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Dacthal preemergence herbicide drives out over 20 annual grassy and broadleaf invaders, including crabgrass and *Poa annua*. It *prevents* weeds—kills the seeds as they germinate.

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Diamond Shamrock Chemical Company
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Cleveland, Ohio 44115

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Please send me _____ Total Turf Care dials.

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Position _____

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For More Details Circle (106) on Reply Card

WEEDS TREES and TURF®

Volume 11, No. 1 January, 1972

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The Cover

Arvida Corporation, a land development firm headquartered in Miami, has developed 34,000 acres of Southeastern Florida into a beautiful example of multiple land use. Our cover represents the integration of water systems, trees, fairways, blue skies and Florida sunshine.

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On the Safety and Health Act of 1970

Sen. Harrison A. Williams, Jr. (Dem.-N.J.) and Rep. William A. Steiger (Rep.-Wisc.) have stitched together a new green flag with a white cross. Called the Williams-Steiger Occupational Safety and Health Act of 1970, this flag is currently waving a Federal safety signal in every state of the nation.

The act authorizes the Department of Labor to set and enforce occupational safety and health standards for businesses engaged in interstate commerce. This includes farmers and small businessmen who employ help, even those with only one employee. Four sets of safety standards for agriculture are embodied by the law. Two specifications went into effect last August 27, one for the design, application and use of the slow moving vehicle emblem and the other for the construction and maintenance of temporary labor camps. Two additional standards involving the pulpwood timber industry and the use, handling and storage of anhydrous ammonia will become effective this February.

The teeth to this law are sharp. Admittedly, it places a burden on the employer to keep additional records detailing each occupational injury and illness on employees. Enforcement is through

safety inspectors. The law permits them to enter all business establishments, large or small, to inspect structures, equipment, materials and to question privately the employer or any employee. We would predict that businesses involved in the handling, distribution and application of crop and turf protection chemicals will be among the first to be visited by inspectors.

Violators will be issued written citations and given a reasonable time to correct the situation. Accurate records are required on work-related deaths, injuries and illnesses. Employers may also be required to maintain records of employee exposures to potentially toxic materials.

Whether the law is good or bad is not the issue. Safety must be the watchword in every operation we undertake. Safety like a clean environment is not to be practiced by a few. Rather, it is the responsibility of every individual—employer and employee.

We in the green industry must adopt the green flag of safety as our standard. The Occupational Safety and Health Act only establishes Government's authority to insure safety. The real responsibility rests with each of us.

BEAUTIFUL



PERFECT!

Right now, we think we have the world's most perfect turf variety (and model). 0217® Brand Fylking Kentucky bluegrass seeds germinate enthusiastically, grow a lush, deep green lawn with a thick turf. And here's where the perfection is appreciated by the people who must grow and care for lawns: Disease and drought resistant! Dense turf crowds out weeds. Fertilizer and water requirements are always modest when cut between 1/2 - 1 1/2 inches. (Can be cut low as 1/4 inch for home putting greens.) Next lawn, or to renovate your old lawn, specify the perfect one, 0217® Fylking Kentucky bluegrass, now at most seed and garden supply centers and sod landscape distributors.

Another fine product of Jacklin Seed Co., Inc.

U.S. Plant Patent 2887

beautiful by the yard



FYLKING KENTUCKY BLUEGRASS
U.S. Plant Patent 2887

Beautiful enough to create a fashion sensation, the quality of Fylking Kentucky bluegrass lawns has proven superior in 12 years of international testing and actual lawn use. The fine-textured, deep velvet turf is a richer green earlier in the spring, retaining color later in fall. So thickly woven it strangles weeds. Fylking is remarkably disease, drought and wear resistant. It thrives cut low as 1/4 inch (even 1/8 inch) for a backyard putting green. Plan a rich new lawn or renovate your old one with 0217® Fylking Kentucky bluegrass seed or sod at most seed and garden supply centers or sod landscape distributors.

Another fine product of Jacklin Seed Co., Inc.

Like beautiful girls, Fylking Kentucky bluegrass lawns offer so much more—beautiful color, texture and easy to love and care for. Abundant sideshoots coupled with a thickly branching root system produce an unusually luxuriant turf of thick, cushiony velvet. More disease and weed resistant, drought and traffic tolerant. Fylking has proven superior in 12 years of international tests. It thrives cut at 3/4 inch (even low as 1/4 inch) and makes backyard putting greens practical. Ask for the beautiful one, 0217® Brand Fylking Kentucky bluegrass lawn seed or sod at seed and garden supply centers and sod landscape distributors.

U.S. Plant Patent 2887
Another fine product of Jacklin Seed Co., Inc.

**FYLKING
FYLKING
FYLKING
FYLKING
FYLKING
FYLKING
FYLKING**

Remember the next time you're going to renovate your lawn. It's 0217® Brand Fylking Kentucky bluegrass lawn seed or sod. It forms a more disease and drought resistant, greener lawn. Fylking is cut low as 1/4 inch, even for home putting greens. Ask for Fylking at seed and garden supply centers and sod landscape distributors.



Another fine product

Fylking Has Both

First, Fylking is outstanding in performance: beautiful, rich velvet turf so thick it crowds out weeds, is green earlier and later. More disease and drought resistant, can be cut low as 1/4 inch, even 1/2 inch for home putting greens.

Second, Fylking is nationally known. It's becoming one of the most popular, new, low-growing lawn turf varieties in the country. Fylking is advertised nationally in all of the key trade publications and the top daily newspapers. Complete sodding, seeding and technical brochures are provided free on request. For the finest quality turf, insist on 0217® Fylking Kentucky bluegrass, available at your local wholesale distributors.



FYLKING KENTUCKY BLUEGRASS
U.S. Plant Patent 2887

Another fine product of Jacklin Seed Co., Inc.



This new, Super-Lightweight will amaze you! The STIHL 020AV

Here it is! New and terrific!

The finest and the most advanced mini-size lightweight saw in the World... designed and engineered for you by STIHL, makers of the World's First and Finest Chain Saws.

It's the first and only chain saw of its size in the World with built-in shock absorbers and automatic chain oiling. Yes, now you can have the same famous patented STIHL AV anti-vibration system & superior quality and performance, formerly only available in our higher priced professional models.

A small beauty, that weighs less than 10 lbs. with bar & chain. Its amazing power and long, trouble-free operation, without overheating, makes it perfect for pruning, limbing and felling.

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STIHL 020AV

Look Mom... One Hand



THE ACKLEY HYDRAULIC PISTOL GRIP CHAIN SAW

gets the trimming
job done
faster and easier.

So light, so well balanced, so easy to maneuver . . . every trimming job goes faster with the Ackley Pistol Grip Hydraulic Chain Saw. Powered by the HYREVZ hydraulic motor it zips through limbs and trees big and small hour after hour with never a miss or sputter. Quiet too . . . much, much quieter.

Requires only 1000 to 2000 psi and 5 to 8 GPM. Variety of saws . . . 9" to 21". Fully insulated handle.

Also available in a long handle (up to 5') model with hi-dielectric epoxy.

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LETTERS TO THE EDITOR

TURF IMPORTANT TO ATHLETIC PROGRAM

In the past three months your magazine has published two articles on football field maintenance by Dr. W. H. Daniel and myself. I would like to take this opportunity to personally thank you and your magazine for publishing these articles.

As an exponent of natural grass for athletic fields, I feel that the responsibility lies with the turfgrass people to show that the artificial turf is not always the best answer for football fields . . . MELVIN J. ROBEY, Superintendent of Athletic Facilities, Purdue University, Lafayette, Ind.

MORE INTEREST IN SPORT TURF

I continue to receive your excellent magazine, and enjoy reading several of the features each month. On pages 26 and 27 of your November issue is a very fine feature concerning athletic field maintenance. I wish I could get this article into the hands of about twenty persons in Monroe County, Michigan who have charge of our various athletic fields . . . EDGAR C. KIDD extension agricultural agent, Monroe, Michigan.

TREE INJECTION CRITICISM

I have just finished reading the latest issue of your excellent publication. I always enjoy the factual information given in the articles you print.

This time, however, I must take exception to the article: The Widening Potential of Tree Injection . . . Although the article is well-written, and contains a lot of information for those not familiar with the process, it is misleading in creating the impression that this method is a cure-all for all types of trees. This is definitely not the case . . . Apparently the translocating ability of trees differs with species, and some, such as fruit trees do very well, but some like oak do very poorly. This phenomena was substantiated by several researchers at U.C. Berkeley. Consequently, the statement that tree injection works for all trees would seem to be falacious, and should be

qualified. Y. LEE HUANG, greens superintendent, Walnut Creek Golf Course, Walnut Creek, Calif.

REPRINTS? YES

I want to convey the sincere appreciation of the administration and faculty of our school in the spread . . . of our new Recreational Grounds Management curriculum.

May we have permission to make reprints of the page for use in student recruitment for the coming year . . . You may also be interested to know that two of the students in the picture, Mr. Avery and Mr. Hollar, have just been notified that they are recipients of scholarships from the Golf Course Superintendents Association of America. WILLIAM S. STOKES, Community Services Officer, Catawba Valley Technical Institute, Hickory, N. C.

INSPECTED SEED

The October 1971 article, "Turfgrass Seed and Fertilizer Bidding Specifications," by William E. Knoop, posed the question — "How to be sure the seed obtained is indeed the mixture ordered." He suggested the grass varieties should be purchased separately and then mix them yourself.

. . . the New Jersey Department of Agriculture offers a service to prospective purchasers of grass seed mixtures which will assure him that the mixture obtained is the mixture ordered . . . ROY M. ATKINSON, Chief, Bureau of Seed Certification, Department of Agriculture, Trenton, N. J.

ANYTIME

Our agency has subscribed to your publication for several years and we are in the process of publishing a monthly news letter for some of the aerial applicators whose insurance we write.

I was wondering about copying an article from time to time from your magazine which would be of interest to these insureds. For instance, the article on Herbicide Safety in your November 1971 issue. We would, of course, give full credit to your magazine and to the writer of the particular article. . . ART EVERETT Little Rock, Arkansas.

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Your inquiry will be forwarded to the manufacturers in whose products you are interested.

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ART EDWARDS
EDITORIAL DIRECTOR



Government News / Business

Nurserymen Discuss Border Quarantine Developing uniform quarantines and regulations to make a freer exchange of plant materials between the U.S. and Canada may soon be possible. Twenty officials representing both governments, U.S. nurserymen and the nursery industry in Canada met recently to discuss the situation. Five quarantines are now identical including: Japanese beetle, European chafer, Cereal leaf beetle, gypsy moth, and European marsh crane fly. Agreed at the confab that trade associations of each nation will keep each other informed of any changes in quarantines and regulations.

More Dollars For Highways That's the report from the Department of Transportation's Federal Highway Administration. They estimate that \$21.8 billion will be available in 1972 for Federal, State and local governments.

EPA Okays Insecticide Product Prentiss Drug & Chemical Co., Inc. has announced registration by Environmental Protection Agency of Prentox intermediate DPB-1000. The concentrate contains Diazinon and synergized pyrethrins. It will be further formulated for the preparation of a finished insecticide.

Dollar Devaluation U.S. small business will be little affected by the President's announcement of the devalued dollar, say economists. Japanese and European import prices will register a change. U.S. investors in foreign markets will benefit most; foreign business in the U.S. will be hardest hit.

Auto Excise Tax Refund As suspected, the 1971 Revenue Act, now law, repealed the 7 percent excise tax on new cars and trucks weighing up to 10,000 pounds. Made it retroactive to August 16. Customer's refund checks will be mailed early this year.

Ruckelshaus On Eutrophication The EPA administrator in a recent House committee hearing pointed to \$12 billion included in the February '71 Nixon program to achieve clean water. "If it appears, Ruckelshaus said, "that phosphorus control measures might be effective, we will work out the remedial action which will be necessary in conjunction with the state and localities involved." He further said that the Refuse Act permit program will be used to deal with industries; and where municipal waste treatment plants are involved, grant funds will be used to assist in construction of remedial facilities.



THE GREEN INDUSTRY AT WORK

Integrated Land Development



Top: Arvida Corporation's major resort hotel complex is the Boca Raton Hotel and Club. With the completion in late 1969 of the 26-story guest room tower, the hotel can accommodate 1,500 guests daily. Pictured above are, from left: Mac Parsons, superintendent of the two Hotel courses; W. H. Wright, superintendent of the two Boca Raton West courses; and C. C. Shaw, Arvida vice-president for golf course development.

INTEGRATED LAND DEVELOPMENT, is the fashionable phrase. Add a few million dollars to a planner's dream and you can build a beautiful tropical atmosphere for living.

But who keeps the dream looking beautiful year after year?

What system of landscape maintenance works? Should services be hired, or should a staff be maintained? Should the staff have central direction, or should specialists tailored to a particular job be allowed to function independently?

Probably every combination has been tried, and many have worked. Nevertheless, it is interesting to examine how one large Florida corporation is taking care of its own landscape maintenance.

Arvida Corporation, a multi-million-dollar land development firm headquartered in Miami, inherited part of its system. Another part evolved from practical experience, and modifications stemmed from good business sense.

(continued on page 18)



**"Get rid of
those weeds."**

**"What are you
spraying?"**

Geigy herbicides can satisfy both sides.

It's tough being the man in the middle when you're armed only with excuses.

Geigy herbicides give you something better. Answers.

Answers to all kinds of weed and vegetation management problems.

Answers that should satisfy both sides: Those concerned about stopping weed pollution, and those concerned about what you're spraying.

How? After Geigy herbicides do their job, nature breaks them down. This helps you enhance the environment without injuring it. Which makes your job easier. And more satisfying.

You've got AAtrex[®], Princep[®], Atratol[®] and Pramitol[®] to choose from. In wetttable powder, emulsifiable, pelleted and granular forms. Each is suitable

for various jobs and conditions. But all give long-term, effective performance. Singly or as the foundation for combinations of chemicals.

So if you'd like help in planning a vegetation management program that gives you answers, not excuses, please send this coupon to: The Industrial Weed Control Department, Geigy Agricultural Chemicals, Division of CIBA-GEIGY Corporation, Saw Mill River Road, Ardsley, New York 10502.

Name _____

Position _____

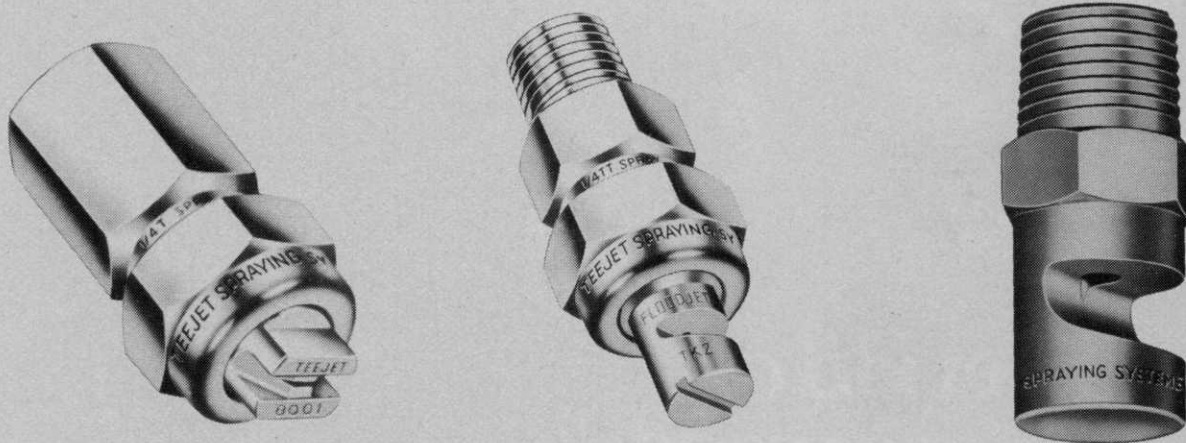
Company _____

Address _____

Zip _____

Nozzles And Spray Systems

By Donald R. Weber, Spraying Systems Company, Bellwood, Ill.



Type 1/4 T Teejet nozzle with flat spray tip.

Type 1/4 TTK Teejet nozzle with Floodjet tip.

Type K Floodjet nozzle.

Before delving into the nozzle varieties available and their usage, there are some physical attributes that ought to be considered. Just how accurate should one expect a nozzle to be at the time of purchase, and how long should this accuracy remain?

We feel that if we can manufacture an orifice with a tolerance of plus zero, minus 0.00" to 0.002" we will be able to deliver to the customer a nozzle that will meet his specifications as to gallonage, spray angle, distribution of liquid throughout the spray angle, proper particle size and particle size distribution, and from a good to a long performance life depending upon the conditions under which the nozzle is used. The reason for slightly undersizing the orifice is to give an extended wear life to it. However, if it is made too small, then the desired spray characteristics will be altered.

In order to have a rough gauge of comparison, here are results of accelerated erosion tests. The conditions of the test were: 1) finely ground quartz suspended in water under continuous agitation; 2) iden-

different materials; 3) all orifices mounted on the same header; 4) the header fed from more than one location if necessary; 5) pressure held to a constant reading; 6) all orifices tested the identical length of time under the identical conditions.

Unless such conditions are used and met, results will be incorrectly interpreted and reported. Repeated tests of orifices and nozzles showed the following relationships to be consistent: Using brass as a base and giving it a life of one (1), whether it be minute, hour, day, week, etc. we have:

Material	Life
Plastic	1/2 to 1
Aluminum or brass	1
Stainless Steel	3.5
Hardened Stainless Steel	10 to 15
Ceramic	90 to 130
Tungsten Carbide	180 to 250

While one plastic orifice did give an extended life, it was due to a small skin burr around the orifice that tended to flap back and forth without wearing off, thus interfer-

not increasing the wear life. Upon removing this flap from other identical orifices, we found that it did not withstand erosion any better than orifices made from other plastics. Flow rates were inconsistent with those marked on the orifice.

There are a multitude of grades of ceramic. Some are good, all are extremely brittle, and all have been inaccurate so far. Most are placed in a brass holder that does not stand up under certain chemicals, and if cemented into stainless steel holders, some chemicals attack the cement and the tip falls out. So far it has been the brittleness and inaccuracy that has defeated these tips.

PLASTIC orifices, depending upon the material from which they are made, can vary due to absorption of liquid or loss of moisture. They are made by molding over a pin. Shrinkage must be considered in this molding process, because these pieces are literally knocked out of the molds and ejected from the orifice core pins by the thousands. Orifice sizes will vary due to the mold, typically matched orifices, except in