Industry News

N.H. forest named biosphere reserve

Hubbard Brook Experimental Forest in New Hampshire was recently named a "biosphere reserve", according to a spokesman for the U.S. Forest Service.

The newly-named reserve is part of an international network of protected areas representing the world's major natural regions. In addition to conservation, the areas will be used for research monitoring and education. Five other U.S. sites, all in existing national forests or national parks, were also named biosphere reserves under UNESCO's Man and the Biosphere Program.

Hubbard Brook has served as a watershed research site since 1955, said Robert S. Pierce, Forest Service research forester at Durham, NH. Located in the central White Mountains near West Thornton, Hubbard Brook is typical of many watersheds in New England. That, and the fact that its vegetation is representative of northern hardwood forests, make it an ideal site for research.

Plant to make gas for NH_3 production

W. R. Grace & Co., and Ebasco Services Inc., both of N.Y., NY, will negotiate a contract with the Energy Research and Development Administration (ERDA) to design a demonstration plant for the gasification of coal for generation of synthesis to produce 1,200 tons per day of ammonia.

The plant will be designed to demonstrate the utilization of a wide range of U.S. coal, including high sulphur eastern coals. All local, state and federal environmental requirements will be incorporated in the plant design.

At the conclusion of the Phase I design, predefined performance and economic criteria for the facility will be established. These criteria will be the basis for determining whether the proposals will continue to Phase II (construction).

Current plans are to locate the proposed coal-base ammonia plant in Basket, KY, in the vicinity of the Green River, six miles from Henderson, KY.

Fisons expands research area

Fisons Corporation has purchased a 300-acre research farm near Harlingen, TX. The farm will be used for specialized testing and screening of herbicides, insecticides, and fungicides produced by Fisons research and development facility in the United Kingdom.

The purchase of the Harlingen research facility is the second major physical expansion for the firm in the past year. The company recently began construction of a pesticide manufacturing plant on a 435-acre site near Muskegon, MI.

Fisons Corporation, headquartered in Bedford, MA, is a subsidiary of Fisons Limited, England, a world-wide manufacturer and marketer of agricultural chemicals, fertilizers, pharmaceuticals and scientific equipment. Fisons Corporation has been conducting agrichemical research in the US since 1967.

According to Fisons, the Harlingen location was selected for its year'round growing season, enabling the testing of products on a wide variety of crops.

Diamond Shamrock shows record sales

Diamond Shamrock Corp. achieved record sales, net income and earnings per share for the fourth quarter and fiscal year 1976. The announcement was made by W. H. Bricker, president and chief executive officer of the diversified chemicals and oil and gas company.

For the 12 months ending Dec. 31, 1976, net income increased 22 percent to $140.0 million compared with $114.3 million in 1975.

Earnings per share were $3.90 based on 34,547,000 average common shares outstanding. This compares with $3.41 based on 31,344,-000 shares outstanding in 1975.

Record sales totaled $1.36 billion, up 20 percent from 1975.

New insecticide mfg. firm opens

The formation of Fairfield American, a corporation whose insecticide products were formerly made by the agricultural chemical division of FMC Corp. of Middleport, NY, has been announced by Clinton J. Starke, the new firm's president. Starke was formerly manager of industrial sales at FMC.

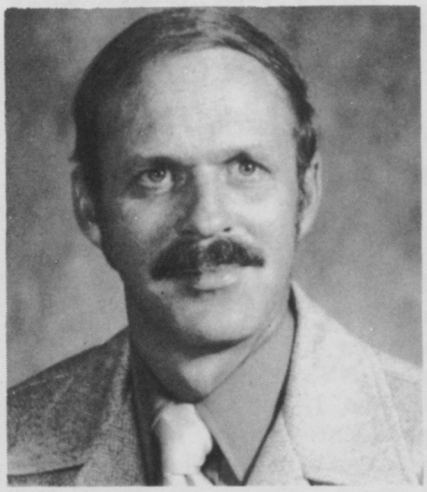
Johns-Manville forms Ag-Turf dept.

The Johns-Manville Corp. is consolidating its agricultural and turf irrigation sprinkler systems business in Fresno, CA, under the name Ag-Turf department. The announcement was made recently by Chester J. Sulewski, senior vice president, industrial and pipe products group.

According to Sulewski, this consolidation will enable the Ag-Turf department to be more responsive to customer needs and to better serve the irrigation market.

People on the Move

James H. Lake has been named president of **Elanco Products Co.,** a division of Eli Lilly and Co. Lake received a B.S. from Bucknell University. He joined Lilly in 1949 and became assistant director of pharmaceutical production in Indianapolis and later director of the Tippecanoe Laboratories in Indiana. He has also served as general manager of the Tippecanoe and Clinton facilities, vice president of the biochemical division and most recently served as vice-president of production operations.



John Sours

John Sours has joined the turf marketing department of the **Jacklin Seed Co.** Sours holds a B.S. in land and water resource development from Michigan State University.

David Simpson has been named technical representative for the Pro-Turf division of **O. M. Scott and Sons** in the Canadian territory east of Toronto. Simpson has extensive background in golf course construction and irrigation.

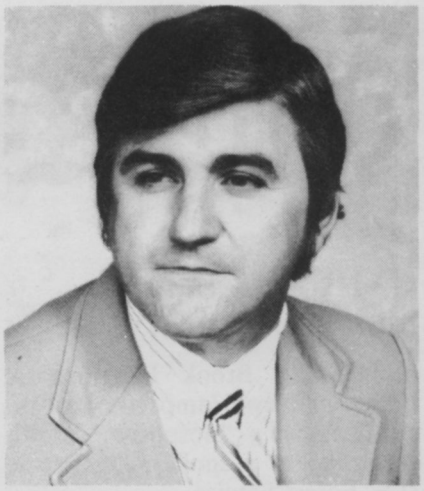
Paul Dexter, formerly senior market research analyst and district sales manager for the agricultural department of The Dow Chemical Co., has joined **Agrotec Services, Inc.,** Salisbury, MD, as field sales specialist. His duties will include covering Virginia and northeast North Carolina. Dexter holds a degree in business administration from the University of Toledo.

Morgan Howard has been appointed western regional turf sales manager for **Rain Bird.** Formerly the district manager for the southwestern region of the United States for Rain Bird, Howard will now oversee the district managers of the western United States.

Lorne R. Dunham has been appointed division manager of **Cole Chemical Supply** of Madison, Wisconsin. Formerly in product development with Occidental Chemical Co., Dunham will be headquartered in Madison.

Toro Co. announces the appointment of **E. S. Newton Jr.,** as director of sales and marketing for turf products. Newton recently completed a special 18-month assignment as director of turf irrigation sales for Toro's irrigation division. Prior to that, he spent 14 years with Zaun Equipment, Inc. of Jacksonville, FL., a full-line Toro distributor.

Thompson-Hayward Chemical Co. announced four branch manager appointments. **Charles P. Jensen** transfers to the Memphis distribution center as branch manager. **J. L. Smith** moves to Atlanta as branch manager, **Phil Kizer** is promoted to branch manager at the Oklahoma City distribution center and **Ray Gibbs** is promoted to branch manager of the Nashville center.



Charles Jensen

Jensen joined the company in 1960 as a warehouseman. Later he served as an industrial sales representative, then branch manager in Atlanta.

Smith has been with the company for 16 years beginning as an office worker then moved into industrial sales and later served as branch manager in Nashville.

Kizer joined the company in 1962 as a laboratory technician. He later served as an industrial sales representative then manager of product marketing in the industrial chemical division.

Gibbs started with Thompson-Hayward in 1970 as an industrial sales representative, a position he has held until his promotion.

The B. Hayman Co. has added two new field representatives to its sales staff. **Don Rodino** will serve as the company field representative in San Bernardino County, Palm Springs and Las Vegas. **Nick Dykman** will serve eastern Los Angeles and Riverside Counties. Both attended Mount San Antonio College.

Allan N. Pavia has been named manager of materials management of the outdoor power equipment division, **J I Case Co.,** based in Wineconne, WI. Pavia joined J I Case in 1964 at the Racine Tractor Plant and most recently served as a supervisor in materials management there.

Healthy little beauty likes shade!

What a beauty little Glade Kentucky bluegrass has turned out to be! A fine, healthy specimen, Glade has a higher level of resistance to powdery mildew, and performs better than many other Kentucky bluegrasses in up to 60% shade as well as open sun. Glade, a Rutgers selection (nationally tested as P-29), has improved resistance to stripe smut and leaf rust. Midwestern and Northeastern university tests indicate that Glade has better than average resistance to Fusarium blight.

Glade is one of the fastest germinating bluegrasses, quickly forming a thick rhizome and root system. A dense, low-growing, leafy turf, Glade has an attractive medium to dark green color.

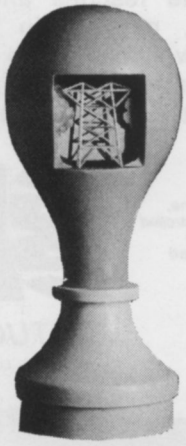
Glade Kentucky bluegrass is your guarantee of physically pure and genetically true seed. You won't be seeding annual bluegrass (*Poa annua*), short-awned foxtail or bentgrass when you plant Glade. Specify this healthy little beauty in your next lawn seed mix. It blends beautifully with fine fescues and other elite bluegrasses, persists in shade when many others weaken. Glade Kentucky bluegrass is available at your local wholesale seed distributor. Insist on Glade in your mix.

Another fine, quality-controlled product of Jacklin Seed Company.

Glade

KENTUCKY BLUEGRASS

U.S. Plant Patent 3151



The wonderful power of selectivity to power line rights of way

by Charles J. Olenik, supervisor of forestry, eastern division, Pennsylvania Electric Company

In recent years there has been an ever increasing demand by homeowners, business and industry for more and more reliable electric service. To accommodate this increased use, companies such as Penelec have constructed new power plants, stepped up voltages on existing power lines, and constructed new and higher voltage transmission and distribution lines to handle the increasing load.

However, having the facilities to generate and carry the energy produced is only part of the aspect of providing reliable service to the customer. New and existing rights of way that are the "highways" of electrical energy must be maintained to prevent any interruption in the flow of energy. Specifically, interruptions caused by trees or brush reaching conductors thereby causing outages and other major and very costly problems.

At the present time, we as right of way managers have numerous synthetic growth hormones that do a reliable job in fighting the encroachment of undesirable tree species on our rights of way. However, we are also facing a fact of increasing public awareness in the areas of environmental quality, ecology, land use and the value of an undisturbed natural landscape.

This fact adds another dimension to the problem of right of way management. That is, we must maintain our rights of way to provide reliable service and at the same time manage these same areas so as to provide an aesthetically pleasing appearance and a land area useful for wildlife and recreation.

The answer to this problem therefore cannot be just any chemical brush control program. There must be some thought and planning to choose a chemical technique that will provide adequate vegetation control and in addition be economical, safe and aesthetically pleasing. To accomplish this goal we should consider some basic factors that are present on all rights of way:

Conditions existing on the right of way

This information must be gathered by a field survey of the right of way, which means we have

to get out and walk and make some observations to determine:

1. Density of undesirable tree species.
2. Density of desirable vegetation.
3. Height of brush to be treated.
4. Terrain.
5. Access.
6. Agricultural activities in and near the right of way as well as state and federal lands that cross the area to be treated.
7. Population.
8. Main road and highway crossing.
9. Stream and river crossings.

Gathering this information is a major part in making a final decision as to the type of chemical technique deemed necessary.

Consideration should be given to the techniques available and the advantages and disadvantages of each as they relate to the field survey. Some of the methods of application used on Pennsylvania Electric Co. property over the years that have been proven effective are:

Selective basal application

1. All woody plant species in the right of way, except species designated to be left for future ground cover, shall be treated with chemical in oil so as to saturate each stem completely at the ground line and to a height of 12 to 18 inches on the stem and completely encircling each stem. Where sprout growth originates from a stump, the treatment shall also be applied completely around the stump and any exposed roots.
2. Extreme care must be taken to treat only the tall growing tree species.
3. All chemical solutions shall be applied by nozzlemen walking the right of way. The applicating equipment may be either power driven equipment or knapsack spray tanks. Spray nozzles shall be adjusted to produce a coarse spray of large droplets at 30 pounds or less pressure.
4. Treatment season shall be year 'round.
5. All evergreen plants, except those listed, shall be treated over their complete height, including all leaves, twigs, and stems, in additions to the basal treatment.
6. All stems of ash species over five feet in height shall be removed by completely cutting at the three-inch height. The brush from this mechanical cutting shall be disposed of in a manner acceptable to the property owner. No burning of this brush will be permitted without the approval of the company. Stumps of this brush to be treated in accordance with specifications for selective basal treatment except for height of treatment.
7. The following plants are not to be treated on the right of way:
   A. All grasses, ferns and herbaceous plants.
   B. All annual weeds and annual plants
   C. Low-growing shrubs including:
      1. Mountain laurel
         Kalmia latifolia
      2. Sweetfern
         Comptonia peregrina
      3. Azalea
         Azalea nudiflorum
      4. Huckleberries
         Gaylussacia spp.
      5. Blackberry
         Rubus allegheniensis
      6. Raspberry
         Rubus occidentalis
      7. Spice bush
         Lonicera benzoin
      8. Choke cherry
         Prunus virginiana
      9. Choke berry
         Pyrus melanocarpa
      10. Dwarf willow
         Salix humilis
      11. Witch hazel
         Hamamelish virginiana
      12. American yew
         Taxus canadensis
      13. Partridge berry
         Mitchella repens
      14. Wintergreen
         Gaultheria procumbens
   D. Small trees to be preserved on the right of way where conductor height will permit:
      1. White flowering dogwood
         Cornus florida
      2. Redbud
         Cercis canadensis
      3. American hornbeam
         Carpinus caroliniana
      4. Shadbush
         Amelanchier canadensis
      5. Iron wood
         Ostrya virginiana
      6. Red cedar
         Juniperus virginiana
      7. Striped maple
         Acer pennsylvanicum
      8. American crabapple
         Malus coronaria
8. All brush over five feet in height, except the above, located within 100 feet of all improved roads and highways shall be cut and stump treated. The cut brush shall be disposed of in a manner acceptable to the property owner and so as not to be visible from the road or highway.
9.

Advantages

1. Selectivity in choosing stems to be treated.
2. Foliage "brown out" can be eliminated with dormant application.
3. Control over application of the chemical solution.
4. Can be applied year round.
5. Most acceptable to the public.

Disadvantages

1. Excessive cost when applied on dense brush.
2. Limitations by terrain and access.
3. May be a problem in obtaining oil.

Water borne, stem-foliage application

1. All undesirable vegetative growth shall be sprayed with a solution of chemical and water so as to completely wet the entire leaf and stem surface until there is run-off; except that evergreen tree species over five feet in height shall be removed by cutting at the three-inch height.
2. Extreme care must be exercised to insure that each plant is entirely covered with chemical solution, both in leaf and stem surface. To accomplish this complete coverage, it is necessary that the nozzleman treat each plant individually from a position close to the plant. Each plant must be treated from more than one direction.
3. All chemical material shall be applied by nozzlemen walking the right of way. The nozzle opening size shall be No. 9 or

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larger. The nozzle pressure shall not exceed 150 pounds pressure. To assure complete coverage of plants on the outer edges of the right of way, it is necessary that they be sprayed by men walking to the edge of the right of way and directing their spray to the center of the right of way. Off right of way damage is not permitted.

4. Pump equipment used to pump or mix spray materials shall not be used to pump water from streams or ponds into spray tanks.
5. Chemical treatment is applied between June 1 and August 15.
6. Chemical treatment shall not be made when there is a danger of wind drift of spray materials causing off right of way damage.
7. Water borne, stem-foliage treatment shall stop at least 100 feet from all road crossings, stream crossings, residences, and agricultural areas and the selective basal application substituted.
8. All brush over five feet in height, except small trees and shrubs, located within 100 feet of all roads shall be cut and stump treated.

Advantages

1. Economical in dense brush.
2. Moderate to good control in dense stands of brush.

Disadvantages

1. Foliage "brown out."
2. Limitations by terrain and access.
3. Less selectivity in choosing stems to be treated.
4. Less control over application of chemical solution.
5. Limitations by weather conditions.
6. Limited time period of application.
7. Water supply may be a problem in some areas.

Application by helicopter

1. Because of the complex nature of this job and the high degree of skill required in this operation, only qualified helicopter pilots with adequate experience in aerial right of way spraying shall be used.
2. It is necessary that all brush on the right of way be treated from two directions parallel with the line in order to overcome the shielding effect of the brush foliage on the forward motion of the spray droplets thus causing lack of treatment from two directions, one-half the prescribed volume of solution will be applied to the right of way by the helicopter flying in one direction; and one-half the volume will be applied by the helicopter flying the same swath in the reverse direction.

   Where the density of brush varies on the rights of way, an effort shall be made to vary the application with the brush density. Side dressing of the trees along the edge of the right of way is not permitted. Damage to trees and other plants off the right of way will not be tolerated.
3. Each property owner on the right of way shall be contacted by the contractor's personnel to obtain consent for helicopter application.
4. Treatment shall be from June 1 and shall be completed before August 15. Application shall not be made when winds exceed five miles per hour.
5. Helicopter application shall stop at least 100 feet from all road crossings, stream crossings, residences, and agricultural areas and the selective basal application substituted.
6. All brush over five feet in height, except small trees and shrubs, located within 100 feet of all roads shall be cut and stump treated.
7. Selective cut areas shall be marked by the contractor so that they can be identified from the air and not treated.

Advantages

1. Economical
2. Effective kill on dense stands of tall brush.
3. Access and terrain aren't a problem.

Disadvantages

1. Foliage "Brown Out".
2. Less control application of chemical solution.
3. No selectivity of application.

4. Limitations by weather conditions.
5. Limited time period for application.
6. Disapproval by a larger portion of landowners than with other types of application.

With all the information on hand, a decision can be made so as to complement the conditions existing on the right of way with the proper chemical technique.

In some cases, several chemical techniques may be employed along a single right of way.

As an example, during the 1975 spray year, one 500 KV right of way was treated using different chemical techniques. A right of way survey was completed the previous year and presented a situation where a selective basal application and helicopter application could be properly used along different sections of the right of way

Approximately 270 acres were set up for the selective basal application because of the light to moderate density of brush intermixed with a variety of desirable vegetation. Access to and along the right of way was adequate for men and power driven equipment to accomplish their job with little difficulty. Finally, the areas surrounding the right of way were mainly crop lands and pasture areas. These existing conditions on the right of way dictated the selective basal approach.

Approximately 100 acres of the same right of way traversed remote, steep, mountain ridges and slopes supporting dominant, tall stands of black birch *(Betula lenta)* and black locust *(Robina pseudoacacia)*. Access was limited with the population of the surrounding area being sparse. In this situation helicopter application was a very useful and economical tool to be used without the public disapproval that may have occurred in a more populated or agricultural area.

By using this approach to vegetation management on this particular right of way, as well as others, Penelec has achieved an effective control of tree species without the public disapproval that may result when we disregard all other factors and base an entire spray program on the economic aspect alone. □

Transplanting tolerances of seven tree species

by James G. Staley and Jamie Dickson

James G. Stanley is a horticulturist at Memphis State University, where Jamie Dickson is a graduate assistant.

Although there is apparent universal knowledge of transplanting requirements for trees there are few reported articles on tree transplanting research.

Pelton (1966), Crockett (1972), and Baumgardt (1975) listed a detailed account of these requirements as pertaining to balled and burlaped trees.

As far as actual transplanting results, Ford and Foot (1973) reported a 93 percent survival rate of trees and shrubs using a tree spade. Tree sizes ranged from 2 - 7½ inches in diameter. Cool (1975) found that trees transplanted with a tree spade rather than hand methods had less than 5 percent losses as opposed to 31 percent by hand digging.

Van de Werken and Beavers (1965) and Van de Werken and Warmbrod (1969) showed that tree species, root system, and management practices determines survival and growth rate. In their studies, Sugar Maple, Pin Oak and Yellow Poplar were ranked from best transplanting to worst respectfully. Willow Oak was originally used but transplanted so poorly it was replaced with Pin Oak.

The purpose of this study was to expand knowledge of tree transplanting tolerances of various species of different sizes.

A total of 454 trees were received from nurseries in Tennessee and planted from November, 1975 to March, 1976 on the South Campus of Memphis State University. Ball sizes conformed to those recommended by the American Association of Nurserymen. The trees were planted in four replicated plots on 20 foot centers and pits were at least 15 inches larger than the balls. The pits were backfilled with a mixture of soil, peat and sand (3:1:1).

All trees were watered when set and watered thereafter as needed. The results reported here are based on records taken June 30, 1976.

In looking at the table it is noted that the Maples transplanted the best regardless of size, whereas the Willow Oaks transplanted the poorest regardless of size. Green Ash transplanted well but Bald Cypress did poorly.

The transplanting tolerances of the Sugar Maple and Willow Oak agrees with the results of the research work by Van de Werken (1965).

It is of further interest to note that the larger size of Willow and Pin Oaks transplanted better than the smaller trees. This may be the result of the larger trees having formed a more fibrous root system due to greater lateral root development. □

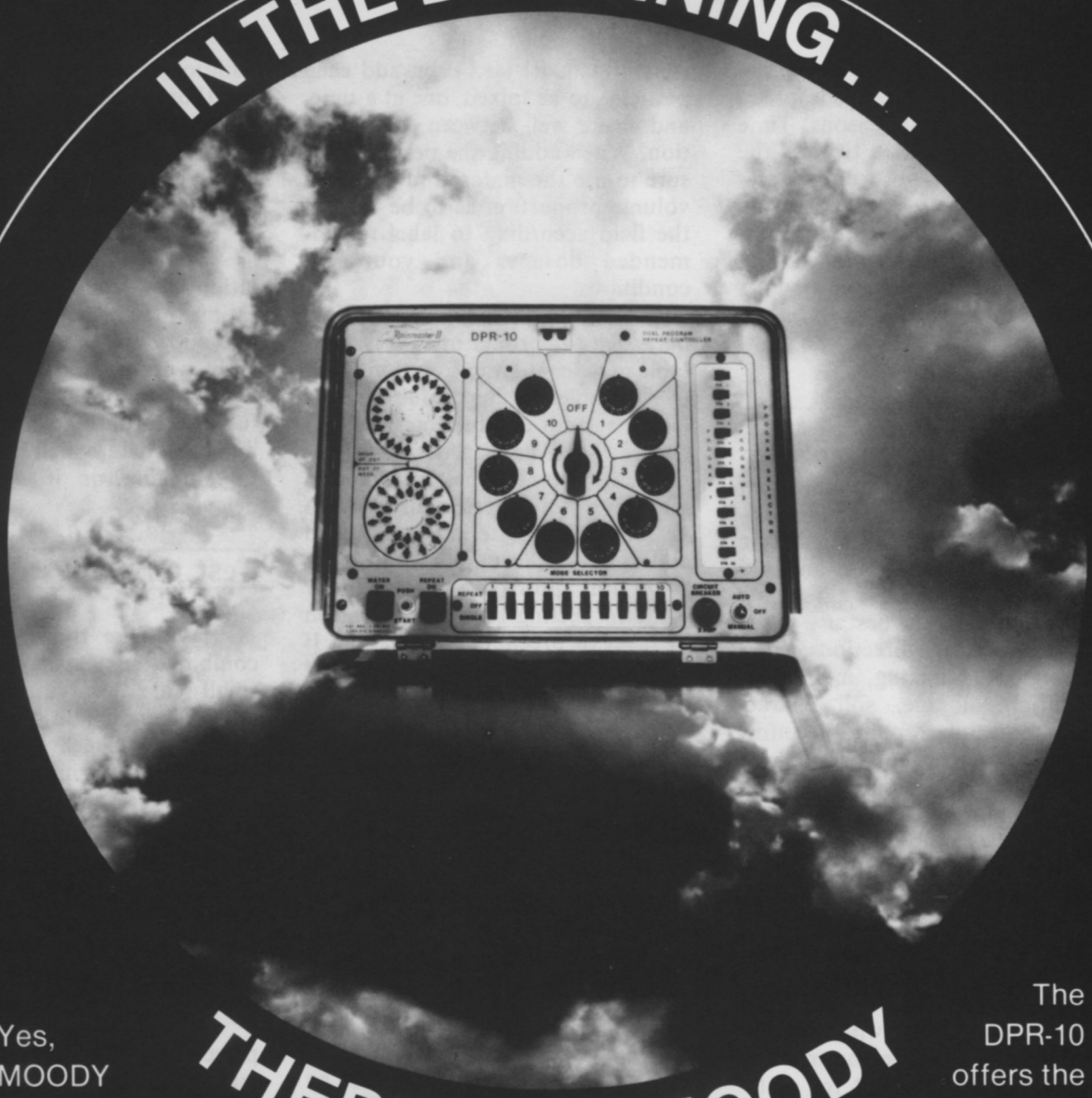
TABLE I

Transplanting Loss (Per Cent) of Seven Tree Species

SPECIES	SIZE (Caliber)	NUMBER OF TREES IN STUDY	PER CENT LOSS
Bald Cypress	2½-3"	29	24
Green Ash	1 -1¼"	48	2
Norway Maple	1 -1¼"	48	0
Red Maple	1½-2"	33	0
Sugar Maple	1 -1¼"	40	0
Sugar Maple	1½-2"	41	0
Pin Oak	1 -1¼"	23	9
Pin Oak	3 -3½"	86	0
Willow Oak	1 -1¼"	30	40
Willow Oak	3 -3½"	76	26

MOODY
IRRIGATION EQUIPMENT
SINCE 1923

IN THE BEGINNING . . .



THERE WAS MOODY

Yes, MOODY Sprinkler Co. has been around since 1923! Fifty four years of producing quality equipment for the turf industry. Our new DPR-10 controller was engineered and built in the great MOODY tradition.

The DPR-10 offers the option of dual programming and repeat cycle in one easy to program compact controlier. Get detailed information on this new controller from your local MOODY distributor or write MOODY Sprinkler Company.

MOODY SPRINKLER CO., INC.

3020 Pullman St., Costa Mesa, CA 92627

Circle 156 on free information card

Tank mixing pesticides for effective results

Tank mixing pesticides is a practice that has gained widespread acceptance in recent seasons. Time and labor savings are two of the obvious benefits, but certain precautions must be taken when using this practice to insure proper control. A recent survey conducted by Stauffer Chemical Company points up some general guidelines to get the most out of this system and limit possible mistakes.

Read all labels

First and foremost to remember before attempting any tank mix is to read the labels. The information contained may be long and involved, but it is there for a purpose: to help you make the best use of the material. Follow directions carefully regarding mixing, method of application, dosage, soil characteristics and other applicable information.

Recent EPA guidelines permit the use of non-registered tank mixes until Oct. 1977 if dosages do not exceed label instructions for any product in the mix used singly for the same pests on the same crops, and if labels do not explicitly instruct against such a mixture.

According to Dr. Douglas Murphy, agronomist with Stauffer Chemical Co., "before you mix any pesticides, first do a test for material compatibility. Many pesticides may not form a stable mixture causing layering or formation of precipitates. Application of a mixture of non-compatible materials will cause excessive rates of each chemical in separate parts of the field.

Test compatability

An easily performed compatibility test involves the following procedures:

First place one pint of the carrier, usually water or liquid fertilizer, in a quart jar. Then add each pesticide to be mixed, one at a time, and shake well between each addition. When adding the pesticides be sure to use the material in the same volume proportion as to be used in the field according to label recommended dosages and your soil conditions.

The usual order for pesticides to be added for proper mixing is: wettable powders first followed in order by flowables, water solubles, surfactants and emulsifiable concentrates. These are general recommendations and label information may give more specific directions.

After the materials are added and agitated thoroughly, let the jar stand for approximately one hour while inspecting for any separation by layer or precipitate formation. If there are any precipitates formed, or relatively quick separation into layers, the mixture is incompatible and should not be used.

Check agitation

"The amount of separation permitted depends somewhat on the agitation capabilities of the field spray tank. Generally, however, minor separating after 30 minutes is tolerable if field sprayer agitation is good," Dr. Murphy adds.

Compatibility tests should be performed each time you fill the spray tank even if using the same formulations. The same analysis of fertilizer may vary in mixing qualities from batch to batch and manufacturer to manufacturer, and untested mixes of the same material may cause problems.

Make sure you have good spray tank agitation. Even somewhat unstable mixtures may be possible if agitation is sufficient to keep them in suspension.

When mixing in the field sprayer, put the carrier in prior to addition of pesticides and allow time for thorough mixing between each material addition. Shortcuts may save you a few minutes, but the penalties can be exacted in yield and dollars.

Apply the fully agitated mixture as soon as possible after formulation to prevent possible separation, precipitation or caking. Do not allow mixtures to stand overnight without constant agitation.

Consult label information carefully regarding temperature and humidity data which may apply before mixing or if application is delayed.

Test mix rates

If you are trying an unknown combination, test it out first on a small scale at varying rates and under different conditions before large scale use. Check with extension agents for information concerning university test data on new mixes or local water conditions which may affect mixtures.

Don't mix pesticides which require different application methods. "Using foliar insecticides like Imidan, for example, with soil incorporated herbicides like Sutan + or Eptam, will cause improper placement of one or both of the materials," Dr. Murphy explains.

Don't hesitate to seek help from your local chemicals dealer or manufacturers representative for advice if problems crop up. Many times they will have access to information you might not know exists.

Do not exceed or underrate dosages of registered tank mixes. Registration is granted only after exhaustive testing under all possible conditions to assure proper control. Varying these rates may result in crop injury or pesticide non-performance. □