NEBRASKA Sustainable Agriculture Society

Features:

Regular Columns:

Promoting agriculture and food systems that build healthy land, people, communities, and quality of life for present and future generations.

Save the Date:
February 14-15, 2014

2014 Healthy Farms Conference

February 14-15
Kearney

It's time to mark your calendars to attend the 2014 Healthy Farms Conference of the Nebraska Sustainable Agriculture Society on February 14-15 at the Younes Conference Center in Kearney.

ABOUT: NSAS has been hosting the Healthy Farms Conference for more than 40 years. The conference provides an opportunity for participants to acquire useful information on numerous alternatives to expand their farming operations while also practicing and promoting conservation. It exposes participants to new and innovative ways to utilize their agricultural operations. It provides a platform for new, transitioning or beginning farmers to network and learn firsthand from fellow farmers as well as the latest research. The conference also provides support for current farmers by fostering growth and stability in sustainable farming methods, including organic and sustainable agriculture. We do this by helping farmers to develop innovative ideas and projects that can impact their local communities and areas.

A variety of interactive educational opportunities are available for adults and youth. Participants will have the chance to network with farmers, university faculty and other agricultural colleagues. Besides providing informative, educational sessions the conferences has commercial and educational exhibits.

A special thank you to our planning committee which includes the NSAS Board, as well as folks from UNL Extension and the local Kearney area.

SESSIONS: This year's agenda offers a number of breakout sessions with topics ranging from urban agriculture to hugelkultur to holistic management. We will also once again have a full youth program with many of the presenters being youth and presenting on projects from their farms. Some of the 2014 sessions include:

- Animal welfare
- Cooking with local foods
- Cover crops and conservation
- Cover crops and forages for cattle
- Fly management on organic farms
- Food truck innovators
- Growing citrus fruit in Nebraska with a geothermal greenhouse
- High tunnels
- Holistic Management financial planning
- Holistic Management biological monitoring
- Language of the fields

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- Local foods hubs in food deserts
- Pollinators
- Smoking and curing meats
- Starting your own CSA
- Telling your farm story

Speakers Include: Ralph Tate, Randy Anderson, Russ Finch, 26th Street Farm, Brian O'Malley, Roger Wilson, Ross Brockley, Lori Tatreau, Harold Stone, Twyla Hansen, Daniel Deffenbaugh, Chad Lebo, Jerry Kinney, Jason Farnsworth, and many more!

KEYNOTES: This year, we will feature several dynamic keynote Presentations:

Lindsey Lusher Shute

Lindsey and her husband own and manage Hearty Roots Community Farm in New York. She is a cofounder and the executive director of the **National Young Farmers Coalition**. NYFC was founded in 2009 to represent, mobilize and engage young farmers across the country to ensure their success. The Coalition has developed many influential initiatives, including Farm Hack, and practical resources for young farmers in addition to advocating for policy changes at the national level that will better sustain young farmers.

Wayne Pacelle

As president and CEO of **The Humane Society of the United States**, Wayne Pacelle leads the nation's largest animal protection organization and one of the largest charities in the United States. Pacelle helped to more than doubled the size of The HSUS, and its impact is felt throughout the United States and the world. The HSUS is the largest provider of direct care services to animals, and it works to shape public and corporate policies in the realm of companion animals, farm animals, horses, wildlife and animals used in testing and research. In the last 9 years, HSUS has helped to pass more than 725 new state laws for animals and worked with dozens of major food retailers to provide markets for more humanely produced animal products. Pacelle is the author of the New York Times bestseller, *The Bond: Our Kinship with Animals, Our Call to Defend Them*. His work on animal issues has been featured in thousands of newspapers and magazines across the country. He graduated in history and environmental studies from Yale University in 1987.

Leigh Adcock

Women, Food & Agriculture Network's executive director since 2008, Leigh Adcock, is an Iowa native who grew up on a half-section family farm and has a degree in communications and journalism from the University of Northern Iowa. She has been involved in environmental, social justice and sustainable agriculture organizations throughout her career, including the Sierra Club, PeaceLinks, Iowa Waste Reduction Center, Practical Farmers of Iowa, Physicians for Social Responsibility and others. She also served 3 years on the Board of the Iowa Environmental Council. Leigh and her family live on an acreage in Iowa.

Sustainable Agriculture Panel

Our final keynote presentation will be a panel discussion on how to define sustainable agriculture, led by former NSAS executive director, Paul Rohrbaugh, who owns and manages Pawnee Pride Meats at Steinauer, Neb. We are in the process of coordinating the panelists. The discussion will explore issues such as what sustainability is, how different farming practices can improve the measures we use to ensure sustainability, and more.

ROUNDTABLE DISCUSSIONS: We will once again be hosting the roundtable discussions on Saturday morning of the conference. The format will be similar to last year, and we will set aside additional time for these discussions. More information can be found on the conference website.

NSAS ANNUAL AWARDS: Each year at the Healthy Farms Conference, we recognize farmers who are making a difference. NSAS gives out 3 annual awards: the Beginning Farmer of the Year Award, the Sustainable Agriculture Educator of the Year Award and the Family Farmer of the Year Award. If you would like to nominate someone, please contact us today!

The **NSAS Newsletter** is a bimonthly publication of the Nebraska Sustainable Agriculture Society (NSAS), a private non-profit organization. Our mission is to promote agriculture and food systems that build healthy land, people, communities, and quality of life for present and future generations. The purpose of this newsletter is to inform our readers on sustainable agricultural issues, resources, and activities. This newsletter is a NSAS membership benefit.

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ALL-NEBRASKA DINNER: The first and original local foods event in Nebraska, the highlight of the conference is the All-Nebraska Dinner featuring foods grown and raised in Nebraska. The evening also includes a live auction, entertainment and recognition of the 2014 Farm Family of the Year. The All-Nebraska Dinner will be held on Friday, February 14, beginning at 5:30 pm.

MOVIE ROOM: We will have a room reserved for continuous showing of films focusing on sustainable and organic farming and foods. Movies we currently have include: *American Meat*, *Greenhorns*, *Food Inc.*, *Fresh*, *Everything's Cool*, *Out of the Mud*, *A Tallgrass Prairie Revival*, *Sustainable Agriculture in Nebraska* and more. Have an idea for a movie to show, let us know!

EXHIBITOR/SPONSOR INFORMATION: There are numerous ways to participate in the conference, including exhibitor and sponsor opportunities. More information can be found on the conference website.

PRE-CONFERENCE TOURS: Tours are being organized of Kearney-area Attractions, such as the Museum of Nebraska Art, The Firefighters Museum, Thunderhead Brewing, Fort Kearney State Historical Park, Great Platte River Road Archway and Morris Press Cookbooks. These tours will be held the day prior of the conference. We'll have more details as the conference draws near.

LODGING DETAILS: Rooms for this are located at the Wingate Inn, which is part of the Younes Conference Center. Rates are $89.95/night. Single, double, triple and quad rooms are available and are the same price. Call 308-237-4400 and reserve a room under the Healthy Farms Conference.

FOR MORE INFORMATION: Complete details will be updated at http://nebsusag.org/conference.shtml. Look for the official conference brochure later in the fall as well as registration instructions.

To learn more about NSAS, visit www.healthyfarms.org.

NEWS ALERT:

USDA Awards Specialty Crops Grants

Agriculture Secretary Tom Vilsack has announced that the U.S. Department of Agriculture will invest $52 million in grants to support America's specialty crop producers through the 2013 Specialty Crop Block Grant (SCBG) Program awards. The funding includes 54 block grants to U.S. states and territories that will support 694 initiatives nationwide. These grants will assist producers of fresh fruits and vegetables and help strengthen markets for specialty crops such as fruits, vegetables, tree nuts, dried fruits, horticulture and nursery crops, including floriculture.

"These investments will strengthen rural American communities by supporting local and regional markets and improving access to fresh, high quality fruits and vegetables for millions of Americans," Secretary Vilsack said. "These grants also help growers make food safety enhancements, solve research needs and make better informed decisions to increase profitability and sustainability."

The SCBG Program for fiscal year 2013 supports initiatives that:

- Increase nutritional knowledge and specialty crop consumption
- Improve efficiency within the distribution system and reduce costs
- Promote the development of good agricultural, handling and manufacturing practices while encouraging audit fund cost-sharing for small farmers, packers and processors
- Support research through standard and green initiatives
- Enhance food safety
- Develop new/improved seed varieties and specialty crops
- Control pests and diseases
- Create organic and sustainable production practices
- Establish local and regional fresh food systems
- Increasing healthy food access in underserved communities

The goal of the grant program is to promote and increase opportunities for specialty crop producers. All 50 states, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa and Guam received grants this year.

Since 2006, the SCBG Program, which is administered by the Agricultural Marketing Service, has awarded more than $293 million. The program is part of USDA's integrated approach to programs and policies that stimulate food- and agriculture-based community economic development. A growing number of specialty crop producers are selling into local and regional markets. This year, all of the states and territories receiving SCBGs are funding projects related to local and regional food systems.

States and territories are also investing their funds from the 2013 SCBGs in projects dealing with the following key issues:

- $3.4 million is going to initiatives that help new and beginning farmers
- $4.3 million will support child and adult nutrition
- $4.5 million will support projects focused Good Agricultural Practices and Good Handling Practices
- $4.3 million will fund additional food safety initiatives
- $14.3 million will support local and regional food systems
- $8.5 million will support sustainable agricultural practices

Visit www.ams.usda.gov/scbgp to read the 2013 project summaries and view a list of awards by location.

The SCBGs are designed to help strengthen the market for specialty crops to sustain the livelihood of American farmers, and strengthen local economies.

Many of the grants announced this round contribute to the development of local and regional food systems. USDA coordinates its work on this issue through the Know Your Farmer, Know Your Food initiative (KYF2), launched in 2009. KYF2 fosters new opportunities for farmers and ranchers and economic development in rural communities; promotes locally and regionally produced and processed foods; cultivates healthy eating habits and educated, empowered consumers; and expands access to affordable fresh and local food in underserved communities.

SUSTAINABLE COOKBOOK:

Summer Squashes, Beyond Zucchini

One of summer's unsung heroes is the humble squash. Their delicate skins and flesh cannot be waxed, so they tend to have a short shelf life and, except for zucchini, have all but disappeared from grocery stores. All the more reason to get thee to a farmers market!

A New World of Squash

There, at the farmers market, you will find tender and delicious yellow crooknecks, green and yellow zephyrs, multicolored scalloped pattypans, eightball zucchinis, delicate pale green Lebanese zucchini, and large mottled Italian heirloom zucchinis such as Costata Romanesca. And if you can't decide, look for quart containers that many farmers stuff full of a medley of beautiful summer squashes.

Yellow Crookneck is one of the oldest documented varieties of squash. Researchers have traced its cultivation to the Lenape people who once inhabited the Delaware valley.

Pattypan squash also originated among the native people of the eastern United States. Both the white and yellow varieties date from pre-Colombian times. The first European settlers came to know it by a variety of names in the languages of different tribes. It soon made its way to Europe, and in France was called pâtisson panaché, which translates to "variegated squash," but which turned into pattypan in English. The scalloped edges of these yellow, white and/or green squash lend a festive look to any dish.

Zephyr is a relative newcomer—about the same size as the crookneck, but with a sturdy straight neck and a green bottom. It is a hybrid, with one parent being the yellow crookneck and the other a mixture of Delicata and Yellow Acorn. And it is delicious.

Lebanese Zucchini (also called Middle Eastern or Zahra) is shorter and plumper than regular zucchini, with an extremely delicate pale-jade skin. It's almost impossible to get one without nicks and scratches, but don't let those surface defects dissuade you from tasting the meltingly creamy flesh within.

Squashes of All Sizes

Size actually does matter in the world of summer squashes, but not as you might imagine. The large ones are good for stuffing and sautéing, the medium ones are great for grilling and for tons of other recipes from soup to cake, and the small ones, well...those itsy-bitsy squash are esteemed by chefs more for their looks than for their taste. Their cuteness diverts some from the reality that they are immature and often harsh-tasting.

But anything larger than itsy-bitsy is delicious, and as with all fresh vegetables, the simplest treatments are the best. Grilling is super-easy: Just slice them longitudinally, brush with oil, sprinkle with salt and slap on the grill. Or try the simple sautéed squash dish below.

Sauteed Summer Squash with Herbs

This recipe works well with squash of any variety and any size, except for monstrous!

- 1/4 cup butter or olive oil
- 1 small onion, thinly sliced
- 2 tablespoons chopped garlic
- 2 tablespoons chopped fresh tarragon, parsley, or other herb
- 1 pound yellow crookneck or zephyr squash, sliced into 1/4-1/2-inch-thick rounds
- 1 pound pattypan, sliced in half, then place the cut surface on the board and cut into 1/4-to1/2-inch slices

Melt butter in a large skillet over medium-high heat. Add onion, garlic and herb; sauté until onion is just tender, about 2 minutes. Add yellow squash and zucchini; sauté until tender, about 8-10 minutes. Season with salt and pepper. Serves 4 to 6.

You can use any kind of summer squash in this recipe, and any kind of herb. Just be sure to cook the squash until tender, since that's when you get their full flavor.

The best way to enjoy healthy, seasonal produce is to buy it from your local community farmer. To locate the farmers' market or CSA nearest you, or visit www.localharvest.org.

NSAS Programs

Healthy Farms Conference, the annual meeting of the NSAS held in February in an Eastern or Central Nebraska community

Western Nebraska Sustainable Agriculture Conference, a joint NSAS-University of Nebraska-Organic Crop Improvement Association event held annually in the Panhandle

Farm Beginnings Nebraska, a joint NSAS-University of Nebraska 10-week course for beginning farmers and growers

Nebraska Beginning Farmer Mentorship Program, connecting beginning/transitioning farmers and growers with mentors knowledgeable in sustainable practices

Market Nebraska, an online interactive map of Nebraska's local foods outlets

NSAS Memorial Library, a collection of books on sustainable practices housed at Ceresco, many of them donated by the family of the late holistic grazing expert Terry Gompert

Farmer Support Group, an in-person discussion group for all farmers and growers that meets monthly at Ceresco

Western Nebraska Fruit and Vegetable Group, an in-person discussion group for growers in the Panhandle

Nebraska High Tunnel Project, workshops and a webinar educating growers on high tunnels

Farm2School Project, connecting local foods producers with interested school cafeterias

By Rita Brhel, NSAS member

Guineas: More Than Bug Control

For many years, in addition to free-range laying hens, Fran Wallace kept ducks for bug control on the family farm near Nelson, Neb. While waterfowl make for an interesting addition to the backyard poultry flock, and do keep pest insects like grasshoppers well below tolerable limits, they can be messy and smelly, turning water sources into mud holes, she says.

And unlike chickens, which hunt for insects in between the flowers in her gardens, ducks walk right through the plants, splaying leaves and scattering blossoms in their wake.

After a neighbor's dog decimated her group of ducks 10 years ago, Wallace bought a handful of guineas to try out as an alternative pest control—and fell in love. Today, she has about 30 guineas on her farmstead.

"They are great tick control," Wallace said, as well as good at controlling all insect pests on the entire property. They roam farther than ducks and chickens, and have more voracious appetites.

As a surprise, guineas are not as loud as Wallace feared they would be, except when a new car drives up the lane or a stray dog comes by, she says, which is why many poultry owners deem them as good as watch dogs.

"One day, the guineas were just clucking up a storm and I went out there to see what was wrong. They were in a big bunch around something, backing up and getting closer to it, over and over," Wallace said. "Turns out, it was a big bull snake. They eventually killed it. We haven't had snakes here since getting the guineas."

But there are challenges to keeping guineas. They don't tame down like chickens or ducks, and are nearly impossible to catch without a net. They don't go into a shelter at night like chickens and ducks do, opting instead to roost in the trees or in the barn rafters, and this can make for an easy midnight snack for owls. They also nest out in the pasture, up to 20 eggs at a time, further attracting troublesome wildlife like opossums. And they aren't the best mothers, which is probably why nature designed them to have such large clutches, as it's not uncommon for none of a summer's worth of nests to yield one chick able to live to adulthood, Wallace says.

When she is able to, Wallace catches newly hatched chicks and their mother and locks them in her brooder shed until the chicks have grown enough to be able to escape from predators.

Wallace has earned a reputation for keeping quality guineas, and if the birds don't readily reveal themselves when someone drives up the lane, her "guinea crossing" sign says it all.

While Wallace keeps her guineas for barnyard bug control, guineas have a wide variety of uses, says Samuel Nahashon, a poultry scientist at Tennessee State University in Nashville, Tenn., from hobby and ornamental to game birds to meat and eggs.

Wallace says that she can't stand the thought of eating her guineas' eggs or butchering them for meat, but Nahashon maintained, "Especially in France and Belgium, we have commercialization of guinea fowl as a meat bird."

He says that the guinea meat is higher in protein, leaner and has fewer calories per pound than either chicken or turkey. While there is no major marketing outlet for guinea meat in the United States, it does offer a unique niche market.

"It would be a considerable opportunity for small-scale farmers who cannot compete with the large corporations engaged in traditional poultry production," Nahashon said.

Guineas also offer a significant value as ornamental poultry, in that there are 6 different breeds of domestic guinea and then at least 8 different varieties within each of these breeds. The most popular guinea kept on farmsteads is the pearl grey helmeted guinea, a white-spotted gray bird with naked necks and heads and long, bare legs. Other breeds include the black, white-breasted, plumed, vulterine and crested guineas.

While most guinea owners let their flocks free-range, guineas raised as a market opportunity need to be kept in confinement, Nahashon says. Each bird requires approximately a square yard in floor space.

Other than being fed a commercial game bird feed, guineas keep similarly to other poultry types in confinement, except that their roosts need to be tall and steep, with the lowest rung at least 4 feet off the floor.

"The guinea fowl love to roost," Nahashon added.

More information on keeping guineas can be found at www.gfba.org or www.guineafowl.com.

OCIA News

Organic Crop Improvement Association
Nebraska Chapter #1

The Secrets of Soluble Carbon

Soluble carbon provides the energy—food—for microorganisms. For years, we have shared our observations of superior-looking crops in fields that can "digest" last year's residue by July 1 every year. The reason for those superior crops? We have cycled much of the residue into soluble carbon!

Soluble carbon enters the soil in three ways: plant decomposition, root exudation, and soil amendments. Soluble carbon is utilized by soil microbes and contributes to the accumulation of soil organic matter through humification.

Soil organic carbon exists in many forms, but can be split into 3 main groups:

- **Insoluble** soil carbon makes up more than 90% of total carbon in the soil. Things that fall in this first category would be cellulose and lignin (primary component of plant cell walls), chitin (primary component of fungal cell walls and soil animal exoskeletons) and decomposed material in the form of soil humus.
- **Biomass** carbon is made up of soil microbes and animals—basically all living organisms in the soil except plants. The biomass carbon pool only represents 1-2% of the total carbon in the soil but is a driving force in the soil carbon cycle.
- **Soluble** carbon provides an immediate substrate/food source for many soil microbes and is produced by plant roots as root exudates and by the enzymatic decomposition of insoluble and biomass carbon. Soluble carbon is used rapidly, so concentrations in the soil are usually quite low (less than 1% of soil carbon). Soluble carbon is a very active and useful form of carbon, especially for soil microbes.

Carbon availability is much higher in the rhizosphere than in bulk soil. The concentration of soluble carbon decreases as you move away from the roots. Plant roots release all kinds of exudates and compounds—many of which are high in soluble carbon—that are appealing to bacteria and fungi in the soil. Besides root exudates, many carbon-rich compounds such as root hairs, fine roots, border cells and mucilage are released into the rhizosphere during plant growth.

Soluble carbon is not available to soil microbes year-round. In agricultural soils, there are pulses of carbon that enter the soil via root exudates and other organic materials, following seasonal growth patterns of plants and decomposition of plant residues. Innovative farmers can utilize cover crops to increase the frequency and duration of these carbon pulses into the soil. The longer you have plants growing in your soil, the more exudates and carbon you have entering your soil. Efficient decomposition of crop residues is also an important consideration. All of this carbon improves your soil and supports populations of beneficial soil microbes.

There are many benefits of having plentiful soluble carbon in your soil. Nitrogen (N) fixation is an energy intensive process and N-fixing bacteria are able to do their job better if there is plenty of food (soluble carbon) available. Soluble carbon availability is also an important factor for the survival of introduced microbes—such as those in Myco Seed Treat™, SP-1™, and Residuce™—because it helps them get established and proliferate on your farm.

By utilizing cover crops, efficiently decomposing crop residues, rotating crops, and practicing wise tillage, you can increase rates of soluble carbon in your soil and, in turn, boost the numbers of beneficial microbes on your farm.

By Rita Brhel, NSAS member

Succeeding as a New Small-scale Goat Dairy

The first consideration when starting a goat dairy shouldn't be what type of goat to buy, the feed or even the equipment set-up to extract and store the milk, says Carol Delaney, a longtime goat and sheep dairy specialist at the University of Vermont, who now consults internationally, with recent trips to Mali and El Salvador. Rather, it's the image the producer wants to project to his customers.

"You are the platform," Delaney said. "Starting a commercial farm means opening your life to the public. Think of what you want to convey."

Goat dairies often sell directly to the consumer, so they are both the production unit and the retail store. They need to be clean and well-run, and the producer must be someone the consumer likes as a person.

Delaney recalls a producer who influenced her own initial interest in goat dairying: The producer remembered the consumers' names, was always smiling, gave out samples, but never made consumers feel bad for not buying a product and would send a business card home with consumers as a reminder.

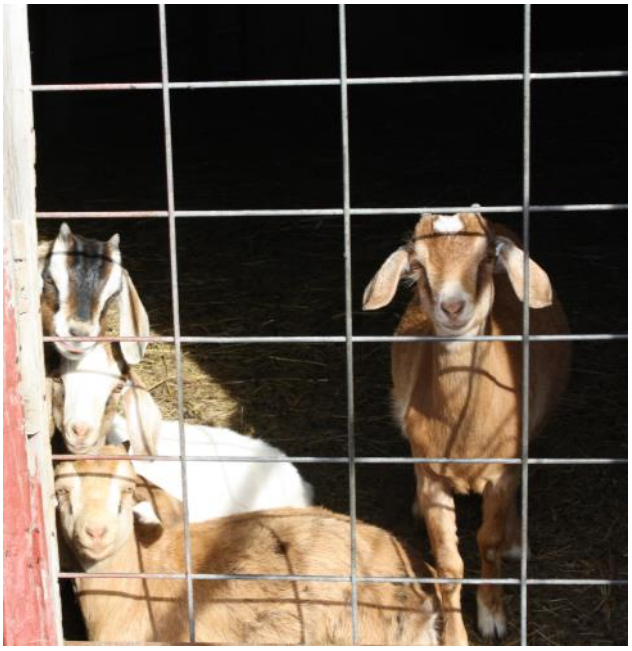
It's also vital for owners of goat dairies to write a business plan. Like any other business, the finances need to balance and a business plan provides the guidance toward profitability.

"You want to have this clear picture about why you're doing what you're doing and who you're selling to," Delaney said.

A business plan allows for exploration of all facets of a goat dairy, because producers will be producing more than milk and milk products: also does, bucks, market kids, manure and weed control. And a goat dairy needs more than a barn and a milking parlor: also parasite control and veterinary care, land for pasture and a winter feed source.

Most goat dairies are nothing more than hobbies, Delaney says. The difference is, businesses have set goals and are working toward them, and are holding themselves accountable in making decisions through detailed production and financial records—for example, determining whether to buy feed packaged or in bulk, which milk replacement formula to be using and what forage works best depending on not only price but animal performance. This means crunching numbers and sometimes making tough decisions to sell goats that are no longer producing well.

"It's no longer a hobby once income exceeds expenses," Delaney added.



One of the critical decisions in starting a goat dairy is which breed to select. Each breed has different composition to its milk, and which breed will work for a particular operation depends on the milk's end use. Nigerian Dwarf is a good all-around breed, but it is a smaller breed and doesn't have as much production as other dairy breeds, such as Nubian or Alpine. However, depending on the type of operation, the smaller breed may be the best option.

"When you look at total production, that's not enough," Delaney said. "You got to look at the fat and protein. That's what pays."

Some breeds' milk has high or low fat content, or high or low protein content. Producers wanting to sell fluid milk want a breed whose milk contains both high fat and high protein, and Nigerian Dwarf is best known for this. Producers who want to make cheese want milk with a high fat and low protein content, and the best cheese breeds are Nigerian Dwarf and Nubian. But efficiency also pays, and Nubian and Oberhasli are the best breeds for cost-effectiveness.

"So my mantra is, be sure to get a healthy animal," Delaney said.

Veterinary concerns to watch for are the HIV-like Caprine Arthritis-Encephalitis Virus; Caseous Lymphadenitis, which produces infectious abscesses; and internal parasites, which are most likely to affect young kids, does at kidding and early lactation, and during times of chronic stress. Individual goats can be more susceptible than others to these health issues, just as some are better milk producers, more feed-efficient, have easier kidding, better udder formation, better longevity or more favorable somatic cell counts—meaning that record keeping is a must, as is selling sub-par animals.

"If you can't measure it, you can't change it," so record everything, says Delaney.

One management choice that is changing in the goat dairy industry is kidding dates. Tatiana Stanton, goat and sheep specialist at Cornell University, has been studying the effect of kidding dates on the efficiency of goat dairies. What she has found is that there is 4 times as much labor in winter kidding as in spring kidding but that more labor didn't reduce mortality. However, fertility is higher for winter kidding than spring kidding.

"Being at the birth does not change the outcome," Delaney said. "Skill does."

Keeping barns clean and bedded down, having healthy animals and building experience through a mentor is important to making an operation successful. Commercial goat dairies also benefit from automatic feeding and milking, an ergonomic milking platform and barn designs with room for expansion.

Finally, Delaney says that as with any business, a goat dairy is constantly a work in progress. If the producer isn't consciously moving his operation forward, it moves backward. It's never static, so she recommended to always "work most on the weakest link."

Goat dairies, like all livestock operations, require daily care of the animals but more so, because milking needs to be done twice a day. It can be intense, but for someone who likes goats, owning a dairy can be living the dream.

By Rita Brhel, NSAS member

Cover Crops Big on Lower Inputs, Slow on Popularity

Using cover crops has received a lot of attention during the past decade as the next step in no-till crop production, but farmers have been much slower to adopt the practice. While cover crops have immediate environmental benefits in improving soil quality, the economic impact is less clear and producers aren't keen on adding a step into their crop rotation whose money-making potential is still being debated.

Less than 1% of all crop acres in the United States make use of cover crops, says Ryan Stockwell, agriculture manager for the National Wildlife Federation at Reston, Va. But, he contends that this represents rapid growth for a nearly unheard-of practice before the turn of the century.

"Certainly, before the introduction of no-till, no one would've been convinced to try cover crops. They would've been laughed at for just thinking of it," Stockwell said. "With no-till, cover crops create an opening with how we can change our culture and create new techniques."

Cover crops—crops are planted into a row crop, such as corn or soybeans, during the off-season as a way to protect the soil during times of non-production during the year—are touted as an important soil conservation tool, especially by governmental incentive programs borne out of an environmental-oriented agenda, as cover crops provide soil coverage and thereby reduce erosion and runoff.

"Cover crops can reduce nitrate leaching at lower costs than other practices," Stockwell added.

As far as the economic impact, what's vague about cover crops is not that there are agricultural benefits—cover crops reduce fertilizer and herbicide applications as well as crop water needs—but rather their monetary value, says Sam Wortman, agronomist with the University of Illinois at Urbana, Ill.

But there has been renewed effort in educating producers during this latest drought. Stockwell explains how every one percentage point increase in soil organic matter adds about 1 inch of water-holding capacity per acre, and each inch of water equals 1 week of water in a drought.

"Cover crops can increase or at least maintain soil organic matter," Wortman said. "Cover crops increase soil organic matter and improved soil aggregation creates increased water-holding capacity. This can drought-proof your farm."

> "Cover crops...can drought-proof your farm."

How Cover Crops Work

Because cover crops aren't planted to be harvested, they are killed during the growing season before they have used up the available nitrogen, when the terminated crop can then become soil organic matter for the next crop. The soil organic matter breaks down into nitrogen that can then be available for the next crop. The more cover crops are used—during consecutive years—the more soil organic matter can build up and the nitrogen-boosting benefits can extend well past the next growing season.

"The capacity for replacing synthetic nitrogen on your farm really depends on your climate," Wortman said. "The relationship is between percent nitrogen and dry matter production."

There are two types of cover crops, which sometimes are mixed together for a combined effect:

- **Catch crops**, such as oats or rye, are planted at the end of the corn or soybean season to scavenge unused nitrogen from the former crop.
- **Legumes**, such as vetch, have biological nitrogen-fixation abilities similar to soybeans that naturally increase soil nitrogen, which can be used to reduce fertilizer needs for the next season of corn or soybeans. Because nitrogen from legumes is used up quickly by crops, many legume cover crops are mixed with grasses to better extend nitrogen availability as grass residue breaks down into nitrogen more slowly.

An example use of cover crops involves a rotation of corn to soybeans to winter wheat to an oat-radish-winter pea mix (cover crop). Another example is a rotation of corn to aerial-seeded rye (cover crop) to soybeans to winter wheat to clover (cover crop). The most common rotation, Wortman describes, is corn to aerial-seeded rye-mustard mix (cover crop) to soybeans to aerial-seeded oat-mustard-vetch mix (cover crop).

There are other benefits to cover crops beyond increased soil nitrogen: Soil organic matter fuels soil microbial communities, which is what breaks plant residue down into usable nitrogen, and an added benefit of these more diverse soil microbes is fewer crop diseases.

Cover crops themselves provide habitat for beneficial insects, and studies with cotton show that cover crops can reduce pesticide applications, showing that there is similar potential for other crops. Cover crops can also suppress weeds at germination by physically crowding out, blocking light, reducing soil temperature, and using available soil nitrogen. In addition, some cover crops including rye, sorghum, and sudangrass produce phytotoxins that chemically inhibit weed growth.

"Most weeds are pretty prolific, and I've seen weeds growing through sidewalk, so this isn't going to be the be all, end all, but it'll slow them down early on," Wortman said. "It'll be a way to give crops a competitive edge."

Barriers & Unknowns

Cover crops are one of the more researched areas in crop production lately, and many benefits have been uncovered, but this farming practice is still a work in progress in many ways.

The biggest barrier to more producers considering cover crops is the need for new equipment or access to different equipment. At this time, the best planting techniques for cover crops are using a no-till driller or planter, a highboy, or aerial application. Purchasing new equipment or hiring a pilot can be expensive, and developing new planting techniques is just one area of research for cover crops.

Another research push is finding effective ways to terminate cover crops, which needs to be done at least 2 weeks prior to planting corn and soybeans to break the cover crop's phytotoxin effect. Mature cover crops can be harvested, mowed or crimped. Crimping is done with a piece of equipment called a roller-crimper that rolls the crop onto the soil surface and crimps the crop at the base to stop its growth. Immature cover crops can be killed with a herbicide compatible with the upcoming crop. Some producers till cover crops into the soil as green manure, but in a no-till situation, this would negate the soil-building goals.

Another major barrier to adopting cover crops is that it does add more steps in each year of crop production. The cover crop needs to be planned right before or right after fall harvest of the main crop, corn or soybeans, and then terminated in the spring right before spring planting of the main crop. Producers with livestock can use cover crops as winter grazing, and that adds a further step.

"We need cropping system design considerations to meet these goals," Wortman said.

Crop insurance coverage is a concern of most producers wanting to try cover crops. It's important to clarify requirements regarding cover crops with crop insurance agents, Stockwell says. Some mandate evidence that cover crops meet guidelines for food farming practices. For some agencies, cover crops may be inadvertently blamed for low yields or delayed planting due to policy loopholes. From his conversations with producers, Stockwell has learned that crop insurance issues have greatly hindered cover crop adoption.

And while cover crops are helpful in drought situations, they are almost exclusively a no-till farming practice. While they can be used in tillage situations, cover crops are most beneficial in a no-till system. However, transitioning to no-till—the time it takes for the soil profile to repair and for crop yield to recover, which Stockwell calls the "5-year sweat"—takes years and a drought situation is a poor time to begin.

Finally, adding cover crops to an operation requires a learning curve for producers in how to select a cover crop mix. Cover crop species have different costs, biology, benefits and ability to meet certain management goals. Some cover crops, like summer annuals, can be planted after small grain harvest. Winter annuals go in after fall harvest of soybeans or corn. There are also perennial cover crops as well as cool-season annuals that can be used before corn and soybeans are planted in the spring. The silver lining is that cover crop mixes are easy to grow, Wortman says.

"Even if someone has no experience with cover crops, it's a good chance some of those cover crops will stick and then the producer can adjust for future years," he added.

Dollars & Sense

The economic impact of cover crops is not easy to measure, but they're there.

"Many benefits are not immediately available like soil organic matter and weed suppression," Wortman said. "Many benefits are not valued by the markets, like the classic example: soil erosion."

In addition, variables are constantly in fluctuation, from the weather to input costs to grain prices. And while there are incentive and cost-share programs available to encourage producers to try cover crops, their future is uncertain, they're not available in all areas, and not all farmers qualify.

"A question that weighs heavy on the minds of many farmers is, 'How much help can I get from the federal government if I'm going to take a risk on cover crops?'" Wortman said.

This is where research can play an important role on showing just how much risk versus benefit that cover crops carry, Stockwell says. He told of an on-farm study in North Dakota on long-term no-till corn: Cover crops cut herbicide needs in half from 4 applications, reduced field passes, increased soil organic matter, and as a bonus, increased wildlife biodiversity as purely an aesthetic value.

At the end of the season, using cover crops had cost the producers $4 more per acre, due to the cost of the cover crop seed mix, but bumped corn yield up by 8 bushels per acre, which translated to $52 more income per acre.

SAVE THE DATE:

NSAS Chef Contest is Jan. 19 in Omaha

The "Iron Chef" Committee has been actively organizing a long-awaited fundraiser.

The event was originally conceived with 3 purposes:

- ⇒ Introduce, create and enhance awareness of local foods among local chefs;
- ⇒ Introduce people to local foods producers, products and availability;
- ⇒ Create an entertaining, educational fundraising event focusing on the local foods community.

NSAS producers nominated the chefs during the 2012 Healthy Farms Conference, during which 6 were voted Nebraska chefs most supportive of sustainable farms and farming practices by NSAS producer-members. The chefs were selected for their efforts in sourcing food from local growers to serve in their establishments, enhancing local foods systems and increasing awareness of sustainable agriculture in Nebraska. Three chefs from Omaha and 3 from Lincoln received the most votes. The nominated chefs have been sent a letter acknowledging the recognition by NSAS producers and inviting them to participate in a highly visible competition.

The "Iron Chef" Committee met twice with Metro Community College Culinary Institute representatives who have been most helpful in organizing the event. We also took the opportunity to enjoy a fabulous meal created by culinary students at the Sage Bistro and were able to meet with Brian O'Malley, Institute Chef, who has been an NSAS Board member and advisor.

"It is fabulous to see a project take shape that has been just a dream for so long," said NSAS Board President Krista Dittman.

The Chef Contest will be held Sunday evening, January 19, 2014, at Metropolitan Community College Culinary Institute, located on the Fort Omaha campus. The theme is "Thank YOU for promoting the fabric of our local food community." The event will feature all 6 chefs creating 4 appetizers and 2 desserts from locally sourced foods. Guests will be able to sample each of the creations and then vote for their favorite.

Please mark your calendars and plan to participate to support your local producers and NSAS!

By Rita Brhel, NSAS member

The Basics of Holistic Livestock Health

Ann Wells began her career like so many others in her field. She graduated with her DVM from Oklahoma State University in 1980 and began practicing large-animal veterinary care. All was well until about a decade later when, after experiencing recurring parasite problems with her own sheep and goats, she had a change of heart toward her profession.

"I started questioning what I was doing," said Wells who now consults producers in preventative veterinary medicine through her practice, Spring Pond Holistic Animal Health in Prairie Grove, Ark. "I would go out and treat livestock, then go home and wait for them to call me again, and I though there must be a better way to serve livestock producers."

Wells had come to a crossroads in her life—continue down her current path treating sick animals with an always-ready clientele, or take the less-traveled road in livestock disease prevention. She chose the latter, but it took a complete overhaul of how she had learned to approach animal health.

"It's not taught in veterinary school, not taught in medical school, how to keep people healthy," Wells said. "You're taught how to treat disease."

Going from the treatment approach to a preventative approach changes how the producer sees the interactions of the livestock with the environment. The environment is no longer something to be feared as a contaminant or a source of pathogens, but as an integral part of a healthy livestock ecosystem. Disease happens when the environment is out of balance, Wells says, and preventative medicine works by managing the environment.

"Livestock don't have to get sick," she said. "A holistic approach looks at animals and the environment together."

Holistic animal health views animals and the environment as one in the same, as components of a whole system, and the interactions of which determine how well the system works together, Wells says.

"Inter-relatedness helps improve the whole system," Wells explained. "Change one part of the system to improve the health of the whole system."

The Silver Bullet

Wells doesn't want to call it a silver bullet, because people are wary of anything that sounds too good to be true, but there's a reason why so much emphasis has been placed on rotational grazing and why so many producers swear by it: Rotational grazing is the best environment for raising livestock.

> "To achieve the goal of healthy livestock, understand that there are no cookbook recipes for success."

Livestock are created to be ruminants, so the best environment is in a grazing system, she said. Disease occurs more in confined, dry lot, grain-based environments because they are not the natural environment for ruminants.

In a rotational grazing system, the foundation of health begins in the pasture's health: soils, grazing management, and drinking water.

"If you focus on these, you don't have to focus on the rest as much," Wells said—the rest being animal breeding, housing, equipment, and finally traditional-model veterinary care, such as vaccinations and disease treatments.

Building the Foundation

Before focusing on the specifics of livestock management, producers need to become experts in grazing management on their operations, Wells said. They need to know the ins and outs of their farm's system, and what they have on hand and what they need to get to where they need to go. The first step is in taking an inventory of what they have now:

1. **Map the soil types**—Obtain a soil map from the local Natural Resources Conservation Service and double-check it with soil tests in various parts of the pasture. "You want to study the results, not the recommendations, because often what the recommendations are for is not the type of operation that you're doing," Wells said.
2. **Map the forage types**—Write a pasture history, whether by memory or talking to former owners. Take photographs or write in a diary of how different parts of the pasture react to the seasons, weather, grazing pressure and so on. Identify forage types, and send samples to a university lab for nutrient analysis.
3. **Review animal histories**—Write the management history for each animal owned, not only in the current operation but also inferred from past producers. This goes beyond birth weight, percent calf crop, average daily gain and other data that are important but also includes details such as whether a management system is grain- or forage-based, continuously or rotationally grazed and so on. For example, "A lot of producers go out and buy a bull and them him out in the pasture. If that bull was fed a lot of grain, that bull will just melt away. If you know his management history, you can bring him in and wean him off grain and onto a forage system slowly," Wells explained.

Once the producer has taken an inventory of his system, he can determine what needs to be done moving forward. Before making big changes, however, Wells recommends acquiring a NRCS Conservation Plan Map of the farm, on which the producer the draw out plans for fences according to natural contours of the grazing areas, water accessibility, and position of permanent features such as buildings and roadways.

This is also the time to write down goals and the steps needed to reach them, including a timeline. This can be a tedious chore for producers, but it's a crucial step to get a big-picture idea of future plans in light of what's going on now on the farm.

"You can draw lines and draw new lines, and it won't cost you a dime, but if you go out and build a fence and find out a year later that it wasn't a good spot, it's going to cost you a lot—in money and labor," Wells said.

Selecting Naturally Resilient Animals

It is during this getting-started phase in designing a preventative health program for producers to study up on what a healthy animal looks like. Because of the current veterinary model of less prevention and more treatment, many producers have lost touch with what healthy behavior looks like in animals, such as alertness, bright eyes, erect ears, sleeping and eating patterns, chewing cud, having a full rumen, not limping, no diarrhea and so forth.

"When you have a sick animal, that animal is going to cost you money because you got to treat it," Wells said.

There are abnormal behaviors that show up before an animal can be diagnosed with

an actual disease, that can signal that the environment is out of balance and that disease is imminent.

"This seems like a no-brainer, and it is," Wells said, "but everyone gets busy and lazy and has to relearn basic preventative care."

She suggests first looking at the herd as one from a distance. Unhealthy animals will be the stragglers, those that aren't doing what the rest of the herd is doing. The producer can then compare the animal's abnormal behavior, such as limping or diarrhea or limp ears or sluggishness, with the behavior of healthy animals to get a sense of the difference.

These unhealthy animals don't always have a disease that can be treated or even detected clinically. For example, animals that are bred to be champions in the show ring often do not do well in a production setting.

"This animal is never going to have a high level of vitality," Wells said.

In any herd, there are 3 levels of animal health, and producers can work toward a more resilient herd by selecting for naturally resilient individuals:

1) **Harmonious**—These animals have been selected or bred specifically for the individual production system.
2) **Profitable**—These animals are healthy and are making money but there are still some areas where they fall short of harmonious and do cost the farm money. These shortcomings can be selected against in future replacements.
3) **Unprofitable**—These animals are prone to illness, are costing the farm, and need to be culled.

The Best Prevention is Stress Reduction

While there are individual animals that are more resilient than others, producers need to start with a foundation of health-driven management practices so that the herd as a whole as the best potential for disease prevention. The core of preventative animal health is stress reduction.

Stress can be greatly upsetting to an animal's immunity. Stress, whether mild or severe, releases hormones that instigate the fight-or-flight instinct, designed to relieve the animal of the stress event. In the process, the digestion, growth, and reproduction processes shut down. In a single stress event, such as a pack of dogs running the herd around, this reaction comes and goes and the effects of the hormone end. But in a chronic stress event, even a series of mild stress events such as an overstocked drought-stricken pasture, the effects of the hormone on the body continue and the animal's immunity decreases, resulting in an animal much more likely to get sick.

"One big stress is the same as many little stressors," Wells said. However, even more so than one severe stress or mild but chronic stress, "the worst stress is intermittent stress, so let's say that pack of dogs comes back an hour later just when the cows settles down."

Stressors are anything that cause disruption of an animal's normally relaxed demeanor and biologically driven life processes, such as poor nutrition, weather extremes, chronic disease, parasites, birthing, and poor handling. In addition, some animals have a genetic predisposition to poor stress response.

"There's a lot of research being done to find lines that respond better to stress," Wells said. "They still get stressed, just respond differently."

Producers don't need a specific study to pick out some of the more stressed animals in their herds, however. They just need to observe their social behavior for a time. Submissive animals—the animals at the back of the herd and that step away anytime another animal wants to challenge dominance—are more stressed than herd members, Wells explains.

More on Management Decisions

Much stress can be reduced through culling susceptible animals, good animal husbandry, sanitation, vaccinating, quarantining new animals, and providing good nutrition.

Of these, producers are least likely to quarantine. New animals should be kept in a pen far enough away to prevent nose-to-nose contact with other animals for 7 to 10 days. This is long enough to observe the animal for signs of illness that could be transmittable to rest of the herd.

"One of the worst cases of foot rot I've ever seen was a man who brought in a new ram and didn't quarantine him, who had foot rot," Wells said. "It spread through his whole flock, and he dealt with it for 2 years, ending it finally by culling many of his ewes."

Another management downfall, especially during a drought, is maintaining good nutrition.

"Nutrition is the cornerstone of your herd's health program," Wells said. "Availability and quality of forage is going to change depending on the time of the year and the animal's nutritional requirements."

Growing and lactating animals have the highest nutritional requirements, but it's not necessarily based on the size of the animal, she says. For example, a growing steer requires more quality feed than a growing lamb, but a lactating ewe with 3 lambs requires more than a lactating cow with 1 calf.

In addition, even if pastures look lush, that doesn't mean that they will be well-utilized by the animals grazing it, Wells adds. Cattle prefer grass but will eat some forbs, sheep prefer forbs but will grass, and goats prefer browse but will eat forbs. That's why multi-species grazing—grazing more than 1 livestock species together or following 1 species of livestock with another—works, but Wells cautions against other grazing trends of late, such as mob grazing, which works as a short-term strategy but isn't a healthy, long-term grazing strategy.

Integral to assessing individual animals for their health status is grading animals according to a Body Condition Score (BCS). BCS for cows is graded 1-9, with 1-3 being too thin, 4-6 being good, and 7-9 being too fat. Sheep and goats are graded 1-5, with 1-2 being too thin, 3 being good, and 4-5 being too fat. BCS is ranked by observing how much certain points of the animal's body is apparent due to fat thickness, including the hip bones, top of the spine, the tranverse processes, and the ribs. Wells recommends feeling the animals as well as observing and color of the animal can trick the eye. BCS should be scored for each animal at breeding time, at calving/lambing/kidding, and going into winter, with the latter being the most critical, as this is when weather extremes are likely to be most stressful.

"Weather conditions—this is the 1 thing we have no control over," Wells said.

Animals more likely to withstand cold stress are those with lower maintenance requirements, which tend to easy adapt to the change in seasons, have more fat cover and have a longer hair coat. Producers can help reduce cold stress by providing wind protection.

All animals can be affected greatly by heat stress, which combines high temperatures with high humidity and no wind. The best thing producers can do is provide shade and constant availability of water.

Another environmental condition that can cause stress to animals, but often goes unnoticed by producers, is mud. Dry lots are also challenging during weaning when dusty conditions can cause respiratory problems in stressed calves and lambs. Wells suggests fenceline weaning for calves and letting lambs wean themselves in the pasture.

Parasites are a normal problem for all livestock, but especially for sheep and goats. Because of the tendency for internal parasites to build up resistance to treatments, veterinarians are increasingly promoting selecting naturally resistant individual animals that always carry a light parasite load but whose health is not affected, and then only treating with anti-parasitics on

Continued on page 12...

problem years. Wells adds that forage type can also affect the parasitic load: Some plants, like chicory and trefoil, naturally reduce parasites on pastures. In addition, parasite numbers are greatly influenced by weather conditions and pasture stocking rates.

"Parasites were a non-issue last year, because it was so hot and dry," Wells said. "That's why the animals coming from the West have to adapt to the parasite load here. Always remember that the majority of the parasite's life cycle is outside the animal, so pasture management is really important."

No matter the growing conditions, she advises producers to never graze below 4 inches or to graze close to manure, to do rotational grazing versus continuous grazing, and to follow one species of livestock like sheep with a different species like cattle.

"I have had 100 head of cattle for 15 years and only dewormed 5 animals in that time," Wells said.

Many organic producers swear by alternative therapies for internal parasites such as cayenne pepper or herbal remedies instead of medical anti-parasitics. Many of these don't work unless they are done early and are no more useful than the overall preventative management plan, she adds.

"If small ruminant producers do not have some sort of overall parasite management plan, they will not be raising small ruminants for long because they'll end up losing an entire lamb crop or an entire kid crop," Wells said.

> "Livestock don't have to get sick."

Herbal remedies, in particular essential oils like cedar oil, on the other hand, can be helpful in fly control, she says, as is using diatomaceous earth, selecting natural resistant cattle breeds like Brahman, and letting poultry free-range in the pasture.

Where Vaccinations Fit

Vaccinations are an essential part of a preventative health program, but Wells cautions that they still work best as part of the whole plan.

"They are a cheap insurance plan, especially for a new producer," Wells said.

The problem occurs when producers use vaccinations as their sole prevention strategy and let sanitation and other basic preventative management strategies go by the wayside. When this happens, vaccinations are far less effective and, for some individual animals, provide no protection. The rules of vaccinating include using the ones that are needed for the local area, to wait to vaccinate young animals after two months because the mother's immunity is passed through the milk before them and will cancel the vaccination, and to follow the instructions on the bottle.

"If it says to refrigerate, then do it," Wells said. "If you throw it in your truck and drive around all day, your vaccine is useless."

When Prevention Doesn't Work

No matter how thorough a preventative health program is, there will still be times when an animal needs treatment for an illness or injury. The conventional medications work, but so do many alternative treatments for non-parasitic controls. Producers can learn more at www.ahvma.org.

"Many people regard these alternative treatments to be quackery, but they are not," Wells said. "Most work very well, as do conventional veterinary products."

And when a preventative program doesn't work, it's an opportunity for producers to learn what to change to improve their operation.

"To achieve the goal of healthy livestock, understand that there are no cookbook recipes for success," Wells said.