

Solar Farms in Agricultural Areas: A New Challenge for Land Use Planning

By Joe Lawrence, MS, CCA . Reprinted from: <https://www.dairybusiness.com/solar-farms-in-agricultural-areas-a-new-challenge-for-land-use-planning/> on June 4th, 2021

Land use decisions is one of those topics that can seem rather insignificant at the micro-level, such as converting one acre of land to a housing lot. However, at the macro-level it has massive ramifications on our townships, counties and even the world. It's certainly not a new topic as significant concerns around the loss of agricultural land for development have existed for decades but there are new forms of development pressure exerting themselves on farmland.

The term development is often associated with progress; however, the terms are not always synonymous. This is precisely why the loss of farmland to development has been a point of concern for so long. The most obvious concern when farmland is lost is often from a food security standpoint. Another aspect, often-overlooked, is the economic impact of agriculture on local economies. And more specifically, how the economic contribution of a new land use compares to the use of that land for food production.

While different sectors of agriculture utilize different metrics to measure economic impact, the focus here will be on dairy. A study from Cornell University sought to understand the economic multiplier of the money paid to dairy farmers for their milk. The study looked at all the ways farmers spend their money to continue operating their farm and determined that for each one dollar in gross milk sales, 2.29 dollars are generated in the economy through purchases and the jobs these purchases support. Other studies, such as work from the Center for Dairy Excellence in Pennsylvania report the numbers in slightly different ways. However, if you convert the values to common terms, they are in relative agreement.

As with any model or equation, assumptions are needed to look at

the impact of this from a land use standpoint, but data exist to make some pretty sound assumptions.

In most areas, we can reasonably use two acres per cow (and her replacement) for a good balance of meeting forage needs and balancing manure management on a dairy. The next step is to decide on a milk price and level of production per cow. Again, these can be debated, and milk price certainly varies over time and by region, but for this purpose the recent 2020 Cornell Dairy Farm Business Summary report will be used, \$18.25 per CWT and 26,355 lbs. per cow.

Plugging these numbers into the economic multiplier and the result is an annual economic impact of over \$10,900 per cow or over \$5,400 per acre.

Setting aside the very legitimate concerns regarding loss of farmland from a food security standpoint, this value can be used to pose the question, will the new land use generate more than \$5,400 per acre in economic activity.

A form of development pressure that is relatively new involves the push for renewable energy. This push and advancements in technology have put solar energy at the forefront, even in relatively cloudy, snowy states like New York.

Agricultural land offers a convenient place to develop solar projects as the land is already clear and often relatively flat and accessible. Furthermore, historically high-quality agricultural land often led to development of major infrastructure (main roads, powerlines) because of where the first successful settlements were located. This further focuses the current development pressure on some of our highest quality agricultural land, as access to sizable electrical infrastructure is another important criterion for solar developers.

For farmers, solar opportunities may present themselves in two ways. First, a farm can invest in solar panels to help meet the energy needs of their farm businesses, reducing energy costs. There are a number incentive programs for doing so and farmer can find resources in their respective states for this.

Second, and the focus of this article, is the leasing of land to a solar developer to host a commercial solar farm on a farmer's land. In New York, the Climate Leadership and Community Protection Act calls for installing 6,000 megawatts of solar by 2025, a trend also seen in other states and at the national level.

Among the debates on which form of renewable energy should be

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The South Central New York Dairy and Field Crops Program is a Cornell Cooperative Extension partnership between Cornell University and the CCE Associations in 6 Counties.



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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UPCOMING FARM BUSINESS EVENTS

Mark your calendars for these upcoming events!
More information to follow on our events calendar on our webpage.

AG SOLAR

Navigating Solar Lease Agreements and the Solar Development Process: A Program for NY Farmers and Rural Landowners

9:30am - 1:30pm, October 26, 2021

Hybrid Program - offered at multiple locations across NYS
Organizers: Mary Kate MacKenzie, Dayton Maxwell, Nicole Tommell, Elizabeth Higgins, Myron Thurston

Industry and legal experts and local officials will share information to help farmers and rural landowners navigate the solar development process, understand their options, make informed decisions, and negotiate solar lease agreements.

CCE FARMER TAX SCHOOL

Tax Planning for farms that file a Schedule F

7:00pm - 8:30pm, October 13, 20 & 27, 2021

Virtual Program

Organizers: Mary Kate MacKenzie, Dayton Maxwell, Katelyn Walley-Stoll

Agenda:

October 13th - Session 1

(Intro to income tax planning & setting goals)

October 20th - Session 2

(Understanding Schedule F & IRS Pub 225)

October 27th - Session 3

(Strategies for income tax planning with guest Speaker)

Intro to Farm Financial Record Keeping

7:00pm - 9:00pm, December 2, 2021

Virtual Program

Organizers: Joan Petzen

Farm Tax Management for Beginning & Small Farm Businesses

7:00pm - 9:00pm, January 18, 2022

Virtual Program

Organizers: Steve Hadcock, Dayton Maxwell

Tax Incentives, Credits, and Updates for Farms

7:00pm - 9:00pm January 25, 2022

Virtual Program

Organizers: Elizabeth Higgins, Bonnie Collins

leading our efforts to reduce dependence on fossil fuels, one thing is relatively undisputable. While solar offers many benefits, it does have a relatively large land use footprint relative to other energy sources. Most estimates indicate that five to seven acres is required to produce one megawatt (MW) from solar. For New York, this equates to 35,000 to 42,000 acres of land to meet 2025 goals.

In contrast, a wind farm example from the Tug Hill region of NY offers some perspective. While some literature reports the footprint of wind farms as the total area of the farm, from an agricultural land use standpoint the footprint is really only the towers, access roads and power lines as all other land within the project footprint remains viable for farming. According to data for the Maple Ridge Wind Farm in Lewis County, New York, the project covers 21,000 acres but only about one percent is the actual towers and infrastructure. The nameplate capacity of the project is 320 MW, so this equates to approximately 0.65 acres per MW, nearly nine times less than solar.

It should be acknowledged that there are efforts underway around agri-voltaics – food production under and around solar installations. These prospects have generated some excitement but perhaps more significant than the question of how we produce food within the footprint of solar is the question of market opportunities for the potential products. Exploring these market opportunity questions, at a much deeper level than current, will be critical to seeing any meaningful economic impact from agri-voltaics.

It is also important to recognize that not all land is created equal and while protecting farmland is important, protecting our best land has a higher impact. In the context of environmental and economic sustainability, it could be argued that some less productive farmland would be better suited to be utilized for an alternative use as its low productivity creates a higher environmental footprint and cost of production when used to support a dairy cow.

Leasing land for this purpose can certainly be a welcome income source for a farm, particularly in a time of such price volatility, and this is certainly an important factor. For some farmers, it could be just the boost they need to keep the farm going. This topic also elicits discussion about landowners' rights. Without diminishing the importance of these points, the past has taught us just how important higher-level land use planning is. Examples of disputes and challenges resulting from the lack of planning appear, almost daily, in news stories for communities across the country and many have agricultural connections.

On the surface the opportunity for a farmer to lease a parcel of land to a solar project seems to have a number of benefits. The farmer receives income from the land and the local community typically receives some level of compensation in the form of Payments In Lieu of Taxes (PILOT) agreements and other incentives

that generate more funds than the taxation of the open land. However, this is also a case where the actual value of what is being given up can be greater than the value of the new development. Using currently available numbers, relatively productive farmland (the two acres per cow scenario) generates over twice the economic activity as a solar project.

SEE THIS VIDEO: a scenario comparing the economic activity of an acre supporting a dairy cow to that of an average solar development agreement in NY. <https://naturallylewis.com/initiatives/smart-growth-solar>

Taking this a step further, the once thriving small business ecosystems built around supporting agriculture in many rural communities have already disappeared and for many other communities fortunate to have maintained these agricultural ecosystems the pressure is significant. It works both ways. These businesses need a certain density of agricultural production to remain viable and their presence in a community can enhance the economic competitiveness of the farms.

Removing more land from agriculture means fewer total farms and less capacity to support the cows that support this business ecosystem. There are a number of rural communities right on the tipping point for retaining enough acres in farming to support these businesses and the potential shock from rapid land development could be enough to tip the scale on their viability in some communities.

In today's economic environment it should also be acknowledged that discussing economic impact in this way creates a bit of a cruel irony. The numbers show us that a farm can be operating at a deficit but still creating significant economic activity in the local economy as every dollar made (plus some!) is spent to keep the animals healthy and the farm operating. So, while the farm's contributions to the economy are significant, the business is only sustainable when the farm is profitable. This makes the discussion around this topic even more complicated.

There are perhaps no right answers to these questions; however, our best chance of successfully navigating these issues is to at least make sure we are having the discussion and heeding the warnings around under-planned development.

Editor's note: The author is the Dairy Forage Systems Specialist with PRO-DAIRY in the College of Agriculture and Life Sciences, Cornell University. He is also a volunteer in land use planning in his home area, Jefferson County, N.Y. He can be reached at ph. 315-778-4814 or jrl65@cornell.edu.



NY HERO Act Regulates Airborne Infectious Disease Prevention Plans and Safety Committees

by Richard Stup, Cornell University; This post appeared first in [The Ag Workforce Journal](#).

The New York legislature passed and the governor signed the [New York HERO Act](#) on May 5, 2021. This new legislation requires **ALL** employers to adopt an airborne infections disease safety standard, and requires employers with **10 or more employees** to “permit employees to establish and administer a joint labor-management workplace safety committee.” All types of private employers are included in the new requirements and “farmworkers” are specifically identified as included employees in the [legal text](#).



The legislation defines the worksite as “any physical space, including a vehicle, that has been designated as the location where work is performed.” It goes on to include in the worksite definition “employer-provided housing and employer-provided transportation at, to or from the work site...”

Airborne Infectious Disease Exposure Prevention Plans, Due August 5, 2021

The NY State Department of Labor (NYSDOL), in consultation with NYS Department of Health, is responsible for implementing the new law. They created [model safety plans](#) with ready-to-use templates for many industries including [agriculture](#). Employers have the option of simply adopting NYSDOL’s model standard or developing a plan of their own that meets or exceeds all of the law’s requirements. The law requires the plans to specifically address the following items: employee health screenings, face coverings, personal protective equipment (PPE), workplace hand hygiene, cleaning and disinfecting of share equipment, social distancing, compliance with quarantine or isolation orders, engineering controls such as ventilation, designation of supervisors to enforce the plan, compliance with regulations, and the verbal review with employees of all related employer policies.

To get into compliance, farm employers can [download the agriculture template](#), and add information specific for your farm. There are 9 places in the template where you can add farm-specific information. Note that this template is in “fillable PDF” so you should be able to type right in the specially provided boxes and lines on the form.

The text of the HERO act says employers must provide their plans to employees, in writing, in English and in their native language. Further, it says the plan must be posted prominently in the

workplace, included in the employee handbook if the employer has one, and made available upon request to contractors, employees, and government representatives. The [HERO Act website](#) states that “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.” Translations of the template are not available on the website at the time of this writing.

It’s important to note that, while private employers are required to have a plan for their business by August 5, 2021, the plans are not currently required to be in effect. The plans will only be activated “when an airborne infectious disease is designated by the New York State Commissioner of Health as a highly contagious communicable disease that presents a serious risk of harm to the public health.”

Joint Labor-Management Workplace Safety Committee

A less-publicized part of the HERO Act requires employers with 10 or more employees (at any time during the year), to “permit employees to establish and administer a joint labor-management workplace safety committee.” This committee can consist of both employee and employer representatives but it must include at least 2/3 “non-supervisory employees.” The committee must be co-chaired by a representative of the employer and a non-supervisory employee. The committees must be “authorized to perform the following tasks, including but not limited to:”

- Raising health and safety concerns.
- Reviewing safety policies related to the law or to worker’s compensation.
- Reviewing the adoption of policies in the workplace.
- Participating in site visits by government enforcing agencies.
- Reviewing any safety reports filed by the employer.
- Scheduling meetings during work hours at least once per quarter.

The HERO Act website remains silent about this safety committee aspect of the new law but employers should stay tuned as regulations evolve.

Anti-Retaliation Measures and Penalties

The HERO Act includes extensive and specific discussion of anti-retaliation measures regarding all aspects of the new law. Employers are well-advised to take this law seriously and avoid any adverse actions against an employee for asking or complaining about potential airborne diseases, safety issues, or prevention plans at work or in employer-provided housing. Seek legal counsel for specific legal questions.

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FARMER 2021 TAX \$CHOOL

SAVE THE DATE!

**CCE Farmer Tax School
offers ...**

**“Income Tax Planning
for Farms that file a
Schedule F” Workshop**

Wednesdays, October 13, 20 & 27, 2021

7:00pm - 8:30pm

Virtual program offered online via Zoom

Have you even wondered how income tax planning can strengthen your farm business? Save the date for a three-part virtual workshop series on this topic from 7:00pm - 8:30pm on October 13, 20 and 27.

The three sessions will build on each other, starting with an overview of income tax planning. Producers will learn how to set tax planning goals and generate the financial data necessary to get started. The second session will give producers a detailed understanding of the IRS Schedule F. Farm operators will learn how the IRS defines revenues and expenses and calculates depreciation, profits, and losses. This session will cover the relationship between profits and losses shown on the Schedule F and total income tax liability. During the third session, Farm Credit East accountant Paul VanDenburgh will share specific strategies for income tax planning and discuss how to work with an accountant to implement the correct strategies for your farm.

By completing this course, farmers will articulate income tax planning goals and gain a deeper understanding of the strategies and action needed to achieve them. This series is a good fit for any farm that files a Schedule F as part of their IRS income tax return.

Registration information will be released in September. Registered participants will receive a packet of print materials in the mail, digital copies of all print materials, and access to recordings of the three webinars. Check our events page for more information, or contact Donette Griffith (dg576@cornell.edu; 607-391-2662): <https://scnydfc.cce.cornell.edu/events.php>

This workshop series is one of several classes offered as part of our CCE Farmer Tax School. Additional classes will take place in December 2021 and January 2022.

Pesticide Cancellation Update: Lorsban (chlorpyrifos) Ban in NY

The New York State DEC has adopted changes to the state pesticide registration regulations prohibiting chlorpyrifos in New York State effective July 31, 2021. Notice of the regulation adoption was published in the [State Register](#) July 21, 2021. Additional supporting documents for the regulation change can be found at the [DEC's website](#).



This ban went into effect on July 31. The NYS DEC also cancelled the registrations of most chlorpyrifos products on December 31, 2020 and then cancelled the remaining products on July 31, 2021. As for any remaining grower inventory after July 31, the NYS DEC issued an enforcement discretion that will allow possession, transport, storage or handling of open or closed containers of these products for purposes of shipment out of state or for proper disposal and will allow preparation for disposal of these products until February 1, 2022 or until the Enforcement Discretion for Distribution of Unregistered Products Containing Chlorpyrifos is rescinded by the Department.

More info can be found at: <https://www.dec.ny.gov/chemical/122311.html>.

The NYS DEC also notes that, in addition to pursuing re-distribution of these products out of state or proper disposal, growers may also explore participation in a CleanSweepNY collection event. A collection event is planned for October 12 through 14 in DEC's Region 4. Check the CleanSweepNY website, email info@cleansweepny.org or call 518-225-8146 for details. DEC is also pursuing potential collections in other locations.

Note from Janice – If you have product that you need to dispose of please let me know. If there is a critical mass, we can ask for a CleanSweep program in our region. Thanks.

Dystocia and Difficult Calvings: A Perspective from Dam and Calf (Part 2)

By: Betsy Hicks (SCNY) & Casey Havekes (NNY)

It is important to remember that the dam is not the only one that experiences the stress of a difficult calving, but the newborn calf does as well. In Part 2 of this series ([click here to access Part 1](#))*, we will discuss how dystocia impacts the new calf. The information shared below was originally shared as part of [Cornell Cooperative Extension's Critical Calf Care series](#). You can find links to the recordings by clicking here, and supplemental materials by [clicking here](#)**.

Calves born to difficult calvings are referred to as dystocia calves. Dystocia can have both immediate and long-term impacts on the calf, and research has shown that these calves may have reduced survival rates to adulthood and reduced milk production once they are an adult. Included in the list of immediate impacts on the calf is acidosis. Acidosis arises as the result of asphyxia, which occurs with the premature rupture of umbilical vessels. This terminates oxygen supply to the fetus from the placenta, while carbon dioxide accumulates in the bloodstream creating an acid-base imbalance. When this occurs, there is inadequate oxygen uptake by the placenta or lungs, and consequently there is inadequate oxygenation of body tissue cells. In animals with asphyxia, the concentration of carbon dioxide produced by the cells increases in the blood, because its elimination via the placenta or lungs is impaired, and results in respiratory acidosis. A mild case of acidosis with a pH of slightly less than 7.2 occurs in normal calves immediately after unassisted birth and is considered physiologically normal; however, if respiratory acidosis is severe and not corrected, it can further lead to metabolic acidosis. In the absence of oxygen, body tissue cells derive energy from anaerobic glycolysis, which results in the production of lactate and leads to metabolic acidosis. One of the most detrimental impacts of this metabolic acidosis is the decreased colostrum intake and IgG absorption. In some research it was demonstrated that acidotic calves had a 52% decrease in colostrum intake and a 35% decrease in IgG concentrations compared to non-acidotic calves. Part of this is due to decreased absorptive ability for these calves, but the other part is behavioral and related to the fact that dystocia calves are weaker, take longer to stand, and have poorer suckle reflexes when compared to calves from a normal birth.

Despite dystocia calves having a few strikes against them right from the get-go, there are strategies we can implement to help them succeed. The first is to sit the calf upright in a position

called *sternal recumbency*, see Figure 2. This position will allow her lungs to expand to their full potential and will facilitate breathing. The next strategy is to further stimulate breathing; once oxygen starts entering the lungs and carbon dioxide starts leaving, this state of metabolic acidosis will begin to correct itself. Sitting the newborn calf upright is the first step, but you can also tickle the inside of her nose with a piece of straw, or pour cold water over her head which will trigger a gasp reflex. Additionally, you can *somewhat* aggressively rub the calf with a dry towel to promote breathing; at the same time this is going to help her warm up. One very important point is that you should never hang the calf upside down or swing her to try to get fluid out of her lungs. Research has shown that the fluid that is expelled in this act comes from the stomach (not the lungs) and is beneficial to the calf. Additionally, this increases the risk of the calf aspirating on this fluid, as well as putting more pressure on the lungs from the abdomen.

Once the calf is breathing, the next strategy is to keep the newborn calf warm. In order to stay warm newborn calves break down brown fat and engage in physical activity, both of which are compromised for dystocia calves. Using a heat lamp, dry bedding, and calf jackets can help facilitate this process if a dystocia calf needs help staying warm. Expanding the calf's blood volume is another important factor and this can easily be accomplished by feeding colostrum. Dystocia calves often lack a suckle reflex and can be referred to as "dummy calves", this makes colostrum delivery extremely important. We want to make sure the new calf is getting the best quality colostrum possible and if she does not want to drink, we recommend tube feeding her. In fact, recent research has demonstrated that IgG absorption is not different for calves whether they are fed by tube feeder or by bottle. It is also important to pay attention to how the colostrum is being warmed if you are feeding frozen colostrum. We want to make sure that is being warmed slowly



Figure 2. Calf in "sternal recumbency" position.
Photo credit: <https://www.calf-tel.com/en/calf-corner/dystocia-calves-need-extra-tender-loving-care>

(Continued on page 7)

and that may take some careful planning on your part. When placing the colostrum in water to thaw it out, make sure the water is not too hot (< 120°F) as IgG proteins will be denatured and ineffective for the calf. A good way to test this is by putting your hand in the water; if it is too hot for you to comfortably rest your hand in, then it is too hot for warming the colostrum.

Lastly and likely the simplest strategy, is just to monitor the new calf extra closely. This calf is going to be more susceptible to disease as compared to calves from normal births. We encourage you to watch out for behavioral indicators of disease as those will often present themselves sooner than physiological signs. Some farms put some type of special indicator on the calf or her hutch/pen, such as a pink clothespin or calf collar, as a reminder that she was born to dystocia and may require special attention. In some cases, the newborn calf may benefit from a non-steroidal anti-inflammatory drug (NSAID). This strategy can be extremely useful, but requires special planning with your veterinarian as it is considered off-label use for that class of medicine.

As discussed in Part 1, dystocia has a huge economic impact to the dairy and beef industries with costs coming from both the dam and the calf. Attention to this time period will help ensure the best outcome for them both. For the calf, the various strategies discussed above will help increase the likelihood of her survival, improve resistance to disease, and will promote growth and vitality. If you have dystocia problems on your farm, please reach out to one of us (Betsy Hicks: bjh246@cornell.edu; 607-391-2673 / Casey Havekes: cdh238@cornell.edu; 315-955-2059) and we can help you troubleshoot this challenging area.

* https://nydairyadmin.cce.cornell.edu/pdf/newsletter/pdf305_pdf.pdf

** <https://www.youtube.com/playlist?list=PLBMGyzTr13du4xAYtpEXoXUXUiWZzfbDA>



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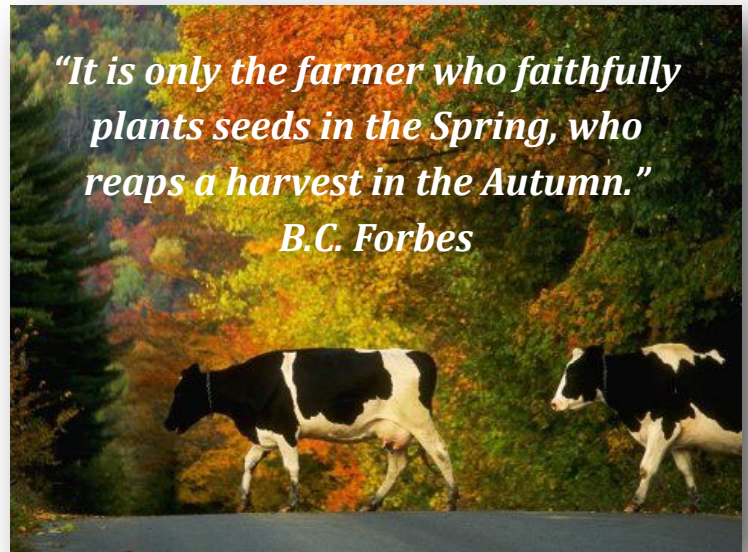


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plants seeds in the Spring, who
reaps a harvest in the Autumn."*

B.C. Forbes



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For more information or to make an appointment

Cornell Cooperative Extension

Healthy, Hardy Heifers!

**A virtual series for managing heifers
post-weaning to calving**

CCE Regional Ag Teams are excited to offer this NEW heifer series! Join us **VIRTUALLY** for an 8-week series on heifer management topics from post-weaning to calving! This series will be offered virtually via Zoom every Friday starting October 1st, 2021, at 12:00pm EST. Sessions will be ~30 - 45 minutes in length, with a question period at the end.



Registration:

<https://scnydfc.cce.cornell.edu/event.php?id=1656>

**This program is offered at NO COST
thanks to our generous sponsors!**

For registration help/questions, please contact:
Donette Griffith, dg576@cornell.edu / 607-391-2662

*Sessions offered online (via Zoom) at 12:00pm EST**

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Fridays at 12:00-12:45pm EST

October 1 – Series Kick-Off

*Murilo Carvalho, Holstein
Canada*

October 8 –

**Transition After Weaning
CCE NCRAT Dairy Specialists**

**October 15 – Pre-Breeding
Comfort and Nutrition**

*CCE NCRAT and SCNY Dairy
Specialists*

October 22 – Hoof Health

Dr. Dorte Doepfer, UW Madison

October 29 – Repro Strategies

Dr. Julio Giordano, Cornell

November 5 – Bred Heifers

Dr. Tom Tylutki, AMTS

November 12 –

**Pre-calving Nutrition
Dr. Mike van Amburgh, Cornell**

November 19 – Pre-calving

Comfort and Facilities



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

Cornell Cooperative Extension Transition Cow Tuesdays

Transition Cow Management Webinar Series

Tuesdays from Nov. 2 to Dec. 14, 2021
12:30-1:00pm

These webinars are short and to the point, just 30 minutes. Grab your lunch and join us.

Have you...

...been working with the farm transition cow program but want to know more about the how, what and why?

...wanted to improve the transition cow performance of your herd but need to know where to start?

...wanted to increase the skills you bring to the farm or your farm employer?

...been wondering where you'll find the time to attend a course or workshop?

If so, this webinar series is designed for you.

Dates and Topic

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.

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.

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.

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.

Nov 30 - Calving-

Parturition is critical step in transition. This session will discuss the basics of cow behavior, calving assistance, and physiology.

Dec 7 - Post Calving Monitoring-

This session will outline the steps for monitoring cow health post calving.

Dec 14 - Evaluating Transition

Management- This session will cover Dairy Comp items to track and measure success of the transition program.

Presenters:

Tom Overton, PhD, Professor of Dairy Management, Chair of the Department of Animal Science at Cornell University

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

Rob Lynch, DVM, Cornell PRODAIRY Program

Judy Moody, Agricultural Resource Management Specialist, Dairy One

Margaret Quaassdorff, CCE NWN, Regional Dairy Specialist

David Balbian, CCE CNY Regional Dairy Specialist

Lindsay Ferlito, CCE NNY Regional Dairy Specialist

Casey Havekes, CCE NNY Regional Dairy Specialist

Betsy Hicks, CCE SCNY Regional Dairy Specialist

Register once for access to all webinars.

REGISTER

Register online at:

<https://cals.cornell.edu/transition-cow-tuesdays-webinar-series>



Cornell CALS
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Cropping Notes

By Janice Degni—Field Crop Specialist

Anticipate an early corn silage harvest.

Rough guidelines for the progression of corn maturity predict 45 days from silk stage to ½ milklane. I spotted tassels poking out the 3rd week of July and there were many fields in silk by the 28th of July. Estimating timing of harvest from that date, using 45 days as the benchmark, puts us in the 2nd week of September for corn to be at or approaching ½ milklane. When the ear reaches ½ milklane, it is recommended to collect stalks and chop them up to measure whole plant moisture. Over the years we have learned that whole plant moistures will vary at ½ milklane, in response to the season's growing conditions.

Taking a deeper dive and mining years of climate data using the Climate Smart Farming *Growing Degree Day Calculator* we know, in general, it takes around 1000 growing degree days (GDDs-86/50 method) to reach the tassel and silk stage in corn. It takes roughly another 1000 GDDs to reach ½ milk-line and an additional 100 GDD to reach full maturity at black layer. Of course, there is variation between shorter and longer season hybrids. For example, an 80-day hybrid requires about 1100 GDD's and a 110-day hybrid about 1,400 to reach silking. To reach ½ milklane it takes an additional 770 GDD for an 80-day hybrid and 1000 GDD for a 110-day hybrid.

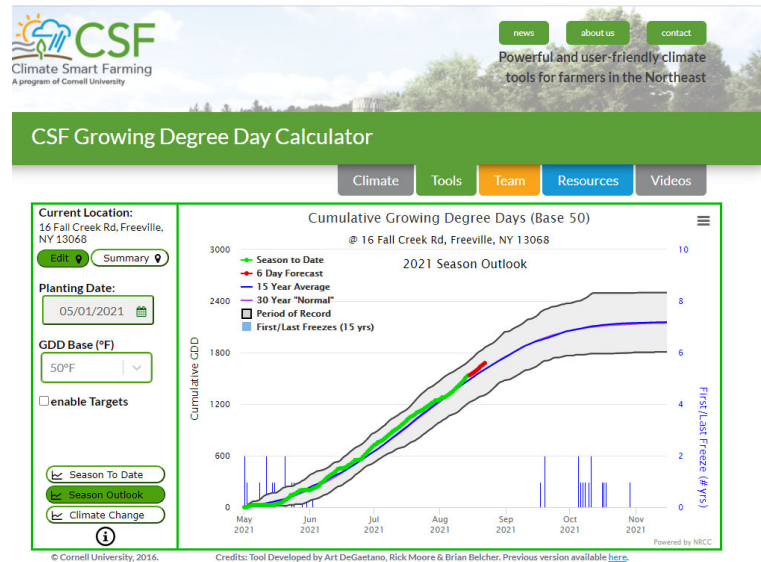
Using long-term climate data from Freeville, NY I will provide an example for our six-county region. Your neighborhood may be slightly ahead or behind the numbers for Freeville. These numbers provide general guidelines extracted from long-term weather data. Other factors that will affect rate of maturity include planting date and growing conditions like moisture and night temperatures. Plants have shown compensatory growth, requiring fewer GDDs to reach maturity when planted late or when the season is cool.

At the Freeville weather station, the Climate Smart Farming

Growing Degree Day Calculator logged 1007 GDDs on July 16 and predicts an accumulation of 2002 by September 24.

See Table 1. Average daily GDD accumulation by month for the range of average daily accumulation.

According to the historical record the earliest frost date is September 17 and the latest frost date is October 29. Frost is the book end of the growing season.



You can get data for your fields by visiting the Climate Smart Farming Site tools and pin your location on the map. Update your planting date and you will have customized values for your farm (<http://climatesmartfarming.org/tools/csf-growing-degree-day-calculator/>).

The following article is about staging corn for harvest. Joe Lawrence and Ron Kuck's article, [Setting the Stage for Success: Corn Silage Harvest](#), has all the current recommendations and guidelines for making and preserving great corn silage.

Find the article on page 15 or online at: <https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/7/2349/files/2018/09/Corn-Silage-Harvest-1zzocvl.pdf>.

Table 1. Average daily GDD accumulation by month (Freeville, NY 2021)

	Average Daily Accumulation	Monthly Accumulation	Season Summary to date (5/1 - 8/24)	Annual GDD Accumulation (30-year normal) May – Oct 15
May	6	199		
June	17	506		
July	17	539		
August	19	491	1735	
				2108
Source: Northeast RCC CLIMOD 2. http://climod2.nrcc.cornell.edu/				

Please contact Janice if you want assistance staging your corn for harvest.



Setting the Stage for Success: Corn Silage Harvest

By Joe Lawrence, Cornell PRO-DAIRY & Ron Kuck, Cornell Cooperative Extension

Taking the time to plan can greatly increase the odds of success in any endeavor. Planning for corn silage harvest not only increases the odds of getting through harvest season with success but will benefit your farms feeding program for the next year.

“As farmers, we must constantly keep in mind that there is no animal on the farm that possesses the power to transform coarse forage and grain into the highest order of human food like the cow. *But the lesson for us to consider is how we can best aid this wonderful animal in her transforming power.*” – W.D. Hoard

The potential for short forage supplies following a challenging 2016 growing season further elevates the importance a successful harvest. Executing a proper harvest plan and managing the manageable can increase the value of the feed and reduce unnecessary losses to what may already be a short feed supply.

Dry Matter

Whole plant dry matter remains the single best way to stage corn silage harvest. Recent rains on drought stressed corn make whole plant testing all that more important. Visual assessment of plants can be very misleading, especially if the stalk and leaves are stressed from drought.

Storage Type	Dry Matter %
Bunk silos and piles	32-36
Bags	32-36
Concrete Uprights	35-38
Sealed Uprights	40-50

Kernel Processing

Since kernel processors began showing up on choppers the guidelines for an “optimum” processing score have changed several times to the point where several are actually suggesting that there is no such thing as too much kernel processing, so long as overall forage particle size isn’t compromised.

A quick evaluation can be done by placing a sample of corn silage in a bucket of water. The kernels will separate from the fodder so you can easily assess kernel damage. The goal should be greater than > 90% breakage of kernels.

While it takes more management with larger choppers (running greater volumes of material through the processor), it has been shown that excellent kernel processing scores can be achieved regardless of machine size.

Laboratory Scores	
Rating	Processing Score
> 70	Good
50-70	Adequate
< 50	Poor

Work with your farms crop team, crop advisors, nutrition advisors and equipment representatives to make sure you your processor is ready to go and is being monitored throughout harvest.

Length of Cut and Particle Size

Achieving proper length of cut in balance with kernel processing takes great attention in monitoring chopper performance and making continual adjustments as harvest progresses and changes in forages (dry matter, stage of maturity, hybrid, and yield) occur.

Forage harvester settings:

- If using a processor, theoretical length of cut (TLC) should be 0.75 inches.
- Set the processor rolls with an opening of 1-3 mm.
- If not using a processor TLC should be 0.25 – 0.5 inches.

Guidelines for Penn State particle separator:

2 screens + pan

- Top screen = 10-20% of the total weight
- Middle screen = 40 – 60%
- Pan = < 40%

3 screens + pan

- Top screen = 5-15% of the total weight
- Second screen = > 50%
- Third screen = < 30%
- Pan = < 5%

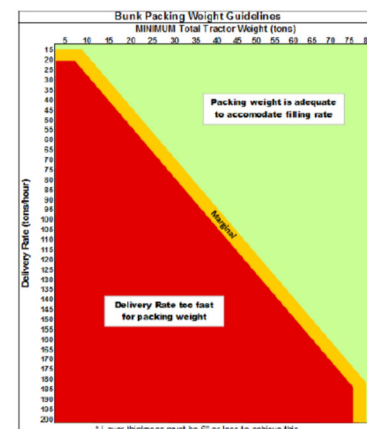
Source: <http://ansci.cals.cornell.edu/sites/ansci.cals.cornell.edu/files/shared/documents/ImaturFrstedCornSilag.pdf>

Corn Shredlage: Like conventional processing shredlage units require continuous monitoring and adjustment. Manufacturer guidelines for TLC are 1-1.2 inches (26-30mm); however, some farms report reducing TLC back to approximately 0.75” depending on forage parameters at harvest. Study and survey results indicate that while, with shredlage, a greater percentage of material will remain on the top sieve, increased sorting by animals was not observed.

Storage Management

Minimizing dry matter losses with your forages is always important but can make be especially beneficial when facing tight forage inventories.

- **Bunk Density** - Achieving proper density is essential to reducing dry matter losses in storage. See our article on packing bunk silos at <http://prodairy.cals.cornell.edu/productionmanagement/resources>.
- Pack in thin layers (< 4-6”)
- Inoculants – Utilize bacterial inoculants to aid in fermentation and reduce losses
- Cover with oxygen limiting plastic
- Feed out – manage feed out to maintain fresh forage.
 - ⇒ Set goal to remove a minimum of 4-6” from surface/face of silage each day.



Be Safe! Make sure you and your crew go home safely each day.

Alfalfa Fall Harvest Guidelines in NY; Forage Research Update Series

By Dr. Jerry Cherney, CCE Forage Specialist

Fall harvest management is one of the factors affecting the ability of alfalfa to overwinter successfully. Other factors include the age of the stand, the winter hardiness and disease ratings of the cultivar, the length of cutting intervals throughout the season, soil pH, soil K level, soil drainage, and whether growth is left to catch snow. Once we have planted a stand of alfalfa or alfalfa-grass, the primary two persistence factors we can control are soil K level and fall cutting management.

Good Old Days

For a number of decades, the policy for alfalfa fall harvest was to insist on a no-cut fall rest period of 4-6 weeks before the first killing frost. This critical fall period allowed root reserves to be replenished and minimized the chances that cutting management would negatively impact overwintering. Adequate time to replenish root reserves was considered 10% bloom by some researchers, while others assumed that 8-10" of top growth in the fall assured maximum root reserve storage, prior to the first killing frost. It also left significant alfalfa residue to facilitate insulating snow catch.

What is a "Killing Frost"?

The temperature at which alfalfa essentially stops all growth is somewhere between 24 and 28 ° F. Sheaffer (MN) suggested the first killing frost was 28 degrees F, Tesar (MI) considered it 26.6 ° F (-3° C), while Undersander (WI) considered a killing frost as 4 or more hours at 24° F. Other studies have used 25° F as the definition of first killing frost. This can greatly impact the date of "first killing frost". In Ithaca, NY for example, the latest "first killing frost" date for 30 years of weather data occurred Nov. 5 at 28° F vs. Dec. 10 at 25° F. When accumulating Growing Degree Days (GDD) until first killing frost, a low temperature such as 25° F is not reasonable, as all alfalfa varieties with appropriate winter hardiness ratings for the region would have gone dormant well before Dec. 10.

Fall Alfalfa Harvest Management, 1980's

During the 1980's, numerous studies in Canada and the northern USA investigated alfalfa fall harvest management. Research in southern Saskatchewan found that a third cut between Aug. 25 and Sep. 20 reduced spring yields, compared to an Oct. 1 cut. McKenzie et al. (1980) determined that a second cut from Aug. to mid-Sep. consistently reduced future yields in central Alberta, but not in northern Alberta. In Minnesota, Marten (1980) concluded that a third harvest anytime in September would not reduce persistence, assuming it was a winter hardy variety on well-drained soils high in K, and there was consistent snow cover. In Michigan, Tesar (1981) also concluded that a third cut in September or early October was not harmful.

Tesar and Yager (1985) suggested that a third cut in September in the northern USA was not harmful as long as there was adequate time for replenishment of carbohydrate reserves between the second and third cuttings. Sheaffer et al. (1986) concluded that fall cutting does increase the risk of long-term stand loss, but that fall cutting will provide short-term higher yields and high quality. They also concluded that length of harvest interval and number of harvests during the growing season were as important as the final harvest date.

Root Reserves Assessed with GDD

The first attempt to quantify carbohydrate reserves between second and third cuttings of alfalfa based on GDD occurred in Canada. Research in Quebec by Belanger et al. showed that it may be acceptable to cut during the critical fall rest period in September, as long as there was an interval of approximately 500 GDD (base 5° C) between the fall harvest and the previous harvest. For forage crops in the USA, GDD are calculated using base 41, with heat units accumulated above a daily average of 41° F (5° C). These do not generate the same number of GDD units, 500 GDD base 5 C is equal to 900 GDD base 41 F.

Current NY Guidelines

The sum of the above research results caused NY fall alfalfa harvest recommendations to change about 20 years ago to "Allow a rest period of 6 to 7 weeks between the last two cuts". A similar recommendation in PA of "At least 45 days between the last two cuts" was also adopted. This recommendation has not changed in NY for the past 20 years. Keep in mind that any cutting management options during the critical fall rest period must involve healthy stands of better adapted winter hardy varieties with multiple pest resistance.

Application of the 500 GDD Criteria

A comparison of the Quebec 500 GDD base 5 C rest period can be made with the currently recommended "6-7 week rest period". By selecting the years with the least and most GDD accumulated during August and September, a range in days for the rest period can be calculated, based on a 500 GDD interval between the last two cuts (Fig. 1 & 2). If cutting on Sep. 1, the 500 GDD interval prior to Sep. 1 is about 5 weeks (Table 1). If cutting Sep. 30, the 500 GDD interval prior to Sep. 30 is 6 to 7 weeks. The rate of decline in GDD units per day in the fall is similar for central and northern NY (Fig. 3 & 4; Table 1).

All X- and Y-axis date combinations below the shaded boxes in Fig. 1 and 2 identify the rest period interval that will result in 500 GDD

(Continued on page 13)

before the September cut with high confidence. These date combinations resulted in 500 GDD for all 30 years of weather data. All X- and Y-axis date combinations above the shaded box in Fig. 1 and 2 will be very unlikely to accumulate 500 GDD, as this never happened in 30 years. For example, in Ithaca (Fig. 1) if alfalfa is cut on Aug. 2, it is Sept. 12 before you are out of the rest period shaded zone. Using the 500 GDD concept, our current 6-7 week rest period is appropriate for cutting at the end of September, but could be reduced to approximately a 5 week rest period if cutting Sep. 1. For rest periods based on GDD, the later it is in the season, the longer it will take to accumulate 500 GDD (Fig. 3 & 4).

Applying the 500 GDD Interval to the Critical Fall Rest Period before 1st Frost

It has been suggested to apply the Quebec research to the period preceding 1st frost, and help define a “no-cut” time interval prior to 1st frost. The assumptions are that we need 500 GDD (base5 C) for alfalfa to build up root reserves. A second assumption is that it is safe to cut alfalfa if there are less than 200 GDD (base5 C) remaining before the first killing frost, as there would be insufficient regrowth to use up enough storage carbohydrates to negatively affect alfalfa persistence. We are presenting this system as an example, even though we were not able to find any evidence in the scientific literature concerning the 200 GDD assumption. A similar example of this concept can be found in Michigan literature (<http://www.agweather.geo.msu.edu/agwx/articles/article-09.html>), although GDD base₄₁ were used for this example incorrectly. Using the 500/200 GDD criteria, we can approximate the odds that fall mowing will not cause winter injury.

Approximate probabilities of either accumulating over 500 GDD (base5 C) or accumulating less than 200 GDD (base5 C), with long-term weather data (30 consecutive years) can be calculated if alfalfa is cut on a particular date in the fall at a particular site (Fig. 5 & 6). Four dates can be determined to approximate 0 and 100% chances of either more than 500 GDD after fall cutting, or less than 200 GDD after fall cutting. For this exercise, we are assuming that the first occurrence of 28°F is a “killing frost”. A killing frost in Watertown occurs on average 9 days earlier than in Ithaca (Table 1).

Four dates, (a,b,c,d, Fig. 5 & 6) are identified by calculating the following:

- Year with earliest killing frost date: subtract 500 GDD base5 C (from Sep. 20, 1993).
- Year with latest killing frost date: subtract 200 GDD base5 C (from Oct. 28, 2001).
- Year with latest killing frost date: subtract 500 GDD base5 C (from Oct. 28, 2001).
- Year with earliest killing frost date: subtract 200 GDD base5 C (from Sep. 20, 1993).

For long term weather data, these dates correspond to:

- Latest calendar date resulting in >500 GDD base5 C after fall cutting.
- Earliest calendar date resulting in <200 GDD base5 C after fall cutting.
- Earliest calendar date resulting in <500 GDD base5 C after fall cutting.
- Latest calendar date resulting in >200 GDD base5 C after fall cutting.

To simplify the display, we then assume a linear relationship between 0% and 100% chances that fall cutting will not cause winter injury. Statistical probabilities could be calculated individually for each day, but the results would not provide clear guidelines. The rate of GDD accumulation into the fall gradually decreases and is not perfectly linear (Fig. 3 & 4), but for practical purposes a linear display suffices. Cutting on Aug. 31, Sep. 1, or Sep. 2, the odds of either accumulating >500 GDD or accumulating <200 GDD in Watertown, NY are approximately zero. Using this system, the date that would maximize the chances of winter injury due to cutting is Sep. 1 in Watertown, and Sep. 6 in Ithaca.

Comparing the Systems

Compare Fig. 4 (interval to 1st frost) to Fig. 2 (interval between last two cuts). If alfalfa was mowed on July 25, and then mowed again on Sep. 1 in Watertown, the chances of winter injury due to cutting are near zero for Fig. 2 (with 500 GDD accumulated between the last two cuts all 30 years). So under one system (Fig. 4), Sep. 1 would be the worst date to cut alfalfa in Watertown, while under the other system (Fig. 2), Sep. 1 can be a very safe date to cut alfalfa.

It is possible that both systems are reasonable. Allowing a 500 GDD interval before a Sep. 1 cut would make a Sep. 1 cut relatively safe. On the other hand, not allowing 500 GDD before a Sep. 1 cut might make this the worst possible time to cut an alfalfa stand. Keep in mind that winter damage to alfalfa is an accumulation of insults. A weakened stand will be considerably more susceptible to damage from intensive harvest management, as well as mowing during the critical fall rest period.

Reasons to be more Conservative in NY vs. the Midwest

There are several issues more specific to the Northeast/New England, which will likely have an impact on the chances of fall cutting affecting long-term alfalfa persistence. The basic requirement for any cutting of alfalfa during the critical fall period is that near ideal conditions exist. That is, you have a healthy, very winter hardy variety with high soil K, good soil drainage, and good snow cover over the winter. Good soil drainage in NY is often not the case, and consistent snow cover is never guaranteed. In northern NY there is also the possibility of alfalfa snout beetle and/or brown root rot damage, which could greatly affect the

(Continued on page 15)



Calf Care & Quality Assurance Publishes Animal Care Reference Manual

Aug 11, 2021; News Release

ARLINGTON, VA – [The Calf Care & Quality Assurance \(CCQA\) program](#) today published the first volume of its [Animal Care Reference Manual](#). This manual assists farmers and ranchers who raise different breeds of male and female calves intended for dairy and/or beef production systems, encouraging calf raisers to approach management decisions with thoughtfulness and an appreciation for the responsibility they have to their animals, consumers and the broader cattle industries in the U.S.

“The Animal Care Reference Manual is a fantastic resource which highlights best management practices and recognizes the good work that calf raisers implement across the country,” said Beverly Hampton Phifer, Stakeholder Relations Manager for the FARM Program. “This inaugural CCQA resource deliverable was designed to help calf raisers continually improve animal care outcomes on the farm while providing assurances for the supply chain.”

In addition to the manual, the CCQA program also offers resources specific to the needs of calf raisers such as protocol templates and animal observation scoring reference guides. Online and in-person opportunities for individuals looking to be CCQA-certified, as well as a facility self-assessment, will be available later this fall.

The CCQA program is jointly led by the National Dairy Farmers Assuring Responsible Management (FARM) program, managed by the National Milk Producer’s Federation (NMPF) and NCBA’s Beef Quality Assurance (BQA) program, funded by The Beef Checkoff. Support is also provided by the Dairy Calf and Heifer Association, and The Beef Checkoff-funded Veal Quality Assurance (VQA) program.

-COVID-19 VACCINES-

The New York Center for Agricultural Medicine and Health (NYCAMH) is coordinating on-farm COVID-19 vaccine clinics for farm owners and their employees in New York State.

NYCAMH nurses with COVID-19 vaccine experience administer the vaccines on site. All paperwork is completed on site by NYCAMH staff who can provide information and answer questions in English and in Spanish.

All services are FREE.

To sign up, you must be:

- **Over age 18**
- **A farm owner or employee (H2A workers included)**

NYCAMH will schedule appointment dates and times that work with your farm’s schedule.

Time away from work will be approximately 30 minutes.

A minimum of five vaccine recipients are needed to schedule an on-farm clinic. Often one farm will host for its employees as well as workers coming from for other area farms.

For additional information or to schedule an on-farm vaccine clinic with NYCAMH, please call Kathy Smith at 607-547-6023.



Bassett Healthcare Network
New York Center for Agricultural
Medicine and Health

consequences of cutting during the fall period.

Reasons to be less Conservative in NY vs. the Midwest

Another NY-specific issue is that of species mixtures. Most alfalfa in the Midwest is sown in pure stands, over 85% of alfalfa sown in NY is in mixture with perennial grasses. For mixed stands with alfalfa, growers may be somewhat less risk averse than with pure stands, when it comes to the chances that fall cutting will result in shortened persistence of the alfalfa component. Loosing alfalfa more quickly from a mixed stand is not quite as catastrophic as losing alfalfa in a pure stand. With the availability of Round-up Ready alfalfa, the frequency of pure alfalfa stands in the Midwest is likely to increase. Because NY has few prime alfalfa soils, it is less likely that RR-alfalfa will greatly increase the proportion of pure alfalfa stands in NY.

Conclusions

Our historical understanding of alfalfa root reserves provides evidence for maintaining a Critical Fall Rest Period for alfalfa. Applying the 500 GDD criteria to the Critical Fall Rest Period, however, results in an average rest period before 1st killing frost exceeding 7 weeks. Past research data provide evidence that a sufficient rest interval between the last two cuts allows us to take the last cut during the critical rest period. There does not appear to be evidence to change our basic logic for fall harvest of alfalfa. Some fine tuning of the rest interval between the last two cuts can be made using Fig. 1 and 2. The above suggestions are for healthy stands. If a stand is not healthy, a more conservative harvest management may increase the chances of stand survival.

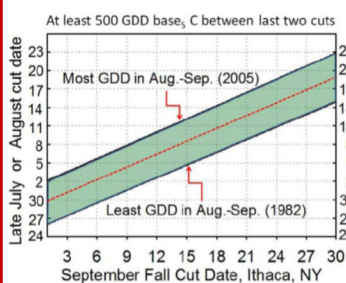


Figure 1. Range in rest period between September cut and previous cut to accumulate 500 GDD bases C (or 900 GDD bases F) for Ithaca, NY. Based on 1982-2011 weather data.

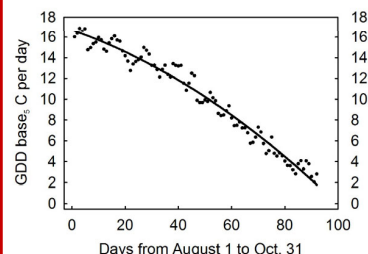


Figure 3. Accumulation of GDD units (bases C) per day between August and October for Ithaca, NY. Averages of 12011 GDD weather data.

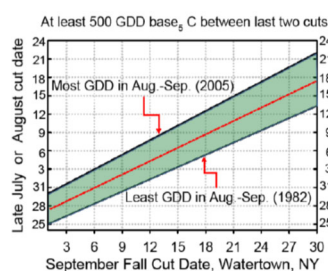


Figure 2. Range in rest period between September cut and previous cut to accumulate 500 GDD bases C (or 900 GDD bases F) for Watertown, NY. Based on 1982-2011 weather data.

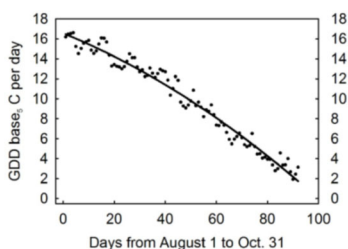


Figure 4. Accumulation of GDD units (bases C) per day between August and October for Watertown, NY. Averages of 1982-2011 GDD weather data.

Table 1. Ithaca (central NY) vs. Watertown (northern NY), 30 years of weather data.

	Ithaca	Watertown
Range in 1 st 28°F frost date	Sep. 29 – Nov. 5	Sep. 20 – Oct. 28
Average date of 1 st frost	Oct. 16	Oct. 7
Decline in GDD units/day from August 1 to Oct. 31 (GDD bases C)		
Linear decline per day in GDD	-0.16	-0.16
Critical Rest Period before 1 st frost (500 GDD bases C interval)		
30 year Range	6.3 to 9.0 weeks	5.3 to 8.2 weeks
Average Critical Rest Period	7.6 weeks	6.8 weeks
Average Rest Period between last two cuts (500 GDD bases C interval)		
If last cut is on Sep. 1	4.6 weeks	5.0 weeks
If last cut is on Sep. 15	5.3 weeks	5.6 weeks
If last cut is on Sep. 30	6 weeks	6.3 weeks
If last cut is on Oct. 15	6.7 weeks	6.9 weeks
Rest Period to guarantee 500 GDD between last two cuts		
If last cut is on Sep. 1	5.1 weeks	5.3 weeks
If last cut is on Sep. 15	5.9 weeks	6.1 weeks
If last cut is on Sep. 30	6.6 weeks	7.0 weeks
If last cut is on Oct. 15	7.3 weeks	7.6 weeks

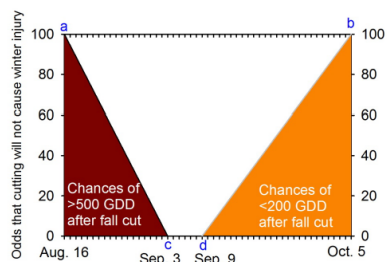


Figure 5. Approximate chances that fall cutting will not cause winter injury to alfalfa in Ithaca, NY. Based on 1982-2011 weather data and GDD bases C (500 and 200 equivalent to 900 and 360 GDD bases F). This is based on killing frost dates considered as the first 28°F temperature.

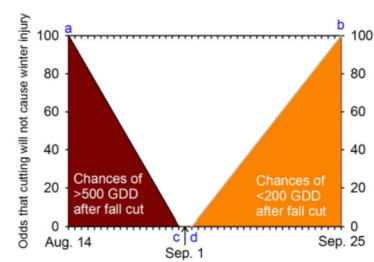


Figure 6. Approximate chances that fall cutting will not cause winter injury to alfalfa in Watertown, NY. Based on 1982-2011 weather data and GDD bases C (500 and 200 equivalent to 900 and 360 GDD bases F). This is based on killing frost dates considered as the first 28°F temperature.

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Cornell Cooperative Extension

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Upcoming Events

September 8 12 pm – 2 pm	Dairy Grazing Pasture Walk Summer Series—Session Three; Murraydale Farms– Truxton, NY With USDA Natural Resource Conservation Service Grazing Specialist, Karen Hoffman / No Charge Register here https://scnydfc.cce.cornell.edu/event.php?id=1629 or 607-391-2662 for assistance
September 8 10am-2pm September 14 1pm-3pm	Silage Dry-down Clinics - 2 Locations in conjunction with Ward and Van Scoy Corn Silage Plot Day, Marean Drive, Newark Valley just past the fire training facility. Tully Ag Center, 20 Onondaga Street, Tully. Collect 4-6 stalks/field, label field. Corn should be dented approaching or near 1/2 milk line. Contact Janice or Betsy for additional details.
September 18, 2021 10 am-3 pm	Onondaga County On-Farm Fest Enjoy a free day of family-friendly fun as local farms open for tours. Learn about life on the farm and discover the latest advances in agriculture. Many farms will have local products and food for sale, live music, and interactive exhibits. For more details: https://onondagagrown.com/onfarmfest/
October 1,8,15,22,29 November 5,,12,19 12—12:45 pm	Healthy, Hardy Heifers! Virtual Series Fall 2021 Sessions offered online (via Zoom) at 12:00 pm EST To register: https://scnydfc.cce.cornell.edu/event.php?id=1656 ; FMI: Donette Griffith, dq576@cornell.edu / 607-391-2662
October 13, 20 & 27 7:00 pm - 8:30 pm	Tax Planning for farms that file a Schedule F Virtual Program; FMI: https://scnydfc.cce.cornell.edu/events.php
October 5, 2021 6:30 pm – milk punch 7 pm—business meeting	Cortland Cty Farm Bureau Annual Meeting Dinner & Business Meeting FMI: https://www.facebook.com/Cortland-County-Farm-Bureau-228387873973131/ Location: TBA
October 26, 2021 9:30am—1:30pm	Navigating Solar Lease Agreements and the Solar Development Process: A Program for NY Farmers and Rural Landowners Hybrid Program - offered at multiple locations across NYS FMI: https://scnydfc.cce.cornell.edu/event or 607-391-2662 for assistance