

A Grass Plant

Showing Principle Parts



Integrated Roadside Vegetation Management

A unique approach to rural roadside vegetation management is sweeping across lowa. The program is called Integrated Roadside Vegetation Management (IRVM). Roadside weed prevention and erosion control are the primary objectives. Native prairie grasses and wildflowers are used to establish a diverse plant community best adapted to local climate.

The program offers many benefits for the people of lowa. These include: 1.) Spending far less taxpayer money on herbicides that threaten the environment. 2.) Establishing a more sustainable plant community that requires less maintenance and restores a piece of lowa's natural heritage 3.) Keeping lowa's topsoil in the fields and spending less on ditch cleanouts 4.) Beautifying roadsides and enhancing wildlife habitat with wildflowers and native grasses.

These objectives are accomplished by "integrating" a few environmentally sound management techniques into a system that encourages desireable vegetation. Often times it is not so much what we do, but when we do it that determines whether the effect is beneficial. Sometimes a small, controlled burn will help the vegetation. In other cases, the limited use of a specific herbicide or some spot-mowing will keep the roadside healthy and free of weeds. In each case timing is key to obtaining the desired result.

To learn more about this program contact your County Roadside Manager. If your county does not yet have an IRVM program and Roadside Manager, feel free to call or write this office.

 Office for Integrated Roadside Vegetation Management Department of Biology University of Northern Iowa Cedar Falls, IA 50614-0421 (319)273-2813



= Counties with IRVM Program Managers

January

A Plan in Time Saves Nine

Off-season responsibilities such as making sure equipment is properly maintained and stored and checking supplies of seed and herbicide are excellent ways to stay busy in the winter. Beware they do not become great excuses for avoiding an activity of vital importance to a healthy County Roadside Program. That activity is **Planning!** Roadside planning involves laying out another season of burning, seeding and spot-spraying. It means setting goals balanced between great expectations and what absolutely must be done for the county. If flashes of insight and creativity occur during the microseconds between every day thoughts, we must allow time for this to happen. Stare last season in the face, evaluate it and visualize clearly the successes to repeat and problems to overcome. Outline specific objectives for the upcoming year. State them clearly in measurable terms. In two short months the rush of warm-season activities will begin. Put together a good plan now and enjoy efficiency and clarity of purpose the rest of the year.

Winter is also an opportunity for Roadside Managers to establish landowner contacts. Farming practices have significant impact on roadside vegetation. Working with landowners to solve occasional problems will be easier when landowners already know about IRVM and their county's efforts to maintain healthy roadside vegetation.

Prairie Windchill Chart

						EC	luiv	alen	rie	mpe	latu	retr	1					
	Calm	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
(miles per hour)	5	Cold 27	32	22	16	11	6	0	-5	-10	-15	-21	-26	-31	-36	-42	-47	-52
	10	22	Very 16	Cold 10	3	-3	-9	-15	-22	-27	-34	-40	-46	-52	-58	-64	-71	-77
	15	16	9	Bitte 2	-5	d -11	-18	-25	-31	-38	-45	-51	-58	-65	-72	-78	-85	-92
	20	12	4	-3	-10	-17	-24	-31	-39	-46	-53	-60	-67	-74	-81	-88	-96	-103
Wind Speed	25	8	1	-7	-15	-22	-29	-36	-44	-51	-59	-66	-74	-81	-88	-96	-103	-110
	30	6	-2	-10	-18	-25	Extr -33	eme (-41	-49	-56	-64	-71	-79	-86	-93	-101	-109	-116
	35	4	-4	-12	-20	-27	-35	-43	-52	-58	-67	-74	-82	-89	-97	-105	-113	-120
	40	3	-5	-13	-21	-29	-37	-45	-53	-60	-69	-76	-84	-92	-100	-107	-115	-123
	45	2	-6	-14	-22	-30	-38	-46	-54	-62	-70	-78	-85	-93	-102	-109	-117	-125

Equivalent Temperature (F°)

Read right and down from calm-air line. For example, a calm-air temperature of zero degrees Fahrenhiet (0°F) has an equivalent cooling effect of minus 39°F at a wind speed of 20 miles per hour.

February

An Ounce of Prevention is Worth a Pound of Topsoil

Prairie Legumes

- American vetch
- Cream flase indigo
- Ground plum
- Illinois bundleflower
- Lead plant
- Partridge pea
- Purple prairie clover
- Roundhead bushclover
- Tick trefoil

A diverse, healthy grass and legume stand provides the best defense against invading annual and perennial weeds. Disturbances to this plant community result in ugly patches of bare soil. The soil is full of weed seed lying in wait for just such an opening.

These roadside disturbances are caused by everything from burrowing animals to piling and burning of refuse to improper application of herbicides. Deposition of soil from adjacent cropland is the biggest cause. Spring rains and soil erosion may have annual weeds growing and producing seed

in roadsides before corn or beans are ready for harvest!

Soil deposition is caused by uncontrolled surface runoff and wind blowing across bare fields. All forms of soil erosion are reduced when conservation tillage is employed. Crop residue will protect the soil surface and reduce soil movement. With less soil movement, farmers will see less soil deposition in roadsides. Eliminating disturbances such as soil deposition will result in fewer weeds germinating, growing, and producing seeds in roadsides.



The Nitrogen Cycle

March

The Early Burn Gets the Worm

Burning roadsides has been a traditional spring farming activity in America since colonial times. Native Americans burned prairies to renew vegetation and attract grazing animals.

When we suggest the use of prairie vegetation in a rural roadside, we include roadside burning as a primary management technique. Besides stimulating the growth of native prairie plants, there are many benefits to roadside burning. 1.) Control of weeds and woody invaders. 2.) Removal of thatch. 3.) Recycling of nutrients. 4.) Warming the soil and giving warm-season plants an earlier start.

Before conducting a burn Roadside Managers consider **traffic safety, weather conditions, equipment** and **manpower. Timing** is another important factor. Burning from mid April to early May, or around corn planting time, produces the most beneficial effect on warm-season grasses. Burning earlier is better for wildflowers, ground nesting birds and insect populations. For Roadside Managers there is wisdom in burning as soon as conditions are dry enough to permit a good hot fire. Waiting until mid-April increases the risk of having the entire burn season wiped out by a couple weeks of rain.

Landowners doing proper burn management in their own roadsides can be an important source of help with this management technique. Contact your County Roadside Manager or this office for more information on burning roadsides.



Roadside weed control in 1930.











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April

Don't Put All of Your Roadsides in One Basket

Diversity of crop and farm enterprises builds a steady farm income. Diversity of industry and retail trade ensures a healthy economy. Likewise, diversity of grasses and forbs in the roadside creates a strong, long-lasting plant community.

As rural roads and adjacent roadsides are regraded and improved, County Roadside Managers across lowa are reseeding roadsides with native prairie grasses and wildflowers. Prairie plants are adapted to a wide range of soil types, moisture levels, and climatic conditions. Most prairie grasses and wildflowers grow aggressively during the hot, dry summer months and provide superior erosion control through the fall and following spring. Once established, the deep rooting prairie vegetation can prevent the invasion of noxious weeds and reduce the number of problem shrubs and trees.

Prairie grasses commonly used by IRVM Counties are big bluestem, little bluestem, Indiangrass, sideoats grama and switchgrass. Roadsides planted to these grasses and a good mix of wildflowers are more stable and colorful throughout the year than those planted to traditional grasses introduced from Europe.



Мау

A Spot Spray in May Keeps the Thistles At Bay

One of the challenges of rural roadside vegetation management is controlling noxious weeds. Techniques include periodic burning, limited mowing, and spot-spraying. The best way to control weeds is to maintain a healthy stand of native grasses. Their extensive root systems can out-compete even Canada thistle.

In many roadside areas we do not have an established stand of native prairie plants. In these situations, County Roadside Managers may decide the most effective way to control a noxious weed is to use a specific herbicide and apply it with a backpack sprayer and hand-held spray wand. The wand allows Roadside Managers to control the amount of herbicide applied and direction of the spray.

We encourage landowners and farmers to resist the temptation to use cropland herbicides and spray equipment in roadsides. Broadcast spraying applies herbicide on the whole roadside plant community. This weakens the existing vegetation, kills wildflowers and allows more weed invasion, not less.

Spot-spraying is a vast improvement over traditional broadcast spraying both financially and environmentally.



June

Roadside Beauty is in the Eye of the Beholder

Some people prefer roadsides kept uniform by regular mowing. Others view roadsides as an opportunity to recreate our native landscape, one made up of many different plants of varying heights and colors.

In terms of personnel hours, equipment hours and fuel consumption, mowing is very expensive. Before mowing consider the purpose for mowing. Except for the immediate shoulder and where dictated by safety considerations, mowing roadsides is an unnecessary management practice. Areas that require periodic mowing to maintain a safe right-of-way are intersections, bridges, sharp curves and farm and field entrances. To reduce continual maintenance in these areas, County Roadside Managers and County Engineers are replacing the tall growing weeds, grasses, or shrubs with shorter growing grasses and flowers.

Prior to the development and extensive use of herbicides, mowing was the primary weed management technique. It was thought that frequent, close mowing would remove the weed's ability to reproduce. Research has shown that with some plants this is true. However, improper mowing height and frequent or poorly timed mowing can reduce root mass, plant vigor, and overall production potential. This weakening of the plant community makes the roadside more susceptible to weeds and erosion.



July

Every Rain Cloud has a Weedy Lining

Annual and biennial weeds produce a lot of seed and complete their life cycle in one or two years. The top layer of soil is loaded with this weed seed. In a year of heavy rainfall, just about everything that germinates gets enough moisture to establish roots and grow. Everything! Wild parsnip, Queen Anne's lace, wild lettuce, and sweet clover. Dense and tall, they grow along roadsides, stream banks, and meadows.

Is there cause for excessive mowing or spraying to control these opportunistic weeds? Being annuals or biennials, they die after flowering. It may take a year or two of average rainfall for a balance of smaller weed patches to be established. In time we will see these sites reclaimed by perennial grasses and flowers. As moisture becomes more scarce (usually in late spring and early summer) the perennial plants with established root systems claim all available moisture and the young weeds die back. Understanding the life cycle of individual weeds allows us to respond with the proper management approach.



Long-lived perennials







Bowie Hydro-Mulcher, Bowie Straw Blowers "Landtack" Tackifier, T.G.M.I. Tailgate Mulchers "Landpride" Equipment

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August

July Showers Bring August Flowers

There was a time when anything purple and yellow growing in a roadside was considered a weed. Regardless of the actual roadside plant, blooming flowers meant trouble and signaled a time for mowing and spraying.

Not so any more. The enlightened Roadside Vegetation Manager recognizes that most of the plants blooming in ditches are harmless. Many are native wildflowers. The wide diversity of roadside vegetation includes legumes to supply nitrogen, composites producing seed for wildlife and tall grasses for nesting cover.

In a prairie community there are plants growing at different rates and flowering at different times. A roadside with this kind of plant diversity provides a progression of color throughout the season. Short growing prairie flowers bloom in the early spring when grasses are dormant. As the tall prairie grasses begin to grow, spring flowers are replaced by taller ones that are better able to compete for sunlight. These include such favorites as pale purple coneflower, blazing star, purple prairie clover and compass plant. The progression of roadside color continues into the fall as goldenrod and asters take their turn. Integrated Roadside Vegetation Management encourages these flowers and helps ensure their survival.



September

"See You in September..." Tallgrass Roadsides

The personal journals of lowa's early settlers tell of grasses "so tall they hide a person on horseback." These stories were no doubt inspired by the sight of big bluestem and Indiangrass at their maximum height in late summer and fall.

Today these same tall grasses can be seen in roadsides along lowa's primary and secondary road systems. In a prairie setting with fertile soil, adequate moisture, and full sunlight, they will reach heights of six to eight feet or more! In roadsides these grasses may be three to four feet in height. Emerging seed heads make fall the easiest time to identify prairie grasses.

REDUCE FALL TILLAGE

Soil particles that are loosened by excessive tillage may be carried by wind or water and deposited in roadsides. It takes only a quarter to a half inch of soil to smother and kill the existing grass and provide a perfect spot for weeds to grow next year. The use of **conservation tillage** dramatically decreases wind erosion on flat fields and water erosion in hilly areas. **Field borders** and **grass buffer strips** provide protection to the roadside and help maintain a vigorous, healthy plant community.

Conscientious farming practices can add to the health of roadside vegetation.







October

Gather Ye Rosehips While Ye May

As introduced species such as bromegrass and tall fescue turn a drab, mousey brown for the winter, native prairie grasses reach their full glory. Big bluestem and little bluestem turn rich brown and burgundy. Indiangrass, switchgrass, and Canada wildrye are a lighter brown, reflecting the sun with a golden glow.

The bloom may be off the rose..But this is the time for collecting that otherwise expensive wildflower seed. Local prairie remnants, railroad right-of-ways and roadsides, provide sources for native seed. The biggest expense is the time invested. Roadside programs can reduce this cost by enlisting volunteers. Harvesting is done largely by hand. Homemade tools save wear and tear on the skin. New weed-whipper style equipment is effective. And modified combines are practical for use on large areas.

Besides being able to recognize the different prairie seeds, it is important to know when the seed is ripe. Books are available with tips on harvesting dates, seed storage and propagation. Some counties plant locally harvested seed in nursery plots thereby establishing a seed source for future years. Germination rate for wild seed is more variable due to environmental stresses. This seed is prized for possessing the genes of plants truly native to your area.



November

Good Snow Fences Make Good Neighbors

Strategically placed snow fences trap drifting snow and provide protection for driveways, buildings, and the road in front of your house. As a part of the environmental movement and trend towards sustainability, the use of plantings as 'living' snow fences is becoming more and more popular. Typically these involve rows of trees and shrubs. They block the snow, add beauty to the landscape and provide valuable wildlife habitat. A line of tall native grasses 10 feet wide will also effectively block blowing or drifting snow and act as a permanent, attractive snow fence.

Study snow drifting patterns around the farmstead to determine strategic planting sites. Maintain at least 25 feet between the snow fence and the area or building being protected. This is where the blowing snow will settle as it is slowed down by the snow fence. County Extension offices have additional information on snow fence location and design.

Native prairie grasses are an attractive addition to farmsteads and field borders. Because these grasses remain pretty much erect throughout the winter, they provide excellent winter cover for wildlife and nesting cover for birds (pheasant, partridge, quail, etc.) in the spring. Under the blanket of snow supported by the prairie grasses, these animals are protected from the cold and freezing winds of lowa's legendary winters.

















(515) 266-6739

December

A Day in the Brush Is Worth Two in the Office

Winter's short days and cold temperatures signal roadside vegetation to slow down and wait for spring. Roadside Managers pay no heed. For them winter is merely time to find other avenues of productivitiy. Nasty weather makes it easier to stay indoors and catch up on paper work. Update those records. Write that article. Study new literature.

One sure cure for the cabin fever brought on by this sedentary lifestyle is brush control. Mild winter days are great times to head out and maintain the roadside clear-zone. Removing trees and brush provides a safe recovery area for errant vehicles leaving the roadway. Trees are removed from foreslope and ditch bottom using chainsaws and other brush cutting tools. Stumps are treated to prevent resprouting. Brush and trees on the backslope are removed according to the management philosophy and resources of the county.

Not all Roadside Managers are responsible for brush control in their counties. Roadside Managers in these counties must find other ways to keep their balance til' spring.



Grass	Origin		Life Span	Growth Form		Growth Season		Grazing Response			Grazing Value			Height Growth		
Facts	Native	Introduced	Annual Perennial	Bunchgrass	Sod-Formin	Cool	Warm	Decreaser	Increaser	Invader	Good	Fair	Poor	Tall	Medium	Short
Big bluestem	х		х		Х		х	х			x			x		
Buffalograss	х		х		Х		х		Х		X					X
Cordgrass	х		х	r	- X		х	x				Х		х		
Canada wildrye	х		х	x		X		x			X			x		
Indiangrass	х		х		х		х	x			х			х		
Junegrass	x		х	х		х		х			X				X	
Kentucky bluegrass		x	x		x	x					x				X	
Little bluestem	X		х	х			х	x			х				X	
Orchardgrass		х	×	X		х					x			X		
Porcupinegrass	x		х	x		х			x		X				X	
Prairie threeawn	x		x				x			х			x			x
Reed canarygrass			х		X	х		x			x			Х		
Sand lovegrass	X		х	X			×	х			x			х		
Scribner panicum	X		х	х		х			Х			х				X
Sideoats grama	х		х		х		х	х			x				×	
Smooth brome		X	х		X	X					X				х	
Switchgrass	Х		х		х		х	х			x			X		
Tall dropseed	X		X	X			X		Х			х		Х		
Tall fescue		X	x	Х		х				Х					Х	
Timothy		х	х	Х		Х					x				Х	
West wheatgrass	X		Х	x		х		х				Х			X	

Roadside Evaluation

What to look for when viewing roadsides:

How wide is the roadside? How steep are the slopes? Most lowa roadsides have the same general shape but do vary some in width and degree of slope. Steep narrow roadsides are difficult to access with maintenance equipment.

Do the shoulders continue to slope all the way to the edge allowing water to run off the road? Are they mowed short without being scalped down to the soil? When the vegetation is damaged in this way water running off the road cuts a channel through the shoulder edge. Keeping the slope and the vegetative cover requires a delicate balancing act.

Look for bare soil. Bare soil in a roadside is usually the result of some kind of disturbance to the vegetation. It can be a major problem such as soil washed or blown in from adjacent cropland or something insignificant such as dirt thrown out by a burrowing animal.

Is erosion occurring? Gaps in the vegetative cover allow movement of soil down the slopes.

Are tall annual weeds such as ragweed and foxtail present? These weeds are the first plants to colonize disturbed areas. In time they will be replaced by permanent vegetation if the disturbance is corrected.

Are thistles present? Perennial weeds compete with desirable vegetation for water and nutrients.

Do farming practices in neighboring fields encroach upon the roadside? Cultivating too close to roadsides causes soil to spill down the backslope and bury vegetation. Overspray of cropland herbicides kills roadside vegetation. A narrow grass border around fields greatly reduces these problems.

In the early spring gravel is visable where it was thrown into the roadside by passing snowplows. Just another obstacle in the life of roadside vegetation.

Is the roadside vegetation made up of many different kinds of plants with different heights and colors? Or is it largely all one species? Plant diversity makes a stronger plant community.

Is the roadside wet or dry? Cattails, Reed canary grass, prairie corograss and bluejoint grass often indicate wet roadsides.

Does the roadside contain good nesting cover? In an agricultural state such as lowa, roadsides are important nesting areas. The mosaic patterns and varying heights of a diverse plant community are of greater interest to wildlife.

Your County Roadside Manager

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BACKSLOPE - The side of the ditch furthest from the road.

BUNCHGRASS - A grass that produces many side shoots and thus grows in a clump.

COMPANION CROP - Often necessary for plantings on highly erodible sites usually consists of oats at the rate of 1/2 to 1 1/2 bushels per acre to hold the soil until the permanent seeding gets established.

COOL SEASON - Plants, mostly grasses, that grow during the fall and spring and are more or less dormant during the summer.

DECREASER - Range plants which decrease under heavy grazing. (there are plants that can be decreasers or increasers depending on soil and moisture conditions).

DORMANT SEEDING - Seedings made in late fall just prior to freezeup. Normally this period begins about November 1 in Northern Iowa and November 15 in Southern Iowa. Use the regular seeding rate if the seed is incorporated into the soil.

ENCROACHMENT - Practices on land adjacent to roadsides resulting in negative impacts to roadside vegetation.

FIELD BORDER - A narrow strip of grass planted between field and roadside protecting roadside vegetation from cropland activities and runoff.

FORESLOPE - The side of the ditch closest to the road.

FROST SEEDING - A seeding made in late February or March on seedbeds prepared in the fall. Seed is sown on the surface that has been made friable by freezing and thawing. The soil surface is usually "honeycombed" with small cracks.

INCREASER - Range plants which increase in number as the decreaser plants are weakened and die.

INTRODUCED - Plants which have been brought in from outside North America and are not in the original vegetation.

NATIVE - Plants which are native to the North American continent.

WARM-SEASON - Grasses that reach their peak growth in midsummer. They have deep roots which allow them to have lush, green growth during July and August when cool season grasses are dying out.



Integrated Roadside Vegetation Management

Managing Iowa's Roadside Resource for -

- Ground Water Protection
- Soil Conservation
- Prairie Restoration
- Wildlife Habitat

Sponsored by The Iowa Association of County Conservation Boards

Office for Integrated Roadside Vegetation Management

Department of Biology University of Northern Iowa Cedar Falls, IA 50614-0421



