

—People on the Move—

Paul Hamann, promoted to branch manager of the Indianapolis, Indiana distribution center of Thompson-Hayward Chemical Company. Hamann will be responsible for the administration and sales of the company's complete line of industrial and agricultural chemicals, feed additives, and textile maintenance supplies.

* * *

Frank P. Popoff, named general manager of the Ag-Organics Department of Dow Chemical U.S.A. Popoff, the director of marketing for Ag-Organics since 1971, succeeds Robert E. Naegele, recently named president of Dow Chemical of Canada, Limited.

* * *

Thomas H. Wyman, president and chief executive officer of Green Giant Company, of Chaska, Minn., has been elected to the board of directors of The Toro Company. Wyman's appointment to the Toro 10-man board was effective October 1.

* * *

Frank J. McDonald, named Cushman-Ryan national sales manager under a restructuring of the OMC-Lincoln marketing group (division of Outboard Marine Corporation). The restructuring involves 11 positions and completes consolidation of Outboard Marine Corporation's non-marine product lines under one marketing umbrella. Other employees assuming new duties: **Edward J. Molaskey**, Cushman-Ryan field sales manager; **Vernon J. Worrel**, manager-engineering planning; **John Schubert**, director of customer relations; **Charles W. Beam**, manager-marketing planning; **Daniel L. Hedglin**, service manager. **Ed Large**, manager-marketing communications; **Lee Heckman**, sales administration manager; **Tom J. Reynolds**, Pioneer national sales manager; **Robert W. Reid**, Lawn-Boy national sales manager and **Vaughn E. Border**, who will direct OMC-Lincoln distributor operations.

* * *

Sandra Hochhausen, appointed to the sales force of Grass Growers, Inc., of Plainfield, N.J., as a promotional/sales representative. Hochhausen will travel extensively throughout the U.S. promoting the exclusive line of Terra Tack, erosion control binder for straw, hay and wood fiber mulch.

* * *

Kenneth Bradfield, appointed marketing manager of the new TURF/AG Division of Hahn, Inc.

* * *

George O. Voss, appointed area sales manager covering the Northeast, North Central and Southeast regions for Stauffer Chemical Company's Agricultural Chemical Division. In other company moves: **John B. Juvenal**, moves to regional sales manager covering the Southeast region. **Clay M. Blakemore**, heads district sales region covering the Delta District. **Roy Rau**, appointed area

sales manager covering the Midwest, Southwest, Western and Pacific Northwest regions. **Gale Harold** appointed regional sales manager covering the Midwest region. **Jerry Lacey** district sales manager of the Colorado district. **Harold L. Straube**, became chairman of the board of the National Agricultural Chemicals Association for 1976 at the recent annual meeting of the association. He is vice president and general manager of the Agricultural Chemical Division and also a director and member of the executive committee of the NACA.



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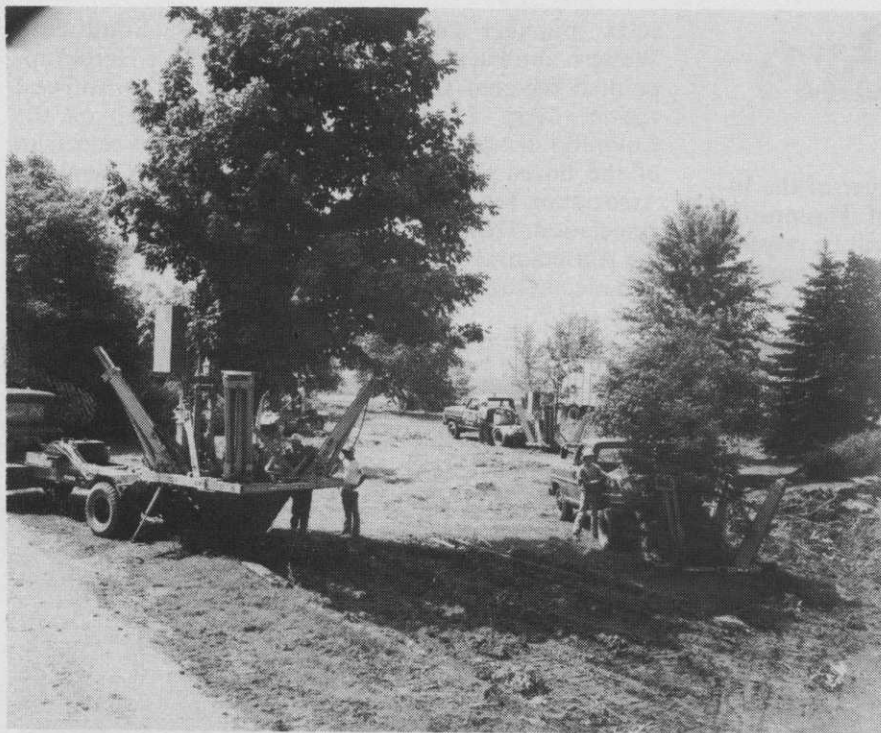
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The average tree spade tree planted on Lansing streets is two-and one-half inches in diameter. Many of the trees come from the city nurseries, from row purchases at wholesale nurseries, and from discounted overgrown stock.

TREE SPADE *(from page 16)*

rected to \$17.68). Remaining costs for supplies, equipment and labor for watering and other miscellaneous items add \$18.05 to the bare root cost and \$6.82 to the tree spade cost. This gives a total cost for a surviving bare root tree of \$72.21 and a surviving tree spade tree of \$53.79. The 1973 projection of 2.5 surviving tree spade trees planted for each bare root surviving tree was substantiated only in principle. A corrected ratio is approximately 1.5 tree spade to 1 bare root tree. It is felt that this ratio will level out at approximately 2 to 1 for a normal year.

The last two years produced a number of factors which caused a loss of efficiency for the tree spade method. An early snowfall in November caused the addition of a tractor-loader to the tree spade operation which was used to remove snow from the planting sites and the nursery. This allowed the trees to be dug and planted at the proper depth. Muddy conditions for abnormally long periods in the nursery decreased production and increased towing charges. The total down time for bad weather came to 16% in 1973-1974 and 23% in 1974-1975. The tree spade truck (not the TS44T) broke down numerous times causing 26% lost time in 1973-1974 and 22% in 1974-1975. The 1973 projection was for 6 trees planted per work day. The 1973-1974 actual figures averaged 5.5 trees planted per work day and in 1974-1975 the average was 5.0 trees planted per work day. The tree spade operated approximately 50% of the total work days for both years.

A total of 689 tree spade trees were planted in 1973-1974 and 794 were planted in 1974-1975 in spite of the abnormal weather conditions and lengthy truck repair time. This quantity was in part due to the use of the tree spade in conjunction with wire baskets for balling trees where the haul distance was not economical. A number of trees were also planted with the use of "tree cans", a method using metal cans to transport tree spade dug trees. In both cases the total cost per tree planted goes up but a larger number of trees can be successfully planted in a short time.

The disadvantages of planting by the tree spade method can be summarized into four items:

1. abnormal weather (too wet, too much snow and too hot)

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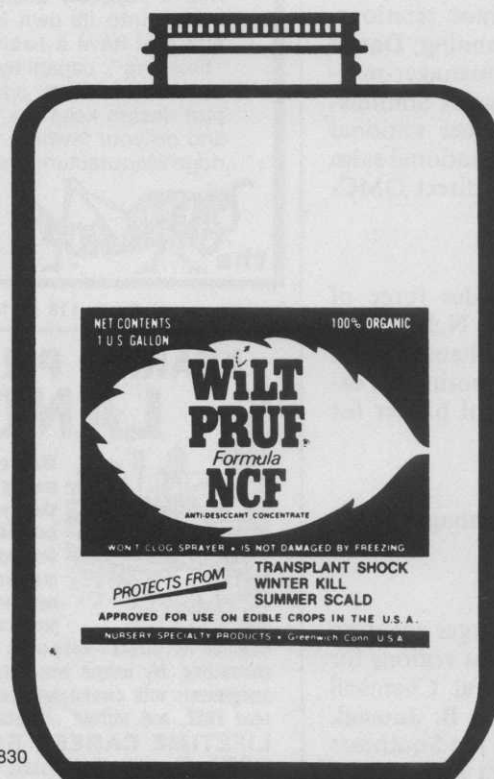
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2. unplantable sites (utility conflicts and narrow parkways)
3. unavailable trees within an economical haul distance; and
4. lack of an equipment operator

It is the opinion of the Lansing Forestry Division that the advantages far outweigh the disadvantages for tree spade planting. Surviving tree spade trees are cheaper than bare root trees through greater survival, less special care and much less loss due to vandalism. The operation can take place twelve months of the year with one full time tree spade operator. This makes the activity routine and creates much less interruption of other work activities such as occurs when setting up for a bare root planting season.

Perhaps the biggest advantage is the ability to plant up to a four inch diameter tree. The City of Lansing normally plants one and one-half to two inch diameter bare root stock and suffers much higher mortality whenever a tree over two inches is accidentally planted bare root in the heavy clay soils. The average tree spade tree planted during the last two years is two and one-half inches diameter with many coming from the city nurseries, from row purchases at wholesale nurseries, and from discounted overgrown stock. The gratitude of a property owner having a larger tree planted in front of his residence is overwhelming. The goal of the City of Lansing is to operate the tree spade primarily out of its own nurseries with three inch diameter stock being put on the streets. The operation of a city tree nursery is seen as the most economical method of procuring trees. The basic requirements include good available land within an economical haul distance of the center of the city (five miles for Lansing), a species mix to fill requirements, a maintenance program of band herbiciding tree rows and mowing the sod centers, and a tree spacing of paired rows with individual tree spade access to one side of each tree. An alternate procurement method to consider would be contract growing by a local private nurseryman.

One last advantage of having a tree spade is the capability to perform special planting jobs quickly and cheaply, whether it be for an instant mini-park or transplanting a donated specimen tree rose to a bicentennial rose bed.



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APPLICATION *(from page 21)*

cations with 2,4,5-T and adhere to the restrictions of the USDA and VDA, EPA, and OSHA as to application near ditch banks, lakes and streams and close to buildings.

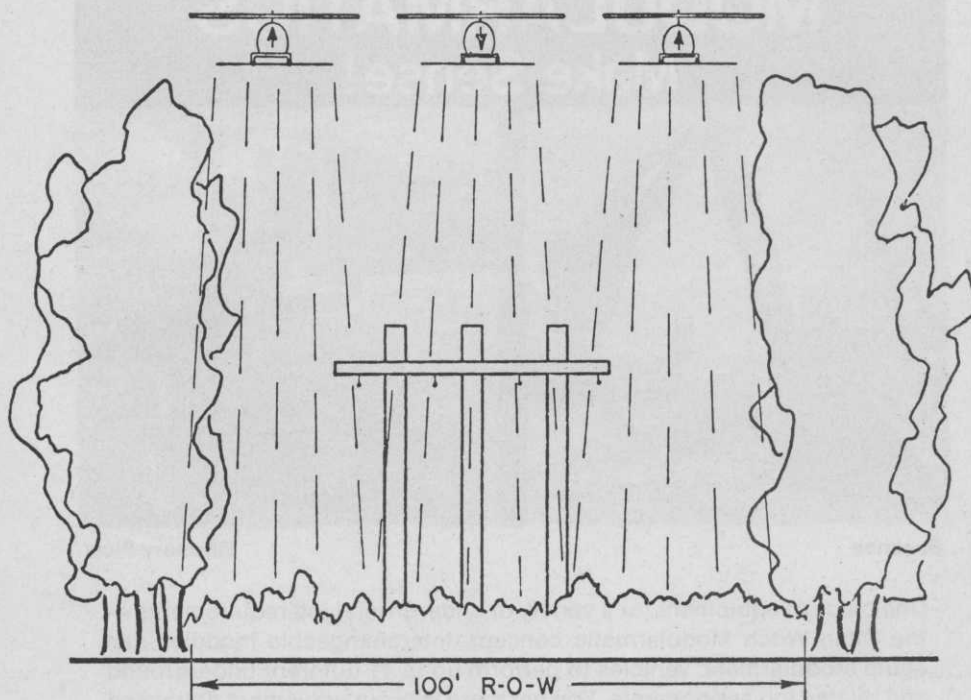
Because of the need for good public relations and the fact that the foliage of brush turns brown after spray treatment, it is advisable that no brush **over four feet in height** should be treated with foliage spray. The preferred treatment of brush and shrubby growth **over four feet should be cut first**, then given basal spray control, thus avoiding unsightly brown foliage and public criticisms.

Calibration of Aerial Sprayers

Calibration of helicopter sprayers — Actual output per acre of aerial spray rigs is of utmost importance as with any method of pesticide application. The delivery at ground level of a predetermined amount of liquid per acre is not easy to accomplish, especially in uneven terrain where utility lines are at various heights from the ground.

Each type of aerial spraying equipment performs differently and the pilot should be thoroughly checked out with each type as he would be with different types of aircraft. For instance the width

(continued on page 36)



This is a typical profile of a cross country line 44 KV or higher.

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International Harvester Continues Merging Efforts

Pay Line Division of International Harvester has entered Phase II of its program to merge all divisional marketing efforts into one integral organization with consolidation of construction and industrial equipment sales forces.

The consolidation, to be implemented between now and the start of the 1976 fiscal year on November 1, completes the merger which was begun last year, explained J. L. Adams, Division marketing vice president.

"At that time we combined all the marketing departments, except sales," he said. "We did this deliberately because we did not want to disrupt the on-going relationship between our sales people and the distributor organization during the merger and centralization at Schaumburg of all other marketing functions.

"We were cognizant of the fact that this step — Phase II — would have to be taken as soon as we, and our distributors, were ready to assimilate it. That time is now."

Under Phase II the country has been divided into eight regions, with a Pay Line sales force in each responsible for the sale of the entire line of International industrial and construction equipment.

"We will have a mutuality of territory with no duplication of efforts for both product support and sales," Adams said. "The boundaries of the new sales territories are almost identical to those of our Product Support regions and this will result in all-around better sales and service for our distributors and their customers."

Under the new concept J. P. (Jim) Brady, former Industrial Equipment sales manager, and T. C. (Tom) McGonigle, former Construction Equipment sales manager, become managers of equipment sales for the entire line. Brady and his organization will be responsible for the northern tier of states and McGonigle and his group will cover the southern and far western states.

K. R. (Ken Foster, formerly manager, General Product Sales, becomes assistant to the vice president, marketing.

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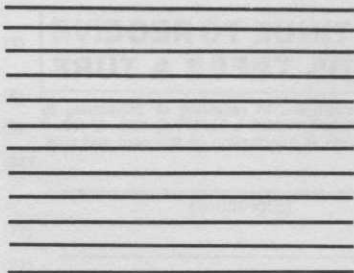
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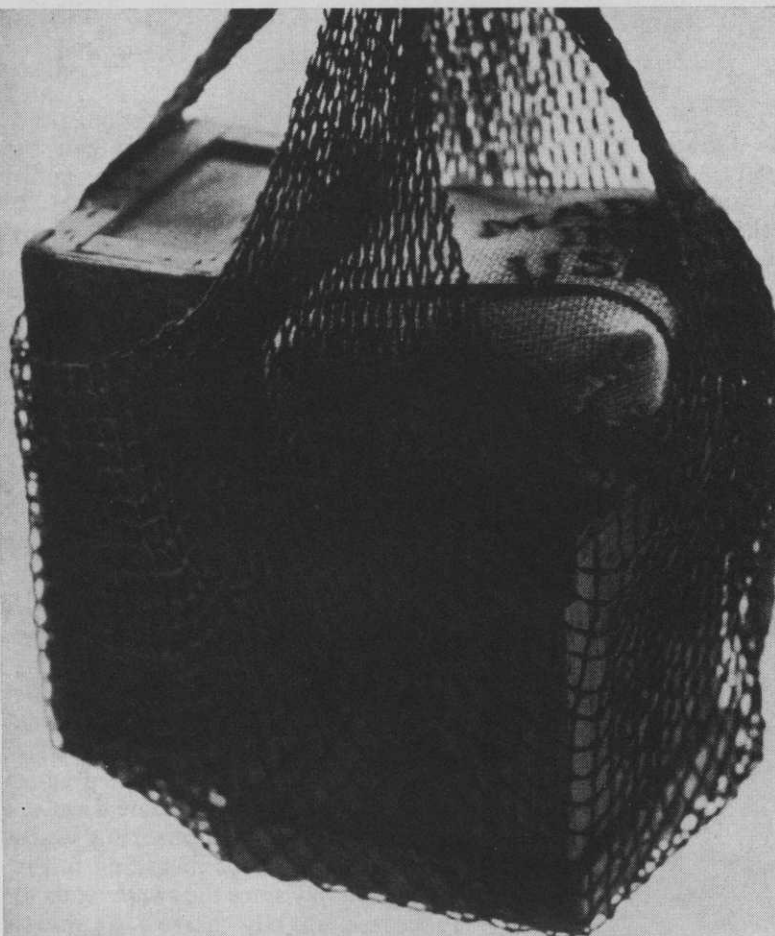
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APPLICATION *(from page 34)*

covered by the Microfoil boom will be approximately double the length of the boom at 50' height using .028" orifices whereas the 060 boom will cover a width approximately double its length at a height of 125'. As with calibrating other types of spray equipment the following are of importance:

1. Air speed

2. Pressure
3. Swath width
4. Volume

In addition for aircraft calibration the height from the ground is very important since the effective swath is largely governed by this factor. Charts are provided for proper speeds and height to cover given heights in aircraft manuals and by the spray equipment manufacturer.

In actual calibration the pilot

should first be sure that the air speed indicator is correct. This can be checked by flying over an automobile at low speeds (15-20-25-30 mph etc.). Since aircraft air speed indicators are not very accurate on the low end of the speed range. Once the aircraft speed is known the volume of spray delivered per minute should be determined in actual flight.

With a 50' swath, 1 mi = 6 acres and 100' = 12 acres (approx.)

If 10 gal./acre is desired it would be necessary to deliver 10 gal/min at 60 mph, using a 26' boom at 50' height with the Microfoil boom. If the height must be increased and the swath width increases then the aircraft must be slowed down or the pressure increased in order to apply the correct amount of spray. Raising the pressure is not advocated since this will often produce fine droplets that drift easily. In checking swath width it should be measured in the right-of-way since the swath tends to become slightly narrow in areas where trees bound each side of the right-of-way as compared to an open area.

Other factors that influence the application rate are "crabbing" or flying slightly sideways to compensate for air movement will narrow the swath width and cause "streaking" in wide rights-of-way. In general a pilot learns many of the fine points of spraying with experience and cannot become proficient until he has mastered the many different situations involved in aerial spraying.

Spraying with a helicopter is not only useful in controlling weeds and brush underneath the conductors but side trimming of adjacent trees is also accomplished in the same operation. This greatly reduces future trimming costs and aids in preventing electrical outages during wind and ice storms. In spraying operations one pass is generally made to a given area regardless of the equipment being used on the helicopter. Better results can usually be obtained by flying in both directions, especially with the Microfoil boom, but this increases costs per acre. With equipment that deliver higher gallonage with larger droplets such as the Spray Disk as the 060 one pass is sufficient. □

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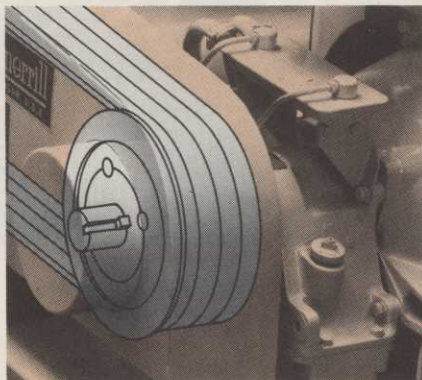


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High Flying Contract Application



IT'S morning's first light. And the early silence is broken by the sound of a helicopter rotor beating the still air. It flies over the rise and down into the still dark valley followed by a sparkling stream of spray.

The pilot is a contract applicator treating vegetation beneath an electrical transmission line. His name is Jerry Hill.

Hill is president of Eastern Helicopter Corporation based in Roanoke, Virginia. He sprays many of the thousands of miles of electrical transmission and distribution cable stretched across the most rugged territory in the Eastern Seaboard states.

This eastern area has historically been a source of rights-of-way maintenance problems. Major utility companies such as Appalachian Power Co., Virginia Electric Power Co., Monongahela Power Co., and South Carolina Electric and Gas have installed their lines through areas too mountainous and swampy for economical ground crew control. Confirmed opinions from vegetation control managers indicate that ground control is not the answer. Most look to contract aerial applicators for the solution to their vegetation control problems.

Recently one utility official remarked that a tree grew into his company's electrical transmission lines. The tree caused a short-out and resulted in a breakdown of service. The outage cost this company more money than their entire contract aerial application program of nearly \$160,000.

Jerry Hill is just one of many contract applicators servicing the needs of the Eastern utility companies. But outside of a few corporate-owned flying services, most are seasonal businesses operating with less than a handful of pilots. Just the nature of contract application requires extensive travel. And Hill and his ground crew travel a several state region during the 90-day spray season.

During the past spray season Hill has managed to put down over 100,000 gallons of chemicals. "By the end of this season, I'll probably have sprayed more gallons of material than I have in the four years since I started Eastern," Hill told **WEEDS TREES AND TURF** in September. A major percentage of Hill's high volume is a result of his efficient operating techniques.

"A pilot's ground crew can make or break any spray operation," Hill said. "My ground crew is always there with the set-ups when I land for refilling. I lose very little time on the ground."

Top: Jerry Hill steers his ship down the right-of-way applying a herbicide to the unwanted vegetation. This is the first season Hill has used the new boom and nozzle arrangement. Bottom: Hill, left, founded Eastern Helicopter Service in 1971. A major part of his success as a contract applicator is attributed to an efficient ground crew. Here Hill is shown with Charlie Turpin, center, and Bill Chappell, right, two members of his crew.



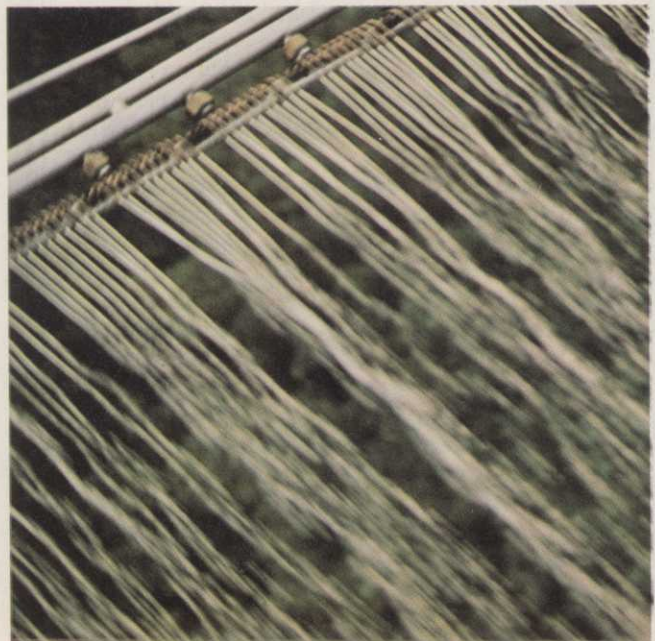
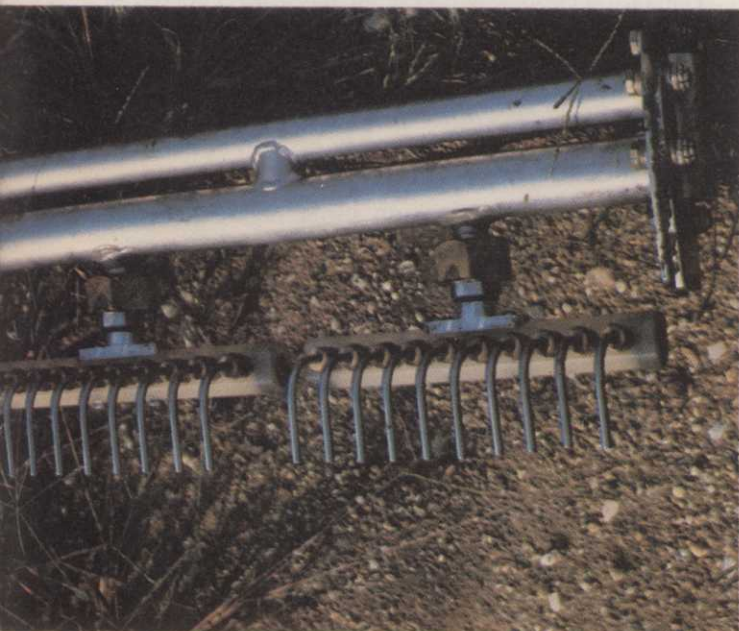
Another factor contributing to his best-ever season Hill attributes to the use of a boom and nozzle arrangement manufactured by Amchem Products, Inc., Ambler, Pennsylvania. The boom, called the Microfoil, is hardly a newcomer to the helicopter application field. "Tex" Waldrum of Amchem's Mechanical Research and Development Division pioneered the boom in 1967. Since that time, the boom has been equipped with a variety of nozzle configurations and ending, at present, with the .060 nozzle.

"The .060 refers to the orifice size in inches," said Waldrum, "That's a large droplet size compared to the earlier .013 and .028 nozzles."

Waldrum, along with several pilots using the new combination, consider it one of the most effective weapons yet for vegetation control. "The .060 produces a large droplet size giving maximum drift control and creating a shattering effect when it hits the top canopy of brush," said Waldrum. This shattering effect allows for a large part of the volume to fall through the brush giving better than average penetration and improved coverage.

(continued on page 40)

Top: Hill demonstrated the boom and nozzle arrangement at the recent meeting of the Mountain Lake Right-Of-Way Management Council meeting near Richmond, Virginia. Here some of the members examine Hill's ship. Lower Left: This is a close-up view of the .060 nozzle mounted on a Microfoil boom. Below: The boom and nozzle produce drift control through the formation of nearly uniform droplets with a minimum of fine droplets. This results in a sheet of spray falling to the ground, rather than a drifting cloud of material.



Microfoil Background

By "TEX" WALDRUM, Director,
Mechanical Research and Development,
Amchem Products, Inc., Ambler, PA

THE STORY of the Microfoil™ spray device actually begins shortly after World War II. At that time, the use of hormone herbicides in effective vegetation control was really coming into its own. When this hormone herbicide began to be used commercially, it became apparent that drift control, especially in aerial application, would be very important for effective use.

Amchem Products, Inc. (known as American Chemical Paint Company at that time) held patents on 2-4D and were immediately aware of the drift control problem and how important a solution would be. In those days, scientific thinking was oriented around the use of thickened carriers which would produce larger droplets than conventional spray . . . and reduce drift in this way. With this concept in mind, Amchem developed invert emulsion.

Everyone agreed that this should be an extraordinary drift control material. But, there was no spray equipment available which was capable of handling the invert . . . even on an experimental basis. The problem was assigned to Amchem mechanical research and development. The result was invention of a device now known as the Spra-Disk™.

The Spra-Disk is a centrifugal device for aerial application which sprays through 360° and is capable of handling invert emulsions at their maximum viscosity. For 15 to 17 years this device was a leading development where precise drift control was needed in aerial application of industrial chemicals. It became the mainstay of helicopter industrial application east of the Rocky Mountains.

Through these years, while taking advantage of the invert emulsion system, technical and scientific personnel were increasingly aware that further advances needed to be made. Invert emulsion was an added economic burden, for one thing.

The consensus was that conventional spray would be the answer, if a device could be conceived to eliminate or drastically reduce the drift of material during application. The Microfoil aerial applicating spray device was the result.

Microfoil controls drift by using surface tension to manufacture uniform droplets from a laminar flowing stream. The process allows all droplets making up the pattern to be virtually uniform in size — preventing segregation of droplets due to cross wind conditions and eliminating aerosol. With the precise spray pattern it is possible to make drops from whatever height necessary and still apply all spray material on target. □

APPLICATION *(from page 39)*

But the Waldrum development has done more than improve the chemical coverage. It has allowed pilots to apply more chemical in a single pass over the right-of-way. "During the first days of rights-of-way maintenance, all control was accomplished from the ground," Hill added. "Now with this new nozzle and boom arrangement, my application rates have increased to 25 gallons per acre under optimum conditions." Hill claims the increased rate attains and surpasses any control from the ground.

And according to Hill, aerial application at these new rates is cheaper than ground control. "Side-trimming is one of the most difficult control operations to perform from the ground, Hill says, but it's a relatively simple job with a helicopter and Microfoil." "The boom does a better job with an .060 than can be done from the ground, considering the type and ability of the pilot versus the ground crew."

Hill describes his airborne ship and boom as a very precise instrument. "A pilot can write his name with this boom," he said. But a precision instrument is only as good as the operator. And pilot finesse has become the name of the game.

The chemical application business is being bombarded from all sides by government agencies, a variety of citizen organizations, and the media. The negative publicity has done nothing to lessen the number of complaints or damage claims. "A pilot has to be extremely careful when spraying chemical," Hill added. "You have to maintain a stable ship and keep the spray on target."

Vegetation control from the air has always stayed in the 90 percent area, says Hill. But with the extra volumes of chemical pilots are now able to put down, control has been reported at almost 100 percent. Once the pasture-like appearance has been achieved in the rights-of-way, the unwanted woody growth is easier to keep under control.

The maximum spray season using phenoxy herbicides is approximately 90-days for most eastern areas. But one new chemical recently introduced to the rights-of-way market may extend the season by an additional 30 days. The product is called Krenite. It's manufactured by DuPont. "Krenite doesn't cause the unsightly brownout found with most of the herbicides," said Hill. "It's especially useful around roadsides and crossings where the public has a first-hand view."

An old crop duster once said that airplanes were made to fly and helicopters were made to crash. But then he never met Jerry Hill. The 35-year-old pilot has been in air for a dozen years and with his precise control and thorough ship maintenance he'll be in the air for another dozen. □