## **Field-proven systemic** spray replaces trimming on hedges, shrubs and ground covers!



Spray with Atrinal and you'll reduce hand-trimming time, and labor... and in landscaping, time is money!

Spray Atrinal on hedges, shrubs and ground covers and they will require less trimming and pruning and have a more compact shape. Atrinal can also be used to remove unwanted blooms or fruit on certain species. And spraving is faster and easier. Atrinal, now being introduced to the American market, has enjoyed continued success in Europe.

Trust Atrinal. Use it, then watch your labor costs go down as profits go up! Get all the facts. See your distributor or write-Maag Agrochemicals Marketing, (ROCHE) Hoffmann-La Roche Inc., Nutley, N.J. 07110.



Systemic

Regulator

Systemic Plant Growth

Regulator

## CLEARING UP MYSTERIES WILL AID GROWTH OF HYDRAULIC SEEDING

By Bruce F. Shank, Editor



**Bowie pull-behind unit** in hose operation. The unit requires one person to control the clutch and another to operate the hose.

ust Atrinat. Use it, then watch your labor costs town as profits go up! Get all the facts See you ibutor or write-Maag Agrochemicals Markefing, Hoffmann La Roche Inc., Nufley, N.J. 071103 Manufacturers of hydraulic seeding and mulching products appear to be mounting another charge at growth as reclamation regulations sweeten the market. Even though reclamation is not proving to be the boom market as hoped, other markets such as lawn care are keeping interest high and bringing needed attention to specifications and mulches.

Highway construction and the Army Corps of Engineers have provided the hydraulic mulch and seed manufacturers with their business mainstay since the forties when the first hydraulic seeders and straw blowers were introduced commercially. For the past decade there have been three makers of equipment (Bowie, Finn and Reinco) and two national distributors of mulch (Weyerhauser and Conwed). These five firms have been and still are the foundation of the market.

But their market is being challenged on both equipment and mulch fronts. Strong Manufacturing of Arkansas and Electric Technology of Washington have released hydraulic seeding devices this past year.

New companies selling mulch on a national scale have come chiefly from the cellulose insulation business. They include Cellin of Virginia, International United Chemical Co. of Los Angeles, and Fibrex Corp. of Kansas City. Strong Manufacturing is planning to enter the mulch market this summer with a paper mulch.

There are others who have existed on a more regional basis. They include Superior and Grass Growers in New Jersey, Grass Fiber Inc. and Jacklin in the Northwest, Cal-Fiber in Los Angeles, and Fibre-Therm in Ontario, Canada. There are many others who convert urban byproducts into mulches for the area around them.

Organizations such as the International Erosion Control Association (IECA), The Associated Landscape Contractors of America ALCA, and the Soil Conservation Society are putting more emphasis on hydraulic seeding and mulching in their programs. Their members are raising questions about basic problems with state and private specifications, application rates, application methods, and products.

These questions should be answered before the market gets so confused and uncertain that architects will exclude hydraulic mulching from specifications and revert to blown straw.

Getting answers means objective research is needed. At the present time there are only two or three persons active in university research of hydraulic mulches and equipment in the U.S., Burgess Kay at the University of California, Davis, and R.E. Blaser at Virginia Polytechnic Institute, Blacksburg. Their research has been limited in many cases to small plots and sometimes artificial environments designed to resemble real conditions.

Bob Fischbach, secretary treasurer of the IECA,

ircla 109 on free information ca

told Weeds Trees  $\vartheta$  Turf that the Association has now enough funds to start supporting research. Hopefully other gifts to research can help these researchers develop programs large enough to make field test comparisons of all products currently on the market. Industry associations, armed with this objective data, can police promotion of industry products for accuracy.

#### Products

Most of the suspicion is over mulches. The equipment manufacturers naturally feel their equipment has advantages over their competition. But for the most part, they have all been doing a good job when properly used.

Mulches on the other hand are used in great volume. Consistent grind and quality are important when used in hydraulic seeders.

According to Blaser, mulches are used to control erosion and dust during construction and to assist establishment of seedlings. They control erosion by preventing rain drops from breaking down soil particles and plugging up pore spaces with small sandy and silty materials. They assist establishment of seedlings by moderating soil temperature and improving water infiltration.

Straw, hay, wood bark, wood chips and wood fiber are the best mulches Blaser says. Kay has reported that in rainfall tests paper performed well on a 1:1 slope and increased the effectiveness of wood fiber in a half and half mix. Other mulches on the market consist of different types of paper, processed straw, and treated byproducts of the seed industry.

Costs, slope, application procedures, location, and additives make any of these mulches best for certain conditions. There is a place for straw, which tends to be cheapest at approximately \$100 per acre, and hydraulic mulches which can cost from \$400 to \$600 per acre.

"When you get into highway cut that is 200 ft. tall and 1<sup>1/2</sup>:1 slope, or you get into a housing project where you've got to have immediate ground cover hydromulching shines, Fischbach says. "But if you can get in there with a wheel tractor, drill seed, blow down straw, and crimp it in, hydromulching makes less sense."

One advantage of hydromulching is it can be a one-step process. A slurry of seed, mulch, fertilizer and binder can be applied all at one time. However, at normal application rates of 1,500-3,000 lbs. dry matter per acre, even large tank hydraulic units have to be refilled every 15 minutes.

Another way is to hydroseed with seed and fertilizer, and then blow on straw. On steep or windy slopes a binder might need to be applied over the straw.

Norm Krisburg of Reinco has linked efficiency of one- and two-step methods with the size of the



Circle 134 on free information card MAY 1979/WEEDS TREES & TURF 33

## Hydraulic Seeding

job. Krisburg says that once a job gets over four acres, the two-step method is less costly, even though a straw blower is needed in addition to a hydraulic seeder or mulcher. Walter Reinecker of Reinco says, "Invariably, if someone buys a hydrograsser from us and contemplates a full-time mulch business, he will come back and buy a straw blower in two to three years."

Blaser suggests this combination; 3000 lbs. straw per acre blown on and overseeded with a seed, fertilizer and wood fiber slurry at 700 lbs. per acre. The wood fiber binds the straw to the soil and according to Blaser, is superior to any of the binders or tacking agents. He adds that such an application can last through the winter on slopes of 1½:1. This would be the Cadillac and too costly for some projects.

Specified rates characteristically are higher on the West Coast than on the East Coast. "Fiber on the West Coast has nearly always been specified at a ton an acre," says Reinecker. "When fiber was first introduced to the East Coast, specs were set at 700 lbs. per acre. East Coast suppliers wanted to be competitive with hay or straw and fiber mulch cost \$100 more per ton on the East Coast due to shipping costs from the West Coast. The 700 lbs. rate was too low and now most specs range from 1,200 to 1,500 lbs. on the East Coast.They are reaching 3,000 lbs. on the West Coast."

Paper mulches can be produced wherever large amounts of paper are used and therefore aren't as tied to shipping costs. Much of the strategy of the new mulch companies is to eliminate long haul shipping costs by setting up plants in regional centers. This will probably force down mulch prices for a period of time. Single plant companies warn that product quality can vary with regional plants.

Mulches may vary according to additives. You can buy basic mulches and add your own binders, surfactants, and fertilizer, or you can buy premixed versions. Binders do vary and this is one area where some research could help. Experts will say that fertilizer content should depend upon soil tests. Fibrex contains something called a "growth stimulant," but a spokesman for the company said the identity of the stimulant is a trade secret.

Larry Porter of Strong Mfg. said his company has tested certain papers for mulch and found the coating on some paper to have the same effect as a binder. Ernest Gilcrist of Cellin reports paper type does make a difference.

Rates seem to be climbing to straw rates, 3000 lbs. per acre. If they reach that level, mulches for *Continues on page 36* 

## Seeding & Mulching? Give it the Gullished Look...

## Super HydroSeeder®

1500 gallons — skid mounted for universal mounting on trucks and trailers. It is designed for highway, surface mine, logging road, pipeline and large commercial revegetation projects. Unloading time is 9 to 15 minutes and it will spray to distances of 180 feet from the tower. The Super handles heavy loads of seed, fertilizer, lime and wood fiber mulch.

#### **Bantam Mulch Spreader**

Home builders, landscape contractors, surface mines, county road departments, soil conservation service, parks, U.S. Forest Service and others have spread straw and hay mulch at a rate of 1 to 2 acres per hour with their Bantam Mulch Spreader. This low cost, universal unit is ideal for anyone involved in revegetation.

### Bantam HydroSeeder®

800 gallons—trailer or skid mounted. The Bantam is ideal for seeding, fertilizing and mulching residential and commercial turf areas at rates of 9000 to 11,000 square feet per load. The Bantam will Seed, Fertilize and Lime all disturbed areas at rates of 2 to 3 acres per load.



Circle 171 on free information card



## **ARBOTECT**<sup>®</sup> 20·S The strongest Dutch elm disease protection you can give a tree.

ARBOTECT 20-S fungicide helps make it possible to save many elm trees that otherwise would be lost.

Injected into the trunk of the tree, ARBOTECT builds a barrier against Dutch elm disease inside the tree itself. It helps prevent the disease in healthy elms, and can often save infected trees if they are treated early enough.

Used along with sanitation, insect control, and root graft elimination, ARBOTECT can significantly improve the effectiveness of a Dutch elm disease control program.

ARBOTECT differs from other elm fungicides in several important ways:

- It is registered at rates high enough to be effective.
- It is concentrated, requiring much less water for injection, so trees can be treated much faster.
- Thiabendazole, the unique active ingredient in ARBOTECT, is highly effective against

Ceratocystis ulmi, the fungus that causes Dutch elm disease.

 Even though it is more effective and convenient, ARBOTECT costs about the same to use as other elm fungicides.

This year, put ARBOTECT to work in your disease control program. It's the strongest protection you can give an elm against Dutch elm disease.



## Arbotect Strong

## protection for elms.

Agricultural Products Merck & Co., Inc. P.O. Box 2000 Rahway, New Jersey 07065 ARBOTECT (thiabendazole) is a registered tradema of Merck & Co., Inc.

> Circle 157 on free information card

hydraulic devices will be about three times more expensive than straw from a local source. Shipping costs are rising at the same time. The advantages of hydraulic mulches will have to be clearly established to overcome the cost differential

Krisburg has suggested there is a point of diminishing return on mulch and seed rates. The cost of additional mulch may not justify the added germination.

The differences in hydraulic seeders and mulchers center around pumping and mixing.

The oldest device, the Finn, has both mechanical agitation and recirculation to keep the slurry uniformly mixed. The Finn has a centrifugal pump. A recirculation system has the bonus of valving from the hose end. The operator can control spraying from the ground by a valve on a semirigid hose.

The Reinco has recirculation mixing only. It claims this simplifies the machinery and cuts down on maintenance. However, the Reinco uses a larger centrifugal pump.

The Bowie has a gear pump that can handle heavy slurries and can be used for sprigging as well as seeding. Bowie says seed damage is reduced since seed only goes through the pump once. Without recirculation however, hose end control is not possible. Two men are needed when using a hose.

The Strong Spraymate uses a progressive cavity pump, which is a technology from the cement pumping business. Like the Bowie, material passes through only once. Strong says their machine can handle 1:1 water to solids. It can sprig and is reversible in case of nozzle blockage. The slurry is mechanically mixed.

The Erocon Division of Electric Technology Corp. makes hydraulic seeders and a device called an air seeder. The hydraulic seeders range from 800 to 3,300 gallons and have hydraulically driven mechanical agitation systems. The purpose of the hydraulics is to replace drive belts, chains, and



Reinco unit features simple, jet agitation without mechanical paddle wheels.

sprockets of standard mechanical agitation systems. There is no recirculation. A diesel engine drives two pumps, one for the agitation system and a centrifugal pump for spraying.

The air pump is a device which combines seed and fertilizer from separate tanks and sprays them out together. The rates of fertilizer and seed can be controlled. The device can spray out 40 ft.

Erocon is also the company that is producing a land imprinter developed by the Forest Service, which imprints reclaimed topsoil to hold water and seed.

#### Specifications

When a landscape contractor does business in more than one state, variations in specifications can be a hassle. Highway work specifications are established by the state architect or engineer based to some extent on Federal guidelines. But sometimes you have to wonder why neighboring states have such different specs.

For example, Charles Tennant, chairman of ALCA's Erosion Control Committee, works for both Illinois and Iowa highway departments out of his Rock Island, Illinois office. "Iowa specifications call for 400 gallons of seed and fertilizer slurry per acre, whereas Illinois requires separate applications of seed and fertilizer at 1,000 gallons per acre," says Tennant.

Fischbach says the state architect makes the specifications up based upon his own testing, influence from contractors and influence from suppliers. "Regional climate differences are part of the reason for variance, but not all."

"The contractor always wants to put the least amount of mulch down and the supplier always wants the greatest amount," according to Reinecker.

Lawn Care companies in some regions of the U.S. offer hydraulic liming, seeding, and overseeding as a extra service to customers. Erocon is developing a simplified version of its 800 gallon unit specifically for landscape contractors and lawn care companies.

The reclamation market for surface mines will take longer to develop than originally thought. Lawmaking took considerably longer than expected and enforcement isn't really off the ground in many states. When the questions are resolved and the requirements of the law are made clear, then surface mine reclamation will start to roll. Many coal companies have already established reclamation programs under state law.

Highways, surface mines, and lawn care should provide healthy growth in hydraulic seeding and mulching for the next ten years. The landscape contractor will develop more uses for smaller hydraulic units. A slow-down in the construction industry might soften the effect of lawn construction, but developers may be convinced that hydraulic seeding is a quick and economical way to seed a new subdivision. How hydraulic seeding will compete with sodding is yet to be seen. As in lawn care, a new technology can spell tremendous growth if it works, but it has to work consistently and reliably. **WTT** 

#### Addresses

Associated Landscape Contractors of America, 1750 Old Meadow Rd., McLean, VA 22101. (703) 893-5440.

R.E. Blaser, Distinguished Professor of Agronomy, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061.

Bowie Industries, P.O. Box 931, Bowie, TX 76230. (817) 872-2286.

Cal-Fiber, 611 S. Anderson St., Los Angeles, CA 90023. (213) 268-0191.

Cellin Manufacturing Co., P.O. Box 224, 9610 Gunston Cove Rd., Lorton, VA 22019. (703) 690-1195.

Conwed Corp., Environmental Products Div., 332 Minnesota St., P.O. Box 43237, St. Paul, MN 55164.

Erocon Equipment Div., Electric Technology Corp., P.O. Box 11062, 5202 S. Proctor St., Tacoma, WA 98411. (206) 475-6100.

Fibrex Corp., P.O. Box 258, Grain Valley, MO 64029. (800) 821-5572.

Finn Equipment Co., P.O. Box 8068, Cincinnati, OH 45208. (513) 871-2529.

Grass Fiber, Inc., 520 E. 2nd St., OR 97448. (503) 998-6812.

Grass Growers, P.O. Box 584, Plainfield, NJ 07061. (201) 755-0923.

International Erosion Control Association, Bob Fischbach, P.O. Box 807, Freedom, CA 95019. (408) 722-5315.

International United Chemical Co., 645 E. 60th St., Los Angeles, CA 90001. (800) 421-5904.

Jacklin Seed Co., Route 2, Box 402, Post Falls, ID 83854.

Burgess L. Kay, Wildland Seeding Specialist, Department of Agronomy, Agricultural Experiment Station, Davis, CA 95616.

Reinco, P.O. Box 584, Plainfield, NJ 07061. (201) 755-0921.

Strong Manufacturing Co., P.O. Box 8068, Pine Bluff, AK 71611. (501) 535-4753.

Weyerhaeuser, 2525 S. 326, Federal Way, WA 98003. (206) 924-2345.

The revolutionary machine for the turf industry that seeds or sprigs, fertilizes, waters, sprays and mulches in one easy operation.

The BOWIE HYDRO-MULCHER performance is unequaled. Its capability has created a totally new method of lawn, turf and ground cover application, plus faster, more effective erosion control.



Dollar for Dollar — Where quality, performance, and durability count — you can't beat a Bowie

If you need a dependable mulcher, then you need THE BOWIE HYDRO-MULCHER. Call or write for complete details.



### EXCLUSIVE BOWIE HYDRO-MULCHER FEATURES:

- Only proven unit for both sprigging and seeding with cellulose fiber mulches.
- Equipped with enclosed shredder bar for shredding full bales of cellulose fibers.
- Centralized tower control with no hoses.
- Equipped with triple agitators for faster mixing and eliminating sediment build-up.
- Uses pump only for spraying, so pump lasts longer.
- Slurry passes through pump only once, thus reducing seed damage and clogging.



BOWIE INDUSTRIES, INC. / P.O. BOX 931 / BOWIE, TEXAS 76230 / (817) 872-2286

Circle 153 on free information card

## GROUNDCOVERS PROVIDE ALTERNATIVE TO TURFGRASS IN LANDSCAPING

### Donald H. Steinegger and Kim W. Todd

Extension Horticulturist and Campus Landscape Architect University of Nebraska-Lincoln



Groundcover eliminates bare ground where mowing is difficult.



Groundcovers unify elements of a planting and provide textural transition.

Strictly speaking, a groundcover is any material which covers the ground, whether it be grass, flowers, plants or mulch. When using a groundcover in landscape design, the term includes any plant lower than three feet in height which, when established, will cover the ground to the extent that underplanting is not required and weeds are excluded.

Groundcovers are associated by many people with a lower maintenance program than that required by turfgrass. This is true only for properly established and maintained groundcover. The initial two to four years demand careful management and in subsequent years a program of pruning, fertilizing, watering and weeding must be practiced in accordance with the species chosen.

In situations where turfgrass is hard to maintain, a groundcover may be the alternative to bare ground or paving. There are groundcovers which thrive in dense shade or intense sun; wet lowlands or dry, rocky soils. On steeply sloping sites where mowing is difficult and erosion control is necessary or where a poor soil structure exists, a groundcover can eliminate mowing and stabilizes the soil. Groundcover can provide continuous greenery or color on urban sites which are either very small or inaccessible for the purposes of the constant maintenance required by turf (for example, raised planter boxes or the open space around street trees). On uneven, rocky sites or walls, a twining groundcover can mask irregularities and cover unsightly land features.

The best reasons for choosing groundcovers over turf involves their design characteristics and aesthetic quality. They may be used to unify different areas of the site, acting as a textured carpet between plantings. Groundcovers act as transition plantings between high maintenance/high use plantings and more naturalized areas, and between turf lawns and taller shrubs. They may define space by leading the eye in a particular direction or reinforcing and dramatizing the shape of the underlying land forms. Finally, groundcovers create a high degree of visual interest through contrast with adjacent surfaces and the surrounding plant materials.

The choice of groundcover for a given situation ' is based on: (1) the design characteristics being sought — color, form, texture, shape and size; (2) the intended site and function of the groundcover — transition, visual interest, difficult conditions for turf; (3) the hardiness and adaptability of the plant to the area; the maintenance requirements and amount of available care; and, (4) the availability of the plant. A plant under consideration for use as a groundcover should be evaluated on its ability to spread; for its growing habit, which should be relatively neat and uniform; for its size; and, for the ease with which it can be kept in the area designated for it.

Plants which become scraggly and open with maturity do not make good groundcovers nor do those with dense, twiggy structures which become collectors of blowing paper and trash. Plants which will rapidly outgrow their boundaries or freely self-sow into surrounding sites are best avoided when choosing a groundcover. Shrubs which reach heights greater than three feet or which must be planted close together to make up for their lack of ability to spread are generally not considered as groundcovers.

There are several categories of plants which include species adaptable for use as groundcovers. Herbaceous plants are chosen for areas where their lack of winter vegetations is not detrimental. Examples of these sites would be parking lot islands or street frontages where woody plants could be damaged by snow removal operations. They are usually rapidly spreading and frequently provide interest through brightly colored flowers or variegated foliage. Woody deciduous plants may be chosen over herbaceous groundcovers in situations where a larger size is required, or where the dieback characteristic of the latter is undesirable. They are good choices for transition between lower ground covers and tall shrubs, and provide visual interest through seasonal variation. Evergreens provide green color throughout the year, although if an evergreen is chosen primarily for its green winter color, a taller variety is desirable, since the prostrate tones will be invisible under the snow in the Great Plains area. Because of their uniformity, evergreens serve well as screening materials or as a backdrop for ornamental groundcovers. They are an effective deterrent to foot traffic. They form a very dense mat when established, spreading to cover rocks and soil and shade out weeds. If the proper variety is chosen for the site, they rarely need pruning. Broadleaf evergreens are chosen for situations in which foliage is desired year-round. but an evergreen it not suitable. They may be planted for visual contrast or as a transition between deciduous and evergreen materials.

#### **Herbaceous** Perennials

Basket of Gold (Alyssum saxatile) reaches a height of one foot with individual plants moderately spreading to one foot. The finetextured foliage is gray-green. The most notable





Periwinkle Vinca minor



Japanese Spurge Pachysandra terminalis



# When they bag more,

## When there's no compromise in performance, they're worth even more.

Introducing Toro Front Runner rotaries.

They're self-contained vacuum grass collecting systems designed specifically to bag and carry heavy loads without penalizing performance.

Result? They stop, start, steer and maneuver as well loaded as many mowers with add-on bag systems do empty.

Since they're designed for big grass loads, strain on engines, transmissions and other components is cut way down. Which cuts way down on repairs and down time.

What's more, Front Runners offer the largest grass collection capacities available. The GMT (left) handles up to 20 bushels and mows 48" or 60" wide.

The Turf Truck, with hydraulic dump system, handles up to 50 bushels and mows 60" wide. Benefit: More mowing between grass dumpings.

Or, for wide mowing without bagging, choose the giant 80" batwing deck on either unit. Outer wings follow contour of ground to eliminate scalping. To make your GMT worth even more, choose a snow plow, snow blower or sprayer.

Increase the worth of your Turf Truck with all season cab.

Toro Red Wagon Service is one more reason your Toro is worth more. Every Red Wagon mobile van comes with a trained pro and the equipment and parts he needs to perform most maintenance on the spot.

Call 800-328-2858 toll-free for the name of your nearest Toro distributor and a demonstration. 65-075-03677