

SPRING 2021

Cornell Cooperative Extension

Central New York Dairy, Livestock and Field Crops

Quarterly Newsletter

Spring Has Sprung!

The CNYDLFC team has been busy making provisions to get back out visiting people, planning for summer meetings and just the general scouting that we do as a team. We are eager to see all our producers, yet we still must continue to follow COVID guidance as we move from spring to summer. The team is planning on a few outdoor events that would include pasture walks and other on-farm activities. I hope as the events roll out; folks will gather to visit with their farm friends! Our events although educational, really are social gatherings! I cannot wait for the CNYDLFC team to connect with you at the farm level. It brings me great joy.

Please continue to read our weekly newsletter that is sent out on Thursdays. This will give you all the weekly happenings as well as upcoming programs and events. If you do not receive, please let the office know at herkimer@cornell.edu.

Happy Planting!

Nicole

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Current Practices May be Harming First Calf Heifers

By David R. Balbian, Area Dairy Management Specialist

There has been plenty of research conducted with lactating dairy cattle. The return on investment when there are positive results is often easy to document via increased milk output. The adoption of the new practices is often based on the economic returns.

When it comes to heifers, the economic returns are not as obvious. We have to wait until they are producing milk to determine any benefits. Heifers are an expense without immediate economic returns. We have learned to view these replacement animals as an investment that can provide an economic return in the future.

In the past, some dairy producers determined the success of their calf-raising program on whether or not the calves lived or died. Today we know that nutrition and the health status of these calves can have a huge impact on their productivity later in life. By now, most dairy producers have learned of current recommended practices related to feeding our newborn and pre-weaned dairy replacements. Feeding higher levels of milk or milk replacer results in better growth rates, better immunity and healthier calves that are likely to be more productive as cows.

The question we need to be asking ourselves is what other heifer raising practices that we control have an impact on the productivity of these animals once they enter the milking herd. Our recent Central New York Dairy Day program brought these questions to the forefront for me. Dr. Mike Van Amburgh from the Department of Animal Science at Cornell was the speaker who raised these questions. The first is the question of how we wean these calves. There is frequently a lull in growth during this period. This area warrants more work and research.



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However, the question I want to bring to you today is the pre-fresh period for our first calf heifers. How do you group and feed these animals? It is not uncommon for these animals to be grouped with pre-fresh cows where they are fed the same diet. These diets are typically designed to minimize the likelihood of metabolic problems at calving. They may have a negative cation ion balance. They may be what we sometimes call “the goldilocks diet” that is high in fiber, low in energy and provides bulk to promote rumen fill. Is this the right diet for these heifers? We often feed it to them because it is convenient, but is it what they need. Competition at the feed bunk and for stalls can be another issue. We recommend that milking first calf heifers have their own group. The advantages are well known and documented. We say that first calf heifers are still growing as the reason for their lower milk output when compared to older cows, as they still need nutrients for growth. This is another reason to have them well grown at calving, so they will need less nutrients to grow during that first lactation.

These young first calf heifers are very resilient, but what are the issues we sometimes see in the field? Very little or no colostrum production is not uncommon. Failing to bag up and poor milk production is another. Other metabolic issues can also occur. What could be the reason for these issues? Dr. Van Amburgh gives us something to ponder. Fetal growth really ramps up around 90 days pre-calving, and this first calf heifer is still growing herself. On top of all that, we sometimes put them in an overly competitive grouping situation and feed them a low energy diet. No wonder they have problems. Their nutrient need goes up and we feed them a diet with less nutrients! So, what should we be doing with these pre-fresh heifers? Perhaps they should be in a separate group beginning at 90 days pre-fresh and fed a diet that will support their own growth and the growth of their calf. This would be a diet that is substantially different from the mature cow pre-fresh diet and it would need to be fed for a longer period. I have heard of people grouping pre-fresh first calf heifers separately, but not for 90 days. This area of management and nutrition is ripe for additional research. We may be missing a key component that could result in healthier and more productive first calf heifers. It makes sense and is worth thinking about.



Robotic Milking: Routine Flexibility

by Margaret Quaassdorff

Robotic milking is a growing management style on New York's dairies with over 60 robotic dairies across the state. Proper facility design, and managing cows in a way that takes cow behavior into consideration has helped to decrease the amount of labor needed on these farms. In addition, the type of work and way that it is performed can differ from that of a conventional dairy that milks in a parlor or tiestall setting. In our Automated Milking System (AMS) discussion group, we have recently covered topics surrounding everyday operations, routines and tasks. No matter what color robots a farm has, one goal of an AMS is to maintain steady traffic to the robot in order to reach maximum production and efficiency. Dairy farmers who spoke of successes in their daily routines, recommended to double- and triple-up on tasks in order to spend less time physically disrupting their cows. For example, one dairy farmer fetches cows, scrapes manure out of the barn, and beds with sand in the same time block. During this time, the rest of the cows in the pen are pushed up to the feed bunk alley where they can eat. Depending on the number of fetch cows he has at that time, he keeps the robot milking while he completes the chores in the pen. The fetch cows are typically finished milking when he is ready to move the rest of the cows away from the bunk to clean and bed the front stalls and alley. This leaves the robot open for only a short time before the cows coming back over from the feed bunk will enter to be milked.

Another dairy farmer has found success in moving their feeding time to the early afternoon instead of early morning. She claims that cows do not run out of feed overnight, and the feeding hours are more comfortable for the person doing the job. Automatic scrapers keep the alleyways clean, and open stalls are scraped by hand and wood shavings are added to the mattress beds as needed. Cows are not forced to move if they are lying down at this time.

Training heifers to the robot is a challenging, and sometimes frustrating, chore to many dairies. A dairy with four boxes was able to spend some time training heifers to walk into the robot, and become familiar with the prepping process, and the movements of the robot arm. This made the transition to the milking string easier after the heifers calved in. Some dairies rely on a strict fetching policy for heifers to make sure they are milked three times per day.

Others allow a little more flexibility when training heifers to go through the robot, and have seen some get the hang of it sooner than others. If you are large enough to have a transition pen, it works well to concentrate your main fetch cows and heifers there as they get used to using the robots. An organic grazing dairy has learned that it can take a little while for the cows to overcome the herd mentality to leave the pasture and go into the barn to milk. Most mature cows figure it out quickly, and come and go as needed. All heifers must go through the robot before leaving to go out to the pasture again. All farms agreed that fetching cows is both a science and an art.

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Robotic Milking continued

Opinions about footbath location, frequency, and solution use differed among many dairies. All agreed that putting it at the entrance of the robot would reduce the number of visits to the robots. Some chose to have the cows walk through as they exit the robot, which did not seem to affect visits, but could potentially cause chemical damage to the robot machinery and mechanics in the long run. Others chose to put the footbath away from the robot at cross-alleys, and run the entire herd through several times a week.

When considering labor, farms with fewer than three robot boxes had no more than two full-time employees completing all chores on the farm, including feeding calves and heifers, and taking care of maternity and fresh cows. Farms with six to eight robot boxes said that almost everyone was cross-trained on all chores on the farm with a few more focused employees for robot maintenance. In speaking with larger robot dairies, it seems they tend to have specifically skilled employees for different areas of the farm including larger tasks of breeding, feeding, special needs cows, and robot maintenance. This helps to maximize the efficiency of each employee, and capitalize on their strengths. In the end, all dairies agree that to maintain efficiency in an AMS, it is good to have a set routine for daily, weekly, monthly and yearly tasks. They also stress the need to be flexible in how you go about accomplishing each task, as different cow behavior and robot technology can sometimes interfere with your plans.

If you are a robotic farm interested in joining our discussion group, please send an email to maq27@cornell.edu to find out the details of the next meeting. Reprinted with permission from Margaret Quaassdorff, Dairy Management Specialist, CCE Northwest Dairy, Livestock, & Field Crops Team.



Photo 2. Employees inspecting the mechanical side of an automated milking system.

Photo credit: Margaret Quaassdorff



Photo 1. Cow being prepped for milking in an automated milking system. Photo credit: Margaret Quaassdorff

Managing Prolapses in Cows

by Dr. Elizabeth Crabtree, Oklahoma State University College of Veterinary Medicine. Reprinted with permission

With spring calving season approaching, many ranchers will have to deal with the dreaded uterine and vaginal prolapse.

Both prolapses are closely associated with calving, but each has very distinct causes and occurs at different times. It is important to recognize what type of prolapse you are dealing with to institute the appropriate treatment in a timely manner. This article covers the predisposing factors of each type of prolapse, the differences in treatment for each prolapse, and the implications each has for subsequent calving's.

Both the vagina and uterus are part of the female reproductive tract. To understand prolapses, it is important to understand how the cow's reproductive tract is arranged. In the cow, the vagina and the uterus are separated by the cervix. The cervix serves to close the uterus off to the "outside" during pregnancy. During labor the cervix dilates to allow the calf to pass out of the uterus, through the vagina, and out into the world. So, while both are a part of the reproductive tract, they are separate anatomical structures that serve very different purposes.

As the name implies, a vaginal prolapse is the prolapsing of the vagina itself. This condition most often occurs in late gestation, days to weeks before the expected calving date. During this process the cervix remains intact protecting the pregnancy. There are many predisposing factors to the development of a vaginal prolapse, the most important being the increase in abdominal pressure due to the growing fetus. Many other factors such as high body condition score, age, and breed/genetics will also predispose cattle to vaginal prolapses. Vaginal prolapsing is especially recognized in the Hereford breeds. An important factor to remember is that if a cow has a vaginal prolapse once, she is highly likely to prolapse again. This makes it an important management issue, and culling is recommended.

A vaginal prolapse is generally smaller in size with a smooth to slightly wrinkled look. Treatment for a vaginal prolapse is rather straight forward—replace the vagina into normal position with the assistance of an epidural anesthesia. A Buhner's stitch is placed to keep the prolapse from reoccurring. This stitch will need to be removed once calving starts because it will impede the progress of labor and endanger the cow and calf.



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Uterine prolapse is much different. As the name implies, it is a prolapsing of the uterus. Uterine prolapses occur after calving when the uterus inverts itself through the cervix and the vagina out of the cow. A uterine prolapse will be larger in size than a vaginal prolapse, usually reaching all the way to the ground. Often another distinguishing factor is the presence of placentomes or the connection between the calf and the cow. These structures are oblong in shape, dark purple in color and raised. There are a handful of predisposing factors for uterine prolapses: a prior vaginal prolapse, low calcium levels, and dystocia or difficult delivery. In beef cattle, a prolonged delivery is the most common cause. For this reason, the best prevention of a uterine prolapse is early intervention when a heifer or cow is having difficulty calving. Uterine prolapses are an emergency and need to be addressed by a veterinarian as soon as possible. With the uterus out, tension is placed on the large uterine vessels. This tension on the vessels puts the cow at risk of rupturing, which can cause the animal to go into hypovolemic shock and bleed out internally. With this in mind, transporting is not ideal as this can cause more trauma and tension to the uterus and its associated vessels.

Treatment of a uterine prolapse is less straight forward than a vaginal prolapse. Replacing the uterus into its proper position is more difficult than a vaginal prolapse. An increase in time spent outside of the body also increases the difficulty of replacing the uterus, and decreases the prognosis. If a uterine prolapse is severe enough, the option of amputation is sometimes best. This option gives the cow time to raise her calf, but she would need to be culled due to her lack of a reproductive tract. The severity of uterine prolapses often indicates further supportive care and potential hospitalization are needed to give the cow her best shot at survival. Unlike a vaginal prolapse, uterine prolapses are not hereditary in nature. This means that a cow does not necessarily need to be culled based on a uterine prolapse alone.

While this article makes prolapses seem cut and dry, that is not always the case. Prolapses are a vicious cycle of pressure and straining that causes a worsening of the prolapse that causes more straining and so on. It is possible for both the vagina and uterus to prolapse. Remember, if your animal has a prolapse, it is important to have the animal examined by a veterinarian in a timely manner.

IMPORTANT HIGHLIGHTS TO KEEP IN MIND:

Vaginal Prolapse:

- Smaller in size
- Smooth to slightly wrinkled contour
- Most likely occurs before calving
- Genetic, recommend culling
- Make an appointment with your veterinarian

Uterine Prolapse:

- Larger in size
- Most likely occurs after giving birth
- No genetic component
- Medical emergency
- Transport not recommended

Weaning Tips & Tools to Limit Stress in Your Flock

by Ashley McFarland, Regional Livestock Specialist

As spring slowly comes to an end sheep producers are preparing their flock for one of the most stressful times on lambs and ewes.

The weaning process should start roughly 7-10 days prior to the date you actually would like to pull the lambs off. When I say weaning, this is a practice we do when we pull and separate the ewes and lambs from each other. At this point our lambs are anywhere from 8-10 weeks of age and have been receiving a creep grain or highly palatable forage since roughly a week of age. By this age, the lambs are receiving most of their nutritional value from grain or hay and not from their mother anymore. Lambs are consuming water so they are fully ready to take on the big world without their dam alongside of them.

The ewes should be given poorer quality hay (late made dry 1st cutting is recommended) and remove ALL grain from their diets during the weaning process to ensure proper dry down. Some producer's will even remove water for 24 hours to reduce their milk supply, studies have not shown whether or not this is a huge helping aid in this process. Remember to not pull water in temperatures above 50 degrees F.

The weaning process can be done a few different ways. Some producers like to wean and turn ewes and lambs right onto pasture. The lamb's age at weaning may be slightly higher due to grass availability. Other producer's wean at 60-80 days regardless. By weaning around two months of age this allows the ewe to gain condition back to get rebred in a few months and the lamb to get a great start on its own. The lambs should be at least 50 pounds when weaning occurs. Often producers with more terminal breeds such as your black faced lambs will wean around 80 pounds. Every operation weans at a little different time and if that fits your farm than don't change your management practices.



Predominately, ewes will hit their peak lactation production approximately 3 week after parturition occurs. After 4 weeks the ewe's production will slowly start to decrease. By the time they reach 6 weeks milk production will rapidly decrease. At 2 weeks of age it would be wise to have free choice hay or grain in a creep area where the ewes cannot get access. This will allow the lambs to receive all of the feed rather than the ewes taking it on them. It is recommended to keep free choice minerals for the entire flock at all times.

Weaning placement can be done a few ways:

- 1.) Fence line weaning; having a secure, sturdy fence that neither the ewes nor lambs can break through is key.
- 2.) Removing the ewes from the barn in order to not hear or see their lambs.
- 3.) Keeping lambs on the ewes while ewes are on pasture and doing a "natural weaning". This would occur around 4-6 months. This would be the least stressful on both the ewes and the lambs, however this will run your ewes down tremendously.

Before weaning we need to make sure all lambs have been properly vaccinated and are ready to take on this stress. It is recommended that lambs be vaccinated within the first 7-14 days of birth and to be given a booster vaccine 3-4 weeks after. The most common vaccine given is a CD& T vaccine. That is recommended to be given prior to castration and tail docking.

At this time we need to keep a very close eye on ewes and lambs. Watch for ewes that may go off feed, and or have hard, or red udders. This is a sign of mastitis and would need intervention immediately. In lambs that go through weaning stress they need to be evaluated daily for scours, and feed consumption. If any of these signs are present I recommend you talk to your veterinarian and get their opinion.

By following these tips above this will help minimize the health issues that can arise during stressful times such as weaning.

How to Talk About COVID-19 Vaccination with Your Employees

by Mary Kate MacKenzie, Farm Business Management Specialist; Richard Stup, Ag Workforce Specialist; and Mary Jo Dudley, Director of the Cornell Farmworker Program

The decision to receive the COVID-19 vaccine is a highly personal one, yet each individual's decision has profound implications for public health. At the farm level, that makes farmer and farm worker vaccination an important risk management issue. The more people on your farm who are fully vaccinated against COVID-19, the lower your risk of experiencing a COVID outbreak with consequences for employee health and farm operations.

As a manager, your words and actions have potential to influence employee attitudes about the vaccine. How can you communicate effectively about COVID-19 vaccination with your family members and employees? Here is a list of Do's and Don'ts to help you have productive conversations that lead to more vaccinations.

DO

1. Be the first person on your farm to get the COVID-19 vaccine.

Actions speak louder than words. Leading by example is an easy way to demonstrate that you take the threat of COVID seriously and you view the vaccine as an important tool to reduce COVID risk. It also gives you the ability to speak from your own experience about the process of getting vaccinated and any side effects that you experienced. If one person on the farm gets vaccinated, that may make others less hesitant about receiving the vaccine. According to a survey conducted by the Kaiser Family Foundation's COVID-19 Vaccine Monitor, individuals who were eager to get the vaccine were 79% more likely to know someone who was already vaccinated compared to individuals who said they would get the vaccine "only if required".

2. Discuss COVID-19 vaccination early and often with your employees.

Encourage employees to get the COVID-19 vaccine and discuss how vaccination is good for the farm. Share your reasons for getting vaccinated and describe your experience with the vaccination process. Provide information about COVID-19 risks and the benefits of vaccination from trusted sources, including the CDC, the Cornell Farmworker Program, and the Institute for Food Safety at Cornell. Be sure to provide information in your employees' native language. Share the English and Spanish recordings of a recent webinar featuring medical providers discussing "COVID-19 vaccines for farmworkers: Should I get it and what are the side effects?"

3. Share the fact that vaccines have a long and effective history of controlling and eradicating diseases in both humans and animals.

Measles, mumps, diphtheria, whooping cough, and polio are just a few of the devastating human diseases that we control routinely with vaccines. Smallpox, an historic scourge of humanity that killed 3 in 10 of its victims and left others scarred and blinded, was eradicated worldwide by vaccines. Similarly, animal agriculture industries have long used vaccines to prevent disease in livestock. Farmers and farm employees should be very familiar with vaccines and understand the import role they play in controlling disease and promoting health.

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4. Help employees navigate the logistics of getting vaccinated.

Make sure your workers know that, in New York State, vaccination is free and available to anyone age 16 and up who lives or works in the state. Share information with your employees about clinic locations, dates and times, and how to register. Make sure employees know they are eligible for up to four hours of paid leave to get a COVID-19 vaccination. Discuss transportation options and whether the farm is able to transport employees to a vaccination site.

Once your employees have registered for the vaccine, make sure they have all necessary documentation ready for their appointment, including photo identification. This can include documents from another country, such as passports, voter registration cards and consular IDs, or photo identification from another state. Everyone should bring proof that they live or work in New York State. Those that do not have a New York State ID can bring a paystub showing the farm address. Health insurance is not required for vaccination. However, people who have health insurance should bring their insurance policy information to their appointment.

5. Listen to employee concerns and consider whether you can do anything to alleviate them.

Listening without judgement to employee questions and concerns is one of the best ways to build confidence in the COVID-19 vaccine. Some employees may voice concerns stemming from a lack of information or misinformation about the vaccine. Others may worry about missing work after getting the vaccine due to potential side effects. In response, be prepared to share your own reasons for getting vaccinated, provide information about vaccine safety from reliable sources, and communicate your farm's sick leave policy. Discuss staggering vaccination dates for workers to avoid the possibility of everyone experiencing side effects at the same time.

6. Continue sharing information about new opportunities to get vaccinated.

Farmworker vaccination efforts across New York State are gaining momentum. Now that eligibility is based on age, farmers and farm workers may access the vaccine through multiple channels, including sites run by New York State, county health departments, and pharmacies. According to the Governor's April 13 announcement, the state is devoting additional resources to increase vaccine delivery to farmers and farm workers through convenient pop-up vaccination sites. As you learn about new vaccination opportunities, be sure to share them with your employees. If you have workers who are not ready to get vaccinated now, they may be interested in a few weeks or months.

DON'T

1. Repeat doubts about the safety of COVID-19 vaccinations from unreliable sources.

The scientific community is strongly in support of the vaccines that are approved for use in the U.S. because they are safe and effective. This was demonstrated both through large scale trials while the vaccines were being developed and now by the hundreds of millions of people who have safely received them. Rumors and doubts expressed by leaders can make employees afraid of the vaccine. There are actual risks from vaccines, such as rare allergic reactions, but these risks are far outweighed by the risk of not getting vaccinated and the danger that unvaccinated individuals present to themselves and to everyone with whom they come into contact.

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2. Disregard or judge employees when they ask questions or share their concerns.

These are truly uncertain times and the pandemic has provoked historic levels of fear in our society. Stress and anxiety can hinder good decision-making and leave people vulnerable to unfounded rumors and misinformation. Do not dismiss employees' concerns with a quick judgement. Instead, listen and ask questions. A listening ear can help people unpack their concerns and hold them up for examination against the facts. You might then have an opportunity to follow up with reliable information from trusted resources after listening.

3. Fail to encourage your employees to get vaccinated.

It is not enough to rely on public messages to encourage your employees to get vaccinated. As a business manager, you are a trusted source of information and guidance. Your silence about COVID-19 vaccination might be read by employees as indifference or, worse, hostility toward vaccination. The safety of your employees and their families, the future of your business, and the health of our communities depends in part on your positive communications about vaccination.

Conclusion

Leadership matters. Your efforts to encourage vaccination for your employees and their families could have far-reaching effects in protecting health and life. Please do your part to encourage the people you lead to get the vaccine, get protected, and help snuff out COVID-19.

Resources

Here are the full web addresses for the two webinar recordings referenced above, hosted by the Cornell Farmworker Program and Finger Lakes Community Health:

- COVID-19 vaccines for farmworkers: Should I get it and what are the side effects? (English): <https://cals.cornell.edu/covid-19-vaccines-farmworkers-should-i-get-it-and-what-are-side-effects>
- Las vacunas para el COVID-19: ¿Debería obtenerla y cuáles son sus efectos? (Español): <https://cals.cornell.edu/las-vacunas-para-el-covid-19-deberia-obtenerla-y-cuales-son-sus-efectos>

A set of FAQs, based on farmworker questions during the webinars, is available through the Cornell Farmworker Program (farmworkers@cornell.edu).

The Cornell Farmworker Program also has emergency resources available to assist farm workers whose families have been affected by COVID-19. Information about the farmworker emergency relief fund in both Spanish and English can be found at: <http://www.trabajadores.cornell.edu/>



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We Want to Collect Your Cereal Leaf Beetle Larvae!

by Ken Wise, NY State Integrated Pest Management (klw24@cornell.edu)

Many of you have had issues with cereal leaf beetle in small grains. In the late 1960s and 1970s, USDA released a parasitoid that controlled cereal leaf beetle at very high levels. It was established and did a good job on control for many decades. In some parts of NYS there are very low levels of these parasitoids. We are looking to reestablish them in those areas.

In 2020 NYS IPM (Jaime Cummings) conducted a survey on the percent parasitism of cereal leaf beetle larvae in several areas of the state. The results are as follows:

Cereal leaf beetle parasitism data summary from 2020

Location	County	Collected	Crop	# larvae	% parasitized
Livingston	Columbia	4-Jun	conventional oats	76	0
Livingston	Columbia	4-Jun	organic spring wheat	71	0
Livingston	Columbia	4-Jun	conventional spring barley	64	0
Livingston	Columbia	4-Jun	organic winter barley	58	3.5
Valatie	Columbia	4-Jun	conventional winter wheat	10	10
Valatie	Columbia	4-Jun	conventional oats	46	23.9
Ithaca	Tompkins	10-Jun	conventional winter wheat	77	2.6
Trumansburg	Tompkins	15-Jun	conventional winter wheat	62	0
Seneca Falls	Seneca	11-Jun	conventional winter wheat	14	0
Baldwinsville	Onondaga	12-Jun	conventional winter wheat	128	0
Rose	Onondaga	12-Jun	conventional winter wheat	100	0
Baldwinsville	Onondaga	12-Jun	conventional winter wheat	83	0
Baldwinsville	Onondaga	12-Jun	conventional winter wheat	79	0
Shortsville	Ontario	17-Jun	conventional winter wheat	98	0
Aurora	Cayuga	24-Jun	Conventional spring barley	20	0
Ithaca	Tompkins	24-Jun	conventional spring oats	77	0

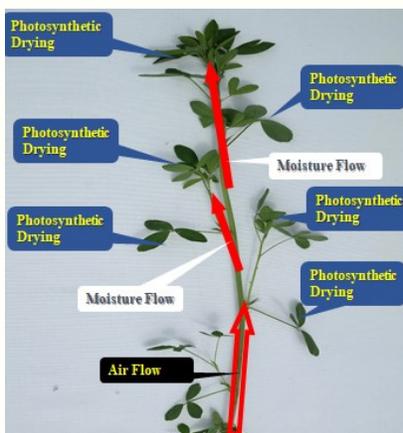
As seen in the table, most areas of the state have very low levels of the biocontrol parasitoid. We are looking to conduct the same survey in 2021 as well as continuing to develop a parasitoid insectary refuge on the Cornell Farm in Aurora. This can help us reestablish the parasitoid in areas of the state that might need them. If you have cereal leaf beetle in your fields please let your area specialist know (Erik Smith, eas56@cornell.edu) and we can come and collect them. We will also let you know the rates of parasitism of the beetles in your fields.

Winter Forage: Windrow Compost vs. Photosynthetic Drying

by Thomas Kilcer, Certified Crop Advisor

Winter forage has yielded more in one cutting than all 5 cuttings of many alfalfa harvests. It is both a benefit and a problem. The heavy crop comes out the back of the mower and lands with a splat. It is a lot of material to get to 35% DM.

Winter forage harvested at the flag leaf stage has very highly digestible components. The fiber digestibility is higher than many Brown Mid Rib forages. I have measured sugar levels over 20% on a dry matter basis. The nutritional quality when the mower pulls into the field and what reaches the mouth of the cow can be two very different forages. For those who are still using the old traditional mowing directly to windrow and letting it sit for 2-3 days, what reaches the cow's mouth is far, far, less quality than what you mowed. Mowing directly to windrow is windrow composting – it is not preserving high-quality forage – it is not drying the forage as fast as it could. It simply aerobically composts the most readily digestible components that could be used to produce milk as it slowly over-dries on the outside. It makes a major difference in the amount of digestible energy reaching the mouth of the cow.



Leaves in sunlight continue to photosynthesize and use water at a rapid rate. If the stem is not damaged from conditioning it will draw nearly all the water out of the stem and draw air in the bottom drying the stem first and the leaves last.

Many of today's farms are mowing, without conditioning, directly to a swath greater than 80% of the cutter bar. The majority of the leaves and intact stems are in the sun. This allows PHOTOSYNTHETIC DRYING to remove moisture faster than any machine manipulation. Photosynthesis in sunlight converts carbon dioxide (CO₂) and the plant's water (H₂O), into carbohydrates. The plant, even cut off, is still alive. If the leaves are in sunlight they continue to photosynthesize down to about 50% dry matter; removing water in the cut plant, while producing sugar and other highly digestible components – thus increasing feed quality as it simultaneously dries the forage. It commonly increases the energy reaching the cow's mouth 20%. The key bonus is that it will dry it faster than any machine handling. By not conditioning the stem, the leaves will wick the moisture out of the stem. Thus, the stem dries first and the leaves last. Mowing without conditioning results in a swath with leaves on the top in the sun to maximize photosynthesis, and the stems underneath. In a narrow windrow and/or if you leave it overnight, the reverse happens and the plant respiration burns up digestible components and produces water – it is composting. The outside is dry as corn flakes and the center as wet as direct mowed. As the center of the windrow respire the digestible parts, it leaves no substrate for inoculants to properly ferment. Thus, Clostridia organisms take advantage of the situation, degrading the protein and producing Butyric acid. These are the flat, wet, butyric smelly lumps in your silo.



Narrow rows on right are ready to chop in 2-3 days. Wide swath on left in 2-3 hours.

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That said, remember winter forage yields are 30% - 250% heavier than first cut alfalfa. Top management yields are a 2 - 3 times thicker swath than alfalfa. Laying the swath at greater than 80% of cutter bar allows for photosynthetic drying - for the top couple of inches. For a heavy crop like winter forage, the swath is thicker than the sun can penetrate. We have found that after 2 hours of drying the top is getting very dry to the point it stops photosynthetically drying; while the bottom is as wet as when you mowed it. Tedding winter forage 2 hours after mowing is key to bringing up the lower layers to the sunshine for photosynthesis to dry it. Watch your tedder forward speed. Going too fast forward will make nondrying tedder lumps rather than lifting the lower layers and spreading them to dry. The tedder must be set to the top of the stubble or else it will be rooting in the dirt, increasing ash level, and decreasing milk production. Some tedders have the top tine longer than the bottom so it can move the crop without rooting in the dirt. Others have hooked teeth that do an excellent job of bringing up the bottom layers to the top. I have seen 3-ton dry matter yield triticale mowed without conditioning at 80% of cutter bar width at 10 am; tedded at noon, and merged and chopped at 35% dry matter by 3 pm.



The better quality the feed the more it packs in the windrow. This maintains 100% humidity and so it does not dry inside the windrow. 80% of the forage is in the dark and respiring away the digestible components that make milk - decreasing feed quality.

Photosynthetic drying also works with other haylage crops. They don't usually need to be tedded. This drying results in forage that is higher in digestible components than when the mower cut it. Old style multiday haylage had Net Energy of Lactation of .58-.60. Wide swath same day was .71 or more; almost the same as corn silage. The sugar boost produced in photosynthetic drying provides substrate for the inoculant (highly recommended) to quickly drop the pH to stable silage levels, thus eliminating clostridia and butyric formation even in wetter forages. The quick pH drop conserves even more nutrients for the cow. The higher sugar also supports higher milk protein production. The other result is that you only need one day to get the crop ensiled. What gets mowed today, gets ensiled today. Taking smaller acreage in a one day mow/ensile system can get more done than waiting until the crop is past prime until you get a 2 or 3-day window to mow the entire countryside. This is especially beneficial for labor limited farms. As you can see in the graph above-right, in the study we conducted on four alfalfa varieties, leaving a swath 90% of the cutterbar width and with NO conditioning, 38 inch tall first cutting on a humid sunny day was ready to chop in 1.5 hours. The biggest problem the first year farmers try this, is the silage gets too dry. It dries faster than they think. Farmers have proven that the system works.



As winter forage yields are passing 3 tons of dry matter (reaching 4 & 5 tons on farms) even with wide swath the layer is too thick and tedding 2 hours after mowing is key to making 35% DM same day haylage.

Do No-Tiller Need Coulters Anymore?

by Julia Gerlach, writer at No-Tillfarmer.com. Article published February 26, 2021. Reprinted with permission

These row-unit stalwarts were once essential for no-tilling. But with today's advances in planter technology, are they still necessary?

Hailed by many as one of the critical equipment developments that made no-till possible, the use of coulters on planters has declined in popularity a great deal in the past few decades.

In 1991, a No-Till Farmer survey showed that a vast majority of no-tillers – 94% –utilized coulters on their planters to slice through surface residue ahead of seed openers and, in some cases, work a little bit of soil as well. In fact, data from our most recent 2021 No-Till Operational Benchmark Survey indicates only about 43% of no-tillers use them today.

Dave Dum, a planter maintenance expert with equipment dealer Binkley & Hurst, says this shift is largely due to improvements in other planting technologies. “In the past, we thought that to no-till we needed a coulter, but in fact a lot of farmers can do the job without them – especially with air bags and hydraulic down pressure,” he says.

Andy Thompson, a territory sales manager at Yetter Mfg., agrees and says if a farmer tell him he wants to use coulters, he asks why. “A lot of farmers are just using them because they’ve always used them. But we’re not running 1980s planters anymore,” he says. “Today we have hydraulic down forces that are automated, we have very heavy row units and heavy planters with plenty of weight on the tool bars to hold them down,” he says.

“Some of the original reasons why we needed coulters – to loosen the ground and allow us to penetrate better and to get loose soil to close the seed trench – we’ve replaced all of those things with better ideas.”

The Cutting Edge

While neither Dum nor Thompson are enthusiastic about coulters, they acknowledge that there may be situations and soil types where farmers might find having coulters on a no-till planter to be beneficial and they both say that sometimes the effectiveness depends on how coulters are being set up and used.

“A coulter, especially if it’s running deeper than the seed opener, will cause issues. It shouldn’t run deeper than the seed opener blades or it can cause a false bottom in the seed trench,” says Dum, adding that a false bottom can lead to air pockets that dry out the soil, causing uneven seed depth and emergence.

Thompson agrees and adds that running coulters too deep frequently leads to soil being pulled out of the ground.

“This can cause soil plugging around rows cleaners or gauge wheels, which can actually change the row unit depth,” he notes.

Thompson also says using coulters limits the ability to use other, possibly more impactful, attachments due to a lack of space on the planter.

“On most row units, there’s a certain amount of space at the front of the row unit where we can put attachments – maybe 19 to 22 or 23 inches,” he says. “If we put a coulter up there, there’s very little we can do to change the performance of the row cleaner or add other features. It’s pretty valuable real estate.”

“When a farmer tells me they want to use coulters, I ask if they’ve ever not used a coulter,” Thompson says. “I’m always willing to listen and try to understand if they have a good reason for using them. But after 15 years I haven’t heard a compelling answer.”

Both Thompson and Dum concede coulters will lessen wear on seed opening discs and possibly smooth out the path for them.

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“Working the ground a little can make it easier for the seed opening discs to form the trench,” says Dum. “If you’re running a coulter, it’s doing a lot of the harder work of loosening a little ground for the seed opener blade following behind.”

Dum says one instance where he sees coulters as potentially beneficial is in heavy clay soils. “I like a 13-wave or a turbo coulter blade in heavy clay. But when it gets wet, they can pull wet dirt out of the seed trench,” he warns. “I don’t like bubble coulters because they smear the sidewall too much, which is one reason I think some farmers go away from coulter blades.”

Some argue that coulters can be helpful in situations where residue is abundant or unevenly distributed in front of double-disc seed openers. But Thompson says that in those cases having row cleaners is more important.

“Anytime you have something penetrating the ground, if you don’t move the residue first, then you run the risk of just pushing it into the seed slot, or hairpinning,” he says. Thompson uses the analogy of cutting a piece of string.

“If you put a piece of string on a cutting board and press down on it with a blade that’s really sharp, you’ll probably cut it,” he says. “But if you take that same piece of string and that same sharp blade and you lay the string on top of butter, when you press your blade down, you probably won’t cut the string – you’re just going to shove it down into the butter.”

Thompson says in situations with hard ground or good soil resistance, coulters may work fine. But in those cases, no-tillers need to make sure to keep their blades sharp.

“Getting back to our analogy, if you take that same string and the same cutting board but instead of using a sharp knife you use a butter knife, then you’re not going to cut the string,” he says.

“And that’s one of the issues we have with coulter blades. When they’re running straight and they’re sharp, a lot of times they will cut the residue. But if they start to get dull or if you’re using a wavy coulter, they’re less likely to do a good job of actually keeping an edge and cutting through the residue.”

Wavy blades, of course, often aren’t used primarily for slicing through residue, Thompson explains. Rather, some no-tillers use them to loosen the soil to make it easier for the opener blades to penetrate it. Likewise, the loose soil can be beneficial on the back end, facilitating the closing of the seed trench.

“But our closing-wheel technology has come a long way in the last couple of decades and we no longer need the soil loosened up,” says Thompson. “We can actually do that better in the back with spiked closing wheels than we can up front with a coulter.”

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Cutting through stalks. For some no-tillers who plant high levels of crop residue, coulters can be beneficial in terms of slicing through heavy corn stalks. But experts say coulters need to be kept sharp or they can actually cause hairpinning, and contribute to problems achieving even emergence.

Sharpness and Moisture Impact Performance

For no-tillers who use coulters, research from Iowa State University suggests focusing on keeping coulters sharp may be more important than worrying about what kind of coulters to use.

Tests conducted by ag engineers Chang Choi and Donald Erbach comparing smooth, rippled, notched and fluted coulters showed little difference between them when soil and residue conditions were the same.

Most tests with the coulters were run at 19-22% moisture, and at soil compaction levels similar to those found under no-till field conditions.

Smooth, fluted, rippled and notched coulters of 16 inches in diameter were tested along with an 18-inch rippled coulters and 18-inch sharpened, rippled coulters.

Tests were conducted at a speed of 2.8 mph and the coulters were operated at 1½- and 3-inch depths. The coulters were run through corn stalks collected in the fall prior to corn harvest. Stalks were cut into 1-foot lengths, set in water to provide three levels of residue moisture content, and placed on the soil surface perpendicular to the coulters path at distances of 6 inches, 1 foot and 2 feet between stalks.

The percentage of corn stalks sheared was not affected by coulters type, but was affected by moisture content of the stalks, say Choi and Erbach. “The dry stalks were cut easier than wet stalks.”

The percentage of corn stalks sheared was not affected by coulters type, but was affected by moisture content of the stalks, say Choi and Erbach. “The dry stalks were cut easier than wet stalks.”

As the moisture content of stalks increased from 13% to 67%, the percentage of sheared stalks decreased from 89% down to 33%.

Stalk-shearing ability of the sharpened coulters was superior to that of other coulters. More than 90% of wet corn stalks were sheared by the sharpened coulters – even at the low-soil-strength level. The percentage of stalks sheared was a little greater for the large coulters, but not significantly.



Wavy coulters are often used to fracture the soil's surface, but no-tillers need to be careful about the speed at which they've run. As a planter goes faster, the impact of the coulters blades ripples outward and can create a much wider seed trench than expected.

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Helpful Hints

For no-tillers who choose to use coulters, here are a few tips:

⇒ If running a coulters, be sure to adjust it and run it above seed depth. “A lot of farmers never adjust the depth of their coulters,” says Andy Thompson, a territory manager with Yetter Mfg.

“If you’re going to use a coulters, put new V opener blades on, put brand new coulters blades on, and then level the planter and adjust the coulters so it’s ¼-3/8 of an inch above the bottom of the seed depth. Then at the end of the season, go through and adjust as needed for the next year.”

⇒ If choosing to use a coulters, be sure to place a residue manager in front of it. “The goal is to never penetrate the soil until after the residue is moved — that’s our best-case scenario,” Thompson says. “If we don’t do a good job with that and there’s residue in the way when the coulters comes through, we’re much more likely to get hairpinning.”

⇒ Advertised seed trench widths are approximate and relative to speed. Higher-than-average speeds will result in more soil disturbance. For instance, a 16-inch 13-wave coulters may have an advertised seed trench width of 1 inch, but if the planter is running at 8-10 mph, Thompson says, the seed trench will be more like 2 inches.

“It’s kind of like if you were to vibrate your fingers in water,” says Thompson. “The faster you wiggle your fingers, the further the waves move outward.”

⇒ Sharpen coulters as needed. If the soil is dry and hard, coulters may not need to be sharpened as often as when soil is wet and soft. But how sharp is sharp? Coulters that are too sharp will chip or bend easily, so the best bet is to keep them sharpened to a 45-degree angle.

⇒ Ultimately whether or not coulters are beneficial depends on soil condition and planter operation. By driving too fast and making a wide cut, you’ll have trouble adequately covering the seed furrow.

⇒ You also need enough weight to get the coulters into the ground — 500 pounds per row is a rough guideline. Add-on weights and adjustable pressure can help, but you’ll need to experiment with your own soil types and residue conditions to find the exact amount of weight.

Every Summer Will be Too Hot & Too Dry...

by Erik A. Smith, Regional Field Crops Specialist

...Until proven otherwise. According to the Old Farmer's Almanac, we could be in for a wetter-than-normal summer. Which, depending on what they mean by "wetter", could be a welcome change from what we experienced last summer (as long as it's not too much wetter). But we should prepare our forage crops and pastures for a 2020-like summer every single year.

Many of our forage grasses, such as orchardgrass, bromegrass, the fescues, timothy, and ryegrass, are cool-season grasses that thrive in our northeastern climate, but they are especially sensitive to hot, dry weather. Many of us didn't see rain for two months or more last summer, and our hayfields and pastures became weed fields (not the recently-legal kind). While a summer like last year will be hard on grass forages no matter what, there are ways to mitigate the damage.

The first thing is to make sure your roots are deep enough. And the best way to do that is to keep enough green material above ground. For these cool-season grasses, cut no lower than 4", especially when that material is expected to bridge the midsummer dry period. And the same minimum height goes for rotating livestock out of their paddocks later in spring. You might get away with grazing down to 3-3.5" inches now, but it's not worth the risk as we get closer to summer.

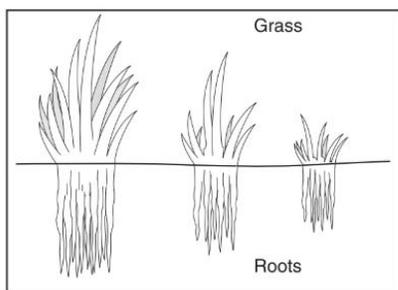
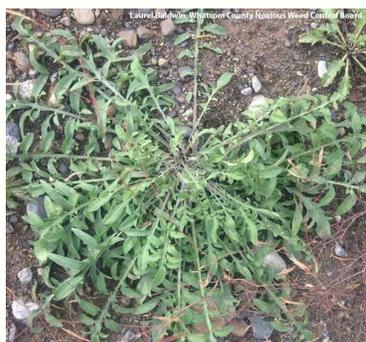


Figure 2. Heavy, frequent defoliation stops root growth and reduces the size of the root system. It reduces the plant's ability to absorb water and other nutrients, thus making the plant less drought resistant and less able to manufacture food.

(Adapted from "Grazing and browsing: how plants are affected", by Robert K. Lyons and C. Wayne Hanselka, Texas A&M Agrilife Extension)



Spotted knapweed, *Centaurea stoebe* Lam.

The second thing is to make sure your grasses are getting what they need from the soil to get off to a head start in spring and bounce back in late-summer. While snowmelt and springtime rainfall is mostly out of our control, we need to ensure that our soil - especially hayfield soil - hasn't been strip-mined of nutrients over the years. Ideally, nitrogen should be applied to existing hayfields very early in spring, but a second application should be made immediately after first cutting to give your grasses a boost. For pastures that you've just rotated out of, clip them to a uniform height (to knock down the patches that animals have avoided grazing), and drag them to spread out the manure. If you're rotating pastures, you likely wouldn't bring animals back into that paddock for a few weeks regardless, but it bears repeating that dragged pastures need to rest for a few weeks to prevent parasite transmission.

The side benefit to all of this is keeping those weeds in check. Healthy, deep-rooted, tillered grass is hard to out-compete. When weeds do pop up in your hayfields, don't be afraid to clip them above your grass before they go to seed, even if you're not taking a cutting. The last thing you want is to sit back and let them take over.

Chemical controls are often not worth the money unless things have really gotten out of hand, and you have a really formidable weed (such as milkweed, Canada thistle, or knapweed) in a dense, unavoidable stand. These situations will take repeated, targeted efforts to reign in. Repeated spot treatments of glyphosate, 2,4-D, triclopyr, or metsulfuron (Cimmaron) can target these stands without breaking the bank on whole-field applications that may not be necessary. For best results, apply herbicides to milkweed in the bud stage in spring, to Canada thistle when it is 10-15" tall in the pre-bud to bud stage (best in fall, but second-best in spring), and to knapweeds at the pre-bud stage in spring. Always apply before mowing, or if it's too late for that, after they've resumed their growth.



Canada thistle, *Cirsium arvense* L. (Photo from "Weed Identification, Biology and Management", by Alan Watson and Antonio DiTommaso)

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