

Northeast Pasture Consortium News Update January 2017

Linking Graziers, Researchers, Extension, and Technicians

<http://www.grazingguide.net>

James Cropper, Executive Director & Editor



2017 Northeast Pasture Consortium Annual Conference & Meeting - From Pasture to Table - Grass-Fed Livestock Production of Meat and Milk and Its Preparation - Their Effects on Fatty Acid Composition and Human Health

Our 2017 annual conference and meeting will be at the Clarion Hotel and Conference Center in Hagerstown, MD on March 2 and 3. The complex is located at 901 Dual Highway (US 40).



Location Map of the Hagerstown Clarion Hotel & Conference Center

We have combined our Conference with the Maryland Cattlemen's Association (MCA) Maryland Hay and Pasture Conference. Three technical sessions and the Producer Showcase directly relate to our theme. The three technical sessions each cover a different segment of the theme. The *Ruminant Fatty Acid Production with Pastured Livestock* session covers how to enhance the content of healthful fatty acids in meat and milk produced by livestock raised on pasture. The *Processing Milk and Cooking Meat effects on Fatty Acid Profiles in Consumed Grass-Fed Meat and Milk Products* session covers the fate of ruminant fatty acids when milk is processed and meat is cooked. The third session, *Human Health Implications of Consuming Grass-fed Meat and Milk Products*, covers the impact of consuming ruminant fatty acids on human health. The Producer Showcase has two Maryland farms, a beef operation and a dairy operation, that pasture their

livestock. The beef farm finishes their feeder cattle on grass.

Hotel reservations for the Clarion Hotel can be made by phone at 301-733-5100. The room rate there and the Quality Inn is \$70.00 per night plus tax that includes a continental breakfast. This rate is held as a block of rooms set aside for MCA conference attendees which includes NPC Consortium Conference attendees. **Ask for the MCA Room Block** when calling. Two other hotels have blocks of rooms for MCA conference attendees. **Cut-off date for all room blocks is 2/20/17.** View these hotel choices at: <http://www.marylandcattle.org/>.

Registration for the conference this year is being handled by MCA. If paying by credit card, go to this website:

https://www.eventbrite.com/e/2017-maryland-cattle-convention-and-northeast-pasture-consortium-conference-tickets-29492620221?utm_term=eventurl_text

There is a service charge for use of a credit card.

If paying with a check by mail, go to:

<http://www.marylandcattle.org/>

Click on the picture of the MCA brochure to get the schedule of events and registration form. An Adobe Acrobat pdf file will appear on the computer screen. The registration form is on pages 3 and 4 of that file. On page 4 of 4, the registration fee for the NPC conference is in the upper left hand corner. Any additional program items that you want to attend are directly below the NPC Conference registration fees for public and private attendees. Select any of those that you want and enter the total amount of your check at **TOTAL ENCLOSED. Registration must be received by February 25.** Be sure to fill out page 3 with the names of those people you are registering as name tags are used for admittance.

THERE WILL BE NO ON-SITE REGISTRATION NOR WILL THERE BE ANY MEAL TICKETS SOLD AT THE DOOR IN MARCH.

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THE REGISTRATION DEADLINE WILL BE STRICTLY ENFORCED. There will also be no entry into the technical sessions without a name tag (which only come with a complete and paid registration).

Driving Directions:

From Baltimore, MD:

Take I-70 West to exit 32B (Rte. 40 West). The Clarion Hotel is 2.5 miles on the left.

From Washington DC:

Take Rte. 270 North to Frederick. Take I-70 West exit. Follow I-70 to exit 32B (Rte. 40 West). The Clarion Hotel is 2.5 miles on the left.

From Carlisle, PA:

Take I-81 South to Rte. 40 East exit. The Clarion is 4.5 miles on the right.

From Breezewood, PA:

Take I-70 East to exit 32B (Rte. 40 West). The Clarion is 2.5 miles on the left.

From Martinsburg, WV:

Take I-81 North to Rte. 40 East exit. The Clarion is 4.5 miles on the right.

2017 Northeast Pasture Consortium Annual Meeting Agenda

Thursday, March 2

Time Activity

8:00 AM **Opening Session** - Mr. Jim Cropper, Executive Director (Certified Forage & Grassland Professional) presiding, Berkley-Franklin Room
Welcome - Dr. Scott M. Barao, Executive Vice-President, MCA
Introduction of Participants
Conference Overview

9:00 AM **Session 1, Part 1 – Cooking Meat effects on Fatty Acid Profiles in Consumed Grass-Finished Meat Products** - Moderator, Dr. Peggy Tomasula, D.Sc., Berkley-Franklin Rm.
Speakers:
Dr. Carol Lorenzen, Professor, Meat Science, Animal Science Research Center, University of Missouri, Columbia, MO - *Forage Finishing Beef: Impact on Consumer Appeal and Meat Quality*
Ms. Janet Roseland, M.S., R.D., Dietitian and Nutritionist, Nutrient Data Laboratory, USDA-ARS, Beltsville, MD - *Lipid content of beef and lamb cuts, grass- or grain-fed, including the impact of cooking from USDA research studies*

10:00 AM **Break** - Main Ballroom

Time Activity

10:30 AM **Session 1, Part 2 – Processing Milk effects on Fatty Acid Profiles in Consumed Grass-Fed Milk Products** - Moderator, Dr. Peggy Tomasula, D.Sc., Berkley-Franklin Rm.
Speakers:
Dr. Michael Tunick, Research Chemist, Dairy and Functional Foods Research Unit, USDA-ARS, Wyndmoor, PA - *Variations in milk lipids*
Dr. Diane Van Hekken, Research Chemist, Dairy and Functional Foods Research Unit, USDA-ARS, Wyndmoor, PA - *Impact of processing on the healthy fatty acids in milk and other dairy products*
Dr. Peggy Tomasula, D.Sc., Research Leader, Dairy and Functional Foods Research Unit, USDA-ARS, Wyndmoor, PA - *A new way to look at the impact of dairy foods on health*

12:00 PM **Lunch** - Main Ballroom

1:00 PM **Session 2 - Human Health Implications of Consuming Grass-fed Meat and Milk Products** - Moderator, Dr. Naomi Fukagawa, Director, Beltsville Human Nutrition Research Center, USDA-ARS, Beltsville, MD, Berkley-Franklin Room
Speakers:
Dr. Jana Kraft, Research Assistant Professor, Department of Animal and Veterinary Sciences, University of Vermont, Burlington, VT - *Rumen-derived fatty acids - what makes them special*
Dr. Daniela Barile, Associate Professor and Chemist, Food Science and Technology, University of California - Davis, CA - *New opportunities for promoting human health using Prebiotics extracted from milk*
Dr. David Baer, Supervisory Research Physiologist, Food Components and Health Laboratory, USDA-ARS, Beltsville, MD - *Does the dietary source of trans fatty acids affect risk for cardiovascular disease in humans?*

3:00 PM **Break** – Main Ballroom

3:30 PM **Research and Education Priorities From the 2015 NEPC Farmer Survey** - Moderator, Ms. Susan Parry, B-Franklin Rm. Priority Research Areas identified by the Farmer Survey and 2017 Conference Presurvey
Discussion by Conference participants
Preliminary Reordering of Research and Education Priority Needs

4:30 PM **Business Meeting**, Mr. Jim Cropper, Executive Director presiding, Berkley-Franklin Room
Election of Private Sector and Public Sector members-at-large to the Northeast Pasture Consortium Executive Committee

5:00 PM **Adjourn**

5:30 PM **Dinner** – Buffet - Main Ballroom

7:00 PM- **Evening Session** - Producer Showcase - Moderator, Dr. Les Vough, Berkley-Franklin Room

9:00 PM **Speakers:**
Dr. Scott M. Barao, Executive Director, The Jorgensen Family Foundation, Inc., Hedgeapple Farm, Buckeystown, MD - *Producing and Marketing Grass-Fed and Finished Beef in a Profitable and Sustainable Way*
Mr. Mark Seibert, Co-Owner and Operator, Clear Spring Creamery, Clear Spring, MD - *Clear Spring Creamery: A Grass-Based Dairy Where Grass and Milk Never Tasted Better*

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Friday, March 3

Time	Activity
7:00 AM	Buffet Breakfast - Main Ballroom
8:00 AM	Session 3 – Ruminant Fatty Acid Production with Pastured Livestock - Moderator, Diane Schivera, Berkley-Franklin Rm. Speakers: Mr. Caleb Goossen and Ms. Melissa Bainbridge, Ph.D. Candidates, Dept. of Plant and Soil Science and Dept. of Animal Science, College of Agriculture and Life Sciences, University of Vermont, Burlington, VT - Improving milk and forage fatty acids in pasture-based dairies Dr. Andre Brito , Associate Professor, Department of Biological Sciences, Dairy Organic Management, University of New Hampshire, Durham, NH - Tradeoffs and interactions between pasture and concentrate on milk fatty acid profile Dr. Jim Neel , Research Animal Scientist, Forage and Livestock Production Research Unit, USDA-ARS, El Reno, OK - Factors which impact the fatty acid profile of ruminant meat
10:00 AM	Break – Main Ballroom
10:30 AM	Session 4 – Forage Allocation during the Pasture Season to keep yourself, your forage plants, and your livestock happy - Avoiding train wrecks in an uncertain world - Moderator, Mr. Don Wild, Berkley-Franklin Room Speakers: Mr. Troy Bishopp , Owner and Operator, Bishopp Family Farm, Deansboro, NY - The Grazing Chart: A practical management tool to improve decision making Dr. Heather Darby , Extension Associate Professor, Department of Plant and Soil Science, College of Agriculture and Life Sciences, University of Vermont, Burlington, VT - goGraze: an innovative web and mobile based tool for grazing planning and recordkeeping
12:00 PM	Lunch – Main Ballroom
1:30 PM	Session 5 – Mob grazing (Ultra-High Stocking) - Moderator, Dr. Kathy Soder, Berkley-Franklin Room Speakers: Dr. Ben Tracy , Associate Professor of Grassland Ecosystem Management, Department of Crop & Soil Environmental Science, Virginia Tech University, Blacksburg, VA - Summary of Mob Grazing Research in Virginia Mr. Doug Peterson , Iowa and Missouri Regional Soil Health Specialist, Soil Health Division, USDA-NRCS, Des Moines, IA - Healing the Land with High Density Grazing
3:00 PM	Break – Main Ballroom
3:30 PM	Option 1: Research and Education Priority Needs Revisited based on the Past Two Days presentations. Consortium members proceed to Hager Room to discuss additional research and education priorities. Option 2: Maryland Hay and Pasture Conference attendees stay at Berkley-Franklin Room for the MCA session, Consumer Perceptions of (Animal) Agriculture: Working to Build a Constructive Dialogue. Consortium farmer members may attend this session, if they desire.
5:00 PM	Adjourn

Conference Overview

You may have noted that two of the presentation titles used the word lipid(s). Lipids comprise a group of naturally occurring molecules that include fats, waxes, sterols, fat-soluble vitamins (such as vitamins A, D, E, and K), monoglycerides, diglycerides, triglycerides, phospholipids, and others. The main biological functions of lipids include storing energy, signaling, and acting as structural components of cell membranes. When they are consumed by eating meat and dairy products, they provide nutrition. Whether or not they provide good nutrition depends on which lipid it is and the amount present in relation to other lipids that may be less desirable for human healthfulness. Grass-finished meat and grass-fed milk tend to have more of the good lipids than do confinement-fed meat and milk.

To give everyone a good idea of what each speaker is presenting at the conference, each speaker gives a summary about their presentation below.

Session 1, Part 1 – Cooking Meat effects on Fatty Acid Profiles in Consumed Grass-Finished Meat Products

Dr. Carol Lorenzen, Professor, Meat Science, Animal Science Research Center, University of Missouri, Columbia, MO

Forage Finishing Beef: Impact on Consumer Appeal and Meat Quality

The use of forage to replace grains in finishing diets of cattle has been discussed since cattle have been in feedlots. The nutritional benefit of finishing cattle on forage varies by body location, in general cuts with a higher fat content (chuck compared to loin and round) have more conjugated linoleic acid (CLA) and a more favorable omega-6:omega-3. Finishing cattle on forage leads to leaner carcasses with more favor-

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able nutritional profiles. When meat from forage finished cattle and grain finished cattle have similar USDA Quality Grades, consumers find the forage finished beef to be acceptable.

Ms. Janet Roseland, M.S., R.D., Dietitian and Nutritionist, Nutrient Data Laboratory, USDA-ARS, Beltsville, MD

Lipid content of beef and lamb cuts, grass- or grain-fed, including the impact of cooking from USDA research studies

The Nutrient Data Laboratory (NDL) at the USDA-ARS conducts food composition research for meats and other foods to develop nutrient data which are publicly released in the USDA National Nutrient Database for Standard Reference (SR). Data results from NDL studies will highlight the content of lipids and other nutrients and the effect of cooking on these constituents, in grass- and grain-fed lamb and beef. These data provide researchers, agriculture industry members, nutritionists, and consumers with important information to apply to policy, health research, labeling, and food selection/preparation choices.

Session 1, Part 2 – Processing Milk effects on Fatty Acid Profiles in Consumed Grass-Fed Milk Products

Dr. Michael Tunick, Research Chemist, Dairy and Functional Foods Research Unit, USDA-ARS, Wyndmoor, PA

Variations in milk lipids

Lipids in milk are the most complicated and most studied fats and oils in nature. About 98% of the fatty acids (FA) in milk are in the form of triglycerides (more properly known as triacylglycerols, TAG), that are impacted by pasteurization and homogenization. The composition of FA and TAG varies by species and feeding practices,

resulting in differences in physical properties and health aspects. Understanding the impact of feeding regimen and processing on the lipids in milk will help optimize the use of milk in various products.

Dr. Diane Van Hekken, Research Chemist, Dairy and Functional Foods Research Unit, USDA-ARS, Wyndmoor, PA

Impact of processing on the healthy fatty acids in milk and other dairy products

Common dairy processing protocols can alter the composition of fluid milk and dairy foods in ways that influence the amount of healthy lipids in the final product. Homogenization, heat treatment, standardization of fat content, and the transformation of milk into different dairy foods can influence the quantity of fat and the fatty acid profiles in milk and dairy products. Comparison of fatty acid profiles in milk and different dairy foods coming from grass-fed and conventional/confined dairy herds illustrates the level of healthy C18 lipids found in these products. Milk from grass-fed cows, which typically has higher levels of the healthy fatty acids, should be used in fat containing products where the lipids will contribute to the daily total of healthy lipids in the diet.

Dr. Peggy Tomasula, D.Sc., Research Leader, Dairy and Functional Foods Research Unit, USDA-ARS, Wyndmoor, PA

A new way to look at the impact of dairy foods on health

The Simulator of the Human Intestinal Microbial Ecosystem (SHIME) is an in-vitro model of the human digestion system consisting of bioreactors in series that simulate the stomach, the small intestine and the large intestine. So far, the link between the composition of the gut microbiota

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and health has been established, but the link between what is consumed and how it effects the gut microbiota is relatively unknown. The SHIME closes this gap by allowing study of the effects of mediators such as milk or a processed product on the gut microbiota. We will discuss how we are using SHIME technology to examine the effects of milk fats on the gut microbiota.

Session 2 - Human Health Implications of Consuming Grass-fed Meat and Milk Products

Dr. Jana Kraft, Research Assistant Professor, Department of Animal and Veterinary Sciences, University of Vermont, Burlington, VT



Rumen-derived fatty acids - what makes them special

Despite the Dietary Guidelines for Americans recommending the consumption of fat-free or low-fat dairy products, there is an increasing body of evidence challenging the previous scientific consensus that dairy fat intake affects health adversely. Dairy products contain the most complex mixture of fatty acids in nature and are a significant source of a large variety of unique bioactive fatty acids. This presentation provides information about ruminant-derived bioactive fatty acids focusing on their origin, strategies for natural enhancement, and potential benefits to foster human health.

Dr. Daniela Barile, Associate Professor and Chemist, Food Science and Technology, University of California - Davis, CA



New opportunities for promoting human health using Prebiotics extracted from milk

Human milk is the ideal food in terms of nutrition for newborns as it provides a myriad of bioactive functions that influence infant's healthy growth, before they are able to digest any other food. Studies show that exclusive human milk feeding during the first few months of life decreases the risk of developing intestinal inflammation called necrotizing enterocolitis (NEC) compared to commercial infant formula based on bovine milk. Milk oligosaccharides (OS) [defined below] are receiving increasing attention in the field of human health research due to their theorized ability to improve health status and serve as prebiotics (defined below) for developing infants. The ability of OS to modulate intestinal bacterial communities could also be significant for adults, as specific gut microbial compositions have been linked to obesity and type 2 diabetes. Despite the important role of human milk OS for health, a particular difficulty with research in this area is the lack of sufficient material for performing large functional and in vivo studies. In the search of bioactive compounds that better mimic human milk composition, bovine milk oligosaccharides (BMO) were dis-

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covered a few years ago. Bovine milk is produced industrially and is a promising source for OS recovery, as underutilized dairy processing streams in whey processing were recently shown to contain OS similar to those found in human milk. To this extent, our group has explored the viability of milks and dairy processing streams as sources for extraction and identified a multitude of BMO in cheese whey permeate (deproteinized whey powder), the by-product of whey protein concentration. The concurrent application of mass spectrometry methods with novel purification techniques has enabled gaining valuable information about the bioactive milk OS and guide their separation process from milk and dairy streams. Preliminary in-vitro results using purified BMO fractions demonstrate significant growth of beneficial commensal bacteria (aid in the digestion of food) found in the intestines. OS provide a potentially new source of added value components to milk and dairy products. However, there is still little information on bovine milk OS. In order to efficiently utilize milk OS on a large scale, it will be necessary to understand the factors that influence OS synthesis and production in milk. Currently, little is known about factors that impact BMO concentration in milk even though variation is known to occur. Understanding the reasons for these natural variations would allow the environmental factors (e.g. pasture feeding) to be harnessed so that milk can be tailored to fit its eventual application. By establishing an abundance of free OS in bovine milk from various feeding trials (e.g. pasture fed versus industrial settings), we could provide a guide for the dairy industry to strategically capture the most important components with regard to glycosylation (defined below). This approach will eventually enable development of new dairy products with health guiding capabilities for infants, immuno-compromised elderly, and the population at large.

Oligosaccharide, any carbohydrate of from three

to six units of linked simple sugars (monosaccharides). (Source: Britannica.com)

Prebiotics are carbohydrates that cannot be digested by the human body. They are food for probiotics which are "good" bacteria that help keep your digestive system healthy by controlling growth of harmful bacteria. Yogurt is the best source of good bacteria (lactobacillus or bifidobacteria), for instance, so it is said to contain probiotics if it is made with a live or active bacteria culture. (Source: WebMD)

Glycosylation, the addition of saccharides to proteins or lipids to form a glycoprotein or glycolipid. (Source: The American Heritage® Medical Dictionary)

Dr. David Baer, Supervisory Research Physiologist, Food Components and Health Laboratory, USDA-ARS, Beltsville, MD



Does the dietary source of trans fatty acids affect risk for cardiovascular disease in humans?

This paper will provide a summary of research investigating different sources of dietary trans fatty acids and how they impact human health, specifically risk for cardiovascular diseases. Partially hydrogenated vegetable oils contain a range of monounsaturated trans fatty acids which increase low density lipids (LDL) cholesterol, and have been associated with an increased risk



of cardiovascular diseases. On the other hand, ruminants produce a more narrow profile of trans fatty acids, and predominately produce trans-11 18:1 (trivial name, vaccenic acid). In humans, some of this dietary vaccenic acid can be converted to rumenic acid (a conjugated linoleic acid [CLA]) with purported health benefits. Ruminant feeding practices can be used to alter the concentration of CLA in animal products, but these feeding practices can also increase the concentration of vaccenic acid. Data will be presented from human feeding studies investigating how dietary trans fatty acids from partially hydrogenated vegetable oil and from vaccenic acid impact risk for cardiovascular disease.

Session 3 – Ruminant Fatty Acid Production with Pastured Livestock

Mr. Caleb Goossen and Ms. Melissa Bainbridge, Ph.D. Candidates, Dept. of Plant and Soil Science and Dept. of Animal Science, College of Agriculture and Life Sciences, University of Vermont, Burlington, VT

Improving milk and forage fatty acids in pasture-based dairies

The demand for grass-fed dairy products is driven, in part, by their enhanced content of bioactive fatty acids. This presentation is an overview of the factors affecting forage and milk fatty acids, with a focus on utilizing forages to improve the bioactive fatty acid content of dairy products. Caleb and Melissa will review farm management practices that can be utilized to improve the fatty acid content of pastures and milk. Recent research on the fatty acid profile of summer annual species and how these forages affect milk fatty acids and production will also be presented.

Dr. Andre Brito, Associate Professor, Department of Biological Sciences, Dairy

Organic Management, University of New Hampshire, Durham, NH

Tradeoffs and interactions between pasture and concentrate on milk fatty acid profile

Several factors have been reported to influence the fatty acid (FA) profile of milk including dairy breeds, season, climate, stage of lactation, and management. However, the impact of diet on milk FA profile seems to have captured more interest of dairy scientists and general public as consumption of pasture and concentrate by the dairy cow has major implications in the content of omega-3 FA and conjugated linoleic acid (CLA) in cow's milk. Dr. Brito will present research data about the trade-offs and interactions of replacing pasture with concentrate and consequent implications on milk FA profile.

Dr. Jim Neel, Research Animal Scientist, Forage and Livestock Production Research Unit, USDA-ARS, El Reno, OK



Factors which impact the fatty acid profile of ruminant meat

The difference in meat fatty acid (FA) composition between forage and concentrate finished products is well documented. However, can producers of pasture finished meat refine their product's FA makeup through dietary and(or) managerial manipulation? Dr. Neel will explore the possible avenues for influencing meat FA makeup and their merit.

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Session 4 – Forage Allocation during the Pasture Season to keep yourself, your forage plants, and your livestock happy - Avoiding train wrecks in an uncertain world

Mr. Troy Bishopp, Owner and Operator, Bishopp Family Farm, Deansboro, NY

The Grazing Chart: A practical management tool to improve decision making

Daily monitoring and using grazing records are essential to verifying actions, reducing stress, and improving land, soil fertility, and financial management decisions. The use of a grazing planning chart will help you process live information, forecast bottlenecks and create scenarios to accomplish your goals. Learn how it's used in a season, what it looks like, and how it has solved nagging grazing management implementation problems for hundreds of farmers. Beware, the use of this tool can become contagious!

Dr. Heather Darby, Extension Associate Professor, Department of Plant and Soil Science, College of Agriculture and Life Sciences, University of Vermont, Burlington, VT

goGraze: an innovative web and mobile based tool for grazing planning and recordkeeping

UVM Extension has developed a new tool to help grass-based livestock farms develop and link nutrient management and grazing plans. Learn about goGraze, a stand-alone (or companion to goCrop) app that helps estimate and plan for forage availability based on livestock needs and land production. Get a sneak peek of this new software which can help farms organize, plan, and keep records with one handy tool.

Session 5 – Mob grazing (Ultra-High Stocking)

Dr. Ben Tracy, Associate Professor of Grassland Ecosystem Management, Department of Crop & Soil Environmental Science, Virginia Tech University, Blacksburg, VA



Summary of Mob Grazing Research in Virginia

We recently completed two complementary studies that evaluated mob-type grazing in Virginia. Grazing studies were conducted at three sites between 2012 and 2016. A primary focus was to learn how mob grazing affected forage production, nutritive value, pasture species composition and soil health. This talk will summarize some of the findings from these studies. Overall, our findings suggest that mob type grazing has few overly positive, or negative, effects on plant and soil variables when compared with standard rotational and continuous grazing. Mob grazing may have some negative effects on cow-calf performance, however.

Mr. Doug Peterson, Iowa and Missouri Regional Soil Health Specialist, Soil Health Division, USDA-NRCS, Des Moines, IA



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Healing the Land with High Density Grazing

Because of their vegetative cover, pastures and rangeland are often overlooked as having degraded soils. In fact, grazing lands suffer from soil disturbing activities caused by overgrazing that results in reduced root mass, increased weed pressure, compacted soils, greater surface runoff, and diminished soil habitat. Doug will explain how managing stock density can be the most powerful tool available to manage grassland resources. He will cover how stock density affects utilization, reduces spot grazing, controls weed competition, improves manure distribution, and provides seed to soil contact. Simply put, managing stock density has the potential to improve and build more soil than we ever thought possible.

Evening Session - Producer Showcase

Dr. Scott M. Barao, Executive Director, The Jorgensen Family Foundation, Inc., Hedgeapple Farm, Buckeystown, MD

Producing and Marketing Grass-Fed and Finished Beef in a Profitable and Sustainable Way

This presentation will provide an overview of the Hedgeapple Farm model system for producing 100% grass-fed and grass-finished beef, year-around. Topics to be covered include breeding and genetics, life-cycle animal management (including animal growth and production targets), forage production, grazing system management, animal harvest, carcass quality, and on-farm retail marketing.

Mr. Mark Seibert, Co-Owner and Operator, Clear Spring Creamery, Clear Spring, MD

Clear Spring Creamery: A Grass-Based Dairy Where Grass and Milk Never Tasted Better

The unconventional practices utilized at Clear Spring Creamery that form a successful and viable business model are detailed in this presentation. Grazing management, including seasonal milk production, winter grazing, outwintering and outsummering, warm season and cool season annuals will be presented. Other practices including once a day milking, calf nursing and weaning, and solar power will be detailed. An overview of the on-farm Grade A processing facility and the retail sales at farmers markets will be included.

A conference coming up quickly in January is the Winter Green-Up Grass-Fed Grazing Conference near Albany, NY. Below is the information about it and the agenda.

The Ninth Annual Winter Green-Up Grass-Fed Grazing Conference

Winter Green-Up – Saturday, January 28th, 2017 – Century House, Latham, NY (Albany County)

This year Winter Green-Up is a one-day event to make it easier for participants to budget for both Winter Green-Up and the upcoming 9th Annual National Grassfed Exchange Tour and Conference, being held in the Albany area in September, 2017. But even if Winter Green-Up will be shorter, we've made sure that there are great speakers and vendors and the traditional Winter Green-Up lunch - at a great price! Speakers include Doug Carmichael, Director at Lake City Research Station in Lake City, MI on how they graze their animals at the research center and how they enhance their winter gains to finish animals at 18 months. Also Dr. Rachel Gilker, editor of *On Pasture*, on compaction in your pasture and Blaine Hizfield of Seven Sons Farm in Roanoke, IN on their farm's marketing program, among

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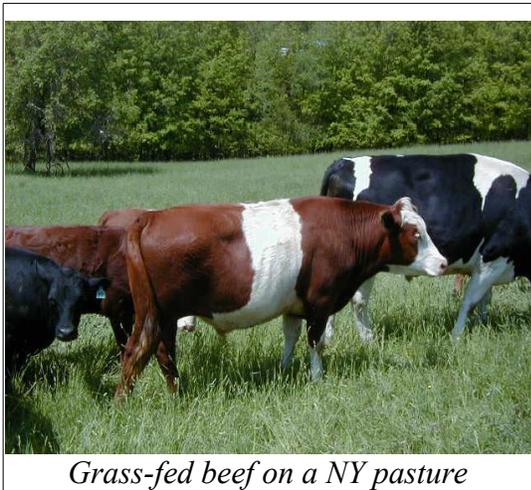
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others. Please contact Tove Ford at Cornell Co-op. Ext., (518) 765-3518 or tff24@cornell.edu, Tom Gallagher at tig3@cornell.edu or Morgan Hartman at morgan@blackqueenangus for more information. Cost is \$75, and rooms are being held for Friday and Saturday night at the Century House for \$114/night – call (518) 785-0931 to reserve and mention the Winter Green-Up conference.

Registration available at

https://reg.cce.cornell.edu/WGU2017_201.



Grass-fed beef on a NY pasture

Other Lipids Ignored by Most People in Grass-Fed and Finished Meat and Milk that Seal the Deal in Healthfulness

"While the overall concentration of total saturated fatty acids (SFAs) is not different between feeding regimens (grass-finished versus grain-fed), grass-finished beef tends toward a higher proportion of cholesterol neutral stearic FA (C18:0), and less cholesterol-elevating SFAs such as myristic (C14:0) and palmitic (C16:0) FAs. Several studies suggest that grass based diets elevate precursors for Vitamin A and E, as well as cancer fighting antioxidants such as glutathione (GT) and superoxide dismutase

(SOD) activity as compared to grain-fed contemporaries." This is a quote from "A review of fatty acid profiles and antioxidant content in grass-fed and grain-fed beef" by Daley et al. *Nutrition Journal* 2010, 9:10, pp. 12.

The same goes with dietary intake of cholesterol. Although beef is often pointed to as elevating serum cholesterol, it actually is no higher in cholesterol than other meats such as chicken or pork and is actually lower than lamb or turkey by at least 10mg/100 g of meat. Therefore, it can be used interchangeably with white meats to reduce serum cholesterol in hyper-cholesterolemic people. Grass-finished beef tends to be even lower in cholesterol than grain-fed beef as it has less intramuscular fat than grain-fed. Intramuscular fat content of beef meat is the main determinant of cholesterol levels in beef. As it increases, so does cholesterol content.

Carotenes (mainly b-carotene) are precursors of Vitamin A, a critical fat-soluble vitamin vital to human health. Grass-fed and -finished ruminants pass a portion of the ingested carotenoids from green grass into their milk and body fat. These carotenoids are what causes the body fat of these pastured animals to be yellow when the pastures are lush with green growth. White cheeses produced from grass-fed milk have a yellow cast as was demonstrated by Kim Seeley at a conference of ours several years ago. Although yellow fat in meat is often regarded as bad in the meat case due to appearance, it actually has a healthier fatty acid profile and a higher antioxidant content than white fat. Carotene content of forages vary by season, harvest method, and plant species. Eighty percent of the carotene in green forages can be lost when harvested for hay, silage, or haylage. Therefore, it is important to keep ruminants grazing as long as possible to keep carotene levels up in their meat and milk. Grass-fed beef can have 7 times as much b-carotene as grain-fed beef.

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Vitamin E is another fat-soluble vitamin that is elevated in pasture fed ruminants. Grass finishing increases vitamin E levels three-fold over grain-fed beef and places grass-fed beef well within range of the muscle Vitamin E levels needed to extend the shelf life of retail beef (3 to 4 μg a-tocopherol/gram tissue). Vitamin E acts post-mortem to delay oxidative deterioration of the meat that turns red meat to brown. Packaged meat that looks old is avoided by the customer.

Glutathione (GT) is a recently discovered protein in foods. Dairy products have very little GT in them, but freshly cooked meats are high in GT. Since GT compounds are elevated in lush green forages, grass-fed beef is particularly high in GT as compared to grain-fed.

Grass-fed meat samples are also higher in superoxide dismutase (SOD) and catalase (CAT) activity than beef from grain-fed animals. These two enzymes work in tandem as powerful antioxidants. Grass only diets improve the oxidative enzyme concentration in beef, protecting the muscle lipids against oxidation as well as providing the beef consumer with an additional source of antioxidant compounds (Daley et al). These antioxidants are cancer fighters.



Jersey cows on rotational pasture

Milk fat is a very rich source of butyrate in the human diet. Butyrate is anticarcinogenic. It is linked to preventing colon cancer. It also inhibits

the invasion of tumors into the human body. Butyrate effects on human health may be enhanced by the presence of other bio-active compounds in milk such as retinoic acid, vitamin D, and 3-hydroxy-3-methylglutaryl co-enzyme A reductase inhibitors (Shingfield et al, 2008).

Several branch-chain fatty acids found in milk exhibit anticarcinogenic properties. A phospholipid, sphingomyelin, has been shown to reduce the number of colon tumors. Sphingomyelin also reduces cholesterol absorption in lab rats (Shingfield et al, 2008). How grass-fed versus confinement-fed diets affect the levels of these lipids in milk seems to have not been studied either at all or very little .

The News Update Credo

The Northeast Pasture Consortium News Update is published semi-annually, a late summer-fall issue and winter issue. 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.

Pasture Systems and Watershed Management Research Unit

