Early Successional Habitat Development/Management

Herbicide Application for Plant Succession Management

Illinois Conservation Practices Job Sheet 647B ***August 2009***

Photo by David Howell

GRASSLAND MANAGEMENT

Plant communities change over time and often evolve to consist of a few dominant plant species. Non-diverse plant communities often offer limited beneficial habitat for a variety of wildlife species. Disturbances such as fire, mowing, harvesting, and tillage are used to change climax plant communities to make them more diverse. Herbicides have proven to be useful tools in managing succession in plant communities. Most of the chemicals available to natural resource managers were originally developed for agricultural applications. Several of the chemicals have been registered for applications beyond their original agricultural purposes and are now legal for use for natural resource applications. Always consult the product label(s) prior to using a specific formulated product. Herbicides are either selective or non-selective and are applied prior to plant emergence or after the target plants are established. Herbicides that control susceptible plants by preventing their emergence from seed are called *preemergence* herbicides. Herbicides that kill plants that are already emerged or established are called *postemergence* herbicides. Natural resource managers must first understand the basic properties of herbicides in order to select the appropriate chemical(s). Listed below are characteristics of herbicides that need to be understood.

HERBICIDE TYPES

Selective: Herbicides that will only control certain weeds or types of weeds are called selective. Some herbicides are active only against grass species and others are only active against broadleaf species. Selective herbicides are excellent tools for altering the composition of a plant community. There are selective herbicides that are applied preemergent and postemergent.

Non-selective: Herbicides that control a broad spectrum of species. Glyphosate and paraquat are examples of commonly used non-selective postemergent herbicides.

Systemic: Systemic herbicides are most commonly postemergents that are absorbed within treated plants and translocated throughout the plant. Systemic herbicides are usually preferred for perennial species. Complete plant coverage with the spray solution, although desirable, is usually not absolutely essential. Lower carrier volumes and surfactants are often added to the spray solution to enhance performance.

Contact: Contact herbicides exhibit limited movement within treated plants and are only recommended for sites comprised of only annual species. Higher carrier volumes and spreader/sticker type additives are often added to the spray solution to improve coverage and absorption.

HERBICIDE PRESCRIPTION

Herbicide selection, rate, and timing of application are determined by the species that needs to be controlled, thinned, or suppressed and the species to be promoted. There is no single chemical “prescription” that will work in all situations.

A large number of acres of grass and legume plantings have been established in various crop land retirement conservation programs. With time, many of these stands have evolved to consist of only one or two dominant grasses. The stands are nearly devoid of forbs and legumes that benefit wildlife. Residue from previous years of growth consisting of dead stems and leaves accumulate on the soil surface making it difficult for seed feeding bird species to find food. Additionally, the density of the grasses impedes mobility of young chicks in search of food. Herbicides can be successfully used to suppress the dominant grass species to allow the existing seed bank to supply the missing forbs/legumes or facilitate additional seeding. In most cases, nonselective systemic herbicides are needed to provide the necessary degree of suppression. Contact herbicides can also be used depending on the level of suppression desired. To optimize herbicide performance some manipulation of the existing grasses is necessary. Mature, dense grass stands tend to not be actively growing thus limiting the uptake and translocation of applied herbicides. Stimulate active growth by mowing, burning, or harvesting the

existing live and dead grass if possible. Late summer is the optimum time period to perform the mowing, burning, or harvesting activities for perennial cool season grasses. Early spring is the preferred time period for native warm season grasses. Allow at least 6-8 inches of regrowth before herbicide treatment. Consult the product label for the proper herbicide rates. Table 1 below lists common nonselective herbicide performance on selected perennial cool season grass species.

It is important to note that herbicide rate recommendations are based on obtaining maximum results possible for the targeted species. Using herbicides for a sub lethal effect is not well researched and generally information for such use is not found on the label. As a consequence the user bears all responsibility for the performance of the product(s) used.

Table 1.

Herbicide	Rate/acre	Bluegrass	Smooth Brome	Tall Fescue	Orchardgrass	Timothy
Glyphosate, fall	1.5 lb. a.e.[1]	9+	9	9	9	9
Glyphosate, fall + spring	.75 lb. a.e.[1] .75 lb. a.e.[1]	9+	9+	9	9	9
Glyphosate, spring	1.5 lb. a.e.[1]	9	8	7	7	8
Gramoxone Inteon	4 pt.	6	4	7	4	6
Gramoxone Inteon	2 pt.	5	N	5	N	5

9=excellent, 8=good, 7=fair, 6=poor, 5 or less=unsatisfactory, N=no control or not labeled.
[1] - a.e.=acid equivalent
Adapted from Table 10. pg 90, 2008 Illinois Agricultural Pest Management Handbook, Univ. of Illinois, Champaign-Urbana

Mature stands of native warm season grasses can also be very dense. Herbicides can be used to decrease the dominance of the established grasses opening the structure to allow for the reestablishment or introduction of additional forbs. Using herbicides for suppression essentially involves using sub lethal rates to severely injure the established grasses. The table listed below lists a few suggested herbicide treatments that may be used to suppress established native warm season grasses.

Table 2.

Herbicide	Rate/acre	Comments
Imazapic + glyphosate	11-15 oz. product/acre	Switchgrass and Eastern Gamagrass are highly sensitive to imazapic. The product should only be used where a high level of damage can be tolerated.
Sethoxydim	2 pts. product/acre	Selective for grasses only
Clethodim	10 oz. product/acre	Selective for grasses only

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Owner/Client:		**Date:**
Farm #:		**Tract#:**
Planned By:	**Checked Out By**	**Check Out Date:**

Specifications

Field(s)	Acres	Treatment Dates	Targeted Species	Treatment Methods

Read and follow the pesticide label. The pesticide label is the law and all label specifications must be carefully followed.