

Dawn Attack . . . On Hydrilla

By DOUG JONES, Applied Biochemists, Inc., Mequon, Wis.

Hydrilla, a prolific strangler of Florida's inland lakes and waterways, continues to resist control efforts.

Those attending the Hyacinth Control Society convention in Winter Park, Florida, July 14-17, will learn first-hand of progress to date in hydrilla control.

Applied Biochemists, Inc., a Mequon, Wisconsin firm, was among the first (starting in 1970) to engage in serious testing for a chemical control of hydrilla. The story Applied Biochemists, Inc. will tell in Winter Park is that of the new CUTRINE-PLUS, its vastly improved copper triethanolamine, algacide which, in combination with Diquat or Aquathol-K, has become important in hydrilla control.

Since hydrilla came to the forefront as an aquatic crisis problem, chemicals have shared the experimental spotlight with insects, fish, and mechanical devices in an all-out effort to control its spread. (WEEDS TREES and TURF, October, 1972, reported an isolated hydrilla infestation in an Iowa farm pond.)

Each type of control has shown some promise, and more work is needed. Chemicals appear to show the most immediate success in at least controlling growth.

Buying time while maintaining a year-to-year plant knockdown is perhaps a better way to state the assumption.

The CUTRINE testing program was conducted with the cooperation of Robert "Doctor Bob" Blackburn and his U.S.D.A. associates at the ARS station in Fort Lauderdale, Florida. Blackburn has expanded his work to include other chemicals and chemical combinations, and will report on his work at the Winter Park meeting.

Field tests on CUTRINE and Diquat were conducted in 1972. Using a combination of four gallons of CUTRINE and two gallons of Diquat per acre, applied by dragging hoses along the bottoms of lakes and across hydrilla beds, good results were obtained. In the test plots, observed by scuba divers, the combination showed an average of 83 percent control of hydrilla after 30 days.

Attesting to the severity of the problem, following a positive result observation after 60 days, little control was noted after 90 days. So, while the CUTRINE/Diquat system provided excellent short-term

results at economical cost per acre rates, and with little or no harmful effects on invertebrates which make up the fish food chain, it was obvious a perfect solution was not yet at hand.

In 1973, Applied Biochemists, Inc. received federal registration for CUTRINE-PLUS, a more stabilized copper complex which has proven to be 50% more effective than CUTRINE. The product contains 9.0% active copper compared to CUTRINE's 7.1%, reduces cost per acre treated, and eliminates the sulfates which some users had found objectionable.

Armed with a better, less costly weapon, Applied Biochemists, Inc. contacted the major governmental and private agencies responsible for



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aquatic nuisance control, and the stage was set for the 1974 hydrilla control season.

Early reports are that both the CUTRINE-PLUS/Diquat and CUTRINE-PLUS / Aquathol-K combinations are working well. The latter method was first tested in the summer of 1973 with the expected mixed results. More definitive data will come from another season in the field and, if the combination proves as predicted, it will provide even greater economies in treatment.

Basically, it is recommended that 3-1/3 gallons of CUTRINE-PLUS be combined with two gallons of Diquat for hydrilla control, a cost of approximately \$90 per acre foot. Due to the increased compatibility of CUTRINE-PLUS with Diquat, it may be possible to reduce the ratio to 1 1/2 gallons of CUTRINE-PLUS to two gallons of Diquat, and a \$70 per acre foot cost. Experimentation by the user will result in the best combination.

Two gallons of CUTRINE-PLUS and two gallons of Aquathol-K is standard for hydrilla control at a cost of \$45-50 per acre foot. Again, experimentation will prove the key.

In all cases, above costs should be tempered by the steadily increasing cost of chemicals. However, these combinations at this time provide the lowest cost for treatment. Method of application likewise varies with the type of water body to be treated.

For example; the massive and extensive canals and waterways in Florida have raised the question as to the fastest and most efficient method of treatment. In the southeastern section of the state, one answer has been the helicopter.



A nurse truck, loaded with premixed chemical, is used for tank refill on one of Southeastern Helicopter Service's choppers. The truck follows landward as the aircraft treats the weed-choked canals.

Early treatment of hydrilla by helicopter, using CUTRINE-PLUS and both Diquat and Hydrothol-K, has proven to be efficient.

The procedure consists of a helicopter pilot and crew usually beginning at daylight. On the day prior to treatment, a tank truck is loaded with premixed chemical. It follows landward as the aircraft treats the weed-choked canals. Weight is an important factor for the helicopter, with an 80-gallon chemical load about maximum for each series of passes. The 80 gallons amount to about 720 pounds, and often the pilot will carry only enough gasoline to fly that much material on the canal.

Thus, frequent re-loading, both of chemical and gasoline, are required, since the helicopter is rigged with only a 10-foot wide application boom.



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Surface craft treatments, many times involving air boats, are common and usually accomplished by using the invert or bivert applications.

Invert and bivert methods, in which the chemicals are mixed with an oil-based emollient, eliminate drift problems. The chemical is released through hoses trailing the boat. Some applicators prefer releasing the chemical several inches below the water surface, allowing the weight of the chemical to drop throughout the water spectrum. Some prefer dragging across the plants at the bottom. Either way, the oil emollient permits the active chemical to cling to the hydrilla.

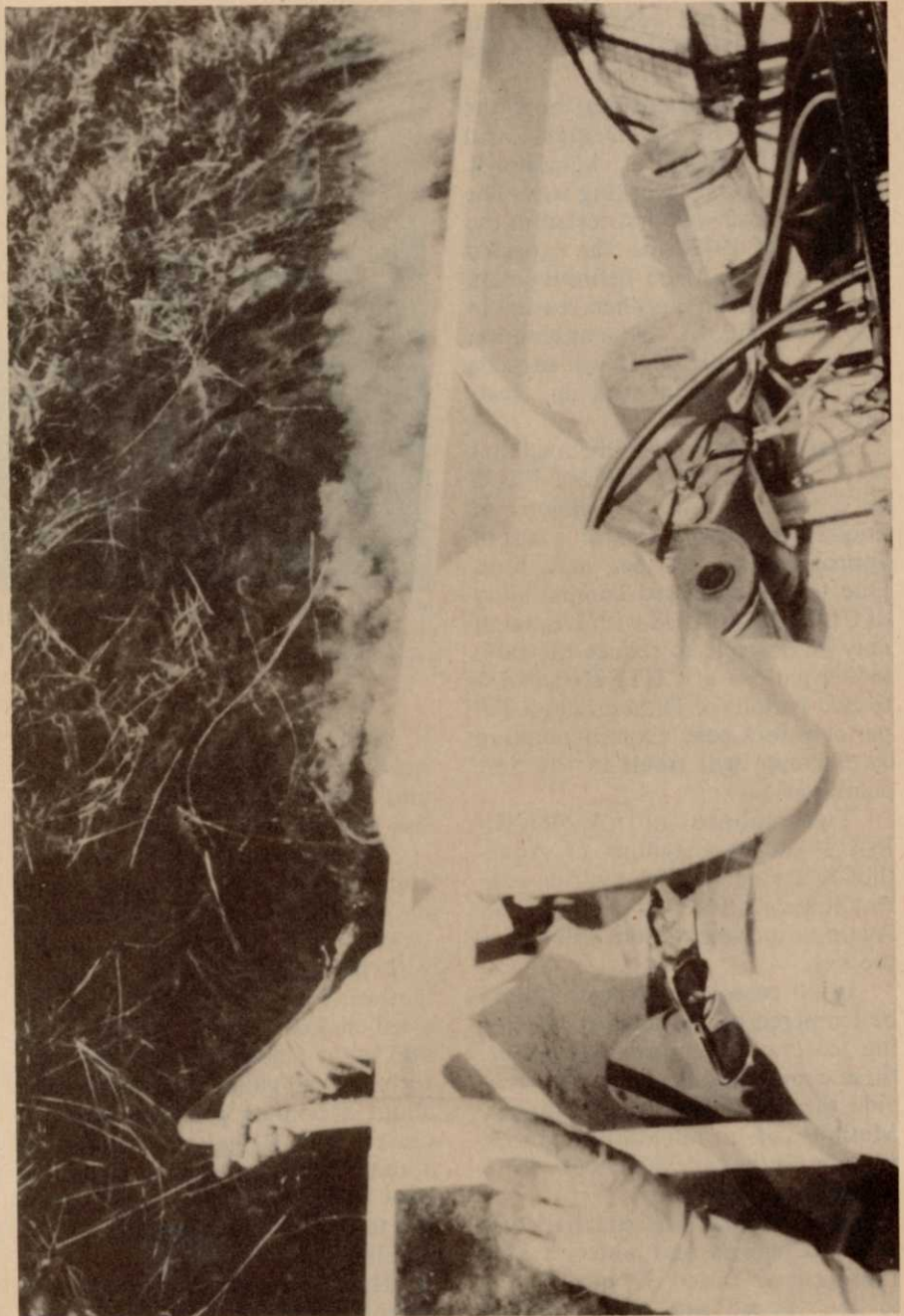
Spray treatment is the oldest method, and is still widely used. Vinnie Diaz, aquatic weed foreman for the city of Margate, Florida, is one who utilizes this method with great success.

For hydrilla control, Diaz makes 200-gallon batches of CUTRINE-PLUS and Diquat on a 5:2 ratio, diluting with water. Using a John Bean rig, he can cover two acres of water, spraying from the shoreline out.

Diaz also has had good results applying CUTRINE-PLUS by itself for control of chara, the weed-like bottom attached algae. He mixes 1.2 gallons of CUTRINE-PLUS in 100 gallons of water, enough to spray one acre.

He reports "great" results on both chara and hydrilla. The chara is normally controlled within two weeks, hydrilla knockdown occurring within a few days.

In general, those who are using a CUTRINE-PLUS/herbicide combination in Florida this year are experiencing hoped for results in about two weeks.



The Broward County (Fla.) Water Resources Department applies a hydrilla-control chemical mixed with an oil-based emollient. Surface craft treatments using the invert or bivert methods eliminate chemical drift problems.



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