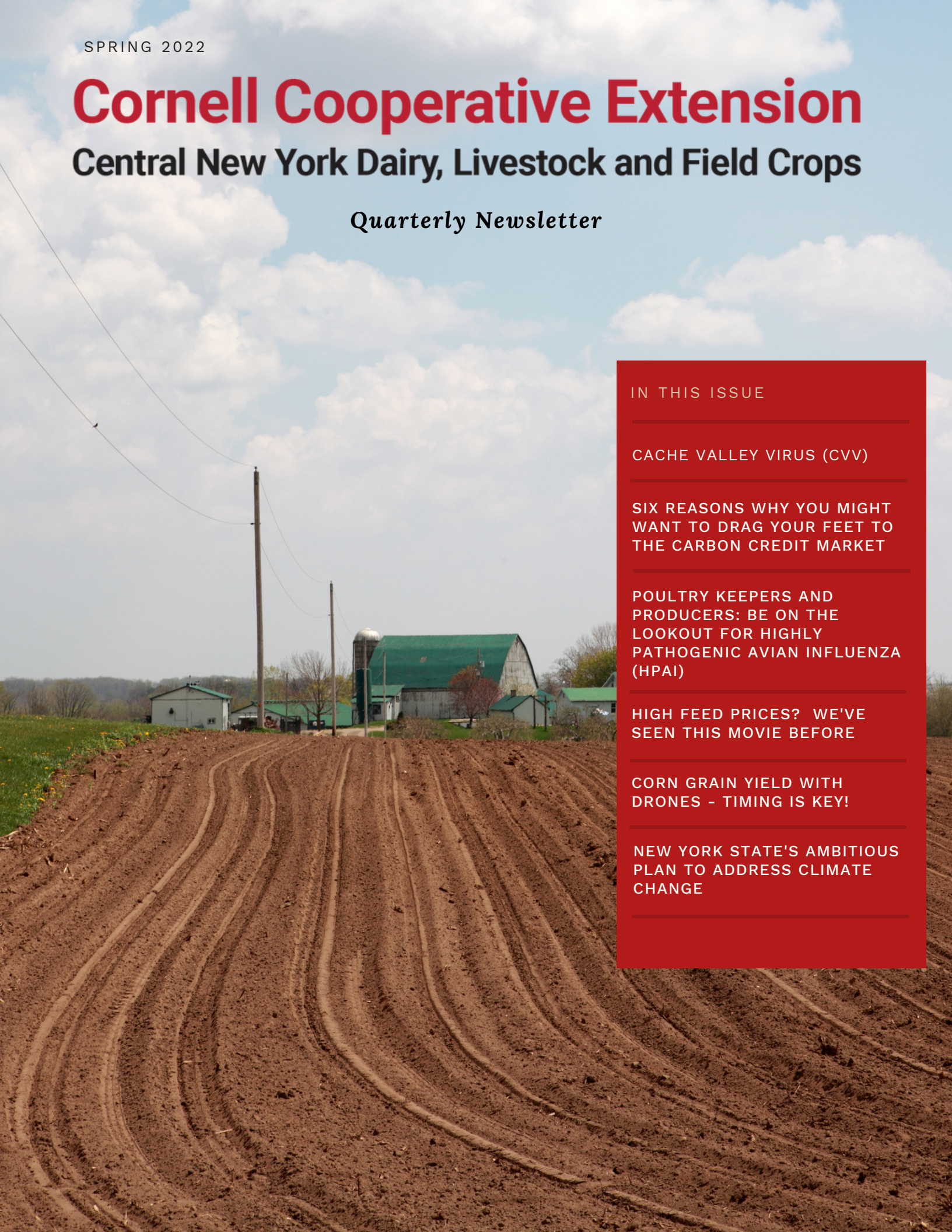
SPRING 2022

Cornell Cooperative Extension

Central New York Dairy, Livestock and Field Crops

Quarterly Newsletter



IN THIS ISSUE

CACHE VALLEY VIRUS (CVV)

SIX REASONS WHY YOU MIGHT WANT TO DRAG YOUR FEET TO THE CARBON CREDIT MARKET

POULTRY KEEPERS AND PRODUCERS: BE ON THE LOOKOUT FOR HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI)

HIGH FEED PRICES? WE'VE SEEN THIS MOVIE BEFORE

CORN GRAIN YIELD WITH DRONES - TIMING IS KEY!

NEW YORK STATE'S AMBITIOUS PLAN TO ADDRESS CLIMATE CHANGE

Cache Valley Virus (CVV)

By Rachael Cately, DVM, Tufts Veterinary Field Service

By now, many of you have probably at least heard of Cache Valley Virus (CVV) if not experienced it first-hand. It's a disease that has intermittently affected sheep and goat farms in the Midwest and West in previous years, and this year it is wreaking havoc on many sheep farms in the Northeast. Upwards of 50% of lamb crops are being reported lost due to this crippling disease. As a result, don't expect to see many winter and spring lambs from this region hitting the sales this spring or next year as yearlings.

History & Reemergence

Cache Valley Virus was first discovered in 1956, when researchers isolated it from the bodies of mosquitoes. These mosquitoes came from Cache Valley, a region in northern Utah, which is how the virus gets its name. In the late 80s, researchers found the virus to be the cause of malformations of lambs in Texas. Since then, research has shown that the virus can infect and spread among deer, cattle, and horses without causing fetal malformations. Humans can become infected and sick too, but human patients do not contribute to the spread of the disease. A new strain emerged in the Northeast in 2010, and the incidence of CVV has been increasing ever since. This strain appears to originate from southern Mexico, demonstrating just how easily spread the new version is.

Transmission

Mosquitoes are an important piece of the puzzle! These tiny pests carry CVV and spread it to mammals when they bite and feed. Periods of drought likely decrease mosquito presence and CVV transmission, whereas wet and humid periods cause an increase. Multiple years in a row of low incidence leads to extremely vulnerable populations of does/ewes. When a wet season comes, viral resurgence leads to a seemingly catastrophic incidence level during the next kidding/lambing season. The 2020 drought followed by New England's very wet summer of 2021 is a prime example!

Symptoms

An infected animal does not usually show signs of sickness, but if a sheep or goat is bitten while she is pregnant, there can be huge detrimental effects on the fetuses. These effects depend on when during her gestation the ewe or doe is infected, and most of the effects occur when a dam is bitten between roughly 27 and 54 days gestation. If she is bitten on the earlier side of that period, she is likely to abort her pregnancy and come back into heat. If she is bitten in the middle of that period, her offspring will be born with brain and skeletal deformities, and only skeletal deformities if bitten toward the end of that period.

Continued on next page

What if she's bitten multiple times by infected mosquitoes during that window of pregnancy? It's possible that one lamb or kid is affected differently than another in that same uterus!

The first sign that CVV is affecting your flock could be that some of your dams that are suspected or confirmed pregnant come back into heat and/or are rebred 45-60 days after they were originally bred. Later signs could include stillborns demonstrating any of the following:

- Arthrogryposis - bent legs and fused joints
- Scoliosis/torticollis - twisted spine
- Hydrocephalus/hydranencephaly - enlarged skulls with decreased brain tissue and reduced brain function
- Underdeveloped muscles
- Parrot mouth
- Cryptorchid - undescended testicles
- Mummified fetuses

Occasionally, lambs or kids are born alive with some of the signs listed above, or they may just appear abnormally weak or drowsy.Remember, multiple offspring from the same dam may demonstrate different signs.

Diagnosis

CVV can be difficult to diagnose because the virus is no longer actively present in the dam or fetus when the malformed fetuses are delivered. Diagnosis is best made by identifying antibodies to the virus in either the small amount of chest fluid surrounding the lungs or in the heart blood of a stillborn.Antibodies can also be found in a blood sample from the dam, but do not necessarily mean she was infected during the specific pregnancy in question. If you suspect CVV and would like to pursue testing, keep the fetus in question cold, and contact your veterinarian to arrange sample collection and submission to Cornell Veterinary Diagnostic Laboratory.

Prevention

Preventing future outbreaks of CVV is a hot topic right now. Unfortunately, there is no vaccine for this disease. Researchers suspect that small ruminants develop natural immunity following infection, which should protect subsequent pregnancies and prevent future offspring from being affected. This is not a proven fact; future research should confirm or deny this suspicion.

In order to limit disease in your flock, minimize exposure to mosquitoes during and shortly after the breeding season.Apply insect repellants (sprays, pour-ons, fogs, tags, etc), or keep females in the barn under fans during their susceptible time (from when they are bred up until 60 days pregnant). You might also consider planning breeding to avoid peak mosquito season, which is generally August through October. Unfortunately, mosquitoes seem to be around longer each year due to early, warm spring days and delayed frosts. One suggestion that seems to be gaining a lot of popularity is to focus on breeding your ewes for fall lambing. This ensures that most of your dams are past the 60 days bred timepoint when mosquitoes emerge, and therefore unlikely to suffer the birth defects associated with CVV. Those females who don't catch for fall lambing will likely need to still be bred during mosquito season, but having a reduced number of susceptible pregnancies helps manage the risk and reduce the impact of CVV. Lastly, hopefully we can get a vaccine engineered sometime in the near future!

Six Reasons Why You Might Want to Drag Your Feet to the Carbon Credit Market

a commentary by Katelyn Walley-Stoll, Farm Business Management Specialist, Southwest NY Dairy, Livestock & Field Crops Team

I recently attended the National Extension Risk Management Education Conference in Omaha, NE (doesn't sound exciting, but I promise that it was!). In the midst of topics related to financial analysis, succession planning, and sound farm practices were several outstanding speakers sharing research-based information on one hot topic - Carbon Credits.

Interestingly enough, we're not seeing a huge pick-up here in New York, but I am getting a lot of questions on the topic. As with any new program or initiative, there are always those early adopters that jump right in and can either see a really big payoff or troubleshoot all of the frustrations for the rest of us. However, even more so with this topic, it does seem like there are some pretty big issues at play, and the "opportunity cost" of being an early adopter might be higher than expected.

First, some background information from Iowa State University*: "A *carbon credit is a tradable asset (similar to a certificate or permit) that represents the right to release or emit carbon into the atmosphere. Carbon credits are created when entities (compared to a set baseline) reduce their carbon emissions or sequester carbon.*" So, companies can pay people to sequester carbon on their behalf (or pay a third-party aggregator). Farmers, and their carbon sequestering agricultural practices are one of their primary targets/partners. These transactions take place on the voluntary market.

For some, selling carbon credits can be a helpful and efficient way to boost/diversify farm income. Especially since most of the practices that are used to sequester carbon also provide added soil health and additional benefits to the farmstead. Now, here are some key considerations and questions that you should consider before jumping right in.

Continued on next page

*See article at
https://www.extension.iastate.edu/agdm/articles/plastina/PlaNov21.html

1. **Additionality**. Most companies will only pay for newly adopted carbon-sequestering practices. For farms that are already implementing practices like no-till, cover cropping, creating permanent pasture in marginal crop production fields, or reducing fertilizer applications - additionality means they won't qualify for selling carbon credits. Unfortunately, the hope of future carbon credits prevents some farms from implementing these soil-saving, best management practices while leaving behind those who have already done the work. Some companies will offer a one-time "look back" which will pay for practices adopted within the past 2-5 years.
2. **Complexity of Payments**. Every carbon market entity handles payments for carbon credits differently. Some will offer portions of the payment up front, after the first growing season, or within their annual lease agreements. However, others might hold portions of payment for 5+ years to ensure continued compliance. Another consideration is the type of payment. While some will simply mail a check, others might offer stock, purchase credits, "tokens", or even cryptocurrency.
3. **Stacking**. Usually, fields that are enrolled in a carbon credit program will not be eligible for other government programs or other environmental credit markets. So, if you enter into a contract selling carbon credits, and another program comes along offering payment for adopted practices, you won't be able to use those fields in the new program for a certain length of time (set in your contract). Those new programs might offer even more incentive or fit your farming practices better.
4. **Permanence**. Carbon Credit contracts can last anywhere from 1 to 10 or even 20 years. Over the length of the contract, the implemented practice will likely need to stay in place or there may be penalties and fees involved. This is an important consideration as it might take a much needed tool out of your toolbox - lost for decades like your 10mm socket. If you, for example, have an herbicide resistant weed pop up in a no-till field, how will you manage the growing weed pressure without tillage? It's not impossible, but it does bring up some interesting management decisions. What if your farm changes production or diversifies into new crops? What about your succession plan and future farm ownership?
5. **Data Management**. When selling credits, a lot of sensitive farm data will be collected. This will include things like contact information, historical cropping practices, yields, and values. It's important to clarify how your data will be protected and how it will be handled. In some situations, companies may want to share, use, or sell your data to other entities.
6. **Determining Payments**. In addition to how you'll get paid, there are some complexities with how much you'll be paid. What type of process will be used to submit soil samples or prove that carbon has been sequestered - and to measure that carbon? Some companies will have a price floor, some will pay market value, some will spread payments out over a period of time. Will you be paid a set per-acre rate, or will that vary by the amount of carbon you sequestered?

Continued on next page

I think that it's safe to say that we all see the challenges of climate change in our work every day. Sequestering carbon, and implementing best management practices in field crops production systems, will benefit soil health, farm production, and the environment as a whole. Yet, as with most things nowadays, it's important to utilize technical advisors and SOUND LEGAL COUNSEL when considering entering the Carbon Credit Market. The starting contracts that are out there are drafted by the purchasing companies and will always put their interests first - having someone on "your side" to ask questions, challenge clauses, and clarify details will be key before locking into a multi-year contract agreement.

This information is for educational purposes only and is not a substitute for sound legal counsel. Cornell Cooperative Extension is dedicated to providing research-based information to our agricultural producers. Every effort has been made to provide correct, complete, and up-to-date recommendations. Changes occur constantly and human errors are possible.

Photo by Erik A. Smith

See the article at https://swnydlfc.cce.cornell.edu/submission.php?id=1543&crumb=business|9 and contact Katelyn Walley-Stoll at 716-640-0522 or kaw249@cornell.edu

Poultry Keepers and Producers: Be on the Lookout for Highly Pathogenic Avian Influenza (HPAI)

by Amy Barkley, Livestock and Beginning Farm Specialist with the SWNY Dairy, Livestock, and Field Crops Program

Since the beginning of 2022, over 350 cases of Highly Pathogenic Avian Influenza have been identified in U.S. wild bird populations. Cases in backyard and commercial poultry flocks are on the rise, and it's important now more than ever to keep an eye out for suddenly high mortality in your flocks and to report any suspicious whole-flock illness.

What is Avian Influenza (AI)?

Avian Influenza is a highly contagious poultry virus that has the potential to cause large financial losses to the U.S. poultry industry. A highly pathogenic strain (HPAI), H5N1, last hit the U.S. in 2014-2015, and was considered the nation's largest animal health emergency. Over 200 cases of the disease were found in commercial flocks, backyard flocks, and wild birds. More than 50 million birds were affected and subsequently died or were euthanized on more than 200 farms in 15 states.

Where does it come from?

Waterfowl, both wild and domestic, act as carriers. Since the outbreak of 2014-2015, scientists have been monitoring wild bird populations, and waterfowl hunters send their harvested birds in for testing. Wild waterfowl regularly carry low-pathogenic strains of the virus, but it can easily mutate to a highly pathogenic strain, as we've seen this year.

Which flocks are affected?

Flocks of any size, from back yard to commercial, and any species can be affected.

Why should I be concerned?

Two laboratory-confirmed cases of Highly Pathogenic Avian Influenza, one in a pheasant flock in Dutchess County and one in a backyard flock in Ulster County, were identified in NYS on Thursday, February 24th. These follow the case identified in a backyard flock in Suffolk County on February 19th. These flocks have been euthanized to help control the spread of the virus.

While these are only three cases, it is anticipated that there will be many more. There are currently over 350 cases that have been identified in wild bird populations along the eastern portion of the United States. As of March 10th, 2022 there have been 26 cases in backyard and commercial poultry flocks across the eastern and central U.S.. Cases in commercial and backyard flocks will likely increase as wild waterfowl migrate northward in the coming months.

How does it spread?

HPAI lives in the respiratory and/or intestinal tract of birds. It can be picked up from contact with infected feces, surfaces, or through the air, though ariel transmission from farm to farm is unlikely. It can be transported on infected feed, clothing, or equipment. Once on the farm, the disease is readily passed from bird to bird, infecting an entire flock quickly.

Continued on next page

Common symptoms:
Any birds can be affected, but birds other than waterfowl react most strongly to the virus. Poultry infected with HPAI may show one or more of the following symptoms:

- Sudden death without clinical signs
- Lack of energy and appetite
- Decreased egg production or soft-shelled or misshapen eggs
- Swelling of head, comb, eyelid, wattles, and hocks
- Purple discoloration of wattles, comb, and legs
- Nasal discharge, coughing, and sneezing
- Discoordination
- Diarrhea

A high level of mortality without any clinical signs is known to be a hallmark of the virus. In some cases, expect 100% of the flock to die within a few days. Regardless of how the disease presents, a large portion of the birds in a flock will be affected. Waterfowl may carry the virus but not show symptoms.

What do I do if I think I have HPAI in my flock?

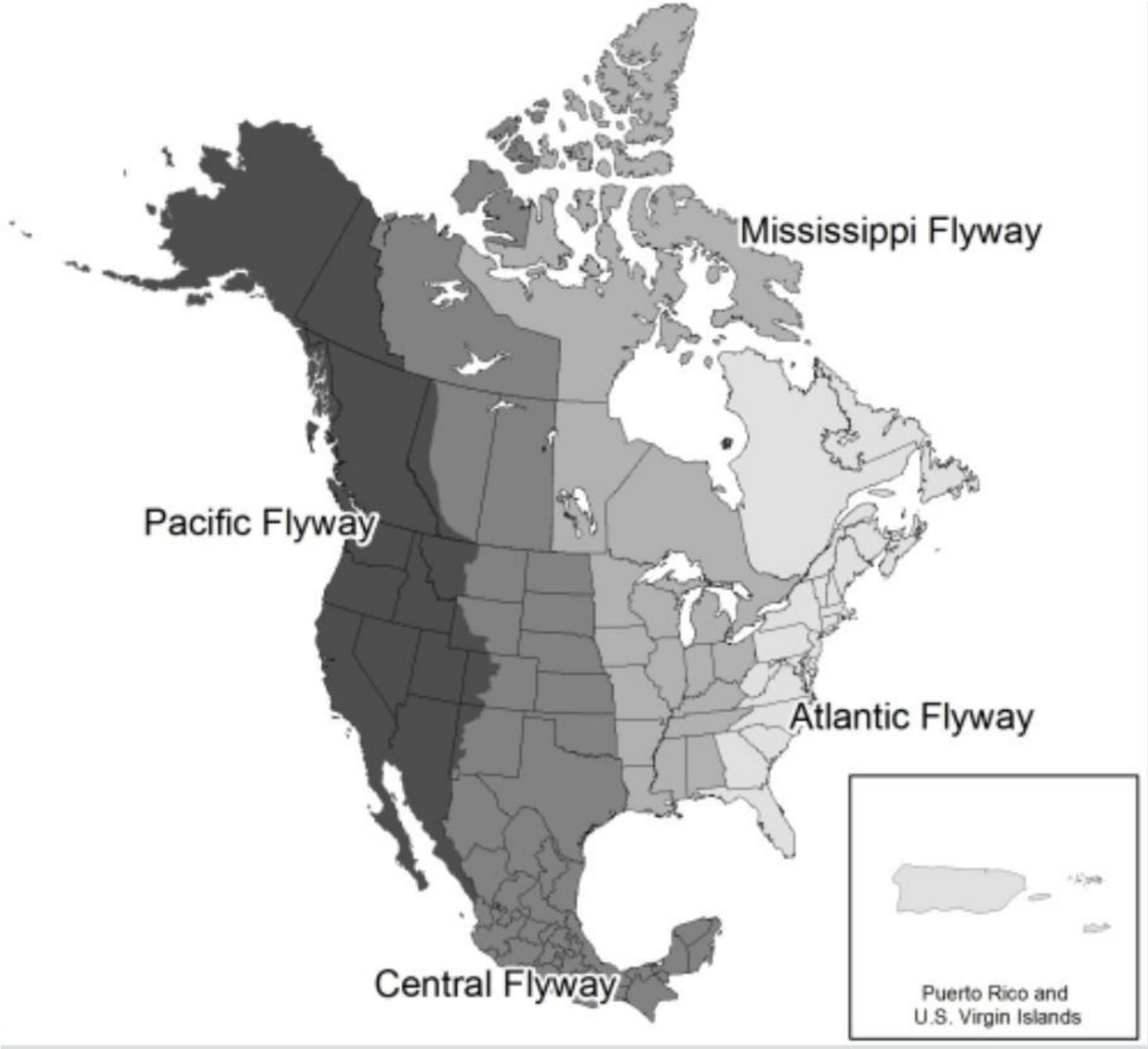
Report it! If your birds are sick or dying, it's important to report it immediately so that we can stop the spread to any other flocks. You can call:

- NYS Department of Agriculture & Markets: 518-457-3502
- USDA (United States Department of Agriculture): 866-536-7593
- Your local Cornell Cooperative Extension Office
  - https://cals.cornell.edu/cornell-cooperative-extension/local-offices

What can I do to manage for it?
Because there is not a vaccine currently available in the U.S. for this disease, keeping it out through biosecurity is going to be the best course of action. The easy-to-follow biosecurity principles below can go a long way to keeping your birds safe from disease:

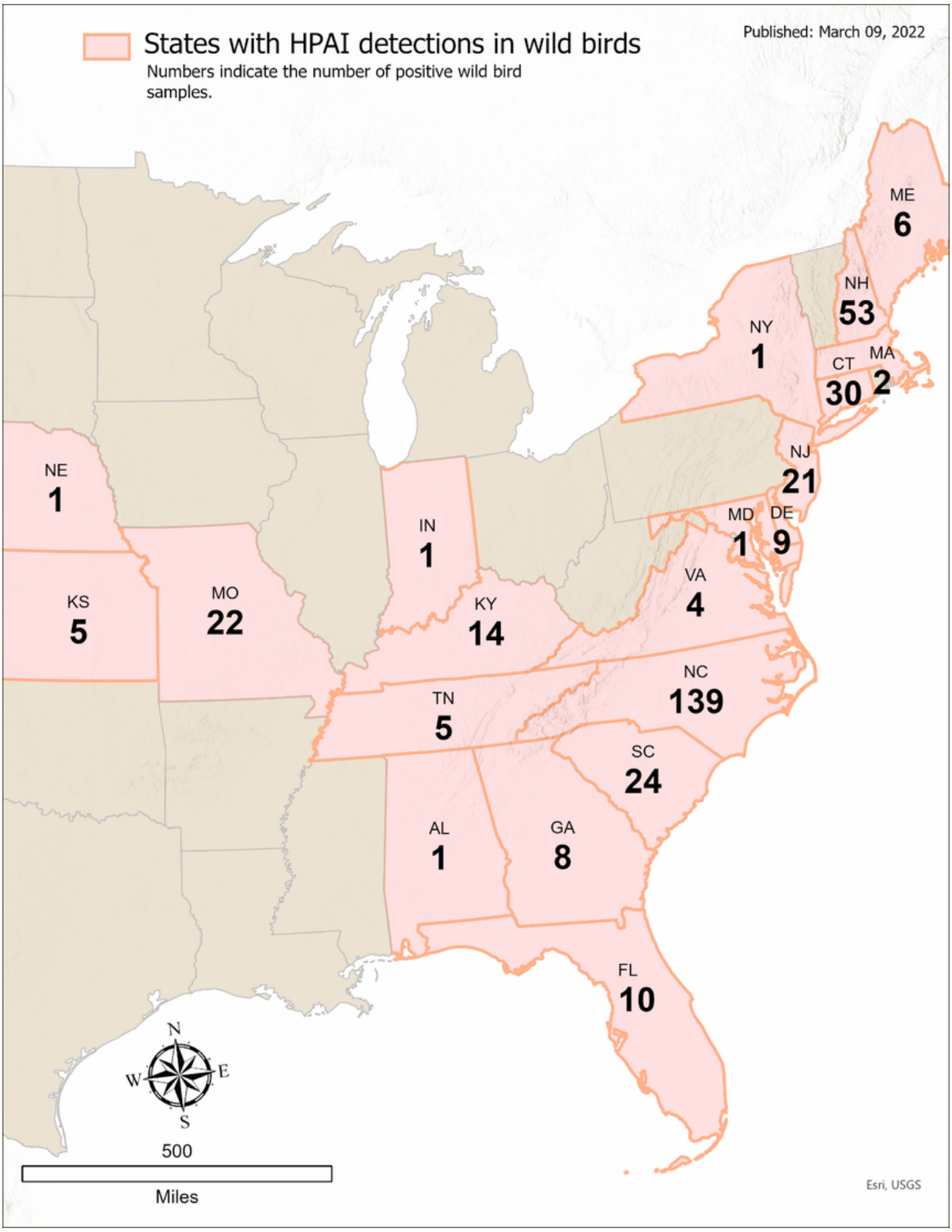
- Establishing an "all-in, all-out" flock-management policy
- Protecting against exposure to wild birds or water or ground contaminated by wild birds
- Closing bird areas to nonessential personnel or vehicles
- Providing employees with clean clothing and disinfection facilities and directions for their use
- Thoroughly cleaning and disinfecting equipment and vehicles (including tires and undercarriage) when entering or leaving the farm
- Banning the borrowing or lending of equipment or vehicles
- Banning visits to other poultry farms, exhibitions, fairs, and sales or swap meets (if visits must occur, direct workers to change footwear and clothing on their return)
- Banning bringing birds in slaughter channels back to the farm

Continued on next page



Migratory flyways of U.S. bird species. Most birds will fly along their flyway, but there may be some overlap, which can move avian disease across the country. Photo from the U.S. Fish and Wildlife Service.

Continued on next page



The number of wild birds testing positive for Highly Pathogenic Avian Influenza as of March 9th, 2022. Wild waterfowl are the most common carriers of the virus and spread it as they migrate. Image from USDA-APHIS.

Contact Amy Barkley at 716-640-0844 or amb544@cornell.edu

High Feed Prices? We've Seen This Movie Before

By David R. Balbian, Regional Dairy Management Specialist

As I am writing this article on April 20, 2022, I'm seeing the May futures for corn at $8.04 and the May futures for soybeans at $17.165. We have seen $8.00 corn before in late August of 2012. During that same period, the soybean price reached $17.58 at its peak. The August 2012 milk price from the Market Administrator's office for 3.5% milk priced at Boston was $18.40. The March 2022 price from the Market Administrator's office is $24.74. The high point on milk price was $26.16 for September in 2014.

Back in 2012, I remember people being concerned that we would "run out" of corn. We did not run out of corn. It all goes back to economics 101. It's simple supply and demand. When supplies are tight and demand is high, prices go up. As prices rise demand slows and prices stabilize. For the most part, prices will rise high enough to allow the supply to last. Have you tried to buy a used car or pickup lately? The same economics 101 is at play.

So, where does that leave us today? Even though grain prices are high, the milk price is also high, at least in historical terms. Demand for overall dairy products is good and exports are at record highs, being equivalent to around 17.5% of our national milk production. Some people will and already have cut back on grain feeding as a response to higher feed prices. The current economics do not justify that. There is still a reasonable and positive margin to feeding grain based on the nutritional needs of your herd. The Dairy Margin Coverage (DMC) program is currently not projecting any payments for 2022. That tells us that milk income after feed costs is much more positive than it was in 2021. For those of you who are participating in the DMC program for 2022 you should not feel bad. Instead of receiving DMC payments, you are getting more money in your milk check. Remember, it is the margin after feed costs that pays all of your other bills and provides for family living. It's the margin that is important, not grain prices. If you talk to some of the old timers, they will tell you that they made the most money milking cows when grain prices were high. I am sure that was not always the case, but sometimes it was the case. That's because the margin was good during those periods. Another factor that plays into future milk prices is the national supply of dairy replacements. Replacement numbers in relation to the milking herd are low. During tough times many dairy producers reduced the number of heifers they were raising to reduce expenses. Some have bred certain animals to beef sires to capture the higher price for calves they did not plan on raising. Because of this, any signal to increase national milk production with higher milk prices will take more time to occur than in the past.

Continued on next page

So, what does the future hold? I wish I could tell you, but there are more uncertainties than I think I have ever seen before. What will the future of COVID outbreaks, variants, vaccinations and restrictions be? What will be the impact of the war in Ukraine and sanctions on Russia? Will the current system of quota and over quota milk prices that many of our handlers and cooperatives have in place still be relevant in the future? In retaliation, will the United States suffer from cyber-attacks that affect our infrastructure in an adverse way? Will high fertilizer and other crop input costs reduce yields this year? Will energy prices ease or will they go up even more? What will happen with labor? Will the overtime rules in New York stick or might they be modified? How about labor unions and agriculture? How about supply chain issues? What about inflation? The current rate of inflation is at 8.5%. How high will interest rates go and what impact will that have on the economy? Are we headed for a recession in 2023? For those of you who have asked me about the future you know that I will give you my opinion, but often follow up with the following answer, " If I knew exactly what was going to happen I wouldn't be here talking to you today. I'd be on the beach in the Bahamas drinking a margarita. I'd be on my laptop making trades on the stock exchange and the futures market and making millions."

So, my current advice is to feed your cows what they need. Make sound herd management decisions. Get your hay crop harvested on time so you have a plentiful supply of high quality forage. That will allow you to feed less grain and also allow your cows to express their genetic potential with high levels of milk production. It kind of sounds like the advice you have always heard before, even when we were not in such an era of uncertainty, right? If you purchased a DMC contract, feel good that you will be protected from that possible black swan event, like the one that struck us in 2020. At that time, the dairy industry was expecting a reasonably profitable year, then COVID struck and chaos ensued.

Corn Grain Yield Estimation with Drones - Timing is Key!

by Sunoj, S., J. Cho, J. Guiness, J. van Aardt, K.J. Czymmek, and Q.M. Ketterings, Nutrient Managemnet Spear Program, Department of Animal Science, Department of Statistics and Data Science, and PRODAIRY, Department of Animal Science, Cornell University; Chester F. Carlson Center for Imaging Science, RIT

Introduction

Yield maps can help farmers identify high and low yielding areas in a field and customize management practices to maximize return on investment. Currently, most yield monitor systems on choppers and combines record yield and GPS location at 1-second intervals. With properly calibrated systems, and once data generated by these systems are cleaned of errors, accurate yield maps can be generated. However, calibration and data cleaning are required as extra steps prior to yield mapping, while sensors are expensive and can break during harvest, without the opportunity to redo the data collection. Approaches to estimate yield that reduce the risk of data loss, are less time consuming, and can be used by a larger number of farmers therefore could be beneficial. Here we report on a study using drones (commonly called "unmanned aerial systems" or UAS) to estimate yield at the subfield level.

Timing of N sidedress and UAS flights

Sidedress N treatments – The experiment was conducted at the Musgrave Research Farm in Aurora, NY in 2019. All N treatments received starter N (30 lbs N per acre). Six N treatments were implemented including zero N (NoN – only starter), N rich (NRich; 300 lbs N per acre at planting), and sidedress applications (180 lbs N per acre applied) at V4, V6, V8, or V10.

UAS flights – Weekly UAS flights (total of 12 flights) were done between VE and R5 using the Quantix mapper from AeroVironment Inc. The UAS payload consists of two cameras, one for color imagery (red, green, and blue bands) and one with a near-infrared (NIR) band. The reflectance values were used for calculating "vegetation indices", which typically are used to highlight specific vegetation features or conditions. Although six different vegetation indices were tested, we only report here on models derived using the normalized difference vegetation index (NDVI), which was best-suited for yield estimation. NDVI is a combination of the red and near-infrared bands.

Results

Did a Delay in Sidedressing Impact Yield?

All N treatments that received more than just starter N produced higher yields (Figure 1A), with NRich and sidedressing at V4 and V6 producing the highest yields (~170 bushels per acre) and the NoN treatment producing the lowest yields (85 bushels per acre). Delay in sidedressing to V8 and V10 resulted in lower yields. These results were consistent with N sidedress experiments across four years at the same location. See article at https://bit.ly/3vR5SAv.

Continued on next page

Did Timing of Sidedressing Impact Yield Model Accuracy?

The timing of N sidedress application had not just an effect on yield, but also on NDVI reflectance when sensed at the R4 growth stage (Figure 1A). Earlier sidedress N application (up to V6) produced a narrow range of NDVI values, while delaying the N sidedress application produced more variable NDVI signals (e.g., V8 and V10 in Figure 1A). The performance of yield estimation models (Figure 1B) showed that models that used data from plots that were sidedressed at or before V6 did well (R > 0.90), whereas inclusion of data from plots that were sidedressed at V8 or V10 were much less reliable (R < 0.68). These findings suggest that estimation of yield for fields that were sidedressed later than V6 are much less reliable, even with inclusion of NoN and NRich NDVI data.

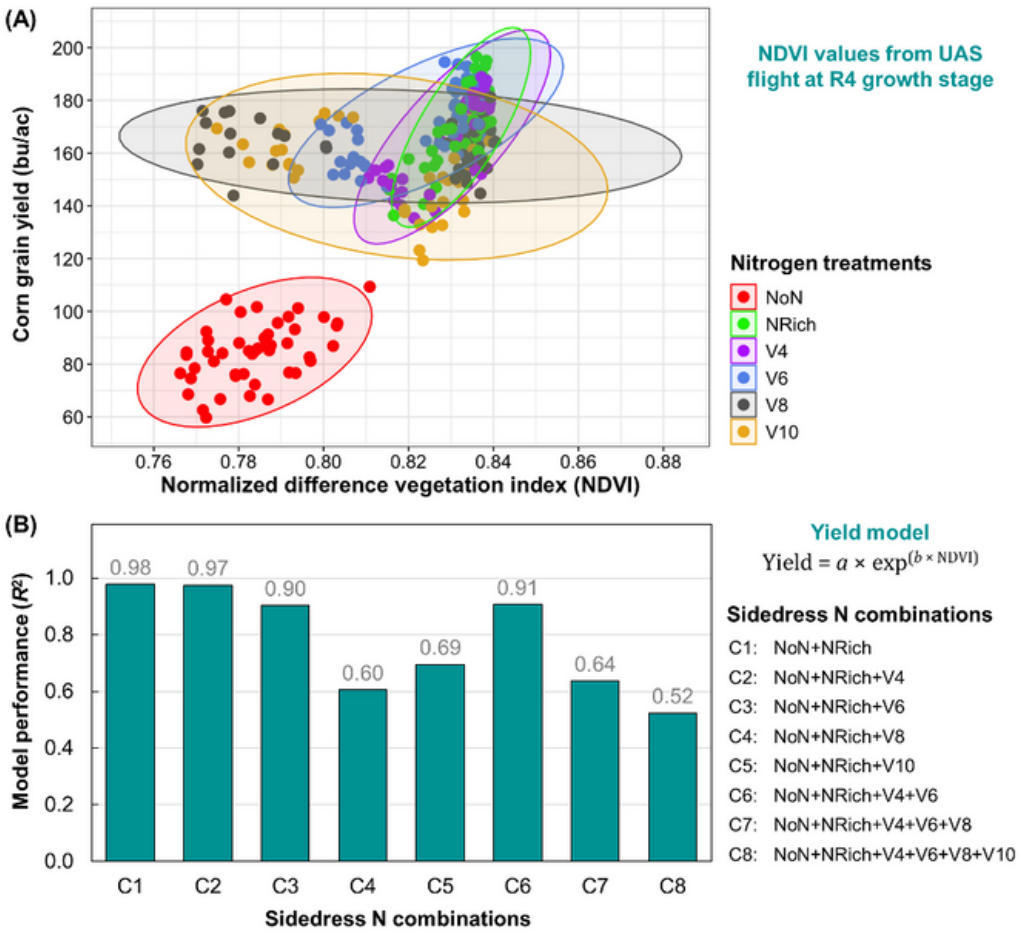


Figure 1. (A) Relationship between corn grain yield (from yield monitor system) and NDVI reflectance (from UAS) for different nitrogen (N) treatments; and (B) Yield model performance for different combinations of sidedress N application. Note: NoN = starter only; NRich = 300 lbs N per acre at planting; V4, V6, V8, and V10 = sidedressing of 180 lbs N per acre at the respective growth stages. The values above each bar indicate the coefficient of determination (R2) for models fitted with NDVI and corn grain yield. The R2 values range between 0 and 1, with 1 being the best model. Models were derived from flights at the R4 growth stage.

Continued on next page

Does Timing of Flight in the Season (Growth Stage) Impact Yield Model Accuracy?

Flights at the R4 growth stage resulted in reliable models, as long as sidedressing took place at or before V6. But what about flying earlier in the season? Data shown in Figure 2 indicate a much lower estimation accuracy at all vegetative growth stages (up to VT) and after R4 (Figure 2). At R5 the canopy started to turn yellow and much of the reflectance signals were not reliable for yield estimation. The lower performance at R2 was attributed to cloudy conditions during the flight, highlighting one challenge with the use of passive sensors to capture NDVI. Our results suggest that flying on a sunny day, when corn is between R1 and R4, gives us the best yield estimation models.

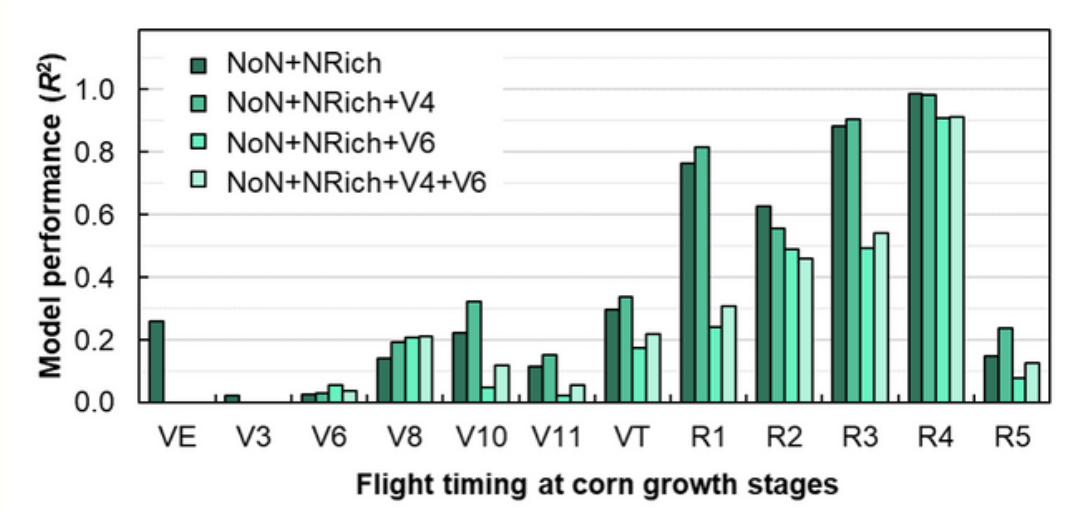


Figure 2. Corn grain yield estimation performance of NDVI using the UAS images obtained throughout the growing season.

Conclusions and Implications

Yield estimation using drones is a promising approach provided we implement the following management strategies: (1) Avoid delay in sidedressing – Sidedressing after V6 not only reduced corn grain yield, but also produced variable NDVI values, resulting in poor estimations of corn grain yield; (2) Fly the drone between R1 and R4 – After R4, the canopy starts to turn yellow, which makes it unsuitable for yield estimation; and (3) Avoid cloudy days for flights – Flying on cloudy days can impact the images collected and the accuracy of yield estimation models derived from the imagery. Ongoing research at the NMSP is exploring an approach of scaling this work to larger fields and developing yield estimation models that can be applied across farm fields and different farms.

See article at
https://blogs.cornell.edu/whatscroppingup/2022/02/14/corn-grain-yield-estimation-with-drones-timing-is-key/

New York State's Ambitious Plans to Address Climate Change

The Climate Leadership and Community Protection Act and the Draft Scoping Plan - Open for Public Comment Now

by Kitty O'Neil, Zach Spangler and Jenna Walczak

New York State's Climate Leadership and Community Protection Act (CLCPA or Climate Act) was passed in 2019 and lays out a plan to progress NYS communities and businesses toward a carbon-neutral economy, with meaningful milestones along the way. Climate change presents real problems for our communities, lands, infrastructure and economy. We expect our steadily increasing release of greenhouse gasses (GHGs) – such as carbon dioxide, methane, and nitrous oxide – into the atmosphere to cause severe weather patterns such as intense storms, droughts, flooding events, and more frequent and intense heat waves. This will result in catastrophes like power grid outages, wastewater and contaminant spills, and all the downstream, long-term impacts of these disruptions and damages to our communities and systems. For NYS farms, climate change increases the likelihood of weather delays during planting and harvest seasons as well as heat stress for crops and animals. To begin to solve this problem, we need to rapidly reduce our release of GHGs. The CLCPA addresses this need head-on with a systematic approach.

Goals of the CLCPA include an 40% reduction in GHG emissions by 2030, and an 85% reduction by 2050, compared with 1990 emissions levels. To identify and enable action toward this end, the Act tasked a Climate Action Council with conducting a complete GHG inventory and with drafting a 'Scoping Plan' to outline a framework for how NYS will equitably reduce GHG emissions. The GHG inventory has been completed and summarizes all GHG emitted by human activity in NYS from 1990 to 2019 for four sectors – Energy, Industrial processes, Agriculture /Land Use, and Waste. A quick read of the inventory report reveals lots of complex decisions that were needed about how to value and assign these emissions and how to draw boundaries around the different sectors. Descriptions of how this was decided and calculated, however, are also detailed. Some GHG improvements have already begun. The inventory document reports that peak emissions in NYS occurred in 2005 and we've already reduced GHG emissions by 17% since then. Our primary GHGs of concern are CO2 and methane and the sectors most responsible for our GHG emissions are the Energy, Waste and Agriculture sectors. The strategies outlined in the Scoping Plan reflect the relative scale of these various contributions by all sectors in its priorities.

Continued on next page

The Energy sector includes all emissions associated with the generation and use of energy, including for electricity generation, transportation, and on-site fuel use in buildings for heat or manufacturing. The Energy sector encompassed the largest portion of emissions every year included in the inventory and therefore a big part of the GHG reduction strategy in the Scoping Plan is focused on this sector, aimed at achieving 100% reduction in emissions from electricity generation by 2040. Implementation of some of these strategies is already visible around us, in the form of wind and solar power generation installations, a shift toward more efficient equipment and systems and more electric-powered buildings and transportation. The Scoping Plan outlines a strategy to generate more renewable energy, retire fossil fuel-powered electricity generation and improve our distribution infrastructure.

Emissions resulting from the Waste sector are largely methane and CO2, generated by the decomposition and combustion of human-generated waste materials.Sources of GHG from this sector are landfills, waste incineration facilities, recycling operations, wastewater systems and anaerobic digesters. The largest contribution to GHG emissions from waste management is the uncaptured methane emitted from landfills. As Composting and natural organic matter decomposition are not included in this inventory.

The Scoping Plan defines the Agriculture sector as production of livestock, crops, dairy, timber and wood products and its emission sources include equipment, animals, cropland, forest fires, decomposition of dead trees and development of ag and forest land. This sector also provides carbon sequestration benefits, with its ability to remove atmospheric CO2 and store it in trees, plants and soil. The strategies outlined in the Scoping Plan for the Ag sector are focused on both sides of this equation – mainly reducing methane and nitrous oxide emissions and sequestering more carbon. The Scoping Plan outlines the use of the Agricultural Environmental Management (AEM) program to provide assistance and planning for the Ag sector.Many Ag sector strategies are focused on forest management, but there are also emphases on precision feed management, manure management, nutrient management, soil health and a payment-for-ecosystem-services program. Livestock emit the dominant share of agricultural GHG as methane and nitrous oxide.Methane emissions from manure storages are targeted for investment in the form of cover-and-flare systems, anaerobic digesters, composting systems and other methods that collect, capture and destroy methane or prevent its production. The statewide Climate Resilient Farming grant program has already provided $12 million in funding for some of these efforts through local county Soil and Water Conservation District (SWCD) offices with another $8 million available this year. Methane emitted from normal ruminant digestion, or enteric fermentation, is also addressed in the Scoping Plan. Though this GHG represents the largest share of agricultural emissions, methane production per unit of meat or milk has decreased from 1990 levels due to improved feed efficiencies. Further reductions in animal methane emissions are needed however, and may be achieved with more research, testing and use of feed additives.Some of these ideas are already in progress.

The other portion of Ag sector emissions is nitrous oxide, mostly emitted from nitrogen fertilizer losses to the atmosphere. Reducing this loss is already desirable and prioritized on almost all farms especially in this year of record high fertilizer prices, but it will also be a target of added urgency as part of GHG mitigation efforts. Soils also release CO2 as organic matter is decomposed via natural processes. This release can be reduced, however, with elimination of tillage, and soil can even serve as a net sink of carbon with improved health practices, which also offers other resilience advantages to the farm.

Expansions of capacity and technology, training and cost-shares appear throughout this Draft Scoping Plan, in addition to the bits described here, as they apply to each sector. The Scoping Plan is 340 pages in length and includes detailed presentations of strategies, rationales and feedback plans for the six sectors of the economy included in the CLCPA – buildings, electricity, industry, ag and forest lands, and waste. Links are listed below to the Draft Scoping Plan, the GHG Inventory Report, the CLCPA website and other materials.

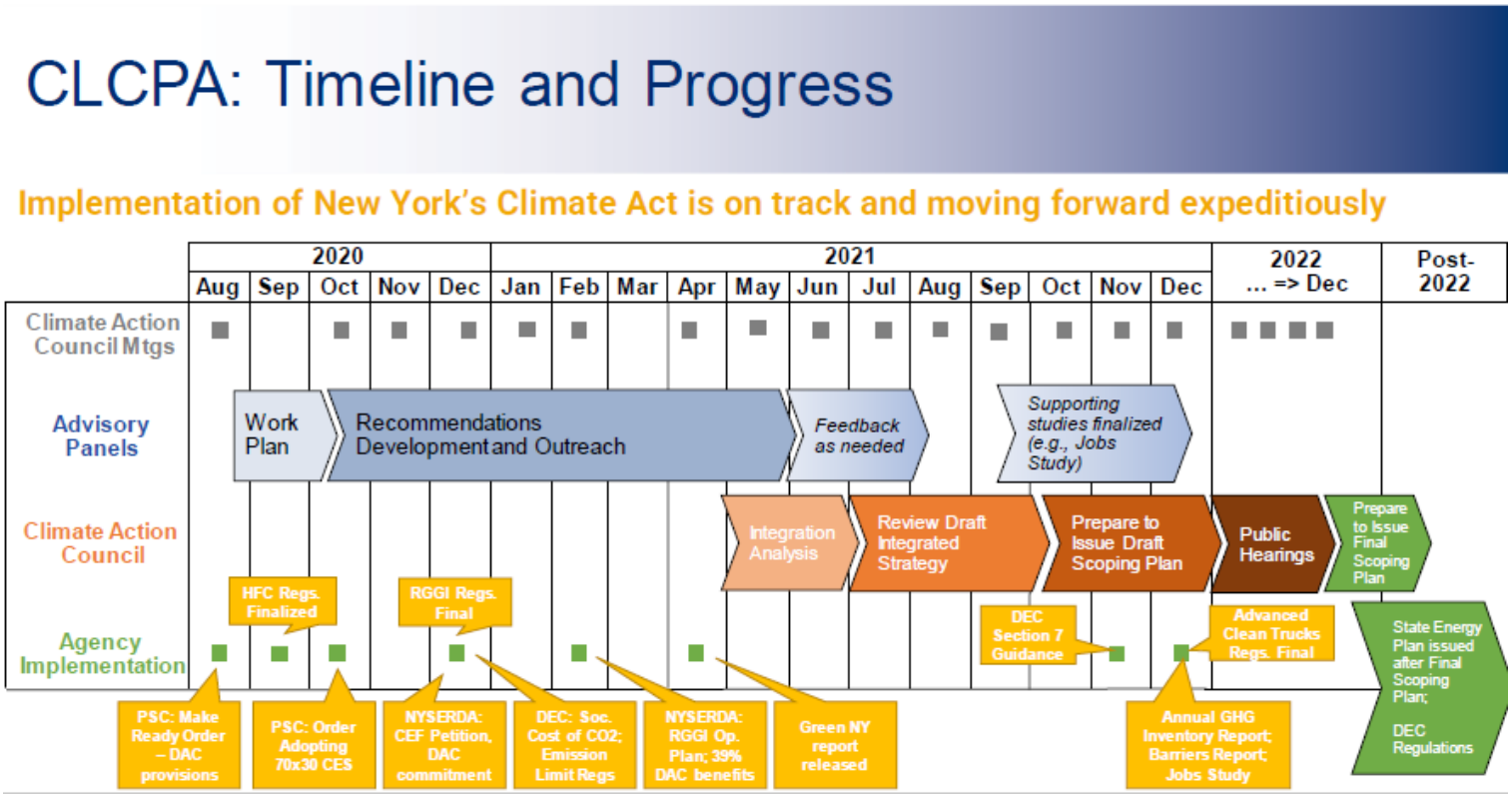
One crucial component of the CLCPA initiative is the public comment and input period, which is currently open through June 10, 2022. Eight in-person and 2 virtual public hearings are scheduled to collect feedback on the Draft Scoping Plan. Event dates and locations are listed at https://on.ny.gov/3kq5ljK. The most convenient for the North Country is 4 pm on Tuesday May 10th at The Wild Center in Tupper Lake or the virtual sessions. Preregistration for these events is encouraged. Written comments are also invited, and they may be submitted via an online form at https://bit.ly/3s0a6EX. The Scoping Plan is expected to be finalized and published in January 2023.

The progress and protection intended by the CLCPA and its specific strategies will offer both challenges and opportunities to NY farms and communities. Some transitions and changes may be simple while others may be more lengthy and difficult. Each component of the plan offers potential for innovation and collaboration across sectors, with benefits to farms, the environment, and our communities. Extension can provide technical support on many of the management practices and systems that will be needed, with our local SWCD offices providing much of the administration.

Cornell Cooperative Extension recently added two Climate Resilience Specialists to our statewide system – Jenna Walczak ((518) 791-1888 and JW2254@cornell.edu) and Zach Spangler ((518) 935-8062 and ZHS3@cornell.edu). Both are housed in the Hudson Valley and are developing statewide programs to advance resilience in our agricultural production systems across NYS. Watch for their contributions to this important topic.

See the article at https://nydairyadmin.cce.cornell.edu/pdf/newsletter/pdf338_pdf.pdf
Reprinted with permission.

Continued on next page



Additional Resources:

1. NYS Climate Leadership and Community Protection Act (CLCPA) website https://climate.ny.gov/
2. NYS Greenhouse Gas Inventory Report website: https://www.dec.ny.gov/energy/99223.html and report summary https://www.dec.ny.gov/docs/administration_pdf/ghgsumrpt21.pdf
3. NYS Climate Action Council Draft Scoping Plan: https://climate.ny.gov/Our-Climate-Act/Draft-Scoping-Plan
4. NYS Economic Impacts of Investing in Climate Mitigation in New York Forests and Agriculture: https://climate.ny.gov/-/media/Files/Publications/Energy-Analysis/Economic-Impacts-of-NYS-Climate-Mitigation-Strategies.pdf

Central New York Dairy, Livestock and Field Crops Team

Nicole L. Tommell, M. Ag.Ed
Team Leader
Farm Business Management Specialist
Phone: 315-867-6001
Email: nt375@cornell.edu

Ashley McFarland, PAS
Area Livestock Specialist
Phone: 315-604-2156
Email: am2876@cornell.edu

David R. Balbian, MS, PAS
Area Dairy Management Specialist
Phone: 518-312-3592
Email: drb23@cornell.edu

Erik A. Smith, Ph.D.
Area Field Crop Specialist
Phone: 315-219-7786
Email: eas56@cornell.edu

Stay in Touch

Website: cnydfc.cce.cornell.edu

Facebook Page: facebook.com/cnydlfc

Join our E-mail list: http://eepurl.com/hh3vBj

A program and funding partnership between Cornell University, Cornell Cooperative Extension and the Cornell Cooperative Extension Associations of Chenango, Fulton, Herkimer, Madison, Montgomery, Otsego, Saratoga, and Schoharie Counties.