Commercial Sod Industry

Nutsedge, Aquatic Herbicide Research Results

Editor's Note: The following two articles, the results of just-completed or on-going research, were presented by the authors — both of whom are with the University of Illinois, Urbana, Ill., —at the 29th North Central Weed Control Conference, St. Paul, Minn.

Aquatic Herbicides In Irrigation Water

By ROBERT C. HILTIBRAN

AQUATIC WEEDS can present serious problems in irrigation ponds by clogging irrigation lines and pumps, interfering with play on golf courses and detracting from the aesthetic value of the landscape. Attempts at controlling aquatic weeds with herbicides are limited by the subsequent use of the water for irrigating putting greens and other turfs. This experiment was designed to evaluate the suitability of various aquatic herbicides in terms of their safety to intensively cultured turf.

The herbicides were added to barrels of water at normal treatment concentrations and the water was then applied to 'Penncross' creeping bentgrass, maintained as putting green turf, at 9.8 gallons per 30 square-foot plot (equvalent to ½ inch of irrigation). Applications were made twice in the spring study (May 31 and June 3), four times each in the spring-summer (May 31, June 3, July 29 and 30) and summer-summer (July 30 and 31, August 7 and 8) studies, and twelve times in the multiple summer study (from August 14 to September 17).

Turfgrass injury varied with type and formulation of herbicide and timing, rate and number of applications (see Table 1). No injury was observed in plots treated with any of the copper compounds, diuron, fenac, 2,4-D amine, or endothall formulations. Diquat, and 2,4-D ester were slightly to moderately injurious depending upon rate and number of applications. Silvex, dichlobenil and simazine were moderately to highly injurious resulting in complete loss of turf in some instances.

An additional consideration when using herbicide-treated water for irrigating turf is the residual toxicity of the herbicide in water. The relatively short residual activity of diquat in the aquatic environment would allow for safe use of diquat-treated water soon after treatment. In contrast, 2,4-D ester, silvex, and dichlobenil have a longer residual life in the water requiring a longer waiting period between treatment and use of the water for irrigating bentgrass turf. □

TABLE 1. Potential Hazard From Aquatic Herbicides In Irrigation Water To Creeping Bentgrass Turf

Aquatic Herbicide	Rate, ppm[a]	Hazard[b]
Copper sulfate	1 (Cu)	low
Copper-triethanolamine complex[c]	1 (Cu)	low
Diuron	0.25	low
Endothall		
potassium salt	1	low
N,N-dimethylalylamine salt[d]	1	low
mono (dimethyltridecylamine oxide)	1	low
di (dimethyltridecylamine oxide)	1	low
Fenac	2	low
2,4-D		
dimethylamine sale	2	low
butoxyethanol ester	2	moderate
butoxyethanol ester	4	moderate
Diquat	1	moderate
Diquat + copper-triethenolamine	1+1 (Cu)	moderate
Dichlobenil	2	high
	1	moderate
Silvex		
butoxyethanol ester	2	high
potassium salt + endothall[e]	2+1	moderate
Simazine	0.5	high

[a]Rates expressed as acid equivalent or active ingredient of each herbicide rather than as salt or ester formulation; [b]Hazards expressed as: low (little likelihood of turfgrass injury from use), moderate (some thinning and discoloration of turf), and high (severe injury or loss of turf); [c]Cutrine Plus; [d]Hydrathol-47; [e]Aquathal Plus.

Cultural Practices And Yellow Nutsedge

By A. J. TURGEON

YELLOW NUTSEDGE is a serious weed of lawns and intensively-cultured turfs which has increased in occurrence and distribution in recent years. Studies were undertaken to determine the effects of cultural practices and Kentucky bluegrass competition on the growth and development of yellow nutsedge.

In a greenhouse study, six yellow nutsedge plants were planted in glass-sided boxes with and without Kentucky bluegrass, and additional boxes were planted with Kentucky bluegrass alone. Half of the boxes were mowed weekly while the other half were unmowed for the first 12 weeks, then mowed weekly for the remainder of the 32-week experimental period.

Observations were made on shoot density, below-ground development and tuber formation. Nutsedge density was highest in boxes in which nutsedge was planted alone and not mowed. Mowing or competition with Kentucky bluegrass substantially reduced nutsedge density during the initial 12 weeks of the experiment. However, the combination of mowing and competi-

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tion with Kentucky bluegrass held the nutsedge population virtually in check.

This same effect was observed eventually in the previously unmowed boxes in which mowing was initiated after the twelfth week. By the twenty-eighth week, nutsedge density in these boxes was at six or less plants per box.

Visual observation of the belowground development of nutsedge revealed considerable rhizome formation in boxes in which nutsedge was planted alone and not mowed, while very little rhizome development was evident where mowing or competition with Kentucky bluegrass were factors.

Tuber development was zero in mowed boxes and substantial in the unmowed boxes. However, competition with Kentucky bluegrass sharply reduced the amount of tubers produced.

In a field study, yellow nutsedge was planted in plots of Kentucky bluegrass turf and maintained at ¾, 1 ½ and 3 inches cutting heights, and fertilized at rates of 0, ½, 1 or 2 pounds of nitrogen per 1,000 square feet per month from May to October. The highest nutsedge density occurred in plots maintained at ¾

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NEWS

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Diamond Shamrock Corp. Introduces Liquid Daconil

The Agricultural Chemicals Division of Diamond Shamrock Corporation has announced production of Daconil 2787® Flowable Fungicide in liquid form.

This flowable, broad-spectrum fungicide, which is said to be just as effective as the Daconil W-75 wettable powder formulation, can be used on over 25 species and varieties of grass and many ornamental plants for control of a number of diseases including dollar spot, helminthosporium leaf spot and melting out, copper spot, gray leaf spot and stem rust of bluegrass.

When preparing Daconil 2787® for application, it should be remembered that one pint of the new flowable is equal to one pound of the wettable powder formulation.

According to the manufacturer, Daconil 2787® Flowable Fungicide disperses quickly, requires a minimum of agitation, exhibits excellent turf tolerance even in hot, humid weather and provides excellent coverage and exceptional residue protection. For more details, circle (709) on the reply card.

Maryland Sod Conference To Study Current Troubles

Current problems of the Maryland sod industry will be the focal point of the 10th Annual Sod Conference to be held March 6 at the Adult Education Center, University of Maryland, College Park, Md.

A panel discussion on current sod marketing problems will highlight the conference, according to John R. Hall, extension turf management specialist from the University of Maryland.

Featured panelists will include Steward Knudson, president of Maryland Homebuilders, and Jack Foley, president of the Montgomery County Board of Realtors, who will talk on current housing needs and the situation as he fore-

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inch height suggesting that the nutsedge is well adapted to a close mowing regime.

Initially, fertilization appeared to enhance nutsedge growth, but this trend was reversed by the end of four months. This was probably due to the response of Kentucky bluegrass to fertilization during late summer. Thus, the success of nutsedge as a weed in turf is apparently associated with conditions that reduce the competition from Kentucky bluegrass.

Bentazon, cyperquat and MAMA were applied for controlling yellow nutsedge on a golf course tee of Kentucky bluegrass maintained at ¾ inch cutting height. The herbicides were applied at various rates. Repeat applications and the addition of surfactant to the spray solution were also included in the test. Control estimates were made approximately three and seven weeks after initial treatment. Plugs were extracted from each plot and nutsedge tubers were separated and counted.

Nutsedge control was best in plots receiving two applications of any of the three herbicides under evaluation. Where effective control of the nutsedge shoots was observed, tuber development was also substantially reduced. Some temporary discoloration was observed on the MAMA treated plots while no injury was evident from the bentazon or cyperquat treatments.

There was substantial variability among replications that was associated with differences in irrigation coverage. Generally better control was observed in the more intensively irrigated plots.

Based on this observation and subsequent greenhouse tests, it was concluded that frequent irrigation for a period of several weeks prior to herbicide treatment enhances control of yellow nutsedge with herbicides. □

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