

Cornell Cooperative Extension

South Central NY Dairy and Field Crops Program

Broome * Chemung * Cortland * Onondaga * Tioga * Tompkins

DAIRY &
FIELD CROPS

DIGEST

Jan/Feb 2022

★Virtual★ Winter Crop Meeting Series

Zoom Webinars:

Fridays,

Jan. 14—Feb. 4

Wednesday, March 23

1:00—2:00 pm

Cost:

\$15—All 5 Sessions

CCA credits available for all

Register Online:

[https://scnydfc.cce.cornell.edu/
event.php?id=1773](https://scnydfc.cce.cornell.edu/event.php?id=1773)

Need help registering?

**Ask Donette @ 607.391.2662 or
dg576@cornell.edu**

Program Questions?

**Ask Janice @ (607) 391-2672 or
jgd3@cornell.edu**

January 14th—Methane's Role in Global Warming & Current and Future Opportunities to Decrease Enteric Methane

This presentation provides an update and assessment of the current state of greenhouse gases in our atmosphere and their impact on changing global climate and understanding the role of agriculture to contribute to lowering emissions.

Dr. Bob Howarth, The David R. Atkinson Professor of Ecology and Environmental Biology & Current and Future Opportunities to Decrease Enteric Methane

Dr. Thomas R. Overton, Professor & Chair of Animal Science-Cornell U. and Director PRO-DAIRY Program

January 21st—Corn Silage: 2021 Hybrid Trials and Key Considerations for 2022

The results of the 2021 trials will be presented with emphasis on the season's growing conditions influenced both crop yield and forage quality.

Joe Lawrence, Dairy Forage Systems, PRODAIRY

January 28th—The Value of Manure told with Five Stories

This presentation will share research results that answer questions such as; What is the fertilizer replacement value of manure? How does injection of manure in alfalfa impact the crop? What is the carry over benefit of manure application? And more!

*Dr. Quirine Ketterings, Cornell Spear Nutrient Management Program,
Kirsten Workman, Nutrient Management Specialist with PRODAIRY*

February 4th— Carbon Markets—A Realistic Outlook

This presentation will provide an overview of carbon-credits for farm and forest owners., as well as include different opportunities and the considerations involved before signing a carbon-credit contract.

*Jenifer Wightman, Senior Extension Associate, School of Integrative Plant Science
Soil and Crop Sciences, CALS, Cornell*

March 23rd—Net O and Sustainability –What it Means for Dairy

The U.S. Dairy Net Zero Initiative (NZI) launched in 2020 is an industry-wide effort towards achieving the U.S. dairy's 2050 environmental stewardship goals including carbon neutrality. In this presentation, Ketterings and Godber will give updates on both projects and share initial results.

*Dr. Quirine Ketterings, Cornell Spear Nutrient Management Program
Olivia Godber, Post Doctoral Research Associate*



The South Central New York Dairy and Field Crops Program is a Cornell Cooperative Extension partnership between Cornell University and the CCE Associations in six Counties.

South Central NY Dairy & Field Crops Digest



Cornell Cooperative Extension

South Central NY Dairy and Field Crops Program

We are pleased to provide you with this information as part of the Cooperative Extension Dairy and Field Crops Program serving Broome, Cortland, Chemung, Onondaga, Tioga and Tompkins Counties. **Anytime we may be of assistance to you, please do not hesitate to call.** Visit our website: <http://scnydfc.cce.cornell.edu> and find us on social media! Facebook, YouTube, & Twitter!

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We put knowledge to work in pursuit of economic vitality, ecological sustainability, and social well-being. We bring local experience and research-based solutions together, helping our families and our community thrive in a rapidly changing world.

Building Strong and Vibrant

New York Communities

"Cornell Cooperative Extension is an employer and educator recognized for valuing AA/EEO, Protected Veterans, and Individuals with Disabilities and provides equal program and employment opportunities"

To Our Readers,

As we leave the past year behind and welcome the New Year, we want to thank you for reaching out to us and participating in our meetings and events. If you made a phone call, read a newsletter or email, or hosted an on-farm educational event, we appreciate you reaching out and helping us deliver our program. Over 600 subscribers receive our bi-monthly newsletter packed with updates, technical information, and upcoming events. We have over 400 Facebook followers and blog subscribers, and a YouTube channel with 38 hours of educational videos. We rely on our dedicated Advisory Committee members to help identify needs across the dairy and crop community and guide our priorities. Over the last few years, the complexity of issues facing dairy producers has seemingly increased, from weather extremes, new labor laws, and milk market insecurity to scrutiny of operations and practices by the public, to list a few. Producers are dealing with these challenges during an extended period of tight margins. You have to love the animals and appreciate the miracle that occurs from seed to harvest of our crops to keep at the never-ending daily demands of the business. We invite you to reach out to us if you need help with any aspects of the challenges of production and the business environment. Mary Kate is adept at business topics from record keeping to assessing the health of a business or the profitability of a new practice. Betsy has been working with herds of all sizes to evaluate cow comfort and herd health and addressing issues with least cost solutions. She is our local expert on strategies for beef X dairy cross breeding. Fay has close alliances in the organic dairy world and a passion for supporting success with grazing practices. Janice is working with soils, crops, and manure. Planning for the crop season ahead is especially important this year as the availability of seed and inputs are reported to be in short supply with higher prices. A strategic approach with crop rotation and manure rates and distribution will help to contain costs. As always, your Extension Dairy and Field Crops Team is here to serve you.

South Central Dairy & Field Crops Team

Janice * Betsy * Fay * Mary Kate * Donette

Dairy Margin Coverage (DMC): Program Changes and Decision Tools for 2022 Enrollment

by Mary Kate MacKenzie, Farm Business Management Specialist

Dairy Margin Coverage (DMC) is a voluntary risk management program authorized by the 2018 Farm Bill that pays participating dairy producers when the difference (the margin) between the national price of milk and the average cost of feed falls below a certain level selected by the program participants. The enrollment period for coverage in 2022 runs from December 13, 2021 until February 18, 2022. For more details about the DMC program, or to enroll, contact your local Farm Service Agency. Additional information can be found on the program website: <https://www.fsa.usda.gov/programs-and-services/dairy-margin-coverage-program/index>

Program Changes

Two recent updates may make the DMC program more appealing to some producers in 2022. First, according to USDA, the program is “changing the DMC feed cost formula to better reflect the actual cost dairy farmers pay for high-quality alfalfa hay. FSA will calculate payments using 100% premium alfalfa hay rather than 50%. The amended feed cost formula will make DMC payments more reflective of actual dairy producer expenses.” This change will increase the cost of the feed ration used to calculate the dairy margin, and will therefore increase program payments relative to past values.

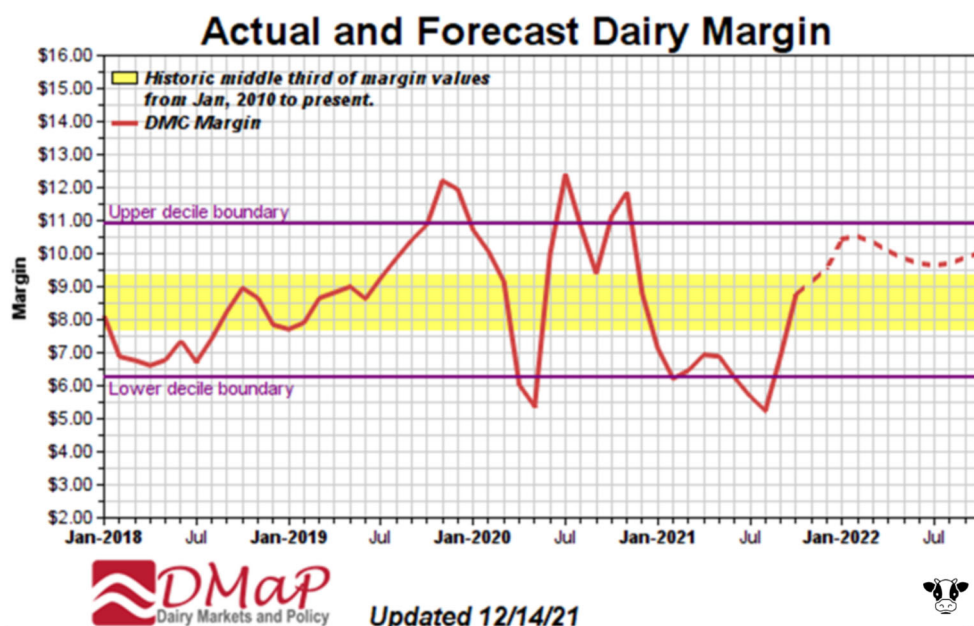
Second, FSA will allow some producers to increase their historic milk production for the first time since the program started in 2014. According to Cornell University Professor of Agricultural Economics Chris Wolf, “this change will be particularly useful for farmers who had less than 5 million pounds of production base under the program but have grown since 2013.” Supplemental DMC enrollment will allow eligible dairy operations with less than 5 million pounds of established production history to increase their base according to a formula using their actual milk marketed in 2019. Supplemental DMC coverage is applicable to calendar years 2021, 2022 and 2023. Participating dairy operations that increase their base through supplemental Enrollment may receive supplemental payments retroactively for 2021. A farm must complete Supplemental DMC Enrollment before enrolling in 2022 DMC coverage.

Decision Tools

The Program on Dairy Markets and Policy provides tools to help dairy farmers decide whether to enroll in the Dairy Margin Coverage program. One such decision aid is a chart that shows the actual dairy margin for the past several years and the forecast dairy margin for the next 12 months. This chart is updated daily to reflect current estimates of future milk and feed values taken from CME Futures prices. The current chart can be viewed here: dairymarkets.org/Tools/MILC-MPP.html

As of December 14, the forecast shows no payments for most of 2022 given the strong milk price forecast, despite rising input costs. Yet, according to Professor Wolf, “thinking about this as risk management means that it may still be entirely rational to purchase coverage. There have been many years in the past where payments did not look likely at this time the previous year but materialized because of weather or other supply or demand shocks. Historically, the DMC program has been a net positive in almost every year (2014 being the exception).”

Farms can also use an interactive DMC decision tool on the Program on Dairy Markets and Policy website to make coverage selections and view forecast results. This tool shows Net Benefit Forecasts, Price Forecasts, Historic Performance, and a Milk Price Trigger Analysis based on the selected coverage levels. This tool is free and available here: dmc.dairymarkets.org.



Give Your Farm an Ag Labor Checkup for 2022

by Mary Kate MacKenzie, Farm Business Management Specialist

If you have employees on your farm, this is a great time of year to review your labor practices to be sure your business complies with current New York State ag labor regulations. Below you will find a summary of key provisions from New York State's Farm Laborers Fair Labor Practices Act, Minimum Wage Order for Farm Workers, Human Rights Law, and HERO Act (source: New York State Department of Labor (NYS DOL), dol.ny.gov). Cornell Agricultural Workforce Development provides additional resources on regulatory compliance with state and federal labor laws here: agworkforce.cals.cornell.edu

Minimum Wage: Minimum wage across Upstate NY (excluding New York City, Long Island & Westchester) will rise to \$13.20 per hour on December 31, 2021. The Minimum Wage Order for Farm Workers provides that all workers, with certain exceptions, receive the New York State Minimum Wage. This does not include members of the employer's immediate family. The Minimum Wage Order for Farm Workers applies only to farm workers employed on farms where the total cash remuneration paid all persons employed on the farm exceeded \$3,000 in the previous calendar year.

Overtime: All farm workers, including Foreign Visa workers, must now be paid one and a half times the regular rate of pay for hours worked over 60 in a calendar week.

Day of Rest: Employers must provide at least one day (24 consecutive hours) of rest in every calendar week. The employer must designate, and notify the worker in advance of, their day of rest and, whenever possible, ensure that the day off coincides with a traditional day for religious worship. Farm workers are permitted to voluntarily work on the day of rest, provided the employer pays them at the overtime rate. Employers must keep a weekly record of hours and days worked.

Pay Notice and Work Agreement: Farm operators can use NYS DOL form LS309 "Pay Notice and Acknowledgement for Farm Workers" to satisfy the pay notice provisions of NYS Labor Law and the written work agreement provisions of the Farm Minimum Wage Order. Employers must notify employees in writing if any information in the notice changes. A fillable version of form LS309 is available to download here: <https://dol.ny.gov/pay-notice-and-acknowledgement-farm-workers-ls309-english>

Unemployment Insurance: Farm employers, and farm crew leaders under certain conditions, are required to provide unemployment insurance coverage for their employees. H-2A Foreign Guest Workers are excluded from unemployment insurance coverage.

Workers' Compensation: Farm employers, owners and operators are required to provide workers' compensation coverage for their employees, regardless of their annual payroll, and all employers are required to post the mandatory workers' compensation notice of compliance poster in both English and Spanish. Additionally, farm labor contractors, forepersons and supervisors who receive

notice of an injury must notify the employer, owner or operator of the farm where the injury occurred, and employers are prohibited from discriminating against farm laborers who request workers' compensation claim forms.

Disability Insurance and Paid Family Leave: Farm employers, owners and operators are required to provide New York's disability benefits (DB) and Paid Family Leave (PFL) insurance coverage to eligible farm laborers. Visit paidfamilyleave.ny.gov for information on PFL employee eligibility and opt-out waivers that employers must give to those who qualify. All employers are prohibited from discriminating against employees who request DB or PFL claim forms. For more information, please call **844-337-6303**.

Right to Organize: Farm workers possess the right to organize, which includes forming, joining, or assisting labor organizations, and the right to bargain collectively through representatives of their own choosing. This includes the right to engage in concerted activities (any activity, discussion, or meeting directed at improving terms and conditions of employment, or the group interests of employees), for the purpose of collective bargaining or other mutual aid or protection, free from interference, restraint, or coercion of employers. However, farm workers do **not** have the right to strike. Farm workers are protected from retaliation, including termination, if they are speaking to each other about labor conditions and organizing. For more information, please contact the Public Employment Relations Board at **518-457-6410** or see perb.ny.gov.

Sexual Harassment Prevention: Every employer in the New York State is required to adopt a sexual harassment prevention policy. The policy must include a complaint form for employees to report alleged incidents of sexual harassment. An employer that does not adopt the model policy must ensure that the policy that they adopt meets or exceeds the minimum standards. Employers must also provide employees with sexual harassment prevention training on an annual basis. NYS DOL provides a model policy, complaint form, and training materials, available here: www.ny.gov/combating-sexual-harassment-workplace/employers

Airborne Infectious Disease Exposure Prevention Plan: On September 6, 2021, Governor Kathy Hochul announced the designation of COVID-19 as an airborne infectious disease under the HERO Act. This designation requires all employers to implement workplace safety plans. The NYS DOL, in consultation with the NYS Department of Health, has developed various industry-specific model plans for the prevention of airborne infectious disease. Employers can choose to adopt the applicable policy template/plan provided by NYS DOL or establish an alternative plan that meets or exceeds the standard's minimum requirements. Employers are required to provide a copy of the adopted airborne infectious disease exposure prevention plan and post the same in a visible and prominent location within each worksite. A template for agricultural businesses is available online at dol.ny.gov/ny-hero-act.



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FARMER 2022 TAX \$CHOOL

An educational series from Cornell Cooperative Extension Farm Business Specialists offering courses designed to inform and empower farm managers to better understand their tax obligations, management strategies, and improve farm profitability.

COST: Each course has its own fee. See below for more information regarding our program scholarships

REGISTRATION: Register online by visiting tinyurl.com/ccetaxschool.

This is REQUIRED three business days in advance of the workshop. Following your registration, you will receive a confirmation email and an invitation to complete a pre-course survey. This survey will help our instructors tailor the topics covered in each course.

Tax Management for Beginning and Small Farm Businesses

*Tuesday, January 18th @ 7pm - 9pm
\$10/farm*

A one-night virtual meeting for beginning and part-time farmers that provides useful tax information enabling participants to be make better tax decisions for their business. Federal and state income taxes will be covered. Tax regulations specific to NYS will be covered as well.

Farm Specific Tax Code Benefits

*Tuesday, January 25th @ 7pm - 8:30pm
\$5/farm*

For farm businesses of all shapes and sizes, tune in to learn more about the tax advantages available for farms. This workshop will include information for the current tax season.

CAN'T MAKE IT LIVE?

Sign up any and we'll send you a recording following the workshop.

IS THIS FOR ME? *This series has options for agricultural producers of all shapes, sizes, and time in business.*

LEARN MORE, VISIT US: <http://tinyurl.com/ccetaxschool>

The Cornell Cooperative Extension Pesticide Safety Education Program (CCE-PSEP) is pleased to announce the availability of the **2022 Cornell Guide for Integrated Field Crop Management**.



2022
Cornell Guide for Integrated Field
Crop Management

*** Now Available ***

Cornell Cooperative Extension

These guidelines are not a substitute for pesticide labeling. Always read and understand the product label before using any pesticide.

Written by Cornell University specialists, this publication is designed to offer producers, seed and chemical dealers, and crop consultants practical information on growing and managing field corn, forages, small grains, and soybeans. Topics covered include nutrient management, soil health, variety selection, and common field crop pest concerns. A preview of the Field Crops Guide can be seen online at <https://cropandpestguides.cce.cornell.edu>.

Highlighted changes in the 2022 Cornell Field Crops Guide include:

- Revised pesticide options for economically important field crop pests.
- Updated corn, forage, and small grain variety trial and research data.
- Revised soil management information.

Cornell Crop and Pest Management Guidelines are available as a print copy, online-only access, or a package combining print and online access. The print edition of the 2022 *Field Crops Guide* costs \$33 plus shipping. Online-only access is \$33. A combination of print and online access costs \$46.50 plus shipping costs for the printed book.

Cornell Guidelines can be obtained through your local Cornell Cooperative Extension office or from the Cornell Store at Cornell University. To order from the Cornell Store, call (844) 688-7620 or order online at <https://www.cornellstore.com/books/cornell-cooperative-ext-pmep-guidelines>.

The Challenge of Greenhouse Gas Emissions; *an Outline by your Extension Specialist.*

by Janice Degni—Regional Extension Field Crop Specialist

I have been learning and thinking about how sustainability, carbon footprint, greenhouse gas emissions and the Net Zero initiative interact and how they relate to dairy and crop production. How will farms respond to the challenge and what will be the impact to our agricultural producers?

The National Dairy Council and Dairy Management Inc. have published their objectives for reducing the industry's greenhouse gas emissions.

"All food production comes with an environmental footprint. Responsible food production works to minimize that footprint. Given how important dairy is to the American diet, producing dairy has a surprisingly small impact on the environment.

In 2008, U.S. dairy was the first in the food agricultural sector to conduct a full life cycle assessment at a national level which showed it contributes just 2% of all U.S. greenhouse gas emissions. As of 2007, producing a gallon of milk uses 90% less land and 65% less water, with a 63% smaller carbon footprint than in 1944. Thanks to increasingly modern and innovative dairy farming practices, the environmental impact of producing a gallon of milk in 2017 shrunk significantly, requiring 30% less water, 21% less land and a 19% smaller carbon footprint than it did in 2007.

We've made progress, but we're not stopping there. The dairy community is committed to conserving natural resources and making further progress. Our 2050 goals support a vision that dairy is an environmental solution, addressing the areas where U.S. dairy collectively can have the greatest impact.

Specifically, the goals are:

- Achieve GHG neutrality ¹.
- Optimize water use while maximizing recycling.
- Improve water quality by optimizing utilization of manure and nutrients."

https://www.usdairy.com/sustainability/environmental-sustainability?gclid=CjwKCAIA-9uNBhBTEiwAN3lIND0m3JzfUSykr6htWaQ1rsV7wgHoM2Lk1OosZLeTxQ7SYbqe9hjlXoCG_0QAvD_BwE

Let's step back to get a global perspective of the issue. The United Nations succinctly describes the crisis of our changing climate.

The Situation: Climate Change

"Climate Change is the defining issue of our time and we are at a defining moment. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale. Without drastic action today, adapting to these impacts in the future will be more difficult and costly.

The Human Fingerprint on Greenhouse Gases

Greenhouse gases occur naturally and are essential to the survival of humans and millions of other living things, by keeping some of the sun's warmth from reflecting back into space and making Earth livable. But after more than a century and a half of industrialization, deforestation, and large scale agriculture, quantities of greenhouse gases in the atmosphere have risen to record levels not seen in three million years. As populations, economies and standards of living grow, so does the cumulative level of greenhouse gas (GHGs) emissions.

There are some basic well-established scientific links:

- The concentration of GHGs in the earth's atmosphere is directly linked to the average global temperature on Earth;
- The concentration has been rising steadily, and mean global temperatures along with it, since the time of the Industrial Revolution;
- The most abundant GHG, accounting for about two-thirds of GHGs, carbon dioxide (CO₂), is largely the product of burning fossil fuels." (<https://www.un.org/en/global-issues/climate-change>)

We as individuals or businesses or industries all use energy and resources that have been created with energy inputs. The energy inputs can be computed to calculate a carbon footprint.

The Nature Conservancy explains, "A carbon footprint is the total amount of greenhouse gases (including carbon dioxide and methane) that are generated by our actions. The average carbon footprint for a person in the United States is 16 tons, one of the highest rates in the world. Globally, the average carbon footprint is closer to 4 tons. To have the best chance of avoiding a 2^o rise in global temperatures, the average global carbon footprint per year needs to drop to under 2 tons by 2050. Lowering individual carbon footprints from 16 tons to 2 tons doesn't happen overnight!" (<https://www.nature.org/en-us/get-involved/how-to-help/carbon-footprint-calculator/>)

We have to make changes to our lifestyles and businesses to be part of the solution of GHG reduction. The United Nations explains the goal of limiting global warming to 1.50 Celsius? [Note 1.5^oC=34.70, 2^oC=35.60].

Global Warming of 1.5°C

In October 2018 The Intergovernmental Panel on Climate Change, IPCC, issued a special report on the impacts of global warming of 1.5°C, finding that limiting global warming to 1.5°C would require rapid, far-reaching and unprecedented changes in all aspects of society. With clear benefits to people and natural ecosystems, the report found that limiting global warming to 1.5°C compared to 2°C could go hand in hand with ensuring a

(Continued on page 7)

more sustainable and equitable society. While previous estimates focused on estimating the damage if average temperatures were to rise by 2°C, this report shows that many of the adverse impacts of climate change will come at the 1.5°C mark.

The report also highlights a number of climate change impacts that could be avoided by limiting global warming to 1.5°C compared to 2°C, or more. For instance, by 2100, global sea level rise would be 10 cm lower with global warming of 1.5°C compared with 2°C. The likelihood of an Arctic Ocean free of sea ice in summer would be once per century with global warming of 1.5°C, compared with at least once per decade with 2°C. Coral reefs would decline by 70-90 percent with global warming of 1.5°C, whereas virtually all (> 99 percent) would be lost with 2°C.

The report finds that limiting global warming to 1.5°C would require “rapid and far-reaching” transitions in land, energy, industry, buildings, transport, and cities. Global net human-caused emissions of carbon dioxide (CO₂) would need to fall by about 45 percent from 2010 levels by 2030, reaching ‘net zero’ around 2050. This means that any remaining emissions would need to be balanced by removing CO₂ from the air.

New York State has set some very aggressive goals to reduce “our” greenhouse gas emissions by 85% by 2050. The CLCPA, or Climate Leadership Community Protection Act passed in 2019, outlines the goals to reduce the production of greenhouse gases in NYS in the table that follows:

New York's Nation-Leading Climate Targets
85% Reduction in GHG Emissions by 2050
100% Renewable Energy by 2030
70% Renewable Energy by 2030
9,000 MW of Offshore Wind by 2035
3,000 MW of Energy Storage by 2030
6,000 MW of Solar by 2025
22 Million Tons of Carbon Reduction through Energy Efficiency and Electrification
Source: https://climate.ny.gov/

We see some of these goals playing out on the landscape with the increase in solar panels across the landscape. Possibly with negative impacts for agriculture when the solar panels are placed on our better and highly productive soils.

Agricultural stewardship provides benefits to the practitioner and society generally. Stewardship is the care of land in a way that reduces negative off farm impacts and safeguards the productivity of the land for future generations by controlling nutrient and soil loss which in turn protects water quality.

The 2022 Winter Crop meeting seminars will address GHG emissions in general and in dairy production and potential benefits such as carbon credit payments.



Did You Miss Our “Transition Cow Tuesdays”? Here are the links !



Nov 2-Transition Cow Nutrition This session discusses why the transition diet has a tremendous impact on cow health and milk production, and how to ensure adequate nutrition is supplied at each phase of transition. <https://youtu.be/hVbN7dUY7cg>

Presenter: Tom Overton, PhD, Professor of Dairy Management, Chairman of the Department of Animal Science at Cornell University

Nov 9-Feeding the Transition Cow The mechanics of providing feed in conjunction with transition cow behavior is a crucial aspect in providing adequate nutrition. We'll discuss factors in feeding management during this session. <https://youtu.be/pg-EZiGKT-0>

Presenters: Dave Balbian, Betsy Hicks, Margaret Quaassdorff, CCE Regional Dairy Specialists.

Nov 16-Selective Dry Cow Therapy Learn how dry cow therapy impacts transition cow management. We will discuss the basics of selective dry cow therapy. <https://youtu.be/AyxjrThB7HY>

Presenter: Daryl Nydam, DVM, Faculty Director, Atkinson Center for Sustainability, Dept of Population Medicine and Diagnostic Sciences, Cornell College of Veterinary Medicine.

Nov 23-Facility Considerations Housing can make or break a cow's transition period and her next lactation. Both her physical and behavioral needs will be discussed. <https://youtu.be/oWLXS57wBPg>

Presenter: Lindsay Ferlito, NNY CCE Regional Dairy Specialist.

Nov 30-Calving Considerations. Parturition is critical step in transition. This session will discuss the basics of cow behavior, calving assistance, and physiology. <https://youtu.be/6lj4WlissGg>

Presenters-Rob Lynch, DVM, Cornell PRODAIRY Program, Margaret Quaassdorff, NWN CCE Regional Dairy Specialist, Kaitlyn Lutz, DVM, NWN CCE Regional Dairy Specialist.

Dec 7-Post Calving Monitoring-This session will outline the steps for monitoring cow health post calving. <https://youtu.be/gM6-ethnGaQ>

Presenters: Rob Lynch, DVM, Cornell PRODAIRY Program, Margaret Quaassdorff, NWN CCE Regional Dairy Specialist, Kaitlyn Lutz, DVM, NWN CCE Regional Dairy Specialist.

Dec 14-Evaluating Transition Management-This session will cover Dairy Comp items to track and measure success of the transition program. <https://youtu.be/OFrt4wCXcvw>

Presenter-Judy Moody, Agricultural Resource Management Specialist, Dairy One.





www.cals.cornell.edu/pro-dairy/events-
programs/regional-programs

Cornell Cooperative Extension

Implementing Practical Genetics for the Commercial Dairy

**Every Wednesday from Feb 16 until March 16th
12:00pm to 12:45pm EST**

This webinar series will be presented entirely by Dr. Heather Huson, Faculty, Dept. of Animal Science, Cornell University.

Based on Dr. Huson's Applied Genetics course this program will give participants an understanding of how to use genetic information to reach their herd goals. An optional in person session will provide an opportunity for hands on practice with genetic analysis tools.

Feb 16, 12:00pm -1:00pm

Overview of Genetic Evaluations

Overview of how to obtain genetic evaluations for your herd including individual traits, targeted indexes, total performance indexes and what is included in the results.

February 23, 12:00-12:45pm

Inbreeding and Crossbreeding

Discussion on how to manage inbreeding, the effects of inbreeding depression, and how crossbreeding can be utilized.

March 2nd, 12:00-12:45pm

Management and Decision Making

Overview of how genetic evaluation results can be used in management decisions.

March 9, 12:00-12:45pm

Marketing and Industry Impact

How genetic evaluations are used in marketing, including details you should ask, and ways to select and market your own animals.

March 16, 12:00-12:45pm

Data Review

Examining genetic evaluation data, creating personalized indexes, and how to use this in management strategies.

Must attend this session to participate in the in-person workshop.

In Person Workshop

10am-2pm.

Lunch provided.

Opportunity to work with real data in basic excel sheets and in different industry software packages.

March 30 -Morrison Hall

Cornell University, Ithaca NY.

or

SUNY ATTAIN Lab in Perry NY-

date to be determined.

*This program has
been made possible
by the following
generous sponsors:*

ASAP Interiors

CHR HANSEN

Dairy Herd

Management Services

Farm Credit East

FeedworksUSA

**Keseca Veterinary
Clinic**

Lutz Feed

Perry Vet Clinic

Zinpro

**Pre-registration is
required. Registration
fee is \$50.**

REGISTER

[https://scnydfc.cce.cornell.edu/
event.php?id=1755](https://scnydfc.cce.cornell.edu/event.php?id=1755)

Questions?

Contact Betsy Hicks;

bjh246@cornell.edu

or Kathy Barrett at

kfb3@cornell.edu



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-programs/regional-programs

Cornell Cooperative Extension

Net Zero for NY Dairy What You Need to Know

February 2 and February 3, 2022
12:00pm-2:30pm ET
A two day virtual conference

This conference has gathered dairy industry experts to shed light on what “getting to net zero” means for dairy producers.

Join us if you are...

...curious about what getting to “Net Zero” means for dairy farmers and why it’s being talked about so much.

...interested in the **facts** around dairy cattle and greenhouse gases.

...looking to learn about current and future farm practices and technology that can be used to reduce greenhouse gases?

... wondering where you’ll find the time to attend a conference or workshop?

Wednesday | February 2, 2022

U.S. Dairy Net Zero Initiative: Building a Roadmap to 2050 – Karen Scanlon.

Cattle and Climate Change – Frank Mitloehner, PhD

Consumer Trends and Industry Sustainability – Sara Place, PhD

Thursday | February 3, 2022

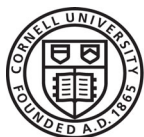
Management Practices for Managing Methane – Peter Wright.

Innovative Crop Strategies for Reducing or Sequestering GHG – Quirine Ketterings, PhD,

Nutritional Strategies for Reducing Greenhouse Gases – Tom Overton, PhD,

Using Genetics to Impact Green House Gases – Dr. Christine Baes or Research Associate.

Dairy Producer and Industry Panel



Cornell CALS
College of Agriculture and Life Sciences

Presenters:

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Herbicide Shortage – How To Plan For The 2022 Growing Season

By: Bill Johnson, Marcelo Zimmer and Bryan Young; Orig. Printed: 10/8/2021 in Issue: [2021.27](#)

By now I suspect everyone has heard the warnings to expect spring crop needs to be in short supply and with high prices. The list includes seed, fertilizer, and crop protectants. This article from Bill Johnson and company, Purdue University weed scientists, provides recommendations for weed control strategies in light of shortages or glyphosate (RoundUp products) and glufosinate (Liberty Link crops). A recent tweet from U of Wisconsin, Rodrigo Werle, warned of 2,4-D and clethodim shortages in 2022. Next month we'll feature Dr. Johnson's recommendations for terminating cover considering expected herbicide shortages. -Janice Degni

October 8, 2021—There is a lot of speculation about a herbicide shortage for the 2022 growing season, which will impact weed management decisions starting with fall applications. The two main active ingredients that we're hearing about right now are glyphosate (Roundup, others) and glufosinate (Liberty, others), both associated with an increase in cost. There will likely be limited supplies of other pesticide active ingredients as well, but in the short term, a shortage of these two active ingredients poses some major challenges for corn and soybean production. The purpose of this article is to discuss ways to minimize the impact of herbicide shortage on corn and soybean production in the Midwest. As you search for alternatives to these two herbicides you may have already determined that weed control guides produced by University Extension and Industry will become your most important tool for planning your herbicide purchases for many years to come. To access the Weed Control Guide for Ohio, Indiana, and Illinois, follow this link - <https://extensionpubs.osu.edu/2022-weed-control-guide-for-ohio-indiana-and-illinois-pdf/>.

First, what is causing the shortage? There are several different factors which are impacting this issue. In no particular order, the reasons for the herbicide shortage include a decline in number of laborers to unload tanker ships at gulf ports, lack of truck transportation from the ports to get the ingredients to U.S. formulation plants or formulated products to the retailers, reduced supplies of some of the inert ingredients of the formulation, shortages of materials to make containers and packaging, and Hurricane Ida that damaged a glyphosate production plant in Luling, LA (<https://www.agweb.com/news/business/technology/hurricane-ida-idles-largest-glyphosate-production-plant-us>).

Regardless of the cause, it is also important to consider herbicide costs. We are hearing that glyphosate prices will be in excess of \$80/gallon. So, even if there is not a shortage, you should plan your weed control strategies for the next growing season to accommodate a limited availability because of supply or price of these two active ingredients.

It is important to point out that the demand for glyphosate will be considerably less in a conventional till system than in a no-till system. Glyphosate is arguably the most important herbicide that facilitates no-till crop production. It's even more important in

systems where cover crops are used and need to be terminated before corn or soybean planting. Therefore, one simple way to reduce reliance on glyphosate is to simply go back to using tillage for fall and early spring weed control. This practice will be very effective for controlling the weeds emerged at the time of tillage, but some farm operations may not be set up for the extra equipment, labor, and fuel needed to do this on a widespread basis. In addition, replacing burndown herbicides with tillage threatens soil conservation practices. Glufosinate demand, on the other hand, will not be impacted as much by choice of tillage system since we don't use glufosinate in our fall or spring burndown application, and not much is used in corn. There is some glufosinate used in delayed burndown situations. However, we mostly use glufosinate postemergence in soybeans after the crop and summer annual weeds have emerged.

If you're not interested in returning to widespread use of tillage, keep in mind that you are looking for ways to control winter annual weeds before planting and control grass weeds with other herbicides to decrease reliance on glyphosate for postemergence grass weed control. Secondly, regardless of tillage system, you want to build a solid residual program as the backbone of your weed control strategy to reduce reliance on using glyphosate postemergence in the crops. In the next section of this article, we will outline some weed control considerations based on the type of tillage system you are in and the weeds to be controlled at different times of the year.

Fall Applied Herbicides for Winter Annuals on No-Till Ground

If you are a cover crop user, plant high biomass producing covers that include cereal rye for horseweed suppression. Suppression of winter annuals other than horseweed can be somewhat variable, but we usually have better results if biomass production is high in the fall. If legumes are not planted with the cereal rye, we can also use 2,4-D or dicamba in the fall to control winter annual broadleaf weeds that emerge before winter freeze up. Weed control benefits from high biomass cover crops can also be realized for the 2022 growing season as well. We occasionally see some suppression of waterhemp and annual grasses as well with high biomass cover crops.

If you are not a cover crop user and you use fall applied herbicides for winter annuals, consider taking out glyphosate and just using 2,4-D + dicamba mixtures this fall **IF** you only have broadleaf weeds [chickweed, henbit/deadnettle, shepherd's purse, field pennycress, mustard species, cressleaf groundsel, dandelion (which is a perennial), poison hemlock (a biennial), etc.] in your fields. If you have grass weeds (annual bluegrass, Carolina foxtail, false timothy, others), and they are small and actively growing, you can use reduced rates of glyphosate to control the grasses and rely on 2,4-D + dicamba mixtures to control the broadleaf weeds. Keep in mind

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that if you mix reduced rates of glyphosate with 2,4-D, dicamba or both, grass control can be compromised (herbicide antagonism). So, make those applications on a warm day and be sure to add AMS to the mix to minimize the risk of herbicide antagonism. In addition, we have observed that the addition of saflufenacil (Sharpen, others), can help speed the activity of glyphosate on some annual grass species. Again, if you are reducing the rate of glyphosate to conserve your supply, adding a saflufenacil product might improve the activity of glyphosate. Remember to use MSO and a nitrogen source with saflufenacil for optimum foliar activity.

There are other active ingredients that provide some control or suppression of winter annual grass weeds and can be used in the fall, such as paraquat, clethodim (Select, others) and rimsulfuron (Resolve, Basis, Crusher, others). These herbicides will be a bit more limited in the spectrum of weeds controlled compared to glyphosate. Therefore, make sure to properly identify the weeds present in the field and check if the weed species found are listed on labels of these products. Paraquat is commonly used with metribuzin (Sencor, TriCor, others) and 2,4-D or dicamba for fields going to soybean. For fields going to corn paraquat + simazine (Princep, others) + 2,4-D or dicamba would be an effective broadspectrum treatment. If you are using a clethodim or rimsulfuron product instead of paraquat, add 2,4-D or dicamba to help with broadleaf weeds.

Spring Applied Herbicides for Winter Annuals and Early Emerging Summer Annuals on No-Till Ground

For no-till corn acres, we have to design a program to 1) control the winter annual and early spring summer annual weeds that have emerged, 2) fit the crop being grown that summer, and 3) factor in the fairly long list of residual premixes that might have some combination of atrazine, isoxaflutole, mesotrione, rimsulfuron or thiencazabone, metribuzin, or saflufenacil in them. All these herbicides have some foliar activity on early spring weeds and fit into a no-till burndown scenario. Isoxaflutole, rimsulfuron, and thiencazabone have foliar and residual activity on grasses and will control a few selected broadleaf weeds. Metribuzin, saflufenacil, and mesotrione have foliar and residual activity on a key no-till weed, horseweed (aka marestail), and can also help with waterhemp and Palmer amaranth control. A group 15 herbicide (metolachlor, dimethenamid, pyroxasulfone, acetochlor) is also needed to form the backbone of the soil residual grass and small seeded broadleaf weed control program for the season.

As we get closer to the 2022 growing season and start planning for control of summer annual weeds it will be important to assess your supply of these active ingredients and build the backbone of your weed control program around full rates of residual herbicides so you can minimize reliance on postemergence herbicides. As mentioned in the introduction, there are many good references available to help you determine which residual herbicides best fit the weed species you are battling. Consult the weed response table such as these to choose the best product for each specific

field. If you can build a weed control program that only requires one postemergence treatment of glyphosate or glufosinate, and possibly at a rate less than the maximum labeled rate, that will allow you to stretch glyphosate and glufosinate supplies over more acres. However, don't fall into the trap of thinking you only get one application of these herbicides so you should wait for the last weed flush before you spray. With limited supply and increased costs, the best route is to use a reasonable rate on small weeds with the best adjuvant system and application method possible. Use residual herbicides to manage other weed flushes.

Here are a few scenarios to consider based on the problematic weeds in a specific field. Keep in mind we do not endorse any specific product or company. We are simply pointing out which products, based on the active ingredients they contain, would be a good fit with the weed pressure we have mentioned. All the University Extension weed control guides and most of the guides written by the crop protection industry have weed efficacy tables in them to help the user determine which products provide acceptable control of the most common weeds in the specific geographical area covered by the guide. Of course, these guides assume all herbicide label recommendations are followed for the application and herbicide resistance in the weed population has been considered.

Example 1. A no-till corn field with lots of annual bluegrass or Carolina foxtail, and summer annual grass pressure. If the grasses are 3 inches or less in height, and you have a limited supply of glyphosate, consider using this combination for your burndown treatment – Corvus or Revulin Q at a full labeled rate. The thiencazabone + isoxaflutole in Corvus or the rimsulfuron + mesotrione in Revulin Q will control small annual grasses. Add atrazine (1 to 1.5 lb ai/A) and possibly a group 15 herbicide to boost residual broadleaf and grass weed control. If you have some emerged broadleaf weeds present when the burndown treatment is made, add saflufenacil, 2,4-D or dicamba to the mixture. For weeds that break through the residual treatment, use a postemergence treatment of glufosinate + dicamba or glyphosate + dicamba and add a 1/3 to 1/2 label rate of the atrazine premix products that contains a group 15 herbicide to lengthen the window of residual weed control in the crop. We know many growers won't use glufosinate in corn since it isn't always clear what hybrids are Liberty Link and they want to save the glufosinate for soybeans. You can also use Revulin Q, Realm Q, Armezon, Armezon PRO, Impact or Laudis for postemergence grass control if glyphosate or glufosinate is not available.

Example 2. What if the field in example 1 will be planted to soybean, rather than corn and is also infested with horseweed and waterhemp? The good news here is that there are several premixes available that have metribuzin in them. We have always observed better activity out of paraquat by adding a triazine herbicide to it and by simply adding paraquat and 2,4-D to a premix that has metribuzin in it, you have a ready-made, broadspectrum burndown and residual herbicide. The soybean premixed products that would fit this scenario include Authority MTZ, Canopy,

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Dimetric Charged, Intimidator, Matador, Boundary/Moccasin MTZ. The second choice would be to use clethodim for grasses + other herbicides to control broadleaf weeds. Clethodim can be used for emerged grasses, but activity will be slower in cool weather conditions and can also be antagonized by other components of the mixture (2,4-D, dicamba, acetochlor). Rimsulfuron can be used 30 days or more before planting soybean and may help with winter annual grasses, providing some residual control of summer annual grasses as well. Use of rimsulfuron would be best suited to STS or Bolt soybeans since they will be more tolerant to rimsulfuron. The postemergence weed control program will be based on the soybean trait planted and the weeds that break through the residual herbicide. Adding a group #15 residual herbicide (metolachlor, dimethenamid, pyroxasulfone, acetochlor) to the postemergence application will be the backbone of your small seeded broadleaf and grass control program, and reduce the need for a second postemergence application later in the growing season.

Example 3. A no-till corn field with no winter annual grasses, but lots of horseweed (marestail), giant ragweed, and lambsquarters have started to emerge. The field has a history of having some foxtail, fall panicum and waterhemp, but the summer annual grasses and waterhemp don't emerge as early as the ragweed and lambsquarters. Use Acuron, Lumax/Lexar, Resicore, or Verdict. Add saflufenacil (not needed with Verdict since it contains saflufenacil), 2,4-D or dicamba to each of them for additional foliar activity on broadleaf weeds. Add atrazine to Resicore or Verdict for additional residual control of broadleaf weeds. If summer annual grass weeds have emerged, add paraquat or a pint/A of glyphosate to the mixture. If saflufenacil is added to one of the premixes that doesn't contain saflufenacil, add 20-30 gallons of UAN (if corn has not emerged) and MSO for burndown of small grasses and broadleaves. For weeds that break through the residual treatment, use glufosinate + dicamba or glyphosate + dicamba and add a 1/3 to 1/2 label rate of the atrazine premix product that contains a group 15 herbicide to lengthen the window of residual weed control in the crop. You can also use Revulin Q, Realm Q, Armezon, Armezon PRO, Impact or Laudis for postemergence grass control if glyphosate or glufosinate is not available.

Example 4. What if the field in Example 3 will be planted to soybean, rather than corn? In this field, broadleaf weeds (winter and summer annuals) and horseweed are the target with the burndown treatment. So, start off by determining which soybean trait will be planted. If it is non-GMO or straight Roundup Ready or Liberty Link, remember that there will be a preplant interval for 2,4-D or dicamba. The interval for 2,4-D will be shorter for these soybean traits. So, a mixture of 2,4-D + saflufenacil or metribuzin for broadleaf weeds will be the backbone of the burndown program and all that is likely needed for burndown if no grass weeds are present. As mentioned above, we will want to build the weed control program around a broadspectrum residual herbicide, so simply adding 2,4-D to premixes that contain saflufenacil (Verdict, Zidua Pro) or metribuzin (Authority MTZ, Canopy Blend, Intimidator,

Kyber, Matador, Boundary/Moccasin MTZ, Trivence, or Panther Pro) makes the most sense and would require a 7 to 30 day preplant interval depending on the 2,4-D formulation and rate used. If you planted Enlist beans, you would use the same strategy, but no preplant interval is required if you use the 2,4-D choline (Enlist One) product from Corteva. If you plant Xtend soybeans, simply replace 2,4-D with an approved dicamba product (Engenia, Xtendimax, or Tavium) and no preplant interval is required for that trait. The postemergence weed control program will be based on the soybean trait planted and the weeds that break through the residual herbicide. Adding a group #15 residual herbicide to the postemergence application will be the backbone of your small seeded broadleaf and grass control program and reduce the need for a second postemergence application later in the growing season. Next week, we will cover recommendations for Examples 5 and 6 outlined below.

Example 5. A field is planted to multi specie mixture of cover crops that contains cereal rye, (and to a lesser extent annual rye) and other species which include legumes and brassicas. The cover crops that will need to be terminated prior to corn.

Example 6. A field is planted to multi specie mixture of cover crops such as cereal rye, (and to a lesser extent annual rye) and other species which include legumes and brassicas. The cover crops that will need to be terminated prior to soybeans.

These are just a few examples of some different scenarios to consider when building a weed control program. Keep in mind that the concern isn't just the limited supply of glyphosate and glufosinate, but the increase in cost, especially glyphosate which may be 4X the cost just a few years ago, which makes other herbicide options much more feasible that you didn't consider previously. We will add other examples to this discussion as we write our future newsletter articles through the winter months. We will also be covering this topic in our winter county meetings as well.

Other Tips:

- Target using "regular" rates of glyphosate to stretch supply. Instead of using 32 or 44 oz/acre of a Roundup brand product, consider using the standard rate on the label such as 22 oz/acre for Roundup PowerMax (Note – Roundup PowerMax3 will be launched in 2022 and the standard rate is 20 oz/acre; equivalent to 22 oz/acre of the old R. PowerMax formulation).
- Identify glyphosate or glufosinate premixes that may be in greater supply or at lower relative costs compared to solo glyphosate and glufosinate products.
- Failure is not an option for herbicide applications. Make sure you optimize your herbicide applications using the best methods (GPA, spray nozzles, etc.), adjuvants, and minimal weed size for foliar applications.
- Substitute alternative corn post herbicides that control grasses and broadleaves, if they don't include a residual group 15 herbicide, add one to the postemergence mixture.
- Cultivate if needed and/or possible.
- Hand weed escapes prior to the weeds setting seed.





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Are Persistent Biocontrol Nematodes (Entomopathogenic) For The Control of Corn Rootworm an Economic Benefit For Your NY farm?

By Elson Shields and Tony Testa, Dept of Entomology, Cornell University, Ithaca

Research in NY has shown that corn rootworm can be controlled for multiple growing seasons with a single application of native persistent biocontrol nematodes, known also as Entomopathogenic nematodes. On NY farms with a good crop rotation between corn and other crops, research shows biocontrol nematodes can be used to replace the more costly GMO-rootworm trait corn. On NY farms where GMO-rootworm traits are failing, the addition of biocontrol nematodes to the field as an additional management tool restores the yield to the pre-rootworm damage level and targets the resistant rootworm larvae who have survived the toxin in the plant but should not be used alone. In fields which are long-term continuous corn, biocontrol nematodes should only be utilized with corn containing rootworm traits because these two different modes of mortality for rootworm reduce the long-term selection for resistance.

What are Biocontrol Nematodes?

Biocontrol nematodes are microscopic round worms in the soil which only attack insects in the soil or on the soil surface. Biocontrol nematodes are different from the plant parasitic nematodes which attack crops. The biocontrol nematodes discussed here are native to our Northern New York (NNY) soil where they were originally collected. The nematode insect infective stage (called the Infective Juvenile or IJ) moves about in the soil in search of insect hosts, finding the insect using CO₂ gradients and other chemical attractants. When an insect host is located, the IJ enters the insect through a breathing opening called a spiracle and enters the insect body cavity. Once inside, the nematode releases a bacteria which kills the insect. The nematodes then molt to adults and produce offspring on the nutrition provided by the dead insect. When the insect resources are consumed, a new set of IJs are released into the soil to search for additional insect hosts. An average sized insect larvae will produce between 100,000 and 200,000 new IJs.

What do these biocontrol nematodes attack?

This entire technology was developed to reduce snout beetle (ASB) populations to sub-economic levels in NNY. ASB is costly to the dairy farmer, commonly killing alfalfa stands in a single year. To date, more than 150 NNY farms have applied biocontrol nematodes to >25,000 acres to successfully reduce snout beetle to a sub-economic level and increase stand life back to 3-5 years.

Corn Rootworm: During the research developing the use of native persistent biocontrol nematodes to reduce ASB populations in NNY to sub-economic levels, it was discovered that biocontrol nematodes applied in alfalfa for snout beetle control also carryover to attack corn rootworm when the field is rotated to corn. Biocontrol nematodes are completely compatible with all of the Bt-RW traits,

killing the Bt toxin survivors. Research has shown that after 4 years of corn, the populations of biocontrol nematodes in the field are high enough to attack alfalfa soil insects when the field is rotated back to alfalfa.

Wireworm and White grubs: Since NY alfalfa culture usually incorporates grass into the mix, NY fields usually have a population of wireworms and native white grubs in the field when the field is rotated to corn. Often, these insects then cause stand problems in 1st year corn. If the field has been inoculated with biocontrol nematodes for control of either snout beetle or rootworm, the biocontrol nematodes also attack these insects and reduce their impact on seedling corn when rotated to corn.

Does the soil type influence the species of biocontrol nematode applied?

NY research data indicates a mix of biocontrol nematode species gives better control of soil insects than a single species alone. The reason for these results is each nematode species has a preferred section of the soil profile where it is most effective. For example, *Steinernema carpocapsae* prefers the top 2-3" of the soil profile and dominates this region. If *S. carpocapsae* is the only nematode used, insect larvae below the 2" level escape attack. The addition of a second nematode species which prefers the low portions of the soil profile compliments the presence of *S. carpocapsae* and gives more complete control of soil insects throughout the plant root zone. In sandier soils, the top 2" often become too dry for a biocontrol nematodes to move and attack insect larvae. In these soils, a nematode species mix which include *S. carpocapsae* would be ineffective and requires a different mix of nematode species.

Our recommendations for biocontrol nematode species mixes for soil types:

Clay loam – silt loam soils: *S. carpocapsae* + *S. feltiae*

Sandy loams – sand soils: *S. feltiae* + *Heterorhabditis bacteriophora*.

What are the differences between the entomopathogenic (biocontrol) nematodes purchased on the web from the Persistent NY strains mentioned here?

Biocontrol nematodes purchased from commercial sources have lost the ability to persist in the soil after application for a significant length of time. Many commercial strains persist in the soil for only 7 -30 days and require application timing to be closely matched with the presence of their target host, requiring an annual reapplication. In contrast, the NY persistent strains of Biocontrol Nematodes are carefully cultured to maintain their evolutionary ability to persist

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across hostile conditions such as the lack of available hosts and temperature extremes (dry soil conditions, winter). Additionally, NY persistent strains are re-isolated from the field every two years so the nematode cultures do not become "Lab strains", but remain adapted for NY agricultural soil conditions. New York persistent strains are applied once and persist in the field for many years following application. Not surprising because they were isolated from NY soils where they have evolved for a few million years. If the NY persistent strains are cultured carelessly, they also quickly lose their ability to persist and are no better than the commercial strains purchased off the web.

How are biocontrol nematodes applied?

There are two major ways to apply biocontrol nematodes to NY fields.

Commercial Pesticide Sprayer: Thousands of acres have been inoculated using slightly modified pesticide sprayers of all sizes from 30' booms to 100+' booms. To use these sprayers, the following guidelines need to be followed.

1. A good washing of the sprayer (similar to changing pesticides)
2. All screens and filters removed (nematodes cannot pass through them)
3. Nozzle change to a stream type nozzle to shoot a concentrated stream of water to the soil surface through any vegetation.
4. 50 gpa minimum
5. Application in the evening or under cloudy/rainy conditions (nematodes are sensitive to UV)

Liquid Dairy Manure: This method was recently developed and offers some advantages over using a pesticide sprayer. The biggest limitation is the time between adding the nematodes to the liquid manure and field application. After adding the nematodes to the manure, the manure needs to be spread in the field within 20-30 minutes. Longer intervals result in the nematodes dying from the lack of oxygen.

The advantages of using liquid dairy manure as the carrier are 1) no extra trips over the field, 2) can be applied any time of the day and 3) no extra costs.

Application timing: Biocontrol nematodes which are persistent, can be applied anytime during the growing season when soil temperatures are above 500F. Ideally, nematodes should be applied when there are hosts in the soil so they can immediately go to work and reproduce. However, the NY persistent strains have the ability to sit and wait for months before needing to attack hosts and reproduce. We request that no nematode applications be made after September 15th due to cooling soil temperatures and limited time to find hosts before winter. Applications are made to the soil surface under conditions of low UV exposure (late in the day, rainy/overcast days, in cover crops where there is adequate ground shading). Field tillage has no impact on biocontrol nematodes. In addition, if nematodes are applied before field tillage, the movement of soil during tillage helps the nematodes redistribute throughout the field and help them fill in the gaps which may occur during application.

Where can I get Biocontrol Nematodes which are adapted to NY and will persist across growing seasons?

Currently, there are two sources to purchase biocontrol nematodes adapted to NY growing conditions with their persistent genes intact to persist across growing seasons (and winter) in NY.

1. Mary DeBeer, Moira, NY. cell: (518) 812-8565
email: md12957@aol.com
2. Shields' Lab, Cornell University: Tony Testa
email: at28@cornell.edu cell: (607) 591-1493



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Events Calendar; For more information, visit <https://scnydfc.cce.cornell.edu/>

Fridays, Jan 14– Feb 4 Wed, March 23	Winter Crop Meeting - Zoom Meetings from 1:00—2:00 pm; \$15 all sessions FMI and Registration: https://scnydfc.cce.cornell.edu/event.php?id=1773
Tues, January 18 7—9 pm	Tax Management for Beginning and Small Farm Businesses ; \$10/farm; Virtual FMI: http://tinyurl.com/ccetaxschool
January 19 & February 15 7-8:30 pm	Ag-Coffee Hours: Developing Farm Goals for a Successful 2022 & Conversation Tillage and Soil Health FMI: http://cortland.cce.cornell.edu/events
Tues, January 25 7—8:30 pm	Farm Specific Tax Code Benefits ; \$5/farm; Virtual FMI: http://tinyurl.com/ccetaxschool
January 21, February 4 & 18 11am - 12 pm	Onboarding Webinar Series for Farm Employers ; Virtual; No charge FMI: http://tinyurl.com/AWOnboarding2022
February 2 - 3 12—2:30 pm	Net Zero for NY Dairy - What You Need to Know ; Virtual; No charge FMI: https://scnydfc.cce.cornell.edu/event.php?id=1755
Weds., Feb. 2 - March 16 12 –1:00 pm	Field Crop Weed Identification and Control Series 2022 ; Virtual; No charge FMI: https://scnydfc.cce.cornell.edu/event.php?id=1758
Tuesday, February 8 10—2 pm	New York Certified Organic Meeting ; Offering Hybrid; No charge FMI: https://scnydfc.cce.cornell.edu/event.php?id=1786
Weds., Feb 16—March 16 12 - 12:45 pm	Implementing Practical Genetics for the Commercial Dairy ; Virtual; \$50/person FMI: https://scnydfc.cce.cornell.edu/event.php?id=1755