

Mineral supplementation important for beef cattle

By **Wayne R. Wagner**, Livestock Specialist, WVU Extension Service

The importance of mineral supplementation and nutrition is underestimated by most beef producers. While subclinical deficiencies often go unrecognized, they cause a reduction in growth and efficiency and depress the immune system. Trace minerals are required for metabolism of nutrients, reproduction, immune response, and nerve conduction. Deficiencies occur because cattle cannot consume enough of the minerals or because a dietary antagonist, such as sulfur or iron, is inhibiting their utilization of a trace mineral.

The most deficient minerals in grazing cattle are phosphorus, copper, and zinc. In addition, West Virginia pastures typically are marginal to deficient in selenium. Cattle here should receive supplemental selenium because it plays a vital role in the reproductive and immune systems. The importance of phosphorus is well understood, but we are just beginning to understand the importance of copper and zinc.

These two minerals, when consumed in forages, do not seem to be highly available to the animal. Therefore, even if a forage analysis shows adequate levels of copper and zinc, subclinical deficiencies can and do occur. For example, it is estimated that the absorption of copper from fescue by cattle is low, normally ranging from 5% to 15%. The importance of these minerals seems to be enhanced

when cattle are stressed. There are indications that when cattle are stressed, the excretion of zinc from the body doubles and that of copper quadruples.

Weaned calves normally experience stress, which increases their susceptibility to infectious diseases. It is critical to provide adequate levels of zinc and copper to calves at least 45 days before weaning and during weaning. Maintaining adequate levels of these minerals significantly reduces the number of deaths and improves the recovery rate of infectious bovine rhinotracheitis (IBR)-stressed cattle. IBR is a problem throughout West Virginia.

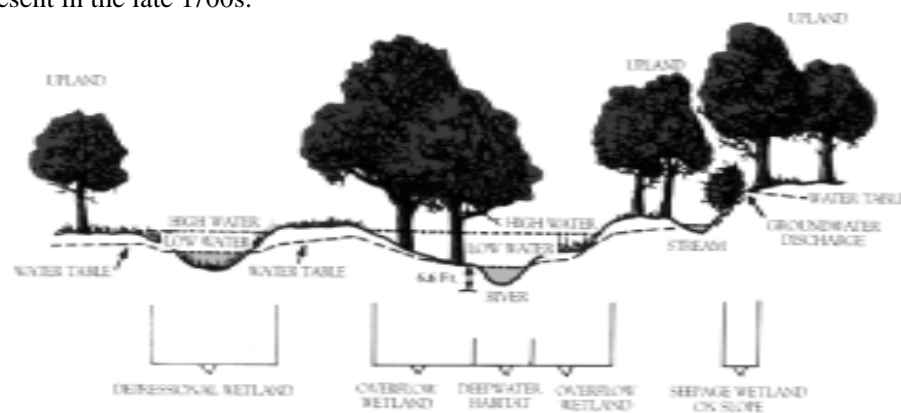
The effectiveness of vaccines will be reduced if cattle have a subclinical deficiency of these trace minerals. In addition, wormy cattle have less ability to build an adequate immune system, even when effective vaccines are being used systematically. Examine the tag on your mineral supplement and look for copper sulfate and zinc oxide or zinc sulfate because these are highly available to the animal. At a minimum, it appears that when minerals are consumed at a level of 2 ounces per head per day, the mineral should contain at least 1,000 ppm copper and 2,500 ppm zinc.

If your calves experience pinkeye, watery eyes, foot rot, or respiratory problems, you should examine your mineral supplementation program.

West Virginia's wetlands are wonderful

By **Jim Anderson**, Wildlife and Fisheries Professor, WVU College of Agriculture, Forestry, and Consumer Sciences, and **Bill Grafton**, Wildlife Specialist, WVU Extension Service

Wetlands covered an estimated 221 million acres of the contiguous 48 states in colonial days. More than 53% of those wetlands have been drained or filled. West Virginia is estimated to have 102,000 acres of wetlands, which is less than 1 percent of the state's land area. This amount is 24% less than the 134,000 acres present in the late 1700s.



Schematic diagram showing wetlands, deepwater habitat, and uplands on the landscape. Note differences in wetlands due to hydrology and topographic position.

Although West Virginia has fewer wetlands than many states primarily because of its rugged topography, there are some well-known wetlands in the state. Some better known wetlands in western West Virginia are McClintic, Green Bottom, Blennerhassett, Boaz, Williamstown, and Winfield. Wetland complexes in the southern mountains occur on Marsh Fork, Raleigh County; Meadow River, Greenbrier County; Meadow Creek, Fayette County; and Muddlety Creek, Nicholas County. Well-known wetlands of the high mountains include Cranberry Glades, Canaan Valley, Dolly Sods, Pine Swamp, and Cranesville Swamp. Two popular wetlands in the Eastern Panhandle are Altona-Piedmont Marsh and Town Marsh. Numerous other small wetlands occur throughout the state.

Wetlands are known by a variety of names. Types of wetlands occurring in West Virginia are aquatic, bogs, marshes, swamps, riparian (streamside), seeps, and wet meadows. Numerous wetlands occur where man-made structures, such as roads and railroads, impound water. They also are found around the margins

of lakes and farm ponds. Most wetlands are dominated by grasses, forbs, shrubs, or trees.

Wetlands are definitely not "waste lands." Important components of the landscape, they serve the following valuable functions:

- agricultural uses
- flood prevention
- wildlife habitat
- pollution and sediment control
- recreation areas and aesthetics
- groundwater recharge

Wetlands have always been highly productive wildlife habitats. Birdwatchers visit wetlands to see and photograph bald eagles, red-winged blackbirds, kingfishers, tree swallows, and many other birds and wildlife. Ducks, geese, herons, and woodcocks depend on wetlands, as do fish, turtles, frogs, and crayfish. Beaver, muskrat, mink, and raccoon require wetland habitats for feeding and reproducing.

Wetlands provide economic benefits without being filled or drained. Some wetland owners trap fur-bearing mammals, raise fish (aquaculture or baitfish), or have fee hunting and fishing operations. Wetlands supply cash crops of cranberries, blueberries, and peat moss.

Wetland plants can remove toxic contaminants from water and soil. They can absorb agricultural fertilizer, nutrients, and pesticides before they pollute waterways. Wetlands also have been used in treating acid mine drainage from abandoned coal mines. Many West Virginia farmers manage wet meadows and hayfields as insurance to provide forage during dry periods. These wetlands may be the only productive fields during the 10-year cyclical droughts.

Many West Virginia wetlands function naturally without any assistance from people. Others may need to be managed with water level control devices or by controlled grazing, mowing, or burning. Managed wetlands can be more productive than naturally functioning wetlands, but expenses also are greater. The amount of effort required to manage water control devices depends on the type used. Simple metal pipe risers without stop logs automatically prevent water from rising above a predetermined height. Structures that allow the water level to be manipulated from completely dry to a maximum set height require more management and a greater time commitment.

West Virginia's wetlands are a small portion of the landscape, but they provide valuable benefits and products to their owners and to society.

Part 2 of this series will deal with the controversial governmental policies and regulations that are used to determine legal (jurisdictional) wetlands.

Start now to control next year's aquatic weeds

By **Ken Semmens**, Aquaculture Specialist, and **Rakesh Chandran**, IPM Specialist WVU Extension Service

It happens every year, and each year you resolve to solve the aquatic weed problem in your pond. Before long, it is the middle of summer and aquatic vegetation covers the pond surface. Timing is critical, and once again it is too late to solve the problem. But it's not too late for a midyear resolution to solve next year's problem.



Now is a good time to identify the problem. What kind of weed is it? How much of the pond surface is covered? If you can determine the kinds of weeds growing in your pond, you can easily determine the appropriate treatment. For example, filamentous algae is commonly treated with a chelated copper product like Cutrine+. However, this treatment is ineffective on a rooted plant like eurasian milfoil. It is nearly impossible to correctly identify a plant over the telephone. Seeing a sample of the plant itself is the best bet. Photographs, drawings, photocopies, and scanned images are also helpful. For photographs of some common aquatic weeds, you may wish to visit the image gallery on our aquaculture Web page (<http://aquat1.ifas.ufl.edu/photos.html>).

Estimating surface area will require some measure of pond dimensions. A pond 200 feet long and 75 feet wide has a surface area of 15,000 square feet (200 x 75). Since there are 43,560 square feet in an acre, the surface area of a pond with these dimensions will be 15,000/43,560 or about a third of an acre.

Estimating the amount of water in the pond will be important if you are treating the entire pond with a herbicide at a specific concentration. Volume is usually measured in acre-feet. (One acre-foot is the volume of water 1 foot deep over an area of 1 acre. One part per million of 1 acre foot is 2.7 pounds.) If the pond above had an average depth of 5 feet, it would have 1.65 acre feet of water (.33 acres x 5 feet deep).

It is handy to measure depth in the warm summer months and mark the water level at that time. When it comes time to treat, you can check that reference for the depth. For example, if the water level in the above pond was half a foot higher than when the pond was 5 feet deep, there would be 1.8 acre-feet of water in the pond (.33 acres x 5.5 feet).

There are a variety of ways to manage an aquatic weed problem.

1. Use herbicides to kill vegetation directly. (Remember to read the label and follow instructions.) There is great appeal in immediate results. Plants controlled with herbicides frequently grow back. If applied properly, herbicides will not kill the fish. However, treating the entire pond with herbicide at this time of year can lead to oxygen depletion, which could cause a fish kill.
2. Do nothing. Maybe the problem is more in your mind than in the pond. Biologists in the W.Va. Division of Natural Resources (DNR) point out that the best bass populations are found in ponds with weed coverage of up to 40%. If bass fishing is important to you, it may be wise to do nothing.
3. Limit addition of nutrients. Weeds grow in response to fertilization. There may be ways to reduce flushing of manure and other nutrients into the pond. Fewer nutrients may lead to less weed growth.
4. Limit light penetration. Some people suggest fertilization as a way to create a "bloom," which promotes growth of the microscopic algae and makes the water green. This strategy works well in the southern United States where warm water temperatures commonly favor growth of this algae.

Unfortunately, fertilization may also promote growth of the weeds you are trying to control. There are products on the market that make the water blue. This effectively shades the bottom, controlling plant growth in water deeper than 3 feet. Such products are most commonly used in ponds where appearance is critical.

5. Remove weeds physically. Mechanical removal of the plants is effective but can be a lot of work. Floating plants like duckweed will be skimmed from the surface if the overflow drain pipe draws from the surface of the pond. Expect the weeds to grow back.
6. Stock fish that eat weeds. Grass carp tend to eat submerged rooted aquatic vegetation that is tender. They may provide long-term and cost-effective control. Like cattle, they will eat preferred plants first and then graze less-desirable plants. Grass carp may not control some plants like filamentous algae especially if the water is cold. Israeli carp and koi carp may be effective against duckweed and filamentous algae. The DNR permits sterile grass carp in West Virginia. Israeli carp and koi carp require no permit. For details, check our Web site (<http://www.wvu.edu/~agexten/aquaculture>).
7. Draw down water in winter. Lowering water level will subject shallow areas to freezing and may kill weeds in these areas.
8. Design ponds properly. If you plan to build a pond, consult the Natural Resources Conservation Service. You can avert many weed problems if the pond is designed properly.

There are many ways to manage an aquatic weed problem. Integration of two or more strategies gives you even greater flexibility. For example, treating with herbicides gives immediate control, and stocking with grass carp after treatment may provide long-term control.

When the water begins to warm up in the spring is a good time to take action, but you can begin to solve next year's weed problem now.

For more information, contact your county's WVU Extension agent or check the Web sites given above.

Successful direct marketing offers 'realistic' experience

By **John Jett**, Horticulture Specialist, WVU Extension Service

The key to marketing small fruits and vegetables directly to the consumer is to recognize that growers are not just in the business of selling produce. They are in the business of selling the sights, sounds, smells, and atmosphere associated with the total purchasing experience.

Supermarkets are able to obtain large volumes of products and sell them for less than the local farmer. However, supermarkets cannot offer a realistic farm or market experience.

Quality stands above all else in establishing and maintaining a profitable farm. But quality includes more than just the commodity; it involves the entire experience that is involved with getting the product into the consumer's home.

Pricing

The prices charged for the product must be fair to both the grower and the customer. Price is not determined exclusively by supply and demand.

Customers often do not shop around for the best price. Instead, they develop a loyalty to a particular grower and trust him or her to set a fair price. Fair pricing requires a thorough knowledge of production costs, which must include the grower's own labor. Prices must be set to meet costs and provide a reasonable profit.

Overcharging can result in unhappy customers, and underpricing can cut into profits. Reducing prices to undercut the competition may seem like a good idea at first, but it is likely to cause more harm than good. First, a grower reduces profit because sales volume does not increase proportionally. Competitors may lower their prices, setting up a price war. Finally, customers may expect a drop in price later and hold off on buying the product.

In surveys, customers rank quality and consistency above price in importance. Lower price produce is often considered to be of lower quality. The main reasons customers visit farm markets or pick-your-



own operations are to obtain fresh fruit and vegetables and to have a pleasant experience—not to get a break on price.

Marketing Options

Invest time in determining which marketing option is best for you. Direct marketed fruits and vegetables

(continued on page 4)

Butler: Head and shoulders above the pest

Edited by **David P. Welsh**, Public Relations Specialist
WVU College of Agriculture, Forestry, and Consumer Sciences

When destructive insects threaten West Virginia's extensive forested lands, it's good to know there's an expert on hand.

Linda Butler, a professor of entomology in West Virginia University's College of Agriculture, Forestry, and Consumer Sciences (CAFCS), has established an outstanding reputation in her career as a scientist at West Virginia University. Her body of work has earned her distinction as the 2000-2001 Benedum Distinguished Scholar in the life sciences.

Butler is known primarily for her work as a forest entomologist, which includes examining the impact of pesticides used to control exotic forest insects on nontarget species and the feasibility of using biological control techniques. An outgrowth of this research is her work identifying insect species involved in defoliation and tree mortality, which has resulted in the discovery of significant new information on the life cycles of species of caterpillars that defoliate trees.

Much of Butler's research has centered around long-term studies on the control of the gypsy moth and other defoliators and the impacts of defoliation and pesticide application on animals that use arthropods as food sources, including songbirds, fish, and other aquatic species in streams located in pesticide-use areas. Butler also has compared the destructive impacts of the gypsy moth to those of the chemicals used in its control.

She has designed and carried out innovative projects to help solve practical problems. She has been involved in small detailed investigations and in large multidisciplinary projects extending over many years. Results from her work have been published and presented widely.

Butler's work on defoliating insects began in the early 1980s, when a biological system called a looper complex was detected in West Virginia's eastern forests, which resulted in significant defoliation and tree mortality. This early work identified the insect species involved, determined their life cycles, and included studies of native parasites and predators that tend to balance populations of defoliators and moderate their effects.

At the same time that work was being done, Butler began work on the natural controls affecting native caterpillars that defoliate hardwood forests. This work resulted in identification of more than 100 defoliating caterpillar species in Cooper's Rock State Forest.

Parasitic wasps and flies, which are significant in the suppression of these defoliators, were reared and identified from the caterpillars. Many of these caterpillar/parasitoid associations had been unknown previously.

With the anticipated arrival of the gypsy moth into West Virginia, forest insect surveys were undertaken using light traps, tree bands, and pitfall traps to establish a baseline on population of native defoliators, parasites, and predatory insects in the forest. These studies resulted in collecting thousands of specimens that represented several hundred species. With the full-scale arrival of the gypsy moth in north central West Virginia in the early 1990s, these baseline data enabled Butler to carry out long-term studies on the impact of pesticides on nontarget species when various chemicals were used to suppress gypsy moth.

Later studies determined the impacts of destruction of nontarget species of insects and other arthropods on animals that feed upon them. Others were undertaken to determine the secondary impact of spray programs on food for terrestrial animals such as songbirds and bats, and for fish and other aquatic species in streams adjacent to or within the treatment areas. It was found that richness and abundance of insect species tended to be less on treated than untreated areas in the year of treatment and for at least one year following treatment.

Butler's work is considered outstanding because it has resulted in significant new information regarding human-applied and natural controls of defoliating insects, especially of the gypsy moth and the impact these insects have on forests.

In a current study, she and co-workers have identified 600 species of moths, 159 species of larvae, 198 species of flies, 94 species of beetles, 19 genera of weevils, 22 species of formicids, and numerous species of parasitic wasps in these areas. The vast collection of insects and other arthropods now serves as the focus for a National Science Foundation grant being sought by Butler and her colleagues. This grant will enable them to characterize more fully the insect fauna found in central Appalachian forests, which will shed much new information on the ecology and diversity of our hardwood forests. Her work has contributed greatly to a better understanding of the relationships among species and the ecology of the whole forest rather than an isolated insect or tree.



Want to extend grazing season?

By **Ed Rayburn**, Forage Agronomist,
WVU Extension Service

Do you want to extend the grazing season this year? Here are a few management tips to help you do so.

1. Select a pasture or hay field and graze or hay it off by late July or mid-August.
2. Apply 50 to 60 pounds of nitrogen per acre using ammonia nitrate, ammonia sulfate, or urea. If a recent soil test indicates that soil phosphorus is low, using diammonia phosphate (DAP) at 100 to 200 pounds per acre will provide 18 to 36 pounds of nitrogen and 46 to 92 pounds of phosphate.
3. Keep livestock out of the field until late October to early December, depending largely on when other pasture is grazed off and when your animals need the feed.
4. If the field has predominantly orchardgrass or bluegrass, start grazing in October or November so that it will be eaten off before early December. These grasses are killed by freezing weather, and they brown down to where cattle will not eat them well past early December. Smooth brome grass and reeds canary grass are even more sensitive than orchardgrass to freezing and should be grazed off earlier.
5. Tall fescue can be grazed from December through March, depending on when your animals need it. Strip grazing will allow you to get the most grazing days from an area of stockpiled grass. Give the animals only enough area to feed them for three to six days. If stockpiled tall fescue has been fertilized with nitrogen, its crude protein content will be adequate for beef cattle in December and January. If no nitrogen fertilizer is used or if there is a lot of rainy weather in December and January, the animals may need a protein supplement when grazing fescue in February and March. Forage testing and knowing your animal's feed requirement will tell if and how much supplemental protein is needed.

More detailed information on stockpiling tall fescue for winter grazing can be found in the WVU Extension Service fact sheet "Tall Fescue Management" available from your county Extension agent or on the Web (www.caf.wvu.edu/~forage/tallfesc.htm).



West Virginia University's Animal Science Farm was the setting for Kiddie Days April 24-27.

Thousands of youngsters from Morgantown and surrounding areas visited the facility to get a sense of how a farm operates. Bill Jones, farm operator for WVU, said: "This is a very popular event. The kids get to see the sights and hear the sounds of a working farm, and that's unfortunately becoming an increasingly unusual opportunity." WVU's College of Agriculture, Forestry, and Consumer Sciences holds Kiddie Days each spring, with faculty, staff, and students guiding tours.



You're never too young to plan for retirement

By C. Sue Miles, Family Life Specialist, WVU Extension Service

People get into trouble fairly easily making some common retirement planning mistakes. Farm families have special retirement planning needs. Family and business plans need to be driven by your family's vision of your lives and the farm three to five years from now and later.

The most important thing to do is to take the time to talk it through. Make sure each family member is "on the same page." Do you want the farm to pass to another generation? Does everyone agree on that? Take time to develop a plan and put it on paper now. Revisit it every few years because our vision and goals change as our lives change.

The following are some considerations for you now or mistakes that might cost you dearly:

1. Don't put off retirement planning. Too often, people in their 50s decide they want to retire at 60. By this time, it may be too late to achieve what they want by their projected retirement date.

2. Figure out how much income you'll need in retirement. A common approach assumes you'll need at least 75 percent of your current income. Many factors can up this figure greatly. Usually, retirement income needs are based on a person's life expectancy. According to actuarial projections, people who are age 65 can expect to live another 12 years. However, the number of people at least 100 years old is growing impressively. Also, adult children, your siblings, and/or parents may turn to you for financial help. You may have planned for your own retirement income needs but not considered their potential needs. Deciding to travel a lot or buy a second home in retirement could boost your income needs.

3. Begin looking around and learning about retirement community/assisted-living options. When you can no longer live on your own but don't require a nursing home, assisted-living housing arrangements provide living quarters, meals, house-keeping services, laundry, recreation, and some on-site medical assistance. Different levels of care, cost, and independence are available. Today, assisted-living costs average \$3,000 a month.

4. Many of you have paid into some retirement plans. However, don't put all your eggs in this basket. For example, financial experts frequently tell us not to count on Social Security. At best, Social Security benefits provide only a safety net for retirement. Currently, the most you can expect is about \$1,500 a month. If you want to retire early—before the normal retirement age fixed by law—benefits are permanently reduced.

Example: In the past, when the normal retirement age was 65, those retiring at 62 received a benefit reduced by 20 percent. Today, normal retirement age for someone born in 1938 is 65 years and two months (it is scheduled to rise to 67 years). If this person retired in 2000 at age 62, benefits are reduced

by 20.83 percent. For those with a 67-year retirement age (starting in 2022), benefits will be reduced by 30 percent for those opting to take benefits starting at 62.

To get some idea of what to expect from Social Security when you plan to retire, you can use a benefits calculator on the Social Security Administration's Web site (www.ssa.gov/retire/calculators.htm).

5. Don't underestimate medical costs. Medicare, a federal benefits program covering many types of medical expenses starting at age 65, covers only certain expenses. You must pay deductibles and co-payments on these expenses, plus the expenses Medicare does not cover, out of your own pocket. Most experts suggest carrying

supplemental health insurance coverage. "Medigap" policy costs vary according to the coverage you select.

6. Don't wait too long to buy supplemental health insurance. Generally, Medicare doesn't cover the cost of long-term care that may be required by those with Alzheimer's and other chronic diseases or simply old-age-related incapacity. The cost of long-term care is steep, averaging about \$50,000 annually nationwide and costing more than \$100,000 in some locations. Those with income and assets below modest governmentally fixed levels can qualify for Medicaid to cover nursing home costs. However, anyone with assets to protect won't qualify and will need to carry private long-term-care insurance. The younger you are when you take out the policy, the lower your annual premiums.

7. Meteoric rises in the stock market in recent years may lead you to believe that you now have enough money to retire. Review your finances carefully before you decide to quit your job.

8. Many who retire early get bored and go back to work within a year or two, either on a voluntary or paid basis. Decide how you're going to spend your time before you decide to retire. Perhaps you want to retire in phases. That makes a lot of sense to many people including farm families. The important thing here is clear communication. If you are retiring from your farm, be specific and negotiate exactly what responsibility you will have and what others will do. Be specific about the time frame for phasing out of farming and then do it.

9. Seek expert guidance. You may think retirement planning is a do-it-yourself process. Even if you're adept at handling your own investments, it is a good idea to review your plans with an expert. Check with a certified financial planner who has experience helping people make the transition from work to retirement.

10. Review your plans regularly and make adjustments as things change. They always do and always will!



(Direct Marketing, continued from p. 2)

are typically sold via one of four marketing channels: pick-your own, farm market, roadside stand, and farmers market.

Pick-Your-Own

The pick-your-own (PYO) market has proven successful for many growers. To attract enough customers, a PYO farm is best located within 20 miles of a densely populated area.

It helps if the fields are on or near a major roadway and easily accessible. However, many highly successful PYO farms are in less than ideal locations. Developing a customer base on out-of-the-way farms requires patience, a great deal of promotional effort, and a reputation for providing a pleasant farm experience. Ample parking space should be available as well as toilet facilities, drinking water, shade, and some seating.

Field supervisors must be employed to direct and help customers in parking, harvesting, and checking out. Supervisors should be courteous and friendly and have a thorough knowledge of the farm. Customers should not have to wait in long lines to pay.

PYO farms can provide family recreation. Families tend to pick more produce so most operations allow children to help under proper supervision. However, it is a good idea to have alternative amusement for them, such as a playground or petting zoo.

Farm Market/Roadside Stand/Farmers Market

A farm market in conjunction with PYO can be a powerful draw for customers. Providing customers with recipes and instructions on how to handle produce at home can increase sales and encourage repeat customers.

Selling fresh fruits and vegetables at retail is another way to provide customers with the farm experience. Good signs, both outside and within the retail area, are important to customers. Similar to the PYO, it is important to have knowledgeable, friendly sales staff to serve the customers.

Educating buyers about what they are purchasing is a value-added strategy that will attract people to your outlet. Cooking demonstrations and recipes will make a lasting impression on customers. Selling jams, jellies, juices, salsas, and herb vinegars adds value and profits to farm-raised products.

In the next issue, we'll discuss advertising's role in direct marketing.

WVU UPDATE

The West Virginia University Extension Service and the WVU College of Agriculture, Forestry, and Consumer Sciences are pleased to offer this educational insert to the Farm Bureau NEWS as a service to West Virginians. We welcome your questions or comments.

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Lawrence S. Cote, Director, Cooperative Extension Service, West Virginia University.

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