

Control Of Fragrant Waterlily And Spatterdock With Glyphosate

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ABSTRACT

Fragrant waterlily (*Nymphaea odorata* Ait.) and spatterdock (*Nuphar* sp.)¹ were treated with N - (phosphonomethyl) glycine (glyphosate) at rates of 3 and 6 lb a.i./acre and with paraquat (1,1'-dimethyl-4,4'-bipyridinium ion) at a rate of 1.5 lb a.i./acre. Glyphosate controlled the above-ground portions of both fragrant waterlily and spatterdock within 2 months of treatment with no regrowth occurring the following spring. Paraquat caused practically no injury.

INTRODUCTION

Waterlilies belonging to the genera *Nuphar* and *Nymphaea* are serious aquatic weed problems in many areas of the United States. They occur in shallow lakes and reservoirs, abandoned mill ponds, ditches, slow moving streams, and other shallow-water habitats. They interfere with recreational use of water and can choke ditches, seriously impeding water flow.

Chemical control methods to date have not been com-

¹Identified by Dr. Ernest O. Beal of Western Kentucky University, Bowling Green, Ky., as intermediate between several species and subspecies but closest to *Nuphar luteum* subsp. *variegatum*.

pletely satisfactory. This paper is the result of a continuing search for better herbicidal control of these genera.

METHODS AND MATERIALS

Experiments were conducted in ditches 10 ft in width. The herbicides were applied from the bank with a research type hand-carried sprayer, using a boom that covered the entire width of the ditch.

Two locations were selected, one for each of the species to be tested. In both cases the water surface was almost completely covered by the floating lily leaves. Glyphosate was applied at rates of 3 and 6 lb a.i./acre and paraquat at a rate of 1.5 lb a.i./acre to plots 25 ft in length. Both materials were applied at a pressure of 30 psi in 22 gallons of solution per acre. Treatments were replicated three times according to a randomized complete block design. The herbicides were applied 27 July 1972 and visual ratings were made 8 August, 25 August, and 28 September 1972 and 18 May 1973.

RESULTS AND DISCUSSION

Both rates of glyphosate resulted in excellent control of fragrant waterlily and spatterdock (Table 1.) The rate of herbicidal response was greater on spatterdock than on

TABLE 1. CONTROL OF FRAGRANT WATERLILY AND SPATTERDOCK WITH GLYPHOSATE AND PARAQUAT. HERBICIDES APPLIED 27 JULY 1972.

Herbicide	lb a.i. per acre	Percent control ^a							
		Fragrant waterlily				Spatterdock			
		8 Aug. 72	25 Aug. 72	28 Sept. 72	18 May 73	8 Aug. 72	25 Aug. 72	28 Sept. 72	18 May 73
Glyphosate	3	43	78	100	100	88	97	100	100
Glyphosate	6	73	93	100	100	92	100	100	100
Paraquat	1.5	53	10	0	0	40	10	0	0
Untreated	—	0	0	0	0	0	0	0	0

^aEach value is the mean of three replicates.

fragrant waterlily. Excellent results were noted within 12 days of application on spatterdock whereas, fragrant waterlily did not exhibit a comparable response until approximately 1 month from time of application.

Flowering was halted in both species within 2 weeks of treatment with glyphosate. The plots were completely free of all lily growth 2 months after treatment, with no regrowth occurring in the spring of 1973. On 18 May 1973, the water surface of the control plots was completely covered with lily leaves.

Paraquat caused some leaf necrosis shortly after treat-

ment on both species (Table 1). The leaves also appeared to lie flat on the water rather than having their margins curled slightly upwards as in the controls. The plants continued to flower and within a month looked almost normal. The following spring the paraquat-treated plots were given the same ratings as the controls.

The action of glyphosate on fragrant waterlily and spatterdock was truly spectacular. These initial experiments indicate that this herbicide holds great promise for control of these troublesome weeds.