

ONFARM | virtual FORUM 2026

Building our understanding of best management practices (BMPs) and their effect on **soil health** and **water quality** in Ontario.

Summary Report

- EXPLORE** **Quantifying Soil Health Changes: Challenges and Successes**
Soil Resource Group
- Optimizing Nutrient Application Rates with SWAT Maps and the new SWAT Water Tool**
Jonathan Zettler - Fieldwalker Ag
- Runoff & Nutrient transport**
- Taking the 4R Nutrient Management Approach**

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2026 ONFARM Applied Research Forum Summary Report

Hosted by the Ontario Soil and Crop Improvement Association

February 10, 2026 | Virtual Event

The 2026 ONFARM Applied Research Forum brought together farmers, researchers, conservation authorities and agricultural advisors to share applied research findings on soil health, water quality and nutrient management across Ontario.

The ONFARM program evaluates beneficial management practices (BMPs) under real-world farm conditions, with a focus on understanding how management decisions influence nutrient loss pathways and long-term soil performance. Funded under the Sustainable Canadian Agricultural Partnership (Sustainable CAP) and active through 2028, the program continues to generate multi-year datasets that support practical, evidence-based farm decision-making.

This year's forum centered on five key themes: hydrology and nutrient transport, runoff mitigation strategies, 4R nutrient stewardship, soil health measurement and spatial decision-support tools.

Launched in 2019, the On-Farm Applied Research and Monitoring (ONFARM) program is a nine-year initiative developed by the Ontario Ministry of Agriculture, Food and Agribusiness (OMAFRA) and delivered by the Ontario Soil and Crop Improvement Association (OSCIA). Originally established as a four-year program and renewed through 2028, ONFARM has completed extensive soil health and water quality analysis across 35 farm sites in Ontario to build a stronger, evidence-based understanding of how best management practices (BMPs) affect Ontario farmland.

The program assesses BMPs such as cover cropping and the use of organic amendments through coordinated soil and water monitoring, with soil quality data collected by the Soil Resource Group (SRG) and water quality research conducted by teams at three conservation authorities. Supported by a network of dedicated farmer cooperators and long-standing partnerships, ONFARM has generated valuable insights to date. During the Forum, we reflect on what has been learned so far and look ahead to the exciting research priorities shaping the program.

Agenda

February 10, 2026 (via Zoom)

Time	Activity
9:00 am	Welcome & Setting the Stage Speakers: <ul style="list-style-type: none">• Kelly Carmichael, Knowledge Mobilization Specialist at OSCIA• Renée Bowler, Assistant Deputy Minister of the Food Safety and Environment Division at OMAFA• Nicole Mackellar, OSCIA Director > ONFARM program highlights and progress
9:20 am	Agricultural Runoff and Nutrient Pathways Speakers: <ul style="list-style-type: none">• Kokulan Vivekananthan, Water Quality Specialist at OSCIA• Farm Cooperator, Rick Kootstra, Huronview Farm
9:50 am	Research and Management Strategies to Limit Runoff Nutrient Losses Speakers: <ul style="list-style-type: none">• Mari Veliz, Ausable Bayfield Conservation Authority > Using mini-field basins to evaluate best practices• Brittney Littlefield, Lower Thames Valley Conservation Authority > Investigating tillage practices on edge-of-field non-growing season water quality• Beth Wrona, Upper Thames River Conservation Authority > Sharing observations of seasonal differences in nitrogen losses
10:30 am	Break
10:45 am	Taking the 4R Nutrient Approach Speaker:

Time	Activity
	<ul style="list-style-type: none"> Emily Cook, Sylvite
11:15 am	<p>Quantifying Soil Health Changes: Challenges and Successes Soil Resource Group (SRG)</p> <p>Speakers:</p> <ul style="list-style-type: none"> Don King, MSc, CCA-ON, Senior Agronomist / President The Soil Resource Group Margaret Ribey, M.Sc., CCA-ON, The Soil Resource Group Farm Cooperators: Larry Dyck and Kevin Eisses
11:55 am	<p>Optimizing Nutrient Application Rates with SWAT Maps and Exploring the New SWAT Water Tool</p> <p>Speaker:</p> <ul style="list-style-type: none"> Jonathan Zettler, Fieldwalker Ag
12:25 pm	<p>Closing Remarks</p>

Forum Overview

Opening Remarks

Renée Bowler, Assistant Deputy Minister of the Food Safety and Environment Division, OMAFA

Renee Bowler opened the forum by reinforcing the purpose and long-term vision of the ONFARM program. Her remarks focused on the importance of applied, field-based research in strengthening Ontario agriculture’s environmental performance while maintaining farm productivity.

She emphasized that ONFARM’s strength lies in its collaborative model—bringing together farmers, researchers, conservation authorities and government partners to generate real-world data under actual farming conditions. Rather than relying solely on small-plot or

controlled research, the program tests beneficial management practices (BMPs) at field scale, making results directly relevant to producers.

Highlighting the program's continuation through 2028 under the Sustainable CAP, Assistant Deputy Minister Bowler reminded us that long-term datasets are essential for understanding trends in soil health and water quality. Her overarching message underscored that evidence-based decision-making supports both environmental stewardship and farm viability.

Core theme: Collaboration and long-term monitoring are essential to translating research into practical, on-farm impact.

ONFARM Program Highlights

Nicole Mackellar, Director of Member Services and Business Development, OSCIA

Nicole Mackellar focused her remarks on knowledge transfer and the practical application of ONFARM findings. She framed the forum as a bridge between research results and farm-level decision-making, emphasizing that data must ultimately inform management choices.

Mackellar spoke to the complexity of measuring soil health and water quality, noting that variability across soil types, weather patterns and farm systems makes interpretation challenging. She stressed the importance of consistent monitoring protocols and multi-year datasets to draw meaningful conclusions.

Her remarks also reinforced that ONFARM is not simply about measuring outcomes but about helping producers understand how different practices—such as cover crops, nutrient timing, or tillage adjustments—interact within whole-farm systems. She encouraged participants to view the research through a practical lens: how findings can reduce risk, improve nutrient efficiency, and strengthen resilience in increasingly variable weather conditions.

Turning complex data into actionable insights for producers is central to ONFARM's value.

Presentations

Agricultural Runoff and Nutrient Pathways

- **Dr. Kokulan Vivekananthan is Water Quality Specialist at OSCIA**
- **Farmer Cooperator (Rick Kootstra, Farm Manager, Huronview Demonstration Farm)** discussed his on-farm experiences with disrupting nutrient pathways with best practices

Understanding water and nutrient movement in agricultural fields helps us develop effective management strategies. Kokulan discussed the factors that affect runoff pathways and nutrient transport and outlined BMPs that can reduce runoff nutrient losses (phosphorus and nitrogen) without negatively impacting productivity.

This session highlighted that nutrient movement from agricultural fields is strongly controlled by hydrology, particularly the partitioning between surface runoff and subsurface (tile) drainage. In Southern Ontario, where more than 50% of farmland is tile-drained, tile drainage was responsible for over 75% of total annual runoff at monitored sites. Most of this flow occurred during the non-growing season (late fall through early spring), when crop uptake is minimal. In contrast, prairie systems with frozen soils exhibited the opposite pattern: up to 70–90% of runoff occurred as surface flow during snowmelt due to impermeable frost layers restricting tile discharge. These findings reinforce that runoff pathways — and therefore nutrient transport risk — are highly climate- and soil-dependent.

Nitrate losses were consistently greater in tile drainage than in surface runoff, reflecting nitrate's high solubility and mobility in soil water. When elevated tile concentrations were combined with high tile flow volumes, subsurface pathways became the dominant nitrate export mechanism. Phosphorus dynamics were more complex. Although surface runoff remains an important transport pathway, monitoring data showed that more than 60% of soluble reactive phosphorus and total phosphorus losses at some Ontario sites occurred through tile drains. Macropore flow (e.g., earthworm channels and soil cracks) was identified as a key mechanism allowing dissolved phosphorus to bypass soil filtration processes and move rapidly to drainage systems. Overall, the session emphasized that nutrient loss risk is driven not only by application practices but by soil structure, seasonal timing and hydrologic connectivity — underscoring the importance of targeted best management practices such as 4R nutrient stewardship and controlled drainage.

Effective nutrient management must account for water dynamics. Managing runoff and improving infiltration are central to reducing off-field nutrient movement.

Research and Management Strategies to Limit Runoff Nutrient Losses

Edge of Field Research: The science behind measuring sediment and nutrients in agricultural fields.

- **Mari Veliz, Ausable Bayfield Conservation Authority**
Using mini-field basins to evaluate best practices.
- **Brittney Littlefield, Lower Thames Valley Conservation Authority**
Investigating tillage practices on edge-of-field non-growing season water quality.
- **Beth Wrona, Upper Thames River Conservation Authority**
Monitoring the effects of varying management practices on runoff pathways and nutrient transport at an edge of field research site in North Kettle. Sharing observations of seasonal differences in nitrogen losses.

Building on the hydrology discussion, the second session presented applied research findings on BMP performance. Monitoring data from ONFARM sites demonstrated that practices such as cover cropping, reduced tillage and residue management can improve soil structure, enhance infiltration and reduce erosion-related nutrient losses.

However, outcomes varied across sites due to weather, soil conditions and landscape position. Presenters stressed that no single practice guarantees consistent results. Instead, combining practices within a systems-based approach delivers more reliable improvements in water quality.

Integrated management systems outperform isolated practices. Layering BMPs increases resilience and reduces nutrient export risk.

Using mini-field basins to evaluate best practices

Mari Veliz

This presentation demonstrated how small, bermed sub-watersheds within a single field can be used to directly compare best management practices (BMPs) with business-as-usual management under real farm conditions. Long-term monitoring (since 2017) in Huron County showed that unharvested cover crops (oats and peas) significantly reduced runoff frequency during winter and snowmelt events compared to harvested or bare fields. In the 2020–2021 season, runoff occurred only once in the unharvested BMP area versus 31% of monitored events in the harvested area, and phosphorus and total suspended sediment losses were approximately twice as high where the cover crop had been removed. Similar trends were observed in 2024–25, with higher total suspended sediment, total phosphorus, and nitrate concentrations leaving the non-BMP watershed. Dissolved phosphorus concentrations were more comparable between treatments, reinforcing that sediment-bound phosphorus is strongly influenced by soil cover and erosion control.

Beyond nutrient concentration, the study emphasized hydrologic response as a critical outcome: simply reducing the frequency and volume of runoff events can meaningfully decrease downstream impacts. Earlier watershed work in Gully Creek showed that 59% of phosphorus export originated from streambank erosion, highlighting that synchronized runoff from multiple fields can amplify channel erosion. Additional monitoring of contour versus pattern tile drainage demonstrated that drainage configuration also affects water export, with contour systems (installed at minimal grade) releasing less water than conventional pattern tiling. Overall, the findings underscore that maintaining winter soil cover and strategically managing drainage can reduce runoff generation, sediment transport, and nutrient loss at both field and watershed scales.

Investigating tillage practices on edge-of-field non-growing season water quality

Brittney Littlefield

This presentation evaluated how tillage versus no-till systems, combined with different fertilizer placement methods, influence non-growing season nutrient losses on systematically tile-drained Brookston clay soils. Comparing conventional tillage with fertilizer incorporation (2019–2020) to no-till with surface broadcast fertilizer (2023–2025), nitrate concentrations were generally higher under the no-till surface broadcast system. This was attributed to increased macropore flow and preferential pathways that allow mobile nitrate to move rapidly to tile drains. A notable spike in nitrate following a prolonged late-summer-to-early-winter drought (2024–2025) suggested that extended nitrification during dry periods can result in a concentrated “flush” when runoff resumes, reinforcing how seasonal weather patterns interact with management to influence loss risk.

Phosphorus losses reflected a clear trade-off between erosion control and dissolved nutrient mobility. No-till surface broadcast reduced total suspended solids and particulate phosphorus losses, demonstrating improved erosion control. However, it increased the proportion of soluble reactive phosphorus (SRP) in both tile and surface runoff, likely because fertilizer remained near the soil surface and had greater contact with runoff water and macropore pathways. In contrast, tillage and incorporation reduced dissolved phosphorus movement but increased particulate phosphorus due to soil disturbance and erosion. Despite these differences in form, total phosphorus losses between systems were similar, highlighting that management practices shift the *pathway and form* of nutrient export rather than eliminating it. The key technical takeaway was that no-till systems on high-clay soils effectively reduce erosion but require complementary strategies — such as subsurface placement, split applications or cover crops — to manage dissolved nutrient losses and balance trade-offs.

Monitoring the effects of varying management practices on runoff pathways and nutrient transport at an edge of field research site in North Kettle

Beth Wrona

This presentation examined six years of edge-of-field monitoring comparing a cover-cropped field (North field) with a no-cover-crop field (South field), focusing on seasonal nutrient trends under real farm management. A key technical finding was the strong temporal link between manure or fertilizer application and subsequent nitrate concentration spikes in runoff. In multiple years (2021, 2023, and 2024), elevated nitrate levels occurred within one month — and in one case within one week — of nutrient application when significant rainfall followed. By contrast, during a dry spring (2025), similar nutrient applications did not result in elevated runoff concentrations, underscoring that precipitation timing relative to application is a critical driver of nutrient export risk.

Event-scale analysis from July 2024 further distinguished between flow-driven and source-driven nutrient losses. Larger, high-intensity rainfall events generated higher total suspended sediment and total phosphorus concentrations, reflecting sediment-bound (particulate) phosphorus transport. However, the highest nitrate and soluble reactive

phosphorus (SRP) concentrations occurred during the first runoff event shortly after manure and fertilizer application — even though it was smaller in magnitude. This “first-flush” effect suggests that proximity to recent nutrient application can be a stronger determinant of dissolved nutrient loss than total runoff volume. Overall, the findings reinforce that while cover crops and incorporation practices are important, spring nutrient applications remain a sensitive window, and loss risk is heavily influenced by rainfall timing and intensity relative to management operations.

Taking the 4R Nutrient Management Approach

- **Emily Cook**, Sylvite Agronomist

Effective nutrient management means using the right source and targeting the right rate, time and placement of your fertilizer, which can protect the dollars you’ve invested in fertilizer and the environment at the same time. Emily Cook illustrated different levels of 4R management strategies that you can apply to your farm and the cost-benefits of various options.

This presentation emphasized that 4R Nutrient Stewardship — applying the Right Source, Right Rate, Right Time and Right Place — is a risk management framework that supports long-term agronomic, environmental and economic sustainability. A central technical theme was phosphorus stewardship: unlike nitrogen, phosphorus is a finite resource with no synthetic replacement pathway, making efficient use critical. Over-application not only increases environmental risk (particularly runoff and water quality impacts) but also represents a direct economic loss. The presentation highlighted that nutrient losses are strongly influenced by timing relative to weather events, placement method and soil test levels. Practices such as regular soil testing, realistic yield targets, calibrated equipment, split nitrogen applications and avoiding application before heavy rainfall or on frozen ground were identified as practical strategies to reduce loss risk while maintaining crop productivity.

The session also highlighted advances in fertilizer technology aligned with the “Right Source” principle. Products such as controlled-release nitrogen fertilizers, nitrogen stabilizers (reducing volatilization and leaching) and less water-soluble phosphorus sources (e.g., struvite-based products like Crystal Green/CGP2X) were presented as tools to improve nutrient use efficiency and reduce environmental mobility. A key takeaway was that no single practice eliminates loss; instead, integrated management — combining placement, timing, rate control and protective practices like cover crops — maximizes crop uptake while minimizing leaching and runoff. Ultimately, 4R implementation was framed not only as an environmental safeguard but as a profitability strategy that protects input investments and strengthens public trust in agriculture.

Quantifying Soil Health Changes: Challenges and Successes

Soil Resource Group (SRG):

- **Don King**, MSc, CCA-ON, Senior Agronomist / President
- **Margaret Ribey**, M.Sc., CCA-ON
- **Farmer Cooperators: Larry Dyck and Kevin Eisses**

A network of farm cooperators across the province are implementing BMPs in field plots and SRG has been monitoring the effect on indicators of soil health. Soil health measurements can vary from year to year and depend on a farm's soil type, region, history, position in the field and level of degradation. SRG highlighted changes over time and provided a closer look at two sites with cooperators Larry Dyck and Kevin Eisses, who shared their experiences with the ONFARM project and how they 'measure' BMP successes on their farms.

Quantifying soil health change

This presentation outlined a province-wide effort to evaluate soil health indicators across diverse Ontario soils, landscapes and best management practice (BMP) treatments. A key technical finding is that soil health indicators vary significantly by inherent soil properties — including texture, drainage class and landscape position — more than by short-term management changes. Lower landscape positions consistently exhibited higher organic matter, active carbon and related biological indicators than upper slope positions, often reflecting long-term erosion and soil redistribution effects. These inherent differences highlight the importance of pedological context when interpreting soil health data and underscore that meaningful change must be evaluated relative to baseline soil conditions by resampling from the same area.

In assessing indicator performance, measures such as soil organic matter, active carbon, ACE protein and aggregate stability demonstrated relatively consistent and reliable behaviour (low coefficient of variation), while tests like PMN and SLAN showed higher variability, limiting their sensitivity for detecting short-term change. After approximately five years of BMP implementation, measurable shifts across sites were modest and gradual. Cover crops alone showed limited short-term increases in total organic matter but influenced active carbon dynamics, potentially reflecting changes in microbial activity and carbon cycling. Systems combining cover crops with organic amendments demonstrated clearer directional improvements in organic matter and related indicators. Overall, the findings suggest that soil health change is incremental, influenced by both spatial variability and management intensity, and requires multi-year monitoring with stable indicators to detect meaningful trends.

Case study results

The case studies demonstrate that measurable improvements in soil health indicators are possible under certain conditions, but the response depends strongly on initial soil condition, soil texture and landscape variability. At the Simcoe County site, where soils were coarse-textured and initially in relatively poor condition, the combined use of cover

crops and organic amendments produced statistically significant improvements in indicators such as soil organic matter and ACE protein (a nitrogen-related biological indicator) by 2025. Active carbon measurements also showed a gradual upward trend relative to the control over several years, illustrating the “squiggle” pattern often observed in soil health monitoring—year-to-year variability with a longer-term positive trajectory under sustained best management practices (BMPs). These results suggest that integrated BMP systems that combine cover crops with organic amendments can increase indicators, particularly on degraded or lighter-textured soils.

In contrast, the second case study on a fine-textured clay soil with a long history of good management showed little measurable treatment effect in the short term. Instead, soil health indicators such as organic matter and ACE protein were more strongly influenced by landscape position than by BMP treatments. Even on relatively flat fields, lower landscape positions consistently exhibited higher indicator values, highlighting the strong role of historical soil redistribution and inherent soil variability. The findings suggest that detecting short-term changes from BMPs in well-managed or high-organic-matter soils may require longer monitoring periods and more spatially refined sampling approaches. As a result, researchers emphasized the importance of tracking soil health trends within landscape zones rather than across whole fields.

Overall, the case studies reinforce several practical recommendations for soil health monitoring and BMP implementation. First, soil health change is gradual and often requires multi-year monitoring using a combination of laboratory indicators and field observations. Second, baseline soil condition and soil type strongly influence how quickly improvements can be detected, with degraded or coarse soils typically responding faster to management change. Finally, farmer observations—including improved soil structure, residue breakdown, weed suppression, and operational efficiency—remain an important complement to laboratory indicators when evaluating the real-world benefits of soil health practices.

Optimizing Nutrient Application Rates with SWAT Maps and Exploring the New SWAT Water Tool

- **Jonathan Zettler**, Fieldwalker Agronomy Limited

The final session introduced watershed modeling tools, including SWAT (Soil and Water Assessment Tool) mapping, as decision-support resources for identifying high-risk nutrient loss areas.

Understanding the variability in your field is the key to managing it uniquely. SWAT Maps provider Jonathan Zettler discussed how the technology assesses a field’s topography and soil characteristics to create management zones, defining your variable rate prescriptions

for nutrient applications or seeding. Jonathan presented a first look at SWAT Water, a new add-on to the SWAT ecosystem being trialed through ONFARM.

SWAT maps

The SWAT (Soil, Water and Topography) mapping approach was presented as a method for identifying management zones within a field based on how water moves across the landscape and how soils respond to inputs. By combining high-resolution elevation data (LiDAR or RTK), electrical conductivity mapping and soil sampling, the system divides fields into 10 zones ranging from dry upland knolls (Zone 1) to water-collecting depressions (Zone 10). The research demonstrated that even in fields with very little elevation change, such as the Fairview site near Chatham with only about four feet of elevation difference across 40 acres, meaningful differences in soil behaviour, nutrient dynamics and crop response still occur. Observations from multiple fields suggest that phosphorus often accumulates in lower landscape positions due to erosion, runoff and lower crop removal, while mid-slope areas frequently show lower nutrient levels because crop removal exceeds nutrient replacement. These patterns highlight how uniform fertilizer applications may overlook important within-field variability.

From a management perspective, SWAT maps can support variable-rate decisions for seeding and fertilizer applications. For example, lower landscape positions with higher water availability may support higher plant populations, while upland knolls with lower yield potential may benefit from reduced seeding rates or targeted nutrient inputs. Conversely, water-collecting depressions often require more conservative management due to risks such as denitrification, root stress or shallow rooting depth. The overall recommendation is that management decisions should consider landscape-driven water dynamics rather than relying solely on uniform soil test values. Integrating SWAT maps with soil sampling and field validation (“ground truthing”) can help guide targeted scouting, optimize input placement and improve nutrient efficiency while maintaining economic viability.

SWAT water – high-level technical findings and recommendations

The SWAT Water system complements SWAT mapping by monitoring and forecasting plant-available water across the landscape using soil moisture probes and weather station data. At the Fairview monitoring site, a 120-cm soil moisture probe measured volumetric water content at 10-cm intervals, along with environmental data such as rainfall, temperature, solar radiation and humidity. The data showed typical crop water-use patterns, where rainfall events increase soil moisture levels followed by gradual drawdown as crop roots extract water deeper in the profile throughout the growing season. These measurements can be used to estimate field capacity and track when soil moisture declines toward thresholds (often around 50% of available water) that may signal the need for irrigation. In this case study, monitoring suggested that irrigation was not necessary during the season, demonstrating the value of data-driven decision support. Looking forward, SWAT Water aims to better quantify how plant-available water varies between landscape positions—knolls, mid-slopes, and depressions—and how those differences influence yield potential and crop management decisions. However, a key limitation remains the labour required to install and remove soil probes each season, particularly in tilled systems. Future

developments are exploring permanent probes installed in representative landscape zones to build long-term datasets on soil moisture dynamics. While irrigation remains uncommon in much of Ontario, the technology could become increasingly relevant as farms adopt irrigation systems or seek to fine-tune decisions such as seeding rates, nitrogen applications and fungicide timing based on real-time soil moisture and crop stress indicators.

Forum Conclusions

Across all presentations, several consistent conclusions emerged:

- Nutrient losses are largely driven by water movement and extreme weather events.
- Systems-based management approaches produce more reliable results than single interventions.
- Soil health improvement requires long-term commitment and monitoring.
- Precision tools and spatial modeling strengthen decision-making.
- Environmental stewardship and farm productivity are fundamentally interconnected.

The 2026 ONFARM Forum reinforced the value of collaborative, field-based research in generating practical insights for Ontario producers. By integrating hydrology, soil health monitoring, nutrient stewardship and advanced decision-support tools, the program continues to support evidence-based strategies that improve both environmental and agronomic outcomes.

Meet the Speakers



Renée Bowler is the Assistant Deputy Minister of the Food Safety and Environment Division at OMAFA, with over 25 years in the Ontario Public Service. She has held technical, policy, advisory, operational and management roles across three ministries, contributing to legislation, policy and program development while leading teams to deliver impactful results for Ontarians. Renée has a B.Sc.(Hons) in toxicology, a M.A.Sc. in environmental management, a Masters Certificate in Public Administration and advanced leadership training. As a lifelong learner, she is passionate about people-centred leadership, public service and evidence-based decision making. Outside of work, Renée enjoys spending time with her three kids, two dogs and husband, volunteering in the community and swimming, biking and running.



Nicole Mackellar is the Director of Member Services and Business Development with the Ontario Soil Crop Improvement Association (OSCIA), where she focuses on driving membership growth and identifying future funding delivery opportunities for the organization. She brings more than 15 years of experience in the agriculture sector, with a background in market development and international trade for Ontario grains and Canadian soybeans. Nicole is a 2017 Nuffield Canada Scholar, having studied opportunities to brand Canadian grain in global markets. She remains actively involved in her family's cash crop farm in southwestern Ontario.

Agricultural Runoff and Nutrient Pathways



Dr. Kokulan Vivekananthan is Water Quality Specialist at the Ontario Soil and Crop Improvement Association (OSCIA). In this role, he collaborates with conservation authorities and other stakeholders to determine the most effective ways to enhance agricultural water quality through best management practices. With more than 13 years of post-academic experience, Kokulan has developed a strong understanding of the processes governing runoff water and nutrient dynamics in Canadian agricultural landscapes.



Rick Kootstra is a poultry and grains farmer in Huron County. Currently, Mr. Kootstra is on the Board of Directors for the Egg Farmers of Ontario. As Vice President of the Huron County Soil and Crop Improvement Association and Farm Manager at the Huronview Demonstration Farm near Clinton, Ontario, he promotes the use of cover crops and conservation tillage. He is currently exploring innovative ways to use runoff water for farming and training future generations of farmers.

Research and Management Strategies to Limit Runoff Nutrient Losses



Mari Veliz is the Healthy Watersheds Manager at Ausable Bayfield Conservation Authority (ABCA). She has worked at ABCA since 2000. Mari has managed water quality, biomonitoring, agricultural and urban best practice evaluation, and community outreach programs.



Brittney Littlefield is the Soil and Water Soil Quality Technician at the Lower Thames Valley Conservation Authority (LTVCA). Brittney has worked at the LTVCA since 2023, leading the ONFARM edge-of-field monitoring program. She also has experience with agronomic field sampling, data management, and education/outreach projects.



Beth Wrona is the Agricultural Stewardship Technician at the Upper Thames River Conservation Authority. Beth manages projects demonstrating innovative agricultural BMPs applications and promotes their adoption in the Upper Thames River watershed. She coordinates monitoring programs and trials with farmers and rural landowners to assess the efficacy of a range of BMPs to improve water quality and soil health while maintaining productivity.

Taking the 4R Nutrient Management Approach



Emily Cook grew up on her family's farm in Chatham, Kent and now farms with them. She is a graduate from the University of Guelph, with a BSc Agr. Emily has been a team member at Sylvite Agri-Services for five years in sales and agronomy and recently joined the Sylvite Agri-Services Agronomy team providing training and resources for members of the sales team. Emily is currently working towards her CCA designation.

Quantifying Soil Health Changes: Challenges and Successes



Don King is a principal of Soil Resource Group (SRG), a resource management consulting firm in Guelph that conducts applied research in the agricultural and environmental sectors and has also provided land resource services to public agencies, government, private firms and landowners for more than 20 years. Don has extensive experience conducting on-farm projects to evaluate the environmental impact of agricultural production on soil, water and air quality to help determine improved farming practices.



Margaret Ribey is a Natural Resource Scientist for SRG with experience in soil and crop management and research with university, private and public agricultural agencies. Her areas of expertise include soil chemistry and physics, nutrient transport, best management practices, soil health, environmental considerations in production agriculture and nutrient management planning. Margaret coordinates agronomic field sampling, data management and analysis, GIS support, and reporting requirements for numerous projects across agricultural sectors.

Optimizing Nutrient Application Rates with SWAT Maps and Exploring the New SWAT Water Tool



Jonathan Zettler is a Certified Crop Adviser (CCA-ON) and founder of Fieldwalker Agronomy Limited, an independent crop consulting firm serving farmers in Ontario's Bruce, Grey, Huron, Perth and Wellington counties. He specializes in crop planning, variable rate applications via SWAT Maps (Soil, Water and Topography), precision tools like Metos weather stations, and optimizing inputs for corn, soybeans, wheat and edible beans.



Connect with and learn more about ONFARM



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The Sustainable Canadian Agricultural Partnership (Sustainable CAP) is a 5-year (2023-2028), \$3.5-billion investment by federal-provincial and territorial governments to strengthen competitiveness, innovation, and resiliency of Canada's agriculture, agri-food and agri-based products sector. This includes \$1 billion in federal programs and activities and a \$2.5 billion commitment that is cost-shared 60% federally and 40% provincially/territorially for programs that are designed and delivered by the provinces and territories.

