

The Weed Watch



A Publication of Panhandle Research Integration for Discovery Education Weed Management Area in conjunction with High Plains, Sandhills, West Central, Platte Valley, Southwest and Twin Valley Weed Management Areas and the Middle Niobrara Weed Awareness Group

Fall 2019



Kelly Cooley of Cool Pro Solutions demonstrates the truth of the leafy spurge root system. The roots can grow as much as 25 feet laterally, making this perennial weed a challenge to control.



The actual root system of leafy spurge, with root buds starting to emerge to produce new plants.



Leafy spurge fall regrowth.

The Importance of Fall Weed Control

By Kristi Paul, Sheridan County Weed Superintendent

Once again, weed professionals from across the state have faced challenges of noxious and invasive weed infestations. Established perennial noxious weeds such as Canada thistle, leafy spurge, purple loosestrife and phragmites had a banner year. And the biennial weeds (which reproduce only by seeds) exploded this summer. The bountiful spring rains led to the growth of seed banks that have been lying in wait for years, waiting for just the right conditions that would allow them to flourish. Weeds we thought we had a tiny bit of a hold on showed up in pastures, on roadsides, and in many disturbed areas.

Biennial plants are species that need two years in order to complete their life cycle. This group includes species such as musk thistle, Scotch thistle, houndstongue, spotted and diffuse knapweed, common mullein and plumeless thistle will begin this cycle by producing rosettes this fall. A rosette is a circle of leaves, normally found growing flat on the ground. If left untreated, the rosette will then bolt, bloom and go to seed next summer.

Perennial weeds such as Canada thistle, leafy spurge, phragmites, purple loosestrife, saltcedar, sericea lespedeza, giant and Japanese knotweeds take a perennial effort to control. Most of the perennial noxious weeds have an extensive root system with rhizomes that send up new plants from underground in addition to reproducing by seed. Herbicide control of all perennial weeds is the most effective in the fall. About the time Mother Nature gives us a light frost, the perennial plants are pulling nutrients down into their root systems, to store energy to survive the winter. Herbicide applied at this same time also gets pulled deep into the roots for a more effective rate of control.

When the current Nebraska Noxious Weed Act was implemented in 1989, Nebraska had identified 4 noxious weeds; Canada thistle, musk thistle, plumeless thistle and leafy spurge. Today we have 12 noxious weeds that landowners statewide are required to control, in addition to many "county added" noxious weeds in various counties across the state.

And if that is not enough, we are seeing NEW invaders every year, plants that are noxious in other states and are brought into Nebraska in hay, on equipment, by recreational folks, or by animals. Have you heard of absinth wormwood, or black henbane? How about yellow flag iris or sulphur cinquefoil? Each year brings a few new invasive plants, and creates more headaches for homeowners, landowners and weed professionals. Since these plants are not native to America, and therefore have no natural control methods, they tend to move in and crowd out native vegetation. For this reason, homeowners and landowners are encouraged to always be on the lookout for "a plant out of place." You know what usually grows on your place, so if you see something unusual, take a minute to get it identified, and if it is a problematic species, take measures to control it while there's only a few plants.

None of our noxious weeds are easy to control. They have been placed on the noxious weed list because of their obnoxious tendencies, and these invasive plants jump at the chance to fill in where there is a void or disturbed area of soil. Left alone, the noxious weeds can quickly form a monoculture and become even more difficult to control. The old adage an ounce of prevention is worth a pound of cure is very fitting with noxious weed control.

So, this fall...because of the overabundance of noxious and invasive weeds we've had this summer, it is more important than ever for everyone to make an effort to control all noxious weeds.

Kent Aden of Working Ecosystems surveys the river for Twin Valley Weed Management.



Russian olive regrowth, two days after herbicide control by High Plains Weed Management Area.

Projects Continue Along the North Platte River

By Clint Riesen, Project Coordinator

High Plains Weed Management Association (HPWMA) is grant funded by the Nebraska Environmental Trust to provide cost share to landowners for the removal of invasive plant species along the North Platte River, as well as lakes, ponds, tributaries, creeks and any wetland that has a direct impact on the North Platte River. The counties covered include Scotts Bluff, Banner, Kimball, Morrill, Cheyenne, Garden, Deuel and southern Sioux. Russian olive, saltcedar and phragmites are the invasive species that the program works to remove from our local waterways and wetlands. Clint Riesen, the field coordinator for

the program, has been meeting with many landowners this summer to discuss the program, answer questions and address concerns. A concern that is often discussed is re-growth of Russian olive after removal is completed. HPWMA cost shares with landowners to address regrowth by hiring contractors that complete the spraying, using the proper equipment and herbicides to complete the project. Summer and fall before the first freeze are ideal times to spray Russian olive re-growth. The invasive trees are in full leaf stage and will absorb the herbicide very well. Within 5 days the regrowth will be dead; if not, another treatment may be needed. HPWMA has removed Russian olive from thousands of acres over the past twelve years; many of those acres have been maintained by observant and relentless landowners and are clean. However, many acres are needing re-growth treatment. Fall is also a good time to spray for saltcedar and phragmites. If landowners are needing Russian olive re-growth, saltcedar or phragmites spraying done contact Clint at High Plains Weed Management Association for cost-share information.

High Plains Weed Management Association is a collaborative group that relies on landowners for project ideas to successfully remove invasive species from our waterways and wetlands. Currently, High Plains Weed Management Association is actively looking for cost-share projects that need invasive species removed or re-growth treated. Invasive species include Russian olives, saltcedar and phragmites. High Plains has also recently received a grant from Bass Pro Shops/Cabela's to help establish a cost share program for spraying common mullein. Contact Clint Riesen at 308-633-1264 to find out more about these programs.

High River Flows Created Alternative Decisions

By Merle Illian, Project Coordinator

"Vegetation management in the riparian area of the Lower Republican and Little Blue Rivers has been anything but normal this year. With the high and erosive water flows, it has become almost impossible to put our terrestrial spraying equipment into the river channel this year," says Mark Goebel, Franklin County Weed Superintendent. "It has been one rainstorm event after another and the river flows never do subside. The latter part of August is when we usually put our all-terrain vehicles into the river and begin spraying noxious and invasive vegetation. This job starts at Cambridge, Nebraska and goes all the way to the Kansas-Nebraska state line south of Hardy, Nebraska. This is a 145 mile stretch of river that takes about a month. This year the river work will also be compounded by debris and logjams in the river."

"Harlan County Dam will be releasing water flows at 1,100 cubic feet per second this fall," says Larry Janicek, Project Manager Harlan Co. Dam. "This will keep the river channel below the dam at full flow

capacity. With the lake elevation at record highs, we will not be doing any spraying this year around the lake for invasive vegetation, because there is no exposed shoreline to contend with," says Janicek.

"Twin Valley Weed Management Area (TVWMA) plans to hire an air boat this fall to do our spraying," says Dennis VanWey, Webster County Weed Superintendent. "We hired Working Ecosystems, an aquatic vegetation spraying company, to survey the river for us. With their airboat, the contractors will be able to make a trip down the Republican River to determine the severity of the noxious weeds, and to see if the river is navigable. If there is a large amount of bank sloughing, and additional trees falling, logjams are created. This can cause major problems, caused by the debris accumulating under bridges. The logjams can alter the flow of the river channel. The airboat has been a great solution to address the river this season, to plan for the future of our projects." Please contact Merle Illian at 402-746-4558 for more information about TVWMA.

TWIN VALLEY WEED MANAGEMENT AREA • TWINVALLEYWMA.COM

Coordinator Merle Illian 402-746-3560	Adams County Eric Walston 402-461-7173	Clay County Bruce Rumsey 402-762-3652	Fillmore County Todd Boller 402-366-1921	Franklin County Mark Goebel 308-425-3716	Furnas County Todd Weverka 308-268-2824	Gosper County Marty Craig 308-324-3771	Harlan County Tim Burgesson 308-928-9800	Kearney County Joseph Anderson 308-832-2854	Nuckolls County Nick Elledge 402-879-1900	Thayer County Brian Schardt 402-365-4366	Webster County Dennis VenWay 402-746-2890
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HIGH PLAINS WEED MANAGEMENT AREA

Coordinator Joyce Mick 308-633-1264	Project Coordinator Clint Reisen 308-225-0146	Banner County Buck Hottell 307-214-5481	Cheyenne, Deuel & Garden Counties Cris Burks 308-760-1111	Kimball County Rick Wangler 308-235-2681	Morrill County Cody Renkoski 308-203-1454	Scotts Bluff County Jeff Schledewitz 308-436-6709	Sioux County Nick Sanderson 308-668-9453
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Using Insects to Control Noxious Weeds

By Scott Erthum, Brown County Weed Superintendent

Biological Control, or bio-control, is the practice of using one life form to control another. It can be an animal, insect, or pathogen. One of the reasons that invasive plants are so successful in establishing in a new area is that there are no competing or controlling pests to keep them in check. Bio-control practices aim to balance this out. To make sure the introduced agent only targets the intended pest and doesn't affect any other plants, researchers travel to the plant's native country, bring the insects back into the United States, and spend years making sure the insect is host specific. Only then will the insects be allowed to be released on the appropriate noxious weeds in our country.

Bio-control agents can be a powerful tool in the effort to control noxious weeds, but rarely are they a stand-alone treatment option. One of the biggest misconceptions about bio-control is that all a landowner has to do is release a few bugs on the target plants and the problem goes away. It's a bit more involved than that. When an area is inaccessible to spraying (steep canyons or hills) bio-control may be a way to get some control of weeds such as leafy spurge. Many of the early adopters of bio-control in the 1990's learned this the hard way and lost time and ground thinking the bugs would do it all.

Research from United States Department of Agriculture – Agriculture Research Service (USDA-ARS) in North Dakota shows that bio-control can be a powerful tool when used as part of an Integrated Pest Management (IPM) system. IPM may include herbicide application, grazing, prescribed fire and bio-control all used in a combined effort to control noxious weeds.

If you decide to try to implement a bio-control program, there are a few things to consider. One of the most important is site selection. Picking the right site is crucial to being able to establish a viable insectary. Each noxious weed has a protocol for ideal site selection. I'll just cover one example:

Using leafy spurge flea beetles to combat leafy spurge

There are two species of flea beetles that are commonly used to manage leafy spurge in the United States. *Aphthona lacertosa* is commonly called the brown leafy spurge flea beetle and *Aphthona nigricutis* is commonly known as the black leafy spurge flea beetle. Both are very similar in life cycles, and in the damage they inflict. Both species are commonly found in the same patch but they do have slightly different requirements. *A. nigricutis* prefers warmer, drier sites and lighter soils. *A. lacertosa* has a broader range of tolerances. They can tolerate cooler, moister sites with some shade. The ideal site would be one that has a good southern exposure. Establishment can take time and multiple releases. Research has shown that even in ideal conditions, only about 30% of sites can be established from a single release.

The benefit of establishing a bio-control site is definitely worth

the effort. The insects work year round, impacting plants in multiple ways. Once a population is established, the adults begin to defoliate the young plants. After mating, females lay eggs on the soil, usually near the base of a spurge plant. Once they hatch, the larvae move into the root system of the plant (NDSU W1183). The biggest impact of the flea beetles is the larva feeding on the root hairs of the leafy spurge. It may take several years to see the results of the larva feeding on the root hairs, which eventually causes an unhealthy-looking, less dense patch of leafy spurge. Therefore, it

takes long term commitment and a lot of patience to see the impact on large areas of leafy spurge. Flea beetles will move a short distance and may move into areas where no control is being attempted. Until a population of flea beetles becomes established, landowners will likely need to use herbicide outside the insectary areas to keep the spurge infestation from spreading.

USDA-ARS Research has also shown that once the insects have become established, herbicide application can be done in the fall. The list of herbicides is limited, but certain herbicides can be used to treat the leafy spurge and not harm the larva in the root system. The newer herbicides such as Method® and Perspective™ are not good choices as they impact the roots of the plant, and the insects will not survive (David Hirsch, USDA APHIS 2019).

Once the insects are thriving at the site, it will be necessary to collect and move them around to different patches, or different areas on your land. This is easily done by sweeping for them when they are in the adult form. In early to mid-summer, the adult flea beetles emerge above ground to mate and lay eggs. During this time the insects can be swept and relocated. There is little concern about over harvesting the insects, as only 5-10% of the adult insects are harvested while sweeping. If a very successful site is established, the insects require movement, because they need leafy spurge to survive. If the leafy spurge is all gone, they will die in proportion.

Throughout Nebraska in the past 20 years, bio-control agents have been released on leafy spurge, Canada thistle, spotted and diffuse knapweed, purple loosestrife, common mullein and field bindweed. **Soil type, weather, site location and many factors determine success or failure of the insectary being established.**

Statewide, less than half of the releases get established. The bottom line is that a bio-control program can be used effectively as part of an Integrated Pest Management program. Bio-control requires a lot of patience, since you see very little change for several years. Compare it to planting new trees on your land....you are planting for the future generation. We establish bio-control with the hope of an impact on the future of the noxious weed. If you have or wish to establish an insectary, or have questions about bio-control, contact your local County Weed Superintendent so that you can work together to establish bio-control on your property.

Citations: North Dakota State University, Leafy Spurge Control Using Flea Beetles (*Aphthona* spp.); W1183 Revised.
<https://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/leafyspurge/leafyspurge>.
 Dr. Rodney Lym; North Dakota State University



Aphthona nigricutis, brown flea beetle



Aphthona lacertosa, black flea beetle



Once an insectary is established, the adult flea beetles will defoliate small leafy spurge plants.

SANDHILLS WEED MANAGEMENT AREA - MIDDLE NIOBRARA WEED AWARENESS GROUP*

WMA Office – 308-346-3393
 Blaine/Thomas • Carol Conard – 308-346-4047
 Boone • Jack Nordeen – 402-608-0595
 Brown • Scott Erthum – 402-760-0093*

Cherry • Barbara Small – 402-322-1067*
 Custer • Ridge Horky – 308-872-2410
 Garfield • Jimmy Petersen – 308-214-0301
 Grant • Cody Renkoski – 308-203-1454

Hooker • Neal Hayward – 308-546-2706
 Greeley • Walter Bjorklund – 308-428-5955
 Keya Paha • Travis Mundorf – 402-497-3800*
 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

Noxious Weed Control

By Kristi Paul, Sheridan County Weed Superintendent

The Nebraska Noxious Weed Control Act states that “it is the duty of every person who owns or controls land in the state of Nebraska to effectively control noxious weeds on such land.” It’s the law, pure and simple. Yet many acres of noxious weeds across Nebraska have gone uncontrolled this year. There were many uncontrollable obstacles for controlling noxious weeds, thanks to Mother Nature. As a result, more effective control measures will be needed this fall and next spring.

What is a noxious weed and where did they come from?

Noxious weeds are non-native invasive plants, most of which originated in Europe, and arrived to the United States by accident in the ballast of a ship, or on purpose as an ornamental. Because these plants are not native, the insects, diseases and animals that would normally help to control these plants are not found here. This gives the weeds the advantage to invade and crowd out desirable vegetation in cropland, pasture, rangeland and other native habitats. These weeds invade roadsides and disturbed areas, displacing native plants and reducing habitat quality for wildlife.

Noxious weeds are spread by seed, wind, water, animals, and neighbors. Forage moving from one landowner, county or state to another should be noxious weed seed free. For most noxious weeds, the seeds can lay dormant in the soil for many years, just waiting for the opportunity to fill a void in disturbed or neglected areas.

Perhaps the most important step to noxious weed control is prevention.

Be on the lookout on your property for “plants out of place,” and learn to identify noxious and invasive plants. If detected quickly, noxious weeds can be controlled before they get a chance to get “perennially established.”

I’ve got noxious weeds on my property. Now what do I do?

Once noxious or invasive weeds are found on your property, there are a few factors that can affect your noxious weed control. These factors are: correct plant identification, methods of control, appropriate time to control, right product for the job, and proper growth stage of the plant. Your local County Weed Superintendent should be able to assist with plant identification. The best tool to help answer many weed control questions is the University of Nebraska EC-130, Guide to Weed Management in Nebraska. It is updated annually, and can be purchased from your local county extension educator.

Types of control for noxious and invasive weeds can include cultural, mechanical, biological or herbicide control. Cultural control involves the establishment of competitive vegetation to prevent or slow down the invasion of weeds. Mechanical control includes pulling, digging, disking, plowing or mowing noxious weeds. Biological control includes the use of federally approved insects or pathogens that attack specific weed species.

Musk thistle and plumeless thistle reproduce only by seed. Controlling the new growth this fall will give you a head start on next year's infestation.



Canada thistle is a perennial noxious weed, with an extensive root system. Late fall herbicide application shows the best results to control this noxious weed.

– It's The Law!

Why is herbicide control more successful in the fall?

Fall control of noxious and invasive weeds is usually the most successful, especially in perennial weeds such as Canada thistle, leafy spurge, or field bindweed. When frost is just around the corner, these deep rooted perennial plants are pulling nutrients deep into their roots, preparing for the cold winter. Herbicide control at this time is effective because the plant pulls the herbicide deep into the root system. If the plant dies before the herbicide reaches the root system then the plant will persist. However, if the herbicide reaches the roots it will result in better control of the plant. When we stress the importance of fall control, that doesn't mean it's OK to let all of the noxious weeds go to seed during spring and summer...you still need to keep them from going to seed. Noxious weed infestations that were allowed to mature and go to seed this summer will most likely have regrowth this fall. Treating this regrowth will give you a head start on next year's weed control efforts. Perennial noxious weeds very seldom are controlled with one herbicide application. **IT TAKES A PERENNIAL EFFORT TO CONTROL PERENNIAL NOXIOUS WEEDS.**

When it comes to biennial weeds such as musk thistle, plumeless thistle, houndstongue, and Scotch thistle, there is one thing to remember – these plants reproduce **ONLY BY SEED!** A single Scotch thistle plant can produce thousands of seeds. So, if you simply prevent these plants from going to seed, you can control the infestation (if the plants have gone to seed in past years, there will likely be a seed bank in the soil, so monitoring will be necessary for several seasons). This fall, many of these plants are growing in the "rosette" stage, or small circle of leaves on the ground. Next spring, in biennial weeds, that rosette will bolt, bloom, flower, and produce seeds. By spraying biennial plants in the rosette stage this fall, you will drastically reduce your infestation for next year. The challenge of musk thistle, Scotch thistle or houndstongue is that single plant that hopes you miss it. **ONE PLANT** left uncontrolled can easily start a new infestation.

What is the advantage of spraying a small patch of noxious weeds?

If you get that patch sprayed when it's the size of a pickup...it may cost a few dollars. Wait until those weeds spread across several acres, and you now have to invest hundreds or thousands of dollars. If you choose to ignore or procrastinate on your noxious weed control, in the long run you choose to spend more of the dollars in your wallet.

How about certified organic farmers?

Are they exempt from controlling noxious weeds?

No, not at all. It is the duty of every landowner to control the noxious weeds on his or her property. There are alternative control methods and products that can be used to meet organic certification standards. If someone has gone through the steps to be certified organic, they should be aware of approved practices.

Be a weed warrior

Are you doing the very best to protect your land from the invasion of more noxious and invasive weeds? Or are you doing just enough to get by?

Weeds know no boundaries. As good stewards of our land, whether it's a small lawn in town or a 5,000 acre farm/ranch operation, homeowners and landowners must work to keep land free of noxious weeds. If you are persistent and willing to work at noxious weed control as part of your management practice, the diligence will pay off.



Phragmites and purple loosestrife are both perennial weeds that spread quickly and out-compete desirable vegetation on rivers and streams in Nebraska.

PRIDE WEED MANAGEMENT AREA

Box Butte County
Cody Renkoski
308-203-1454

Dawes County
Dan Wordekemper
308-432-3056

Sheridan County
Kristi Paul
308-327-5629

Sioux County
Nick Sanderson
308-668-9453



SOUTHWEST WEED MANAGEMENT AREA

Project Coordinator
Jim Bowen
308-928-2410

Chase County
Brandon Beard
308-882-7520

Dundy County
Richard Delin
308-423-2652

Frontier County
David Luke
308-367-8304

Hayes County
Boyd Gigax
308-286-3461

Hitchcock County
Bill Hagemann
308-334-5852

Perkins County
Michael Dolezal
308-352-7955

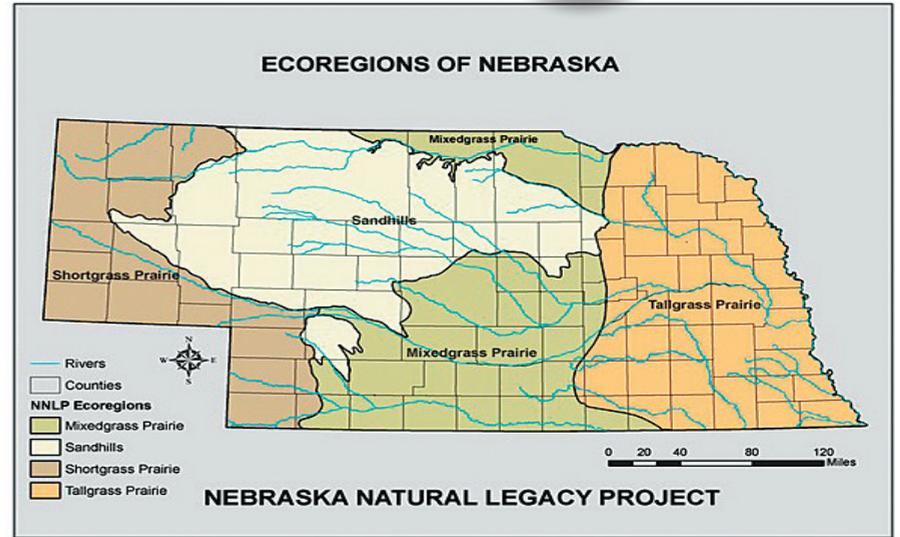
Red Willow County
Bill Elliott
308-345-4333

Invasive Plants Watch List: 2019



In 2018, absinth wormwood and yellow flag iris were added to Nebraska's Watch List in all ecoregions.

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. A complete list and images of invasive plants in Nebraska can be found at <http://snr.unl.edu/invasives>.



CATEGORY 1: Future Invasive Species

These 6 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



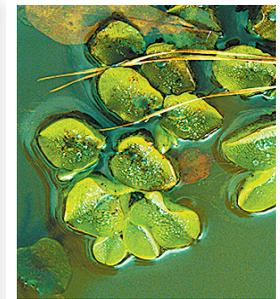
Water Hyacinth



Brittle Naiad



Hydrilla



Giant Salvinia

CATEGORY 2: Shortgrass Prairie Ecoregion



Absinth Wormwood



Black Henbane



Houndstongue

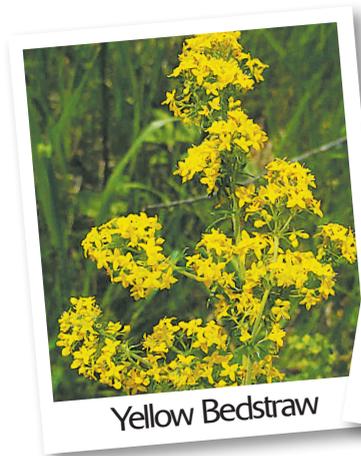


Russian Knapweed

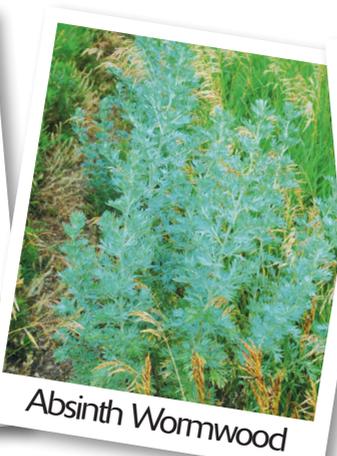


Yellow Flag Iris

CATEGORY 2: Sandhills Ecoregion



Yellow Bedstraw



Absinth Wormwood



Sulfur Cinquefoil

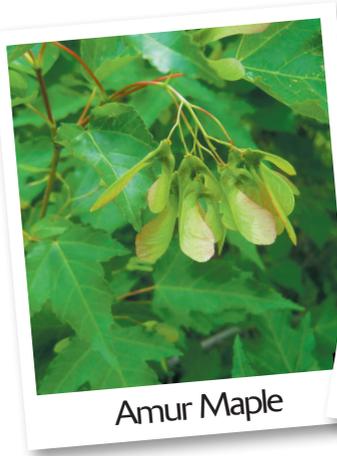


Eurasian Watermilfoil

ABSINTH WORMWOOD
BLACK KNAPWEED
EURASIAN WATER-MILFOIL
HOUNDSTONGUE
SULFUR CINQUEFOIL
YELLOW FLAG IRIS
PERENNIAL YELLOW BEDSTRAW

CATEGORY 2: Mixed-grass Prairie Ecoregion

ABSINTH WORMWOOD
AMUR MAPLE
AUSTRALIAN BEARDGRASS
(CAUCASIAN BLUESTEM)
COMMON AND
CUTLEAF TEASEL
EURASIAN WATER-MILFOIL
GARLIC MUSTARD
JAPANESE HONEYSUCKLE
RUSSIAN KNAPWEED
SULFUR CINQUEFOIL
YELLOW FLAG IRIS



Amur Maple



Garlic Mustard



Caucasian Bluestem



Common Teasel

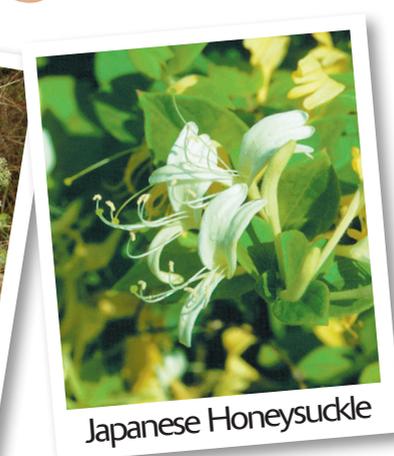
CATEGORY 2: Tallgrass Prairie Ecoregion



Cutleaf Teasel



Sickleweed



Japanese Honeysuckle

ABSINTH WORMWOOD
AMUR MAPLE
AUSTRALIAN BEARDGRASS
(CAUCASIAN BLUESTEM)
BLACK KNAPWEED
CALLERY PEAR (NON-URBAN)
COMMON AND
CUTLEAF TEASEL
CROWN VETCH
EURASIAN WATER-MILFOIL
GARLIC MUSTARD

GIANT REED
HOUNDSTONGUE
JAPANESE HONEYSUCKLE
ORIENTAL BITTERSWEET
PERENNIAL YELLOW
BEDSTRAW
RUSSIAN KNAPWEED
SICKLEWEED
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: <http://snr.unl.edu/invasives>

Thankful & grateful

Following the extensive flooding in Nebraska this spring, hundreds of kind people from across the US stepped up to help flood victims in many ways. So many kind gestures and generous donations arrived from around the country, in the form of funds, food, hay and other supplies.

Although we are immensely grateful for all donations, we must also be cautious. Following the 2012 drought in Nebraska, a new invasive plant began appearing: absinth wormwood. We suspect this invasive plant came in on hay that was delivered from out of state. Since 2014, we have identified absinth wormwood in over 20 Nebraska counties. County Weed Superintendents across the state have been educated about absinth wormwood, and work to control it. It is often found on roadsides, in

corrals, around farm buildings, or anywhere infested hay was stored or fed. Using early detection and rapid response, we hope to keep this invasive plant from becoming a big problem.

No one knows what plant parts, seeds, or weeds may have moved down stream across county lines and state lines in the water, ice, and dirt, as well as loads and loads of hay brought from out of state. Be on the lookout for new or unusual plants on your property for the next several years. Since these shipments came from different states, Weed Superintendents are unsure what species might be considered invasive in the states from where the hay was delivered. So along with being thankful and grateful, please be aware of plants out of place.



Pledge to Prevent the Spread of Invasives

By Todd Boller, Fillmore County Weed Superintendent

Invasive species can cause damage to the economy, the environment, and to human health. But each person can make a difference in preventing new invasions and stopping the spread of existing ones!

People across North America are joining together to protect the places we love by taking the PlayCleanGo Pledge. You can join now!

When you take the Pledge to stop invasive species, you agree to:

- ✓ Remove plants, animals, and mud from your boots, gear, boat, and trailer
- ✓ Clean your gear before entering and leaving a recreation site
- ✓ Drain bilge, ballast, wells and buckets before leaving the area
- ✓ Dry equipment before launching into another body of water
- ✓ Dispose of unwanted bait in a sealed container
- ✓ Use certified or local firewood and hay

Please visit playcleango.org



Focus on Native Bees, Not Honey Bees

By Chris Helzer, Nebraska Director of Science, The Nature Conservancy

The public is very aware that we are in the midst of a pollination crisis. In fact, concern about bees and other pollinators is nearly unanimous in public polling.

At a time when we are polarized on most issues, the need to do something about bees is something we can all agree on. Unfortunately, when people fret about bees and the threats they face, most are thinking about strictly about honey bees.

Honey bees are fascinating creatures. They've got an incredible social structure within their hives, they play important roles in the pollination of many food plants we like, and honey is delicious. However, honey bees are also an introduced livestock species in North America and only one of about 4,000 kinds of bees found in North America.

The thousands of native bee species living mostly below our collective radar are split into categories such as digger bees, carpenter bees, mason bees, sweat bees, bumble bees, and cuckoo bees.

The majority of those species don't live in hives where workers cater to the needs of the queen and raise her babies for her. Instead, most native bees are reared in small nests built and tended by single mothers. Those female bees lay eggs, supply them with food, and protect them from enemies – all by themselves. A distinct minority of native bees live under some kind of cooperative system, and only a very few employ the kind of eusocial behavior we associate with honey bees.

The Dizzying Variety of Native Bees

Native bees also come in a dizzying array of colors, shapes, and feeding preferences. Bumble bees can be as large as your thumb, but many bee species are smaller than a grain of rice. Some are generalists that can feed opportunistically on whichever flowers are most abundant at the time.

Others are much more restricted in their diet, sometimes to a single species or group of species of wildflower. Plants, in turn, display a broad diversity of flower designs that can either make their nectar and pollen available to all comers or limited to only bees of a certain size, tongue length, or ability to vibrate flowers at a specific frequency.

Despite the astonishing variety among bees in North America, most conversations about bee conservation

center on a single, largely agricultural species. Imagine if we did the same thing with birds — we'd be trying to raise more turkeys on farms out of concern for massive declines in overall bird populations.

The Fate of Native Bees

In addition to their inability to shoulder the entire load of pollination, there is also growing evidence that honey bees compete with and potentially contribute to the declines of native bees. That's concerning, and it should make us thoughtful about how and where we place honey bee hives in and around natural areas. However, it's also important to know that honey bees are not the primary reason our native bees are suffering.

In fact, honey bees and native bees share most of the same threats to their survival, with the loss of quality habitat topping that list. Similarly, many of the strategies to help save native bees will also help honey bees — and vice versa. We just need to be careful that saving honey bees aren't the primary focus of conservation efforts or communications.

Increasing the size and quality of habitat for pollinators will boost populations of all bees, including both native bees and honey bees. Yes, certain pesticides and diseases are also causing major problems and we should continue to work on those issues as well.

However, adequate habitat quantity and quality greatly dampens the impacts of those other threats. We need to protect and restore plant diversity in natural areas and agricultural landscapes so that nectar and pollen resources are abundantly available throughout the year. In addition, we need to rebuild and reconnect floristically rich habitats wherever we can. Those are the only viable strategies to conserve bees of all kinds (and most of our native biodiversity).

Compared to those gargantuan tasks, changing the way we talk about bees seems pretty easy, but it is still really important. There are too many news stories that

start with something like, "bees are suffering" and then proceed to talk only about honey bees.

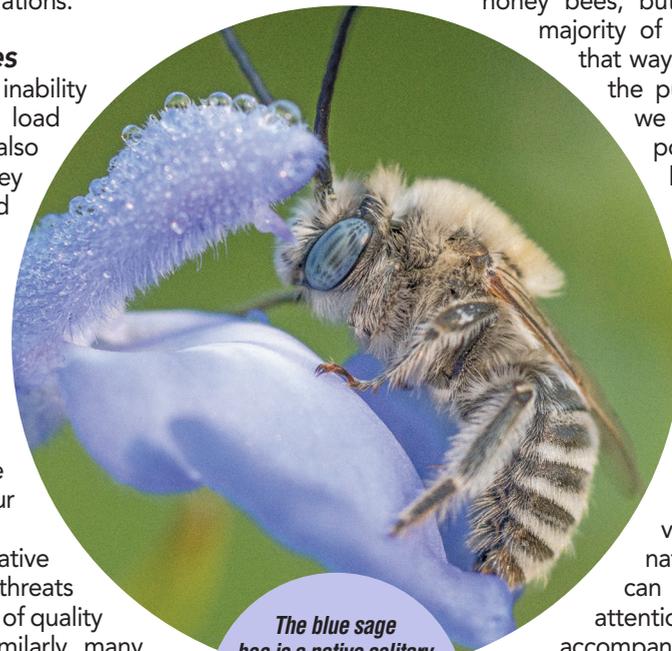
Schools talk a lot about the social structure of honey bees, but don't mention the majority of bees that don't live that way. As a result, much of the public recognizes that we are experiencing a pollination catastrophe but thinks it's an issue of bee keepers and their struggles to save their animals.

The real story of pollinators and their declines is much more compelling than the battle to save a livestock industry. The incredible variety among native bees, alone, can catch the public's attention, especially when accompanied by photos showing the broad range of size, color, and shape among those bees. People can also empathize easily with the extraordinary challenges facing single mom bees trying to feed and protect their progeny in a world of habitat fragmentation and degradation. Including butterflies, moths, flies, wasps and other insects in the discussion provides even more fascinating pollinator accounts and images.

The pollinator narrative is also easy to frame in ways that fit into the broader conservation context. Pollinators rely on habitat size, habitat connectivity, and plant diversity. Those are the key components of conservation success for most other species too, including our own.

Rebuilding and protecting the healthy and resilient landscapes bees need will provide for the needs of both nature and people. That's a story we should be telling.

"This story originally ran on Cool Green Science, the blog of The Nature Conservancy."



The blue sage bee is a native solitary bee that nests in the ground and feeds exclusively on blue sage (aka pitcher sage, *Salvia azurea*)

PHOTO CREDITS

PAGE 1

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Bernad Blossy, Cornell University; John D. Byrd, Mississippi St. University; Bugwood.org

PAGE 6

Wilfredo Robles, MSU, Bugwood.org - common water hyacinth

PAGE 7

Jil Swearingen, USDI NPS, Bugwood.org - oriental bittersweet
Scott Robinson, GDNr, Bugwood.org - giant salvinia
Steve Dewey, USU, Bugwood.org - black henbane/Russian knapweed/perennial pepperweed
Catherine Herms, TOSU, Bugwood.org -

goat's rue

Troy Evans, GSMNP, Bugwood.org - brittleleaf naiad
Robert Vidékj, Doronicum Kft., Bugwood.org - hydrilla
Bonnie Million, National Park Service, Bugwood.org - halogeton
Leslie J. Mehrhoff, UC, Bugwood.org
Nebraska Game & Parks, Ecoregion map
PAGE 7
Cindy Roche, Bugwood.org - meadow knapweed
Chris Evans, IWAP, Bugwood.org - garlic mustard

James R. Allison, GDNr, Bugwood.org -

Japanese honeysuckle
Theodore Webster, USDA ARS, Bugwood.org - sulfur cinquefoil
Chris Evans, IWAP, Bugwood.org - Eurasian water-milfoil - cutleaf teasel
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PAGE 11
Loke T. Kok, VPI, Bugwood.org - bull thistle
John Cardina, TOSU, Bugwood.org - bull thistle
Howard F. Schwartz, CSU, Bugwood.org - field bindweed
Howard F. Schwartz, CSU, Bugwood.org - woollyleaf bursage
Steve Dewey, USU, Bugwood.org - Scotch thistle- houndstongue
John Cardina, TOSU, Bugwood.org - bull thistle

Jan Samanek, SPA, Bugwood.org - field

bindweed
K. George Beck, James Sebastian, CSU, Bugwood.org
Kristi Paul, Sheridan County
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Sara Rosenthal, USDA ARS, Bugwood.org - diffuse knapweed
Jil Swearingen, USDI NPS, Bugwood.org - common reed
Jil Swearingen, NPS, Bugwood.org - Japanese knotweed
Steve Dewey, USU, Bugwood.org - plumeless thistle

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Silesia, Bugwood.org
giant knotweed
Bonsak Hammeeras, Bioforsk - NIAER, Bugwood.org - Canada thistle
Barry Rice, sarracenia.com, Bugwood.org - leafy spurge
Eric Coombs, ODA, Bugwood.org - purple loosestrife
Mike Haddock, kswildflowers.org - Sericea lespedeza

SOMETHING FOR

KIDS OF ALL AGES

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

Absinth wormwood	Inspect	Regular
Acre	Invasive	Riparian
Annual	Japanese knotweed	Root system
Biennial	Label	Saltcedar
Bio Control	Leafy spurge	Sandhills
Bindweed	Little Blue River	Seed
Bull thistle	Mnwag	Seeds
Canada thistle	Musk thistle	Sericea lespedeza
Common mullein	Native	Southwest
Control	Natural	Spotted knapweed
Diffuse knapweed	Nebraska	Successful
Environment	Noxious weed law	Surface
Fall control	Perennial	Translocation
Field	Phragmites	Twin valley
Flea Beetles	Plan	Waste
Giant knotweed	Platte valley	Water
Growing	Play clean go	Weather
Habitat	Plumeless thistle	Weeds
Herbicide	Prevent	West central
High plains	Pride	
Houndstongue	Purple loosestrife	

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.*

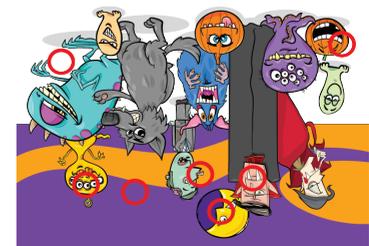
If you have comments about this puzzle, send your name and address to:
PRIDE WMA, PO Box 449, Rushville, NE 69360

Find 7 Differences

Kids Logic Game



Answer



COUNTY-ADDED NOXIOUS WEEDS



FIELD BINDWEED

Banner Garden
Box Butte Morrill
Cheyenne Scotts Bluff
Dawes Sheridan
Deuel



Kristi Paul, Sheridan County Weed Superintendent and PRIDE Board Member. In addition to the twelve weeds that have 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.

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.

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



COMMON MULLEIN

Cheyenne County

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

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



SCOTCH THISTLE

Banner
Box Butte
Cheyenne
Dawes
Morrill
Kimball
Scotts Bluff
Sheridan
Sioux

1 to 10 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.*



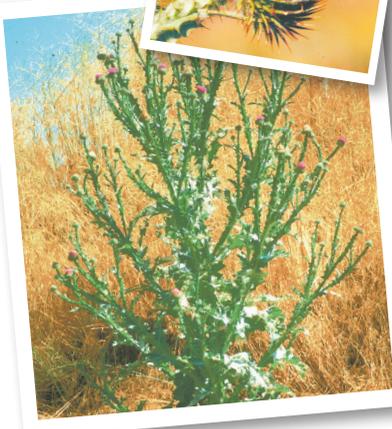
WOOLYLEAF BURSAGE

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.

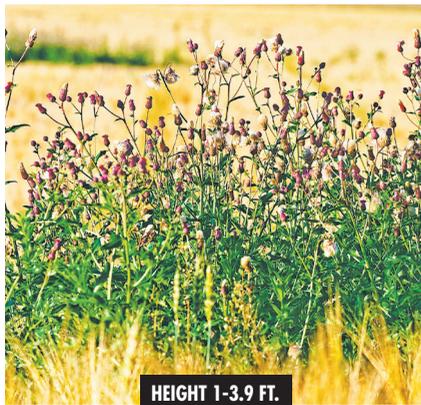


NEBRASKA'S NOXIOUS WEEDS

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

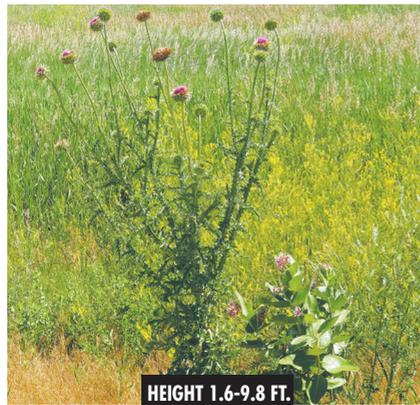
Noxious weed is a legal term used to denote a destructive or harmful weed for the purpose of regulation.

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.



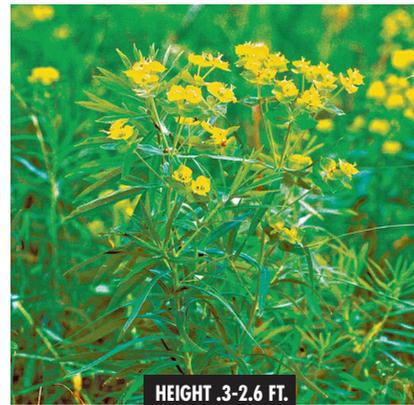
HEIGHT 1-3.9 FT.

Canada Thistle



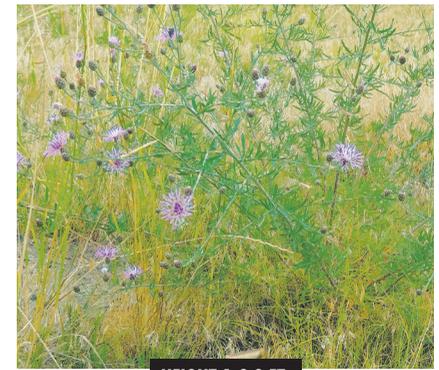
HEIGHT 1.6-9.8 FT.

Musk Thistle



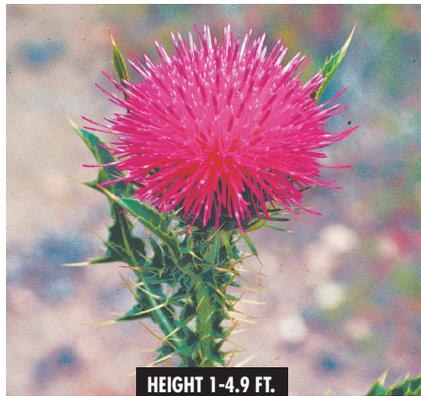
HEIGHT .3-2.6 FT.

Leafy Spurge



HEIGHT 1-3.9 FT.

Spotted Knapweed



HEIGHT 1-4.9 FT.

Plumeless Thistle



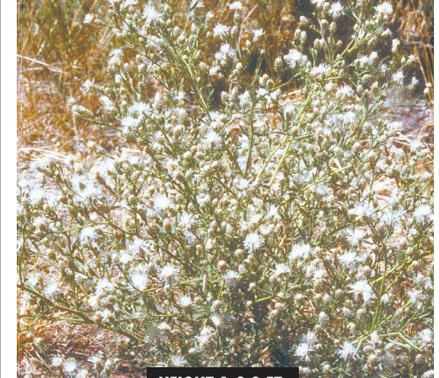
HEIGHT 3.3-20 FT.

Saltcedar



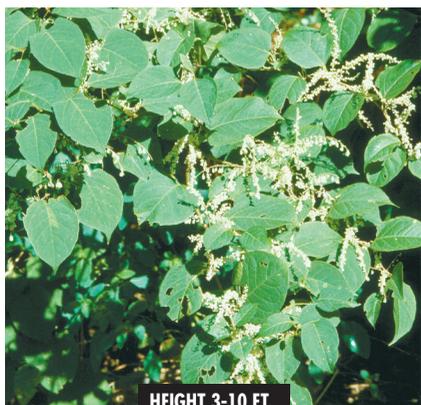
HEIGHT 3.2-20 FT.

Phragmites



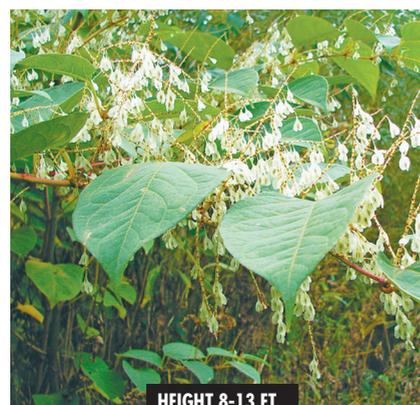
HEIGHT 1-3.9 FT.

Diffuse Knapweed



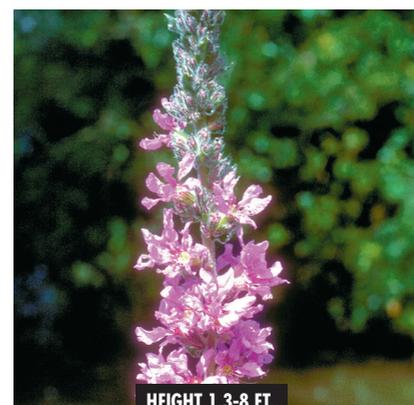
HEIGHT 3-10 FT.

Japanese Knotweed



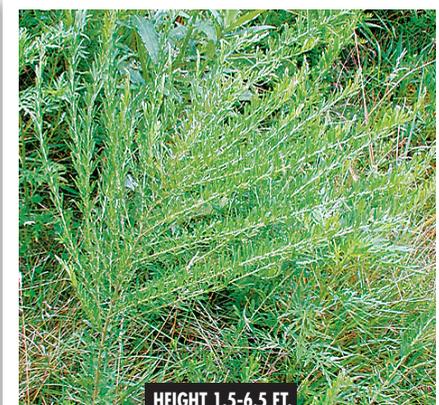
HEIGHT 8-13 FT.

Giant Knotweed



HEIGHT 1.3-8 FT.

Purple Loosestrife



HEIGHT 1.5-6.5 FT.

Sericea Lespedeza