This year, musk thistles have occurred in very high numbers, resulting in one of the largest outbreaks in recent years. Many local farmers are wondering what can be done to control this pest. Spraying, mowing, and biological control should be used to combat this pest.

Spraying is best done in the fall or early spring, while the thistle is still in the rosette stage. Once the thistle starts to bolt and produce a flower chemicals are not as effective and larger amounts of chemical are needed. Additionally, most chemicals take two to three weeks before the plant dies, allowing the plant enough time to produce seed.

Mowing, or brush hogging, can be done during flowering to decrease the amount of seed produced. Studies done in Kansas have found that 11% of musk thistles were killed when mowed during the early bud stage. Mowing a second time four weeks later killed 79% of the thistles. Because thistles can produce flowers for several weeks, multiple mowings will be necessary.

Biological control is another way to reduce musk thistle problems. Rosette and flower head weevils have been introduced throughout Missouri and feed on musk thistle. The weevils use to be purchased, but because they are found in such high numbers retail sale is no longer necessary. The rosette weevil feeds on the leaves of the musk thistle and lays their eggs on the underside of the leaves or on the crown. Hatching larvae will burrow into the crown and feed on plant tissue. Flower head weevils lay their eggs on the musk thistle flowers. The hatching larvae will burrow into the flower and feed on the developing seeds. Each female will lay an average of 100 eggs during its lifetime. As many as 40 larvae have been found in a single bloom.

MU Agronomy Specialist, Sarah Kenyon recommends scouting musk thistles for the presence of the weevil. Collect several blooms from different areas in the field and cut the blooms down the middle. Then count the number of larvae at the base of each bloom (Figure 3). Three to four larvae in a bloom will consume 100% of the seed. Therefore, if several larvae are present per bloom, do not spray! The chemical used in the spray will also kill the weevils. If low numbers of larvae are present mow or spray.
Recently, Kenyon scouted several local fields. “Most fields contained 2 – 3 larvae per bloom and several adults laying eggs (Figure 2 below). For those fields my recommendation was to allow the weevil population to decrease the amount of seed produced and to use chemicals in the fall to remove those that germinate later in the year.”

This information was adapted from MU guide ‘Biological and Integrated Control of Musk Thistle in Missouri’. The complete article can be viewed at the Missouri Extension webpage or by visiting your local Extension office.

Sarah Kenyon, Agronomy Specialist, University of Missouri Extension, Alton, MO

**Figure 3** - Flower head larvae feed in the base of the flower head, exposed here. Cut blooms open to determine how many are present. If 2 or more larvae are present per bloom, seed production will be reduced by 90-100%.

Food Bank is eager for donations of specialty food crops. The food bank will bring a 24 foot box truck to pick up any edible produce, including seconds, which should be in a crate or box.

Contact James Landewee, Operations Director at 573-651-0400 several days ahead of time if possible and specify if a refrigerated truck is needed. He will provide you with a tax receipt for anything you donate.

http://extension.missouri.edu/butler/MoAgNews.aspx
More interesting Apps for Agriculture

Here are more applications available for smartphone technology designed to help ease the burden of office work.

**Commodity Prices.** Track corn, soybeans, wheat, cotton, lean hogs, live cattle, feeder cattle and more. The app has a clean interface and is simple to operate.

**Cash Grain Bids.** Simply input your ZIP code to find out cash bids and base levels in your area. Get bids from the five elevators closest to you.

**Weather Underground.** There are many weather apps, and this one holds up as well as any of them. Information available includes temperature, visibility and humidity in hourly and seven-day forecasts.

**MyTraps.** This subscription-based service allows farmers and consultants to place insect traps wherever they want and then track the movement of insect pests across their fields throughout the season. This provides data that helps users to more accurately target their insecticide applications to areas where there are concentrated populations.

**Aphid Speed Scout.** This app from the University of Nebraska-Lincoln Extension quickly determines if soybean aphids have reached the 250 aphids per plant threshold. Plants are considered "infested" if there are 40 or more aphids on that sample. The app also recommends further scouting or treatment options based on the number of infested plants in a given area. (iPhone, iPad, iPod Touch)

**ScoutPro Corn.** The app allows users to scout and identify weeds, insects, disease and disorders while in the field. Users are then able to upload important field data, images and notes to generate field-specific scouting reports.

**SoilWeb.** USDA–National Resources Conservation Service soil survey information at the touch of a button. The app works with your phone’s GPS receiver to identify soil properties anywhere in the lower 48 states where there is cell phone coverage.

**PrecisionEarth.** This soil sampling app makes it easier to collect grower, field and soil sampling data using only open standards so the data you load and the data you export will work with your current GIS, Web and desktop applications seamlessly. Users can load and display directed sampling layers and boundary vectors, export soil sampling location and display background maps. (iPhone, iPad)

**JD Link.** This equipment management app from John Deere is a telematics system designed to remotely connect owners and managers to their equipment, providing alerts and machine information including location, utilization, performance and maintenance data to manage where and how equipment is being used. (iPhone, iPad)

**Farm Manager.** This app allows farmers to record cropping, livestock, and machinery procedures. Users can record a full history of crops from when they are sown through harvest; record chemical and fertilizer use, including type, rate, and date applied; and keep track of machinery maintenance. (iPhone, iPad, iPod Touch)

**Seed to Harvest.** A complete crop and field record-keeping tool designed with the small organic farmer in mind. Key features include: Record detailed planting information including cultivar, location, amount, date, and an unlimited number of transplanting records. Track inputs, harvest records, and sales by cultivar and location. Generate complete PDF reports of crop and field activity. Internet access is required to generate reports.

**FarmPAD.** This app allows users to enter farm records, equipment service logs, spray records and notes or pictures. You can also draw field boundaries with GPS or by hand. Sync to your Web account to print reports, review history and draw and print field maps. (Android, iPhone, iPad)

**NutriAg.** Check to find out what products are compatible with the Tank Mix Compatibility tool and use our Deficiency Chart to find solutions for nutrient deficiencies in your crops.
Disease Control For Missouri Rice

Our rice crop is all over the board. So, scout early and often and plan ahead for effective disease control in rice.

Rice blast is one of the earliest known foliar diseases. The blast fungus survives in various ways but often is seedborne. To reduce seedborne blast, research suggests Dynasty fungicide (azoxystrobin) at a rate above 0.75 fl oz per cwt as adequate. However, note that this seed treatment will not guarantee protection later in the season. We encourage field scouting, deep flood management, and foliar fungicides as needed. In blast-prone fields (lighter soils, tree-lined, low-lying, etc.), plant a hybrid or resistant variety. This takes care of the disease for the most part. Where susceptible varieties are planted in the wrong field, keep a deep flood of 4 inches on them at all times after initial flood. Fungicides work best if applied twice for blast. The first application should be made at late boot to beginning panicle tip emergence and the second when panicles are 50-75% out of the boot on most of the main tillers. Higher rates are best. If the field is very uniform and disease potential is low to moderate the best timing would be when panicles are emerging with about 35% of the length out of the boot on most of the main tillers. In uneven maturing fields, it is better to spray based on the earlier maturing parts of the field if disease pressure is substantial, and these types of fields would be almost automatic for two applications. Again, proper flood management will really help with blast management and improve performance of the fungicides.

For many years now, strobilurin fungicides have been used to manage sheath blight disease of rice and they have been the backbone for managing fungal diseases of rice in Southern rice producing states. Current fungicides are most effective under low or moderate disease pressure. The challenge comes when varieties are highly susceptible and environmental conditions are very favorable for disease development. When we have sheath blight we recommend our producers use strobilurin+propiconazole fungicide mixtures to combat sheath blight and the smuts.

Smuts were bad in some fields in 2011. Fields sprayed properly with propiconazole-containing fungicides worked to minimize these diseases. In some cases, too much nitrogen was applied to affected fields and in other cases the fungicide was applied too late in the booting stage for maximum effect. The rice smuts cannot be scouted for, so preventive treatment with propiconazole containing fungicides is the only chemical control option. Fields with a strong history of the smuts, or those that have been knowingly over-fertilized with nitrogen are most at risk. Hybrid and medium grains are very unlikely to benefit from fungicide applications. Fungicides should be applied if your effective scouting indicates more than 35% positive stops in susceptible varieties and more than 50% positive stops in moderately susceptible varieties. It is important to note that the sheath blight fungus can be moved from field to field in soil and water and by equipment Timing and rate of the fungicides to prevent the smuts are critical. The fungicides need to be applied at early to late boot but before heading begins on any plants in the field. Earlier is usually better in the booting stage, especially for false smut. The minimum rate of 6 fl oz tilt or tilt equivalent is now required for most effective results under current conditions, but no application will provide 100% control. In the past, we achieved up to 95% reduction in kernel smutted kernels using propiconazole with exact timing and rate but only about 65% for false smut (at best). Where false smut is moderate, 65% reduction is noticeable, but where it is heavy, control is difficult.

Sam Atwell, Agronomy Specialist, University of Missouri, New Madrid, MO
Japanese Beetle Begin to Emerge

As corn continues to develop and soybeans emerge, continue to scout fields for insect pests. One pest that you will see, once again this season is Japanese beetle. Japanese beetle is a medium sized metallic green beetle with bronze wing covers and white tufts of hair along each side. The adults emerge mid to late-June with peak numbers by early-July. Adults live between 30 and 40 days. Adults feed on a wide host of plants. Corn and soybeans are two of those hosts, as well as more than 400 landscape, tree and garden plants. They are known as aggregate pests, since they tend to be concentrated in one area to feed and mate. That is why it is important to monitor entire fields and not make decisions based on one location of one field.

In corn, Japanese beetle feed on corn silks. Peak beetle emergence and corn pollination, over the past seasons, have had a very small overlap window. Threshold for corn is an average of 3 beetles per ear during active pollination with silks clipped to ¾ inch above husk. Pollen shed begins a couple of days before silk emergence and continues a couple days after pollination. Silks emerge on an ear over a 2 to 3 day period, but will continue to be receptive to pollen for up to 10 days. A uniform field will generally complete pollination in less than a week. Once pollen lands on a silk, the corn ovule is pollinated within 24 hours. Therefore the silk clipping window to cause yield loss is relatively short. However, with delayed planting this season that window could be extended. If you have threshold numbers in a field or even a portion of a field, that area can experience yield loss.

Scouting is critical since in many of the cases I have looked at over the seasons, the highest concentrations of beetles are on ends and only extend a few rows into the field or clipping has occurred after pollination. Both cases would not warrant treatment. You can determine pollination by carefully peeling back corn husks, so as not to pull unpollinated silks off the ear. Once husk is removed, gently shake ear. If pollination is complete, silks will fall freely from pollinated ovules. In general, silk rate of emergence and pollen shed is much more likely to be influenced and yield compromised by drought stress. In soybeans, Japanese beetles feed on leaf tissue and are lumped into the insect complex of leaf defoliators. Threshold, pre-bloom defoliation for the insect complex, is 25% or more. Threshold, at-bloom through pod fill is 15% or more defoliation. For more information contact your local MU Extension office.

Anthony Ohmes, Agronomy Specialist, University of Missouri, Cape Girardeau, MO
Fertilizer Recommendations for Missouri Rice

Nitrogen (N):
- Rice varieties differ in the amount of nitrogen (N) fertilizer required to produce optimum grain yields.
- Amounts can range from 0 to 180 pounds of N per acre with 150 pounds being most common.
- Two N application options:
  - 100% applied pre-flood on dry soil (only when able to maintain timely and seasonal flood).
  - About 70% applied pre-flood on dry soil with remainder (45 lbs N/acre) applied as a single mid-season application.
- Treat urea with an NBPT-containing urease inhibitor if timely flood application is a concern (less than 2 days for silt loam soils, less than 7 days for clay soils) or use ammonium sulfate.
- Nitrogen sources: Urea (46-0-0), DAP (18-46-0), or Ammonium Sulfate (21-0-0-24).

Phosphorus (P) and Potassium (K):
Tables below are recommendations for pounds of P and K where soil samples range from low, to medium, to high and the grower is shooting for 200 bu/acre yield.

<table>
<thead>
<tr>
<th>P₂O₅ recommendation</th>
<th>lbs. of P₂O₅ per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>Low</td>
</tr>
<tr>
<td>≥ 6.5</td>
<td>90</td>
</tr>
<tr>
<td>&lt; 6.5</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>K₂O recommendations: lbs. of K₂O per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
</tr>
<tr>
<td>120</td>
</tr>
</tbody>
</table>

Zinc (Zn):
- Zinc deficiency normally occurs on silt and sandy loam soils or on precision graded fields.
- Apply 10 lbs of Zn as a granular fertilizer before emergence on silt and sandy loam soils when Zn levels are <4.1 ppm and pH is >6.0.
- Apply liquid Zn sources at a rate to deliver at least 1 pound of actual Zn per acre.
- Apply Zn to the seed at a rate of 0.25 to 0.5 pounds of Zn per hundredweight of seed.

Sulfur (S):
- Rice does not normally require sulfur fertilizer to produce high yields in Missouri.
- Sulfur is most likely to be needed on sandy soils.
- Sulfur may be needed when the SO₄-S soil test level is <10 ppm or a deficiency has occurred in the past.
- 100 lbs of ammonium sulfate equals 24 lbs of actual S which will supply sufficient amounts of sulfur.

Irrigation:
- An abundant supply of good quality irrigation water is needed for optimum rice production.
- 30 acre-inches of irrigation water pumped per year is average for rice fields in Missouri.
- Rice is normally flooded at the 5th leaf or 1st tiller stage.

Sam Atwell, Agronomy Specialist, University of Missouri, New Madrid, MO
Women in Ag Program and Tour

The University of Missouri Extension the Stoddard County NRCS and the Stoddard County Soil and Water District sponsored a Women in Agriculture Program and Tour on June 11, 2013.

The day began at the NRCS office with Jim Tweedy of Tweedy Law Offices discussing Budget and Estate Management followed by a talk on Conservation Planning by Michele Gross of NRCS.

The first stop of the day was Indian Hills Winery in Puxico, MO. Lunch was preceded by a tour of the vineyard and processing area from Marty and Nicole Sifford. The group appreciated the view, the education and the lunch.

After lunch the group moved to a demonstration of canine excellence at Away2Me farms. Debbie George trains working stock dogs for use on livestock operations. She provided the group with a working demonstration of one of her trainees moving sheep.

The final stop of the day was at R & J Berry Farms east of Bloomfield, MO. Here the group was provided with a tour of different blueberry cultivars, how the family works together to achieve a harvest and samples of blueberry and raspberries.

Although the day was hot, there was new information available at every stop. Thank you to the Stoddard County NRCS and Soil and Water District for helping to make this program possible.
Future Meetings & Events -

**Missouri Rice Field Day:** Thursday, August 22, 2013 at the Rice Research Farm in Glennonville, Missouri. Contact the New Madrid County Extension Center at 573-748-5531 to register or with questions.

**Watermelon Meeting:** Mark your calendar for the watermelon meeting to be held on Wednesday, December 4, 2013.

Commodities and markets - [http://extension.missouri.edu/seregion/fmmkt.htm](http://extension.missouri.edu/seregion/fmmkt.htm)