# 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-

*(continued on page 52)*