

DEEP ROOTS

A NEWSLETTER FOR
FARMERS AND FARMLAND OWNERS
IN IOWA COUNTY WISCONSIN

WINTER 2024-2025

BIOLOGY MATTERS

Why and how a local farmer incorporates biodiversity into his operation.

THE ECOSYSTEM BENEATH OUR FEET

Soil is alive! Learn how to reap the benefits of life below the ground.

NEW COST-SHARE FOR SOIL HEALTH AND WILDLIFE HABITAT

There are several new practices that counties can help pay for.

FIELD BORDERS AND GRASSED WATERWAYS

Good for conservation, business, and biodiversity.

THE BUZZ ABOUT BENEFICIAL INSECTS

Help your farm by welcoming predators, pollinators, and parasitoids.



MAYME KEAGY





WHY BIODIVERSITY?

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We chose an oak tree for the cover because it stands as a powerful symbol of biodiversity. According to ecologist Doug Tallamy in *Bringing Nature Home* and *The Nature of Oaks*, oak trees support more wildlife species than any other native tree in North America. They support hundreds of species, including some of the beneficial predator and parasitoid insects mentioned on page 7. Oak leaves also feed many types of caterpillars, which in turn are crucial food for birds, and acorns feed larger animals like deer, turkey, and squirrels. The extensive roots of oak trees stabilize soil, improve water infiltration, and store carbon.

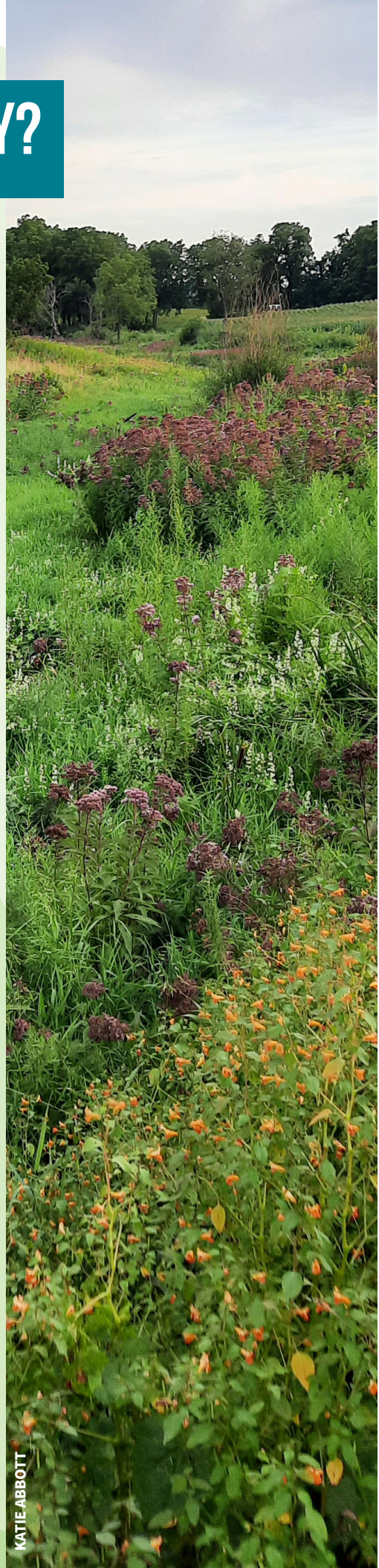
Iowa County is home to some amazing and rare plants and animals, especially in our prairies, grasslands, and oak woods, but many of these wild species are struggling. Both natural and working lands are needed in our landscape. We are fortunate that there are plenty of examples of biodiversity and profitable farms thriving together, including Twin Crix farm featured on the next page.

Every bit of habitat helps, and rewards us with benefits of improved soil, water, ecological services, recreation, and beauty. Read on for some tips and examples for integrating biodiversity into farming operations, and as always don't hesitate to call our office with any questions!

Katie



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BIOLOGY MATTERS

KATIE ABBOTT
COUNTY CONSERVATIONIST

“Biology matters,” stated Patrick Michaels at a recent field day about biodiversity. Patrick is owner and operator of Twin Crix Farm in Wyoming township. Biodiversity simply means the variety of living things in a particular location. Michaels led a tour of his farm and explained how and why he incorporates a variety of life into his operation, starting with life below ground.

“Much of the biological variety on a farm is the microbes and fungi in the soil,” Michaels explained. “Crops are expecting microbes to be there.” Indeed, one gram of soil can house seven to eleven billion organisms.

This underground biology is central to well-functioning soil that improves crop health and productivity. For example, soil biological processes supply approximately 75 percent of the plant-available nitrogen and 65 percent of the available phosphorus in the soil. Poor soil biology shows up in crops as nutrient deficiencies, increased susceptibility to pests and disease, poor water infiltration, and the need for higher inputs of fertilizers and pesticides.

To provide habitat for soil microbes, Michaels uses cover crops and tolerates some weeds. “You have to weigh the tradeoffs. A pure, clean corn field doesn’t provide anything.” That’s because living roots feed the soil microbes, and a variety of roots growing as much of the year as possible will provide the most benefit.

Michaels also maintains buffers that help birds and beneficial insects. He ensures a variety of plants are blooming spring through fall and considers the full life cycle of the critters. “It’s not just food, but shelter and places to raise young as well. More plants growing is more that helps a bug or bird get through a season.”

The final piece of Twin Crix Farm’s diversity focus is the types of crops grown. A low pH area was planted to u-pick blueberries, and an area too long and narrow to efficiently crop was converted to a fruit orchard. Areas between the trees may become u-pick sweet corn or leased to flower sellers.

The nearby stream buffer helps his flowering crops by attracting native pollinators. Michaels pointed out that “it takes four to eight honeybees to pollinate one berry, but it takes only one bumblebee.”



▲ Patrick Michaels explains the importance of biodiversity during a field day at Twin Crix Farm.

Where to start? “Just a little bit on the edge. Take away one tractor pass,” Michaels suggested. “Adding habitat to the edge of fields is easier and will help water quality. Small pieces can also be tucked in anywhere: odd corners, steep bits, and uneven edges. A lot of little patches will add up.”


The hum of insects, bumblebees buzzing on the wildflowers, and a successful blueberry harvest all seem to prove his point that biology matters and is beneficial to farms.

TIPS TO ADD BIODIVERSITY TO YOUR FARM:

- **PLANT ENOUGH SPECIES SO SOMETHING IS FLOWERING ALL SEASON LONG**
- **START SMALL**
- **GOOD SITE PREPARATION AND WEED CONTROL ARE IMPORTANT**
- **TAKE ADVANTAGE OF COST-SHARE PROGRAMS TO HELP YOU GET STARTED.**

CONTACT THE LAND CONSERVATION DEPARTMENT FOR INFORMATION: 608-930-9891.

◀ Left: A view of the diverse buffer at Twin Crix.



THE ECOSYSTEM BENEATH OUR FEET

SARA WILHELM
CONSERVATION SPECIALIST

Your soil is alive! It is crawling with a biological community including earthworms, insects, and microbes, which perform beneficial functions beneath our feet. Their talents include nutrient cycling, breaking down crop residues, and stimulating plant growth.

Microbial biomass is highest around the plant roots, an area called the rhizosphere. Microbial activity such as nitrogen-fixation, phosphorus break down, and suppression of pest and pathogens directly affects crop health. Microbial activity can also reduce nitrate leaching, improving groundwater quality and human health.

How can we take care of this ecosystem within the soil? Following the 5 Principles of soil health is a great way to get started.

Maximize Soil Cover – Bare soil is more likely to erode. Armoring the soil with residue or living cover protects it from the impact of rain drops and slows water so it can soak into the soil profile, rather than running off and carrying away valuable nutrients. Soil cover also adds organic matter, reduces evaporation, and maintains summer soil temperatures, which will help soil biology.

Minimize Disturbance – Loosening the soil with tillage makes it vulnerable to heavy rains and breaks up the soil structure that provides homes for microbes. Using forms of reduced tillage or no-till can maintain the soil's structure and stability.

Maximize Living Roots – The plant sugars that feed microbes are stored in roots. Having a living root throughout the year, such as a cover crop in winter and early spring, allows microbes to survive in the rhizosphere. Using cover crops also increases organic matter, provides erosion control, and provides residue for weed control during the next cash crop.

Maximize Biodiversity – Biodiversity increases the variety of organic compounds released by plants, which allows a wider variety of soil microbes to thrive and provide their full benefits to the soil. Diversifying your crop rotation by adding alfalfa, a multi-species cover crop, or another cash crop such as wheat, into your rotation can ward off harmful pests and weeds, enhance nutrient cycling, and improve overall farm sustainability.

Incorporate Livestock – Incorporating grazing into your system, whether throughout the year, or by allowing cattle to graze corn stock after harvest, has several benefits. The manure can provide food for microbes, and animals help organic matter break down through trampling. It can cut back on feed and fertilizer costs throughout the year, while controlling weed growth and dispersing nutrients through manure. Farms without livestock can still receive benefits by adding manure from a nearby farm or adding temporary fence for a neighbor's cattle to graze cover crops.

Our soil used to be filled with biological communities that could support plant life and cropland. Over time, extreme tillage, exposure of the soil surface, and high chemical use has weakened the soil's biological communities. In return, we must rely on commercial fertilizers, pesticides, and equipment to grow a feasible crop. Implementing the Five Soil Health Principles can help bring back microbial activity within the soil which can assist in rebuilding the soil system. Save time, money, and the ecosystem beneath your feet by keeping your soil alive.

Learn more about soil health and soil biology online:

<https://www.youtube.com/watch?v=kfwW6bPrQdc&t=68s>

<https://cias.wisc.edu/crop-soil/wisconsin-soil-health-scorecard/>

<https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soils/soil-health>

NEW COST-SHARE FOR SOIL HEALTH AND WILDLIFE HABITAT

Now there are more funding opportunities to improve soil health and wildlife habitat! Recent Wisconsin statute updates allow county conservation departments to provide cost-sharing for new practices:

Strip till: Tilling in narrow strips to maintain residue between rows: \$18.50/acre/year up to four years.

Conservation cover and habitat diversification: establishing and maintaining native or non-native grasses and wildflowers to provide wildlife and pollinator habitat. Limited to 20% of the field or up to 12 acres, whichever is smaller.

- Conservation crop rotation: a sequence of crops grown to reduce erosion, protect water quality, and/or improve soil health: \$10/acre/year up to four years.

- Enhancing managed grazing systems through weed management or interseeding
- Stream restoration: improving stream condition and function beyond just bank stabilization. In some cases funding is limited to 50%, and permit restrictions may apply.
- Increased cover crop rate to \$35/acre/year for single species and \$75/acre/year for multi-species (as funding allows), both up to four years.

Rates are typically 70% (unless noted) and some restrictions apply. 90% may be available for those with economic hardship.

We still provide funding for nutrient management planning, no-till, grassed waterways, stream crossings, filter strips, well decommissions, prescribed grazing, runoff control systems, and much more!

FUNDING AVAILABLE FOR NITROGEN USE EFFICIENCY ASSESSMENT

Limited funding is available for nitrogen use efficiency assessment. Assessment rates are \$750 for simple assessments and \$1500 for advanced, using Discovery Farms NUE assessment guidelines.

You can also propose your own N trial for approval by the Land Conservation Department; conservation staff will determine which incentive level would apply.

Contact our office for more info: (608) 930-9891.



Meet Anna Karels, Precision Ag and Conservation Specialist for Southern Wisconsin

I am a recent graduate of South Dakota State University where I majored in Precision Agriculture. Growing up on a farm and around agriculture my whole life, my roots run deep for agriculture, and I am so happy that I can work with producers who share that same passion.

Precision ag technology is used to make a variety of agronomic management decisions. This technology has become critically important in identifying under performing acres. My job consists of helping producers to use their farm-specific data to identify areas where management changes and conservation programs can improve the profitability of low-yielding areas.

Changes implemented because of this analysis are beneficial to wildlife habitat, soil health, water quality, and sustainability. I can provide unlimited technical support, precision ag business planning, and help navigating technical and financial incentive programs, all at no cost to you. If you have any questions or are interested in learning more, please reach out to me. My phone number is (608) 475-3510 and my email is akarels@pheasantsforever.org.

Find out more about the program at: <https://www.pheasantsforever.org/Conservation/Precision-Agriculture/Stories.aspx>

FIELD BORDERS AND GRASSED WATERWAYS

GOOD FOR CONSERVATION, BUSINESS, AND BIODIVERSITY



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Corn and soybeans are the most prevalent crops grown in Iowa County, but they can present challenges, especially on fields with steeper slopes. Keeping erosion to a tolerable soil loss with row crops requires good residue management through reduced tillage or no-till practices. Even with no-till practices, steep fields need to be planted on the contour, which can be difficult with today's large machinery. A good waterway system and field borders can help in these situations.

A lot of former headlands are now being planted to row crops up and down the slope, in line with the fence or nearby road. This can result in severe erosion, often eroding down to subsoil over time. This is where field borders can be a useful practice.

A field border is a strip of vegetative cover, usually grass, established around a field perimeter. Borders reduce erosion, provide turning space for equipment, and serve as a roadway along the field edge. Wildlife-friendly grass and legume seed mixes provide cover for ground-nesting wildlife such as songbirds, and pheasants. The legume is often alfalfa or clover, which aids soil health by fixing nitrogen and provides flowers to help pollinators. Well-timed mowing and haying can promote birds, wildlife, and pollinators while building the soil biome.

A grassed waterway is a shaped or graded channel that safely conveys water through a field without causing erosion. Grassed waterways are needed where rainfall concentrates; reduced tillage and high residue are not enough protection for these areas. Grassed waterways can provide much of the same added wildlife benefits as field borders.

Grassed waterways should have a defined bottom and side slopes. If you are finding a flat piece of grass that has erosion on both sides, it is time to rework and seed your grassed waterways.

How are these practices good for business? One farmer pointed out that these field edges are often the least productive land. This may be due to historic erosion or being close to the shade of the woods. In either case, planting and fertilizing row crops in low productivity areas leaves very little margin to make a profit, brings down the field's overall production, and costs you money.

While you are planning for next year's crops, consider planting a grass and legume mix in waterways and headlands. It can make sense for conservation and for business. Contact our office, cost-share and technical assistance may be available to you.

HOW TO ATTRACT BENEFICIAL INSECTS?

- Incorporate insect habitat around your farm, including a variety of flowers, and or plants needed by your target beneficial insects(s).
- Diversify plantings and rotations
- Only use pesticides, insecticides, and miticides when needed.
- Choose pesticides that do not harm pollinators
- Read pesticide labels and follow directions
- Minimize drift
- Avoid applying pesticides on flowering plants
- Follow the 5 soil health principles

Biological control is one component of Integrated Pest Management. For more information visit <https://vegento.russell.wisc.edu/ipm/biological-control/>.



THE BUZZ ABOUT BENEFICIAL INSECTS

SARA WILHELM
CONSERVATION SPECIALIST



Controlling crop pests and diseases has been dominated by chemical use. However, there are integrated pest management options as well, one being the use of beneficial insects. While this buzz word is relatively new, the concept of beneficial insects has been used since the beginning of agriculture.

Beneficial Insects are a diverse group that provide services such as biological pest control, pollination, and soil enrichment through decomposition and nutrient cycling. Fields used to be filled with beneficial insects, but they have lost significant habitat due to lawns, roadways, invasive weeds and brush, agriculture intensification, and increased pesticide use. It may seem easy to control harmful pests using synthetic pesticides. This tactic can be effective for short-term use, but poses concerns with human and environmental health, and builds pest resistance which increases the expense of chemical control.

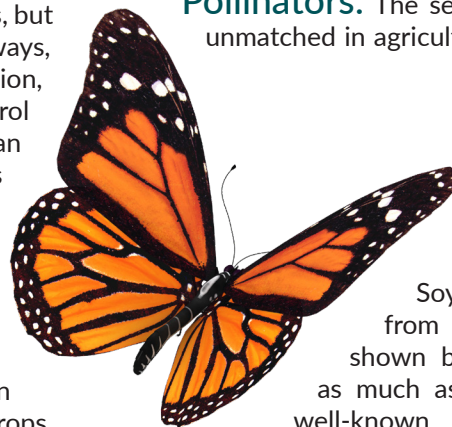
You may be wondering, "So, you want me to control my pest problems by increasing the number of insects in my fields?" The answer is simply, yes. We can pit "bugs" against "bugs" without posing harm to crops. The most important part is being able to differentiate which insects are beneficial and which are harmful to crop production. Then, use chemical control only when necessary and in controlled amounts.

Know the Three Types of Beneficial Insects:

Predators: These feed on cropland pests. Lady beetles, lacewings, spiders, and praying mantises feed on pests such as aphids, mites, and caterpillars. Ground beetles are beneficial against slugs, snails, and cutworms.



Pollinators: The service of pollinator species is unmatched in agriculture. About three quarters of the world's food crops require or benefit from pollination. Here in Wisconsin that includes apples, strawberries, cherries, blueberries, pumpkins, and more.



Soybeans can even get a boost from pollinators; studies have shown bee visits increase yields by as much as 18%. Bees are the most well-known pollinator. Others include butterflies, beetles, and flies.

Parasitoids: These organisms, typically wasps or flies, lay their eggs in or on pests; when the eggs hatch, the larvae feed on the host and eventually kill it. This category includes flies that help fight greenhouse whitefly populations. More Information found here: [Natural Enemies of Pests | https://entomology.ca.uky.edu/018](https://entomology.ca.uky.edu/018).



THERE IS A LOT OF INFORMATION ONLINE ABOUT POLLINATORS. HERE ARE A FEW WEBSITES TO START WITH:

UW-Madison Extension:
<https://hort.extension.wisc.edu/pollinators/>

WI Dept. of Agriculture:
<https://datcp.wi.gov/Documents/PPPFarms.pdf>

Xerces Society for Invertebrate Conservation:
<https://xerces.org/pollinator-resource-center/great-lakes>

Not all insects are bad; in fact, most of them aren't. For every one pest species there are 1,700 beneficial or neutral insect species. The potential of beneficial insects within sustainable agriculture is vast. By working with beneficial insect instead of against them, you can save time and money by cutting back on chemical controls. Implementing biological controls into your system allows nature to work with you in fighting against harmful agricultural pests.

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EVENTS & RESOURCES



FREE NUTRIENT MANAGEMENT PLAN TRAINING

Friday, March 14, 2025, 10AM-3PM

The Nutrient and Pest Management Program within the University of Wisconsin-Madison Division of Extension and the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) are offering a virtual training for farmers interested in writing their own nutrient management plans. This training provides both the basics of nutrient management and an introduction to SnapPlus. <https://cropsandsoils.extension.wisc.edu/upcoming-event-2025-virtual-nutrient-management-training-for-farmers/>



FARMLAND OWNER VIRTUAL MEET-UP

Wednesdays, February 5, 12, 19, & 26, 6:00-7:00PM

Sauk County, in collaboration with American Farmland Trust, is hosting a weekly, virtual meet-up series for landowners who rent out their farmland. This series will equip non operating landowners with tools to better understand the value of their farmland and what they can do to protect it. Come and learn with other farmland owners with this free series! Visit <https://www.co.sauk.wi.us/landconservation/2025-sauk-county-farmland-owner-workshop> for each day's topics and registration link.



REFINING NITROGEN APPLICATIONS FOR ECONOMIC AND ENVIRONMENTAL BENEFITS

Thursday, March 13, 2025, SAVE THE DATE

Farmers and crop advisors, join us for a half-day workshop to optimize your nitrogen use! Learn from UW-Madison experts and local farmers about practical strategies to improve profitability while protecting water quality. Topics include: Soil test interpretation, nitrogen management, economic considerations, and funding opportunities for nitrogen trials. Earn Continuing Education credits!

Stay tuned via our website and Facebook page for more details and registration information. Contact Sara Wilhelm at sara.wilhelm@iowacounty.org with any questions.