



# Northeast Missouri Ag Connection

*Your local link to MU for ag extension and research information*

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## Corn Rootworm

Corn rootworm has not been much of a problem since the introduction of the Bt toxin Cry38b1 which made corn plants resistant to corn rootworm. In recent years entomologists have found resistance to Cry38b1 in four states. Resistance has been confirmed by researchers in Illinois, Iowa, Nebraska, and Minnesota. Scientists in Colorado, Kansas, Missouri, New York, South Dakota, and Wisconsin are reporting significant damage in fields planted to corn hybrids containing the single Bt toxin. While the corn rootworm resistance (CRW) problem in the Midwest has drawn the most attention, it is not isolated to that region. Entomologists in Pennsylvania and New York are seeing an increase in problems as well. While Cry38b1 has been suspect in most of the CRW resistance cases, the practice of continuous corn and the repeated use of a single toxin are putting increased stress on all of the Bt toxins currently available.

Corn rootworms are one of the most damaging pests in the Corn Belt. According to the USDA, corn rootworms are responsible for up to \$2 billion in lost revenues yearly. With the development of resistance to Bt toxins it could be beneficial to scout for the corn rootworm, especially in a corn after corn rotation. Scouting needs to be vigilant to detect potential problems early.

Two species of rootworms that may cause severe damage to corn as both larvae and adults are the western and northern corn rootworms.

**Northern corn rootworm:** The adult northern corn rootworm is a tan to pale green beetle about 1/4 inch (6 mm) long. Newly emerged beetles are usually cream or light brown in color, but gradually turn green with age.

**Western corn rootworm:** Western corn rootworm adults are yellow to green in color with a black stripe along the sides of their wing covers and are about 5/16 inch (7.5 mm) long. However, male wing covers are often nearly entirely black or at least darker in pigmentation than that of the female, which usually appears as more regular stripes.

Identifying damage in corn roots after pollination can help producers evaluate current management practices. This can be accomplished by first checking a plant from a refuge strip or untreated area by digging 6-8 inches around the plant preserving the root ball. Examine the soil and roots for larvae. Damaged roots may appear rotted and will have pinhole markings where corn rootworms have entered the plant's roots. Examine silks for adult beetles. Identifying adult beetles is a clue that any root damage may have been the result of corn rootworms since damage appears primarily on the roots. Plant and stalk health decline caused by nutrient deficiencies may be the result of root damage. Next, dig and examine plants from three other treated areas with the same traits as the plant from the untreated area. Treated plants and those with less corn rootworm damage will be sturdier, with larger root masses and will be more difficult to dig up. Wash the roots and let them soak in buckets of water for 30 minutes. This will allow you to examine clean roots and

identify larvae that float to the top of the water. Options for management include rotating crops and not planting Bt- traited corn with the same single mode of action for more than two years in a row.

**Source:** *Wayne Crook, agronomy specialist*

## Fall Gardening Tips

It has been a good gardening season. The year started off with plenty of rainfall getting crops off to a good start. Rains continued in most parts through early July. I picked my first ripe tomato on July 3. But, I grow tomatoes in raised beds, and they seem to be ripening faster than those planted directly in the garden. It has been a cool summer, so most tomatoes have ripen slowly. The 50 degree nights and 70 degree days, slowed the ripening of fruits and vegetables. Flowers have looked good this summer. Their colors have been vibrant and showy in landscapes, due to the moisture received early in the growing season. Water plants during dry spells. If annuals, like petunias, start to look leggy, pinch them back and fertilize them with a complete liquid fertilizer. Complete means the fertilizer contains nitrogen, phosphorus and potassium and can be found at garden centers and farm supply stores.

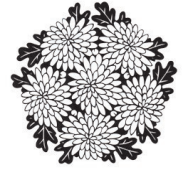
Vegetables such as lettuce, spinach, kale and radishes can be planted for a fall crop. Garden soil is often still warm this time of the year which can prevent some cool-season vegetable seeds from germinating. To help with germination, moisten soil before planting to cool it. Cooler soil will speed germination of cool-season vegetables. Refrigerating spinach seed for a week before planting will also help with germination. Be prepared in late September and October for frosts. Row covers or something else may be needed to protect sensitive crops like green beans and zucchini. Cool-season crops can tolerate a light frost.

Many fall fruits, such as apples, pears, grapes and plums are ready for harvest in September. Pears should be picked before fully ripening on the tree and stored in a cool, dark place, such as a basement to ripen. Rotten or diseased fruits should be picked up off the ground to prevent problems the following year.

Spotted wing drosophila was found in the Kirksville area on July 13. Since then, other reports have been received from around the region. Spotted wing drosophila is a destructive fruit fly that lays eggs in ripening fruit like blackberries and raspberries. They

can also be found in cracked tomatoes, blueberries, grapes and wild fruits such as elderberries. The eggs hatch and the larvae feed in the berry, making it mushy and not edible. Soft berries are a good indication that drosophila larvae are feeding in the berry. Pick ripe berries when they are firm.

Chrysanthemums and asters are a good choice for adding fall color to a landscape. Spring bulb flowers should be planted late September through October, but can be planted up until the ground freezes. Fall is a good time to divide perennials, especially those that bloom in the spring. Enrich the soil with compost before replanting. Peonies can also be divided at this time. Transplant them to a sunny site and do not plant them too deep.



For more information on any horticulture topic, contact your University of Missouri Extension Center.

**Source:** *Jennifer Schutter, horticulture specialist*

## Opportunity Knocks

Cattle producers are currently experiencing record high cattle prices with returns over \$400 per cow according to the Livestock Market Information Center. The U.S. beef herd has declined for six decades, declining from 132 million cows to 88 million, leading to a shortage causing higher prices.

Cattle owners are responding to higher prices by retaining heifers for breeding at a rate similar to the herd upturn in the 1970s. High prices are expected to continue at least through 2015 and maybe into 2016.

With record high cattle prices, producers should be investing in improvements to improve the financial position of the operation in preparation for when the cattle market cycles downward. Many producers are looking to buy more breeding stock, but should also consider opportunities to increase the carrying capacity of pastures and to add pounds to calves. This is especially important with the pasture and hay land acres which have been converted to row crop ground over the last seven years. It is more economical to improve existing pastures than to convert back from row crop.

With an investment now in better genetics, pasture improvement and better water supply; producers can expect higher and more stable returns over the lifetime of that investment. For example, buying genetically

proven sires or replacement heifers can improve the herd for as long as those genetics are kept. Pasture improvements, such as lime, last for three years, while inter-seeding legumes can last up to five years depending on weather conditions and management. The maintenance period on a pond, if built with cost share, is ten years, but most ponds last for much longer. Fences are another investment to consider. The cost of building barb wire fences adds up quickly at nearly \$2/foot. More producers are using electric fence for interior divisions and keeping barbed wire exterior or boundary fences. Maintenance of good boundary fences along a road or between neighbors decreases your liability, improves or maintains neighborly relations, and allows for more management options such as keeping back heifers or bulls.

Initial investments in improvements can be difficult even with the recent high returns. Producers should prioritize improvements based on the farm's business plan, by looking at the most limiting factors (water, forage, beef quality/quantity, management, etc.). Then address those factors according to an intermediate to long range plan.

Utilization of programs within the livestock disaster program should be considered. The livestock disaster programs include the Livestock Forage Program (LFP), Livestock Indemnity Program (LIP), and the Tree Assistance Program (TAP), which are now fully funded and made permanent under the Commodity Credit Corporation (CCC). In addition, the Emergency Livestock Assistance Program (ELAP) covers what is not under LFP or LIP. It is limited to \$20 million each year but covers things such as hay bales that are carried away in a flood or a hay barn full of hay that burns down.

Previously, producers were required to purchase Noninsured Crop Disaster Assistance Program (NAP) to be eligible for disaster assistance; however, that restriction has been eliminated. Livestock Forage Program will pay much better than NAP. Contact the local Farm Service Agency for questions regarding these programs or to sign-up, which will continue through January 30, 2015.

Another consideration for making improvements is cost share assistance through the Soil and Water Conservation District. Most districts can assist with inter-seeding of legumes; management intensive grazing system setup including fencing, liming, and

developing water systems; fencing of existing ponds or wooded areas; and pest management for weeds, woody species, or insects on pasture or crop ground, if requested. Some districts limit the number of practices or the dollar amount per landowner per year. Contact the local Soil and Water Conservation District for more information.

It is important to the future of the operation to make improvements, which are easier to do while cattle prices are high. Consider all options and determine which ones make the most sense.

*Source: Darla Campbell, ag business specialist*

## **Reducing Energy in Grain Drying Operations—Part 1**

It is a delicate task to balance drying grain and minimizing the energy required for drying. One should consider letting crops dry in the field as much as possible. In general, in Missouri, one should try to average about 22 to 23% moisture during the harvest season to minimize field losses and minimize drying costs. This means trying to start harvesting close to 28% moisture. These figures were developed by Bob George and Ed Constein, State Agricultural Engineers in the 1970's, but they still apply today.

One of the most efficient drying methods is to use natural air for drying. While it takes more management, natural air can be used to dry grain that is below 30 percent moisture. When using natural air, it is important to match fan capacity to grain bin volume and do not over-fill bins. **MU Guide 1310**, Low-Temperature In-Bin Drying: Shelled Corn in Southwest, Central and Northern Missouri. This is available at: <http://extension.missouri.edu/p/G1310> This guide uses typical weather conditions for Missouri to determine the depths of grain that can be dried. It also gives the sizes of fans needed to dry and adjusts grain depths for fans that don't match those sizes. Very seldom do we have a typical year so one should check the grain regularly for any problems that might occur.

Grain depth at various moisture levels can be determined from this guide. Once the grain is dried, more grain can be added. The depth of grain to be added should be determined by the moisture level of the grain to be added. Using multiple grain bins, you can dry a large volume of grain with natural air.

Stirring devices can be installed in bins to increase the drying capacity. Care should be taken to install and operate them correctly. The airflow in the bins is increased thereby increasing

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the drying capacity. If used properly, over-drying can be minimized by the mixing of the grain.

*Inspect and maintain grain bins and equipment:*

- Drying equipment should be inspected for proper working order. This includes bearings, belts, etc.
- Check the burners for a blue flame indicating complete combustion when using heated air.
- If equipment is aging, consider replacing with efficient dryers and fans. Consider centrifugal fans for efficient air movement in deep bins.
- Fans and burners should be cleaned. Check the regulators and sensors for good working order.
- Be sure air flow around the fan is not blocked.
- Inspect and clean drying floors. Treat them for insect control according to pesticide application guidelines and the latest recommendations for control.
- Check your grain moisture meters for accuracy.
- Clean dirt and chaff from grain to prevent blockage of airflow in the bins.
- Grain should be leveled in bins to be sure airflow is even throughout the grain.

...*To be continued next month with Part 2*

## **Alix Carpenter**

(July 22, 1970—August 14, 2014)



We are saddened to report we lost a colleague, friend and member of the northeast region extension ag staff. Alix was headquartered in Marion County, as an agronomist for the past fourteen years.

She was born in California and grew up in Louisiana. She received her B.S. and M.S. from Louisiana State University. She went on to earn her PhD in agronomy from Texas A&M University.

Alix fought a short but courageous battle with cancer. She leaves behind two young sons—Augustus and Jacob. The Master Gardeners have worked to set up a trust fund for the education of children through HomeBank in Palmyra. If you would like to make a donation, simply send a check to: **Trust for Carpenter-Melancon Children** and send it to Kristen Williams at the Marion County Extension Center, 100 South Main, Room 201, Palmyra, MO 63461.

University of Missouri,  
U.S. Department of Agriculture  
& Local University Extension  
Councils Cooperating

*Kent  
Shannon*

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