Amchem Designs Aerial Boom For

Drift-Free Spraying

Amchem Products, Inc., Ambler, Pa., has taken a giant step toward total drift prevention by producing a unique helicopter spray boom called the Microfoil.

The new boom, designed to spray uniform droplets with a minimum of hazardous sattelites (fines), uses conventional carriers such as water, oil or emulsions of the two. Thickening agents or invert emulsions are not needed. In one case concerning a public utility, straight herbicide concentrate at 3 gallons per acre was used — a far cry from the 15 to 24-gallon per acre applications common today — and resulted in excellent brush kill.

The Microfoil's length can be varied from 10 to 26 feet, accomplished by bolting 3 or 5-foot boom sections together to achieve the desired length. The boom — its nozzles shaped like airfoils — is similar to the wing of an airplane. This design provides a minimum of air turbulence directly behind the nozzles — where the droplets are formed.

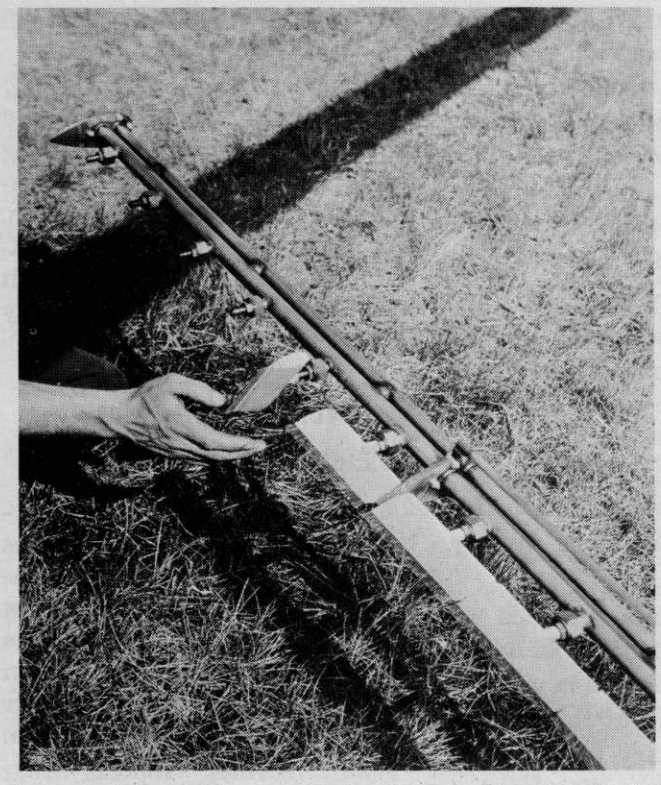
Fifty-two 6-inch nozzles are mounted along a 26-foot boom, and 60 hypodermic-like needles protrude from the trailing edge of each nozzle. Therefore, the total number of orifices on a 26-foot boom amounts to no less than 3120. From these openings, the tiny streams of liquid chemicals are emitted. (At the present time, droplets with mass mean diameters of 800 and 1700 microns are produced). Properly trimmed in flight, the Microfoil produces a pattern much like a white sheet.

The manner in which droplets are formed and introduced into an air stream is the key to their uniformity and stability. By keeping liquid pressures low and positioning the nozzles directly into the airstream as the helicopter moves forward, uniform droplets are produced. When droplets in a spray pattern are the same size, their lateral drift per foot of fall in winds of any velocity can be predicted . . . a factor impossible to calculate before the Microfoil. Amchem is confident, therefore, that its new boom offers the pesticide industry its first real opportunity to accurately place aerially applied chemicals on target.

Potentials of the Microfoil are many and varied, according to Amchem. With drift control as the boom's primary advantage, the need for state and federal restrictions on pesticides could be eliminated. The invention also greatly increases the utility of aircraft, especially the helicopter. Longer flying hours, safer and cleaner flight operations and no need to thicken or invert pesticide carriers have already made the Microfoil popular with spray pilots, says Amchem.

Its potential in the field of brush control is great. On utility, pipeline, railroad and highway rights-of-way the advantages of controlling drift, using conventional carriers and holding volumes down to 10 gallons or less per acre are obvious.

John Kirch, marketing manager, industrial chemicals, Amchem, Ambler, Pa., left, and J. H. Henley, Aerio Agricultural Services, McAlester, Okla., check Microfoil boom at Las Vegas, Nev., demonstration.



Each microfoil nozzle is six inches long and contains 60 needle-like orifices which protrude from the trailing edge.

Microfoil properly trimmed in flight produces pattern above with appearance of a white sheet. Shot taken at Winter Park, Fla.

Federal agencies involved in water hyacinth control have reported favorably on the boom's performance. Citrus growers have found the boom to be the best solution to their miles of cattail-infested drainage ditches. By shortening the boom to 10 feet and flying 15 feet above ground, a 12-foot swath of spray was applied directly on the weeds with no deposit outside the ditches, Amchem revealed.

Drainage canals throughout the Mississippi, Missouri and Ohio River Water sheds also offers a tremendous market for the Microfoil. Foresters, too, feel that the helicopter-Microfoil combination has done an outstanding job in conifer release work.

Only a limited amount of work has been done to introduce the boom into the field of pesticide application to crops. This area will, however, be intensively investigated this year, Amchem said. Research into other areas where drift is a problem will also be continued.

The company plans to lease a number of the Microfoil units to qualified aerial applicators during 1969.

Spray droplet pattern from microfoil delivers series of droplets which are nearly uniform in size.