Our Mission

“The North Country Regional Ag Team aims to improve the productivity and viability of agricultural industries, people and communities in Jefferson, Lewis, St. Lawrence, Franklin, Clinton, and Essex Counties by promoting productive, safe, economically, and environmentally sustainable management practices, and by providing assistance to industry, government, and other agencies in evaluating the impact of public policies affecting the industry.”
Soybean cyst nematode (SCN) is primarily a problem for soybeans, but it can infect other crops too, such as edible beans, cowpeas, and some clovers. Once established in a field, the SCN population typically increases until corrective management changes are implemented. Initially, identifying SCN infestation symptoms may be difficult. The first indication of a problem is often lower-than-expected yield performance with little or no aboveground symptoms. Yield loss can be 5-10 bu per acre, or more, without significant above-ground clues. SCN infections can be missed for a few years for this reason, while SCN population increases and infestations spread. Growers may first notice areas of a field with small variations in height and vigor of otherwise healthy-looking deep green plants. More severe infestations may cause patches of severely stunted plants, pale yellow chlorotic foliage, and even plant death. Aboveground symptoms are easily confused with nutrient deficiencies, soil compaction problems, drought or moisture stress, other diseases, or even herbicide injury. Symptoms may initially appear patchy within a field or may be elongated areas following tillage direction, because SCN cysts are spread with soil. To properly confirm a problem field as an SCN infestation, close root inspections and/or laboratory soil assays are needed. Affected plants may have stunted roots with fewer N-fixing nodules or secondary fungal infections. Diagnostic clues will be the presence of small, yellowish to brown adult female cysts on roots. These cysts are smaller, and often more numerous, than the N-fixing nodules. Absence of these small cysts does not mean a field is free from SCN. In fields with low SCN population numbers, few cysts may develop on roots and can be missed. The best way to definitively diagnose presence or absence of SCN is with a laboratory soil assay. For these lab tests, 6-8” soil samples are collected from suspect areas or suspect fields. At the lab, soil samples are washed with water and passed through a sieve. Nematode cysts are isolated from heavier soil particles using a viscous sugar solution and a centrifuge, and SCN eggs and/or nematodes are counted with a microscope to estimate population numbers per gram of soil. Genetic analysis can be performed to determine the specific race of the infestation. In addition to a confirmation of presence or absence of SCN in a field sample, a relative measure of severity and the ‘race’ is helpful for subsequent management decisions.

Once established, a SCN infestation can never be eliminated completely, but purposeful management changes can reduce SCN population and its impact on a soybean crop. Management recommendations are based on the severity of the infestation as estimated from a diagnostic soil test. Recommendations consider the 3-stage, 30-day life cycle of the SCN as well as their intermittent requirement for host plant roots. SCN eggs are protected inside cysts that are often attached to roots but can be free and unattached in soil. Eggs hatch whenever soil temperature and moisture are appropriate and juvenile nematodes emerge. Juvenile nematodes immediately begin to look for plant host roots to infect and feed upon and, in a few weeks, they develop into an adult. Feeding SCN nematodes are the cause of crop damage. These feeding and growing SCN do not move very far through soil, so if they are unable to find suitable host plant roots within a few centimeters within a few days, the newly hatched juveniles die. Successful adult female nematodes mature, fill with eggs, and form the cysts on the plant roots that are used for field diagnosis of SCN infestation.

Because SCN cannot be eradicated once introduced, and because it has a complicated race structure, an integrated management approach is recommended for control. Management tools include crop rotation, planting and rotating race-
specific resistant varieties, and nematicide seed treatments in addition to other strategies to minimize stress and optimize plant health and yield. Management guidance is to first prevent movement of soil from infected fields by thoroughly cleaning equipment and tools, including tillage and other field equipment, tires, boots, trucks, ATVs, etc. Conduct field operations in infested fields last, when possible, and thoroughly clean equipment afterward. Planting SCN-resistant soybean varieties is effective and matching sources of plant resistance to specific races of SCN is recommended. In infested fields, Nebraska researchers measured 0 to 21 bushel improvements from using resistant varieties, while no yield improvements (or penalties) were detected in non-infested fields. Crop rotation is highly effective for the control SCN populations as well. Rotation between host and nonhost crops will markedly reduce SCN population and rotation of sources of soybean variety resistance may also help to suppress SCN population further (see Table 1). Nematicides have been studied for use against SCN as well and some are labeled for use in NYS.

Table 1. Host and nonhost plants for soybean cyst nematodes. (From ‘Soybean Cyst Nematode: Identification and Management’, 2011. Univ. Nebraska-Lincoln Extension, Factsheet G1383)

<table>
<thead>
<tr>
<th>Host Crops</th>
<th>Host Weeds</th>
<th>Nonhost Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybeans</td>
<td>Common Chickweed</td>
<td>Alfalfa</td>
</tr>
<tr>
<td>Edible Beans</td>
<td>Common Mullen</td>
<td>Corn</td>
</tr>
<tr>
<td>Cowpea</td>
<td>Field Pennycress</td>
<td>Forage Grasses</td>
</tr>
<tr>
<td>Birdsfoot Trefoil</td>
<td>Henbit</td>
<td>Clover (Red, White, Ladino)</td>
</tr>
<tr>
<td>Clover (Alsike, Crimson, Sweet)</td>
<td>Pokeweed</td>
<td>Small Grains (Barley, Oats, Rye, Wheat)</td>
</tr>
<tr>
<td>Lespedeza</td>
<td>Purslane</td>
<td>Canola</td>
</tr>
<tr>
<td>Lupine (White, Yellow)</td>
<td>Sericea Lespedeza</td>
<td>Sorghum (Grain, Forage)</td>
</tr>
<tr>
<td>Vetch (Common, Crown, Hairy)</td>
<td>Wild Mustard</td>
<td>Sugar Beets</td>
</tr>
</tbody>
</table>

Additional resources:
Join us October 28th for a one hour virtual field day that focuses on interseeded cover crops in corn, herbicide resistant weed management and other weed control updates.

- Learn about the different weed control strategies used in corn with interseeded cover crops.
- Get the latest information on herbicide resistant weeds in New York.
- Hear what is new for corn weed control

NYSDEC pesticide credit (Categories: 10, 1, 21,23)

Program is FREE!!

Date: Wednesday, October 28th

Time: 11:30am—12:30pm Virtual

Registration:

- Go to [https://ncrat.cce.cornell.edu/event.php?id=1306](https://ncrat.cce.cornell.edu/event.php?id=1306) to register.

Any question please contact Mike Hunter at 315-788-8450 or mch27@cornell.edu.

"The North Country Regional Ag team is a Cornell Cooperative Extension partnership between Cornell University and the CCE Associations in Jefferson, Lewis, St. Lawrence, Franklin, Clinton, and Essex counties."

Registration Info:
Tatum Langworthy
tlm92@cornell.edu
315-788-8450

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.
This article concludes the series on “Perfecting the Dry Cow Diet” where I’ve summarized the results of my graduate research completed at the University of Guelph under the supervision of Dr. Trevor DeVries. In Part 1 of the series I discussed the importance of particle size (read here), and in Part 2 I discussed the important of moisture level (read here). In this final part, I will discuss how molasses addition to a controlled energy dry cow diet improved feeding behavior and health parameters in transition cows. As a reminder, controlled energy dry cow diets are those which incorporate large amounts of low nutrient forages (typically wheat straw or poor-quality hay) in attempt to reduce the dietary energy density. This strategy allows the cow to consume as much feed as she wants while not compromising her body condition score, or her metabolic health. As previously mentioned, allowing the pre-fresh cow to maximize intake in the dry period is not only beneficial from a metabolic health standpoint, but also from a behavioral and welfare standpoint.

In the first two studies of my research, we explored physical characteristics of the diet (i.e forage particle size and density), and in this study we wanted to explore the impact of adding a molasses-based liquid feed to the diet. Past research has documented the benefits of adding molasses to lactating diets. For example, molasses has been shown to improve microbial efficiency and promote fiber digesting bacteria which can improve feed intake and rumen health. Further, molasses can reduce sorting when added to lactating diets as a result of adhering the smaller particles to the large particles. Very little research, however, has investigated how molasses addition may be beneficial in dry cow diets, particularly those with high levels of lower nutritive value feedstuff such as these controlled energy diets that are more and more commonly being fed. Thus, the aim of this portion of my research was to determine if adding a molasses-based liquid feed to high-straw dry cow diets would improve feed intake, reduce feed sorting, and improve metabolic and rumen health for dairy cows across the transition period. Similar to the other two studies, we collected daily feed intakes, various measures of feeding behavior (including feed sorting), rumen pH, blood metabolites, BCS and body weight measurements, and daily milk weights. Cows were enrolled in the study ~45 days prior to calving and were fed a dry cow diet with either no added molasses, or with molasses added at a rate of 1.0kg/cow/day (DM basis). After calving, all cows were fed the same lactating diet (with no added molasses) and followed for 28 days to identify any carry over effects of the dry period dietary treatment. Below are some of the most important take away messages from this research:

- Cows fed the molasses-based liquid feed had higher intake across the entire dry period. The biggest difference in intake, however, was captured in the week leading up to calving. Notice that in the 7 days leading up to calving the molasses fed cows were able to maintain (and even increase!) intake relative to the control group.

- Cows fed the molasses sorted less against the long particles in the dry period compared to the control group. Even more interesting is that after calving, when all cows were fed the same diet, the cows that were fed molasses in the dry period did not sort for or against the long forage particles, whereas the control group continued to sort against the long particles.

- Cows fed the molasses in the dry period had higher mean rumen pH in the dry period, and for the first two weeks after calving. In the dry period, this difference can be attributed to the microbial enhancing properties of molasses. For the first two weeks after calving, this is likely because molasses fed cows were able to maintain more consistent intake in the week leading up to calving, coupled with the fact that molasses fed cows did not sort for or against the long forage particles.
• Cows fed molasses in the dry period had, on average, a lower maximum BHB level post-calving compared to the control group. In the figure below, you will see that control cows had a maximum reading of 1.5mmol/L which is higher than the threshold for subclinical ketosis (1.2mmol/L), whereas the molasses fed cows did not hit that threshold.

![Graph showing BHB levels post-calving](image)

- Control: \( \text{Control}_{\text{MAX}} = 1.5 \text{ mmol/L} \)
- Liquid Feed: \( \text{Liquid Feed}_{\text{MAX}} = 1.0 \text{ mmol/L} \)

- Cows fed the molasses had numerically higher fat corrected milk yield (+5.5lbs) and energy corrected milk yield (6.2lbs) post-calving.

In summary, molasses addition to a high straw dry cow diet is a successful strategy to improve feed intake, reduce the drop in intake as cows approach calving, reduce feed sorting, and improve metabolic and rumen heath post-calving. It is important to note that the molasses blend that was used in this research was carefully balanced in order to maintain proper DCAD balance. Molasses is naturally high in potassium and this can greatly impact the DCAD, so careful consideration should be had when incorporating molasses in a dry cow diet. Consult with your nutritionist or reach out to me if you have questions on molasses supplementation. For more details on this research project, please refer to the full *Journal of Dairy Science* article.

*This project received financial supported from a Natural Sciences and Engineering Research Council of Canada (NSERC; Ottawa, ON, Canada) Collaborative Research and Development Grant with Liquid Feeds International (Innerkip, ON, Canada), from Quality Liquid Feeds (Dodgeville, WI), as well as the Ontario Agri-Food Innovation Alliance Research Program of the University of Guelph and the Ontario Ministry of Agriculture, Food, and Rural Affairs (Guelph).*
Dialing into your Best Dairy: Reaching Your Herd’s Genetic Potential Involves a Focus on Reproduction, Gestation, and the Dry Period

By Casey Havekes, Lindsay Ferlito, and Alycia Drwencke (CCE Southwest NY Dairy, Livestock, & Field Crops Program)

Numerous management considerations can affect the ability to dial into your best dairy and reach your herd’s genetic potential. Some key management decisions focused on nutrition, cow comfort, and behavior during reproduction, gestation, and the dry period are summarized here.

Nutrition is an important component for reproductive success which requires monitoring and adjusting throughout the aforementioned periods. When a first lactation animal is ready to be bred back, she will typically be on a standard lactation diet formulated to meet her energy and protein requirements and to support a growing fetus, but as pregnancy progresses her energy demands will fluctuate. As she approaches dry off, the key is to keep her in a healthy body condition score (BCS) range, which can be done by breeding back on time, preventing extended lactations, and by feeding a low lactation diet if cows are over-conditioned prior to dry off.

Once the cow is dried off another set of challenges may arise. Farms should aim to have cows calving at a BCS of 3.0-3.25. Excessive loss and gain of BCS during the dry period are both associated with poorer health post-calving, which highlights the importance of maintaining BCS during this time. One concept that is gaining popularity to achieve maintenance of BCS, is to feed controlled energy dry cow diets. These diets incorporate low nutrient forages, such as wheat straw, while being formulated to meet 100% of the cow’s dietary energy needs during pregnancy. With these diets, the cow is able to physically consume as much feed as she wants without running the risk of gaining excessive body condition, resulting in better metabolic health after calving. There are, however, many nutritional and management considerations with these diets, and this approach should not be tested without consultation first. Sorting, for example, is one area that should receive attention when feeding these types of diets; pay attention to any holes dug in the feed and the composition of refusals. The risks associated with sorting during lactation are well known, but it can also be harmful in the dry period if cows are constantly sorting in favor of the more energy dense components and gaining excess body condition. Sorting is also a learned behavior that can be carried over after calving.

Monitoring BCS can tell you a great deal about the nutrition and health of a herd, especially when troubleshooting transition period issues. Best practice would be to record BCS measurements at time of breeding, confirmed pregnancy, dry off, half way through dry off, 7 days prior to calving, and 14 and 28 days post-calving. These measures can help ensure that cows aren’t losing or gaining excessive body condition during these times.

In addition to nutrition, successful reproduction is an important area to focus on as it has a strong influence on productivity and profitability. Getting cows in calf with as few services as possible will keep the herd at a lower average days in milk (DIM), and can improve profitability. The value of a pregnancy varies and is dependent on certain market factors such as milk price, replacement costs, and cull price, but it can range from about $250-500. One study calculated the cost per cow for added days open to be $2-5 per day beyond 90 days open. Industry average pregnancy rates for mature cows are about 20-21%, with excellent programs achieving over 30%. Regardless of which breeding strategy a herd uses, one of the biggest effects on reproductive success is management of the program and the facilities. For example, higher stall stocking densities in the breeding pen have been associated with lower conception rates, while 14 inches or less of bunk space in breeding pens is associated with fewer pregnant cows at 150 DIM. In the Northeast, benchmarks for freestall high pens average about 16-17 inches due to 3-row pen designs and overcrowding, indicating this may be a bottleneck for reproductive success on some farms.

Throughout lactation, the demands on the cow and her time budgets will change. Cows decrease lying time on the day of calving and then increase resting time over the next few days. During peak lactation, her lying time is a bit lower, around 11 hours per day, due to the demands of milking and consuming TMR. As she decreases production, time spent resting increases and during the dry period cows can average 14-15 hours per day lying down. Cow comfort is an important consideration for reaching those ideal resting times. For comfort, stalls need to be larger as the cow gets bigger throughout her pregnancy. This can be managed through

Continued on Page 9...
various grouping strategies. Cows also prefer larger stalls that are wider and longer, with a less aggressive brisket board and neckrail. With these stalls, they will lay down more and stand more in the stall rather than the alley, but this can require more work to maintain bedding cleanliness.

Stocking density should also be monitored as it often increases over time. Every facility will have its own maximum, but research shows negative effects on lying time, behavior, production, and lameness when stocking density gets above 115% in lactating pens, and above 100% in transition cow pens. Farms should aim for a lower number since peaks in calving and seasonality will lead to higher density throughout the year. It is important to keep cows comfortable throughout the whole lactation including during the dry period, as cows that had lower lying times pre-fresh tend to have more hoof lesions in the next lactation.

To perform a self-evaluation of your management, check lactation peaks and reproduction rates and benchmark yourself to your own farm’s data as well as industry benchmarks. Monitor cow comfort throughout these stages of lactation by using lameness and leg injury scoring. According to the National Dairy FARM Program, you should have <5% severe lameness and <5% severe hock and knee injuries. Measure stall dimensions and stocking density to make sure they are suitable as these can influence cow-based outcomes.

When managing cows, it is important to also consider how the cow experiences her environment. By observing cow behavior and looking for changes or abnormalities, underlying issues can often be detected earlier on. For example, changes in feeding behavior or rumination can indicate the cow is experiencing some type of issue. Behavioral changes can also alert producers to variations in thermal comfort such as heat stress.

As cows experience increased heat load, they will exhibit a variety of responses such as increases in respiration rate and body temperature, panting or breathing with an open mouth or protruding tongue, bunching around water troughs, standing near spray water, and decreased feed intake and rumination. Longer term indicators of heat stress can include decreased milk production and fertility, and by the time these physiological responses are seen, the economic losses due to heat stress cannot be recovered. Focusing on earlier animal based measures, such as long stringy drool, panting, and increased respiration rate, to identify heat stress is essential.

Despite economic challenges in the industry, research still shows that investing in heat abatement is financially beneficial. Cows begin experiencing increased heat loads around a temperature humidity index of 65-68, which takes into account both air temperature and relative humidity. Economic modeling suggests production losses from heat stress could be decreased by 43% if cows are provided spray water and fans in addition to shade. Lameness is not accounted for in these economic models, so additional savings are likely. Financial benefits of heat abatement will continue to increase as weather patterns change with more warm days each year and higher temperature peaks. Furthermore, recent research has focused on the benefits of heat abatement for dry cows and youngstock. Animals that experience heat stress during the dry period or as a heifer have more issues with reproduction, and calves born to heat stressed cows have lower production in their first lactation compared to their genetic potential. The growing body of research shows all ages and classes of animals should have adequate heat abatement on the farm.

These are just a few key considerations and there are always more things to think about and act upon to ensure cows are getting in calf, maintaining pregnancy, and freshening successfully. For additional resources contact your local CCE Regional Dairy Specialists or visit the PRO-DAIRY website (https://prodairy.cals.cornell.edu/). Check out the full podcast at: https://soundcloud.com/user-301921459-118136586.
RISK MANAGEMENT

CHECK OUT THE LATEST RESOURCES
AND UPCOMING INFORMATION.

www.agriskmanagement.cornell.edu/

discover:
crop insurance details
New York specific info
where to purchase
how to decide
other resources

PODCASTS, ARTICLES
FACTSHEETS,
PRESENTATIONS,
WEBINARS,
TESTIMONIALS, & MORE.
New York State enacted the Farm Laborer Fair Labor Practices Act (FLFLPA) in 2019 and 2020. This page is intended to point you toward helpful resources to understand the new legal requirements and make changes in your business and human resource management practices to comply with the new requirements.

2020 Changes to New York Farm Labor Laws

2020 Updates to New York Farm Labor Laws, a webinar presented by Cornell Ag Workforce Development and NEDPA on August 17, 2020

- A PDF of the meeting presentation
- A recording of the webinar

Overview Information

- Presentation providing an overview of changes for farm employees beginning Jan. 1, 2020: “Big Changes to New York Farm Employment Laws.” You can also view this information as a recorded webinar from Farm Credit East.
- Find the legal text of FLFLPA here:
- NY State Department of Labor (NYSDOL) website on the subject here:
- NYSDOL’s Farmworker Rights and Employer Responsibilities fact sheet:
  https://www.labor.ny.gov/formsdocs/dipa/p748.pdf

Insurance Changes

- Excellent resource from Worker’s Compensation Board:
  http://www.wcb.ny.gov/farmtoolkit/
- State’s Disability webpage:
  http://www.wcb.ny.gov/content/main/DisabilityBenefits/Employer/complyWithLaw.jsp
CCE Presents

“It’s always my nutritionist’s fault!!” - a FREE webinar on understanding diets & improving communication on your dairy

October 15, 2020 LIVE at 12:30pm and 7:00pm EST

** Registration link to follow

Please click [HERE](#) to register!
Onboarding Dairy Employees

Safe, Productive and Engaged from Day One 2020

The first days and weeks on the job set the course for a new employee. A successful onboarding program can be an essential tool to help reduce employee turnover, increase employee safety and productivity, and contribute to a farm’s success.

Identified as a priority by New York’s Ag Workforce Development Council, Cornell Ag Workforce Development is seeking farmers to participate in the second year of an onboarding project funded by the New York Farm Viability Institute.

This project focuses on navigating employment requirements and improving human resource management practices, including enhancing training skills.

Over a three-session Zoom series, participating farmers will gain an understanding of and complete an onboarding template, and be supported by Dr. Richard Stup, Cornell Ag Workforce Specialist, Extension educators, or industry consultants, to implement onboarding materials, trainings and methods.

Successful projects have a staff member who focuses on HR a few hours each week.

Benefits for Farms:
- Ensures compliance with basic regulations and policies.
- Provides clarification on work procedures and expectations, which results in better employee performance and safety.
- Establishes a workplace culture based on values, philosophies and traditions.
- Creates connected relationships at work that allow employees to engage and thrive.
- Increases employee commitment and reduces turnover.
- Provides accessible and realistic support for farm onboarding, even when labor and time are in short supply.

Expectations of Farms:
1) Establish a farm culture that is safe, productive and engaging. Set Clear, upfront job expectations that employees can fully understand.
2) Provide immediate safety training to avoid injuries. Promote compliance with all employment regulations.
3) Communicate important farm policies and procedures, especially those that may differ from previous employers.
4) Overcome language barriers so that everyone can understand each other.

Sample Onboarding Tools:
Employee Handbooks, SOP’s, Training Videos, New Hire Forms, Job Descriptions, Farm Safety Plans, Checklists, Organizational Charts, Mission Statement, Written Policies, and more...

To Participate, Contact:
Dr. Richard Stup, Ag Workforce Specialist
Cornell Cooperative Extension
164 Plant Science Building
P: 607-255-7890 | E: rstup@cornell.edu
agworkforce.cals.cornell.edu
CCE North Country Regional Ag Team
203 North Hamilton Street
Watertown, New York 13601

What's Happening in the Ag Community

Due to COVID-19 social distance restrictions, all in-person CCE NCRAT programs have been postponed until further notice. Several virtual programs will be offered through the Fall and Winter. Also, check out our CCE NCRAT Blog and YouTube channel for up to date information and content.

Understanding Diets and Improving Communication with Your Dairy Nutritionist, October 15th, see page 12 for more information, or click here to register.

Online Feeder School, Nov 3rd and 5th (English) or Nov 10th and 12th (Spanish), see page 7 for more information.

“Free” Interseeded Cover Crops Virtual Field day, October 28th, see page 5 for more information.

Save the Date!! 2021 Becker Forum - Farm Labor: Time of Change, January 11, 2021

Please note that Cornell University Cooperative Extension, nor any representative thereof, makes any representation of any warranty, express or implied, of any particular result or application of the information provided by us or regarding any product. If a product or pesticide is involved, it is the sole responsibility of the User to read and follow all product labelling and instructions and to check with the manufacturer or supplier for the most recent information. Nothing contained in this information should be interpreted as an express or implied endorsement of any particular product, or as criticism of unnamed products. The information we provide is not a substitute for pesticide labeling.