Linking Graziers, Researchers, Extension, and Technicians

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2020 NORTHEAST PASTURE CONSORTIUM ANNUAL MEETING

The 2020 annual meeting will be held in Fairlee, Vermont at the Lake Morey Resort on Jan-uary 15-16 in advance of the Vermont Grazing Workshop & Conference on January 17-18. The Lake Morey Resort is off of I-91 just north of White River Junction, Vermont near the New Hampshire state line. Address is 82 Clubhouse Road, Fairlee, VT 05045. Phone numbers 800-423-1211 or 802-333-4311(in VT).



Guest Room Rate: (Per Room, Per Night) Standard: Single or Double: \$105.00

Overnight rates include lodging and use of



Resort's standard seasonal amenities (available on a first come first serve basis). Does not include meals. The above rate is subject to a 9% Vermont Rooms and Meals Tax. Charges paid directly by the University of Vermont are tax exempt.

All individual reservations should be made no later than **December 16, 2019**. Reservations received after that date will be accepted on a space available basis. A credit card is required to confirm all room reservations. On-line reservations can be made at:

reservations@lakemoreyresort.com

Check-in time is 3:00 p.m. and checkout time is 11:00 a.m. Early arrivals and late departure requests will be at the agreed upon rate, based on availability.

The 2020 Conference Program

Your Executive Committee is well underway putting together the program for 2020 annual meeting. The next newsletter will have the full agenda. Look for it in early December.



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The sessions currently being planned are:

- The Do's and Don'ts of Silvopasture,
- Pastured Pigs Feed and Grazing Management,
- The Fescues Soft-leaved and Meadow
- Minimizing Soil Compaction in Pastures
- Getting the Most out of Winter Grazing by Forage Species Selection/Management and Grazing Management, and the
- Producer Showcase Pasture-based farmers from VT and NH.

The Do's and Don'ts of Silvopasture

Silvopasture is a relatively new technique in the Northeast to create a productive pasture under the canopy of hardwood trees. This method of creating pasture in a wooded setting was investigated by the Appalachian Farming Systems Research Center Beaver, WV just before their closure. They had sheep pastures under tulip poplar and oak trees that had been thinned out to let enough sunshine through the tree canopy to get good growth of orchardgrass and other forages. Brett Chedzoy, SCNY Ag Team-Forestry Specialist, CCE Schuyler County, NY has advocated the silvopasture practice in his State and uses it on his own farm. He has appeared at Conferences twice. Done correctly, silvopastoralism can be a mutually beneficial arrangement: livestock keep forest undergrowth in check while enjoying the shade and cooler temperatures provided by the trees. The shade and moderate temperatures, in particular, promote the growth of nutritious and diverse forage species. Done incorrectly, it can be a disaster for the remaining trees, the livestock, and the pasture. All of them being much less productive. Since we are seeing the good, the bad, and the downright ugly, we thought it appropriate to have another session on silvopasture, the points to what is necessary to get all three resources – trees, livestock, and pasture plants doing well in peaceful coexistence.



Sheep on silvopasture in WV

Pastured Pigs – Feed and Grazing Management

This will be the first time that we have had a session on how to raise pigs on pasture. Although not too common in the Northeast Region, there are a handful of farms running pigs on pasture. As a boy growing up in northwesttern Illinois, I was in the midst of general livestock farms that raised dairy cows, hogs, and chickens. The milk check kept the cash flow flowing, the hogs paid the mortgage, and the chickens supplied eggs that were sold on Saturday so that we had money to shop with Saturday night after cow milking. In those days, pigs were often raised on pasture during the growing season. Some of the farmers farrowed their sows on pasture using small A-frame structures covered with corrugated zinc-coated steel so each sow and their litter of piglets had shelter. It was a way to not to deal with them in a hog house that required regular clean-out of manure and soiled straw. Raising pigs on pasture was slowly phased out in lieu of total confinement on concrete. It now requires almost a total re-education since the number of people raising pigs on pasture is small and with little or no past experience on how to do it, except for picking up an old edition of Morrison's Feeds and Feeding textbook. See excerpts from the 1916 edition later in this newsletter.

The Fescues - Soft-leaved and Meadow

Kentucky-31 tall fescue has an endophyte fung-

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us that creates an alkaloid, ergovaline, which is toxic to cattle. The malady is called fescue toxicosis. This session will begin with the latest update that is available on this drawback of using the K-31 tall fescue that has naturalized from the original plantings that go back to the 1930's when K-31 was first introduced. The alkaloid made tall fescue, a cool season grass, more adapted to summer heat and humidity in the beef cattle raising area of the Mid-South and Southeast US. Although hardy and productive, we later found out it was not so kind to beef cattle or pregnant horse mares. Meanwhile, dairy cows would avoid eating it if there was anything else available to graze in the pasture. It is not uncommon to see dairy pastures in the lower part of the Northeast spot grazed where tall fescue, orchardgrass, and bluegrass grow together. Bluegrass is grazed close, orchardgrass is grazed, and the tall fescue is left largely untouched and goes to seed.

Meadow fescue facts will be presented. It is well-adapted to the northern part of the Northeast. It too has an endophyte fungus in it, but is a different species that is not harmful to livestock. It does not yield as much forage as tall fescue, but since it is more palatable and benign health-wise, it yields more useful forage since there is no rejection or animal production loss involved. "Early on-farm research showed that, while tall fescue varieties provided more forage, the superior palatability of meadow fescue resulted in equal consumption of tall and meadow fescue (Casler et al., 2008)."

Soft-leaved tall fescue information will also be presented. The soft leaf fescue varieties were discovered in Eastern Europe by the grass seed company Barenbrug. Barenbrug has a division, Barenbrug USA, in Oregon. Many of their varieties of soft-leaved tall fescue have been trialed in research plots at the Iowa State University in Ames as well as the University of Minnesota in

Grand Rapids (The Land, Tim King, 2007).



Soft-leaf Fescue

From King's AgriSeeds

"We were surprised by the yields we got on the fescue in Ames," Gunnink said. "We put in 12 different varieties of improved fescues. The whole bunch averaged eight and a half tons of dry matter and out-yielded all the alfalfa varieties. Also, it yielded as much as 50% more than all the other grasses." (The Land, Tim King, 2007)

The soft leaf tall fescue grass varieties that help make the high-quality dairy forage are related to a group of fescues that have a poor reputation for producing good forage. "The pre-dominant variety in the Fescue Belt is Kentuck-y-31 which is very coarse and not very palatable," Gunnink said. "Now we have new 'soft leaf' fescues varieties that are much more palatable and do not have the endophyte that can make livestock ill." (The Land, Tim King, 2007)

There may be one drawback, owing to shorter leaf lifespan of the soft-leaved cultivar, the decline in leaf NDFD and leaf DMD was faster for the soft- than for the tough-leaved cultivar in a recent research trial in Argentina. These results suggest that the soft-leaved cultivar will require more frequent defoliations than the tough-leafed cultivar to prevent decreases in nutritive value (Insua et al., 2017). This drawback can be easily dealt with by using a faster rotation schedule.

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The coarse-leaved tall fescue palatability is not so easily overcome. See article on silica content of tall fescue in this newsletter.

Minimizing Soil Compaction in Pastures

This session will cover the potential problem of pasture soils being compacted mostly by live-stock traffic. The weight of the grazing animal is transferred to their hooves who's footprint concentrates that weight to a very small area. If the soils are wet and plastic, the hoof can leave a compacted area of soil with each step taken. Sometimes as the soil becomes wetter and more plastic, the hoof will leave a noticeable imprint in the soil. The soil underneath the hoofprint is compressed and therefore capable of permitting the hoofprint to fill with precipitation and nearby runoff water. This keeps the soil wetter longer and tends to promote further soil compaction and deformation.

Two speakers at this session will cover the soil science behind compacted soils in pastures, how to determine how compacted the soils are, and measures to avoid compaction by livestock and remedy existing soil compaction.

Getting the Most out of Winter Grazing by Forage Species Selection/Management and Grazing Management

We are planning on three speakers to talk about the subject of winter grazing by livestock for as long as possible considering how the winter weather holds up at your place in the Northeast. We have a fair number of forage options to choose from to put green forage before the livestock as winter settles in or as it departs. There are also many situational choices as it relates to where these winter annuals will be grown, such as after silage corn or on ground that grew a summer annual for grazing. To get the new crop in the ground there also a number of options that

can be selected that are likely to work best to get the crop well-established going into the winter so it is ready when needed for grazing.



Producer Showcase

Since 2012, the Producer Showcase has been a yearly session. Outstanding pasture-based farmers at this session share with us how they manage their pastures and their farm operations to improve profitability, their lifestyle, and the environment. They are innovators and often come up with ways of doing things that really show that necessity is the Mother of invention. This year a farmer from Vermont and one from New Hampshire will be featured on Wednesday evening, January 15.

2020 Vermont Grazing and Livestock Conference

This event is one of Vermont's largest perennial gatherings of the people who raise animals on pasture, and the service providers that support them. Day One features deep-dive sessions devoted to especially important topics (in recent years ranging from agroforestry and silvopasture to direct marketing, slaughter and butchery, and soil science). Day Two is when keynote speakers present, and we offer a full complement of workshops to address the learning needs of both beginning and experienced farmers. Naturally,

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we serve grass-based Vermont-grown dairy and meat throughout the event!

This year it will be held on January 17-18 at the family-friendly Lake Morey Resort in Fairlee, VT just off Interstate-91 right after the Northeast Pasture Conference. One trip and you get the chance to see both events.

Just as we are finding out from our 2019 Conference that clovers do more than dilute the tall fescue alkaloid intake when both are consumed on pastures with a good 25% of clover by weight in the mix of forage, a research paper sheds a different light on why K-31 tall fescue is not a preferred over soft-leaf, or if other forages are present in the pasture. It may not only be the alkaloid, but also its silicon (Si) content. Some excerpts from it are presented below:

Evidence for Active Uptake and Deposition of Si-based Defenses in Tall Fescue

Emma McLarnon, Simon McQueen-Mason, Ingo Lenk and Susan E. Hartley. *Front. Plant Sci.* 8: article 1199.

Plants take up Si in the form of monosilicic acid [Si(OH)₄] via the roots (Ma et al., 2006). It is transported through the xylem and deposited in the leaves to form phytoliths. Phytoliths are solid bodies of silica (SiO₂) found in epidermal layers, both within and between the plant cells (Piperno, 1988; Currie and Perry, 2007). Trichomes (small hairs found on the leaf surface) may also become enriched with Si and increase the abrasiveness of leaf surfaces. Plants within the grass family (Poaceae) accumulate Si in varying concentrations (up to 10% dry weight) where its primary function is to defend the leaf surface against a range of stresses including drought (Emam et al., 2014; Mitani-Ueno et al., 2016), pathogen attack (Fauteux et al., 2005; Liang et al., 2015) and herbivory (Massey et al., 2006, 2007; Hartley et al., 2015). Tall fescue has been classified as both

a Si accumulator (Hodson et al., 2005) and a nonaccumulator (Ma et al., 2001), suggesting its Si uptake in the natural environment is not uniform.

Three genotypically distinct breeding varieties of tall fescue contrasting in their ability to accumulate Si (under standard greenhouse conditions, average leaf Si concentrations: very, very soft = 0.44%; very soft = 0.43%; and harsh = 0.55%) and varying in leaf texture were provided by the commercial seed company DLF Seeds Ltd., Denmark. The leaf texture is a qualitative trait measured and defined by plant breeders according to how harsh or soft the leaf texture felt on a numerical scale. These were:

- VVS (very, very soft leaf texture);
- VS (very soft leaf texture);
- H (harsh leaf texture).

There are clear differences in the accumulation and deposition of Si between the varieties, and in how the varieties respond to damage (e.g. grazing) in terms of induction of Si defenses. The H variety tending to have the highest Si concentration and trichome density as well as the highest stomatal density and stomatal conductance, and with VVS having the lowest. The H variety had a higher expression of the active Si transporter Lsi2 compared to the VVS variety. In our study, Si was constantly supplied over a period of 12 weeks, and it is possible that the VVS variety is less able to upregulate Lsi2 than the H variety under these conditions. These results suggest Lsi2 has an important role in driving varietal differences in terms of Si concentration in tall fescue. Damaging leaves only elicited a response from the H variety, both systemically and locally. The undamaged leaves of damaged plants increased leaf Si concentration by 27% and the damaged leaves by 47% compared to the undamaged plants.

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FEEDS FOR SWINE

Forage Crops, Pasture, and Other Succulent Feed – From *Morrison's Feeds and Feeding*

982. Value of forage crops and pasture.—

Through the use of suitable forage and pasture crops, pork may be produced at a much lower cost than where pigs are maintained in dry lots on expensive concentrates alone. Spring pigs will thrive amazingly on good pasture supplemented by a limited allowance of concentrates and if not finished by the close of the pasture season will be in condition to make most economical gains in the dry lot. Not only do pigs at pasture make cheaper gains, but the succulent feed and the exercise they obtain are important aids in keeping them thrifty and in good health. When pigs are fed in dry lots it is difficult to save the manure unless they are confined closely, and thus often much fertility is wasted. With pigs at pasture the manure is uniformly distributed on the fields. By the use of forage crops throughout the growing season and legume hay during the winter the cost of maintaining brood sows may be materially reduced. Though pasturage is of prime value for pigs in all sections of the country, it is especially important in the southern states, where, by a well selected rotation of pastures, green feed may be furnished throughout nearly the entire year.

As Evvard of the Iowa Station^(IA Bul. 136.) writes: An ideal forage for hogs should show:

- 1. adaptability to local soil and climate;
- 2. palatability;
- 3. a heavy yield of digestible nutrients, being high in protein and mineral matter, especially calcium and phosphorus, and low in crude fiber;
- 4. succulence:
- 5. long pasturing season;
- 6. ability to endure grazing;
- 7. permanency;
- 8. reasonable cost and ease of seeding:
- 9. capability of furnishing quick pasture at any time during the growing season.
- "These essentials are not found in any single

forage, but alfalfa, the clovers, and rape have most of them."

983. Amount of grain to feed on pasture.— Owing to the high price of concentrates it is important to determine the minimum amount which should be fed to pigs on pasture for satisfactory results. It is never profitable to force young pigs to subsist on pasture alone. At the Utah (Utah Bul. 94.), New Mexico^(NM Bul. 90.), Mississippi^(MS Rpt. 1905.), and Oklahoma^(OK Rpt. 1899.) Stations, alfalfa pasture proved little more than a maintenance ra-tion for growing pigs. At the Kentucky Station(KY Bul. 175.), Good found that 63-pound pigs did not maintain their weight on good rye pasture, and 82-pound pigs barely held their own on mixed clover and bluegrass pasture. Good states that full-grown brood sows, in thin condition and not suckling pigs, will take on flesh when grazing good pasture without grain. Snyder reports that during a trial of 70 days at the North Platte, Ne-braska Substation^(NE Bul. 99.) mature hogs, thin in flesh, gained about 0.5 lb. daily on alfalfa pas-ture without grain.

At the Utah Station^(UT Bul. 94.), a series of trials extending over 12 years was conducted, chiefly by Linfield, to determine the most profitable amount of grain to feed to pigs on pasture, which was principally alfalfa. The results of the trials, which were with pigs weighing 60 to 75 lbs. at the start, are summarized in the following table:

Amount of grain to feed pigs on pasture					
	No. of	Dail	Grain for		
	pigs	у	100 Lbs.		
		gain	gain in Lbs.		
		lbs.			
Full grain ration, in pens	74	0.9	484		
Full grain ration, on pasture	20	1.2	413		
³ / ₄ 's grain ration, on pasture	17	1.0	383		
½ grain ration, on pasture	16	0.7	304		
¹ / ₄ grain ration, on pasture	10	0.5	247		
Pasture only	19	0.2			
Green alfalfa only, in pens	2	-0.3			

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We learn that the pigs on a full grain ration in pens gained 0.9 pound each daily and required 484 lbs. of grain for 100 lbs. of gain, while those getting a full grain ration on pasture gained 1.2 lbs. each daily, pasturage effecting a saving of about 15 percent in the grain required to produce 100 lbs. gain. The pastured pigs getting a limited grain ration ate less grain for each 100 lbs. of gain than when fed a full grain ration, but also made smaller daily gains, the fattening period being thereby lengthened. If the full grain ration on pasture would have fattened pigs in 100 days, the ½ grain ration would have required 245 days. (Editor's Note: Not acceptable then or now.)



Linfield states^(UT Bul. 94.) that pigs fed a limited grain ration on pasture, when later put on full feed, made rapid gains at slightly less cost than those fed a full ration from the start. Hence, for growing pigs to be fattened later, a restricted grain ration on pasture is economical.

984. Alfalfa pasture.—Wherever it thrives alfalfa is the best permanent pasture crop for pigs, since there is no danger from bloat, as with cattle and sheep. Alfalfa provides pasturage during a longer season than almost any other single crop, starting early in the spring and remaining green and succulent in late summer when bluegrass has

dried up and even clover is often somewhat hard and woody. Since heavy pasturing of alfalfa is in-iurious to the stand, the number of pigs should be restricted and the plants allowed to grow up, be-ing cut for hay 2 or 3 times a year. In tests at the Iowa Station by Evvard and Kennedy^(IA Bul. 136.) in which pigs were fed corn and tankage (slaughterhouse waste from which the fat has been rendered in tanks: the residue is dried and ground for use as fertilizer or feed.) on alfalfa pasture, the alfalfa produced 623 to 865 pounds of pork per acre, after deducting the gains to be credited to the concentrates fed, and without crediting the alfalfa with the hay cut from the pasture. In one trial an acre of alfalfa carried an average of over 16 spring pigs for 180 days, producing 1.05 lbs. of gain per head daily. With corn at \$0.50 per bushel and tankage at \$50 per ton, the concentrates fed cost only \$2.88 per 100 lbs. of gain. (Editor's Note: At the cost of grain and by-products today think how much more economical it would be to pasture pigs.)

The most profitable amount of grain to feed pigs on alfalfa pasture will depend on the age of the pigs, the abundance of forage, and the relative cost of concentrates and pasture. At the North Platte, Nebraska Substation^(NE Bul. 99.), Snyder grazed 3 lots of 47-lb. pigs on alfalfa pasture during each of 2 summers. One lot received a light, the second a medium, and the third a full allowance of shelled corn. The combined results of the trials, lasting 98 and 119 days, respectively, are averaged below:

Light, medium, and heavy corn feeding on alfalfa pasture				
	Daily	Corn for 100		
Daily allowance of corn	gain	lbs. gain in		
	lbs.	lbs.		
Lot I, Shelled corn, 0.5 lb.	0.4	128		
Lot II, Shelled corn, 1.1 lbs.	0.5	221		
Lot III, Shelled corn, 2.6 lbs.	0.8	331		

It is shown that Lot I, fed a light grain allowance on alfalfa pasture, required only 39 percent as much grain for 100 lbs. gain as Lot III, fed a full

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corn allowance. Lot III, however, made twice as rapid gains as Lot I. Snyder concludes that a light grain allowance on alfalfa pasture is not economical for growing pigs unless alfalfa is abundant, grain high in price, and market conditions warrant holding the pigs. *It is usually more profitable to feed 2 lbs. or more of corn per 100 lbs. of pigs than to feed a lighter ration*. From trials at the New Mexico Station^(NM Bul. 90.), Foster and Simpson conclude that in their section, where concentrates are high in price, pigs with abundant alfalfa pasture make the most economical gains when fed only about 1 pound of grain daily per 100 lbs. live weight.

985. Feeding a supplement with corn on alfal-fa pasture.—Pigs fed corn alone on alfalfa pasture make fairly satisfactory gains, since the alfalfa goes far toward balancing the corn allowance. More rapid gains are, however, secured when some nitrogenous concentrate is fed in addition. This is shown in the following table which summarizes the results of 3 trials, averaging 71 days, by Waters, Kinzer, Wright, and King^(KS Bul. 192.) at the Kansas Station in which one lot of pigs was given a full allowance of ground corn on alfalfa pasture while another lot was fed a mixture of 62 percent corn, 30 percent wheat shorts, and 8 percent tankage in addition to the pasture:

Feeding supplement in addition to corn and alfalfa pasture					
Average ration	Initial	Daily	Concentrates		
	weight	gain	for 100 lbs.		
	lbs.	lbs.	gain in lbs.		
Lot I, Corn, 3.8 lbs. Pasture	81	0.85	439		
Lot II, Corn, shorts*, and tankage, 5.4 lbs. Pasture	80	1.49	358		

^{*}A byproduct of wheat processing that consists of germ, bran, and coarse

The pigs fed shorts and tankage consumed more feed than those fed only corn in addition to alfalfa pasture, made much larger gains, and required 18 percent less concentrates for 100 lbs. gain. Since the ration is partly balanced by the alfalfa,

not as much additional supplement is required as with corn in the dry lot. For pigs over 100 lbs. in weight, fed corn on alfalfa pasture, 5 percent of high grade tankage or other concentrates furnishing an equivalent amount of digestible protein, will produce about as large and usually more economical gains than a larger proportion.

986. Clover pasture.—In the northern and central states, red clover is one of the most valuable pasture crops for pigs. Carmichael and Eastwood rank 4 forage crops tested at the Ohio Station (Ohio Bul. 242.) as follows, in the order of their efficiency: red clover, rape, soybeans, bluegrass. In Missouri, Mumford and Weaver (MO Bul. 110.) found it inferior only to alfalfa, and in Iowa, Evvard(IA Bul. ^{136.)} found it surpassed only by alfalfa and rape. Since early pasturing may kill clover, pigs should not be turned on until it has made a good growth. Clover does not furnish as constant a supply of succulent feed as does alfalfa, tending to become woody late in the summer, but clipping will aid in inducing a new growth. On soils too wet or too acid for red clover, alsike clover may be grown. Especially in the southeastern states crimson clover, sown as a winter annual, furnishes valuable spring pasture for pigs. (Editor's Note: In the Northeast, as a summer annual. Sow in early spring.)

This book was digitized by Microsoft Corporation in cooperation with Cornell University Libraries in 2007 from which these excerpts above were lifted.



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For more recent guidance on pasturing pigs, refer to this e-publication:

Posted on August 28, 2019 by Swine Extension, *Forages for Swine*

https://swine.extension.org/forages-for-swine/

Frontal Attack on the War on Meat

On the back page of the Business & Finance section of The Wall Street Journal, Overheard column of October 2, 2019, I saw a big Beyond Meat burger. Being a long-time cattleman and a fur trapper as a teenager, I was drawn to the article like a fox to a baited trap. Here are the important snippets from it:

"On Wall Street, meat substitutes are all the rage. But in the world of dietary science, meat may be making a comeback.

This was underscored by the publication Tuesday of findings by a team of researchers in the Annals of Internal Medicine. The team conducted four reviews of various studies examining links between red or processed meat and cardiovascular health, cancer risk and other health outcomes. They concluded that the evidence isn't strong enough to recommend people reduce their consumption of red meat or processed meats."

"The findings are controversial and already have been criticized by other experts. What seems clear is the scientific community remains divided on this and other dietary issues."

From the Authors themselves:

Rationale for Recommendations for Red Meat and Processed Meat

The rationale for our recommendation to continue rather than reduce consumption of unprocessed red meat or processed meat is based on the following factors. First, the certainty of evidence

for the potential adverse health outcomes associated with meat consumption was low to very low (13-16), supported by the similar effect estimates for red meat and processed meat consumption from dietary pattern studies as from studies directly addressing red meat and processed meat intake (13, 14, 16). Second, there was a very small and often trivial absolute risk reduction based on a realistic decrease of 3 servings of red or processed meat per week. Third, if the very small exposure effect is true, given peoples' attachment to their meat-based diet (17), the associated risk reduction is not likely to provide sufficient motivation to reduce consumption of red meat or processed meat in fully informed individuals, and the weak, rather than strong, recommendation is based on the large variability in peoples' values and preferences related to meat (17). Finally, the panel focused exclusively on health outcomes associated with meat and did not consider animal welfare and environmental issues. Taken together, these observations warrant a weak recommendation to continue current levels of red meat and processed meat consumption.

From Annals of Internal Medicine, Clinical Guidelines, October 1, 2019. Unprocessed Red Meat and Processed Meat Consumption: Dietary Guideline Recommendations From the Nutritional Recommendations (NutriRECS) Consortium ©2019 American College of Physicians

The News Update Credo

The Northeast Pasture Consortium News Update is published semi-annually, early fall and winter issues. The goal of these news updates is to keep our Consortium members abreast of the latest research and technology that most impact pasture-based farmers, inform them about the upcoming annual conference, and provide a forum to guide and formulate good policies and best management practices that keep pasture-based farms profitable, efficient, and environmentally sound.