



PHOTO COURTESY OF J. JEFFREY MULLAHEY

►The tropical soda apple plant is a noxious weed that is wreaking havoc on grazing lands in Florida. A single TSA plant can consume 9 square feet when mature.

They Spread Like Wildfire

Given the opportunity, noxious weeds invade grasslands, displacing precious native plants and causing nightmares for landowners.

by **Corinne Blender**

Seedstock producers may dream of a day when their bulls' genetics spread across the country, reproducing in areas faced by challenging climates and rough terrain, fueled by high fertility rates and few limitations. If only their herd's genetics would spread like weeds . . . and if only there were expected progeny differences (EPDs) on plant species that would predict their performance before they were introduced to an area.

Noxious weeds are known for their aggressive, competitive behavior and their tremendous capacity to invade native plant communities. They reproduce through millions of seeds that travel down streams, on wildlife and livestock, and through infested plantings, infecting entire regions of the United States.

Their biology allows them to progress from small, manageable populations to huge, economically and environmentally devastating problems when given the opportunity, according to the Colorado Weed Management Association (CWMA)

Web site at www.cwma.org. These plants grow on the vast grasslands of the United States, and ranchers and private landowners are at the forefront of controlling them.

"If you look at the list of noxious weeds that states have dealt with or are dealing with, you'll find that the vast majority of them have been introduced for very good reasons. The most common reasons for [plant introduction] are erosion control, forage, landscaping and conservation planting," says Kansas State University (K-State) grazing management specialist Paul Ohlenbusch. "It's just that we lost track of the fact that they can naturalize and explode."

Once a weed is determined noxious, a legal term on both state and federal levels, in many cases landowners are required by law to try to prevent its spread and to control its population, Ohlenbusch says. When a noxious weed problem explodes, it takes few prisoners. It can devastate an entire area.

"You have to know your enemy in order

to know how to defeat it," says J. Jeffrey Mullahey, a range scientist and center director of the University of Florida Institute of Food and Agricultural Sciences (IFAS), West Florida Research and Education Center near Pensacola. "Some cattle ranchers are much better at picking out a prize bull than they are at identifying a noxious weed. . . . Until they are aware of it and know what to do, the spread of noxious weeds is not going to be stopped."

Education begins with a landowner's willingness to learn more about the weed problem. "The management of exotic perennial weeds like leafy spurge often requires site-specific plans," says Rich Hansen, U.S. Department of Agriculture (USDA) Bozeman Biological Control Lab, Bozeman, Mont. He recommends a diverse approach for noxious weed control utilizing several resources, including Web sites, county weed supervisors, Extension agents, university weed scientists, etc.

"Ideally, see if you can get an expert to make a site visit and make management recommendations. Consider a spectrum of management tools, adopting those that are best-suited to your situation," Hansen says. "What worked for a neighbor may not work in your situation."

A step ahead of the game

Assistance from noxious weed experts who deal with these plants on a daily basis is ideal, but not always an option. Many times weed specialists are called upon as a "reactive" measure after the weed is identified as a problem, Mullahey points out. "Unfortunately you can look at a case such as leafy spurge — and there are so many examples — that says don't get to this position. It seems like we continue to be more in the reactive mode than the proactive mode," he adds.

A key to working proactively is to know what problems could be faced. Many states have Web sites dedicated to listing weeds declared noxious in their areas, as well as control measures and important information about the challenge a particular noxious weed invasion may pose.

Noxious weeds may differ depending on what part of the United States you are in, but they are a common issue. The following information draws from the specialized knowledge of weed scientists in different regions of the United States to identify major noxious weeds and methods to control and prevent their spread. These noxious weeds have major environmental, economical and social impacts on beef production, and they will continue to take over grazing lands if measures are not taken to prevent their invasion.

Leafy spurge

Leafy spurge leads the pack as one of the most widespread weed problems. It tops the list in many states, especially in the West and Midwest. It can grow in a variety of habitats.

“The largest infestations usually occur on moderately dry rangeland sites with reasonably well-drained soils, where it can very effectively out-compete other plants for moisture and nutrients,” Hansen says. “Leafy spurge can also grow along rivers and lakes, if soils are well-drained, and in forest openings. It doesn’t appear to tolerate shading or high soil moisture very well, so contiguous forests and wet sites don’t usually support infestations. Where precipitation and soil moisture levels are higher (as in eastern North America), other plants can much more effectively compete with leafy spurge.”

Not only does this plant take charge and monopolize the range, it also poses health concerns for cattle if it finds its way into their digestive tracts.

“Leafy spurge has a nasty chemistry, with a host of compounds harmful to most grazers. Cattle that eat spurge may suffer a variety of ailments (scours and the like) or may even die,” Hansen says. “However, the plant is so distasteful that cattle rarely, if ever, eat leafy spurge. In fact, cattle generally avoid spurge-infested areas altogether, even if palatable plants are present.”

When leafy spurge enters into an area, it robs the soil of moisture and nutrients and is detrimental to other plants, Hansen says. It adds to the economic losses associated with any noxious weed infestation.

“Leafy spurge is not eaten by cattle, so the replacement of forage grasses and forbs by spurge greatly reduces the carrying capacity of infested rangeland,” he adds. “This reduced grazing capacity means reduced incomes for, and reduced production outlays by, stockgrowers and landowners, which of course have repercussions throughout local and regional economies.

“Concrete infestation data are hard to come by,” Hansen says. “I have seen estimates that place the infested area in North America in the 3- to 5-million-acre range.”

Tropical soda apple

Florida is known for its beaches and Walt Disney World attractions, but Mullahey is quick to point out that Florida is more than just a place for fun in the sun. “There’s a lot of land in the central and southern parts of the state where cattle are grazing. That is why this plant has become such a real problem for us,” he says of the tropical soda apple (TSA).

It has been termed the “plant from hell” in



► Leafy spurge is one of the most widespread weed problems on U.S. soil. “The largest infestations usually occur on moderately dry rangeland sites,” says Rich Hansen of the USDA Bozeman Biological Control Lab.

many news articles explaining its noxious character. “Around 1992 ranchers in particular started realizing that there was a new weed in the neighborhood. Unfortunately, it was invasive and noxious and becoming a problem,” Mullahey says.

He says words are hard to find to describe the plant that consumes 9 square feet (sq. ft.) when mature. Once you’ve seen it though, he says, you will never forget it.

“It is a very ominous-looking plant because of its stickers. The stickers are upwards of an inch long,” he says.

Mullahey identifies five major problems TSA has caused for ranchers in Florida and neighboring states where it has the potential to spread:

- loss of forage production;
- lower forage quality;
- lower stocking rates;
- poorer animal performance; and
- shipping issues linked to seed spread.



► TSA is an ominous-looking plant that has stickers upwards of an inch long. The bright yellow fruit is consumed by cattle and wildlife, providing the potential to spread its seed through the southeastern United States.

PHOTO BY WILLIAM S. JUSTICE, COURTESY OF USDA'S PLANTS PROFILE

PHOTOS COURTESY OF J. JEFFREY MULLAHEY

The seed is predominately spread when cattle consume the bright-yellow fruit, which smells sweet — like fresh-baked apple pie. Wildlife consume the fruit, too.

Mullahey says USDA researchers did an ecological range study on this plant to see where it would grow in the United States. Once you get into the more Western areas it gets too cold at night and it doesn’t get warm enough during the day for the plant to survive. The study found eastern Texas to be the farthest west the plant could grow.

States in the Southeast — including Alabama, Georgia, South Carolina and Mississippi — have identified the plant. It was also transported to Tennessee and Pennsylvania on cattle trailers. When the trailers were rinsed out, contaminated feces produced a few plants in those areas, but they have been destroyed.

“I feel like the other states have an opportunity to eradicate it. But in Florida, unfortunately, we’ve lost that opportunity,” Mullahey says. “So we are trying to learn how to live with it, how to control it to minimize its effect on our cattle operations while, at the same time, not allowing it to spread to other states.”

Sericea lespedeza

Ohlenbusch says that plants can have benefits for some, but not for others. Sericea lespedeza is no exception. In the southeastern United States it is called the poor man’s alfalfa, but in the Flint Hills of Kansas and a few neighboring states, it is a destroyer of native tall-grass prairies.

Sericea was first introduced into Kansas in the 1930s for planting on strip mines because it was about the only thing that would grow on the land, Ohlenbusch says. It was thought to protect fragile land from erosion and to provide wildlife cover.

It wasn’t until the mid-1980s that specialists recognized the plant was going to be a problem. It was declared a noxious weed statewide in 2000. As of Jan. 1, 2002, Kansas has reported about 469,000 infested acres in 73 counties, according to the Kansas Department of Agriculture.

“We know that the seed of sericea is eaten by cattle (under certain circumstances), goats, sheep, deer and a number of ground-nesting birds. We’ve also found it on running boards and back bumpers of pickups, and in tire treads. Any place it can attach, it will,” Ohlenbusch says. Recently, Ohlenbusch says the seed was found to float on water, and plants were found at the high-water mark of a reservoir in Oklahoma as well as along streams.

“These seeds move in a lot of ways,” he says. Sericea lespedeza can actually replace

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PHOTOS COURTESY OF OREGON STATE UNIVERSITY, FORAGE INFORMATION SYSTEM

► *Sericea lespedeza* is still planted in some areas of the United States, but in Kansas it is considered a noxious weed that is invading tall-grass prairies. “*Sericea lespedeza* can actually replace the existing vegetation, creating the real monster,” says Paul Ohlenbusch, a grazing management specialist with Kansas State University.

the existing vegetation, creating the real monster. Once native grasses are replaced, it is very difficult to get them back. Restoring the grasses is expensive and slow.

The key is not to ignore the plant until it becomes a full-blown invasion.

“Management gets to be tough because we have all levels of invasion. If you have a little bit, get after it. If nothing else, dig up the plants,” Ohlenbusch advises. “Know where they are and go back year after year. The seed production on this plant is extreme.”

“If you have more than scattered plants, spot treat in those areas. As they get denser and denser, the first thing you may want to do is try to keep some of the more open areas clean, and then work on the more extreme areas as time goes on. But the biggest thing we have to do is stop seed production.”

Many times little is known about noxious weeds. Researchers spend a lot of time just trying to understand what each is about and, essentially, how ranchers can best live with them on their grasslands.

“We don’t know if we are dealing with a single genetic source or whether we are dealing with different genotypes,” Ohlenbusch says. “We have actually found some old soil bank fields from the late ’50s and early ’60s that have solid plantings that have never escaped.” Other plantings have spread out of control.

“We will learn to live with it just as we are learning to live with musk thistle and a few of the others. We will never get rid of them,” Ohlenbusch adds. “Eradication at this point — except in areas that are very new with a few scattered plants where we can get to them and pretty well take out everything — is out of the question. The seedbank takes care of that.”

To really control invasions, combining mechanical, chemical, biological and cultural control methods is critical. Musk thistle is a success story and is now on the decline in Kansas since landowners have developed and combined these methods.

Tansy ragwort

Tansy ragwort was first reported in Oregon in 1922, says Tim Prather, a University of Idaho (UI) assistant professor of weed ecology. It has also been found in California, Idaho, Washington and Montana.

“Tansy ragwort can cause liver failure in cattle when they have eaten 2% to 8% of their body weight,” Prather says. “Animals normally do not eat it, but they can consume it accidentally, especially when the plants are small. Animals will consume it when it is in hay.”

Tansy ragwort was added to Idaho’s noxious weed list in 1993. Noxious weed distribution data in this area has been collected since the mid-1980s.

“The plant is biennial to short-lived perennial. The first leaves of a seedling are oval with wavy margins. Flower stalks can be up to 6 feet tall, containing many small, yellow flower heads. These flower heads are approximately 1 inch across,” Prather says. “The flower head has a small brown center. Flowering is from mid-summer through fall. Seeds are tiny and tipped with hair-like plumes that carry the seeds long distances.”

Tansy ragwort invades areas where the land has been disturbed. Moist pastures,



► Researchers at the University of Idaho are collecting information on tansy ragwort by using a global positioning system. A map will be made from this data to guide weed-control efforts.

forested areas, meadows created in forest clearings and lands after forest harvesting are all common locations where tansy ragwort may be found, Prather says.

“There are biological control agents that attack the plants. The cinnabar moth was released in 1959 into the United States. The ragwort seed fly was released in 1966 into the United States. The ragwort flea beetle was released in 1969,” Prather says. “The cinnabar moth and the ragwort flea beetle can be very effective in control of tansy ragwort, but their survival in colder climates can be a problem. The U.S. Forest Service (USFS) is working to introduce insects with greater cold tolerance.”

A UI research team is taking a new approach in tracking the spread of the tansy ragwort.

“A crew of four people is trained to identify tansy ragwort, distinguishing it from closely related native species. The crew goes to locations containing the plant and begins to survey on slope contours away from the known infestation for 0.5 miles, and they survey along roadways for up to 1 mile from the last recorded plant,” Prather says. “Plant locations are recorded using a GPS (global positioning system) that is linked to a handheld computer. The map is displayed on the handheld computer along with their current position. Once plants are found, they are entered on the display of the handheld computer.”

The research will be used to help assemble a map to guide weed-control efforts. Tansy ragwort is just one of the many noxious weeds that is being tracked in the study.

For information on plants considered to be noxious in your area, contact your local Extension office or visit the Bureau of Land Management (BLM) Environmental Education homepage at www.blm.gov/education/weed/weed.html.



► The first leaves of a tansy ragwort seedling are oval with wavy margins. When the plant is mature it will have many small, yellow flower heads and can be up to 6 feet tall.