The Rapps tow a fork lift for unloading sod delivered at site. Bob Rapp, in picture, says that they have found this more practical than the boom which they have mounted on another Rapp truck. Forklift is used on local deliveries, up to 40 miles.

likely to be only part-time sod installers, can be a problem. Bob Rapp says they handle this problem by using a cash-on-delivery system. All Rapp sod is delivered on Rapp trucks and collection made before unloading.

Naturally this system of collection on the spot cannot be adhered to 100% of the time but works adequately for Rapp. He says established landscapers who regularly do business with the Rapp operation are handled on a regular billing basis. Others must assure the office manager that the money will be on hand before the sod is lifted for delivery.

Rapp Instant Lawn farm grows about 200 acres of sod yearly on mineral soil. The demand is currently for Merion, Rapp states, and this variety constitutes the bulk of their production. Rapp finds the best time for lifting sod to be May 5 through September. He prefers to lift and market 2-year-old sod, which contrasts with the preference of many growers, particularly those on peat or muck based soils who like to...

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Fork lift, handled here by Charles Conrow, is used to pick up pallets behind harvest and load trucks for transport. The Rapps maintain two forklifts, one in the field and one which is towed behind a 10-wheel truck.

lift and market sod within a year after seeding.

A Princeton turf harvester is used along with forklifts to handle the palleted sod. Normal production from the harvester is about 7,000 square feet per hour, though the top capacity of the machine is somewhat greater. Two forklifts are needed, one in the field and one which is towed behind a 10-wheel delivery truck. Bob Rapp also uses two additional trucks which are tractor-trailers with mounted booms. These latter trucks are used for distant deliveries or those beyond 40 miles which is the practical limit for towing the fork lift.

Sod is sold to landscapers, garden centers, builders, developers, golf courses, and a few sales directly to homeowners. Rapp says the operation is equipped so that they can operate with only 8 men. This permits them to keep better quality labor, he believes, and to run a more efficient operation. Sod is generally harvested in the morning, and then can be delivered during the remainder of the day.

Seasonal variations have proved a problem to Rapp and other growers in New Jersey and surrounding states. Two years ago, the weather was so dry that one inch of irrigation water disappeared into the soil almost immediately. Rapp uses a portable irrigation system with Marlowe pump. By contrast, the next year was wet to the point that they found it difficult to lift and deliver sod.

Rapp found that the biggest boost to their marketing program proved to be a 4-color promotion folder. A professional photographer was hired to shoot both field and home site pictures and a folder planned to point up the value and beauty of the Rapp instant lawn. These promotion pieces were sent to landscapers, garden center outlets, builders, developers, golf course superintendents, and others who were prospective sod purchasers. This, Rapp said, put their product on the market and helped establish them in the industry. They believe it the single most important step beyond production of a quality product.

MSU Tips on Sodding For Rapid Rooting

Michigan State University studies indicate there are several important guidelines to ensure successful sodding results.

For most rapid sod rooting, MSU specialists point out that sod should be cut 1/2 to 3/4 in. thick. When laying sod, the underlying soil should be moist to give roots a better chance to establish themselves quickly and firmly.

MSU also recommends that soil for sodding be prepared just as it is for seeding. Avoid laying sod on a subsoil because grass does not readily take root in subsoil.

Turf Becomes Big Business For Pennsylvania

Pennsylvania Crop Reporting Service reveals that $231,353,328 is spent each year on maintenance of turfgrass areas in Pennsylvania.

Areas surveyed by the Service included home lawns, schools, sod growers, golf courses, airports, athletic fields, cemeteries, churches, apartments, motel and hotels, parks, state highways, and the Pennsylvania Turnpike.

The 231 million dollar turfgrass expenditure includes $66,557,307 value for unpaid family labor on 2,250,309 home lawns. Replacement value of turfgrass equipment in the state is $333,908,568.

L. H. Bull, Secretary of Agriculture for the Commonwealth says that this makes turfgrass the largest single agricultural enterprise in the state. It was equal to 63 percent of the total cash receipts from the sale of all agricultural products for 1966.
KNOW YOUR SPECIES

BIG SAGEBRUSH

(Artemisia tridentata)


The genus Artemisia (a member of the Sunflower Family or Compositae) contains about 250 species, most of which occur in the arid regions of the northern hemisphere. There are both shrubby and herbaceous species. Most of them are aromatic.

About 96 million acres of the 683,389,000 acres of pasture and rangeland in the eleven Western states are in sagebrush, with big sagebrush (A. tridentata) the most abundant. Associates of this species are silver sagebrush, three-tip sagebrush, low sagebrush, and black sagebrush. Coast sagebrush is common in coastal California and sand sagebrush in the southern Great Plains. Another common associate is rabbitbrush (Chrysothamnus) which is a poor browse species for both domestic animals and deer. On the other hand, bitterbrush (Purshia tridentata), also a common associate, is a favored browse species.

Big sagebrush is a much-branched, evergreen shrub from 1½ to 15 feet tall, usually with a distinct trunk and shreddy bark. The leaves are gray, wedge-shaped, typically with a 3-toothed apex, from ⅜ to 1½ inches long, 1/16 to 3/16 inches wide, and without definite petioles. The flower heads are small, consisting of 4 to 6 disc flowers and occur in dense, leafy panicles up to 4 inches wide. The seeds (fruits) are resinous-granuliferous achenes.

Several different methods have been used to control big sagebrush. The use of fire is one of the oldest and least expensive. Since fire, however, is not effective on sprouting herbaceous or woody plants, these may increase and become a problem. Rabbitbrush may take over and become a more serious problem than the sagebrush. Plowing and discing may be employed, but these operations destroy nearly all vegetation so the areas must be reseeded. After reseeding, however, sagebrush and rabbitbrush must be controlled to prevent invasion of the seeded areas. Spraying with herbicides can be employed to great advantage to maintain the grassland vegetation. Herbicides are also used advantageously on sagebrush lands to control old stands of sagebrush.

When big sagebrush is the dominant shrub, it can be controlled with an aerial application of 2 pounds of an ester form of 2,4-D per acre, applied in a few gallons of water plus a little diesel oil. Plants should be sprayed when they are growing vigorously and after the first new leaves have become fully enlarged.

When rabbitbrush occurs in sufficient amounts to be a problem, spraying should be delayed until the rabbitbrush has attained 3 inches of new twig growth and the quantity of 2,4-D should be increased to 3 pounds per acre. Such a spray should control most of the sagebrush and rabbitbrush if timing is proper and soil moisture conditions adequate for vigorous shoot growth. Once a stand of grass has been obtained, good grazing practices and occasional spraying with 2,4-D to control sagebrush and rabbitbrush seedlings will help maintain it.

Perennial grasses compete against big sagebrush, rabbitbrush and other woody species more effectively than annual grasses. However, on overgrazed sagebrush lands, perennials are eliminated to a large degree and annual grasses remain. A good practice on such lands is to seed perennial grasses after the woody species have been killed. However, the perennial grasses, when seedlings, often fail because they cannot compete well against annual grasses. A promising method of handling this problem is to spray directly behind a seeder with paraquat, which kills the annuals, often allowing the perennials to survive and take over in a couple of years. These areas, again, will slowly revert to sagebrush, etc. if not sprayed with 2,4-D periodically.
**Mobile Soil Conditioners For Golf Course Balding**

The Mobile Municipal Composting Plant, Mobile, Ala., has made available a product to help remedy bald spots on golf courses, that is.

Mobile-Aid, an organic compost soil conditioner that contains beneficial bacteria to improve soil structure, is particularly effective, according to the producer, in soil that lacks nitrogen, phosphorus, potash and other elements necessary for healthy growth of grass and plants, says the company.

Test results on bald spots at the Dauphin Island, Ala., golf course are illustrated above. Because of the soil’s sandy nature, areas on the edges of fairways repeatedly resisted attempts to grow grass. Late last July, 2 truckloads of Mobile-Aid were applied to several spots. Within 3 months, Bermudagrass carpeted these areas, even though it was not the prime growing season, says the company.

Mobile-Aid also tends to prevent wide variations of alkalinity and acidity, according to the company.

**Golf Course**

(from page 13)

...together and back-filled with sandy material. This process insures conservation of water. These are believed to be the first golf course lakes so constructed in the eastern U.S.

Rossmoor Leisure World New Jersey is the seventh Leisure World course. Once the Rossmoor Leisure World Chicago course is completed, Rossmoor Leisure World will be among the largest owner of golf courses in the world.
New Spray Emulsifier
Designed for Spray Oils

On the market now is a new emulsifier, T-MULZ/A02, designed especially for use with superior spray oils.

According to the manufacturer, Thompson-Hayward Chemical Company, Kansas City, Kan., T-MULZ was designed primarily for an atrazine-water-oil mixture. It has been widely tested and used during the past year, both for ground and aerial applications. The new emulsifier contributes to the rapid spreading of oil-atrazine across weed surfaces for fast and complete plant kills.

Comprehensive product studies have demonstrated unusual emulsifier characteristics in the application to T-MULZ A02, particularly with respect to its spreadability, stability, solubility and performance characteristics.
Suppliers Personnel Changes

Chemagro Corp., Kansas City, Mo., announces Hugh W. Swink, vice president-marketing, has been elected to its board of directors. Swink has been with Chemagro since 1951.

The Dow Chemical Co., Midland, Mich., has appointed managers to three recently formed businesses in its Agricultural Products Dept. They are R. M. Barbour, Livestock and Veterinary Products Business; Andrew Butler, Crop Protection; and James H. Gowell, Vegetation Control.

Armour Agricultural Chemical Co., Atlanta, Ga., reports three executive appointments. Dr. R. F. McFarlin, formerly vice president and technical director, has been selected for the new position of vice president-commercial development. He will be responsible for commercializing research and development project results, coordinating marketing programs in new areas of technology, evaluating industry technology and assisting in long-range planning. Dr. J. D. Nikerson has been named director of research and development and Dr. Clyde Reeder, manager of Armour's Atlanta Research Center.

Vistron Corp., a subsidiary of Standard Oil Co., Cleveland, O., has designated Allen E. Behn to manage operation of its new Oxco Brush plant, Cookeville, Tenn.

Fisons Corp., Wilmington, Mass., reports Paul B. Allen, Jr., has joined its technical staff and will serve as Fison's western representative. He will supervise testing programs in the west.

Mobil Chemical Co., N. Y., has announced executive appointments in a major realignment of its agricultural chemical production and marketing organization. Richard B. Madden has named group vice president and will direct activities of three divisions—agricultural chemicals, industrial chemicals, and minerals. J. P. Rogers has been designated vice president and general manager of the Agricultural Division. S. W. Carter becomes vice president of Mobil and general manager of Minerals Division with A. A. Farrell being named the division's marketing vice president. P. W. Judah, moves from acting manager of agricultural chemicals to vice president and assistant to the president of Mobil. Industrial chemicals will remain under the direction of W. P. Boyer.

John Bean Eastern Division of FMC Corp., Lansing, Mich., has recently selected Fred E. Freiheit as chief engineer for agricultural products.

Rohm and Haas Co., Philadelphia, Pa., announces a number of personnel changes in its Agricultural and Sanitary Chemicals Dept. William A. White, assistant manager of the department, has been given the additional position of agricultural chemicals product manager. James E. Thompson becomes assistant to White in the agricultural chemicals sales section. William R. Hughson, former product manager, has been named manager of the northern sales territory. He replaces James M. Graham, who will retire in December. Until retirement, Graham will handle special sales and development assignments. Gunther W. Skall, now in the New York City area, will transfer to the central territory. He will be replaced in the northeast sales territory by Craig A. Guthrie.

J. I. Case Co., Racine, Wis., reports Edward J. Campbell has joined its staff as general manager of the components division, Racine. He will be responsible for design and manufacture of all components produced by the three Racine plants and for design and production of agricultural tractors at the Clausen plant.

The Dow Chemical Co., Midland, Mich., has named W. L. Corbin as manager of sales for its Agricultural Products Dept. Dow also appointed two field sales managers who will be responsible for marketing its agricultural products in the United States. Joe F. Kinman will manage the eastern sections, including key poultry markets of the mid-south. Manager for the central and western sections will be Howard W. Sheldon.

Elanco Products Co., a division of Eli Lilly & Co., announces appointments of two managers. Robert P. Moorman, Jr. has joined its Financial Division as manager of credit for the southern marketing regions. He will headquarter in the general offices in Indianapolis. Floyd L. Simpson has been named manager of a new sales district in Elanco's Agrichemical Sales Division. His territory includes western Tennessee, Mississippi and central and southern Louisiana.

Koehring Co., Milwaukee, Wis., reports John J. Hinnendael has been named controller. He replaces J. R. Aydelotte who will continue as secretary.

Brady, Des Moines, Iowa, a division of Koehring Co., has recently designated Marvin D. Van Peursem as chief engineer.

United States Testing Co., Inc., Hoboken, N. J., announces the appointment of David Argyle as manager of agricultural services at its Denver, Colorado branch. Argyle will be responsible for soil testing, fertilizer and irrigation recommendations and scheduling of plant tissue and leaf analysis programs.

Aeroquip Corp., Jackson, Mich., reports Don T. McKone has been elected president and chief operating officer. Peter F. Hurst, the company's founder, remains chairman of the board and chief executive officer.

American Potash & Chemical Corp., Los Angeles, Calif., announces two men have joined its (Continued on page 38)
FOR SALE

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BRANCH MANAGER: To run office in Central Michigan area. Must be capable and aggressive salesman in the entire tree and lawn care line. The opportunity is unlimited for the right man who wants to work with one of the largest tree companies in Michigan. Salary open. Box 33, Trees, Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

FIELD SUPERVISOR Industrial Weed Control firm in eastern Pennsylvania is looking for a field supervisor. Degree in one of the agricultural sciences is desirable but not necessary. Write Box 30, Weeds, Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

THE COVER

(from page 5)

control of aquatic weeds, biological controls, physiology of aquatic...
Safety "Do's and Don'ts" For Pesticide Storage

Any pesticide — insecticide, herbicide, fungicide, etc.— left over from last year should be carefully disposed of, says the U. S. Dept. of Agriculture.

Dispose of any container that has lost its label, the Dept. recommends. Don't save or reuse empty pesticide containers. Read and follow directions and precautions on labels every time you use pesticides. Don't rely on your memory.

Always remember that many pesticides can be harmful to both people and pets if they are not handled, applied and stored with care and caution.

"Up, Up and Away" Spraying Method A Winner

The war against Michigan crop diseases will be won in the air, contends Dr. Howard S. Potter, MSU plant pathologist. Aerial spraying is proving faster, better and more economical than ground methods, says Potter.

In many cases, aerial spraying provides a savings of both money and the amount of water required, according to Potter, whose figures show that aerial spraying costs average $2.50 per acre, often less than ground spraying costs. Ground sprays often require 100 or more gallons of water per acre, while aerial spraying requires much less, says Potter.

Other advantages of aerial spraying cited by Potter are: ability to be applied to wet soil, elimination of plant damage and soil compaction, and better plant protection because concentrated fungicide residues on leaves are readily distributed by dew deposits and are less likely to be washed away by heavy rain.

Potter says aerial spraying is also easily adaptable to close row spacing and solid block plantings that are difficult to spray with ground equipment.

A disadvantage of aerial spraying, Potter admits, is the inability to control fungicide drift that may endanger humans, livestock and nearby crops. Better trained pilots, improvements in spraying equipment and better chemical formulations are helping to solve these problems, he concludes.

Use Hot Bath Method to Kill Nematodes

A good, hot bath will free shipment of Bermuda grass turf from at least 3 types of nematodes, according to USDA scientists.

Nematodes cause considerable damage to turf and can be spread to many locations through turf shipments unless certain precautions are taken.

Test results indicate that cores of sod (1" x 3") should be held in water at 122°F to greatly reduce—but not completely wipe out—nematodes in turf shipments. The most favorable time-and-temperature combination is 15 minutes at 130°F. This treatment kills all nematodes but causes no damage to the turf.

When sod cores are held for 15 minutes at 140°F, both nematodes and grass are killed, so caution must be taken.

Personnel Changes

(from page 36) staff as Trona Chemicals sales representatives. They are William J. Crummer, Cleveland, O., sales office; and Douglas H. Downing, Shreveport, La., office.

Rain Bird Sprinkler Mfg. Corp., Glendora, Calif., reports Ed Shoemaker has been selected as sales manager of its new marketing division, Eastern Rain Bird Sales, Inc., Peoria, Ill.

We need competition. That's the thinking of Jim Ousley, Sr., who heads up one of the country's top sod producing companies. During an enjoyable visit with Jim this past month at Pompano Beach, Fla., he stated that competitive bidding on some varieties stimulates sales. Ousley faces all the problems of fellow sod growers in high labor supply and high costs, plus some which are uniquely Floridian. Among these latter are expensive chemical treatments for chinch bug and billbug control.

Air-Boats Vs. Jets. A bigger thrill than the usual jet plane flight is that first, wild ride in, on, or about an air-boot. It's something different as I found out while picking up this month's cover picture in Florida's Everglades west of Ft. Lauderdale. C. Elroy Timmer, technician for ARS, USDA, was my pilot during a tour to test spraying on water hyacinths at the Loxahatchee research area at Delray Beach, Fla. The boat sways, dips, and literally flies over the water and swamp vegetation. Besides producing a thrilling ride, it's also the only practical way to travel Everglades country.

Membership Goal For ASPA. Sod producers are joining their new national association at a record rate. Latest word is that 101 are dues payers. Goal for the group according to Executive Secretary George Hammond at Columbus, O., is 150 by their July 30 meeting at Purdue, and 200 by the January '69 annual meeting.

Uncle's Dirty Laundry. Plaudits to the California Association of Nurseries and their stand against tax-supported plant production nurseries. Research, yes, but production for competitive sales, no! The association recognizes the need for public nurseries as holding yards, but as far back as 1965 passed a resolution calling for a 10-year phase out of local, county, and state tax-supported nurseries. A number have been closed since then but progress is not what it should be. The California group has again voiced its opposition and reaffirmed its stand.

Northwest Association Spraymen Active. Had a nice visit with James Overton, of Miller Products and the Northwest Spraymen's Association, Portland, Ore. Jim reports the association is active and interested in some coordinated reporting with WEEDS TREES AND TURF. We've always enjoyed working with this forward looking group. They are aware of their public image and constantly work to improve the stature of the sprayman.
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