program has already survived the hardest audience in agriculture: your own father, looking at his own numbers, on his own kitchen table.

"There's a difference between believing in something and putting your own family's money behind it," Brent says. "My dad farms for a living, not to prove a point for me. When his numbers came back better, that meant something I couldn't have gotten from a trial plot."

For readers weighing their own version of this, the transferable lesson isn't any single product — it's the order of operations. Test first. Cut what the soil test says you can. Let the biology ride passes you're already making. And then verify, every season, on your own ground.

The budget didn't grow. It moved — and the soil is the line item that gains.

The corn doesn't know any of this, of course. It just stands there in the July heat, over head-high and closing canopy, doing what corn does on a farm where — this year — every dollar underneath it has a job.

Figures reflect Jack Hjelmeland's 2026 plans on a same-yield basis; herbicide retained in both plans. Phosphorus and potassium reductions are managed to soil test and confirmed through annual sampling. One operation's results — outcomes vary by field, soil test, and prices. Not a guarantee of yield or savings.

How They Did It

- Soil-tested every field; cut phosphate and potash to what the tests called for
- Dropped the fall fertilizer pass, gypsum, standalone fungicide, and adjuvants
- Right-sized nitrogen to its agronomic optimum
- Added the biology: in-furrow, residue digester, foliar carbon, live algae — riding existing passes
- Annual sampling verifies the soil gains, field by field

THE PROGRAM AT A GLANCE

Corn program: $189.39/ac
Soybean program: $131.52/ac
Application: rides existing planter and spray passes
Verification: annual soil sampling, run by BetterAcre
Comparison basis: same expected yield; herbicide retained in both plans

$37.97	848	Same	11%
KEPT PER CORN ACRE	ACRES IN THE PROGRAM	EXPECTED YIELD, YEAR ONE	LOWER CORN INPUT COST

The classroom, most of the day, was a standing circle in a pasture.

Between stops, the shuttle was a flatbed and a good bench seat.

AT A GLANCE

Event: Soil Health School
Host: Minnesota Soil Health Coalition
Farm hosts: Dawn & Grant Breitkreutz
Harmony Group: Tucker Garrigan, Director of Sales, BetterAcre

NOTES FROM THE ROAD

A Standing Circle in a Pasture

Some of the best agronomy education in this country happens without a lecture hall. This summer's Soil Health School, put on by the Minnesota Soil Health Coalition, ran mostly on foot — a group of farmers moving field to field, kneeling in the grass, and arguing productively about what was underneath them.

BetterAcre's Tucker Garrigan was among them, and came home impressed on two counts. The first was the event itself. "Big thank you to Mark Gutierrez and the team at the Minnesota Soil Health Coalition for putting on another great Soil Health School," he said. The work behind an event like this is invisible until you see the turnout and the questions being asked — and by both measures, it delivered.

The second was the hosts. Dawn and Grant Breitkreutz opened their operation to the group, and Tucker called them "incredible examples of how farmers can support each other to share best practices and improve outcomes on the farm." He didn't have to take their results on faith, either: "It was also very obvious how well the focus on prioritizing the life in your soil is producing incredible results in the crops and animals."

Which is, in a sentence, the argument this whole magazine keeps circling — soil biology isn't an abstraction, and the proof shows up above ground where anyone standing in the field can see it.

Demonstrations ran all day, and the notebooks stayed open. Photos courtesy of Tucker Garrigan.

PHOTO ESSAY

The Season in Pictures

Summer across Harmony country, photographed by our own people — from the lakes of northern Idaho to the fields of Kyle, Texas, with stops in Minnesota, North Dakota, and Arkansas along the way. Photographs by Robert Smith, Dani Lawson, Jenn Arneson, Marie Hjelmeland, Al Toops, and Kayla Norris.

Sundown over a North Dakota sunflower field — a few million faces turned toward the last light. Photo: Al Toops.

The northern lights make a house call over Rochester, Minnesota. Photo: Jenn Arneson.

Fireweed takes the high country near Coeur d'Alene, Idaho. Photo: Dani Lawson.

Last light on the pond, Rochester, Minnesota. Photo: Jenn Arneson.

An afternoon rest in the tall grass, Fouke, Arkansas. Photo: Kayla Norris.

The welcoming committee, on flower duty in Harmony, Minnesota. Photo: Marie Hjelmeland.

Fresh bales wait on the trailer along a fence line in Kyle, Texas. Photo: Robert Smith.

> **Submit your photos:** Send us high-resolution photos from your operation for a future issue — published photographers are credited. Details at harmonygroup.ag.

Bret Shaw, Director of Sales, Solvix.

EMPLOYEE PROFILE

Bret Shaw

Director of Sales, Solvix

Bret Shaw's path into agriculture started the way a lot of good careers do: with a job that turned out to be a calling. Fresh out of college, he signed on with SST Software, a digital-ag company out of Oklahoma, and discovered he liked standing at the intersection of farming and technology. He never left. "There is no better industry than ag," he says.

These days, as Director of Sales for Solvix, his time goes to getting the word out — building the messaging around Solvix's offerings and helping people understand what the data can do for their business. The aim, as he puts it, is to position Solvix and TerraGenomix as the tools creating a shift in the biological market.

Ask what people most misunderstand about his job and he doesn't hesitate: Solvix isn't another one-off digital tool. "There are plenty of those already out there," he says. "The industry needs better solutions." He describes the Harmony family — Solvix on data, TerraGenomix on genetic analysis, Country Roads Ag in the field, and BetterAcre on product — as an interwoven ecosystem that generates value through the entire channel, from manufacturers and resellers to retailers, independents, and growers. "We see a bigger vision through a process approach versus a one-trick pony."

His proudest moment of the past year? The Harmony Group's progress in a very short time — "the aggregation of a great team and great ideas, paired with bold execution."

And the best part of the work isn't the technology at all. Solving customers' problems, sure. But really: "Ag has the best people in the world. Building not just work relationships but friendships has been the most enjoyable aspect of my career."

Quick Fire

First job: farmhand in western Oklahoma at 13 — "hot, dusty, and a heck of a good time."
Favorite season: fall in the Midwest. Hunting, fishing, football, and cooler weather — "that's where it's at."
Best advice: "Things are rarely worth doing unless they are difficult. Do the difficult things."

New Faces

Please join us in welcoming the team members who came aboard this year:
Dani Lawson, Product Manager, Solvix
Robert Smith, Software Engineer, The Harmony Group
Samantha Schoenfuss, Operations Manager, BetterAcre

Out & About

Where you've found Harmony Group teams this year:
Midwest Advanced Crop Consulting Field Day
Pennsylvania No-Till Alliance *(see p. 7)*
High Plains No-Till Conference
Minnesota Soil Health Coalition's Soil Health School
Minnesota Soil and Water Conservation Field Days

One Team, Many Zip Codes

The Harmony Group team works from eight states — Minnesota, Iowa, Wisconsin, South Carolina, Oklahoma, Texas, Arkansas, and Idaho — no headquarters hallway, just people living in the country they serve. When you call, odds are good you're talking to somebody looking at the same weather you are.

Community Corner

SAVE THE DATE

Upcoming Events

DATE	EVENT	LOCATION
Aug 7	FSA deadline: Assistance for Specialty Crop Farmers applications	Local FSA office
Aug 31	FSA base-acre allocation review period ends	farmers.gov
Sep 1–3	Farm Progress Show	Boone, IA
Sep 15–17	Husker Harvest Days	Grand Island, NE
Sep 25–Oct 18	State Fair of Texas	Dallas, TX
Sep 29–Oct 2	World Dairy Expo	Madison, WI
Sep 30	Crop insurance sales closing, most fall-seeded crops (varies by county)	RMA / your agent
Oct 20–22	Sunbelt Ag Expo	Moultrie, GA
Mar 3–5	Commodity Classic 2027	New Orleans, LA

Dates from event organizers and USDA as of July 2026 — confirm before you travel; program deadlines vary by county. Submit events at harmonygroup.ag.

Hayden Hjelmeland and Ryan Winter ready the spray drone for its next fungicide pass on Jack Hjelmeland's farm.

The Family Business

On Jack Hjelmeland's farm this summer, three generations of the family business shared one field. Hayden Hjelmeland — founder Brent Hjelmeland's son — spent the day helping Ryan Winter, Country Roads Ag's Director of Customer Experience, run fungicide applications by drone over his grandfather's acres. It's the kind of scene this company was built for: new tools, familiar ground, and the next generation learning the work from the seat beside you.

Mixing and loading between passes at the bins.

FEATURE · SOIL SCIENCE

Looking at Soil Through a Different Lens

BY AL TOOPS · CHIEF AGRONOMIST

For as long as most of us have been in the business, a soil test has told us one kind of story. We pull a sample, send it off, and back comes a report on our nutrients — nitrogen, phosphorus, potassium, maybe a run of micros depending on the lab and the extraction method. Mehlich-3, saturated paste, Olsen or Bray — whichever chemistry your agronomist prefers, the picture we get is essentially the same one: what's chemically present in that soil at that moment.

That picture is useful. It's also incomplete. And I think a lot of growers already know it's incomplete, because we've all stood in a field where the numbers on paper said one thing and the crop said another.

What I want to talk about here is a different way of looking at soil — one that starts not with chemistry, but with biology.

What We Built, and Why

At TerraGenomix™, we've spent a long time thinking about the gap between what a conventional soil test measures and what actually drives a plant's response in the field. Nutrients don't move themselves. Something has to cycle them, fix them, release them, protect them. That something is the community of organisms living in the soil — and until recently, most of that community has been invisible to the grower making the decisions.

TerraGenomix™ is our platform for making it visible. It's a DNA-sequencing approach to soil testing that identifies what's in the soil down to the species level, and then — this is the part that matters — connects those species to the functional pathways they drive and the way the plant responds to them.

The output is the TerraGenomix™ Soil Analysis Report. It can stand alone, or it can be run alongside your conventional testing so the two datasets talk to each other. If you're already pulling Mehlich-3 or saturated paste, you don't have to throw any of that out. What we're doing is layering a level of observation on top of it that agriculture hasn't really had access to before.

Agriculture has spent a long time managing what we could measure. TerraGenomix™ is about starting to manage what we couldn't.

Reading the Report

We designed the report so a grower can read it without a microbiology degree. Every function gets a score, and every score falls somewhere on an index from red to green — red meaning that pathway needs attention, green meaning it's performing well. When you open a report and you see a stretch of red, you know where to look. When you see green, you know what's working and worth protecting.

The first page walks through nutrition. The difference here is that we're not just asking "how much is present." We're asking whether the biological pathway that moves that nutrient is actually functioning. On a recent sample, the nitrogen pathway came back at about 66.5 percent — the fixation and detoxification colonies were there and doing work, but not at the level they could be. Phosphorus was more limited. Potassium was low, meaning the biology cycling it into the plant wasn't performing efficiently. And carbon — the organisms that fix carbon, that break down lignin and plant residue — was the most limiting factor of all.

That kind of reading gives you somewhere to go. Instead of a blanket recommendation, you're looking at specific pathways that can be influenced with targeted inputs, better inoculants, or a change in practice.

Beyond Nutrition

Nutrition is where we start, but it's not where we stop. The report also gets into plant health — because what's growing above the ground is directly impacted by what's happening below it, in the rhizosphere. That interface is where the plant and the soil biology actually meet, and it's where a lot of the crop's fate is decided.

We look at stress tolerance — abiotic, biotic, salt, heavy metal. We look at the soil microbial biomarkers linked to plant hormones like auxins, cytokinins, gibberellins and salicylic acid, and whether the soil is producing or interacting with them in a way that supports the plant. We look at the soil's own defense system: antifungal and antimicrobial colonies, natural nematicidal activity, resistance against invasive parasites. None of these are things you can pick up by measuring a single enzyme. You have to identify the organisms associated with those functions, and that's what the sequencing lets us do.

Soil Quality and Disease Risk

Once we've pulled all of that together, we aggregate it into a broader picture of soil quality — a biodiversity score, a fungal-to-bacteria ratio, an honest read on how much of that soil's potential is currently being expressed biologically. And then we look at the ceiling: how much of that soil could be impacted by better practices — cover cropping, inoculants, better carbon sources, reduced-tillage systems.

The last piece is disease risk. Traditionally, when a pathogen shows up, we reach for a chemistry that shuts it down after the fact. But if the report is telling you before the season that you're carrying a high-risk profile for a particular pathogen, you have options. You can go in with a biocontrol approach, adjust your rotation, load the soil up with the antagonists that suppress that organism naturally. That's a very different conversation than reactive spraying.

What This Changes

The reason I'm excited about this platform is not that it replaces conventional testing. It doesn't. The reason I'm excited is that it gives us a level of observation we haven't had, and observation is where every good decision in this industry starts.

With this kind of reading on the soil, we can watch a field year over year. We can see what our management is actually doing to the biology. We can point to a specific pathway that's underperforming and put a plan against it. We can make economic decisions — real ones, with return attached — instead of guessing.

If you want to see what your soil looks like through this lens, we'd be glad to talk. There's a lot more here than one article can cover, and every field tells a slightly different story.

Al Toops is Chief Agronomist with TerraGenomix™, part of The Harmony Group.

THIS ISSUE'S VISIT

Where the System Meets the Field

Every family of companies has one member whose office is a truck cab. For The Harmony Group, that's Country Roads Ag — the in-field arm that turns what the rest of the family learns into work you can watch happen. This summer, a lot of that work happened about ten feet off the canopy.

Country Roads Ag flies drone application across the Midwest, and the pitch is refreshingly unromantic: it isn't always the right tool, but when it is, it's a real advantage. The clearest cases are ones every grower recognizes — a narrow window with the ground rigs sidelined, a closed canopy with the crop still needing something, ground too wet to drive without rutting it, terraces and hills that punish a sprayer, and the waterways, odd corners, and small fields that never quite fit the equipment you own.

The aircraft itself is a heavy-lift sprayer, and the capabilities are what matter: terrain-following sensors that hold a steady height above the canopy even over rolling ground, obstacle detection that sees trees, poles, and wires, and RTK positioning so a pass can be repeated exactly. It converts from liquid to a dry spreader, which means the same platform handles fertilizer, granular products, and cover-crop seeding across a season.

The regulatory stack behind that flight is heavier than the aircraft: FAA Part 107 certification, a Part 137 agricultural aircraft operator certificate, a Section 44807 exemption, and state applicator licensing, with insurance on every flight. That's part of the point of hiring it out — the compliance and flight planning stay on Country Roads Ag's side of the ledger.

The standard doesn't change with the size of the job: two acres or two hundred, show up prepared, communicate clearly, and follow through until the customer says it's done.

"The drone isn't the point," Winter says. "The point is getting the right product on the right acre at the right time — and there are days when nothing else will do that. If a ground rig can do the job better, I'll tell you so."

Ryan Winter, Director of Customer Experience, Country Roads Ag.

When a Drone Earns Its Keep

Timing-critical windows

Late-canopy, in-season needs

Wet ground, where rigs would rut

Terraced and hilly topography

Waterways and hard-to-reach acres

Spray, dry spread, or seed cover crops

HOW IT FITS TOGETHER

TERRAGENOMIX reads your soil · **SOLVIX** turns the data into recommendations · **BETTERACRE** builds the acre-by-acre plan · **COUNTRY ROADS AG** puts it to work in the field — with **THE HARMONY GROUP** connecting all four. Start wherever you are; the system meets you there.

At working height over Minnesota ground — no wheel traffic, no compaction.

The view from the aircraft: rolling ground, tight corners, support trucks staged on the road.

Next issue: This fall, we go deep with TerraGenomix and Solvix — following a soil sample from the field to the lab to the report.
harmonygroup.ag

FROM OUR KITCHEN

Lemon Cream Chicken & Shrimp Pasta

with sautéed spinach, roasted cherry tomatoes & fresh Romano

Tastes like something you'd order at a cozy Italian restaurant, but comes together in about 40 minutes — the bright lemon cream balances the chicken, shrimp, and Romano, while roasted tomatoes add bursts of sweetness. From Kayla Norris's Prairie Creek Farms.

PREP 15 MIN · **COOK** 25 MIN · **SERVES** 4–6

INGREDIENTS

- 12 oz pasta (spaghetti, linguine, or fettuccine)
- 2 chicken breasts, cut bite-size
- 1 lb large shrimp, peeled & deveined
- 5 oz fresh spinach
- 2 cups cherry tomatoes
- Fresh Romano, grated, for serving
- 1 cup heavy cream
- 4 cloves garlic, minced
- Zest & juice of 1 lemon
- 1 cup Italian cheese blend
- 1 tsp kosher salt · ½ tsp pepper
- Olive oil, butter, Italian seasoning, red pepper flakes, parsley

DIRECTIONS

1. **ROAST THE TOMATOES:** 425°F, with olive oil, salt, and pepper, 18–22 minutes until blistered.
2. **COOK THE PASTA** al dente in salted water; reserve 1 cup pasta water.
3. **COOK THE CHICKEN** (seasoned, in oil and butter) until golden, 6–8 minutes; set aside.
4. **COOK THE SHRIMP** in the same skillet, 1–2 minutes per side, just until pink.
5. **SAUTÉ THE SPINACH** until just wilted, about 2 minutes.
6. **MAKE THE SAUCE:** cook garlic 30 seconds; add cream, lemon zest and juice, salt, and cheese blend; whisk smooth, loosening with pasta water as needed.
7. **BRING IT TOGETHER:** toss pasta in the sauce; fold in chicken, shrimp, and spinach; top with tomatoes, Romano, parsley, and cracked pepper.

PRAIRIE CREEK FARMS TIP: grate the Romano right before serving — it melts into the warm pasta with a salty, nutty finish. Serve with thick slices of crusty bread for the sauce.

Lemon cream chicken & shrimp pasta with sautéed spinach and roasted cherry tomatoes. Photo: Kayla Norris, Prairie Creek Farms.

LETTERS & FEEDBACK

Tell us what you think of Harmony Quarterly, and what you'd like to see in these pages. Reach us at harmonygroup.ag. Letters may be edited for length.

Share a recipe: Send us a family recipe and a photo of the finished dish. Details at harmonygroup.ag.

LOOKING AHEAD

Coming Next Quarter

IN THE FALL ISSUE

- A deep dive with TerraGenomix and Solvix: following one soil sample from the field to the lab to the plan
- Harvest and the fall market — what the season delivered, and what it means for next year's decisions
- More from our people: the next Meet the Team profile, and The Season in Pictures from across our eight states

SHARE YOUR STORY

Story ideas, photos, recipes, milestones — we want them. Everything comes through harmonygroup.ag.