

## USING HERBICIDES TO ESTABLISH NATIVE PRAIRIE GRASSES AND FORBS

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Many Wisconsin landowners will soon be trying to establish native prairie grasses and forbs as part of the CRP program, or to provide wildlife habitat in less productive fields. Stands of prairie grasses such as big bluestem provide excellent wildlife habitat, but are often difficult to establish. It is not uncommon to take three or more years to establish stands of prairie grasses due to slow growth of the prairie grass seedlings particularly in the presence of annual weed infestations. Attempts to establish prairie stands frequently fail totally due to weed competition. Judicious use of herbicides can increase the likelihood of success.

### Quackgrass Management

Quackgrass and other non-native cool-season grasses (e.g. Kentucky bluestem, smooth brome and reed canarygrass) are the greatest threat to successful establishment and maintenance of native prairie plantings. Always control quackgrass before seeding your prairie. The best way is to make at least two applications of glyphosate (e.g. Roundup Ultra or Touchdown) prior to tillage or seedbed preparation. Two glyphosate applications of 1.5 lb ae/acre (two quarts/acre of Roundup Ultra) each to quackgrass at least 8 inches tall (one in the fall and another in the spring prior to seedbed preparation) is a must! In severe situations, three applications will be even better. Do no tillage prior to glyphosate application in order to maintain an intact root and rhizome system to transport the herbicide to buds where new plants originate. If you have an opportunity to plan ahead, plant a crop of Roundup Ready corn or soybeans the year prior to establishing your prairie. You can apply glyphosate ahead of, to the crop and after harvest. The combination of crop competition and herbicide is particularly effective. This system should also control other perennial weeds like Canada thistle and biennials like bull thistle, plumeless thistle, wild carrot and wild parsnip.

If your prairie is already established but is being over run by quackgrass, the problem is more difficult to solve. Spring burning helps, since it sets back the cool season grasses and enables the warm season prairie species to compete more effectively. Glyphosate can also be applied, preferably after spring burning. Burn the site as early as possible, then when the quackgrass resprouts but before growth of desired species commences, apply 0.75 lb ae/acre of glyphosate (one quart/acre of Roundup Ultra). There is always some risk of injuring prairie grasses and forbs which start growing early. But, sometimes there is no choice. It is always best to eradicate quackgrass and other undesirable perennials before establishing your prairie!

### Weed Management During Establishment

Imazapic (Plateau) is an imidazolinone herbicide which can be applied PPI, PRE, EP or POST to control weeds in seedings of several prairie grass and forb species. This product acts by inhibiting the enzyme in plants which produces essential branch chain amino acids (e.g. alanine, leucine and isoleucine). Humans and other mammals require these amino acids in their diet since they don't have the enzyme. Imazapic is also rapidly broken down in the soil after application. Thus, imazapic poses little risk to humans or the environment when used according to label directions.

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Research with imazapic has been underway at the University of Wisconsin-Madison since 1995. The greatest success has been obtained from an application after planting when weeds are between three and four inches tall. Apply 0.063 lb ae/acre (4 fluid ounces of the liquid Plateau formulation or one water soluble bag of the dry Plateau formulation) in combination with methylated seed oil (MSO) and 28% nitrogen fertilizer solution each at 1.25% v/v (ammonium sulfate at 2.5 lb/A can be substituted for the 28% N solution). Remember that switchgrass is sensitive to imazapic. So seed mixtures of indiangrass, big or little bluestem, Canadian wildrye and only a small amount of switchgrass are preferred. Imazapic is safe to many composite (e.g. black-eyed susan) and legume (e.g. Illinois bundleflower) forbs. Refer to the Plateau label for specific instructions for each. Two weeds remain a problem following an imazapic application - common ragweed and rough fleabane. Both are composites related to the tolerant forbs, and usually do not greatly affect prairie establishment and disappear in the second or third year. In the second year, horseweed may also appear, but it is quickly overgrown by the prairie species.

Experience has shown that by following the instructions above, prairie grasses will head out and produce seed the establishment year. Many of the forbs will also bloom the first year, whereas others take longer. The authors often broadcast seed of forbs sensitive to imazapic the first fall after prairie establishment. This results in greater species diversity!

The price of Plateau is quite reasonable, and a 4 fluid oz/A application will cost about the same as two mowings. But success in establishing prairie stands with imazapic will almost certainly be more reliable than for other establishment methods. Common prairie grass and forb species tolerant to imazapic are: big bluestem, little bluestem, indiangrass, side-oats gramma, Canadian wildrye, black-eyed susans, sweet black-eyed susans, purple coneflower, yellow coneflower, oxeye sunflower, Illinois bundleflower, and partridge pea. Generally, only one application of imazapic is needed for the life of a well managed prairie. But, imazapic can also be applied to established prairies to suppress perennial weeds like Canada thistle, leafy spurge and tall fescue. Additional information is provided on the Plateau label.

#### Planting Prairies Species with Corn as a Wildlife Food and Cover Crop

Some corn hybrids have been selected for resistance to imidazolinone herbicides like imazapic. These are identified as IR, IT or IMI hybrids (also known as Clearfield hybrids). When seeded at a population of only 8,000 seeds per acre, these corn hybrids can serve as a source of food and cover for pheasants and other game birds the year of prairie establishment. Most corn planters will not seed less than 16,000 corn seeds per acre. To achieve the desired population, plant only every other row, or mix the tolerant seed with normal corn seed and let the imazapic thin the stand for you! Experience has shown that protection from the corn may actually improve prairie stands in future years. Remember that you can't plant a corn companion crop in CRP land!

#### Planting Prairie Grasses with Grain Sorghum for Wildlife Food and Cover

Big bluestem and switchgrass are very tolerant of atrazine, and so is grain sorghum. But, atrazine is no longer registered for use on prairie grasses, but it is for the grain sorghum. In both 1996 and 1999, we applied a mixture of 1.5 lb ae/acre of glyphosate (2 quarts/acre of Roundup Ultra) and 1.5 lb/acre of atrazine to eliminate cool season grasses like Kentucky bluegrass, quackgrass and reed canarygrass. We then planted a mixture of grain sorghum, big bluestem and switchgrass. If we didn't

seed the sorghum too heavy, establishment of the prairie grasses was great! Technically, you are applying the atrazine to the sorghum crop. But, this mixture really attracts pheasants and quail! Do not plant forbs for two years, since some are sensitive to atrazine residues in the soil. However, indiagrass and Canadian wildrye can be successfully over seeded in the fall following a spring atrazine application. Remember, atrazine use is regulated in Wisconsin to protect groundwater. All users must follow the regulations! Prairies often are planted on sandy soils. But such soils are frequently in atrazine prohibition areas. So, always check on local regulations before applying atrazine.