

UTILITY SPREADER: Highway Equipment Company, Cedar Rapids, Iowa

Self-powered, self-contained HI-WAY Model "P" utility spreader quickly converts any truck, pickup, flatbed or dump body into a "spreader." Can be mounted on a HI-WAY Model "PT" trailer and remotely controlled for one-man operation while being towed behind any vehicle; a station wagon, truck or tractor. For more details, circle (705) on the reply card.



GRASS PLANTERS: Bermuda King Company, Okarche, Okla.

Compact grass planters for faster and economical machine planting of grasses in areas as estates, acreages and golf courses, where larger and heavier machines were formerly restricted. New one- and two-row machines are not only lighter and more maneuverable, but require less horsepower for towing. Will plant Bermuda and a variety of other sprig-root grasses. Of the same durable construction as preceding, heavy-duty Bermuda King Standard Two-Row Planter. Working parts interchangeable with the larger machine. For more details, circle (706) on the reply card.



WOOD SPLITTER: Lupton Tree Service, Tiffin, Ohio

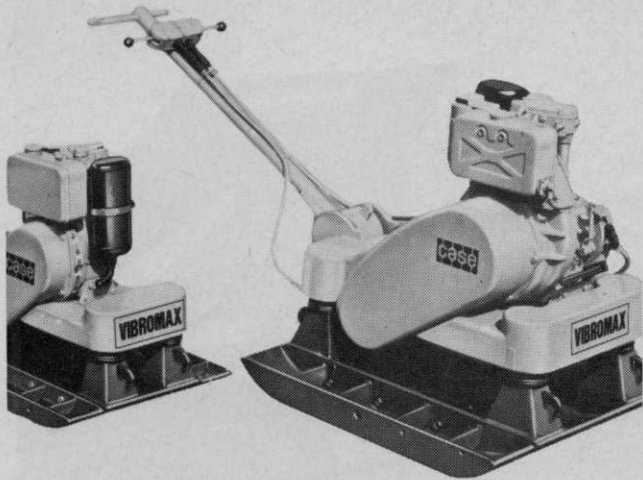
Wood Splitter accessory for backhoe built by Lupton Tree Service, replaces backhoe bucket in less than five minutes. Ruggedly constructed. Maintenance free. A good way for the backhoe owner to split a lot of wood with a comparatively small investment. Available for all size backhoes. Also available with or without remote control valve. For more details, circle (707) on the reply card.



VACUUM COLLECTOR UNIT: Hesston Corp., Industrial Div., Hesston, Kansas

Accessory to Hesston's front runner grounds maintenance tractor, makes clean sweep of clippings, leaves, and litter. Cleans as it mows, can be used with either the 48" or 60" mower, and is self-contained vacuum pickup unit. Blower is powered by the front runner's 14-hp engine. A 6" diameter hose attaches to mower discharge chute to feed material into the 20-bu. capacity collector box. No additional blower or extra trailer needed. Snorkel attachment for the vacuum pickup cleans out areas inaccessible to tractors. Its 15-ft. length reaches under shrubs and other hard-to-clean places to suck up leaves and litter. Also 6" in diameter, the tube handles the biggest of leaves without clogging. For more details, circle (708) on the reply card.





VIBRATORY PLATE COMPACTORS: J I Case Company, Racine, Wis.

J I Case's marketing two direction-reversing plate-type soil compactors through Vibromax Corporation, a new subsidiary. Units are both for heavy-duty surface and below-grade compaction, and will handle a wide variety of granular and cohesive soils and materials. Model ATN 1000 compacts up to 16" deep, with capacity up to 6300 sq. ft./hr. with plate extensions. A simple control lever changes compactor direction. The ATN 2000 compacts up to 31½" deep, will cover up to 12,800 sq. ft./hr. with extension. For more details, circle (709) on the reply card.



ROTARY TILLER: Allis-Chalmers, Milwaukee, Wis.

This 8 hp walk-behind rotary tiller with horizontal shaft drive and two speeds forward is one of four tillers Allis-Chalmers has introduced. Other models include a 3½ hp, with vertical shaft drive, a 5 hp with horizontal shaft drive and 5 hp with cabin drive. All models have synchronized tine spacing and balanced weight distribution over the tines. Other features include Briggs and Stratton gasoline engines with Kool Bore design, spring loaded idler pulley clutching, sixteen tines guaranteed unbreakable, and variable tilling width from 12 to 26 in. with extensions up to 40 in. All models are horizontal in style except for the 3½ hp which is vertical. For more details, circle (710) on the reply card.



CHIPPER-SHREDDER: Oregon Saw Chain Div., Omark Ind., Portland, Ore.

Chipper-shredder chips and bags leaves, twigs, coarse vegetation, tree branches up to 3 inches diameter and even paper that are automatically bagged ready for disposal. Residue can be used as compost. Low-profile unit has low center of gravity and moves easily on two wide tread wheels. It has an 8-horsepower gasoline engine and two hoppers—one for shredding and one for chipping. Cutting mechanism rotates on sealed bearings and all moving parts are fully enclosed for safety. Rubber curtains are installed in the hoppers to protect the user against possible kick back of materials being shredded. For more details, circle (711) on the reply card.



LIGHTWEIGHT BLOWER: The Vandermolen Corp., Livingston, New Jersey

KWH 7-11 Fastblo wheeled blower provides a high velocity, 180 MPH airblast powered by a Sachs 2 Cycle Engine. Weighs 48 pounds and a number of maintenance advantages including no crankcase oil. By revving up almost twice as high as blowers with 4 cycle engines, more high velocity air is generated by the 7-11. Machine can be operated on steep slopes with no worry about burning out the engine because of lack of lubrication. The 2 Cycle, snow mobile type engine starts quickly in any weather. Four rubber shock absorbers hold the engine to wheeled chassis and eliminate vibration. For more details, circle (712) on the reply card.



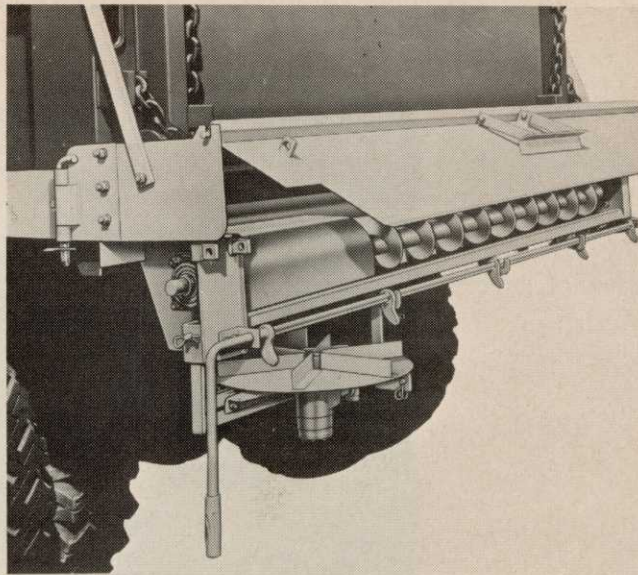
EVERYTHING MACHINE: Air Rake Mfg. Corp., Chicopee, Mass.

"Everything Machine" is a basic air rake unit with interchangeable attachments which convert this basic unit into five different job-functioning machines. With the basic air rake unit, leaves and other lawn debris can be quickly raked and collected by air power rather than the much slower, conventional method of hand raking. With the unit's finger-tip throttle control positioned on the handle bar, the operator can quickly adjust the air thrust to fit the terrain and ground conditions; on open stretches of lawn, an air rake — at full throttle — can rake a swath of up to 5' to the side in a single pass, while in confined areas such as around foundations and trees, the unit may be throttled down for short distance raking. With the air rake, leaves and debris may be worked into windrows or piles for collection just as one does when raking by hand. For more details, circle (713) on the reply card.



TRENCHER: Vermeer Mfg. Company, Pella, Iowa

Compact, low-cost service line trencher designed for simple, easy operation is powered by a 14 hp, 4-cycle, air-cooled Kohler engine and features a simple, hydrostatic drive control. Single control lever lets the operator change speeds and direction instantly . . . with no clutching or shifting required. With a heavy-duty 29,000 lb. test digger chain, the M-147H digs 3-5" wide, down to 30" deep . . . at speeds up to 20 fpm. A handy 16" x 42" dozer blade attachment on the front end of the tractor permits fast, efficient back-filling. Blade angles a full 30° left or right. For more details, circle (715) on the reply card.



SELECTO-SPREADER: Central Engineering Co., Inc.,

All-purpose precision hydraulic tailgate spreader includes a self-cleaning hopper. A single self leveling spinner, hydraulically operated, cab controlled, under the tailgate type of spreader with **Swing Out** rear wall of hopper. Selecto-Spreader model S-330, has a one piece completely removable combination cover and rear wall, which serves as the entire back wall of the hopper and "swings out" to provide easy removal of foreign objects and "self cleaning." When used in the cover position it permits dumping over (or under) the tailgate without material entering the hopper. When used as the rear wall of the hopper, it is locked in place by a positive locking mechanism. For more details, circle (714) on the reply card.



LEAF MULCHER: J & S Company, Danville, Ind.

New design in leaf mulchers utilizes the principal of the vacuum created and the rotating blades of any rotary mower or lawn tractor to draw by suction and cut and shred leaves, grass or garden debris. The unit is simply placed on the ground and, as the material is then swept or raked in, the mowing unit placed above the discharge end quickly and efficiently mulches the leaves or other debris. Unit is constructed of 16 gauge galvanized steel. For more details, circle (716) on the reply card.





Ditch Witch

INDUSTRY INNOVATOR



Top-of-the-line Ditch Witch trenchers now has 65 hp and boasts both main- and service-line capabilities. Unit trenches to depths of 7 feet, widths of 24 inches at speeds up to 2000 feet per hour; will lift self off ground. New earth saw, pictured at top of page, is making a cut thru reinforced concrete.

Ditch Witch—a division of Charles Machine Works at Perry, Okla.—is putting some innovative equipment on the market which promises to revolutionize some aspects of the industry.

Long a maker of small trenching equipment, and later of vibratory plow units, the company has just introduced the revolutionary earth saw, a unit which literally saws its way through most anything including 8-inch reinforced concrete pavement. This market innovation follows the recently developed roto witch, a unit which fits most of the Ditch Witch line of power trenchers and permits continuous trenching under streets, sidewalks and similar surface obstructions. The trenchers themselves vary from the largest unit, a 65 hp unit to a small 25 hp self-propelled vibratory plow unit for laying cable and irrigation lines.

President of the company, Edwin Malzahn, speaking to the trade press at a special demonstration of the new line recently at Chicago, said that the first trenching equipment was built 23 years ago. The company, he said, experienced some lean years of growth but that last

year (based on US Department of Commerce data) manufactured and sold 50% of all such equipment. The present plant at Perry covers nine acres.

Product lines besides the aforementioned include a full line of attachments for most power units which include backhoes and front-end loaders. Several multi-use models will handle a combination of trencher, vibratory plow, backhoe, front-end loader, and the roto witch. The larger power unit also utilizes the earth saw as an accessory.

The units are being used more and more for uses other than industrial. Tree care companies and nurserymen in the Chicago area are using some of the small trenchers for digging tree balls and for root pruning prior to digging. Nurserymen, especially, find the smallest trencher, a non-riding handle bar model, especially adaptable to narrow rows when root pruning and digging ornamentals.

The Ditch Witch line is sold through company dealers in every state of the union, and in Canada, Europe, South America, and Australia.



Press tent at Chicago Ditch Witch product showing. Editors see one of combo series in action. These units in various sizes do five different trenching operations, without changing or adding attachments. Combo trenches, backfills, does vibratory plowing, backhoeing, and boring.



Edwin Malzahn, president of Charles Machine Works, Inc., right, discusses VP 12 unit with Warren (Doc) Jordan, president of Jordan-Kumler advertising agency at Oklahoma City. The 25 hp unit which lays both cable and irrigation lines has plow on front, and is built to fit the normal lawn gate.



On hand for Ditch Witch press showing was Art Erlinger, left, president of Wisconsin Motor, Milwaukee. Visiting with Erlinger is Bud Hollingsworth of Ditch Witch. Wisconsin Motor's engines prevail on this line of equipment.

SPLENDOR

FOR THE GRASS



NEW - SPREDALL FOR LAWN CARE

Spreads redwood composition, steer manure and ALL fibrous material. Adapts to spread granular fertilizer, pellets, plant food, lime, sand and grass seed. Large hopper loads from the top. Rollers 24", 36" and 48" wide. Control within easy reach without dismounting. Spreads evenly on level or sloping ground. Model 7010-B, push type spreader available in 24" width only. Ideal for sanding greens...roller leaves no ruts.

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APPLIED BIOCHEMISTS, INC.

P.O. Box 25
Mequon, Wisconsin 53092

For More Details Circle (119) on Reply Card

Our company is primarily a producer, processor and wholesale marketer of fine turfgrass seeds. Our production centers primarily around 15 different Kentucky bluegrass varieties with our long suit being Merion, and more recently, the new variety Fylking. In addition to the bluegrasses, we produce some fine fescues and four of the new fine-textured Perennial ryegrass varieties including Norlea, NK100, Pelo and Pennsylvania's new Pennfine.

Until the end of World War II the somewhat technical turfgrass industry as we know it today was virtually non-existent. True, there were a few different kinds of grasses to market for home lawns but nothing like the myriad of varieties which we know today. We now have a wide choice of turfgrass varieties for specialized areas varying in range of disease resistance growth characteristics, and even different grades or quality categories.

Reflecting even further, until the mid-1950's, almost every lawn, whether home, industrial or institutional, was established through seeding. Then, in the 1950's, some of the more affluent members of our society asked for and received instant lawns at quite a cost premium per square yard over the traditional method of seeding lawns. This was the beginning of the instant lawn business or what we refer to today as the sod industry.

In a recent survey conducted by the Weeds Trees and Turf magazine, it was reported that the average number of years experience among U.S. sod growers was only 9.4 years per grower, indicating the youthfulness of this new industry and its probable potential for the future. Even more dramatic, however, is the 1969 record sales of \$150 million posted by the industry at the grower level and the over \$400 million generated at the retail or consumer level. Truly this is a dramatic and growing agricultural commodity which warrants close attention from its suppliers and, particularly, seed suppliers.

In analyzing today's sod grower, our company has concluded that:

1. He is an intelligent agriculturist and businessman familiar not only with the basic agronomic essentials of producing

This presentation on sod quality seed from the standpoint of industry was made by Mr. Jacklin before the Biennial Conference Association of American Seed Control Officials, meeting at Portland, Ore., Sept. 12-17.

SEED for SOD QUALITY

An Industry View

By Doyle W. Jacklin

sod, but quite well versed in financial and business management techniques;

2. He is conscious of his production expenses and is continually striving to keep them low enough to provide him with a steady yet reasonable profit;
3. He is anxious and quite willing to try new products which will result in a better sod at a lower cost. These new products would include not only fertilizers, herbicides and equipment but more important to our own industry, new turfgrass varieties; and
4. Probably even more close to home, is the high quality product he produces which relates directly to the quality of the seed which he purchased to establish his fields. Seed quality therefore is important to the sod grower and even more revealing is his willingness to pay for that quality.

Although most sod producing land in the United States has historically produced other agriculture crops, there is increasing acreage of virgin land being cleared specifically for sod production. Over 50 percent of sod producing land is high in organic content and is commonly referred to as peat or muck soil. There is much conjecture as to the best soil type for producing sod but it is now generally agreed that both mineral and peat soils have their advantages and disadvantages. Varietal performance is a more important production factor than soil type.

If given proper care, sod can be lifted as early as 12 months after seeding. The average sod grower

prefers to have one to two-year-old sod before harvesting to insure the development of more mature rhizomes capable of knitting properly to new soil.

New varieties are now becoming available which can produce a liftable sod within six to ten months after seeding with an even denser turf. Ironically, these same new varieties can be a problem to the homeowner if not cared for properly after sodding. With a denser sod and a higher number of leaf tillers and rhizomes and feeder roots, it stands to reason that more water will be required to keep all the plant parts turgid and living while the rooting process takes place. Sod growers, therefore, are now recommending that the new, dense varieties receive a higher frequency of watering immediately after transplanting so that they can root properly with minimum wilt and damage.

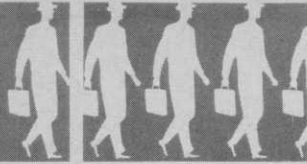
Sod growers are interested in both quality and cost when considering seed. In terms of cost per yard, it has been documented that the average to produce one yard of sod is 29 cents. This includes all direct costs, overhead, taxes, etc.—everything! Of this 29 cents, 4½ cents goes toward purchase of seed, fertilizer, and chemical spray materials. The seed cost itself accounts for only one and one-quarter cent, or 4.6 percent of the total yard production cost. Seed cost then is relatively minor compared to the other costs. When seed of a higher quality is desired, an increase or decrease in seed cost per pound does little to alter the total sod production cost.

By contrast, when seed of inferior quality produces a sod with bunchy off-types, an unattractive sprinkling of annual bluegrass seedheads, or an unsightly mat of encroaching bentgrass, then the loss per yard due to the off-grade sod price can amount to as much as a dramatic five to 10 cents per yard, or four to eight times the actual cost of the seed. Thus, growers demand the highest quality seed available. They are willing to pay the extra price necessary to the seed producer to obtain high quality seed production.

Though sod growers have been demanding high quality seed, it wasn't until two years ago that there suddenly appeared between eight and 10 different quality specifications from a like number of state and regional sod grower organizations. Each set of specifications varied widely in crop and weed re-

(Continued on page 39)

industry people on the move



CARL R. JOHNSON, to vice-president, manufacturing, for Hypro Div., Lear Siegler, from works manager. He joined Hypro in 1947.

* * *

JAMES W. CLAPP, appointed group leader, chemical research operations, R&D of American Cyanamids Ag Div., Princeton, N.J.; an employee since 1939.

* * *

CHUCK COLLINS, Scotts' Orlando golf course representative, named to introduce the company's turf management line in Florida.

* * *

ROGER A. BROWN, to vice-president, sales, turf and terra division of Koos, Inc., Kenosha, Wis., from area sales manager of International Minerals and Chemicals. Koos has announced an agreement with I.M.C. to take over a number of I.M.C. brand names and formulas.

* * *

ALLEN "BARRY" GREER, Atlanta, receives a Conwed Corporation promotion to agronomic sales specialist for the southern region. He joined the company in 1965 as a sales representative.

* * *

JAMES A. HUGHES, president of Diamond Shamrock, to chairman of board, and to continue as chief executive officer. He succeeds **RAYMOND F. EVANS**,

who becomes chairman of the executive committee of the board of directors. **C. A. CASH**, named to succeed Hughes as president. Cash also named chief operating officer.

* * *

ROBERT CARSON McCONNELL, named horticultural program coordinator for Philadelphia with responsibility for 8000 acres of parkland, greenhouses, landscaping, street trees and new environmental center at Fairmount Park, from position of arborist with Fairmount Park Commission.

* * *

LESTER C. OHLE, to Thompson-Hayward as agricultural sales representative, from manager of formulation and government sales for Ciba-Geigy.

* * *

CYRIL A. KUST, promoted to group leader, plant growth regulant discovery, American Cyanamid. He joined company as plant physiologist, herbicide research early this year, from University of Wisconsin.

* * *

DAN HEDGLIN to assistant service manager for Cushman Motors, Lincoln, Neb., from district sales manager for Cushman's industrial and commercial lines at Atlanta.

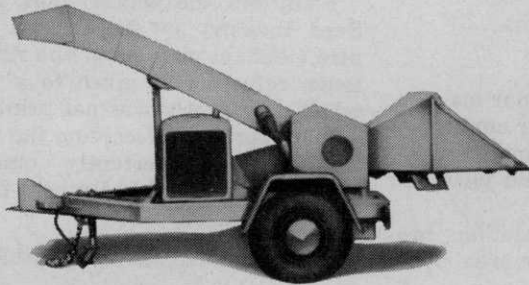
* * *

R. J. (BOB) HAYES, appointed vice-president, operations, Allis-Chalmers Credit Corp. Prior to joining AC in 1962, he was with Speed Queen Co., Ripon, Wis.

* * *

CLARENCE "LES" McCOMBS, named head of department of horticulture, Virginia Tech, Blacksburg, from professor of horticulture at North Carolina State University.

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our customers brag. . . .**



. . . about how much better and more economical our chippers are than anything else they've used. Of course, we design and build them that way. The heart is the 300-pound flywheel and high-speed, tapered blade which chew smoothly, inexorably, through the work material with the safe flexibility that only Asplundh's special engineering features can provide.

Don't take our word. Ask for the specifications brochure "Asplundh Chippers to Fit Your Need" and for a free, no-obligation demonstration. You'll see why an Asplundh Chipper is best for you . . . and as good as you'd expect from the world's largest tree expert company.

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New 5 oz. Aerosol Spray Can

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prevent decay

Cabot's Tree Healing Paint is a carefully prepared bituminous paint for protecting live wood and preventing decay. For years, leading arborists and foresters have been using Cabot's because it

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For More Details Circle (112) on Reply Card

LETTERS TO THE EDITOR

Correction

I note in the August issue that you report the registration of amitrole as being cancelled. This is very misleading.

Only the food crop uses of this chemical have been cancelled. The non-cropland uses are still registered and will not be disturbed. Earlier this summer we took the necessary steps to change our existing labels, literature and advertising to reflect those cancellations.

Since amitrole is widely used industrially by many readers of **WEEDS TREES AND TURF**, I would appreciate your advising them that these uses are, and will continue to be, registered. Please note the enclosed release sent to all our amitrole customers on June 29. Note the comment by the Scientific Advisory Committee that "... no evidence was presented to the committee that amitrole, as now registered, has had any harmful effects on man or animals." **JOHN H. KIRCH**, Marketing Manager, Industrial Chemicals, Agricultural Chemicals Division, Amchem Products, Inc., Ambler, Pa.

Editor's Note: Sorry John. I pulled this short from the EPA release for the Gov't./Business News page and should have included this notation for our readers. A. E.

Information

I am an avid reader of your magazine and have noticed your continuing efforts to debunk the overreaction by our ecologists and would-be ecologists.

I have had several invitations to speak before groups in my area and

would have gladly accepted them if I had information at my fingertips that would present our side of the question. Can you tell me where I can obtain this information? **JAMES R. McCURDY**, President, Green Lawns, Inc., Belleville, Ill.

Editor's Note: For a beginning package of speaking materials, contact James Mills, National Agricultural Chemicals Assoc., 1155 15th St., N.W., Suite 514, Washington, D.C. 20005. The NACA has developed an excellent kit for speakers to which you can add data as it becomes available.

Deep Root Tree Injection

In your August issue there is an article regarding a new formula for deep root tree injection. Please advise where it might be purchased. We are a landscaping maintenance company and would be applying this fertilizer to plants and trees on homeowner lawns. **RENE MAGUET**, Pete Maguet & Sons, St. Clair Shores, Mich.

Editor's Note: We don't know if this product (Dine-A-Mo S) is for sale. But you might contact Charlie P. Johnson Spray Company, Inc., 4665 N.W. 36th Ave., Miami, Fla. 33142.

Editor Error

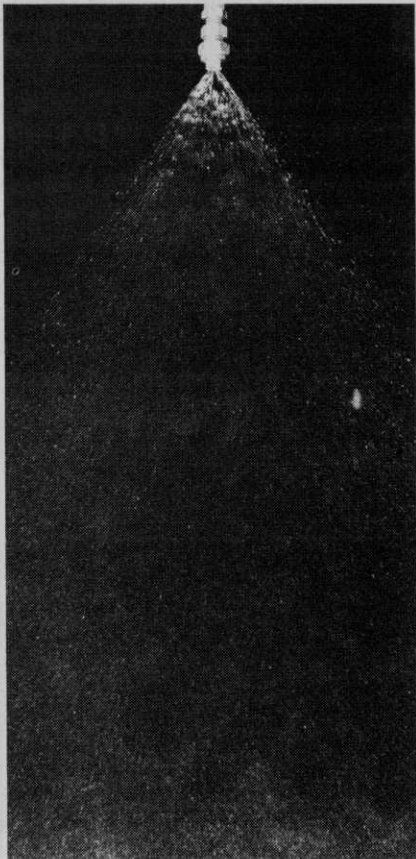
I enjoyed the article "The Grass Seed Industry — An Oregon Empire," but on page 23 of the August issue, reference is given to a table which apparently was not printed. I would appreciate receiving the table that was inadvertently omitted. **ROBERT W. DUELL**, Rutgers Univ., New Brunswick, N.J.

See the accompanying table.

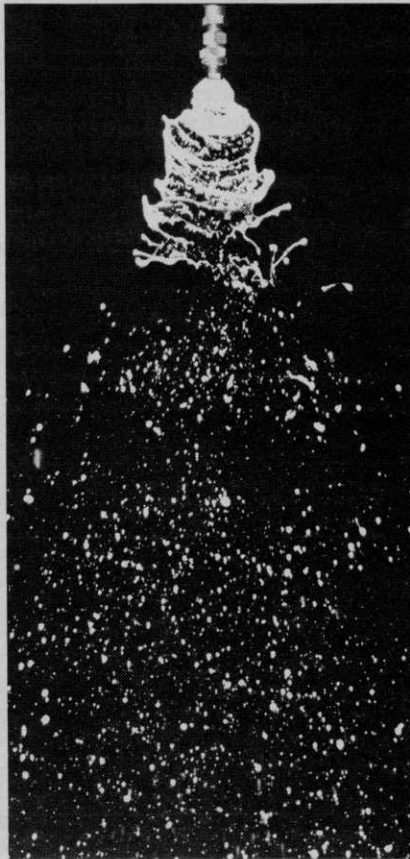
TABLE I. Number of years a field must be free of a species to produce Foundation, Registered, or Certified seed if the previous crop was of a different variety—1971 standards

Species	Foundation seed	Registered seed	Certified seed
	years	years	years
Annual ryegrass	5	5	5
Perennial ryegrass	5	5	5
Orchardgrass	5	2	2
Kentucky bluegrass	5	3	3
Tall fescue	5	2	2
Fine fescue	5	1½	1½
Highland bentgrass	5*	5	5
Crimson clover	5	3	2
Red clover	6**	-	3***

* Deep cultivation required 2 years.
** Cultivation required 3 years.
*** Two years if cultivated 1 year.



Conventional Spray Pattern



Fomex Spray Pattern

Seed (from page 36)

quirements and threatened to create a hodge-podge of specifications. As a result, seed producers in Washington and Idaho, together with the Washington State Department of Agriculture, developed what is now known as Sod Quality Certified Seed Standards. These standards were promulgated by the Washington State Department of Agriculture in 1969 and were subsequently revised and updated in May, 1971.

These Washington State standards are much more rigid than even sod grower standards. It is quite unusual that the seed industry would purposely agree to establish higher standards than required by their sod industry customers. But, in our estimation, the quality seed can be produced and we'd just as well produce a product which meets or supersedes all other quality specifications.

Looking at the maximum allowance weed, for instance, the average allowance by other state sod certification programs averages .10 percent, or over three times as much as the Washington State sod quality seed standards. Additionally, all certified sod quality seed must be free of coarse and objectionable grasses. In the weed section, all sod quality seed must be free of dock, chickweed, crabgrass, Black medic, velvetgrass and all prohibited noxious weeds, in addition to, and probably most important, annual bluegrass.

The sod analysis certificate is based on a 25 gram purity and includes a search for all noxious and other weeds, all crop, and a 10 gram Poa annua check and germination. Each crop or weed found is listed on the analysis and this analysis accompanies every lot of seed shipped. The sod grower will examine this comprehensive seed test- (Continued on page 41)

Colloidal Reduces Drift In Herbicide Spraying

An adjuvant-nozzle system has been developed by Colloidal Products Corporation and Delavan Manufacturing Co. Petaluma, Calif. It helps aerial or ground applicators of herbicides reduce drift by as much as 70%.

FOMEX, a combined spreader-activator, as well as a foaming agent, when used in combination with a foam generating nozzle will, according to Colloidal: 1. Provide maximum contact of the spray so-

lution with the plant surface; 2. Reduce evaporation of the spray deposit; 3. Form a fast draining foam to allow maximum liquid contact with the plant surface; 4. Increase absorption of herbicide spray; and 5. Substantially reduce spray drift.

For more information circle Reader Card No. 721.

Coming for December
Annual Directory and
Suppliers Guide

3 BILLY GOAT Indoor/Outdoor Vacuums

One man with a Billy Goat becomes a big clean-up crew. Original machine BG60 is available in self-propelled (P) and push (A) models, with gasoline or propane engine, battery or electric with cord. For all models—optional intake hose for hard to reach areas.

Model	HP	Snout width	Blower housing	Application
BG60	8	30"	Steel	Industrial
BT70	8	30"	Steel	Grounds, parks
KD40	4	26"	Steel	Lawns, drives

BILLY GOAT
INDUSTRIES, INC.

Dept. WT10, Box 229, Grandview, Missouri 64030



BOOK REVIEW

THE WATER ENCYCLOPEDIA, a compendium of useful information on water resources. Edited by David Keith Todd, professor of Civil Engineering, University of California, Berkeley.

Water, one of our most precious and abused resources, gets the full treatment in the new Water Encyclopedia, recently published by Water Information Center, Inc. The book marks the first time so much hard-to-find and scattered information is available in one volume.

An entire chapter is devoted to Water Quality and Pollution Control, of prime concern today, with such sub-classifications as: Drinking Water Quality Standards, Industrial Water Quality, Irrigation Water Quality, Water Quality for Aquatic Life, Recreational Water Quality, Water Treatment Processes, Waterborne Diseases, to name just a few.

Other chapters indicate its broad coverage: Climate and Precipitation, Hydrology, Surface Water, Ground Water, Water Use, Water Resources Management, Agencies and Organizations, Constants and Conversion Factors.

More than 200,000 facts qualify

The Water Encyclopedia as a singular and basic reference on the subject for those in the field or just interested in it.

About the editor

David Keith Todd is a Professor of Civil Engineering at the University of California, Berkeley, where he is in charge of graduate education in water resources engineering. His education includes degrees from Purdue University, New York University, and the University of California. He is a registered professional engineer and a member of the American Society of Civil Engineers, American Geophysical Union, American Water Works Association, American Meteorological Society, and American Association for the Advancement of Science. As a National Science Foundation Fellow he has studied and conducted research on water resources in Europe. He is the author of more than 90 publications in the fields of hydrology and water resources. In recent years, he has served as a consultant to the United Nations, Federal and State agencies, several cities and other

public and private organizations.

About the publisher

The Water Information Center is a small, well-established publisher specializing in basic books on the subject of water. Long before pollution became a household word, the Center was disseminating valuable information and data through its Water Newsletter, the oldest newsletter of its kind in the water field. The Center's "Water Atlas of the United States" was an award winner, receiving a certificate of special merit from the Association of Printing Industries. The Atlas was also one of a small group of publications chosen to be exhibited in the United States Pavilion at the World's Fair in New York and is still the only reference of its kind available. "The Water Encyclopedia," presented in this pamphlet, is yet another unique publication from the Water Information Center.

The 7" x 10", 550-page, hard-cover volume is available for \$27.50 from Water Information Center, Inc., Dept. 3P, Water Research Building, Manhasset Isle, Port Washington, L.I., N.Y. 11050.

insect report



TURF INSECTS

WESTERN YELLOWSTRIPED ARMYWORM (*Spodoptera praefica*)

OREGON: Moths (freshly emerged) appearing for first time in blacklight trap located near Macleary, Marion County.

A NOCTUID MOTH (*Agrotis ducens*)

NEW HAMPSHIRE: Moths 30 in blacklight trap at Newington, Rockingham County.

A LEAFHOPPER (*Euscelis ohausi*)

OREGON: Collected fourth and fifth instar nymphs on Scotch broom (*Cytisus scoparius*) on June 28, 1970, near Corvallis, Benton County. This is a new North American record. Distribution Europe.

TWOLINED SPITTLEBUG (*Prosapia bicincta*)

SOUTH CAROLINA: Unusually heavy, spittle masses per square yard on lawns in 6 city-block-area of Myrtle Beach, Horry County.

INSECTS OF ORNAMENTALS

RED-HUMPTED CATERPILLAR (*Schizura concinnia*)

VIRGINIA: Feeding on dogwood in Chesterfield County.

AN ARMORED SCALE (*Parlatoria crotonis*)

FLORIDA: Taken on croton at nursery in Chattahoochee, Gadsen County, May 7, 1971. This is a new county record.

TREE INSECTS

EASTERN SPRUCE GALL APHID (*Adelges abietis*)

WEST VIRGINIA: Infestation fifty percent on 12 acre block of Norway spruce in Wetzel County, August 12.

ELM LEAF BEETLE (*Pyrrhalta luteola*)

NEVADA: Damage heavy to trees in Caliente, Lincoln County. Damage heavy in Fallon, Churchill County. Damage light to medium at Topaz Lake, Douglas County. KENTUCKY: Completely defoliated elm trees in Knott and parts of Jackson Counties.

LARCH CASEBEARER (*Coleophora laricella*)

OREGON: Very rapid and unexpected southward movement in Umatilla County larch. Originally detected at Tollgate, June 1970, this species spread into Emigrant Park area between Pendleton and La Grande and into Battle Mountain State Park, located 35 miles south of Pendleton.

DOUGLAS FIR TUSSOCK MOTH (*Hemerocampa pseudotsugata*)

CALIFORNIA: New infestation in estimated 3000 acre stand of mixed forest and private property in El Dorado National Forest, El Dorado County. Mixed populations from light to heavy at Nevada Point, Georgetown area, and along Rubicon River eastward.