went home smiling.

trap rake that's called the Trap King.

We also saw the new professional Sod Cutter. And the new UV4 complete with 1-ton dump.

Not to mention the new Cruiser-2 Truck that's an ideal runabout for any area.

We also heard about other innovations all across the board. In just about every way that clearly puts Jacobsen "out front by design."

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For the name of the distributor near you, write: Jacobsen Turf Distributor Directory, 1721 Packard Avenue, Racine, Wisconsin 53403.

The Herbicide Market

UTILITY WEED CONTROL

By RICHARD E. ABBOTT
Right-Of-Way
Maintenance Supervisor
Ohio Power Company

THE U. S. Departments of Agriculture and Interior in their publication, "Environmental Criteria for Electric Transmission Systems," estimated there were 300,000 miles of overhead electric transmission lines representing nearly 4 million acres of rights-of-way in 1970.

By 1990 it is estimated another 3 million acres of right-of-way will be required. Vegetation manipulation on these rights-of-way will provide the utility arborist and custom applicator diverse opportunities to apply their technical skills and practical know how.

Utilities are increasingly facing a dilemma. On one hand they are mandated to provide dependable, economical electric service and are highly regulated by state and Federal agencies. On the other is the necessity to provide this service within current environmental considerations with a minimum intrusion on the landscape and biosphere. Compounding the problem is the responsibility to meet all these demands without increased costs, if possible, or contributing to the energy crisis.

Substations, transmission lines and power plants have become a focal point for action and criticism in responding to the national concern for protecting the environment. People protest the construction and operation of these facilities in their neighborhood, but no one wants to be without electricity.

After electric service reliability, engineering, environmental and economic considerations have been satisfied, then multiple land use, conservation, wildlife use, landscape and other aspects must be considered in designing, constructing, maintaining and operating transmission lines, power plants and substations. Utilities employ arborists, landscape architects and horitculturists. They perform extensive plantings of trees and shrubs to improve the appearance of their facilities and design them for minimum intrusion on the environment.

Trees and brush must be prevented from contacting overhead electric conductors. The higher the voltage the greater the necessity for adequate tree and brush clearance. A town could be blacked out by an interruption to a 69,000 volt line, while an entire city could be affected by an interruption on a 345,000-volt line.

Ground and aerial spraying of herbicides has been the principal vegetation control technique used to eliminate or manipulate woody vegetation on these lines. No one chemical, technique, application or unit of equipment will satisfy all vegetation control requirements. The utility arborist and custom applicator must have sufficient technical skill to recognize and utilize the optimum tool for each situation.

Among the herbicides most frequently used for woody brush control are 2,4-D, 2,4,5-T, Tordon, Banvel Ammate, Tandex, Hyvar, and 2,4,5-TP. These are chemically formulated for use with water, oil or as thickened emulsions.

Aerial spraying with helicopters does the majority of work in mountainous and inaccessible terrain. For efficiency, economy of operation, speed and effectiveness, absolutely nothing can approach this method in these situations. Thickened (invert emulsions) formulations and special spray application equipment to prevent these materials from drifting off the R/W application area have been developed by the chemical companies. A helicopter using these special formulations and application equipment can fly above a transmission line and precisely apply the material without spray drift damage to adjacent vegetation.

Stem foliage sprays applied at concentrations of one to two gallons of herbicides per 100 gallons of water is the most common method. Four wheel drive equipment with a 400 to 800 gallon hydraulic sprayer is driven over the right of way.

Usually spraymen with individual hand spray guns cover the entire plant from top to bottom to the point of run off with the herbicide mixture. Another variation is the use of an OCS nozzle to apply the herbicide mixture as a broadcast spray 33 feet either side of the truck. Here the truck is driven down the R/W at a fixed speed while the spray mix passes through the OCS nozzle.

Light weight high-pressure nylon spray hose has substantially decreased the physically effort and in-

(continued on page LL)

Beat the big cutting job
with the Hahn-Ransomes 5/7.

The big job. The acres of grass mowing you've come to dread. There are so many ways it can beat you. But now, the Hahn-Ransomes 5/7 helps you turn the tables.

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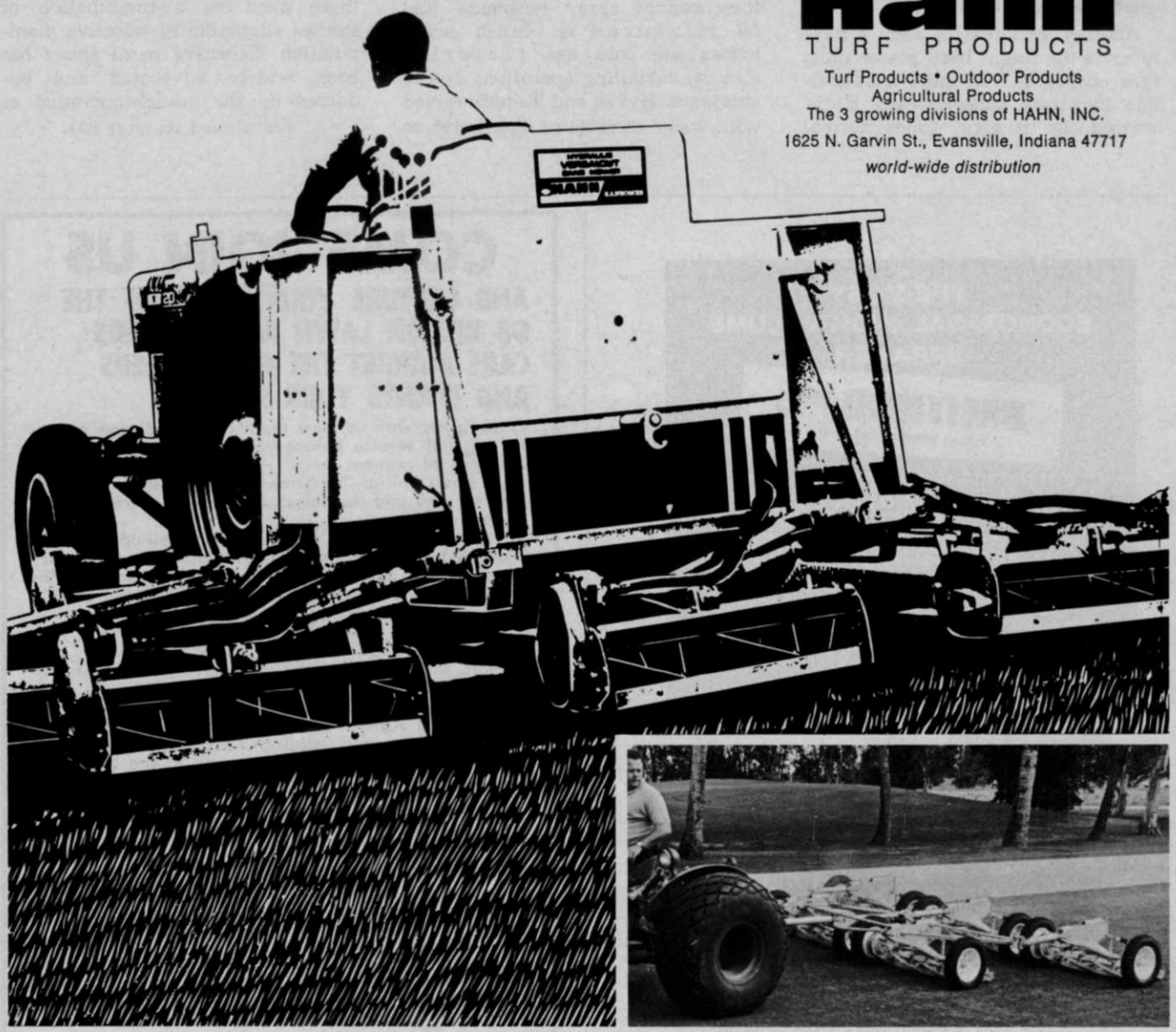

For large area mowing that doesn't require the 5/7, choose one of our Trailed Gang Mowers.

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UTILITY WEED CONTROL

(from page JJ)

creased the productivity of spraymen in those areas where they must resort to dragging hose. One thousand feet of this hose nylon weighs less than 100 feet of conventional high pressure rubber spray hose.

Equipment used has progressed from surplus four wheel drive army trucks to Bombardiers — tracked vehicles especially designed for use in muskeg and swamp — to Timberjacks — rubber tired, articulated, heavy duty vehicles developed for skidding logs out of the woods.

A Timberjack sprayer with a 800 gallon tank basal sprayed 593 brush acres at a cost of under $70 per acre, and stem foliage sprayed 734 brush acres at a cost of under $55 per acre. These costs are 30 to 40 percent less than using conventional four wheel drive spray equipment. The $26,000 acquisition cost limits the number of these machines available.

Another variation of stem foliage spray is the use of back power units (gas engine driven mist blowers). The herbicide concentration is increased up to eight times normal and the air blast from the machine is the carrier used to apply the concentrated mix. Both stem foliage spray and basal can be applied with this equipment. Advantages of this equipment are the small investment required and the ease of operation in difficult terrain. Carrying this 30 to 40 lb. weight around on their back all day while struggling through the brush is a limitation.

Basal spraying with 2,4-D or 2,4,5-T and fuel oil during the dormant season has been extensively performed to control hard to kill species (ash, oak, hickory) and for selective applications.

Another challenge facing the chemical company, utility arborists and custom applicator is the necessity for developing an environmentally acceptable, economical substitute for fuel oil in basal spraying that can be used in the dormant season. With the energy crisis and fual oil shortage, utilities realize they cannot spray herbicide fuel oil mixtures on brush when homes are cold and factories may be curtailing operations due to shortages. Hyvar and Tandex mixed with water at rates of one-fourth to one-half pound per gallon and applied at the base of the plant offers the most promise at the present time. However, both these materials are residual type chemicals which are subject to lateral movement off the R/W under some conditions and must be utilized with caution adjacent to sensitive or desirable vegetation. Also, the water herbicide mixture freezes in cold weather.

Hydraulic sprayers, back pack power units and back tanks all have been used to apply the herbicide fuel oil mixture to the basal 12 inches to 36 inches of the plant. It is important to get coverage completely around the stem to ensure complete kill.

Selective basal spray is used to remove tall growing species of woody plants on the R/W without disturbing the low growing species of shrubs, weeds and other desirable vegetation. First and foremost, there must be a combination of species adaptable to selective manipulation. Selective basal spray has been widely advocated and endorsed by the environmentalist as

(continued on page 00)

Light touch, with turf tires or without.

Myers TurfLine Sprayers give you a "light touch" all over the course in models with tires or without. The TL12TMG (shown above) is our versatile, new, tractor mounted boom sprayer. It features Myers 12 GPM Du-All Piston Pump, a 100 gallon fiberglass tank and 21′ fairway boom. Tank also has sight gauge and paddle agitator. This "light touch" sprayer, without wheels, is only one of many Myers TurfLine units that are especially designed for golf course maintenance. Other Myers TurfLine sprayers with wheels are available with high flotation tires in dual wheel and four wheel models. For details, call your Myers TurfLine dealer or send coupon for free catalog. Myers TurfLine Sprayers. To make your job easier, help speed up your work, keep the course looking great and let you stay within budget.

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GOLF COURSES

(from page FF)

range from $20.00 per acre up to $55.00 or so per acre, per treatment, depending upon many factors. Those costing most per acre per treatment are usually regarded as least expensive in the long run. This is because (a) they have several times the residual control, thus requiring far fewer applications, (b) they control all major annual weedgrasses, not just one or two, and (c) they usually are the safest on the desirable grass, being the only ones actually registered and labelled.

Caution must be observed in using any preemergence weedgrass control. It should not be applied at all if the turf cover is mostly annual weedgrasses. The residual soil effect will prevent germination of any grass seeds planted during the working life of the product after application, including seeds of the desirable bluegrasses, bentgrasses, etc.

Where a fairway contains more than 25% Poa *annua,* best control would be via a new approach, such as with Po-San (Mallinckrodt) which, when sprayed on fairways (not watered in) kills no grass — not even existing mature Poa — and produces no preemergence effect or harmful soil residues. It simply stunts the existing poa and prevents its production of seedheads. Thus desirable grasses fill in. The poa crop the following year is prevented. After a few years the poa population is down to where preemergence materials may be used safely.

As to broadleaf weeds, these are normally best eliminated by postemergence applications of one or more of the many herbicides marketed for years, such as 2, 4-D, 2-4-5-T, MCPP, dicamba and others. Recently, superintendents are using a 3-way synergistic combinations of 2,4-D, MCPP and dicamba marketed as Trex-San (Mallinckrodt) and Trimec (Gordon). These latter are so effective that the manufacturers assert, "We have yet to find a broadleaf weed that Trex-San won't control." A single treatment, properly applied, will safely control most broadleaf weeds from any fine turf, and at the same time destroy the seed-producing capacity of these weeds, thus greatly reducing the likelihood of a serious infestation the ensuing year.

Further, a Trex-San or Trimec application is inexpensive — about $4.50 to $5.00 per acre. These materials are systemically absorbed through weed leaves, and thus should not be watered in. One application controls all emerged weed plants. A second application is not needed until weed seeds germinate and produce new plants.

Figuring a single preemergence treatment in early spring and another in fall, along with roughly two applications per year of a postemergence broad-spectrum broadleaf herbicide, the turf manager can readily devise his own program to eliminate weeds and weedgrasses, and calculate his "per application per acre" cost. Above all, he's sure his costs over the first few years will greatly diminish during succeeding years. As the weedgrasses and broadleaf plants are eradicated and replaced by fine turf, fewer weeds will have the opportunity to invade desirable turf areas. Thus, less frequent weed control applications are needed resulting in lower weed control costs. It is axiomatic that the best weed control is a strong stand of healthy turfgrass.

The golf course weed control market is nationwide. However, it is more strongly concentrated in the major population centers, because the number of golf courses tends to relate to such factors as numbers of people in the area, general affluence (or lack of it) of those people, and so on. Weather, too, determines not only golf course concentration, but often golf course quality and length of playing season.

In the more affluent Northeastern states, for example, there may be an 18-hole equivalent course for every 11 or 12 thousand people, whereas in some of the less affluent southern states there might be only one course for every 35 or 40 thousand people.

Further, the ravages of winter in northern states may limit the length of the playing season to two or three months per year, while courses in the milder climates of the south will be in play year-round.

This should be kept in mind in assessing market sizes and characteristics to determine weed and weedgrass control opportunities.

EQUIPMENT

Weed control application equipment should normally be of the boom type, with adequate pressure to drive the spray solution into the turf. Boom sprayers in this usage are particularly important. They produce little or no drift, which is characteristic of the high pressure gun sprayers. Of course, for spreadable granular types of weed control chemicals, the drop-type spreader is considered best for uniformity and accurcy. Centrifugal types may offset these features with broader coverage and greater speed of application.

Preemergence control applications are usually made in early spring and/or early fall, so that actual marketing of preemergence chemicals precedes these periods by several months. Postemergence chemicals for broadleaf control, on the other hand, are used over a longer season — often throughout the year (depending upon the area). Postemergence chemical marketing begins well before the active weed-growing season and extends throughout the season.

For an excellent picture of the place of herbicides and other turf chemicals in golf course turf maintenance, turf managers should obtain, from WEEDS TREES AND TURF magazine, its significant survey on turf chemicals usages which this important journal published in 1969. It is well worth reading and careful study. □

CUSTOM APPLICATION

(from page CC)

until the last four to five years. In many areas, it still isn't available. Also, people are devoting more time to recreation and they simple would rather play golf than fool with their lawn. Let's face it . . . when the average home owner does take a stab at growing turf, a great number either streak, burn, or don't get enough product on to do the proper job.

WTT: You mentioned that this business was increasing. How do you measure this increase?

Carruth: My best yardstick is Diamond's sales to turf custom applicators. In the past two years, our sales of Dacthal to this market has doubled. If it weren't for shortages in liquid fertilizer, our sales would probably double again in 1974.

WTT: Is there any one goal you feel a lawn applicator should adopt?

Carruth: Definitely. Give your customers a good-looking lawn all season long. The home owner doesn't know or care what you do to his lawn. His real concern is what his lawn looks like.□


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USE SOME SELF CONTROL

Ordinary slow release nitrogens just can't seem to control themselves. In fact, their behavior is as fickle as the weather.

Typical urea-formaldehyde nitrogens depend upon soil temperature and bacterial activity for their release to the soil. During hot weather, the soil temperature and bacterial activity are both high, so they release very fast. During cold weather, they have difficulty releasing any nitrogen to the soil. They have very little self control.

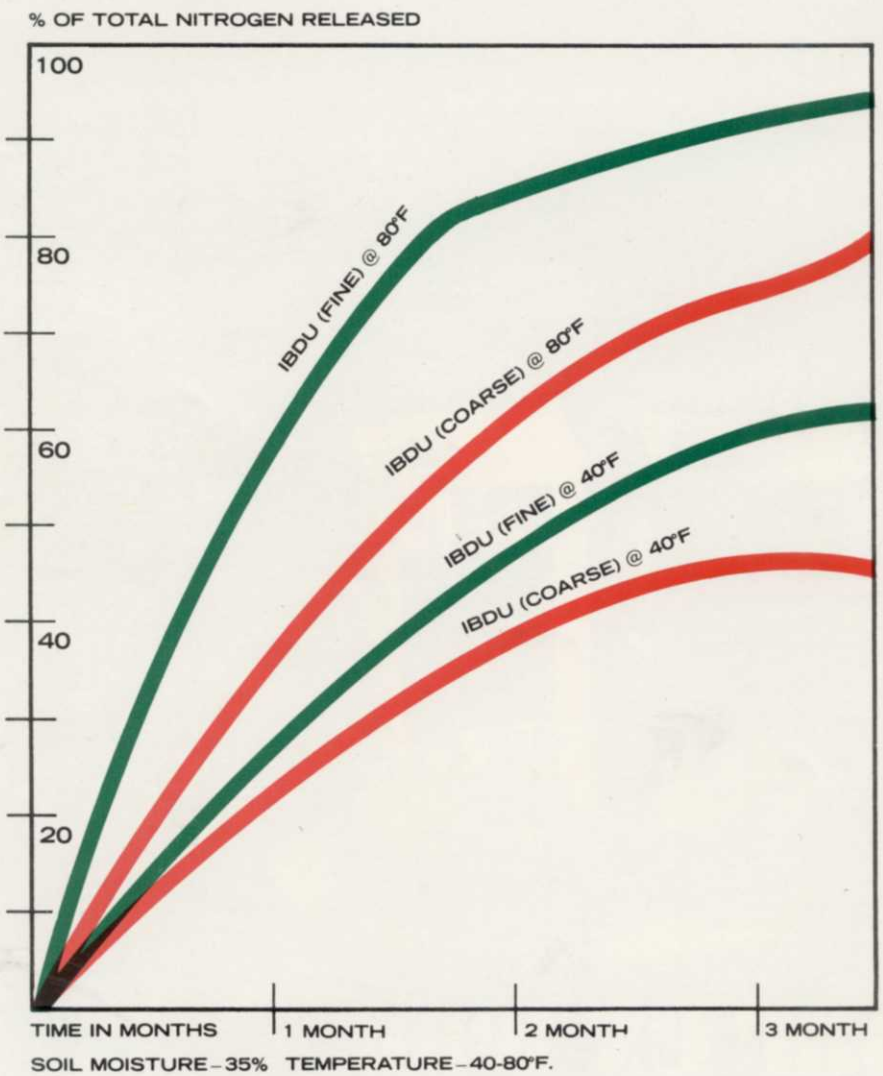
IBDU is a unique slow release nitrog
Its release rate is primarily dependent
normal soil moisture and particle ize.
temperature and bacterial activ na
little effect upon the rate of release of

And that means that IBDU gives you
control over the feeding of your turf.

On cool season grasses, IBDU will f
in the spring and longer in the fall, exte
overall growing season.

In southern grass areas, IBDU feed

NITROGEN RELEASE RATES
EFFECT OF TEMPERATURE VARIATION



SOIL MOISTURE – 35% TEMPERATURE – 40-80°F.

The above chart shows that IBDU is only slightly affected by changes in soil temperature. In a temperature range from nearly freezing (40°) to very warm (80°) coarse IBDU will release 40-60% of its total nitrogen in a 2 month period, while fine IBDU releases somewhat faster.

UF nitrogen sources release quickly in hot weather and almost not at all in cold weather.

IBDU CONVERSION TO SOLU
EFFECT OF BACTERIAL ACT

SOIL MOISTURE – 60% TEMPERATURE – 80°F

The above chart shows that IBDU does its release rate from sterile to non-ster

UF nitrogen sources depend upon bac release to the soil, while IBDU rel ses (normal soil moisture).

par ex® PROFESSIONAL PRODUCTS IBDU® (isobutylidene diurea)

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Soil
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ending the

ing can be

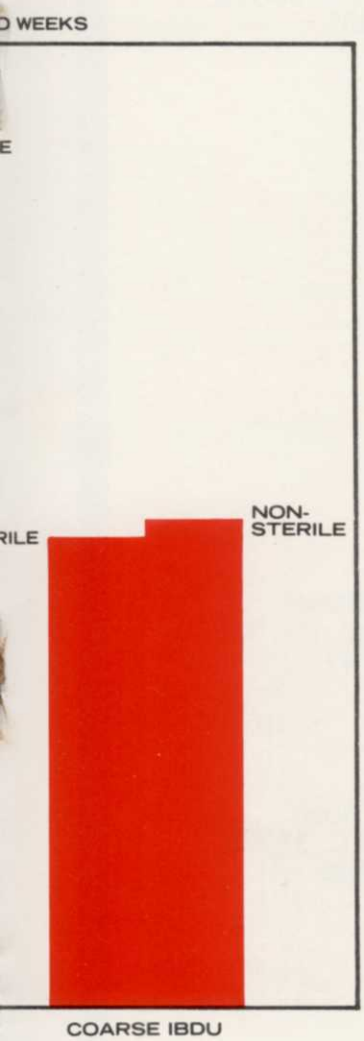
more evenly continued throughout the hot summer months without fear of rapid growth or turf burn. In addition, it is ideal for overseeding in the cooler months.

By using IBDU, you can feed your turf at a more even and more predictable rate.

Now that you know you can more closely control your turf's response by using IBDU, and that only Par Ex contains IBDU, it makes a lot of sense to buy only Par Ex products.

That's using self control.

UBLE FORMS TIVITY



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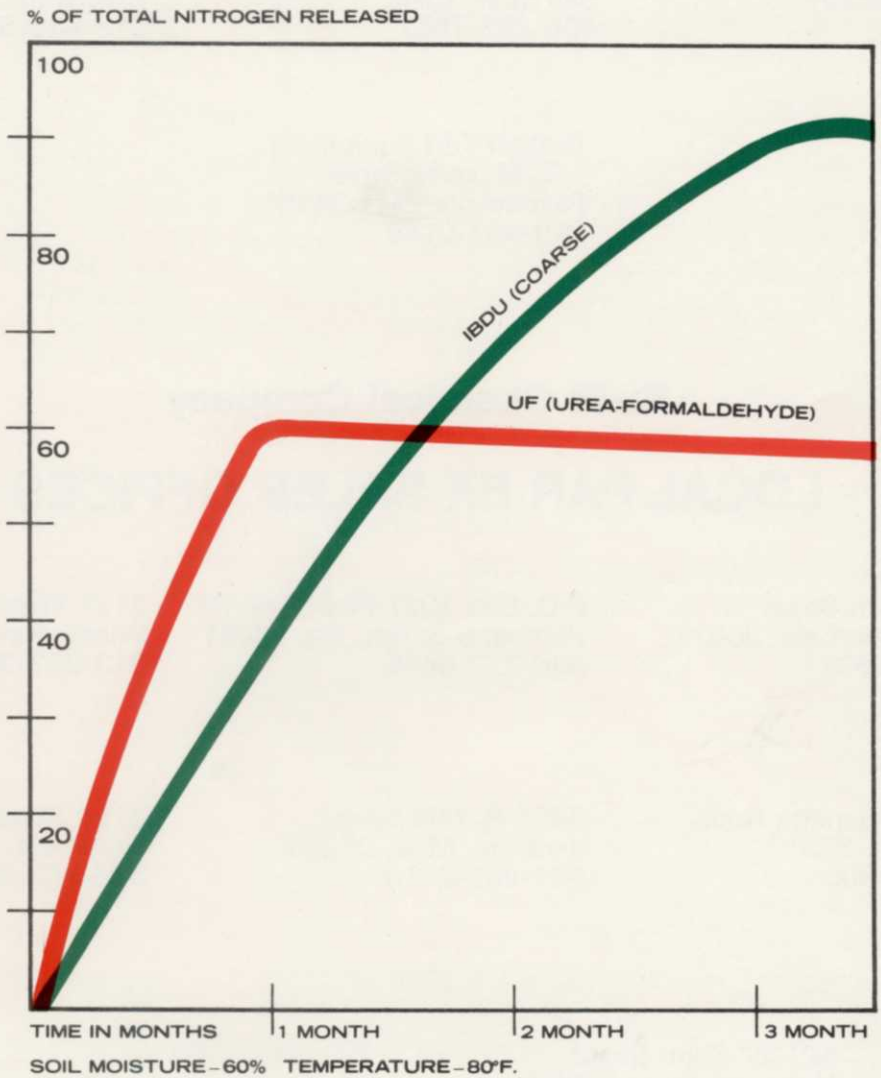
NITROGEN RELEASE RATES IBDU VS. UREA-FORMALDEHYDE



The above chart shows the result of more even release rates. IBDU, since it depends primarily on normal soil moisture and its own particle size, releases longer and more evenly than UF nitrogens.

By using IBDU, you can feed your turf at a rate that is more even and more predictable. No matter how the soil temperature and bacterial activity change, IBDU will continue to release at essentially the same, even rate – lasting a minimum of 12 weeks.

(For your local distributor turn page)

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UTILITY WEED CONTROL

(from page LL)

the acceptable technique In areas such as upstate New York, it was relatively easy to use this technique on the combination species of vegetatoin in the Catskill Mountains.

It is much more difficult to apply this selective basal technique to those species of vegetation growing on the hills of southern Ohio. The lack of low growing species of shrubs and rapid regrowth rate of undesirable species severely limit the areas adaptable to this technique Essential to a good basal program are workmen instructed in plant identification working under close supervision.

Granular or pelleted materials containing Tordon, Tandex, Hyvar or Dybar are available for placement in the root zone area of the undesirable plant. Moisture dissolves the pellets and carries the chemical into the root zone where it affects the plants.

My twenty one years of spraying utility R/W's has produced innumerable changes in attitudes, requirements, chemicals and results.

This gigantic brush chopper built by National Hydro-Ax can clear brush at a cost of about $64 per acre. This compares favorably with other methods of brush control along utility rights-of-ways.

In 1953 a desirable R/W was one with all the brush eliminated and grass as a ground cover. Brush was sprayed in deep hollows where conductors were high above the mature height of the trees, to provide access for men and equipment in case maintenance was necessary. Today a satisfactory R/W may be covered with brush which does not interfere with the maintenance and operation of the line.

Years ago if a herbicide did not

(continued on page RR)

Give us 20 minutes of your time and we'll give you a watch with your face on it.

20 minutes, that's all we ask for.

That's all the time we need to show you right on the spot, in a live demonstration, how to control broadleaf weeds and brush economically and efficiently, without damage to the surrounding environment.

We'll show you in just 20 minutes how our Visko-Rhap herbicide drift control system clears roadways, power lines and waterways without herbicide drift that could otherwise lead to costly damage suits.

We'll show you how Visko-Rhap applies in thick, spaghetti-like strands that break up into heavy oil coated droplets before contact. They will hit and stick, controlling only the growth you want to control.

Aquatic use of Visko-Rhap in drainage systems keeps ditches and canals weed free.

Visko-Rhap clears right of way along railroad tracks.

Roadside application of Visko-Rhap adjacent to cropland.

Power lines cleared by Visko-Rhap of unwanted foliage.

Give us the 20 minutes and we'll not only give you a fine 17-jewel watch with your face on it, we'll give you something even more valuable.

Peace of mind with Visko-Rhap.

Rhodia/Chipman Division
120 Jersey Avenue, New Brunswick, New Jersey 08903

Attention: Dave Perron

Gentlemen:

I am responsible for weed control in my organization. I would like to give you 20 minutes of my time for a live demonstration of Visko-Rhap. I understand I will receive a watch from you with a caricature or a photo of my face on it in return. Please contact me in order to arrange a demonstration.

Name_____ Organization_____

Address_____ Phone #_____

City_____ State_____ Zip_____

Job Title_____

No. of sq. ft. requiring herbicide drift control_____

(Note: Offer expires October 1, 1974)

Visko-Rhap™ by Rhodia CHIPMAN DIVISION

For More Details Circle (143) on Reply Card

UTILITY WEED CONTROL

(from page 00)

completely kill a plant it was unacceptable. Today if the herbicide will only partially kill or retard the growth of the brush, as long as it never grows into the wires, this is acceptable. A helicopter application of herbicide that only partially kills the brush is the most economical and practical means to prevent tree-wire contact in mountainous and inaccessible terrain. Additionally the partial kill reduces the possibility of erosion developing.

Research and development is being carried out on the use of helicopters to apply growth inhibitor chemicals aerially to retard the regrowth of brush without any elimination of plant material.

Mechanical or manual reclearing of brush on R/W's has increased in volume and importance particularly in the urban/suburban areas and because of property owner refusal to allow herbicide spraying. The public will not tolerate the brownout associated with stem foliage spray in developed areas. Additionally adjacent home owners will object if the R/W does not have an acceptable appearance adjacent to their manicured lawns.

Equipment for mowing and reclearing varies from rubber tired farm and industrial tractors with rotary or flail mowers to large, articulated, rubber tired, construction machines capable of cutting an 8-inch (DBH) softwood. Recently we used a Hydro-axe to reclear spray refusals throughout a five county area. Brush up to 15' or more tall was recleared on 148 brush acres for less than $65.

Another tool which we have tried is the brush chopper roller. This has sharpened blades around the circumference of a large diameter weighted roller. A bulldozer is used to pull the roller. This machine recleared 121 brush acres for less than $70 per acre. One drawback is the difficulty in transporting equipment between work locations due to the size and weight involved.

Landscape planting of trees and shrubs is being selectively performed around substations to enhance their appearance and reduce the impact of these facilities. Mowing of grass, insect and disease control, pruning and fertilizing all provide additional opportunities for the products and talents of the Green Industry. Ohio Power Co. has landscaped 23 buildings, 76 substations, and 2 power plants since 1966. This gives some indication of the scope of work being performed.

Weed control to reduce the fire hazards in the gravel areas around substations, power plants, coal piles, etc. using residual type herbicides is another area of operation for the custom applicator. Ohio Power Co. practices weed control on 493 acres around the state. Landscape plantings adjacent to these gravel areas will be injured if the herbicide used moves laterally. Consequently materials that will not affect woody vegetation or established lawns must be used in those areas.

Seeding of disturbed ground on newly constructed transmission lines, to prevent erosion and reduce the regrowth of brush is another area for the Green Industry to provide a service for the utility. Approximately 158 acres of R/W were seeded by Ohio Power Co. in 1973. A new innovation being evaluated is the application of seed and fertilizer by helicopter to disturbed and undisturbed ground on R/W's.

What do I see as the future of electric utility vegetation management? Currently, it is estimated the electric utilities spend approximately $40-50 million on herbicide application, $10 million on reclearing and mowing transmission R/W's, and $15 million on landscaping and maintenance. This volume of work will increase at a steady 5 to 15 percent as new facilities and lines are constructed.

Diversity of requirements, objectives, techniques, chemicals and methods will test the technical and practical skills of all concerned to comply with regulatory, environmental and aesthetic demands.

Aesthetic considerations will become more significant with selective clearing, selective spraying, retention of trees and shrubs at R/W road crossings, reseeding R/W's for wildlife utilization and multiple R/W use all being practiced to a greater extent.

Landscaping and associated aesthetic improvements will increase in volume and sophistication. Design, construction and maintenance will provide more opportunities for the green industry.

Vegetation control by herbicide application will not increase by the same magnitude as other operations. More spraying will be selective, greater emphasis will be on multiple use. With current farm prices increased acreages will be put into agricultural production by bulldozing out the stumps and brush.