

Noxious and Invasive Weed Update

Plant Protection and Weed Control

Fall 2011

Herbicide Headlines

Updates on the Kansas Pesticide General Permit

Special points of interest:

- Herbicide Headlines
- Kansas Noxious Weed News
- Invasive Species Spotlight

On March 31, 2011, the U.S. House of Representatives passed H.R. 872, the Reducing Regulatory Burdens Act of 2011. The bill would amend the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) to clarify that the Environmental Protection Agency (EPA) or a state may not require a permit under the Federal Water Pollution Control Act for the application of pesticides regulated under FIFRA.

After approval in the House, H.R. 872 was sent to the U.S. Senate as part of H.R. 2112, the

Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2012. This bill and subsequent amendments are currently being debated in the Senate, however no date has been set for a final vote.

With the EPA thus far declining to seek additional court-ordered delays to the new rule, the final permit, a fact sheet, accompanying forms to document compliance, electronic notice of intent database information, and a decision

tree tool to help users determine if they need to apply for the permit will be published on October 31, 2011. An effective date to meet all of the permit requirements will be on November 12, 2011.

For more information on the Kansas Pesticide General Permit Program please contact the Kansas Department of Health and Environment at (785) 296-5547 or visit the Kansas Pesticide General Permit website at: <http://www.kdheks.gov/indust/npdes.htm>.

— D. Banks

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Kansas Noxious Weed News

Fall Treatments: Start Weed Control Early for Next Year

I think every farmer and weed professional in Kansas will agree that after the drought of 2011, the cooling days of autumn are a welcomed relief. Would it surprise you to learn that many of our noxious and invasive weed species in Kansas respond the same way? After emerging in the spring and surviving the harsh, desiccating heat and dryness of our Kansas summers, many noxious

and invasive weed species will put on a flurry of growth during the warm days and cool nights of late summer and early autumn.

For perennial and biennial weeds alike, it is a time to produce food in the form of carbohydrates in their leaves and transport it to their roots. This allows the carbohydrates to over-winter as stored food to fuel growth the following spring. Think of a carrot in

your grocery store, the sweetness in the orange root is sugar produced before the vegetable was harvested to provide energy for next year. This period of vegetative growth and carbohydrate production usually lasts until the first frost or hard freeze.

So “*why is this so important?*” you may ask.

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Kansas Noxious Weed News

Fall Treatments: Start Weed Control Early for Next Year (continued)



Canada thistle (*Cirsium arvense*)

During spring, plants send those same sugars to the leaves and growing tips to provide energy for plant growth. In essence, the plumbing of the plant is pushing water out of the roots and into the leaves. Thus, if you spray a plant with a translocatable herbicide during this period, the leaves and stems of the plant may die, but the roots can survive.

However, during autumn, plants will reverse the direction of the water carrying carbohydrates, taking it straight to the roots. If a plant is sprayed with a translocatable herbicide during this time period, it can actually take the herbicide, along with the food it is storing, to the roots, effectively killing itself.

You may be thinking “if it’s that easy, then why

doesn’t everyone spray in the autumn?” There are many different factors to keep in mind if you want to spray successfully later in the year. Variability with cold temperatures, moisture, or weed composition will change the calendar window for optimal spraying conditions from year to year. Several factors to keep in mind are included below.

First Freeze Date

As summer temperatures begin to cool in the autumn of each year, freezing conditions spread across Kansas (Figure 1). The effect these temperatures have on different weeds is dependent upon the plant species. Some plants are killed by the first frost of the year while others can survive a hard freeze. But what do the terms first frost or hard

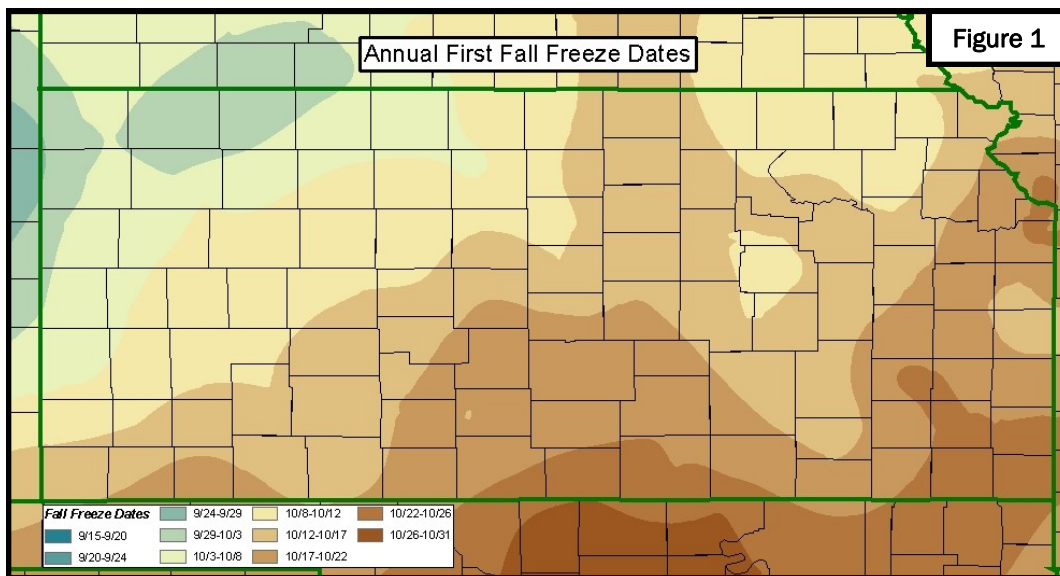


musk thistle (*Carduus nutans*) rosette

freeze mean. The National Weather Service defines a frost as when there is a solid deposition of water vapor from the air. Frost typically forms when solid surfaces are cooled below the dew point and air temperatures range between 33° to 36° Fahrenheit. During this time minor damage is possible to hardy plants with death occurring for

tender plants such as annuals or house plants. A Freeze occurs when the air temperature drops to 32° Fahrenheit. A freeze typically results in considerable damage to unprotected plants, especially if the temperature remains at the freezing mark for several hours. A Hard Freeze occurs when air

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Kansas Noxious Weed News

Fall Treatments: Start Weed Control Early for Next Year (continued)

temperatures reach 28° Fahrenheit or lower. At this date the growing season is considered to have all but ended and many hardy plants begin to go dormant until spring.

Moisture Regime

The amount of moisture deposited during autumn is very important for successful weed control. For example, many weed species when drought stressed will develop a thick, waxy layer on the surface of the leaf, called a cuticle, to help conserve water. This thick, waxy cuticle layer reduces the amount of translocatable herbicide absorbed into the leaves by acting as a physical barrier to the chemical. To overcome obstruction of the cuticle layer a high quality, nonionic surfactant such as a crop oil concentrate, methylated seed oil, or a nitrogen-based additive

(like sprayable ammonium sulfate) may be utilized. In addition, applying herbicides at rates specified on the label for autumn control of the target weed can also improve the control of drought stressed weed species. However, please remember that many herbicides control weed species by acting on the growing points or on actively growing regions of the plant. Under drought conditions many plants will suspend active growth until more favorable conditions return, thus significantly reducing the amount of control a particular herbicide might be able to provide.

Plant Species Composition

The plant species composition of a site, whether it is a roadside ditch or pastureland, is critical in determining proper control techniques,



sericea lespedeza (*Lespedeza cuneata*)

Photo: Karan A. Rawlins, University of Georgia, Bugwood.org

type and rate of herbicide use, and timing of herbicide application. Many of our noxious and invasive weed species have differing life cycles that determine when the plants are most vulnerable to control methodologies. For example, a non-selective herbicide may kill all plants that are sprayed no matter when during the growing season application takes place. However some herbicides are more selective in the plants that they control. Some herbicides will only control a certain weed species if application takes place in the rosette stage of life or during flowering. Additionally, if you use a herbicide that is more sensitive to members of the Aster or Legume Families than other products, that herbicide may also injure or kill preferable native forage species along with the

noxious and/or invasive plants. In contrast, it may not always be like plants that are injured. Some herbicides can actually injure cool-season grasses along with the broad-leaved weedy species you are trying to eradicate. A proper understanding of the product you are using is critical for effective control of noxious and invasive weed species.

Always read and follow the product label thoroughly before applying any herbicide!

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bull thistle (*Cirsium vulgare*) rosette

Photo: Bonnie Million, National Park Service, Bugwood.org

Kansas Noxious Weed News

Fall Treatments: Start Weed Control Early for Next Year (continued)

Included in the following table are several examples of noxious and invasive weed species that may be treated during the autumn of the year for additional control.

Now that you have an idea of what factors influence a successful autumn spraying program and the noxious and invasive weed species that can be sprayed during this period you are probably wanting to know what chemicals herbicides to use. Due to the complexity of plant responses to differing herbicides (particularly herbicide resistance), as well as the plants own responses during different phases of it's life cycle, choosing the proper product can be extremely challenging. In addition, as we discussed earlier, every site has its own unique set of physical properties, climatic conditions, plant species composition, and intended agricultural usage. With such an important decision, it is stressed that individuals contact a number of sources for herbicide recommendations such as K-State Agricultural Extension, your local Noxious Weed Department, or the Kansas Department of Agriculture.

-D. Banks

Common Name	Scientific Name	Family Name	Autumn Control Timing
Russian knapweed	<i>Acroptilon repens</i>	Aster family	Actively growing plants treated from mid-September to late autumn, following several hard frosts and before the ground freezes.
bur ragweed	<i>Ambrosia grayi</i>	Aster family	Actively growing plants treated from late summer to autumn, before killing frost.
musk thistle	<i>Carduus nutans</i>	Aster family	Actively growing rosettes treated in late autumn before the ground freezes.
Canada thistle	<i>Cirsium arvense</i>	Aster family	Early autumn treatments (September to October) on actively growing plants with green leaves, especially rosettes, before killing frost.
bull thistle	<i>Cirsium vulgare</i>	Aster family	Actively growing plants from late summer to autumn, treated before killing frost.
hoary cress	<i>Cardaria draba</i>	Mustard family	Early autumn treatments (September to October) on actively growing plants, especially rosettes, before killing frost.
field bindweed	<i>Convolvulus arvensis</i>	Morning-glory family	Early autumn treatments (September to October), on actively growing plants, after 6-12 inches of new growth.
leafy spurge	<i>Euphorbia esula</i>	Spurge family	Actively growing plants treated from September to early October (2 weeks before first frost).
sericea lespedeza	<i>Lespedeza cuneata</i>	Pea family	Actively growing plants from late summer (bud/blom stage) through autumn, until first frost.
kudzu	<i>Pueraria montana var. lobata</i>	Pea family	Early autumn treatments (September to October) to foliage on actively growing plants before first frost.
quackgrass	<i>Elymus repens</i>	Grass family	Treat new growth in autumn, before killing frost. Treatments applied to drought stressed plants will have reduced effectiveness.
Johnsongrass	<i>Sorghum halepense</i>	Grass family	Actively growing plants treated from late summer to autumn, before killing frost. Do not treat after plants turn brown.
multiflora rose	<i>Rosa multiflora</i>	Rose family	Early autumn treatments (September to October) to foliage on actively growing plants before first frost.



Plant Protection and Weed Control

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Plant Protection and Weed Control staff work to ensure the health of the state's native and cultivated plants by excluding or controlling destructive pests, diseases and weeds. Staff examine and analyze pest conditions in crop fields, rangelands, greenhouses and nurseries. Action taken to control potential infestations of new pests, whether they are insects, plants diseases or weeds, is beneficial to the economy and the environment.

Our mission is to:

- Exclude or control harmful insects, plant diseases, and weeds;
- Ensure Kansas plants and plant products entering commerce are free from quarantined pests;
- Provide customers with inspection and certification services.

Invasive Species Spotlight

Canada Horseweed or Mare's Tail

Canada horseweed (*Conyza canadensis* (L.) Cronq.), also called Mare's Tail, is a member of the aster family (Asteraceae) native throughout North America and Kansas.

Canada horseweed is an erect, summer annual that can grow up to 10 feet tall with dark green leaves that are up to 4 inches long. Canada horseweed is easy to identify from other horseweeds during bolting (producing a flowering stem) as it sends up a single, erect, vegetative stem that is smooth or covered with shaggy hairs. The plant starts to flower in late June and continues until

the first frost. Very small (3-4 mm long), yellowish-flower heads are produced at the terminal ends of upper stem branches. Canada horseweed can produce more than 200,000 tan-colored seeds per year that are dispersed by the wind. Seeds germinate when temperatures are between 65° to 75° Fahrenheit with greatest germination taking place during a 13-hour day length. Seedlings that germinate and emerge in late autumn can overwinter as a rosette and bolt the following spring.

As with other weedy species, Canada horse-

weed has been found to be resistant to several herbicides, including glyphosate. However, pre-emergent and post-emergent herbicides can be used to control Canada horseweed depending upon the location, application, rate, timing, soil moisture, etc. Pre-emergent herbicides such as aminopyralid, bromacil, hexazinone, pyrazon and rimsulfuron have been shown effective if applied uniformly in late fall through early spring. Post-emergent herbicides including aminopyralid, dicamba, triclopyr, and 2,4-D are effective if applied to young plants. Remember, rotating herbicide products or using tank mixes where possible helps prevent herbicide resistance.

— D. Banks



Canada horseweed stem and flower. Photo: Charles T. Bryson, USDA Agricultural Research Service, & Mary Ellen (Mel) Harte, Bugwood.org



Canada horseweed rosette. Photo: Joseph M. DiTomaso, University of California - Davis, Bugwood.org