

Poster; Presentation Award

Selective Herbicides for Managing Moist-soil Wetlands in the Mississippi Alluvial Valley

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Extended Abstract: Moist-soil management requires periodic soil disturbance and hydrologic management to promote production of annual plants which produce seeds and tubers for waterfowl and other wildlife food. However, moist-soil management also often requires a highly dynamic and multifaceted management to control common problem plant species and promote expansion and competitive advantages of beneficial species for waterfowl.

Beneficial plants, with relatively high metabolizable energy for waterfowl, include *Cyperus* spp. (yellow nutsedge), *Digitaria* spp. (crabgrass), *Echinochloa* spp. (barnyardgrass or “millet”), *Eragrostis* spp. (lovegrass), *Leptochloa* spp. (sprangletop), *Panicum* spp. (panic grasses), *Polygonum* spp. (smartweeds), and *Setaria* spp. (foxtail). These beneficial plants can be outcompeted by problematic plants that are stimulated by a combination of inundation, soil disturbance, and warm soil temperatures. Species, such as alligator weed (*Alternanthera philoxeroides*), coffee senna (*Cassia occidentalis*), common cocklebur (*Xanthium strumarium*), hemp sesbania or “coffee weed” (*Sesbania exaltata*), prickly sida (*Sida spinosa*), purple loosestrife (*Lythrum salicaria*), redbone (*Brunnichia ovata*), sicklepod (*Cassia obtusifolius*), swamp smartweed (*Polygonum hydropiperoides*), trumpetcreeper (*Campsis radicans*), water primrose (*Ludwigia* spp.), and multiple morningglory species (*Ipomoea* spp.), all can exclude beneficial species and reduce the food availability and the overall foraging capacity of moist soil wetlands for wintering waterfowl.

Given water and other management constraints in the Mississippi Alluvial Valley (MAV) and

elsewhere, managers may not optimally manage for food producing plants using only disking and water management. Combining these physical manipulations with use of selective herbicides can beneficially alter the existing plant community within and among years and thus be cost effective. Selective herbicides allow for species specific management, removing problem species and allowing release of beneficial species. As demand for land increases and production agriculture continues to increase harvest efficiency, improved management of wetlands is important to sustain carrying capacity of habitats for migrating and wintering waterfowl.

In addition, many land managers charged with managing and enhancing these habitats have the most up to date and well equipped tools to carry out needed management. To gain an understanding of the need and to assess effective herbicides, an in depth literature review was conducted in addition to surveys of land managers to identify problem plants as well as effective herbicides for their control. The objectives of this poster is to 1) identify the most problematic weed species in moist-soil wetlands in the MAV, and 2) recommend effective herbicides for selective control of problem plant species (Table 1).

Table 1. Problematic weeds in moist soil wetlands in the LMAV and effective herbicides for their control.

Forage Species	Herbicide	Rate (lb active)
Alfalfa (<i>Medicago sativa</i>)	2,4-D	30 to 120
	Carfentrazone	6.7-16.5
	Glyphosate	30
	Imazapyr	10 to 40
	Triclopyr	64 to 256
Brome (<i>Bromus sp.</i>)	Glyphosate	40 to 60
	Imazapyr	30-40
Brome (<i>Bromus ciliaris</i>)	Glyphosate	40 to 60
	Imazapyr	30 to 40
Coastal Bermuda (<i>Cenchrus ciliaris</i>)	2,4-D	30 to 120
	Dicamba	8 to 24
	Glyphosate	16 to 32
	Triclopyr	62 to 192
Common Cockspur (<i>Eragrostis amabilis</i>)	2,4-D	30 to 120
	Acifluorfen	8 to 24
	Bromoxynil	24 to 32
	Bromoxynil	26 to 32
	Carfentrazone	6.67
	Chlorimuron-ethyl	0.5 to 0.75
	Dicamba	8 to 24
	Glyphosate	11 to 32
	^{**} Flazasulfuron	0.8 to 1.33
	Imazapyr	40 to 60
	Triclopyr	62 to 192
Duckweed (<i>Lemma sp.</i>)	Carfentrazone	6.75 to 13.5
	Algasol	120
	[*] Fluazifam	3.4
	Imazapyr	30 to 40
Flour Stalk (<i>Stachys arvensis</i>)	2,4-D	30 to 120
	Acifluorfen	16
	Carfentrazone	6.7 to 13.3
	Dicamba	30 to 40
	Glyphosate	16 to 32
	Triclopyr	62 to 192
Lotus, American (<i>Ulmus fulva</i>)	Carfentrazone	6.7 to 13.5
	Glyphosate	60
	Imazapyr	30 to 40
	Triclopyr	64 to 256
Meadow Spurge (<i>Sparganium</i> spp.)	2,4-D	30 to 120
	Acifluorfen	16
	Bromoxynil	16 to 32
	Carfentrazone	0.33 to 0.67
	Dicamba	8 to 24
	Glyphosate	16 to 32
	^{**} Flazasulfuron	0.8 to 1.33
	Imazapyr	40 to 60
	Triclopyr	62 to 192
Redvine (<i>Rumex crispus</i>)	Acifluorfen	8 to 24
	Dicamba	16 to 40
	Glyphosate	16 to 40
	Imazapyr	40 to 60
	Triclopyr	62 to 192
Smooth Yarrow (<i>Thymus</i> spp.)	2,4-D	30 to 120
	Acifluorfen	8 to 24
	Bromoxynil	24 to 32
	Bromoxynil	16 to 32
	Carfentrazone	6.5
	Dicamba	8 to 24
	Glyphosate	72 to 120
	Imazapyr	32
	Triclopyr	62 to 192
Thicket Spurge (<i>Chamaenerion</i>)	Acifluorfen	8 to 24
	Dicamba	16 to 60
	Glyphosate	40 to 96
	Imazapyr	64 to 96
	Triclopyr	62 to 192
Willow (<i>Salix</i> spp.)	2,4-D	40 to 96
	Dicamba	16 to 60
	Glyphosate	60
	Imazapyr	30 to 40
	Triclopyr	32 to 256

^{*} Rate expressed as field or acre feet³

^{**} Rate expressed as dry weight (at once²)