# Researchers Study New Methods For Combating Aquatic Weeds

LYLE W. WELDON and ROBERT D. BLACKBURN

Research Agronomist and Research Botanist, Crops Research Division, Agriculture Research Service, U. S. Department of Agriculture, Fort Lauderdale, Florida.

THE unique field of aquatic weed control requires new approaches and concepts if aquatic weed nuisances are to be economically controlled. Proper placement of the chemical may be the most important factor for effective plant control.

Research on new application techniques has been part of the aquatic weed research program at the USDA, ARS aquatic research laboratory at Fort Lauderdale, Florida. Since a majority of aquatic plants float on the surface of the water, concentration of the chemical at the water surface would lead to more efficient utilization of the chemical.

Walnut shells, corn cobs, and many other floating materials were tested as herbicide carriers in greenhouse tests. A coarse grade vermiculite granule was found to be the most effective floating material to serve as a carrier of diquat and paraquat. The granule formulation is either applied to the surface by blower or by simple hand distribution.

Floating granules of paraquat proved the most effective single treatment for control of alligatorweed in research conducted in Florida, South Carolina, Georgia and Louisiana. Paraquat must be applied at the rate of 6 pounds active ingredient per acre. Though this chemical is not yet approved for use in aquatic weed control, it has proved itself at the research level. Tests generally showed that two or three applications were needed for control. Costs of paraquat could be expected to range from $80 to $100 per treatment. Thus 2 or 3 applications would make alligatorweed control exceedingly expensive.

Alligatorweed is a problem throughout the Southeastern US.

**Floating granule formulation** of paraquat as herbicide on vermiculite is applied by mistblower unit. Floating mats of alligator weed cover body of water 22 feet in depth. Making the application on water shoes is C. Elroy Timmer, technician for Agricultural Research Service, USDA.

It obstructs water flow, hinders navigation, and generally interferes with proper utilization of water.

### Duckweed Common In Small Ponds

Duckweed is almost a universal problem in small ponds. It has been effectively controlled with floating granules of diquat in several farm ponds. The most satisfactory rate of application of diquat was found to be 0.5 parts per million of active ingredient. The granules blown onto the surface of a pond were found to move around the surface of the water with the floating fronds of duckweed.

Tests have been underway in connection with this research at the Fort Lauderdale experiment station for the past 6 years in cooperation with the U. S. Army Corps of Engineers and the Chevron Chemical Company.

Both diquat and paraquat are produced in England at the present time. When it becomes economically feasible to produce and distribute floating granule formulation and when and if label clearance is granted, the technique may prove a boon for aquatic weed control in this country.

Paraquat is used extensively in many foreign countries for control of aquatic plants. It is being used on Lake Kariba in Rhodesia to control salvinia, but not as yet by the floating granule technique.

**Vermiculite granules of paraquat** have been used in Southeastern U. S. research on the control of duckweed and alligatorweed.

**Floating granules of paraquat** on body of water infested with alligatorweed. Floating granules of diquat also used in the research proved very effective on duckweed. Liquid formulations were used with equal effectiveness on duckweed.

A floating formulation for herbicide application is a new approach to herbicide placement in aquatic weed control. Research is constantly seeking such new innovations and methods for effective weed control.

*Both Weldon and Blackburn, authors of this article, spend full time on aquatic weed control research at the USDA Agricultural Research Service facility at Fort Lauderdale, Fla. Both are active in the Hyacinth Control Society, an organization dedicated to control of noxious aquatic weeds. Blackburn serving as president and Weldon as secretary-treasurer.*

**Area in foreground** was treated twice with paraquat at 6 lb/A in 1966. The picture was taken 1 year after treatment.