ESTABLISHING PRAIRIE GRASS BUFFER STRIPS

CONSERVATION MANAGEMENT SHEET AGRONOMY SERIES January 1999

Natural Resources Conservation Service

Michigan

Big Bluestem filter strip sprayed with an Imidazolinone herbicide Plateau

What Are Prairie Grass Buffer Strips?

Strips or small areas of land in permanent vegetation that help control potential pollutants and manage other environmental concerns. Prairie grasses selected for buffer use in Michigan include big bluestem, switchgrass, little bluestem, indiangrass, intermediate wheatgrass, and tall wheatgrass. These grasses and others were native to southern Michigan prairies prior to settlement and crop production

How Does A Buffer Strip Work?

Buffers entrap sediment and other pollutants such as phosphorus, nitrogen, and other plant nutrients along with pesticides and organic material from fields. Buffers create multi-season wildlife food and cover resources as well as connect other habitats as a secure travel corridor.

Where Do Buffers Apply?

Vegetative buffers are designed as filter strips, grass waterways, contour grass strips, cross wind trap strips, field borders, herbaceous wind barriers, or vegetative barriers. The width of the buffers are designed to maximize their effectiveness for their intended purpose when combined with other conservation practices such as conservation tillage, nutrient management, and integrated pest management. Working together, these practices will provide an effective and profitable conservation program.

Where to Get More Assistance

Additional local assistance may be obtained from the local office of a Michigan Conservation District or the USDA Natural Resources Conservation Service (NRCS) office at:

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PLANTING RECOMMENDATIONS

Species and Seed Selection

***Species*:** Big bluestem, indiangrass, and little bluestem are *fluffy* seed grasses. Seeds contain multiple awns or beards that give them a fluffy appearance. Switchgrass and Intermediate Wheatgrass are non-fluffy seed grasses. Purchase the seed and conduct a germination test to determine pure, live seed (PLS) content and proper seeding rate.

Seed quality: Prairie grasses generally have a lower germination rate than cool season grasses. A seed germination check is available through the Michigan Department of Agriculture Seed Test Laboratory located at 1615 S. Harrison Rd., East Lansing, MI. Allow at least 1 month for results because prairie grasses are slow germinating. Adjust the seeding rate based on the germination test results to get the desired PLS stand.

Site Preparation

***Soil test*:** Soil sample at least 6 months prior to planting, a year ahead of seeding is best.

No-till planting

Sod suppression is required. The first step in no-till establishment of prairie grasses is to kill or suppress existing vegetation. Mow the existing sod. Follow with a fall application of ROUNDUP *(glyphosate*) after 8-10 inches of new growth. Add BANVEL *(dicamba)* to a fall herbicide treatment program where perennial broadleaves are present. PLATEAU *(Imazapic)* may also be added when tall fescue or other cool season grasses are the target weed species. New growth may occur in the spring because of limited leaf surface area due to grazing, plant age/height, or climatic factors (dry conditions); an additional treatment of ROUNDUP may be needed.

Tilled planting

A weed-free, small aggregated, firm seedbed is desired except on highly erodible land. Cultipack dry soil only as needed because crusting limits seedling emergence if soils are worked wet, especially on ditch spoils. Sod suppression also applies to a tilled seedbed. Eliminate severe weed problems, such as quackgrass sod, perennial broadleaf weeds (horsenettle, Canada thistle), smooth bromegrass or other plants with fall-applied ROUNDUP or by clean tillage then summer following. A fall cover crop of oats, seeded at 1/2 bushel per acre, provides excellent cover to seed into the fall prepared seedbed the following spring.

Planting Depth

Plant seeds about the depth of your fingernail (i.e., 1/4 to 1/2 inch deep) with grain drills, no-till drills, or broadcast seeders. *A level seedbed is necessary*! A good rule of thumb is to see about 30% of the seed on top of the ground. Drilling grass and legume seeds in rows has proven to give the most consistent results. Grass drills have an agitator in the seedbox to keep the grass seed moving to prevent bridging over the seed meter openings and skips in the final stand.

An alternative seeding method is to broadcast seed with the fertilizer. Set the fertilizer spreader at 1/2 the planned fertilizer rate, drive over the field twice either splitting the middle of the previous tracks or broadcasting the seed perpendicular to previous tracts. Cultipack to firm the seedbed both before and after broadcast seeding.

Weed control during the seeding year

Prairie grasses are greatly benefited by weed control during the seeding year. A weed canopy is damaging because prairie grasses don't tolerate shade. To reduce shade, mow vegetation to 6-8 inches before early August. If prairie grasses are less than the 4-5-leaf stage, use 2,4-D for broadleaf control to eliminate shade. Also, adding 2,4-D should improve common ragweed control.

Residual Imidazolinone herbicides can be used to control annual weeds. PURSUIT (Imazethapyr) herbicide is registered for use on Conservation Reserve Program (CRP) land and Agricultural Reserve Program land seeded to forages, legumes and perennial grasses planted in buffers. Perennial grass species tolerant to PURSUIT include: big bluestem, little bluestem, switchgrass, Russian wildrye, intermediate wheatgrass, tall wheatgrass crested wheatgrass, western wheatgrass, smooth bromegrass, canarygrass, and orchardgrass. Also, PURSUIT is registered for use on the following forage legumes: alfalfa, clovers, crownvetch, birdsfoot trefoil, and lespedizia.

Pursuit application rates: Apply PURSUIT 2AS at 4 fluid ounces per acre or PURSUIT 70DG at 1.44 ounces per acre early postemergence. Use surfactant and liquid fertilizer as per label. ***DO NOT APPLY TO GRASSES UNTIL THEY HAVE 4 TRUE LEAVES.***

PLATEAU herbicide is registered for use on CRP land and Agricultural Reserve Program land seeded to forages legumes and perennial forage grasses

planted in buffers. Grass species tolerant to PLATEAU include big bluestem, little bluestem, indiangrass, sideoats grama, blue grama and buffalo grass. Also, PLATEAU is registered for use on the following legumes: alfalfa, clovers, crownvetch, birdsfoot trefoil and lespedizia

Switchgrass PLATEAU herbicide is not recommended for the establishment of switchgrass as severe injury or death may result. Also check herbicide history. Do not plant prairie grasses where herbicides containing SCEPTER (Imazaquin products) were applied the year before, as the carryover combined with Plateau will result in severe injury to the new seeding.

Plateau application rates: Apply PLATEAU 2AS at 4 fluid ounces per acre preemergence or early postemergence. Make postemergence application 7-10 days after planting when targeted weeds have emerged, but are less than 6 inches tall. Use surfactant and liquid fertilizer as per label.

Carefully read and follow all label directions!

In table 1 are the results of the NRCS/American Cyanamid 1997 Field Trial Results with IMI herbicides. It was observed that:

1. Preemergence applications of PLATEAU provided greater than 90 percent control of redroot pigweed, common lambsquarter, and cocklebur.
2. Preemergence PLATEAU applications provided the best common ragweed control in the trial. Premergence PURSUIT applications provided excellent redroot pigweed and common lambsquarter control, but did not provide effective cocklebur and common ragweed control.
3. POST application of PLATEAU and PURSUIT did not provide control of common ragweed.
4. Big bluestem and indiangrass showed good tolerance to PURSUIT or PLATEAU treatments.
5. Switchgrass tolerance to PURSUIT or PLATEAU was greater with POST applications than with PRE applications with switchgrass showing greater tolerance to PURSUIT.
6. Intermediate wheatgrass showed good tolerance to PURSUIT, but did not show tolerance to PLATEAU.
7. Little Bluestem did poorly under all treatments. This may have been due to poor quality seed.

Table 1: Prairie Grass Stand Count, Height Measurement and Seeding Rate September 1997

TREATMENT	BIG BLUE STAND # / SF	BIG BLUE HEIGHT INCHES	LITTLE BLUE STAND # / SF	LITTLE BLUE HEIGHT INCHES	SWITCH GRASS STAND # / SF	SWITCH GRASS HEIGHT INCHES	INDIAN GRASS STAND # / SF	INDIAN GRASS HEIGHT INCHES	WHEAT GRASS STAND # / SF	WHEAT GRASS HEIGHT INCHES
PLATEAU 4 OZ PRE	4.67	12.33	0.67	1.67	1.00	4.33	3.33	13.00	1.00	6.67
PLATEAU 8 OZ PRE	5.00	10.67	0.33	1.00	0.00	0.00	4.67	13.00	1.00	6.67
PURSUIT 4 OZ PRE	5.00	11.00	0.33	1.33	1.00	3.67	4.67	17.33	5.33	13.67
PLATEAU 4 OZ E. POST	6.00	13.33	0.33	1.33	1.67	7.67	3.33	18.67	2.33	11.00
PLATEAU 8 OZ E. POST	4.67	15.67	0.33	0.67	1.33	11.33	4.67	27.00	1.00	4.33
PURSUIT 4 OZ L. POST	3.67	13.00	0.00	0.00	2.00	10.67	2.33	14.67	4.67	12.67
CHECK	4.33	13.33	0.00	0.00	1.33	21.33	1.67	10.00	4.67	12.33
SEEDING RATE LB /ac	20		15		10		15		12	

CONSIDERATION

PLATEAU and PURSUIT are Imidazolinone herbicides manufactured by American Cyanamid Company. Both herbicides can control highly competitive weeds; thus preventing severe competition to native grass stands for nutrients and water. Both herbicides can achieve this economically at low use rates minimizing the chemical load on the environment. Both work by interrupting a pathway that produces three essential branch chain amino acids in plants. This pathway is exclusive to plants.

And is, in part, responsible for EPA's decision to categorize these herbicides as "practically non-toxic to fish, birds, mammals, insects, earthworms, arthropods, soil microorganisms and other non-plant life forms...." The EPA has recently categorized both as "GROUP E" compounds; meaning PLATEAU or PURSUIT herbicide shows no evidence of carcinogenicity. More precisely, both can be used to control problem weeds without compromising the values and agenda of the CRP or Ag Resource programs.

This Conservation Information Sheet

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Reference/File Indexes

Topic Application:
[ ] Construction
[ ] Design
[X] Fact
[ ] Information
[ ] Management
[ ] _____

Resource Series:
[X] Agronomy
[ ] Biology
[ ] Engineering
[ ] Forestry
[ ] Hayland
[ ] Livestock
[ ] Pastureland
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References:
Plateau Label
Pursuit Label
Plateau Herbicide Registered for CRP Use

USDA NRCS (MI) Conservation Practice Associations:
327 Conservation Cover
589C Cross Wind Trap Filter Strips
393 Filter Strips
332 Contour Buffer Strips
386 Field Borders
422A Herbaceous Wind Barriers
? Vegetative Barriers

USDA NRCS (MI) Associated Conservation Sheets:
Same number as the standards applies

FOCS (MI) Reference Number:
CS _____