

myoglobin (the major pigment in muscle which contains iron) and some commonly used food ingredients. Cooking beef prior to storage accelerates lipid oxidation, which results in the warmed-over flavor. Warmed-over flavor can develop in pre-cooked frozen meats in a few days.

- Heating -- Heating develops flavor via browning, or Maillard, reaction. Cooking temperatures affect these reactions. Heating at lower temps vs. higher temps results in a difference in the concentrations of a number of flavor compounds. In addition, cooking appears to affect umami- (a taste described as savory) related compounds by reducing the amount of free glutamate (amino acid) present. However, it's usually associated with cooked meat that's been refrigerated for 48 hours or less.

The checkoff-funded research reveals the secrets for a successful steak are in a combination of careful animal handling/feeding, proper aging, injections and good cooking.

-- *National Meat Association Lean Trimmings newsletter*

TEN VACCINATION TIPS

Vaccinations are an important key to proper animal health, and herd health management. And, to ensure that vaccination is as effective as possible, proper vaccine handling and administration is very important. The following tips which may help get you on the right path to better herd health management:

1. Consult your veterinarian to develop a protocol that fits the health goals of your operation.
2. Select a quality product. Consult your veterinarian to ensure you are selecting the right products for your use. It is important to purchase only federally licensed vaccines from a reliable source.
3. Carefully read the label to maximize the value and effectiveness of the vaccine. It is important to understand precautions so vaccines are given at the right stage of the animals' lives, to animals of the right age, in the proper dosage and at the appropriate intervals if more than one dose is needed. Store the vaccines according to label directions, paying particular attention to ensure correct temperature and light conditions.

4. When transporting vaccines to chute side, store them in a cooler with an ice pack. Keep the cooler and products in the shade.
5. Always use a sterile transfer needle or disposable syringe when rehydrating products.
6. Mix only one vaccine bottle at a time prior to administration. A good rule of thumb is not to mix more vaccines than will be used in 1 hour.
7. Subcutaneous injections are the preferred route whenever label instructions allow. All injections should be given in the neck.
8. Make sure to use new, sharp needles and the correct gauge size for the vaccine being used and the size of the animal. Change needles every 10-15 animals, and never re-enter a vaccine bottle with a used needle.
9. Always properly clean equipment and syringes after vaccinating. Use the following steps to assure your equipment is sterilized: Reusable syringes should be washed in hot, distilled water. First wash the outside and then take the syringe apart to wash it thoroughly. Fill the syringe with water and cover with damp paper towels. The wrapped syringe should be placed in an open resealable plastic bag and placed in the microwave on high for five minutes. The damp paper towels prevent the metal parts from sparking.
10. Transfer needles also should be sterilized in the microwave; wrap in damp paper towels, place in an open resealable plastic bag and microwave on high for 30 seconds.

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AG NEWS

Division of Agricultural Sciences & Natural Resources
Oklahoma State University

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October 2007

Ornamental Plant Materials 2007

October 9 & 10—Best Western Hotel—600 E. McElroy Road
Stillwater, OK

This workshop is designed for both the green industry professional as well as the hobbyist. A variety of woody and herbaceous ornamentals will be discussed.

Tuesday, October 9

8:45—9:15 A.M.

Registration/Networking/Opening Remarks

9:15—11:50 A.M.

Mediterranean Gardening

New or Overlooked Woody Ornamentals

Japanese Gardens

11:50 A.M.—1:00 P.M. Lunch

1:00—4:40 P.M.

Dear, the Pigweeds are in the Garden Again—A Focused Presentation on Amaranthaceae

Hollies for Oklahoma Gardens

Working in Tropical Paradise

Powell Gardens—Kansas City's Botanical Garden: From Perennials to the New Heartland Garden

Buffalograsses for Oklahoma and Surrounding Environs

4:40—5:45 P.M.

Travel to OSU Botanical Garden

5:45—7:00 P.M.

Educational Sessions at OSU Botanical Garden

Tour 1—Oklahoma Gardening

Tour 2—Bermudagrass Breeding Update

Tour 3—Small Trees/Large Shrubs for the Urban Landscape

Tour 4—Fall Proven Winners and More

7:00—8:30 P.M.

Dinner at OSUBG Educational Building

Wednesday, October 10

8:30—12:00pm

Registration/Networking/Introductions

9:00—9:50 A.M.

Plants of Merit and Other Plant Recommendations for America's Heartland

All About Aquatic Plants

Preserved Plant Materials Laboratory

Growing Outside the Norm

Echinacea: The Wonder Weed

12:00—12:55 P.M. Lunch

12:55—5:10 P.M.

Cherokee Daffodils

Oklahoma's Living Legacy of the Trail of Tears

Oklahoma Cottage Gardening

A Discussion of Bedding Plant Research Results

Preserved Plant Materials Lab (continued)

Plants for the Future Oklahoma Garden Center & Nursery

For More Information & Registration Form contact the Beaver County OSU Extension Service at 580-625-3464 or

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Early Registration \$110 after September 28 - \$140

OBGA Members, Master Gardeners & Co Extension Educator early registration \$80 after September 28 - \$140

September 27 & 28—Nursery, Landscape and Greenhouse Trade Show and Convention, Cox Convention Center. Contact Wendy Gerdes at OklahomaONLAOGGA@aol.com or by phone 405-942-5276 for more information..

November 7—Tree Care Issues, OSUBG Educational Building, OSU, Stillwater. Contact Stephanie Larimer at 405-744-5404.

KEEPING YOUR PUMPKIN LONGER

If you buy your pumpkins early, there are some tricks to make them last. Make sure the pumpkin was harvested before the rind developed a waxy layer to keep the pumpkin from drying out and shriveling. Pumpkins also keep better in cooler weather, and not the 80s and 90s that we have experienced recently.

Even mature pumpkins may be helped by a light application of spray wax or similar material. Several commercial sprays are available that have been specifically developed for preserving pumpkins. These contain a wax to prevent drying and a surface disinfectant to discourage rots and molds.

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Winter Cereal Forage Selection

Triticale is best adapted to heavier soils, but with reasonable moisture also does well on coarser-textured soils. Rye and barley have an edge for forage production on coarser (sandier) soils. Rye has the best overall production for grazing, followed by triticale, wheat, and barley. The ranking for quality is just the opposite. Barley has the highest grazing forage quality, followed by wheat, triticale, and rye.

Winter Barley. In the past winter barley pasture was more susceptible to winterkill than the other cereal pasture options, especially when overgrazed. Breeding efforts have resulted in new, more winterhardy barley varieties well-adapted for grazing and forage production. The barbed awns of some varieties may affect hay palatability. Barley forage production is excellent in the fall under good growing conditions and typically produces more fall/early winter pasture than wheat, triticale, or rye. But late winter/spring production is less than the other three cereal pasture options. Winter barley also produces quality hay and silage. Winter barley grain is an excellent feedgrain.

Triticale. Triticale, a man-made crop, is a cross between wheat and rye. It is used extensively as a forage and grain in Europe and is increasing in popularity in the United States. Older varieties often had spring wheat in their background and were quite susceptible to winterkill. Most varieties currently available in this region possess good winterhardiness. Triticale produces more forage than wheat but is generally of a lower quality. Triticale becomes rank sooner in the spring than wheat. It is best suited as pasture and makes a lower quality hay or silage due to the larger stems, a trait which comes from its rye background. The larger stems make curing in the field for hay more difficult and harder to properly pack for silage. The grain is an excellent feedgrain. There is interest in western Kansas in using the grain in feed rations for swine production.

Rye. Rye often has a bad reputation in wheat-producing areas; however, this reputation is not warranted. As long as rye is not allowed head and produce seed, rye contamination of wheat fields is nonexistent. To prevent seed production, rye should either be destroyed after cattle are removed, or cut for hay or silage at the late boot stage. While the forage quality of rye is lower than the other three winter cereal options (especially in the late spring), there are several reasons to consider rye in a winter pasture program. Rye is the hardiest of the four winter cereal options, stands up the best to drought and heat, recovers the most rapidly when grazed, grows quickly in fall and spring after dormancy, and is the most winterhardy. Late-spring growth, while ample, rapidly turns stemmy and unpalatable. While rye may be used for hay and silage, it is best suited for pasture for the same reasons cited above for triticale.

How much fertilizer can we put down with our wheat seed?

You can safely apply quite a bit of 10-34-0 or 11-52-0 with your wheat seed, especially in 7 1/2 inch rows. But don't try to apply all or most of your total N needs this way by spiking it with urea-containing fertilizers (which includes UAN liquid N). This can damage the seed and hurt germination.

Suggested Maximum Rates of Fertilizer To Be Applied Directly With Wheat Seed

Row Spacing (inches)	Amount of fertilizer (assuming no added K2O)			
	11-52-0 (lbs/acre)	10-34-0 (gal/acre)	11-52-0 (lbs/acre)	10-34-0 (gal/acre)
15	145.5	13.7	100.0	9.4
12	181.8	17.2	127.3	12.0
10	218.2	20.6	154.5	14.6
6-8	272.7	25.7	190.9	18.0

Adapted from Dale Leikam, K-State nutrient management specialist.

Does grain sorghum serve as a host for wheat curl mites through the summer, and cause my wheat to get infected with wheat streak mosaic after sorghum harvest?

Grain sorghum has not been reported as a host of wheat curl mite or wheat streak mosaic, but corn has. If there is living corn nearby a newly planted wheat field, it is possible that wheat curl mites can be living on the corn and move into the wheat crop as the corn leaves die. As a matter of fact, the Banks grass mite can also move off field corn and onto wheat as the corn dries down, according to Colorado State University Extension entomologist Frank Peairs.

The question is also asked quite a bit about whether CRP or ditch grasses can serve as a host of wheat curl mites over the summer. In general, the wheat curl mite can live on annual grasses, but not perennial grasses. To be more specific, the University of Nebraska lists the following as potentially important grass hosts for wheat curl mite, and wheat streak mosaic (from "Wheat Streak Mosaic Disease, Nebraska Extension publication EC89-1871):

Wheat	Oats	Corn	Smooth crabgrass
Goatgrass	Hairy grama	Downy brome	Barnyardgrass
Japanese brome	Cheatgrass	Field sandbur	Canada wildrye
Stinkgrass	Witchgrass	Green foxtail	Foxtail millet

On the other hand, the following plants are rated by the University of Kentucky and University of Illinois as poor hosts of the wheat curl mite, and resistant to wheat streak mosaic: Oat, Barley, Rye, Sorghum, Western wheatgrass, Crested wheatgrass, Buffalograss, Blue grama, Sideoats grama, Smooth brome, Sudangrass, Goosegrass, yellow foxtail, Orchardgrass, Switchgrass, and Reed canarygrass.

Source: The Wheat Farmer/Row Crop Farmer, Sept 2007

BEST TIME TO PLANT TREES AND SHRUBS

Early fall is a wonderful time to plant trees and shrubs. The air temperatures are cooler in the fall, allowing time for the tree or shrub to adjust to its new home without the added stress of summer heat.

Cut back on watering trees

As the days get shorter and evenings cool down, it's time to reduce watering of trees, shrubs, and other woody plants in the landscape. These plants need to prepare for dormancy and will not benefit from too much water. Water periodically when the soil is dry if rainfall is less than usual.

Essential Tips for Planting Bulbs

Snowdrops and crocuses can be counted on to be among the first speckles of spring color in the garden, sometimes even pushing up through snow. And probably no flowers are more associated with spring than daffodils and tulips. Spring is the season that we most associate with flowering bulbs, but if you want to enjoy their colorful blooms then, you need to get them planted months before that. Here are six key points for success:

1. Plant in fall. Spring-flowering bulbs need time to establish roots before the ground freezes, then a cold period to prepare them to bloom in spring when the soil warms up. That means planting in late September or early October in the colder climates, as late as November or early December in warmer regions.

2. Plant in randomly arranged clusters for natural effect. For maximum impact, plant bulbs in masses rather than in straight rows. When planting large clusters of bulbs, it may be easier to dig out the area to planting depth, place the bulbs, then spread the soil back over the planted area.

3. Plant in well-drained, amended soil. Bulbs must be planted in soil that drains quickly, and they grow best in soil amended with plenty of organic matter. You can use individual soil amendments such as sphagnum peat moss, organic compost, or manure—or a pre-mixed product.

4. Plant pointy side up, at proper depth. A rule of thumb is to plant bulbs with their base at a depth equal to three times their height. That means planting small bulbs (the size of a U.S. quarter or less) at about 5 inches and anything larger at about 8 inches. Place the bulb in the hole with the rounded base firmly in contact with the soil below.

5. Protect against rodent damage. Squirrels, chipmunks and other rodents may find your bulbs and dig them up before you even see them bloom the first time. Cats can be effective in scaring away the rodents, and there are a number of rodent-repelling products available at your local garden center. But for severe problems, you can encase your bulbs in a wire mesh cage. One-inch chicken wire works well, allowing bulb shoots and roots to grow right through while keeping the rodents out.

6. Feed in the fall and during growing season. When you plant your bulbs in the fall, add bone meal or a high-phosphorus plant food to the soil at the bottom of the hole. Phosphorus is the most important nutrient for root and bulb development. Previously planted bulbs should also be fed in the fall. Follow up in the spring after shoots appear, but before they bloom, with a feeding of a complete plant food containing high percentages of nitrogen and phosphorus. Continue feeding every two months to encourage increased blooms.

Properly planted, protected, and fed, hardy spring-flowering bulbs will produce new flowers year after year...making them a garden investment that pays dividends many times over.

LEPTO BACTERIA CHANGING, RESEARCHERS REPORT

The bacterium that causes leptospirosis, one of the most widespread infections transmitted between animals and humans, appears to be changing in ways that could limit its ability to survive.

Research suggests that the lepto bacteria that commonly infects cattle is losing its ability to live in water and is evolving toward a host-to-host transmission cycle, according to Richard L. Zuerner, a USDA Agricultural Research Service (ARS) scientist in Ames, IA.

In the past, people and animals could be infected with lepto when exposed to water contaminated with urine from infected animals, or by direct contact with body fluids or tissue from infected animals. Lepto causes pregnant cows to abort or give birth to still-born or weakened calves. Infected humans can develop flu-like symptoms that can be severe and even fatal.

However, genomic sequencing studies by Zuerner and colleagues at Monash University in Australia indicate the lepto bug genome is decaying, which is impairing its ability to sense environmental changes, acquire nutrients and survive outside of a mammalian host. These changes have significantly reduced or eliminated its ability to survive in water, which in turn restricts its effectiveness at spreading.

-- ARS release

UNDERSTANDING THE CHEMISTRY OF BEEF FLAVOR

How does beef get its flavor? Meat is generally composed of water, proteins, lipids, carbohydrates, minerals and vitamins. Of these, proteins, lipids, and carbohydrates play primary roles in flavor development because they include several compounds capable of developing into important flavor precursors when heated. The factors that contribute to beef flavor include:

- Cattle diets -- High-energy grain diets produce a more acceptable intense flavor in red meats than low-energy forage or grass diets. More than 40% of the variation in beef flavor between grass- and grain-finished beef, unaged and aged, is attributed to diet.

- Aging -- Unaged beef has a weak, bland odor, while aged beef has a strong, savory, roasted odor. The conditions (oxygen availability, temperature, humidity and aging time) in which beef is aged affect the ultimate flavor. Aging in a high-oxygen environment can result in a burnt, toasted off-odor. In addition, dry aging increases or concentrates beef flavor more than aging in a vacuum or in carbon dioxide.

- Enhancements -- Brine injection, or enhancements, can improve the sensory quality of beef. Enhancement solutions often contain a form of phosphate to retain moisture, as well as salt to enhance flavor. Enhancement solutions can also contain flavor enhancers and ingredients. Enhancement generally ranges from 6-12% of initial product weight.

- Off-flavors -- Oxidation of meat lipids damages both odor and flavor of fresh, cooked, stored (refrigerated or frozen) and reheated meat resulting in rancid and/or warmed-over flavor. Oxidation can be initiated by light, heat, metals (iron and copper),

Comparison of Winter Cereal Crops for Forage

Relative Ranking	Winter-hardiness	Drought tolerance	Fall pasture production	Spring pasture production	Hay tonnage	Hay quality	Silage tonnage	Silage quality
Best	Rye	Rye	Barley	Triticale	Rye	Barley	Rye	Barley
	Triticale	Triticale	Rye	Wheat	Triticale	Wheat	Triticale	Wheat
	Wheat	Barley	Triticale	Rye	Wheat	Triticale	Wheat	Triticale
Least	Barley	Wheat	Wheat	Barley	Barley	Rye	Barley	Rye

Source: Vic Martin, K-State annual forages specialist