

Eastern Red Cedar Trees Impact Water and Rangeland Resources

By Jim Bowen,
Southwest Weed Management Coordinator

Eastern red cedar trees are native to Nebraska and until the settlement of the Plains, were principally held in check by fire on the landscape. With the establishment of homesteads and towns, fire became detrimental to inhabitants of the area as well as crops and livestock. Containment of wildfires and other practices allowed cedars to establish in densities and expand into areas unlike before. What was once a native species held in low to moderate population is now considered an invasive, non-desirable and problematic tree. Eastern red cedar when left unmanaged spreads aggressively and is adaptable to many soil types. As cedar trees increase in size, they replace desirable rangeland species reducing productivity and precipitation runoff to creeks, streams and rivers. Within a few years, rangeland may go from a grassland to a cedar woodland resulting in significant negative impacts to water and rangeland resources. This invasive species is continuing to increase in population densities and area in southwest Nebraska and other states.



Eastern red cedar trees in Frontier County before removal (photo courtesy of Matt Cappel).



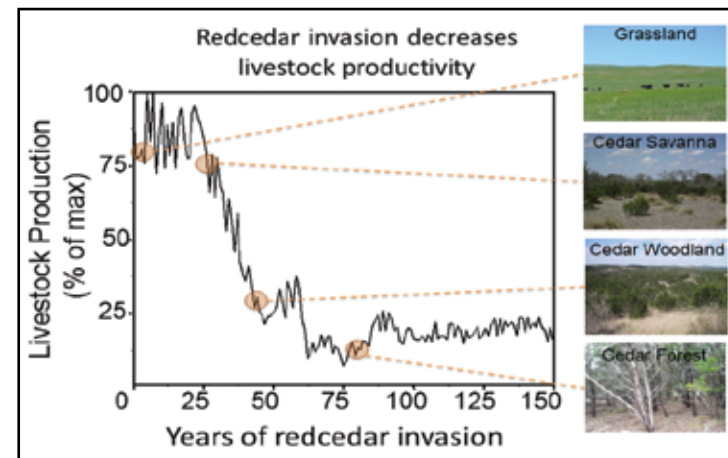
Same location in Frontier County after removal of Eastern red cedar by grinding (photo courtesy of Matt Cappel).

Impacts to Water Resources. Studies show the potential detrimental impacts of eastern red cedar if unmanaged on water resources:

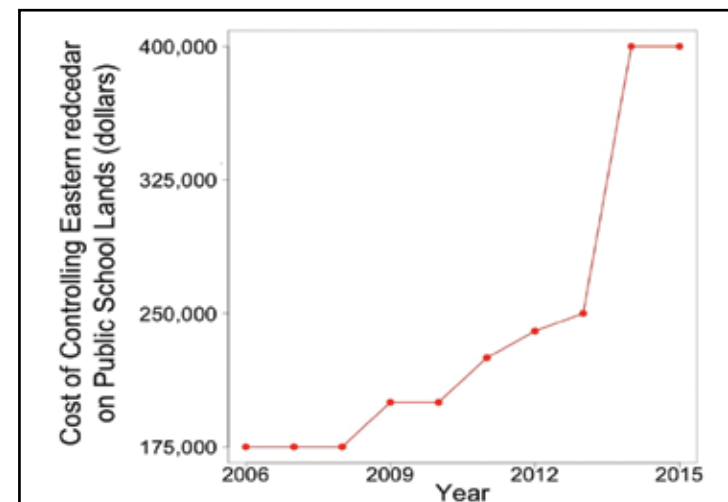
“Detailed experiments at the small watershed scale indicate that conversion of grassland to juniper woodlands will result in much lower stream flows, owing to the combination of higher interception, increases in evapotranspiration, and increases in soil infiltration.” (Caterina et al. 2014; Zou et al. 2014; Qiao et al. 2015).

“Model simulations suggest that encroachment of redcedar into grasslands could have a detrimental effect on stream discharge, which could impact water availability on populations further downstream.” (Starks and Moriasi 2017) Oklahoma Agricultural Experiment Station determined that a 2-inch diameter cedar tree uses six gallons of water per day on

average. As tree size increases, so does water consumption. They observed a 12-inch diameter tree used up to 42 gallons of water a day with high temperatures and soil moisture and one gallon on a day during winter. Using models for individual trees it was determined that a cedar stand consisting of a cedar woodland could potentially utilize the majority of incoming precipitation. With these models less water able to runoff to streams reducing water quantity. Continued on page 2



Money spent by the School Land Trust controlling redcedar on land leased to ranchers for grazing. These lands are meant to generate income for Nebraska schools (Lally et al. 2016).



Lally, D., Bielski, C., Schick, B., Westerhold, C., Zahn, A., Allen, C., Anderson, B., Twidwell, D. (2016) Eastern redcedar invasion threatens funding for Nebraska's public schools. UNL BeefWatch.

High Plains Weed Management Association Update

By Clint Riesen, HPWMA Coordinator

High Plains Weed Management Association (HPWMA) continues to provide cost share for the removal of invasive plant species along the High Plains River area along with lakes, ponds, streams, tributaries, creeks and any wetland that has a direct impact on the North Platte River. HPWMA includes Scotts Bluff, Banner, Kimball, Morrill, Cheyenne, Garden, Deuel and southern Sioux Counties. Russian olive, saltcedar and phragmites are the invasive species that the program works to remove from our local waterways and wetlands. HPWMA is funded through Nebraska Environmental Trust.

Clint Riesen is the field coordinator for HPWMA. Riesen has been meeting with landowners this winter to discuss the program, answer questions and address concerns. A concern that is often discussed are current drought conditions. One important benefit that applies to the drought conditions is keeping our streams and rivers flowing naturally. Invasive species such as Russian olive, saltcedar and phragmites tend to be very invasive in or near waterways and can restrict the flow of water. In my opinion, these species

also tend to have shallow root systems that allow them to uproot and move downstream slowing the flow, creating pooling and higher saturation to occur. The removal of invasive species growing along riparian areas can help to conserve water and improve the water flow. Many responsible landowners have taken advantage of our cost-share removal program. Continued maintenance and spraying of re-growth is highly encouraged and can be cost-shared with High Plains Weed Management Association.

High Plains Weed Management is a collaborative group that relies on landowners for project ideas to successfully remove invasive species from our waterways and wetlands. Landowners have suggested spraying for phragmites and saltcedar with aerial spraying. This is a goal for summer 2022. High Plains Weed Management is currently looking for cost-share projects that need invasive species removed or re-growth sprayed.

To discuss the aerial spraying, removal, maintenance spraying, program and the benefits to the landowner and land, contact Clint Riesen, Field Coordinator at (308)633-1264 clinthpwma@allophone.com or visit www.hpwma.org.

Eastern Red Cedar Trees Impact Water and Rangeland Resources

Continued from Page 1

Impacts to Rangeland Resources. Cedar trees can offer some benefit when managed for specific purposes. However, unmanaged Eastern red cedar will establish and become the dominant species. Delaying management efforts results in increased cost to control and reduced livestock productivity. Preventing establishment by removing small cedar trees is essential to maximize the cost – benefit ratio. The quicker landowners begin to control cedar, the less cost over time they will incur. The graphs on page 1 show the loss of production as succession from grassland to cedar forest and increasing cost to control cedars.

Eastern Red Cedar Management. There are several methods to control cedar depending on tree size, tree density in the area, terrain, buildings, roads, etc. No one method will work in every situation. The most cost-effective practice is to look at your rangeland and control cedar when they are small. If you don't want cedar and you have a few small trees remove them. As the trees get larger and density increases, cost to control also increases. As appropriate, utilizing mechanical removal (skid steer or chainsaws), herbicide and/or fire are management tools to consider. Landowners should consult specialists to discuss options and management goals for their property to control cedar.

- Southwest Weed Management offers assistance to landowners interested in mechanical removal to manage cedars on their property. Landowners meet with the Project Coordinator on site to establish eligibility, program options and landowner goals. Landowners determine the number of trees to remove, amount of funding to expend (up to the maximum cost-share allowance) and select how to perform the work.
- Southwest Weed Management offers 50% cost share program for landowners interested in removing Eastern red cedar and Russian olive from their property.
- A saltcedar (tamarisk) and phragmites program is also available with 100% of cost paid by Southwest Weed Management. Programs are funded through grants and assistance from Nebraska Environmental Trust, Nebraska Department of Agriculture, Upper Republican Natural Resources District, Middle Republican Natural Resources District, Chase, Dundy, Frontier, Hayes, Hitchcock, Perkins and Red Willow County Weed Departments.

If you are interested in participating in these programs or have questions, please contact Jim Bowen, Project Coordinator at swwmjb@outlook.com.

**2022 Leafy Spurge Task Force
Tour and Conference**
Cobblestone Inn & Suites • Ord, NE

August 22, 2022
12:00PM (noon): Registration
1:00PM to 5:00PM: Tour
6:00PM.: Steak Dinner
& Entertainment

August 23, 2022
8:00AM– 12:00PM
Conference Speakers
12:00PM Conclusion

Tour highlights include seeing a variety of noxious and invasive species. This is a great opportunity to see problematic weeds growing, ask questions about control, and network with other landowners and weed professionals. Following the tour, participants will be treated to a nice steak dinner followed by entertainment.

Tuesday morning the conference will include several informational and educational presentations. The \$50 registration fee covers the tour, steak dinner and conference. A block of rooms has been reserved at the Cobblestone Inn & Suites in Ord for those traveling. Rooms are \$96 per night. 308-728-5122 is the number to make your hotel reservation. To register contact Scott Erthum, LSTF Chairman at 402-760-0093 or email browncountyweeds@gmail.com.



HIGH PLAINS WEED MANAGEMENT AREA

| Project Coordinator | Banner County | Kimball County | Morrill County | Scotts Bluff County | Sioux County |
|------------------------------|------------------------------|------------------------------|-------------------------------|----------------------------------|--------------------------------|
| Clint Riesen 308-633-1264 | Buck Hottell 307-214-5481 | Rick Wangler 308-235-2681 | Cody Renkoski 308-203-1454 | Jeff Schledewitz 308-436-6709 | Nick Sanderson 308-668-9453 |

SOUTHWEST WEED MANAGEMENT

| Project Coordinator | Chase County | Dundy County | Frontier County | Hayes County | Hitchcock County | Perkins County | Red Willow County |
|---------------------------|-------------------------------|-------------------------------|----------------------------|----------------------------|-------------------------------|---------------------------------|-----------------------------|
| Jim Bowen 308-928-2410 | Brandon Beard 308-882-7520 | Richard Delin 308-423-2652 | David Luke 308-367-8304 | Boyd Gigax 308-286-3461 | Bill Hagemann 308-334-5852 | Michael Dolezal 308-352-7955 | Josh Mullen 308-345-4333 |

Total Vegetation Control



By Tony Bennett,
Western and Central Nebraska Area Manager, VanDiest Supply Company

What is Bare Ground-Total Vegetation Control?

The goal of any Bare Ground application is to treat the site to ensure all vegetation has been removed. As compared to many Right of Way, Roadside and Selective Control applications, where leaving desired species is the end goal. While there are numerous reasons for the site to be clean of vegetation, the goal in all applications is the same, to control undesired vegetation. Gone is the old term of Ground Sterilization I used 20 some years ago as an applicator. Bare Ground or Total Vegetation Control (TVC) is the more accurate term. The purpose of these applications is usually not to be permanent, which many perceived when using the term sterilization.

We use two different treatment methods in TVC. The first treatment method is the Hard Residual treatment. In this method, you have no concerns with any vegetation on the site and no desirable vegetation to avoid. Everything is cleared on the application site with long extended residuals. The second method is Soft Residual treatment, which is used on sites where there are desirable species such as trees, boxwood hedges, desirable turf or properties adjacent with desirable vegetation. Our goal in Soft Residual treatment is to provide extended residual coverage using soft products, some of which are also used in hard residual settings. Some products that will allow both hard & soft residual applications are Esplanade® 200 SC, Piper™, Payload®, Frequency® and Sulfentrazone™ 4SC. The addition of pre-emergent active ingredients such as Pendimethalin, Proflaminate, and Dithiopyr (Dimension®) commonly used in the turf market but at higher rates fit great into a soft residual mix.



To provide a safe work area, total vegetation control may be used to clear an area of undesirable vegetation.



Herbicide drift due to wind or a water event can cause problems following total vegetation control applications. Each label has special precautionary measures.

Non-Crop terrestrial sites such as railroads, highway rights-of-way, industrial areas, utilities, airports, government and military institutions, tank farms, pumping stations, parking lots, storage areas, utility substations, wind farms, solar farms, communication towers, lumberyards, around farm buildings, non-irrigation ditch banks, fence rows, and manufacturing sites.

When is optimum timing for Total Vegetation Control?

The vast majority of TVC applications were made in the late winter or early spring months as soon as the ground thawed. As many applicators did not have time to get all TVC done in the springtime, many began using late fall applications instead. After years of studies in our area performed by Colorado State University, the industry has concluded that fall applications are even more effective than late winter and early spring applications. Fall applications allow for more opportunities for herbicides to be incorporated into the soil, and the herbicide is being applied before any germination has started. There are also fewer windy days in the fall than there are in the spring, especially the Spring of 2022. Few things are as effective in incorporating the herbicide into the soil as a 4- or 5-inch snow. After the product is incorporated, the ground freezes and the herbicides will not release until ground temperatures rise.

Total Vegetation Control Products: Some of the old chemistry, such as Krovar®, Mojave™, and active ingredient diuron, have given way too much of the new chemistry. Old chemistry still is effective but, in some cases, has the potential to move or leach from the site whereas many of the newer chemistries have the ability to bind tightly to the soil. Some of the newer herbicides will not move unless the dirt is physically moved. Some of these new products are Esplanade® 200 SC, Piper™ WDG, Flumigard® SC, Sulfentrazone™ SC and Frequency®. Another advantage of the new chemistry is the low use rates. Esplanade® max use rate is 7 oz/acre. Piper™ is 10 oz/acre, Flumigard® is 12 oz/acre, Sulfentrazone™ is 12/oz. Compare to the 6-18

lbs of Krovar®, 10-12 lbs of Mojave™ and 5-15 lbs of active ingredient diuron and you can see the big difference. A 2.5-gallon container of Esplanade® 200 SC at the high rate of 7 oz/acre allows you to do 45 acres. A comparison to a mid-rate of Krovar® at 12 lbs/acre would require 540 lbs.

It is also important to remember that a burndown additive should be included in the mix for emerged vegetation. The most common herbicides used are glyphosate, 2,4-D or dicamba. Also, be certain to add an adjuvant matched up to chemistries to enhance performance and dye to be certain of complete coverage.

Another critical factor in successful & responsible TVC is combining not only different herbicides, but combining different classes of herbicides with different modes of action in the same tank mix. Many tank mixes have as many as four different class of herbicides. A perfect example is a Pre-Mix product called Plainview™ SC. It has active ingredients from three different chemical groups using three different modes of action. This is critical now and for the future in fighting resistance issues.

In closing, visit the application site to learn about your site and what management it needs. Study herbicide labels before you make a purchase, and be aware of the following:

- 1) Precautionary Statements pertaining to Hazards to Humans or Domestic Animals and Environmental Hazard.
- 2) Use Restrictions and Use Precautions.

Why Use Total Vegetation Control?

Many of our TVC applications are for personal safety along with the overall safety needs at the site. Many of these sites need to be maintained clear of vegetation for various reasons.

- 1) Safety of the employees. When you are working around pumping units and tank batteries, there are a lot of moving parts. We are always very conscious of a worker becoming entangled in weeds and falling, or being caught in the equipment on industrial or pumping unit sites causing serious injury.
- 2) Fire threat. Old carcasses from dead, dried out plants are always a fire threat.
- 3) In some instances, Insurance Carriers of certain companies require clean sites for the previously mentioned reasons.
- 4) Helps reduce maintenance-labor expenses.
- 5) Helps keep down populations of rodents, snakes, and other species of wildlife.
- 6) In some cases, TVC is used in Roadsides or ROW sites to help improve vision along the ROW or Roadside. It can also be used around guardrails for safety.

Where is Total Vegetation Control used?

The label of each specific herbicide will state where you can make these applications and the precautions associated with these sites, some of the listed sites on a label will be as follows:

TWIN VALLEY WEED MANAGEMENT AREA • TWINVALLEYWMA.COM

| | | | | | | | | | | | |
|--------------|--------------|--------------|-----------------|-----------------|---------------|---------------|---------------|-----------------|-----------------|---------------|----------------|
| Coordinator | Adams County | Clay County | Fillmore County | Franklin County | Furnas County | Gosper County | Harlan County | Kearney County | Nuckolls County | Thayer County | Webster County |
| Zach Jones | Eric Walston | Greg Shuck | Todd Boller | Doug Eckhardt | Todd Weverka | Marty Craig | Tim Burgeson | Joseph Anderson | Nick Elledge | Brian Schardt | Brian Pedersen |
| 402-746-3560 | 402-461-7173 | 402-762-3652 | 402-366-1921 | 308-746-4022 | 308-268-2824 | 308-324-3771 | 308-928-9800 | 308-832-2854 | 402-879-1900 | 402-365-4366 | 308-470-1603 |

Kansas needs to hurry to stop an invasive

By David Condos, Kansas News Service

HAYS, Kansas — Keith Harmony crouches down in a pale yellow field outside his office. He pushes back a cluster of tightly packed two-foot-tall grass, revealing the ground underneath.

In a typical native Kansas grassland, he'd expect to find roughly a dozen different plant species in the square foot of earth between his boots. "Here, all we see — basically for 10, 11, 12 yards — is just one single species," Harmony said. "That's Old World bluestem." The invasive grass has turned this piece of northwest Kansas prairie into a monoculture, where a single species crowds out all the others until it's the last one standing.

And as it creeps its way across the Plains, Old World bluestem is taking over more and more fields like this one. Harmony, a range scientist at the Kansas State University Agricultural Research Center in Hays, is one of the people charged with finding ways to stop it. But he isn't overly optimistic about his chances. "It has the upper hand right now," Harmony said, "It kind of feels like the Old World bluestem is going to win."

Decades ago, humans introduced Old World bluestem, or OWB, to this part of the Plains. But some of the characteristics that made the plant an attractive import — its aggressive growth, prolific seed production and hardy tolerance to drought, fire and grazing — are the same ones that make it so difficult to rein in. Once it dominates a field, it's nearly impossible to eradicate. Now, Old World bluestem is transforming pastures and grasslands into biodiversity wastelands. Some researchers and landowners are rushing to sound the alarm in hopes of helping more people understand how Kansas can keep this invasive grass from overtaking the state — if it's not already too late.

Bluestem blues

Both types of Old World bluestem growing in Kansas — yellow bluestem and Caucasian bluestem — are native to Asia and Europe. And like many invasive species, people brought them to the Great Plains on purpose. It goes back to the Dust Bowl, when the federal government planted the grass to revive land that had been farmed and grazed into oblivion. Back then, most people didn't think of the grass as a problem. It was supposed to be a solution. In the 1980s, farmer Orville Moore helped Kansas State University plant the grass in Hays, where the agricultural research center studied its potential for cattle grazing. "It was just another seed to be drilled," Moore said. "I had no clue." And it wasn't just K-State. Highway departments have planted it in roadside ditches to control erosion. Even the USDA's Conservation Reserve Program has encouraged landowners to plant it widely, particularly in Oklahoma and other parts of the southern Plains.

Those purposeful plantings allowed the exotic grass to get a foothold. It now shows up in just about every county in Kansas. "Nature will take over, and it'll eat your lunch," Moore said. "The horse is out of the barn."

So, why is Old World bluestem so good at being so bad for prairies?

"It's highly competitive," Karen Hickman, director of Oklahoma State University's environmental science program, said. "It can outcompete and outgrow — and inhibit the growth of — other native plants." One of the more sinister ways the plant does this is by chemically changing the soil to be less habitable for neighboring vegetation. The invasive grass releases substances, known as allelopathic chemicals, into the dirt that surrounds it. Hickman's research shows that this biochemical warfare significantly inhibits the future growth, reproduction and survival of nearby native grasses.



Yellow Bluestem

Bothriochloa ischaemum

Yellow bluestem is a perennial, clump-forming grass. It can grow to 4 feet tall, with yellow-green leaves that are usually smooth and grow to 10 inches in length. The leaf blades are flat or folded. The stem joints may be smooth or with short hairs. The silvery reddish-purple flower head is similar to big bluestem, except that there are more branches and they are much finer with smaller seeds. Yellow bluestem blooms in late June to July, earlier than the native bluestems.

Climate change may also benefit Old World bluestem.

One of the plant's weaknesses is that it's less cold tolerant than native grasses. But as temperatures warm, its range could inch farther north. It's now found in some parts of southern Nebraska. And as the unwelcome grass takes root, its impact on the native ecosystem can be dramatic. Fewer native plants means fewer insects, especially bees and butterflies that rely on wildflowers. Fewer native plants and insects means fewer birds, such as lesser prairie chickens and songbirds.

"Native prairie is important to our system...from carbon storage to erosion control to pollinators," Hickman said.

"When we start forgetting that...that gets to be a sad day."

'Prevention is key'

It's not just about wildlife. Old World bluestem could also threaten ranchers' livelihoods due to the extreme cost of managing it once it's established. Even though it has long been planted for grazing, it's not generally as nutritious or appetizing as traditional Great Plains prairie grasses. So in pastures that include both invasive and native plants, cattle will often avoid eating OWB and overgraze the others instead. That can damage native species and give the invader another leg up.

Aaron Popelka of the Kansas Livestock Association (KLA) said many cattle producers are concerned about Old World bluestem, especially in the Flint Hills and Smoky Hills. "Some would be really committed to (stopping) it because they see the threat," said Popelka, the vice president of legal and government affairs with the KLA. "Others are worried about the financial burden that it can impose."

Herbicide treatments can cost tens of thousands of dollars, are difficult to apply over rocky terrain and often kill native grasses too, leaving cattle without anything to eat. The state of Kansas has held at least one public hearing on potentially quarantining the plant's spread. But Popelka said statewide regulations would be unfair to landowners when the plant is often spread by mowing crews in roadside ditches. "As a rancher, even if we want...to keep it in check, our control stops at the fence line," he said. "So the state's got to step up."

PLATTE VALLEY WEED MANAGEMENT AREA

Project Coordinator • Rich Walters – 308-390-2511
Buffalo County • Bret Stubbs – 308-236-1244
Dawson County • Marty Craig – 308-324-3771
Hall County • Rob Schultz – 308- 385-5097

Hamilton County • Jeremy Brandt – 402-604-0226
Howard County • Rob Schultz – 308-380-2099
Keith County • Tim Ryan - 308-284-6601
Lincoln County • Todd Herndon 308-532-4939

Merrick County • Dean Hartwig – 308-946-2881
Phelps County • Bobby Hamilton – 308-995-8485
Polk County • Jim Carlson – 402-747-2921
Sherman County • Mitch Dzingle – 308-745-1513 Ext 111

grass from changing the prairie forever

Some counties have talked about designating it as a noxious weed, which would force both public and private lands to get rid of it. But none have taken action yet. Meanwhile, humans continue to give Old World bluestem a helping hand. Hickman of Oklahoma State said people commonly — and often unknowingly — spread its seeds as they cling to the undercarriages of trucks and farm implements. The seeds can also stow away in contaminated hay bales.

Kansans can help keep the unwelcome grass off their land by learning what it looks like, removing any small patches that sprout up and cleaning the seeds off vehicles before they drive through.

“As with all invasive species,” she said, “prevention is key.”

If someone discovers widespread Old World bluestem on their property today, their options for eliminating it are limited. Hickman said the best results are likely to come from some combination of herbicide, burning, grazing and tilling to try to push the invasive grass into decline. But even if those efforts succeed, landowners would need to remain vigilant for the plant’s return for years to come. “It’s going to require a long-term investment,” Hickman said, “and the fear I have is that no one’s going to see the importance of that.”

The fight ahead

That’s the dilemma facing western Kansas landowners like Randy Rodgers: If you find Old World bluestem, how much effort do you want to put into fighting a plant that’s nearly impossible to get rid of? Rodgers finished his career as a state wildlife biologist in 2010 and planned to spend his retirement fulfilling his long-time dream of caring for his land — a mix of pasture, prairie and farmland in southwestern Rush County. When he began buying the property over a decade ago, he wasn’t familiar with the invasive grass. But a few years in, he realized it already covered large sections of his fields. “You’re left with a choice: Do you kill the Old World bluestem off and give your remaining native grasses a chance to repopulate those spaces?” Rodgers said. “Or do you just give up and let the Old World bluestem take it?” He decided to fight back, first with a backpack herbicide sprayer and then with his own two hands. Over the past three years, he’s spent hundreds of hours pacing back and forth across his fields removing the remaining plants one at a time with a shovel and a bucket. He estimates he killed roughly one thousand Old World bluestems this way last year alone. “I know it’s crazy,” Rodgers said. “A rancher can’t do that...they’re too busy, there’s no way.” And even with all the time and effort he’s put into clearing the invasive grass from his property, Rodgers doesn’t expect to declare victory anytime soon. “Did I get them all? No,” he said.



Caucasian Bluestem

Bothriochloa bladhii

Caucasian bluestem is a perennial, small blue-gray grass with that grows 1-3 feet tall. It forms dense tufts of smooth leaf blades, up to 12 inches long with a thickened mid-vein. The stem joints are purple-tinged and may be smooth or with short hairs. The reddish-purple flower head features side branches that are shorter than the central stem. Caucasian bluestem blooms in late June to July, much earlier than our native bluestems.

“That’s the thing...you have to keep coming back and keep coming back and keep coming back.” That’s because if even a few plants remain, the species’ aggressive growth capabilities could help it eventually take over again, if it’s left unchecked.

In Keith Harmony’s research plots in Hays, Old World bluestems have grown at a rate of 15% compounded each year. And the plant is similar enough to native grasses that it largely avoids being singled out by herbicides, although a couple of the weed killers he studies show promise.

But with no silver bullet, Harmony said trying to slow down its spread may be the best-case scenario for Kansas at this point. “Exponential growth,” he said, “is probably what we’re going to be seeing in the near future.”

David Condos covers western Kansas for High Plains Public Radio and the Kansas News Service.

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Old World Bluestems in Nebraska

By Cheryl Dunn, Research Manager,
Herbarium Curator, University of Nebraska-
Lincoln

- Yellow and Caucasian bluestems, both species of Old World bluestems, can be found in Nebraska. Yellow bluestem looks similar to big bluestem (finger-like inflorescence) and the inflorescence for Caucasian bluestem is more of a Christmas tree shape.

- Old World bluestems establish quickly, are adapted to many soil types, start flowering before native warm-season grasses, are highly prolific seed producers, and are drought tolerant.

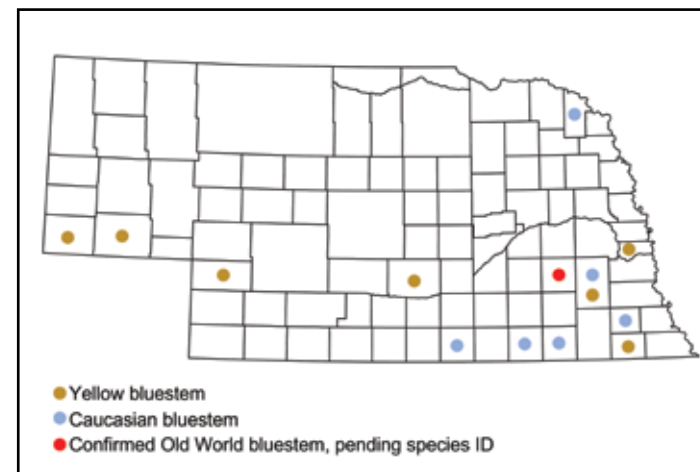
- Old World bluestems are considered unpalatable to livestock. The earliest indication of an infestation usually is that there is a grass in your pasture that the cattle aren’t eating. Old World bluestems frequently begin invading pasture or rangeland around stock tanks.

- Both species can outcompete native grass species and alter soils to prevent growth of native grasses.

- Fall and winter are still a good time to identify Old World bluestems because they grow thick and have a distinct bleach blond coloration on the top half of the plant. This is usually a stark contrast from the color of native bluestems.

- Old World bluestem has been found in various parts of the state including along the I-80 corridor west of Kearney that could be a point promoting spread. It has also been found in the southern counties in South Dakota bordering Nebraska, so it is assumed that is more widespread in Nebraska.

If you have suspected Old World bluestem, please feel free to reach out to Cheryl Dunn, Research Manager-Herbarium Curator, University of Nebraska-Lincoln, cdunn3@unl.edu, 402-472-1953



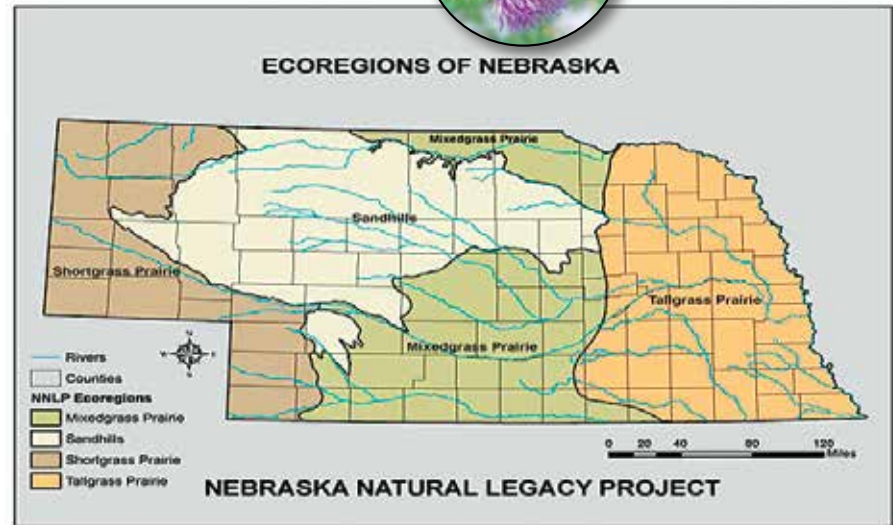
Locations of Old World bluestem infestations in Nebraska.

Invasive Plants Watch List: 2021



Please visit neinvasives.com to see all invasive species - plant species, aquatic species, insects, and others.

These lists were developed to provide a region-based list of invasive plants to be “on the watch for” in Nebraska. Each ecoregion’s species were categorized based on early detection and rapid response potential.



CATEGORY 1: Future Invasive Species

These 4 plants are the same for all ecoregions in Nebraska, as they pose a significant risk if introduced. The aquatic weeds are just one boat ride away from invading any Nebraska lake.



Giant Reed



Oriental Bittersweet



Medusahead



Flowering Rush

FLOWERING RUSH
GIANT REED
MEDUSAHEAD
ORIENTAL BITTERSWEET
PERENNIAL SOW THISTLE
RIPGUT BROME
VENTENATA
YELLOW BEDSTRAW

CATEGORY 2: Shortgrass Prairie Ecoregion

ABSINTH WORMWOOD
COMMON AND
EUROPEAN BUCKTHORN
DALMATION TOADFLAX
HENBANE
HOUNDSTONGUE
RUSSIAN KNAPWEED
ST. JOHNSWORT
YELLOW FLAG IRIS



Absinth Wormwood



Dalmation Toadflax



Houndstongue



Yellow Flag Iris

CATEGORY 2: Sandhills Ecoregion



St. Johnswort



Absinth Wormwood



Sulfur Cinquefoil



Camphorweed

ABSINTH WORMWOOD
 BLACK KNAPWEED
 CAMPHORWEED
 COMMON AND EUROPEAN BUCKTHORN
 COMMON TANSY
 HOUNDSTONGUE
 PERENNIAL SOW THISTLE
 ST. JOHNSWORT
 SULPHUR CINQUEFOIL
 YELLOW BEDSTRAW
 YELLOW FLAG IRIS

CATEGORY 2: Mixed grass Prairie Ecoregion

ABSINTH WORMWOOD
 AMUR HONEYSUCKLE
 AUSTRALIAN BEARDGRASS
 CAMPHORWEED
 COMMON AND EUROPEAN BUCKTHORN
 COMMON TEASEL
 COMMON TANSY
 CUTLEAF TEASEL
 GARLIC MUSTARD
 PERENNIAL SOW THISTLE
 QUEEN ANNE'S LACE
 RUSSIAN KNAPWEED
 ST. JOHNSWORT
 SULPHUR CINQUEFOIL
 WILD PARSNIP
 YELLOW FLAG IRIS



Perennial Sow Thistle



Common and European Buckthorn



Caucasian Bluestem



Common Teasel

CATEGORY 2: Tallgrass Prairie Ecoregion



Cutleaf Teasel



Queen Anne's Lace



Japanese Honeysuckle

ABSINTH WORMWOOD
 AMUR HONEYSUCKLE
 AUSTRALIAN BEARDGRASS
 BLACK KNAPWEED
 COMMON AND EUROPEAN BUCK-
 THORN
 COMMON TEASEL
 CUTLEAF TEASEL
 FLOWERING RUSH
 GIANT REED
 HOUNDSTONGUE

ORIENTAL BITTERSWEET
 PERENNIAL SOW THISTLE
 QUEEN ANNE'S LACE
 RUSSIAN KNAPWEED
 SICKLEWEED
 ST. JOHNSWORT
 WILD PARSNIP
 WINTER CREEPER
 YELLOW BLUESTEM
 YELLOW FLAG IRIS

The Invasive Plants Watch List also lists which counties in Nebraska have "County Added" noxious weeds. This list is described on page 11 of The Weed Watch.

The complete list of Invasive Plants in Nebraska along with species photos can be found at the Nebraska Invasive Species Project website: neinvasives.com

Be Careful What You Ask For

By **Tim Conover**
Custer County Weed Superintendent

As most of you know, the Nebraska Department of Agriculture has designated twelve weeds as noxious in the State of Nebraska. Those noxious weeds are Canada thistle, musk thistle, plumeless thistle, leafy spurge, spotted knapweed and diffuse knapweed, salt cedar, phragmites, Japanese knotweed and giant knotweed, purple loosestrife and sericea lespedeza. However, there are other species in Nebraska considered invasive or have the potential to be invasive. These species can be found on the Nebraska Invasive Plant Watch List.

The purpose of the Nebraska Invasive Species Program is to collect data on the distribution of invasive plants and animals found in various Nebraska counties. The Invasive Plant Watch List includes plant species not known to exist yet in Nebraska, but pose a significant risk if introduced. It also includes species considered high priority for eradication of both new and existing populations and other species that have already established, and the priority is preventing their

spread to new areas. The invasive plant species that have been identified by the Invasive Species Program are located on pages 6 and 7 of this publication.

In addition to the species that have been declared noxious in Nebraska, every county has the option to petition the Director of the Department of Agriculture to place additional weeds on the "County added noxious weed" list. Many counties in Nebraska have added additional noxious weeds; and again, once species are added to these lists, landowners are required to control them. The list of County Added noxious weeds is on page 11 of this publication, and pertains to all Weed Management Areas involved in the Weed Watch publication.

As Custer County Weed Superintendent, I cannot count the number of times I have had someone ask me why other invasive weeds such as field bindweed, common mullein, poison hemlock, and bull thistle have not been declared noxious in Nebraska. If the State declares additional weeds noxious or counties designate additional weeds as noxious in their county, the landowners will then be required to control such weeds on their land. A weed does not have to be labeled

noxious in order for you to take care of it. If a certain weed is a nuisance for you, get rid of it. What might be a problem for you might not be a problem for someone else or vice versa.

Usually more times than not, the person asking to add a certain weed to the noxious weed list is someone who is trying to control that species and has a neighbor who is not. There is not anything saying that neighbors with adjoining land cannot take a proactive approach and work together to address an invasive weed that is not on the noxious list. In fact, landowners working together to manage that species can help eradicate a problem before it gets to a point where listing and outside intervention is needed.

Be careful what you ask for. Adding more species to the noxious weed list, unless deemed absolutely necessary, will not solve the problem. Let's continue to take care of our current noxious weeds; and if you identify a species on the invasive list, please contact your local County Weed Superintendent and let them know. If there happens to be other weeds that are a problem or a nuisance for you, take care of them. There is nothing saying you can't.

Noxious and invasive thistles of Nebraska



Plumeless Thistle



Canada Thistle



Musk Thistle



Bull Thistle



Scotch Thistle

SANDHILLS WEED MANAGEMENT AREA - MIDDLE NIOBRARA WEED AWARENESS GROUP*

WMA Office – 308-346-3393

Arthur • Dave Hardin - 308-650-0369

Blaine • Jason Hunt - 402-760-1209

Boone • Jon Lindgren – 402-841-5738

Brown • Scott Erthum – 402-760-0093*

Cherry • Barbara Small – 402-322-1067*

Custer • Tim Conover – 308-872-2410

Garfield • Jimmy Petersen – 308-214-0301

Grant • Devan Polt – 308-529-1003

Holt • Bill Babutzke - 402-340-6319

Hooker • Neal Hayward – 308-546-2706

Greeley • Margaret Valladao – 402-917-2121

Keya Paha • Kurtis Mizner – 402-382-8173*

Logan, McPherson, Thomas

Richard Cook 308-636-6157

Loup • Zane Young – 308-214-0923

Nance • Chad Borowiak – 308-536-2443

Rock • Mitch Dean – 402-925-8255*

Valley • Darrel Kaminski – 308-383-2701

Wheeler • Doug Reiter – 308-654-3397

PHOTO CREDITS

PAGE 1
Matt Cappel, NEInvasives.org

PAGE 3
Tony Bennett, VanDiest Supply Co.

PAGE 4
Yellow Bluestem, Michelle Villafranca, FtWorth Nature Center

PAGE 5
Cherly Dunn, UNL; Caucasian Bluestem, kswildflowers.org.

PAGE 6
Giant Reed, John Ruter, Univ. GA; Oriental Bittersweet, Jill Swearingen USDN NPS; Medusahead, Steve Dewey, USU, Bugwood; Flowering Rush, Leslie Mehrhoff, UConn; Absinth Wormwood, Yellow Flag Iris, Kristi Paul; Ecoregion Map, Nebraska Game and Parks

PAGE 7
St. Johnswort, LL Berry, Bugwood.org; Absinth Wormwood & Cutleaf Teasel, Chris Evans Univ. Ill, Bugwood; Sulfur Cinquefoil, Theodore Webster, USDA ARS; Bugwood; Camphorweed, Rebekah D Wallace, Univ. GA; Perennial Sow Thistle, Ohio St. Extension; Common &

European Buckthorn, Robert Videke, Doronicum Kit, Bugwood; Caucasian Bluestem, Mike Haddock, kswildflower.org; Common Teasel, Steve Dewey, USU; Queen Anne's Lace, Rob Rutledge, Sault College; Japanese Honeysuckle, James Allison, GDNr, Bugwood;

PAGE 8
Canada Thistle, LL Berry, Bugwood.org; Musk Thistle, Mary Ellen Harle, Bugwood.org; Plumeless Thistle, Steven Katovich, Bugwood.org; Scotch Thistle, Bonnie Million, BLM, Bugwood.org; Bull Thistle, Chris Evans, Univ. Ill, Bugwood.org;

PAGE 9
Baby's Breath, Sublette Co. WY; Julia Scher, USDAAPHISPPQ; Field Bindweed, Steve Dewey, Utah St. Univ.

PAGE 11
Field Bindweed, Woollyleaf Bursage, Howard F. Schwartz, CSU, Bugwood; Bull Thistle, Loke T. Kok, VPI Bugwood; John Cardina, Ohio St. Univ.; Scotch Thistle, Houndstongue, Steve Dewey, Utah St. Univ. Bugwood; Yellow Flag Iris, Houndstongue, Yellow Bedstraw Kristi Paul, Common Mullein, K George Beck & James Sebastian, CSU;

PAGE 12
Canada Thistle, Bonsak Harreraas, Bioforsk, NAIER Bugwood; Musk Thistle, Spotted Knapweed, Kristi Paul; Leafy Spurge, Barry Rice, Sarracenia.com; Plumeless Thistle, Steve Dewey, USU; Saltcedar, Phragmites, Jill Swearingen, NPS, Bugwood; Diffuse Knapweed, Japanese Knotweed, Sara Rosenthal, USDA ARS; Giant Knotweed, Barbara Tokarska-Guzik, Univ. of Selesia; Purple Loosestrife, Eric Coombs, Ore. Dept. Ag; Sericea Lespedeza, Mike Haddock, kswildflowers.org;

Field Bindweed (*Convolvulus arvensis* L.)

Impact:

Productivity of agricultural land infested with field bindweed may be reduced as much as 50 percent. Field bindweed contains alkaloids that are mildly toxic to certain livestock, such as horses. Consumption may cause disruption to a horse's digestive and nervous systems, often seen as progressive weight loss and colic (wagwalking.com). The seeds of field bindweed are especially toxic. (csu.edu/poisonous_plants)

Life Cycle:

Field bindweed is a non-native, long-lived perennial rhizomatous forb. Native to Eurasia, field bindweed was introduced to America as a contaminant in farm and garden seed as early as the mid-1700's. The stems of field bindweed grow from 1 to 6 feet long, twining around plant stems, fence wire, or simply forming dense, tangled mats. When broken, the young stems of field bindweed exude a milky sap. Leaves are 1 to 2 inches long and arrowhead shaped. Flowers are white or pink, trumpet shaped, 1 inch long and wide. Flowering occurs throughout the summer, making field bindweed easy to find and identify. Field bindweed is a species that can establish by seed or through an extensive root system. A single plant can produce 600 seeds, of which 90 percent are viable. Twenty-five percent of these will then germinate immediately, while the remaining seeds can be viable for 60 years or more. If adequate moisture is available, the seeds can germinate in soil temperatures ranging from 40 to 100 degrees Fahrenheit. In addition, seed can be dispersed through movement of infested soil, animals, harvest equipment or harvested crops. Field bindweed also has an extensive, deep, fibrous root system. Each field bindweed plant can spread 10-18 feet per year by roots. The roots can grow to a depth of 20 feet, but 90 percent of the roots are generally in the top foot of soil. The extensive root system of field bindweed makes it difficult to control, as root segments as small as two inches will spread and can generate new growth in a few weeks.



Where Found in Nebraska:

Field bindweed is found in a variety of Nebraska habitats, including agricultural fields, pastures, lawns and gardens, roadsides, non-crop areas and disturbed areas. It tolerates poor soils, but seldom grows in wet or waterlogged areas. Field bindweed is a "County Added" noxious weed in Banner, Box Butte, Cheyenne, Dawes, Deuel, Garden, Morrill, Scotts Bluff and Sheridan Counties in Nebraska.

Control:

Successful control of field bindweed requires a long-term management program. It is necessary to contain and persistently control existing stands in order to exhaust the root system and deplete the soil seed bank. Unless combined with herbicide application, cultivation is not recommended. While cattle, sheep or goats may graze field bindweed, even intensive grazing will not sufficiently stress the plant to prevent its recovery and will often result in overgrazing of the site, which in the end will favor bindweed proliferation. Herbicide control of established field bindweed is never a "one and done" deal. Herbicides that move through the root system to kill the roots and root buds are best for long-term control. Application when field bindweed is actively growing, and during early flowering stage is best. With field bindweed, the location on which it is growing will make a big difference in the choice of herbicide used. Agriculture application, roadside application, lawn and garden application will each likely be a different herbicide labeled for that specific use. A few of the herbicides include the active ingredients 2, 4-D, glyphosate, dicamba and picloram. Always read and follow the label directions, as the label is the law.

Prevention:

Having well-established perennial grasses and forbs on a maintained pasture, prairie, or hay field with proper management can help to prevent the establishment of field bindweed. Inspect plants, mulch and topsoil before adding them to your lawn and garden. Clean equipment before leaving an area infested with bindweed.

Citations: ag.ndsu.edu; Gary Stone, UNL Cropwatch; College of Agricultural, Human and Natural Resource Science and WSU Extension; Oregon State Extension



Baby's Breath

(*Gypsophilia paniculata*)

Impact:

Baby's breath is an ornamental species that can escape cultivation and become invasive very quickly. Baby's breath can form dense stands and displace desirable grasses. It out-competes native plants and takes over their habitat, while providing no food or habitat for native wildlife. Because of the large taproot and ability to produce millions of seeds, this plant is difficult to remove once established. Some wildflower seed mixes contain baby's breath, so be sure to monitor areas where wildflower mixtures are planted.

Life Cycle:

Native to Europe and Asia, baby's breath is a much-branched perennial herb that grows up to 4 feet tall, with a deep root system that helps it to survive arid conditions. Many stems on one plant are upright or ascending, the leaves are opposite, narrow, and covered with hair on both sides. Small flowers that have 5 petals, grow in branched clusters, and bloom during July and August. Flowers form capsules that contain small black seeds. A single plant produces as many as 13,000 seeds. The seeds can drop near the parent plant, or are easily moved by the wind. This perennial plant increases in the number of stems per plant as the roots age and increase in diameter. It can withstand considerable variation in both temperature and moisture, while being most aggressive in areas of low rainfall.

Where it Grows:

Baby's breath can be found in lightly

grazed pastures, highway and rural roadside ditches or fencelines, hay fields and abandoned fields. Like other escaped ornamentals, baby's breath may begin to grow near a cemetery, and escape into a road ditch or pasture.

Control Methods:

A stand of only a few plants can be dug up and disposed of. When digging, the root must be severed several inches below ground level; this ensures the root has been cut below the plant's crown and rhizome. Heavy grazing can suppress the growth of mature plants and prevent seedling establishment. Mowing or light grazing are not recommended, as the plants will regrow. Herbicide application with chlorsulfuron (active ingredient in Telar®) is recommended in early spring when the plant's leaves and taproot are small. A fall herbicide application using metsulfuron (active ingredient in Opensight® or Chaparral™) is another option. Be sure to read and follow herbicide label instructions.

Prevention:

Learn to identify baby's breath. If you see it escaping an ornamental planting, prevent the plant from spreading. Report uncontrolled infestations to your local County Weed Superintendent.

Citations: Northwest Michigan Invasive Species Network; CABl.org; Oregon State University. Weed Control in Natural Areas in the Western United States. J. DiTomaso et al, 2013. University of California Weed Research and Information Center.

PRIDE WEED MANAGEMENT AREA

| | | | | |
|-----------------|-----------------|----------------|------------------|-------------------|
| Dawes County | Sheridan County | Sioux County | Box Butte County | Cheyenne, Deuel & |
| Dan Wordekemper | Seth Tausan | Nick Sanderson | Brett Lauder | Garden Counties |
| 308-432-3056 | 308-327-5629 | 308-668-9453 | 308-760-3701 | Cris Burks |
| | | | | 308-760-1111 |



Weed Watch WORD FIND

- | | |
|--------------------|-----------------------|
| Absinth wormwood | Noxious |
| Babys breath | Perennial sow thistle |
| Biennial | Phragmites |
| Canada thistle | Plants |
| Caucasian bluestem | Platte valley |
| Common tansy | Prevention |
| Diffuse knapweed | PRIDE |
| Drought | Purple loosestrife |
| Field bindweed | Roots |
| Herbicide | Saltcedar |
| High plains | Sandhills |
| Houndstongue | Southwest |
| Invasive | Spotted knapweed |
| Label | St. Johnswort |
| Leafy spurge | Twin Valley |
| MNWAG | Vegetation control |
| Musk thistle | Yellow bluestem |

K L A F G P S T Q D E G R U P S Y F A E L N E C T A K C
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 P E R E N N I A L S O W T H I S T L E T R E R R I U N O
 S U Y E L L A V E T T A L P B M O O E P L P E A V I U R
 X L I I I X M B Y M Z O A N I X D L C T Y Q V A U O E N
 I M Y O I T T P B C B E N W V D T A S Z X R E R D S D M
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 O Y G P O S M H Q T F U O I I S H J O T S I T S F O C F
 W V A O N T P O I M A U C H C T U X F H L D I T F I B U
 T Y W A E O M L E G N E T A K I R R W X T D O J U X I A
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 V P R I D E O X N O E S C A V Y A N T H D B I S N J I N
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 L A V D G U C O U S G S C V Y N P A U L W L D O P S L H
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 E E E V E G E T A T I O N C O N T R O L I E S T E O G O
 Y C Y E E A D T I D E E W D N I B D L E I F S T E H N R
 C T S K O S P O T T E D K N A P W E E D S U V T D B M M
 Q L N O U K Q R E K Y I P S A N D H I L L S O M E N Q W
 Q A I M E D A T H G U O R D E M Q F S Q P C N M X M V O
 F S C O M M O N T A N S Y E L L O W B L U E S T E M Q O
 E F I R T S E S O O L E L P R U P J U H M A C W N A P D

HIDDEN WORD FIND - Responsible landowners take pride in their management efforts to control weeds on private lands in order to protect our environment. Sometimes the greatest challenge is to understand how invaders spread, the groups involved in treating them, and tools they use. Find the words listed to the right in the puzzle above. Words are arranged horizontally, vertically, diagonally, forwards (left to right) and backwards (right to left) and top to bottom or bottom to top.

If you have comments about this puzzle, send your name and address to: PRIDE WMA, 5789 220th Lane, Gordon, NE 69343

Our Mission
 PRIDE serves as a cornerstone to build and maintain partnerships between the many cooperators in invasive weed management and education. With this collaborative effort, a more efficient and successful approach to invasive weed management and awareness is achieved. PRIDE's efforts in pooling of funds and resources from contributors will result in a compounding of investments and rewards.



The Weed Watch...

- Keep for future reference.
- Pass on to a Future Farmers of America Student.
- Recycle at your local recycling center

COUNTY-ADDED NOXIOUS WEEDS



Kristi Paul, PRIDE Board Member.

In addition to the twelve weeds that have been declared noxious in Nebraska, every county has the option to petition the Director of the Department of Agriculture to place additional weeds on the "County-added noxious weed" list. Many counties in Nebraska have County-added noxious weeds, which landowners are required to control.



FIELD BINDWEED

Banner
Box Butte
Cheyenne
Dawes
Deuel

Garden
Morrill
Scotts Bluff
Sheridan

5 to 6 feet long.
Perennial - spreads
by
seeds and
rhizomes.



COMMON TEASEL

2-8 ft tall
Lancaster
Pawnee
Saline
Biennial
- spreads
by seed.



CUTLEAF TEASEL

2-6 ft tall
Lancaster
Pawnee
Saline
Biennial -
spreads by
seed.



HOUNDSTONGUE 1 to 4 feet tall. Biennial -
Dawes spreads only by seeds.
Sheridan

SCOTCH THISTLE

Banner
Box Butte
Cheyenne
Dawes
Morrill
Kimball
Scotts Bluff
Sheridan
Sioux

1 to 10 feet tall.
Biennial - spreads
only by seeds.



COMMON MULLEIN

Cheyenne
County
1 to 7 feet tall
Biennial-spreads
only by seeds.



YELLOW FLAG IRIS

Lincoln County
3-5 feet tall.
Perennial- Forms
dense stands.
Reproduces
by seed and
rhizomes.



WOOLYLEAF BURSAGE

Banner
1 to 2.5 feet tall.
Perennial -
spreads by
seeds and
rhizomes.



**PERENNIAL
YELLOW
BEDSTRAW**
Cherry
2 to 4 feet tall.
Perennial -
spreads by
seeds and
rhizomes.



BULL THISTLE

Rock
1.5 to 6.5 feet tall.
Biennial - spreads
only by seeds.



NEBRASKA'S NOXIOUS WEEDS

It is the duty of each person who owns or controls land to effectively control noxious weeds on such land.

Noxious weed is a legal term used to denote a destructive or harmful weed for the purpose of regulation.

The Director of Agriculture establishes which plants are noxious. These non-native plants compete aggressively with desirable plants and vegetation. Failure to control noxious weeds in this state is a serious problem and is detrimental to the production of crops and livestock, and to the welfare of residents of this state. Noxious weeds may also devalue and reduce tax revenue.



HEIGHT 1-3.9 FT.

Canada Thistle



HEIGHT 1.6-9.8 FT.

Musk Thistle



HEIGHT .3-2.6 FT.

Leafy Spurge



HEIGHT 1-3.9 FT.

Spotted Knapweed



HEIGHT 1-4.9 FT.

Plumeless Thistle



HEIGHT 3.3-20 FT.

Saltcedar



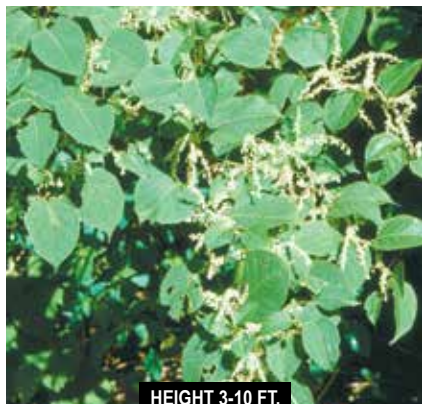
HEIGHT 3.2-20 FT.

Phragmites



HEIGHT 1-3.9 FT.

Diffuse Knapweed



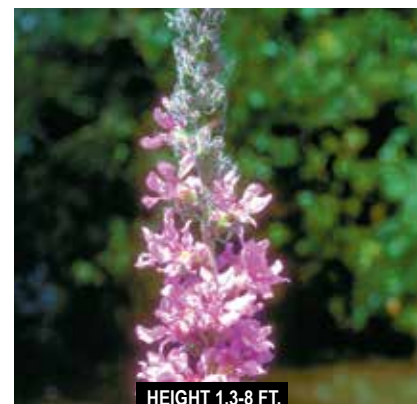
HEIGHT 3-10 FT.

Japanese Knotweed



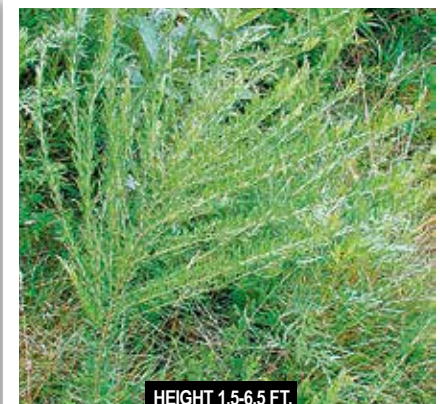
HEIGHT 8-13 FT.

Giant Knotweed



HEIGHT 1.3-8 FT.

Purple Loosestrife



HEIGHT 1.5-6.5 FT.

Sericea Lespedeza