

AG *Newsline*

AG-BUSINESS, AGRONOMY, HORTICULTURE,
LIVESTOCK AND COMMUNITY DEVELOPMENT
FOR WEST-CENTRAL MISSOURI

JULY, AUGUST, SEPTEMBER
2006

Potassium deficiency in soybeans

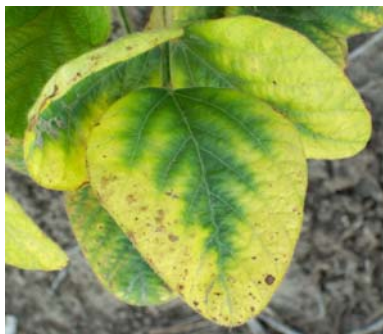
Numerous producers throughout west central Missouri are noticing potassium deficiency symptoms in their soybean crop. Deficiency symptoms will normally show up on older, lower leaves first and then progress up the plant. Leaves will show a bright yellowing around the leaf edges.

As would be expected, potassium deficiency symptoms have been seen on soils testing low in potassium. However, these symptoms may occur even if the soil tests high for potassium, due to poor root growth. Potassium moves very slowly within soil, so roots must continually exploit additional soil volume for potassium. If root growth is inhibited by dry soil or compaction, potassium uptake is depressed. Potassium deficiency symptoms are commonly seen in drought-stressed crops; symptoms should decline (assuming soil test potassium is adequate) if weather conditions arise that encourage new root growth.

Producers are encouraged to soil test fields with apparent potassium deficiency symptoms. If soil test potassium levels are below 150-200 lbs/acre, the deficiency symptoms are predominately due to the low soil test potassium levels. Potash applications are highly recommended on

soils testing below 200 lbs/acre, as a yield response would be expected. If above 200 lbs/acre, the deficiency symptoms are likely due to poor root development, resulting from either compacted and/or dry soils.

On a per bushel basis, soybeans remove approximately 4 times more potassium than corn. To estimate the potash removal rate for your field, **1.4 lbs of potash are removed per bushel of soybean**. Therefore, a 50 bushel/acre soybean crop would remove approximately 70 lbs potash/acre.



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CHECK WHEAT SEED QUALITY

Before Planting

The wheat crop this year has had a number of stresses: drought, heat, greenbugs, barley yellow dwarf, you name it.

If producers are planning to save wheat to plant, it is important to check the germination of their wheat seed. The first step is to clean the wheat seed. It is important that wheat seed be cleaned to remove small and damaged seed and to eliminate weed seeds. Removing small and damaged seed will not only aid in crop establishment, it will also provide a more uniform wheat seedling stand. Removing small and damaged seed will also increase the thousand-kernel weight (TKW), which serves as a measure of seed quality. Wheat seed with TKW values greater than 30 grams tend to have increased fall tiller number and seedling vigor.

The next step is to perform a germination test, which can either be completed at home or by sending a sample to the State Seed Control Laboratory. A home test can be performed by counting out 100 seeds and placing them in a damp paper towel. Place the paper towel into a plastic bag to conserve moisture and store in a warm location out of direct sunlight. After five days, count the number of germinated seeds that have both an intact root and shoot. This will give the grower an estimate of % germination. It is important to choose random seeds throughout the entire seed lot and conduct at least five 100 seed counts.

The Missouri Seed Improvement Association can perform a germination test. The test requires one pound of seed. The State Seed Control Laboratory does free germination testing June 1 through August 31

and November 1 through January 15. Samples sent at other times will have a minimum charge of \$12. Sample forms with the address where samples are to be mailed are available at Extension Centers or at <http://www.mda.mo.gov/pdf/seedsvcsamples.pdf>. If germination is below 85% it is important to increase the seeding rate to compensate; however, I would caution growers from seeding any wheat with a germination test below 80%.

The next step is to assess whether a seed treatment is necessary. A number of fungicides are labeled for use as seed treatment fungicides on winter wheat. These fungicides protect germinating seed and young seedlings from seedborne and soilborne pathogens. Seed treatment fungicides will not improve germination of seed that has been injured by environmental factors and will not resurrect dead seed. A correct assessment of the cause of poor seed quality or poor germination rates is the first step in deciding if a seed treatment fungicide is necessary.

Several fields this year had loose smut. It is easily recognized by the characteristic dusty black appearance of diseased heads. As a rule, glumes and grain are completely transformed to black powder, which shatters off, leaving a bare spike at harvest. Loose smut fungus grows down in the flower and establishes itself inside developing kernels. When infected wheat seed



is sown, the fungus grows into the young shoots and develops with the plant, replacing the spikelets with black spores, which can infect flowers of healthy plants. If infected seed is saved, incidence of the disease may increase over the years. Foundation and certified seed should be relatively free of loose smut. Carboxin (Vitavax) seed treatment should be applied on all wheat used for seed.

Some fields may have had Fusarium head blight (scab) and/or black point. Black point or kernel smudge may be caused by a number of different fungi including species of *Alternaria*, *Fusarium*, and *Helminthosporium*. Affected kernels appear black-pointed. The embryo end of the seed is discolored with a darkened pericarp and may be shriveled. Kernels from heads with Fusarium head blight (scab) may be shriveled or shrunken and lightweight. Some kernels may have a pink to red discoloration. Others may be bleached or white in color. The fungi, which cause black point and scab of wheat seed, may survive in or on the seed, affecting germination and contributing to seedling blight problems if seed is planted. Planting good quality, disease-free seed is an effective means of preventing problems from these seedborne pathogens. If seed with black point or scab must be used for planting must be used, a seed treatment fungicide should be considered. For more information, see guide G4319, available at your local University of Missouri Extension Center.



By Pat Miller, University of Missouri Extension Agronomy Specialist

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THE FLY SEASON IS Upon Us!



With the arrival of summer and hot weather, cattle producers are talking and thinking about fly control.

Flies cost the cattle industry over \$500 million annually with decreased weight gains, decreased milk production and transmission of diseases such as pinkeye and anaplasmosis.

Flies that attack beef cattle are classified as biting or non-biting. The non-biting flies include face flies and house flies and the biting flies include horn flies, stable flies, horse flies, and many species of gnats.

Non-biting flies feed on liquid material around the eyes, nose, mouth, and blood from wounds. They cause eye inflammation and transmit eye disease organisms. Biting flies feed by piercing the animal's skin and sucking blood. Two of the more common flies affecting cattle are face and horn flies.

Face flies feed on secretions around the eyes, nose, and mouth; just as their name implies. These flies are carriers and spreaders of bacteria, which cause pink-eye. Research has reported reduced average weight gains of 17 pounds in calves with one eye affected and 30 to 65 pounds when both eyes are infected. Face flies spend very little time on the animal. As a result, the control of face flies is much less effective because the fly is only exposed to a small amount of insecticide.

Horn flies are of the greatest economic importance to cattle. The horn fly feeds about 20 to 30 times a day, primarily on the back and shoulders of cattle. They

feed by inserting their mouthpart into the host's skin and sucking blood. Horn flies spend their entire life cycle on cattle, only leaving to lay eggs in fresh manure.

For fly control, there are several products on the market that are available. There are insecticide ear tags, pour-ons, sprays, back rubbers, dust bags, and oral larvacides. For effective fly control, it may require a combination of products.

Insecticide ear tags can be highly effective in controlling horn flies and are as effective as any other method to control face flies. There are two categories of fly tags available: pyrethroids and organophosphates. Horn flies can become resistant to pyrethroids, thus resulting in variable control. Face flies are not resistant to pyrethroid-containing ear tags. Organophosphate tags give good control of horn flies with no evidence of resistance, but poor control of face flies. Many producers utilize fly tags for fly control and place them in the ear early in the season. Although this may be the most convenient, it may not be the best timing. The fly tags are designed to provide control for a specific time length and most of the fly problems occur later in the grazing season. Timing is critical and the strength of the insecticide tends to reduce its effectiveness as time passes. Therefore, if fly tags were placed in the cow's ear a month or two

ago, then the effectiveness for fly control has diminished when peak fly populations are occurring now. In addition, rotating year to year on type of fly tags (pyrethroids or organophosphates) is suggested. At the end of the fly season or as the fly tag begins to fail, it is important to remove the fly tags in order to prevent resistance to the insecticide from constant exposure of sub-lethal doses.

Pour-ons and sprays can be very effective. These products can provide an immediate response in control, but are short in duration (typically less than 30 days) and require reapplication throughout the fly season. Back rubbers, fly strips, dust bags can be an effective if they are strategically located for animal use (mineral feeders, watering areas, etc.). Oral larvacides work by inhibiting larval development, breaking the fly's life cycle, and should be started in the spring. However, if your neighbor is not using a similar control method, then flies can be expected to cross the fence and cause problems.

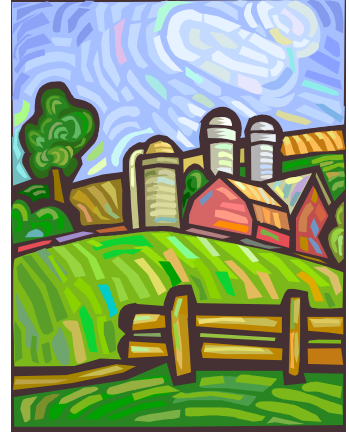
Remember, the economic threshold for fly control is when fly populations are greater than 200 flies per animal. Any fly control that keeps the fly population below the 200 flies per animal level gives the same economic performance regardless of the level of control.



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RULES AND REGULATIONS OF

Direct Marketing



If you have, or are attempting, to sell your farm products at a farmers' market, roadside farm stand, or out of your own home, you have probably realized the importance of contacting your local and state governmental agencies to ensure compliance with their rules and regulations.

If you are thinking about direct marketing - selling a product to an end consumer on an individual basis - your freshly grown produce, jams, honey, meat, cheese or milk, you would be wise to make contact your local health department or the Missouri Department of Agriculture to make certain that you are adhering to proper health department procedures and agricultural regulations.

In May, the Missouri Departments of Health and Senior Services and Agriculture hosted a day-long educational forum to inform food producers and processors of the various local, state and federal agencies that are involved in maintaining and enforcing the rules and regulations that govern direct-marketing raw and processed agricultural products. This article is a very brief overview of the topics covered in the forum.

The Missouri Department of Health and Senior Services (DHSS), the state agency charged with working to improve the health and quality of life of Missourians relies on their service providers at the county and city level to ensure that Missourians retailing their food products are in compliance with DHSS food safety and sanitation standards. Raw or unprocessed foods, such as apples, head lettuce, or whole watermelon can be sold without health department regulation while processed goods such as salsa and cut melon require health department inspection as a

raw product has been altered from its natural state and could potentially be contaminated if not properly handled or stored in a safe environment. In some cases, processing requires the use of a certified and inspected kitchen or facility.

Within the last year the Missouri Legislature passed new legislation easing the restrictions placed on small food processors called the Jams, Jellies and Honey Law (House Bill 744) This law allows for county health department exemptions for producers (farmers, non-profit, charitable or religious organizations) of jams, jellies, honey, and other non-hazardous products from having to use certified and inspected kitchens. However, the exemption only applies if accepted by your local health department. And, if you are selling the product yourself from your home, roadside stand or farmers' market, it is clearly labeled as being produced in an uncertified kitchen and contains your name, address, and all ingredients in descending order and you are making less than \$30,000/yr in sales of the product. Producers are still expected to maintain proper sanitary processing regulations regardless of lack of inspection.

The Missouri Department of Agriculture, MDA, also is involved as a regulating authority at direct-marketing venues. Dairy,

eggs, products sold by weight, and non-USDA inspected meat are but a number of products that are under the authority of the department. Milk and cheese producers would need to contact the State Milk Board to assure that they were adhering to state procedures and inspection regulation. If you are selling eggs or produce by weight you will need to contact MDA's consumer protection department, the Division of Weights and Measures, to acquire a state egg retailer or wholesaler license or to have your scale's accuracy inspected and approved.

Meat products for sale fall under the inspection authority of either the MDA or the USDA. Meat products cannot be sold without being processed in an inspected facility. Your choice of MDA or USDA inspected processor may be dependent on your consumer's needs and demands. It must be noted that any processed (cut) meat product that crosses the Missouri border into a different state for sale must be sourced from a USDA inspected plant. As a marketer of meat products it would be wise to investigate your potential markets and consumers to determine your need of inspection authority.

Continued on page 5.



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JAPANESE BEETLES

Feeding on Silks

Although generally considered an ornamental pest, Japanese beetles are currently damaging corn and soybeans across Missouri.

Corn producers are encouraged to monitor local fields for silk feeding, as Japanese beetles will feed on both corn tassels and silks, with preference for fresh silks. Silk feeding is severe in localized fields throughout west central Missouri and has warranted insecticide treatment.

In these localized areas, 8-9 Japanese beetles were present per ear. Silk feeding was severe and potentially reduced fertilization and seed set. Treatment is justified when an average of 3 Japanese beetles are present per ear, silks have been fed down to ½ inch, and pollination is only halfway completed. If Japanese beetles are not treated, it is important to realize the beetles will develop into white grubs, causing root pruning this fall and next spring. Insecticides labeled for Japanese beetle include: Capture, Mustang Max, Warrior, Baythroid, PennCap-M, Pounce and Sevin. For aerial applications, 2-5 gal-

lons per acre (GPA) is recommended.

The Japanese beetle is about ½ inch long with a shiny metallic-green body and bronze-colored outer wings. This pest became established in the eastern and southern United States in 1917 and crossed the Mississippi River in 1934, at St. Louis. Japanese beetle populations have since been present in namely urban areas, with established populations in St. Louis, Kansas City, and Springfield. They have become a major crop pest only in recent years.

For color photos of Japanese beetles:
www.extension.missouri.edu/ray/ag.shtml

Reference to a certain product does not signify endorsement and exclusion of a product does not signify a lack of endorsement by the University of Missouri.

Rules and Regulations *Cont.*

Canned products come under the authority of the US Food & Drug Administration (FDA). Acidified, and low-acid food products cannot be sold without proper certification. To ensure that consumers are protected from any potential contamination, the FDA requires that operators of processing equipment, packaging systems and container closures attend a FDA certified Better Process Control School to make certain that products undergo proper processing. Canned foods requiring FDA certification are salsas, pickled foods, and canned foods such as green beans and more. For more information on what foods would need canner certification it is best to contact the FDA directly. *It is important to remember that our counties' local health departments may be enforcing more stringent environmental health policies than that of state law. So, for that reason, it is important to contact your local office directly to make sure that you are in compliance.*

Inspection Authority Contacts:

Missouri Department of Health and Senior Services: (573)751-6400, www.dhss.mo.gov

- Section for Disease Control & Environmental Epidemiology (573) 751-6090
- Local City and County Environmental Health Departments

Missouri Department of Agriculture:
(573) 751-4211, www.mda.mo.gov

- Division of Weights and Measures (573) 751-4278
- State Milk Board (573) 751-3830

United States Department of Agriculture:
www.usda.gov

- District Meat Inspection Field Office (785) 841.5600


United States Food & Drug Administration
(913) 752.2100 or www.fda.gov

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Calendar of *Local Events*

FOR STATEWIDE EVENTS, CHECK THE WEB AT:
ACCESS.OUTREACH.MISSOURI.EDU/UOECALENDAR

August 7	Growing Growers: Starting a New Farm & Community Supported Agriculture Farm, 6 - 7:30 PM in Kearney
August 27	Growing Growers: Pests, Disease & Weeds, 10 - 4 PM in Independence
September 25	Growing Growers: An Integrated Farm, 4 - 7 PM in Higginsville
October 21	Growing Growers: Business Management for Small Farms, 10 - 4 PM

Alfalfa producers:
 If you would like to be on a mailing list for alfalfa producers, please send you name and complete address to Pat Miller at 417-448-2560 or e-mail to MillerPD@missouri.edu

Cost Share Assistance Available for Certified Organic Producers and Handlers: To receive information regarding cost-share assistance, applicants must complete a signed application, supply a copy of their organic certificates, and provide an invoice documenting their certification costs. Applications are available from the MDA Web site (<http://mda.mo.gov/Market/certcostshare.htm>); contact Pat Miller (417-448-2560) for more information. **Due date: September 30, 2006**