



Exhibitor Bob Chambers, Dusters & Sprayer Supply, Inc., Chickasha, Okla., left, discusses equipment with Otto M. Neidert, Ulysses Air Service, Ulysses, Kan.



Stanley W. Strew, vice-president, Colloidal Products Co., left, and John C. Coulston, McLoughlin Dusters, Oxnard, Calif., discussed trends and safety.

within as many years. This figure included Iowa operators who have just formed a state group. N-Triple A will help research aerial use of existing and new products and will promote chemicals designed exclusively for aerial application, he said. Reade believes the association can become the leader in creating new and sound credit policy guidelines.

A subject of concern to operators is the high cost of maintaining insurance and the close tie between insurance costs and safety. John C. Coulston, McLoughlin Dusters, Oxnard, Calif., emphasized that safety is money. "What you save (by keeping insurance costs down as a result of a safe operation) goes right on to that slim profit you make," he told the group. "Conversely," Coulston said, "what extra insurance costs over normal expense comes off the slim margin of profit."

Coulston feels that safety for the aerial applicator comes from awareness by someone in charge. He urged operators to check their operations personally, to watch their pilots fly, and to do so on a weekly basis. He suggested letting crews know the safety goals demanded and make them aware that the operator will personally return to check compliance.

In agreement with Coulston, Bill Marsh, Marsh Aviation, Litchfield Park, Ariz., and a vet-

eran pilot and operator, said that operators need to be sure that their pilots know the individual pilot's own capability and the limits of the aircraft which he is flying. Most pilots think they know, Marsh said, but he predicted that on a dead engine landing, that many would undershoot the strip. He urged operators to instruct their pilots on stall recovery techniques at low altitudes. Further, Marsh reported his belief that operating aerial applicators should report all violations of safety regulations for the good of the industry.

Few New Compounds In Aerial Picture

Trends in chemicals for aerial use were discussed by Stanley W. Strew, vice-president, Colloidal Products Co., Sausalito, Calif. Strew pointed to the severe restrictions on efforts of chemical companies in placing new compounds on the market. Because of development costs ranging up to \$5 million and a 5-7 year development period, he expects few new compounds to reach the market during the next few years. Registration requirements for new chemicals are more and more complex.

Greetings proved to be first order of business. Chris D. Stoltzfus, Stoltzfus & Associates, Coatesville, Pa., left, is welcomed by Asa Burroughs, executive-secretary of the Texas AAA, Stonewall, Tex. At the right is Corley Tedder, Tedder Aviation Corp., Texarkana, Tex.





Insurance specialist Charles W. Harper, vice-president, Rebsamen and East, Little Rock, Ark., left, visits with Billy J. Williams, Williams Flying Service, Tutwiler, Miss., center, and Robert A. Phillips, Ceres, Calif. Phillips who was elected president for 1968 served the group as vice-president last year.

Strew pointed out, and uncertainty of future regulations, along with changes in federal, state, and even local laws serve to restrict company progress.

Relatively new in the field of chemical production are the pharmaceutical manufacturers, Strew said. He believes their technology in the environmental health field, their screening programs, and their library of biologically active chemicals will enable such companies to produce some very useful compounds.

Among newer trends, Strew reported, are hormones which are being studied for use in stopping an insect's development, as opposed to killing it outright. Such hormones would likely be safe for use around non-target insects, animals, and humans.

Research on plane dispersal systems, which is being done extensively at Mississippi State University, Starksville, Miss., was discussed by Mike Smith. Smith is a member of the department of Aerospace and Aerophysics at the institution. He said that dispersal systems greatly affect the performance level of planes. The load, he said, is not the most important item. More important, Smith said, is the drag created by the dispersal system.

Research has shown, according to Mississippi work, that the best

rate of climb for a plane will be near the stall speed. A stall speed indicator is valuable as a working tool for the aerial applicator pilot, Smith said. At slower speeds, the power requirement increases greatly.

Dispersal Equipment Causes Excessive Drag

Drag, caused by applicator equipment on the plane, costs many extra dollars when measured by the extra fuel needed per hour. Equipment used today, Smith believes, causes more excessive drag than can be justified. For example, he said that studies have shown that an engine-powered spray system (hydraulic system) can decrease drag from a 55 horsepower requirement down to 10 hp or possibly 12 hp. Another adjustment needed to gain this big saving in horsepower is moving the boom of the spray system up into the wing wake. Proper location of the boom has been found to be critical within one-half inch. The wing wake, Smith said, is very narrow in range. But when the boom is properly located and the engine-powered spray system used, drag becomes a minor factor and climb performance is found to be very close to that of a clean airplane.

Closely attuned to the thinking of Smith was Carl W. Heimer, Piper Aircraft Corporation, Lock-

haven, Pa. Heimer pointed out that a plane is no more than a flying platform. The choice of plane for practically any use is on the market now, he said. Areas needing development, according to Heimer, are safety, which concerns the development of a capsule-type cockpit area, and development of dispersal equipment for aerial application. Heimer believes the aircraft companies must begin more testing programs in both these areas. He stated that dispersal equipment was the greatest current need.

Discussing insurance losses, Charles W. Harper, vice-president, Rebsamen and East Insurance, Little Rock, Ark., said that one of the chief causes of losses is the unwillingness of the operator to refuse risky assignments. There are times, Harper told the operators, when they should avoid the risk in the name of "professionalism." Loss control, he said, is one of the practical steps in getting the cost of insurance down.

Members of N-Triple A complimented F. Farrell Higbee, executive director of the group, for his efforts during this first year of organization. Higbee, in his report to the group, said that he will write a weekly letter to the officers and board of directors of the group. Special effort, he said, will be made to form new state associations.

Richard Reade, outgoing NAAA president, left, and Terrell P. Kirk, Jr., Grumman Aircraft, Elmira, N.Y., look over specifications at Grumman's exhibit booth.





Dr. W. Wayne Allen, agricultural consultant, College Station, Tex., left, and Dr. John Long, director, Biochemistry Research, O. M. Scott and Sons Co., Marysville, O., discuss growth inhibitors at Texas turf session. Dr. Allen serves as executive secretary of the Texas Turfgrass Association.

for the protection of the user.

Athletic field care continues to challenge the personnel responsible for maintaining appearance and utility at the same time the area is being heavily used. This is particularly true of football fields. Dr. J. R. Watson, Toro Manufacturing Corporation, Minneapolis, Minn., discussed some of the problems in this type management. He said proper management of football fields can be a great aid in keeping down injuries, particularly among elementary and high school players.

Dr. Watson pointed out that footing for the athlete is usually good if the grass is in good condition. This requires proper fertilizer balance. When the field is properly fertilized, turf is less likely to be torn by cleats. He went on to say that bermudagrass is the best and most popular football field grass for Texas, though some selections can do a better job with proper management. Ryegrass, Dr. Watson said, is strong and competitive, and can be seeded just prior to the season. It can also be reseeded. Common bermuda can be used, particularly if it is overseeded early in the season, and reseeded lightly through the season. This reseeded, Dr. Watson said, serves to introduce

Texas Turfgrass Conference Features Intensive 3-Day Technical Training

TURFGRASS in Texas is big business. Yearly cost of turf maintenance in the state is set at more than \$211 million. This adds up to 1/7 of the total value of all agricultural crops.

Grass varieties are primarily bermudagrass and St. Augustinegrass. Bermudagrass accounts for 41% of that used on home lawns, St. Augustinegrass for 56%. Miscellaneous varieties make up the other 3%. These are also the primary grasses which concern professional personnel who are responsible for turf maintenance, though specialty types are used as needed. Most of these and their care were key topics at the 3-day Texas Turfgrass Conference, Dec. 4-6.

Dr. W. Wayne Allen, agricultural consultant, College Station, Tex., and executive-secretary of the group said that those attending the Conference were largely concerned with golf courses, parks, cemeteries, institutions, schools, industrial areas, and rights-of-way maintenance on highways, utility lines, and railroads.

In discussing disease control

with the group, Dr. Bob Miller, E. I. du Pont and Co., Wilmington, Del., pointed out that chemicals are for aid in solving problems. They are not intended, he said, to replace the man in management. He urged turf specialists to read and then heed the labels. These, he stressed, are

New officers of the Texas Turfgrass Association, elected for 1968 at the Texas Turfgrass Conference are: Jim Holub, golf superintendent, River Oaks Country Club, Houston, Tex., president, left; and Phil Huey, superintendent, Parks Department, Dallas, Tex., vice-president.



young healthy plants into the mature turf.

Topdressing athletic fields helps to level out turf and improve footing. And topdressing will also aid thatch control, according to Dr. Watson. He suggested a topdressing of organic matter gained by use of peat, cobs, sawdust and possibly other materials in compost form.

Growth Inhibitors May Become Turf Help

Growth inhibitors are relatively new and promise to become a management factor in turf care during the coming years. Dr. John Long, director, Biochemistry Research, O. M. Scott and Sons Company, Marysville, O., discussed his work with a number of experimental chemicals. His evaluation of growth inhibitors for use on turf is that too many limitations exist at the present time.

Performance of turf treated by a growth inhibitor can be predicted fairly accurately, according to Dr. Long. While types and varieties of grasses react differently to the several types of inhibitors he has used, all grasses will show a less intense color level after treatment. Less dense areas of turf fill in more slowly. Any mechanical damage to turf is much slower to recover. There is a greater than normal growth of grass when the inhibitor dissipates.

For the specialist who plans to use a growth inhibitor on turf, Dr. Long specified the optimum conditions of grass for treatment. First, he said that grass should be in an active growth stage. High turf density is needed, along with an adequate fertilizer level. An adequate soil moisture level is mandatory. Pest control is also necessary.

More than 250 turf specialists attended the Conference which was held at Texas A&M University and co-sponsored by the Texas Turfgrass Association and the University. Jim Holub, golf superintendent, River Oaks Country Club, Houston, Tex., was elected president. The group named Phil Huey, superintendent, Parks Department,

Dallas, Tex., as vice-president, and Dr. W. Wayne Allen, agricultural consultant, College Station, Tex., as executive secretary. The 1968 Conference will be held December 2-4.

Roadside Management On New England Chemical Conference Agenda

Turfgrass is a valuable asset for roadside rights-of-way. But maintaining all roadsides in turf is an expensive factor in highway maintenance. R. B. Thorton, manager of the U.S. National Plant Materials Center, Beltsville, Md., says that some use of other covers in selected areas can reduce maintenance costs. Thorton, speaking to 150 delegates at the recent New England Chemical Conference, Concord, N. H., believes that use of crown vetch, low growing lespedezas and similar plants could be increased. He suggested using woody plants for screen effects, beauty spots and for erosion control.

W. J. Garmhausen, chief landscape architect for the Ohio Department of Highways, pointed out that necessity and economics have often dictated development of land transportation systems. Today, he said, highway systems are so complex that specialists in all areas are demanded. But to the usual engineering and other speciality areas must be added aesthetics, pleasure and recreation. Views and vistas, Garm-



Roadside development today is no longer an embellishment, but is planned for the needs of citizens, according to Conference speaker W. L. Hottenstein, above, U.S. Department of Interior.

hausen said, are as important now as grades and curves.

J. A. Dietrich concluded, however, that beautification without maintenance could well lead to ugly dilapidation. Dietrich, Superintendent of Parks and Trees for Greenwich, Connecticut, and also past president of the Natural Shade Tree Association, told the delegates that "one of the most pressing challenges for the individual is the depression and the tension resulting from existence in a world which is increasingly less pleasing to the eye". He went on, however, to show how "beauty can become a reality in any community if properly controlled and organized and our nation will become a more delight-

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W. I. Boyd, E.I. du Pont de Nemours Chemical Co., left, and Dr. H. E. Wave, University of Maine, discuss New England Chemical Conference program. Boyd discussed highway brush control with group. Dr. Wave served as the Conference chairman.



System of Management Underway At Summit Hall To Protect Sod Root Zone and Eliminate Reseeding



Fully mechanized system of sod harvesting on Summit Hall Turf Farm, Inc., is designed to prevent soil compaction. John Nunes sod harvester, above, and International Harvester forklift are on flotation tires. Forklift moves palletted sod to trucks located on hard surfaced roads.

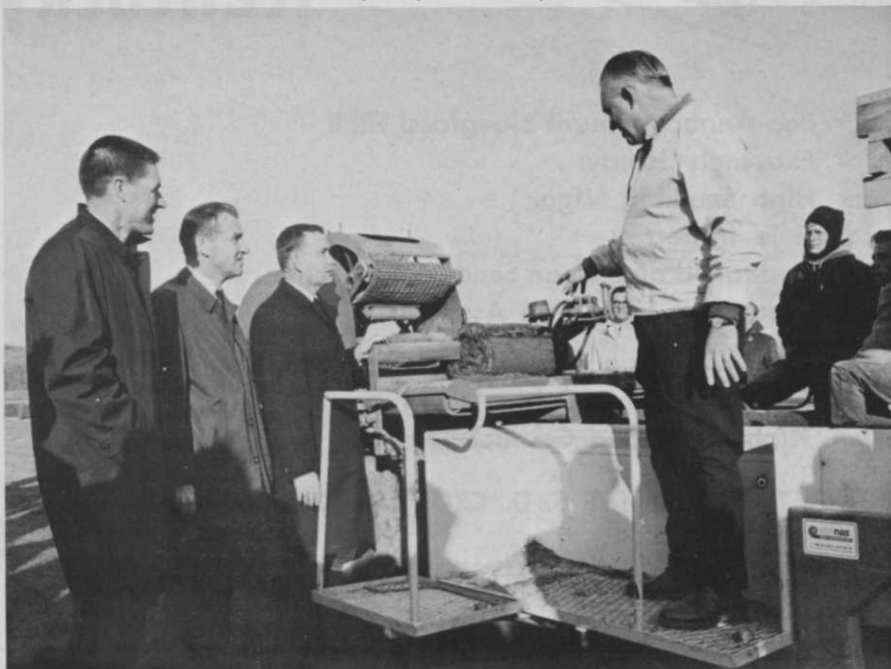
SOD PRODUCTION is a new industry. New methods of growing and handling sod can be expected. The same is true in selling the freshly harvested product. Good producers across the country are shaking down various methods of handling the product and moving it into wholesale and retail channels.

A veteran in the business, Bill Wilmot, founder and manager of Summit Hall Turf Farm, Inc., Gaithersburg, Md., is combining cultural and harvesting methods to cut overall management costs. He is also working to improve marketing practices.

His most recent project is development of a system of management which will eliminate reseeding after harvesting the sod crop. The fact that sod rhizomes below the surface, if not damaged by compaction, will recover and grow new sod as quickly as that established by a new seeding is the basis for his new system.

In the past, Wilmot says, trucks, tractors, and harvesting equipment in general have compacted rhizomes to the point

Bill Wilmot, Summit Hall founder and manager, explains rolling mechanism on Nunes harvester to American Society of Agronomy group which toured farm during recent national meeting. Harvester will handle 1200 square yards of sod per hour with crew of three men.



that too many do not recover, or that recovery is too slow. Today, flotation wheels for all types of equipment enable the operator who uses care in management to all but eliminate compaction.

Wilmot is using a John Nunes sod harvester equipped with high flotation wheels. He uses the harvester for rolling and palleting Merion sod. For Meyer Zoysia, he locks the rolling head out of the way on the harvester and uses it for padding sod. A new International Harvester forklift, also on high flotation wheels, is used to carry pallets from field to trucks on hard roads. The idea is to literally float the sod off the field and onto waiting trucks.

Wilmot is now tooled up and running the first trial with the system. He expects irrigation to be more critical, but has the equipment and controls in the form of a power roll system to handle the problem. Wilmot expects Meyer Zoysia to recover

within 18 months and about the same period for Merion bluegrass. This, of course, would vary in other regions where temperature ranges differ.

Big advantage of the system is the fact that the agricultural phases of reseeding are eliminated. However, Wilmot believes that some light overseeding and scarifying may be necessary. Another major plus which the system promises is that an entire field does not have to be cleaned up before grass recovery begins.

Most of the 300 acres in sod on the Summit Hall Turf Farm, River Farm, is in Merion bluegrass. In fact, Wilmot was one of the early producers of this variety. He supplied the first Merion which went into the East Garden of the White House lawn during the tenure of President Harry S. Truman. This was in the early 1950's.

Wilmot also grows a good percentage of Meyer Z-52 Zoysia.

In addition, he grows Scott's Windsor and will harvest his first 0217 Brand, Fylking Kentucky bluegrass this coming summer. He has high hopes for this latter variety, reporting that it looks very good right now.

For cutting sod ahead of the Nunes harvester, Wilmot uses Ryan sod cutters. The Ryan 18" unit is used for rolls, being mostly Merion. The 15" head is used when sod is folded, and the 12" head for padding Zoysia.

Marketing demands time and effort for Wilmot. He keys his efforts on a number of markets, most of which are in the Washington, D. C., and adjoining areas. In order to guarantee delivery of fresh sod, Wilmot says that sod is cut the morning of delivery and sales are restricted to distances of 200 miles. To do this, he has his crews on the job an hour earlier than formerly. They report in at 6:00 a.m. during the harvesting period.

Summit Hall turf is sold wholesale, retail, and by mail. In fact, the mail-order business for Zoysia plugs continues to be a thrifty one. Wholesale business is via landscapers and retail garden centers. This latter group, particularly the large, chain garden centers, have become big outlets for Summit Hall. Wilmot says the retail end of the business consists of two installation crews which are kept busy the entire season.

Important to the sod producing industry, Wilmot believes, is proper care of the newly laid sod. Since much is sold through outlets other than the farm, Summit Hall furnishes information leaflets on how to care for the new sod. A flyer is provided the buyer for each type of sod purchased. Wilmot has flyers for Zoysia and Merion sods and uses O. M. Scott and Son's Windsor folder when he sells Windsor. Every customer is furnished the proper folder, whether he is purchasing 10 yards or 1000 yards of sod.



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George Hammond, left, secretary-treasurer of the American Sod Producers Association, Columbus, O., and Mr. and Mrs. Ben Warren, Warren's Turf Nursery, Palos Park, Ill., discuss proceedings at ASPA luncheon held during the Ohio Turf Foundation Conference at Cleveland, O. (WTT will carry a complete report on the Ohio Turf Foundation Conference in the February issue).

American Sod Producers Hold Luncheon Conference Dec. 12 At Cleveland

Sod producers attending the Ohio Turf Foundation Conference and Show met for a luncheon session Dec. 12. Bringing the 80 producers up to date on activities of the American Sod Producers Association were Ben Warren, ASPA president, and George B. Hammond, ASPA secretary-treasurer.

Warren told the group, which represented 6 sod producing states, that among plans of the new national sod association was varietal testing. This program will be carried out with leading seed breeders and distributors and at university research stations across the nation.

Warren believes that a varietal testing program will answer the current problem which producers face in selecting the best grass seed for their own future production. He emphasized that the chief value of the seed testing program will be that variety tests can be conducted under actual field conditions on sod farms, and over broad areas of the nation. This will produce results, Warren said, of value to both producers and breeders.

Hammond reported on the substantial progress made by the ASPA since its initial organiza-

tion at Lansing, Mich., last July. He told the group that ASPA now has producer members in 17 states, plus a growing list of associate memberships among material and equipment suppliers.

Also discussed by Hammond were plans for the first annual meeting of the national sod association. This is being held in conjunction with the Golf Course Superintendents conference at San Francisco, Calif., Feb. 18-23. Hammond reported that the ASPA section of the program is being directed to practical sod production and marketing problems. The ASPA, he said, will have a booth at the GCSA exhibit area.

Raymond C. Kinch, professor of agronomy at South Dakota State University, conducts a field inspection of a stand of South Dakota Certified Kentucky Bluegrass. Fields producing certified seed must be at least 10 years old.



South Dakota Growers Are Now Marketing Own State Certified Seed

A new source of Certified Kentucky Bluegrass has been established on the plains of South Dakota where extreme environmental stresses and a vigorous natural selection process have combined to produce a rugged, hardy grass.

South Dakota Certified Kentucky Bluegrass is harvested from stands which are at least 10 years old—some of them nearly 50 years old—containing thousands of genetically different types. The seed is hardy and has a wide genetic base, available only in South Dakota.

J. Duane Colburn, manager of the Seed Certification Service, points out that the planters of South Dakota Certified Kentucky Bluegrass will be assured that all seed has met rigid standards as follows: Inspection of all fields which have been into native Kentucky Bluegrass sod for at least 10 years with proper isolation; Yard and plant inspection of both uncleaned seed lots and final cleaned lots; Careful processing by one of seven seed plants approved for processing Kentucky Bluegrass seed by the South Dakota Crop Improvement Association; and Laboratory Inspection, where minimum standards require 95 per cent pure seed, 85 per cent germination, no noxious or objectionable weed seeds, 0.1 per cent weed seed, 0.1

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Meeting Dates



Helicopter Association Annual, Stardust Hotel, Las Vegas, Nev., Jan. 21-24.

Associated Landscape Contractors of America, Annual Meeting, Conference Center, Williamsburg, Va., Jan. 21-24.

California Weed Conference, 20th Annual, El Rancho Hotel, Sacramento, Calif., Jan. 22-24.

Virginia Turfgrass Conference, Virginia Turfgrass Council and V.P.I., Golden Triangle Motel, Norfolk, Va., Jan. 23-24.

California Weed Conference, El Rancho Hotel, Sacramento, Calif., Jan. 22-24.

California Agricultural Aircraft Association, Annual Meeting, Sahara Tahoe Hotel, Lake Tahoe, Calif., Jan. 24-27.

Arizona Aerial Applicators Association, Annual Meeting, Francisco Grande, Casa Grande, Ariz., Feb. 1-2.

Weed Society of America, 1968 Meeting, Jung Hotel, New Orleans, La., Feb. 5-8.

Maryland Arborists, Nurserymen, and Florists Days, Center of Adult Education, University of Maryland, College Park, Md. A day for each in order listed, Feb. 13, 14 and 15.

Annual Agricultural Chemical Conference, Oklahoma State University, Student Union, O.S.U., Stillwater, Okla., Feb. 14-15.

National Arborists Association Mid-Winter Meeting, International Inn, Tampa, Fla., Feb. 18-21.

American Sod Producers Association, First Annual Meeting, In conjunction with Golf Course Superintendents Assn. Convention, San Francisco Hilton Hotel, San Francisco, Calif., Feb. 18-23.

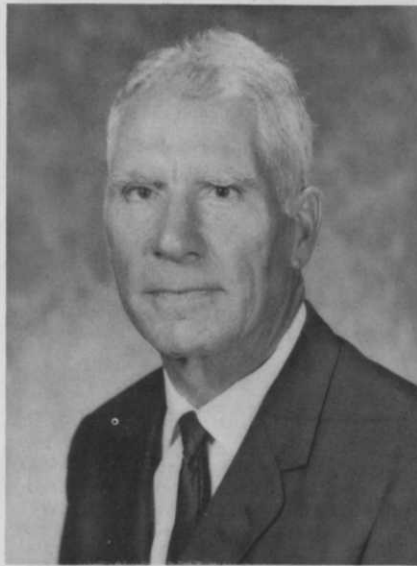
Massachusetts Fine Turf Conference, White House Inn, Chicopee, Mass., Mar. 6-8.

Midwest Regional Turf Conference, Midwest Regional Turf Foundation, Purdue University, Lafayette, Ind., Mar. 4-6.

Western Society of Weed Science, formerly Western Weed Control Conference, Owyhee Hotel, Boise, Idaho, Mar. 19-21.

Michigan Turfgrass Conference, Annual Meeting, Kellogg Center, Michigan State University, East Lansing, Mich., Mar. 20-21.

Dr. A. O. Leonard Will Author Feature Know Your Species



O. A. Leonard

Beginning with the January issue, Dr. O. A. Leonard will write the "Know Your Species" feature for WEEDS TREES AND TURF. Miss June McCaskill, Senior Herbarium Botanist, is assisting him.

Dr. Leonard, who holds B.S. and M.S. degrees in botany and chemistry from Washington State College and a Ph.D. from Iowa State College is a native of Washington, the evergreen state. After receiving his Ph.D. from Iowa State College, he taught at Texas A&M. In 1939, he then joined the Agricultural Experiment Station in Mississippi, where he conducted some of the first studies on chemical weed control in cotton.

Since 1950, Dr. Leonard has been with the Botany Department of the University of California at Davis. His main responsibility at Davis has been the conducting of research on chemical control of woody plants; however, other important research has been on weed control in vineyards, which has been cooperative with the Department of Viticulture. He has published numerous papers on weed and brush control, as well as on transport of herbicides in woody plants.

Turf Stand Density Up With Fall Fertilization

Fall application of fertilizer will increase turf density the next year. This is a finding of The Lawn Institute, Marysville, O.

Director of the Institute, Dr. Robert Schery, reports that heavy autumn fertilization increased the bluegrass turf stand by 48% over an untreated check area.

Goal of the tests was to study any burn from over-application of fertilizer. Rates up to 4 times that recommended by the manufacturer were used in the fall of 1966. Mid-summer grass counts in 1967 showed an average of 428 grass culms or shoots per square foot in treated turf. The untreated check strip averaged 288 culms per square foot.

Foreword Know Your Species

The desirability of native woody plants depends upon the situation under which they occur. There are probably no native woody species which we would desire to have completely eliminated. This is strangely true, even for poison oak (Rhus diversiloba). This shrub adds color to our landscape and need not be controlled except where human contact is likely to be frequent or where its presence is economically detrimental. Woody species may be wanted or unwanted for a variety of reasons. For example, sprouting woody species may be especially detrimental to the establishment of a new coniferous forest after a forest fire; on the other hand, these same species may not be detrimental once the forest has become established. Also, most woody species are troublesome nuisances and create a fire danger when growing beneath utility rights-of-way. Attractive natural landscapes can be developed by the selective removal of unwanted shrubs and trees. Herbicides have become a valuable tool in achieving the above objectives and in shifting the ecology of plants in the directions desired.

O. A. Leonard

POISON OAK

(*Rhus diversiloba*)



Drawing from: California Range Brushlands and Browse Plants by Arthur W. Sampson and Beryl S. Jespersen. Calif. Agric. Expt. Sta. — Ext. Ser. Manual 33.

Prepared by: O. A. Leonard, Botanist, Assisted by B. J. McCaskill Senior Herbarium Botanist, Botany Department, University of California, Davis, California

Poison oak (*Rhus diversiloba*) of western North America is similar in appearance to its relatives poison oak and poison ivy of the eastern United States. Much of what can be said for one species is also true for the others. For example, each species can grow as a ground cover, or climb trees, or stand alone as shrubs.

In all, there are about 150 species of *Rhus* (sumacs) consisting of evergreen and deciduous shrubs and trees. Some of these, including sugar bush (*R. ovata*) and staghorn sumac (*R. typhina*), are valuable as ornamentals. *Rhus* is a member of the Cashew family, which includes trees with edible nuts — the cashew (*Anacardium occidentale*) and the pistachio (*Pistacia vera*),—and fruit, mango (*Mangifera indicam*).

Poison oak is widely distributed from southern British Columbia to Baja California. It is most common in California in the Coast Ranges and in the lower mountain slopes of the Sierra Nevada. It becomes especially abundant in areas where competing vegetation has

been removed; thus one can see hillsides in the lower mountain slopes containing nearly solid stands of this shrub; these same hillsides had been converted from mixed stands of woody plants to solid poison oak by periodic burning and erratic browsing by goats, sheep, or horses. Such animals are rarely poisoned by it.

This shrub is a vigorous sprouter from the underground stems. The leaves are trifoliate, 3 to 6 inches long and deciduous. The leaflets are variously lobed, toothed and sometimes entire, and 1 to 4 inches long. These leaves remain green for varying periods of time, largely depending on the moisture status of the site. However, sooner or later they become yellow and often a beautiful red as the plants become moisture stressed. Reddening of leaves can be seen in different areas from May through October. Flowers are greenish-white, appearing with the leaves in April or May. The fruit is a brown or whitish drupe, about 1/4 inch in diameter.

Poison oak forms an oily substance which is non-volatile at normal temperature, but is volatilized by fire. This substance occurs in all parts of the plant, from which skin irritation can result following contact. It can be transmitted indirectly through contact with contaminated clothing, animal fur, etc. It can even be contacted by inhaling fumes from burning plants, often causing severe effects.

The main interest in controlling this shrub rests in its poisonous allergic properties to many people. There are several herbicides which can be used to kill it. Most important, irrespective of herbicide used, is persistence if complete kill of all plants is to be achieved. Complete eradication may require several years of effort.

Amino triazole and ammonium sulfamate are good herbicides to use around the home. If care is used in application, little injury should be experienced on most other nearby shrubs or trees. Amino triazole can be applied after the poison oak is well leafed out and is moderately effective until foliage begins to yellow.

Poison oak can be controlled with brush killer mixtures of 2,4-D and 2,4,5-T or by 2,4,5-T alone. Silvex (2,4,5-TP) appears to be slightly superior to the previously mentioned herbicides. Careful use of these herbicides is necessary to avoid injury to ornamentals or crops.

When just a limited number of poison oak plants is to be controlled, a satisfactory method is to apply the esters of brush killer mixtures of 2,4-D and 2,4,5-T dissolved in oil. These mixtures should be applied to the basal crown and bark, being careful not to spray other shrubbery. This treatment can be applied at any time of year, although winter and spring are preferable.

Picloram is the most effective herbicide available for poison oak control. However, it is also the most difficult to use, as it may injure other plants having roots beneath the treated areas. Its application should be left to experts.

New Products . . .

Designed for the Vegetation Care Industry



New turf sprayer with a swivel-front high flotation axle and adjustable dry boom is now available. Royalette 1010, with 300 gallon tank, has a 10 gpm pump that delivers up to 500 psi. Unit is powered by a 6¼ hp gasoline engine. Axle, mounted on a swivel, allows short turning radius for the two front 9.60 x 8-inch flotation tires. Rear flotation wheels are 12.50 x 16 inches. Unit has 21-foot dry boom with 13 adjustable nozzles. Write John Bean Division, 1305 S. Cedar St., Lansing, Mich. 48909.



Plastic tank protector withstands temperature from 70 degrees below zero to "Death Valley" extremes. Flame-proof covers extend life of the tank's paint for 5 years. Protects hoses, prevents corrosion. Write R. L. Harris Associates, Box 667, Beatrice, Nebraska 68310.



New line of plastic industrial hand pumps for use in removing corrosive liquids from drums and carboys range in price from \$6.95 to \$19.95, depending on size and the material to be pumped. All are self-priming. Write Beckson Manufacturing, Inc., P. O. Box 3336, Bridgeport, Conn. 06605.

Precision mobile turf sprayer designed for use on greens and other areas where accuracy and uniform turf chemical coverage are necessary, below, features corrosion resistant construction and eight non-drip nozzles on an 80-inch adjustable-height boom. Unit may be pulled, to apply a spray pattern not tracked by the wheels or the operator. Price is \$189.50. Contact Mallinckrodt, 2nd and Mallinckrodt Sts., St. Louis, Mo. 63160.

New high-pressure turf maintenance sprayer is powered by a 2 hp air-cooled engine. Porcelain coated, 15-gallon steel tank sprayer, with high-pressure jet agitation, handles all types of liquids, fertilizers and disinfectants. Features V-belt drive off the engine, 1½ gpm single piston pump, pressure up to 200 psi. Unit has 25 feet of high pressure hose attached to Spraymiser gun. With finger tip controls, gun adjusts from a fine mist to a solid stream at any pre-set pattern. Write Agricultural Dept., John Bean Division, Tipton, Ind.

