Cornell Cooperative Extension Northwest NY Dairy, Livestock and Field Crops Program

AG FOCUS



CALVING ASSISTANCE & NEONATAL CALF CARE CLASS by Libby Eiholzer



Dr. Keith Carlson from Attica Veterinary Associates demonstrates how to conduct a physical exam on a calf.



Dr. Rob Lynch (Cornell Pro-Dairy) and Libby Eiholzer asked attendees to discuss difficult calving cases that they have experienced.

Missed this class? Interested in learning more about calving assistance? Reach out to Margaret or Libby for more information.

Is there another topic that you or your employees would like to learn more about? Let us know and we will consider incorporating it into our next dairy skills training class!

Over two days in October and NWNY November, the Team presented a workshop based on the critical first few days in a calf's life. Cornell Pro-Dairy and three other regional dairy teams worked with us to develop and present this class, which took place in Newark (Wayne County) and Corfu (Genesee County). A total of 30 farm owners, managers attended and employees the workshops, representing 11 farms and 5 counties.

WHAT DID THEY LEARN?

A calf being born is hardly a rare event. After all, herdsmen can spend entire days devoted to the care of cows and calves around the time of calving. What can folks like this stand to learn from a workshop when they're doing it all day, every day?

It turns out that they can still learn quite a bit! One attendee stated, "The courses are very insightful and every time I attend one that I think I already know I always end up leaving with information I didn't know." Another attendee said, "The class was suitable for people with or without a lot of experience in dairy farming, and above all it's a great opportunity for questions and answers."

RECORDKEEPING & CLEANLINESS

One of the reoccurring themes of the two-day workshop was the importance of recordkeeping. Dr. Rob Lynch (Cornell Pro-Dairy) stressed the value of recording a calving ease score for every calving, whether it results in a live or a dead calf. This value helps ensure proper care for both the calf and the cow after calving, as difficult births (dystocia) often result in some level of trauma. Supportive care and close observation can lead to better recoveries.

Close monitoring and recording of colostrum quality is necessary to ensure that calves are getting what they need to develop their immunity. A presentation by Betsy Hicks (SCNY Dairy & Field Crops Team) reviewed how to create written standard operating procedures and use them for training and refreshing employees. Making management decisions for improvement works best when you know that everyone is following the same protocols, and when you have good data about what is actually happening day-to-day.

Another message that participants heard loud and clear was the importance of hygiene, before, during and after the calving event. Dr. Jerry Bertoldo (making a guest appearance post-retirement) discussed the proper way to examine a cow to assess cervical dilation and the calf's position, focusing on getting and keeping everything clean. Dr. Bertoldo stressed sanitation in postnatal care as well, from the environment in the calving pen right down to the nipple or esophageal tuber used to feed colostrum.

After all, we only have one first chance to get a new calf started on the right path!

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For more information about our program, visit us at: nwnyteam.cce.cornell.edu



FIRST PALMER AMARANTH FOUND IN NEW YORK



"there is a bigger and scarier pigweed out there that we have been diligently watching for that has not been found ...until now!"





There are lots of different pigweed species here in NY that we deal with on an annual basis in field crops. The most common are redroot and smooth pigweed. Tall waterhemp is less common, and we have been watching it closely over the past five years, as we now have identified populations in roughly eight counties in the state. We know that those populations are glyphosate resistant and most likely ALS resistant too. But there is a bigger and scarier pigweed out there that we have been diligently watching for that has not been found ... until now.

PALMER AMARANTH HAS BEEN FOUND IN WNY. This first discovery was not out in the field but still on the farm where machinery sits. It is growing right on the edge of a field and could easily spread out into adjacent fields. Palmer is dioecious which means it has male and female plants. It is very prolific and can easily produce 200,000 seeds on a large mature female plant. Seeds are very small and can unknowingly be transferred field to field.

Palmer amaranth is quite common in the southern states all the way up into southern PA and over into the Midwest. It is commonly resistant to glyphosate and ALS herbicides and some populations have been found to be resistant to six different herbicide modes of action. It was only a matter of time before it arrived and we are pretty sure it came here on farm machinery purchased in the Midwest. Other possible modes of entry into the state could be from purchases of cotton seed hulls, hay or seed.

IDENTIFICATION: At first glance, what is most noticeable about Palmer is its very long seed heads (see picture). This plant had many seed heads over 12 inches long with the main leader reaching 18 inches. The seed heads of the female are much thicker than the males and have small spikes that are very noticeable when handled. The length of the leaf petiole is a very good diagnostic for identification. When folded back over the leaf, the petiole will be as long or longer than the leaf tip. As a comparison, tall waterhemp petioles will be shorter than the leaf. Another quick diagnostic is to look at the very tip of the leaf. Palmer will have a short hair sticking out that can only be seen with close inspection (see picture).

Now that we know it is here, it is possible that there are other small populations out there. It is crucial to identify these small populations and try to eliminate them before they establish and spread. We will be discussing more on identification and management strategies for both tall waterhemp and Palmer amaranth at our Corn Congresses on January 9th in Batavia and 10th in Waterloo. See article in this issue for agenda and registration information.

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Cornell Cooperative Extension

Northwest NY Dairy, Livestock and Field Crops Program

2019 CORN CONGRESSES

BATAVIA January 9, 2019 Quality Inns & Suites 8250 Park RD WATERLOO JANUARY 10, 2019 QUALITY INN (FORMER HOLIDAY INN) 2468 ROUTE 414

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Program Registration begins at 8:30 a.m. Presentations will begin at 10:00 a.m.

Corn Congress brochures will be mailed soon watch your mailbox or visit <u>https://nwnyteam.cce.cornell.edu/</u>



CORN DISEASES IN 2018, Dr. Gary Bergstrom, Plant Pathologist, Cornell University

MICRONUTRIENT FERTILITY IN CORN, Dr. Julian Smith, President, CZO Agronomics LLC

PIGWEED INVASION: WATERHEMP AND PALMER AMARANTH, Mike Hunter, NNY Ag Team, Cornell Extension

HOW TO GROW 300 BUSHEL CORN IN WNY - Grower Panel

WHAT DOES THE NEW FARM BILL DO FOR YOU?, Dean Norton, NY Corn & Soybean Growers Association

PESTICIDES & POLLINATORS, Scott McArt, Entomologist, Cornell University

CORN CATERPILLAR PESTS ON THE RISE, Mike Stanyard, NWNY Team, Cornell Extension





Upcoming Webinars

December 10, 2018:

"Cutting Feed Costs Without Cutting Milk"

Presented by: Bill Weiss, The Ohio State University

https://hoards.com/flex-309-Webinars.html

December 11, 2018:

"Robotic Milking Update"

Presented by: Mat Haan (Penn State)

https://extension.psu.edu/technology-tuesdays

January 8, 2019:

Technology Tuesdays: "Activity & Rumination Research" Presented by: *Mat Haan and Kevin Harvatine (Penn State)* https://extension.psu.edu/technology-tuesdays

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FARM FIRE PREVENTION by Margaret Quaassdorff

All too often, and especially during this time of year, we hear news in the dairy community of catastrophic barn fires that claim property, livestock, and human life. Though all potential situations that may cause a barn fire cannot be completely prevented, there are a number of things producers can do to prevent and protect against this type of tragedy.

The first step is to recognize the risks and fire hazards on your farm. In a study by the National Fire Prevention Association (NFPA), "heating equipment" including heat lamps, electrical wiring and related equipment, lamps, and lightbulbs are the leading sources in the ignition of barn fires. Straw, hay, or other sources of feed and bedding are the items that are often first ignited.

As it gets colder outside and in the barn, it is important and helpful to keep calves, pipes, waterers, and engines warm. It is just as important to check over this heating equipment for frayed wires and other damage, and to keep sources of ignition away from this equipment. *Think:* Keep straw/bedding away from, and calf jackets/towels off of, heating lamps and infrared heaters in warming boxes. Space heaters should be on a sturdy surface, and clear of debris. Check wires that lead to waterer heaters. Clear the cobwebs from the outlets and lightbulbs.

Though not always required by local building codes, the NFPA suggests that having the proper equipment and plans can help prevent or help save a farm in the event of a fire. Install and maintain: ABC-type fire extinguishers near every exit and within 50 feet from any point in the barn; fire alarm system; sprinkler system; and carbon monoxide detection system.

We are all busy, but it is also worth the time to talk with your local fire department, and to schedule a farm visit to help address safety concerns unique to your farm. They can also help you to develop a farm emergency response plan, and practice it.

A good tool to help develop your fire prevention plan is Farm MAPPER, a way to make a digital map of your farming operation to provide emergency responders on-site information about hazards and resources.

http://www.nfmcfarmmapper.com/

As the farm manager, ask yourself the following:

- → If the barn is on fire, where do my employees meet so we know everyone has been accounted for?
- Where do the firetrucks park? Are the farm driveways maintained well enough to allow firetrucks to pass?
- Where are the exits? Are they clearly marked?
- → Where is the chemical room, and what types of chemicals do I have? Where is the fuel located?
- → Are there pits in the barn that may be difficult to see, or maneuver around in a scenario where it is too smoky to see, and may pose a safety risk?
- → Is there a pond available for excess water, and should I install a hydrant for easy access?
- → Where will the cows go?

Please do not hesitate to reach out to your local fire department or Extension for more ideas or resources when considering fire prevention on your farm.



DAIRY CROSSBRED CALVES UPDATE by Nancy Glazier

Interest continues to build regarding raising dairy-beef crossbred calves. I have visited a couple of farms and learned a bit more on the topic. Here are some strategies to keep in mind:

Recordkeeping is top of the list. Dams, beef semen utilized, conception rates for starters. Cost of production is key to helping you decide if the enterprise is worthwhile for your operation and helps to gauge when to sell. Remember, *"Keep the best, sell the rest."*

Semen selection is important. The bull should complement the traits of the dairy cow. Dairy breeds are known for their marbling, but are lighter muscled with less desirable muscle conformation as compared to beef breeds. Select beef bulls with calving ease, moderate frames, heavy muscling (especially ribeye area), and above average rate of gain. Many semen companies have bulls they recommend for this.

Colostrum is critical, whether selling as baby calves or staying on the farm. You will not recoup treatment costs. Gain will be less during sickness and feed efficiency will be negatively impacted. Even a half pound a day for a month is 15 lbs. and may not be recouped. Early-life sickness may never be recovered.





Environment- These calves cannot be raised with any success in an old, poorly ventilated barn. They may be a bit heartier than straight bred dairy calves, but they still need dry bedding and good ventilation.

Quality inputs. Quality milk replacer or milk may be fed, with milk being a less expensive option. They can start on a quality grain mix (protein around 18%) and quality hay with weaning at two months. These calves need muscle development with not as much frame. Another idea is a nurse cow, which could support a few calves. Let me know if you try that!

Don't forget the basics – castration, dehorning, tagging, vaccinating. Studies have shown while gain in intact bulls is higher than steers, the actual castration (over 6 months) causes significant stress and sets gain back to where there is no difference. Implants may play a role, depending on your market, and they promote lean muscle growth. There is no withdrawal for their use, but the goal in proper use is to stop implants at 100 days prior to slaughter. General guidelines are to implant at three months of age, with potency increasing with each successive implant, using up to three implants. If finish weight is 1400 lbs., and gain is three lbs. a day, then work backwards to calculate when to insert the last implant.

More on this topic will be shared at the NY Beef Producers Association's winter management meeting January 18, 2019, Syracuse NY (see back cover). The full agenda is posted to our website or visit: <u>http://www.nybpa.org/abwc.htm</u>.

Margaret and I are looking to hold some local discussions in the coming months. Let us know your interest and questions. Our contact information is on page 2.

SEE AND BE SEEN By Timothy X. Terry, Harvest NY



While maintaining lighting and reflectors may seem trivial, consider this:

- ⇒ Equipment is getting larger, but rural roads are not.
- Work days are getting longer (sometimes 24-7) and equipment is travelling on the roads from dusk to dawn.
- ⇒ There are more non-farm people, unfamiliar with agricultural equipment, travelling these roads at high rates of speed.
- A negligence lawsuit can devastate a farm business, and a single life is priceless.

You do the math...

By now the 2018 cropping season has concluded except maybe for getting those last few loads out of the manure storage to carry you safely through until spring. So, the next order of business over the winter, would be to systematically bring each piece of equipment into the shop or garage and repair or replace as necessary to get it ready for next spring. Unfortunately, even as thorough as this process may be, the lighting and reflective markings seldom get more than a lick-and-a-promise.

Fortunately, there is a federal nationwide standard for lighting and marking on agricultural equipment that has been accepted by the National Highway Traffic Safety Administration (NHTSA) and the U.S. Department of Transportation (USDOT). This standard is based on the American Society of Agricultural and Biological Engineers (ASABE) Standard S279.14. The Standard is intended for originally manufactured (new) agricultural equipment, however, it is a good guideline to follow when maintaining and/or retrofitting equipment. What follows is a synopsis of that standard (at least the most likely relevant points).

TRACTORS & SELF-PROPELLED EQUIPMENT

- Two head lamps, two red tail lamps and at least two flashing amber warning lights must be mounted at the same height and spaced laterally as wide as possible. Work lamps or general service lamps projecting to the rear shall not be illuminated during highway travel.
- At least two flashing amber warning lights visible from both front and rear must be used when the machine is at least 3.7 m (12') wide. The lamps shall be mounted between 0.4 and 3.7 m (1.3' and 12') high, and within 400 mm (16") of the lateral extremities of the machine, and shall flash in unison. The extremity dimension includes such

items as dual wheels, wide axles, headers, etc.

- Turn signals must be provided.
- For machines designed to exceed 40 km/h (25 mph), at least two red rear
 facing stop lamps must be mounted that illuminate when operator has activated the brake control. If the machine is less than 1200 mm (4') wide, only one stop lamp may be used, and should be centered as much as possible.
- Machines that travel at less than 40 km/h (25 mph) may be equipped with red rear-facing stop lamps. If equipped, then two red tail lamps must be mounted at the same height and spaced laterally as wide as possible.
- Two red retro reflective devices must be visible from the rear.
- Machines wider than 3.7 m (12') shall have conspicuity material (i.e. – reflective tape) visible from both the front and rear.
- There are requirements for rotating beacons, if the agricultural equipment is equipped with them.
- One slow moving vehicle (SMV) identification emblem must be installed on the machine.
- There are CAN bus terminal receptacle requirements, if the agricultural equipment is equipped with them.
 (CAN bus is a vehicle wiring standard designed to allow microcontrollers and devices to communicate with each other in applications without a host computer.)

NON SELF-PROPELLED EQUIPMENT

 Equipment that obscures the SMV emblem of the propelling machine shall be equipped with an additional visible SMV emblem.

(Continued on page 9)

(Continued from page 8)

- Equipment that extends more than 1.2 m (4') to the left or right of the propelling machine shall have applied at least <u>one</u> strip of yellow retro reflective material visible from the front and at least <u>one</u> strip of red retro reflective material visible from the rear to indicate the extreme projections of the equipment.
- Equipment more than 3.7 m (12') wide must have at least <u>two</u> strips of yellow retro reflective material visible to the front and at least <u>two</u> strips of red retro reflective material visible to the rear of the machine. Strips should be a minimum of 50 mm (2") wide by 230 mm (9") long, within 400 mm (16") of the lateral

extremities, and spaced evenly across the width but no more than 1.8 m (6') on center.

- Equipment extending more than 5 m (16'-5") to the rear of the propelling vehicle shall be equipped with at least one SMV emblem and shall have yellow retro reflective material visible from the left and right sides.
- Equipment that obscures the tail lamps, flashing warning lamp, or stop lamp of the propelling machine shall be fitted as appropriate with lighting to take the place of the lamp (s) obscured.
- Equipment that obscures the front or rear flashing lamps of the propelling machine shall have at least two amber flashing lamps symmetrically

mounted to the machine, visible from the front and rear of the machine.

- Turn indicators shall be provided if necessary due to obstruction of turn indicators on the towing vehicle.
- Stop lamps shall be provided for machines designed to travel at speeds above 40 km/h (25 mph) if necessary due to obstruction of turn indicators on the towing vehicle.
- All required lamps on non-selfpropelled equipment shall be connected to a seven terminal plug conforming to SAE J560.

So there you have it – a lot of words, but not hard to follow. Your local auto parts store should have all the necessary lamps, reflectors, and connectors.

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AG RISK MANAGEMENT PROJECT UNDERWAY

by John Hanchar and Joan Petzen

SUMMARY

- Farm business owners face a variety of risks: production, marketing or price, financial, legal, and human resources.
- Starting with the fourth quarter of 2018, a USDA/Risk Management Agency funded project seeks to provide information to the New York agricultural community about risk management and crop insurance options.
- The website <u>agriskmanagement.cornell.edu</u> provides information to improve farmers' understanding of key topics.

AGRICULTURAL RISKS

This section draws from -- USDA. <u>Introduction to Risk Manage-</u> <u>ment – Understanding Agricultural Risks: Production; Mar-</u> <u>keting; Financial; Legal; Human Resources</u>. <u>https://</u> <u>nydairyadmin.cce.cornell.edu/uploads/doc 107.pdf</u>

Risk is variability in outcomes. Risk is present when outcomes are not known with certainty. Often, farmers can expect outcomes to occur over some range. Production, market (price), financial, legal, and human resources are five sources of agricultural risks.

Risk management strategies can be grouped as follows: *Retain, Shift, Reduce, Self –Insure, Avoid.*

- Retain no protection from downside risk, as in holding an unpriced good.
- Shift a contractual agreement where someone else takes on some of the chance of a negative outcome in exchange for a premium, for example, crop insurance. The more risk you shift, the greater the cost.
- Reduce for example, keeping fences in good repair to keep livestock off the highway, and a marketing plan that locks in some level of guaranteed return.
- Self-Insure emergency reserves funded from previous year's returns.
- → Avoid not selecting a particular enterprise.

Some additional information on production, market, and financial risks follow.

Production risk involves variability in yield and harvested units. For example, when making planting decisions, producers do not know with certainty yield and harvested acres outcomes due to weather, pests, diseases and others factors. Strategies for managing production risk include: enterprise diversification, crop insurance, evaluation and implementation of new technologies and/or practices. Marketing or price risk is variability in output and input prices. Unanticipated forces, such as weather or government action, can lead to changes in output and input prices. Suggested strategies for managing price risk include: developing a marketing plan, including the use of various marketing tools including cash sales, storage, futures contracts, options and others.

Financial risk is variability in: the cost of debt capital; the ability to meet cash obligations in a timely manner; and the ability to grow equity through the operation of a profitable business. Strategies for managing financial risk focus on sound financial planning and control. Annual business summary and analysis using the balance sheet, cash flow statement, and income statement are keys.

NEW YORK CROP INSURANCE AND RISK MANAGEMENT EDUCATION PROJECT

Starting with the fourth quarter of 2018, a USDA/Risk Management Agency funded project under the direction of Professor Jennifer Ifft, Dyson School, Cornell University will support the New York agricultural community as farmers work to make informed risk management and crop insurance decisions.

NWNY Program members will:

- write articles for <u>Ag Focus.</u>
- provide information at the two Corn Congress sites, 9 and 10 January 2019, Batavia and Waterloo, respectively; and the two Soybean Small Grain Congress sites, 6 and 7 February 2019, Batavia and Waterloo, respectively.

The project established a web site <u>agriskmanage-</u> <u>ment.cornell.edu</u> as a resource. Highlights include:

- Deadlines and closing dates for various crop insurance and other insurance products.
- Crop Insurance 101: basics for better understanding crop insurance and its role in managing risks.
- Resources: factsheets, articles, and presentations covering a variety of ag risk management topics.

Please visit the site to learn more about the project and to find materials to help you decide how to best manage risks faced by your operation.

Please contact John Hanchar, 585-991-5438 or *jjh6@cornell.edu*, with questions and/or suggestions for work on risk management topics.





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SOYBEANS USED IN FEED RATIONS by Jodi Putman

This article draws from: Ishler, Virginia. "Soybeans and Soybean Byproducts for Dairy Cattle." Penn State Extension, 9 May 2016, https://extension.psu.edu/ soybeans-and-soybean-byproducts-fordairy-cattle.

The wide spread wet conditions that started in mid-July have continued through harvest across the Northeast and Mid-Atlantic regions. For many areas of the state corn silage harvest got off to an early and good start, but, finishing up the harvest was challenging due to the wet conditions in many areas. Delays on harvest have caused concerns for the ability to get the full crop in, particularly for soybeans. Let's face it: soybeans have taken a hit with all the late season diseases. Seed quality/health continues to worsen the longer they are left in the field. Fields with high fungi incidences should not be used for seed, however, it should be fine for feed, but in low quantity. To my knowledge there are no animal toxins associated with the fungi we have seen.

Incorporating soybeans and their byproducts in rations for dairy cattle provides an excellent source of essential amino acids while providing the ability to fit into any type of forage-based ration. Depending on how they have been processed, they can provide high quality protein, degradable, undegradable and soluble protein, energy, fat, and fiber (Table 1).

Soybeans provide protein and energy to the ration. If soybeans have been properly heat-treated then they can provide additional rumen undegradable protein (RUP) and fat. Soybeans that have not been heated provide a source of degradable and soluble protein.

Soybean oil meal is used as a protein source for dairy cattle. There are some heat-treated soybean meal products that provide additional RUP

to the diet. Soybean hulls provide an excellent source of digestible fiber. They are often incorporated into dairy cattle diets to help stretch forage supplies or to minimize risk from rumen acidosis. There is no question that soybeans and their byproducts can provide various nutrients to the rations of dairy cattle. However, as with any feed, there are some limitations that need to be recognized so their full benefits to the dairy cow can be achieved.

RAW SOYBEANS

Soybeans that have not been heattreated can be incorporated successfully into dairy cattle rations. They provide a source of degradable and soluble protein as well as energy in the form of fat. The suggested feeding level is 10 percent of the total ration dry matter. For lactating cows the suggested feeding level would probably be no more than four to (Continued on page 15)

	Soybean hulls	Soybean meal 44%	Soybean meal 48%	Soybean meal, treated/high RUP	Soybean meal, expeller	Soybeans, heated	Soybeans, raw
DM, %	90.0	<mark>88.0</mark>	88.0	92.0	91.0	90.0	<mark>86.0</mark>
СР, %	12.1	50.0	54.5	48.7	48.5	40.9	40.9
RUP, % of CP	30.0	35.0	35.0	51.0	60.0	50.0	26.0
RUP, % of DM	3.6	17.5	19.1	24.8	29.1	20.5	10.6
Sol P, % of CP	20.0	20.0	20.0	10.1	19.0	17.0	40.0
Sol P, % of DM	2.4	10.0	10.9	4.9	9.2	6.9	16.4
ADF, %	50.0	10.0	6.0	8.2	8.5	11.0	10.0
NDF, %	67.0	14.0	8.0	20.6	12.5	13.8	13.0
TDN, %	77.0	84.0	87.0	85.0	85.0	94.0	91.0
NE∟, Mcal/lb	0.80	0.88	0.91	0.89	0.89	0.99	0.96
NFC, %	13.5	27.3	30.0	18.1	27.1	21.9	23.3
Fat, %	2.3	1.4	1.0	6.8	5.4	18.3	17.7
Ash,%	5.1	7.3	6.5	5.8	6.5	5.1	5.1
Ca, %	0.59	0.30	0.29	0.54	0.29	0.28	0.28
P,%	0.21	0.68	0.70	0.73	0.65	0.65	0.65
Mg,%	0.27	0.30	0.32	0.30	0.28	0.26	0.26
К, %	1.34	2.12	2.28	2.34	1.90	1.89	1.89
S, %	0.11	0.37	0.48	0.40	0.37	0.38	0.38
Mn, ppm	14.0	31.0	41.0	37.0	32.0	33.0	33.0
Cu, ppm	11.0	24.0	22.0	18.0	20.0	14.0	14.0
Zn,ppm	48.0	57.0	61.0	61.0	60.0	50.0	50.0
Fe, ppm	496.0	223.0	227.0	208.0	155.0	158.0	158.0
Se,ppm	0.10	0.11	0.11	0.11	0.11	0.10	0.10
	Source: DSU Extension						

Table 1. Nutritional value of soy products used in dairy cattle diets (all values on a DM basis).

Source: PSU Extension

(Continued from page 14)

five pounds as-fed. Raw soybeans do contain enzymes that may result in some deterioration in the fat portion of the beans. These enzymes include lipase and lipoxidase. Lipase may result in the hydrolytic rancidity or liberation of free fatty acids from the oil present in the soybeans. They can be inactivated at temperatures greater than 175°F. Lipoxidase promotes oxidative rancidity or peroxide formation. Peroxides may be toxic to the rumen microbes at high levels of intake. Young calves appear to be especially susceptible to peroxide toxicity and therefore raw soybeans should be avoided in rations for calves less than four months of age. Lipoxidases are destroyed at temperatures exceeding 120°F. To avoid problems associated with lipase and lipoxidase, i.e. rancidity, it is recommended to store raw soybeans whole. If they are not going to be fed whole, they should be rolled, crushed, or ground prior to inclusion in a grain mix. Ideally the grain mixture should be prepared every two weeks in winter and weekly during summer.

Raw soybeans also contain the enzyme urease, which hydrolyzes ammonia from urea. For this reason it is generally not recommended to include urea in a complete feed containing raw beans. Urea that is in contact with raw cracked or raw ground soybeans can release ammonia in a relatively short period of time. Cows are fairly sensitive to gaseous ammonia, so when too much nitrogen is present in the ration as ammonia, a drop in dry matter intake can occur.

In a total mixed ration system, if whole raw soybeans were used rather than raw cracked or raw ground beans, it is doubtful that urea would be exposed to appreciable urease

activity. However, that is provided few beans were broken during handling and mixing. Ensiling material made with urea as an additive can be used with raw beans since little or no urea remains as such after normal ensiling. Raw soybeans do contain a trypsin inhibitor and possibly other anti-enzymes, which may reduce protein digestion and utilization by single-stomached animals. Soyin, a protein, is also present in raw beans. This is toxic to some singlestomached animals. These factors in raw beans, however, do not appreciably affect cattle, because of their unique rumen metabolism.

HEAT-TREATED SOYBEANS

Heat-treated soybeans, on a dry matter basis, can range between 33 to 44% crude protein, 15 to 22% fat, and generally have a moisture content of 12%. An average RUP value as a percent of crude protein for properly heated soybeans is 50%. The two most common methods of heat treatment are roasting and extrusion. They both have their advantages and disadvantages.

ROASTED SOYBEANS

Roasted soybeans are a very popular way of feeding soybeans, supplying both RUP and fat. They work well in most forage type rations with the greatest benefits being observed in heavy haycrop silage diets. They can be included in the ration up to 18% of the total ration dry matter. However, in many situations, when used with other concentrate ingredients, RUP and/or fat will limit the amount of beans that can be fed. There are two main types of roasters used in the field - a drum roaster and high temperature air dryers where soybeans are conveyed over a perforated floor through which hot air is blown. With drum roasters, soybeans are dropped into a rotating drum where air temperatures may range

from 400°F to 600°F. Soybeans will remain about one minute in the hot air environment before exiting. If beans remain in the roaster longer than one minute, they can get scorched. The amount of damage to scorched beans typically is minimal. Equipment that conveys soybeans across a perforated floor through which hot air is blown causes less scorching and may be more energy efficient than the drum roaster. This type of equipment is usually more expensive. The main objective in the roasting process is to achieve even heating and allowing the beans to be steeped or held without cooling for additional time. Soybeans passed through a drum roaster can produce a fairly consistent product. The most commonly used method is openflame roasting. This is where more variation occurs with respect to RUP levels.

MEASURING FOR PROPER HEAT TREATMENT

Some of the variation in animal production responses when roasted soybeans have been fed may be from improper roasting procedures. If soybeans are roasted with too little heat, then the amount of RUP supplied in the ration may be greatly reduced. When too much heat is used Maillard products can be produced, which makes the protein unavailable in the small intestine. The amount of lysine available postruminally can also be diminished due to improper roasting procedures. For these reasons it is necessary to implement some quality control measures so dairy producers know that they are purchasing a high quality product.

There are tests available to determine if the heat treatment has been adequate and not excessive. **Cornell Cooperative Extension of Livingston County** NWNY Dairy, Livestock & Field Crops Team 3 Murray Hill Drive Mount Morris, NY 14510

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DECEMBER 2018

- 14 2018 Feed Dealer Seminar with guest speakers Dr. Tom Overton and Dr. Kristan Reed, Ph.D., 11:00 a.m.-2:00 p.m., CCE-Genesee County, 420 East Main Street, Batavia. Program includes lunch. \$30/pp, \$25 additional. Pre-registration required. Linda Risewick 585-343-3040 ext.138 or email Ir532@cornell.edu.
- 19 WNY Soil Health Workshop & Annual Meeting, 8:30 a.m. – 3:00 p.m. Quality Inn & Suites, 8250 Park Rd. Batavia, NY. Kris Nichols will be presenting information on Regenerative Farming Practices and Hands-On Tools for assessing soil health. John Wallace will be presenting Penn State research on Weed Management and Soil Health practices. For more information contact: Dennis Kirby at 585-589-5959. DEC & CCA credits pending.

JANUARY 2019

- 9 WNY Corn Congress, 10:00 a.m.—3:00 p.m., Quality Inn & Suites, 8250 Park Road, Batavia, see page 4 for more info.
- 10 Finger Lakes Corn Congress, 10:00 a.m. - 3:00 p.m., Quality Inn, 2468 NYS Route 414, Waterloo, see page 4 for more info.
- 17 Mental Health First Aid Training, 8:30 a.m. - 5 p.m., Ag & Business Center, 36 Center St., Warsaw. Please contact Joan Petzen, 585-786-2251, ext. 122 or jsp10@cornell.edu for further details.
- 18 NYBPA Winter Management Meeting, 10:00 a.m. - 5:00 p.m., DoubleTree by Hilton, Syracuse NY., the New York Beef Producer's Association is presenting a daylong session on the cross bred dairy calf. Speakers will include farmers and extension professionals with experience in this field. The keynote speaker will be from Wulf Genetics working with Genex to supply beef bulls of various breeds to use on Jersey and Holstein cows. For more information, contact Brenda Bippert, NYBPA, 716-902-4305, visit http://www.nybpa.org/abwc.htm
- 2019 Operations Managers Conference, Two-day Event, DoubleTree by Hilton, Syracuse NY. Operations management on 22-23 dairy farms is integral to the success of the farm business. The Operations Managers Conference provides an opportunity for people responsible for day to day activities on dairy farms to increase their management and operations skills while interacting with other managers. For complete event information, including registration fee levels and deadlines, visit the conference website, or contact Heather Darrow, 607-255-4478.

FEBRUARY 2019

- 6 WNY Soybean Congress, 10:00 a.m. — 3:00 p.m., Quality Inn & Suites, 8250 Park Road, Batavia.
- 7 Finger Lakes Soybean Congress, 10:00 a.m. - 3:00 p.m., Quality Inn, 2468 NYS Route 414, Waterloo.

Late Breaking News: Click Here for the Link to the 2018 NY & VT Corn Silage Hybrid Report released November 19, 2018, or visit: https://scs.cals.cornell.edu/sites/scs.cals.cornell.edu/files/shared/documents/NY_VT%20Corn%20Silage%20Hybrid%20Evaluation%20Report 11.19.2018.pdf

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>> UPCOMING EVENTS



