Control Of Spatterdock With Casoron[1]

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Nuphar advena, known variously as spatterdock, yellow water lily or cow lily has in recent years become one of the more prominent, difficult to control aquatic weed species in the southeast. This aquatic weed has become particularly troublesome in areas where temperatures and water conditions are favorable for year round growth.

Control of spatterdock has been traditionally attempted with phenoxy herbicides such as 2,4-D, 2,4,5-T, mixtures of both compounds and related phenoxy type herbicides. Control of spatterdock with phenoxy compounds in the south has usually been transient, or erratic, often requiring repeat applications for seasonal control.

Early in the development of CASORON, 2,6-dichlorobenzonitrile, dichlobenil aquatic weed killer, activity was demonstrated on a number of rooted aquatic weed species including many of the lilies.

Much of the early aquatic work was conducted using CASORON as a preemergence application applied during dormant situations. CASORON appeared effective under such situations and usually afforded seasonal control of many aquatic weed species. These early successful treatments prompted additional postemergence research in the south.

Early results in the south with postemergence applications for control of spatterdock were erratic. Rates of 20 lb/A often resulted in only partial control of spatterdock when evaluated at periods ranging from 2 to 6 weeks after application.

Ironically, reports from Europe at about the same time indicated successful control of this weed species with postemergence applications.

These contradictory data prompted additional field trials in Florida during 1967 and 1968 in an effort to reconcile these data.

METHODS AND MATERIALS

Experiment 1—A trial was established in cooperation with the city of Umatilla, Florida, on a small lake located within the confines of that city. Spatterdock was vigorous and growing in water ranging in depth from 6 to 15 ft. The bottom of the lake was organic peat.

CASORON 4 AQ was applied on November 22 and 24, 1967, at 10 and 20 lb/A on plots approximately 10 by 150 ft with 10 ft wide buffers. Three replications were utilized. Immediately after application the CASORON 4 AQ granules that had lodged on emerged leaves were knocked into the water.

Experiment 2—This trial was established in the Fort Lauderdale, Florida area, west of the Turnpike and just north of Broward Blvd. The aquatic environment was essentially a non-flowing drainage ditch approximately 4 to 6 ft deep. The bottom consisted of a light sand and calcareous, limestone rock. (Table 1)

[1]CASORON® is a research discovery of N. V. Phillips-Duphar, U. S. Patent 3,027248. USDA Reg. No. 184-673.

TABLE 1.—The Control of Spatterdock with Casoron in Turnpike Canal—Experiment 2. Treatment Made March 21, 1968.

Treatment	Rate	Control	
		April 18	May 30
	lb/A	%	%
Casoron	5	5	38
Casoron	10	25	80
Casoron + 2,4-D	5 + 5	30	61
Casoron + 2,4-D	10 + 10	45	88
Check	—	0	0

Treatments were applied on March 21, 1968 utilizing plots approximately 10 X 50 ft with 10 X 20 ft buffers between plots with three replications. CASORON 4 AQ was evaluated at 5 and 10 lb/A alone, and in combination with 2,4-D, 4 + 4 AQ granules at 5 + 5 and 10 + 10 lbs ai/A.

Experiment 3—This trial was established in the Fort Lauderdale, Florida area just north of Oakland Park Blvd. in a non-flowing drainage ditch on the west side of the Sunshine State Parkway. Water depth ranged from 4 to 10 ft. The bottom was composed of decayed vegetation and organic matter on sand.

The treatments were applied on March 21, 1968 and were identical to those described under Experiment 2. Plot size was approximately 20 by 30 ft with 10 by 30 ft buffers between plots with three replications. (Table 2)

Treatments in all experiments were applied by a hand operated granular applicator. CASORON granules were knocked from emersed foliage as described in Experiment 1.

TABLE 2.—The Control of Spatterdock with Casoron in Drainage Ditch—Experiment 3. Treatment Made March 21, 1968.

Treatment	Rate	Control	
		April 18	May 30
	lb/A	%	%
Casoron	5	15	5
Casoron	10	25	85
Casoron + 2,4-D	5 + 5	15	12
Casoron + 2,4-D	10 + 10	35	87
Check	—	0	0

RESULTS

Experiment 1—Plots were evaluated 4 and 8 weeks after application and no herbicidal activity could be detected. Another evaluation was made on February 8, 1968, approximately 11 weeks after application. Some herbicidal activity could be noted at that time as evidenced by deterioration of emersed foliage and lack of rigidity of emersed leaves and petioles.

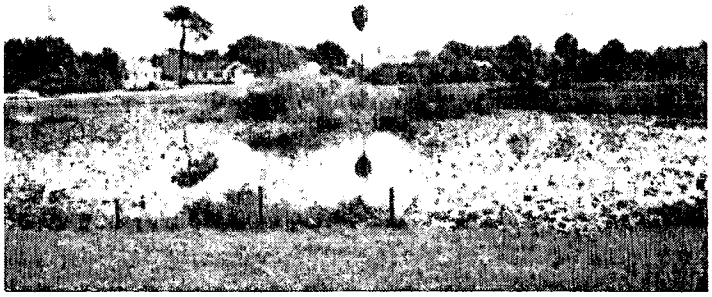

Fig. 1. Umatilla, Fla. Casoron 10 and 20 lb/A, 6 months post application.

Fig. 2. Same area 7 months post application, floating rootstocks visible in foreground of picture.

On March 17, 15 weeks after application another evaluation was made and complete control in all plots was evident at this time regardless of rate.

Observations in early June indicated some encroachment from the periphery of plots, but little or no regrowth within plots (Figures 1 and 2).

DISCUSSION

These data indicate postemergence activity of CASORON against spatterdock to be rather slow, usually requiring 8 to 16 weeks for complete kill. Activity may be more rapid in spring than in fall or winter.

The soil of the aquatic habitat apparently has little effect on the ultimate activity of CASORON on spatterdock.

In Experiments 2 and 3, some growth was noted near the bank where the spatterdock was rooted on steep banks or sides indicating the CASORON granules may not have been affixed on these steep surfaces. Water depth apparently has little effect on control if the rate does not fall below 10 lb/A.

2,4-D may enhance the initial activity of CASORON on spatterdock, but insufficient data is available at this time to assess the residual activity.

CASORON rates below 10 lb/A do not appear to be effective on spatterdock even in combination with 2,4-D.

SUMMARY

The following conclusions may be drawn from data ascertained from the experiments described:

1. CASORON is effective postemergence on spatterdock at rates of 10 lb/A or more.
2. The postemergence activity is rather slow requiring 8 to 16 weeks for control, and evaluations made before 8 to 16 weeks may be misleading.
3. Activity may be more rapid during warm periods.
4. 2,4-D may increase the initial activity of CASORON.
5. Bottom configuration of treatment area may influence results adversely where spatterdock is rooted on steep banks of ditch sides.

Fig. 3 Non-treated check Broward Blvd. location, Ft. Lauderdale.

Fig. 4. Casoron 10 lb/A, 2 months after application.