Identification and Control of Common Reed (*Phragmites australis* (CAV.) Trin. *ex* Steud.)

Introduction

Common reed, often referred to as phragmites, is a perennial invasive terrestrial grass that occurs across the United States. Although widely distributed across Europe, it is unclear as to the exact origin and method of introduction of this species. Categorized as a facultative wetland and obligate wetland species (USFWS 1996), phragmites can occur in a variety of moist to wet environments. The species can tolerate stagnate and flowing water, salt and alkaline conditions, and is commonly found in roadside ditches, marshes, and other wet area (Uva et al 1997). Individual stems can become very large (2 – 4 m in height) and form large monotypic stands. Stems are hollow, round, and become thicker towards the base of the plant. Leaves are fairly long (20 – 60 cm), flat, hairless, and have rough or sharp margins. Plants flower by mid summer in plume-like panicles with feathery spikelets that are purple at emergence and turn light brown with age. Plants rarely produce viable seed and reproduce mainly vegetatively through rhizomatous sprouting. This aids in its invasibility and spread as it is easily moved across sites through disturbances such as mowing, flooding, and road construction. Infestations of phragmites can be problematic in terms of degrading aquatic and terrestrial wildlife habitat and preventing roadside ditches and other waterway channels form operating efficiently.

Control options for phragmites are somewhat limited due to its usual proximity to aquatic environments. Miller (2004) recommends a 4 % glyphosate solution or a 1 % imazapyr solution applied as a foliar spray to control giant reed (*Arundo donax*), a species very similar to common reed. These herbicides are available for use for aquatic situations. These applications may cause unwanted damage to desirable grasses and forbs in the understory. This may be problematic since common reed can not readily establish itself in vegetated soil. Revegetation practices should be addressed when managing common reed infestations. Applying glyphosate or imazapyr through unconventional methods, such as 'wicking' or 'wiping' herbicide applicators may allow for effective control of common reed while allowing desirable vegetation to survive and compete against common reed regrowth. Kay et al (1999) realized effective control 1 YAT (1.2 live shoots / m^2 versus 29.3 live shoots / m^2 in the untreated) with imazapyr at 6 pt / ac when applied through a Weed Sweep, a type of cut – wipe herbicide applicator. Glyphosate, applied at 6 pt / ac, was ineffective in reducing live shoot counts 1 YAT (33.9 live shoots / m^2).

A trial was installed in June of 2005 to examine the efficacy of glyphosate, formulated as Aquamaster®, and imazapyr, formulated as Habitat®, for their ability to control phragmites.

Methods and Materials

The study was located on the eastbound shoulder of the Western Kentucky Parkway in Hopkins County, KY between mile points 44 and 45. Five herbicide treatments and one untreated control were evaluated in a completely randomized block

design with three replications (Table 1). Treatments were applied on June 16th, 2005 using a Teejet XP BoomJet® boomless tip. Plots were 12' X 25' and treated at 20 GPA. Percent control was visually estimated at 53 and 79 DAT. Since the plots were along the shoulder and in the mowing zone the treated areas were mowed approximately 2 – 3 WAT and again at approximately 8 WAT.

Results

The low rate of glyphosate tested (4 pt / ac) resulted in significantly lower control levels compared to the low rate of imazapyr tested (4 pt / ac) at 53 DAT. Imazapyr at 4 pt / ac provided the highest level of control (85 %) at 53 DAT (Table 1). There were no significant differences between treatments in control levels as the trial progressed through 79 DAT as all treatments had control levels between 73 % and 78 %.

The effect of the mowing on the ability of the herbicide to completely translocate though the plant and control regrowth is not yet known. The study will be reevaluated in the late spring of 2006 to collect information 1 GSAT (growing season after treatment). The mowing of the plots also may have affected the variance in the data collected during the same growing season. This effect should also be removed during the following growing season evaluation.

There was a visual effect present in the difference in the glyphosate and imazapyr treatments and the amount of damage to the understory. Tall fescue was severely damage in plots containing glyphosate while minimal damage was observed in the imazapyr alone treatments. This should be considered when making management recommendations.

Table 1: Treatment list and control levels of common reed

Treatment	Product(s)	Rate per acre	Percent Control	
			53 DAT	79 DAT
1	Aquamaster + NIS	4 pt + 0.25 % v/v	53 b	73 a
2	Aquamaster + NIS	6 pt + 0.25 % v/v	73 ab	77 a
3	Habitat + NIS	4 pt + 0.25 % v/v	85 a	78 a
4	Habitat + MSO	6 pt + 32 fl oz	70 ab	75 a
5	Aquamaster + Habitat + NIS	4 pt + 1 pt + 0.25 % v/v	72 ab	78 a
6	Untreated		0	0
$LSD_{0.05}$			29.0	

Literature Cited

Kay, S.H. and Hoyle, S.T. 1999. Use of the Weed Sweep applicator for herbicide treatment on terrestrial reeds. Proc. So. Weed. Sci. Soc. 52: 154-156.

Miller, J.H., 2004. Nonnative invasive plants of southern forests. USDA Forest Service Southern Research Station. GTR SRS-62. p. 82.

Uva, R.H., J.C. Neal, and J.M. DiTomaso, 1997. Weeds of the Northeast. Cornell University Press. 76-77.