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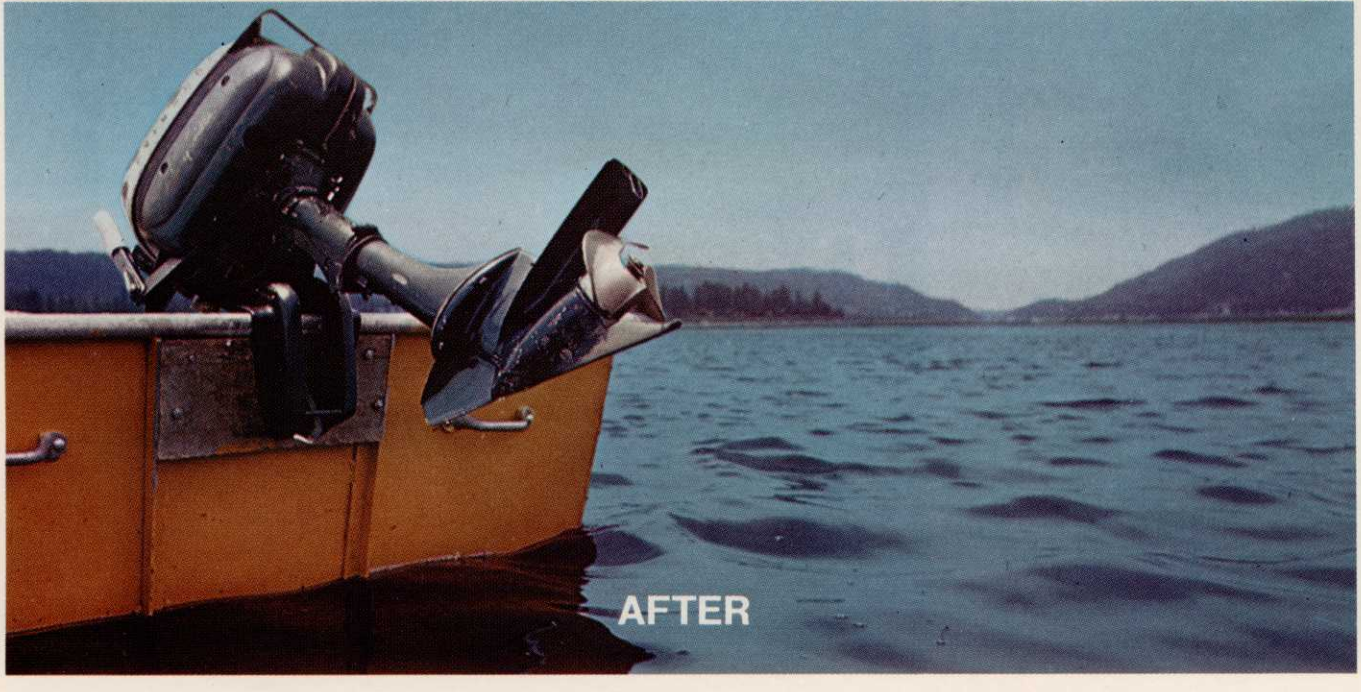


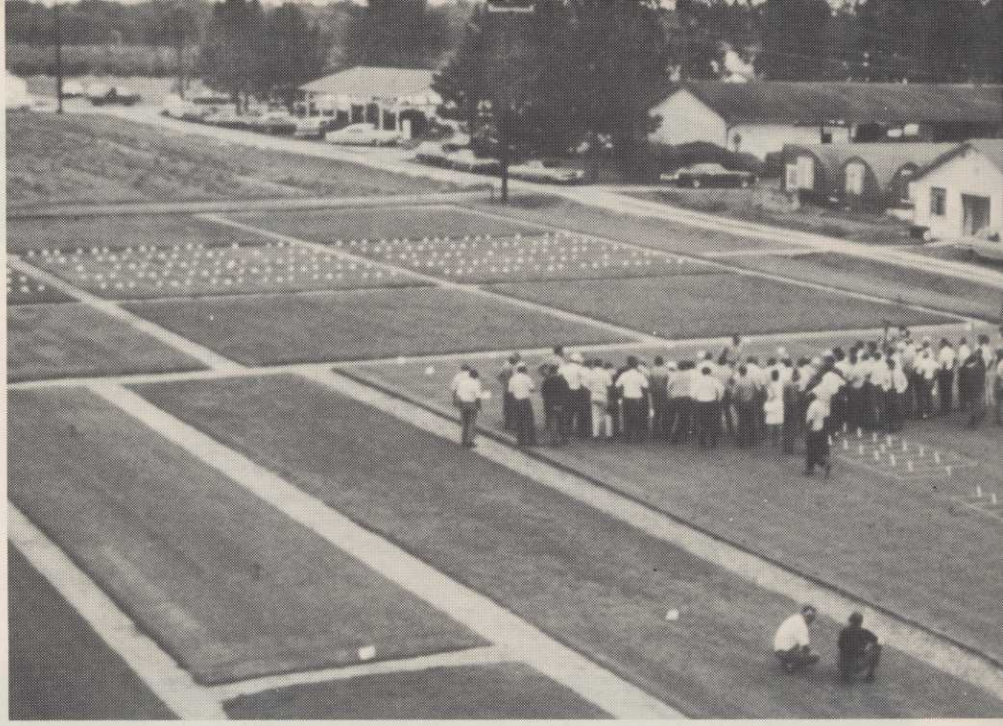
For More Details Circle (128) on Reply Card

Soil Effects from Nitrogen Sources

Fertigation

Pest Control

FLORIDA RESEARCH



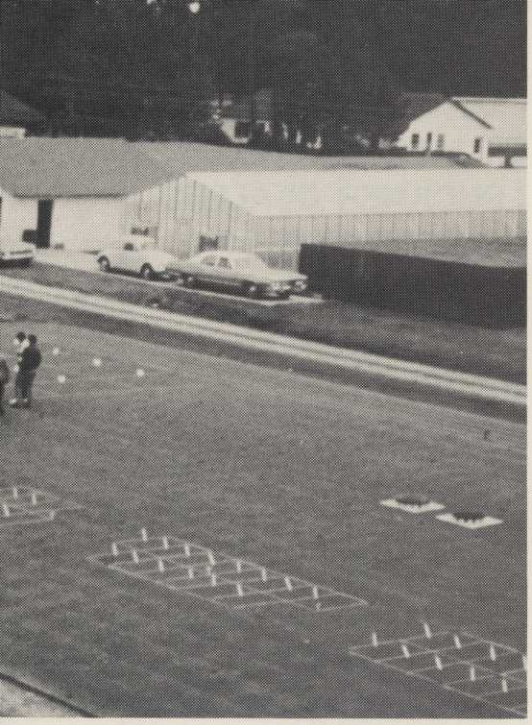
What effect on a sandy soil low in both organic matter and clay does heavy nitrogen fertilization cause? What are the prospects for "fertigation?" Weed control in Bahiagrass? New nematicides?

These questions were among discussions at the recent 18th annual Florida Turfgrass Management conference. About 400 turf specialists attended.

Dr. G. C. Horn, department of ornamental horticulture, University of Florida, reported on a nitrogen source study in 1970 on Tifgreen bermudagrass maintained under putting green conditions. The soil had been amended, he said, with 20% vermiculite, 5% colloidal phosphate, 10% peat and 10% fired clay (by volume) to a depth of six inches.

One-half pound of N applied every other week had a "pronounced effect" on soil pH, the magnitude of which was determined by the nitrogen source, he said.

"Urea and ammonium nitrate, when applied at ½#N per 1,000 sq. ft., every other week has less effect



Turf management specialists inspect research plots at the University of Florida.

on soil pH than either ammonium sulfate or calcium nitrate. Both ammonium nitrate and urea were slightly acid-forming but not nearly so much as ammonium sulfate."

The equivalent of two tons of dolomite limestone per acre was added in July to all plots. Ammonium nitrate and urea left the pH at 6.4, but ammonium sulfate changed it to 4.8 and calcium nitrate to 7.2.

When twice the amount of nitrogen was added, Dr. Horn reported, the soil pH was affected differently. Application of ammonium nitrate ½#N weekly lowered the pH more than 1#N applied every other week. The reverse was true for urea and ammonium sulfate. Calcium nitrate weekly at ½#N per 1,000 sq. ft. lowered the soil pH one unit lower than 1#N applied every other week. (Table 1) The effect on pH of applying one pound of N weekly throughout the year is shown in Table 2.

Data on effects of organic sources of N showed that sewerage sludge, at all rates, maintained soil pH at an optimum level. The pH ranged from 6.5 at lower rates to 6.2 for higher rates. Ureaformaldehyde sources were acid forming at low as 4.0), more so than ammonium sulfate (5.7). Dr. Allen's true organic had a tendency to increase the pH (to 7.0) throughout the year, Dr. Horn reported.

Nitrogen source affected levels of calcium, but with the rate of application rather than source bringing the greatest change. Dr. Horn found that both source and rate of N affects magnesium levels. As the rate of N was increased, the level of available magnesium found in the soil decreased. Ammonium sulfate and calcium nitrate were more detrimental, he said.

Ureaformaldehyde forms of N lowered available soil phosphorus more than other sources, he continued. Highest levels of soil potassium were found when sewerage sludge was added. Ammonium sulfate resulted in the next highest level of available K.

Pros and Cons of "Fertigation"

A study of applying fertilizer through the irrigation system has been initiated at the Plantation Field Laboratory, Ft. Lauderdale. The purpose will be to verify presently claimed advantages and disadvantages and to perhaps discover others. Dr. G. H. Snyder listed these advantages:

1. Labor needed for fertigation is only slightly greater than for irrigation alone.
2. Good surface distribution will be obtained.
3. Good control on depth of placement of certain fertilizers, such as nitrogen, is possible.
4. Nutrients already in solution will become available to plants sooner than when applied dry on the soil surface.
5. It is much easier to control leaching of fertigation - applied fertilizer.
6. Less fertilizer may be required.

Dr. Snyder said the disadvantages include:

1. An improperly designed irrigation system will not give equal fertilizer distribution to an entire turf area.
2. If rain occurs in sufficient quantity for the turf at a time when fertilization is needed, it may be necessary to over irrigate just to apply fertilizer.
3. Often the lower cost fertilizer materials cannot be used.
4. Certain phosphatic materials

TABLE 1. Effects of 2#N per month on soil pH.

Source	1#BW	½#W
Ammonium Nitrate	5.6	5.4
Urea	5.8	6.1
Ammonium Sulfate	4.3	4.7
Calcium Nitrate	7.4	6.2
Average	5.78	5.60

TABLE 2. Effects of 1#N weekly on soil pH.

Source	pH
Ammonium Nitrate	4.2
Urea	4.4
Ammonium Sulfate	4.4
Calcium Nitrate	5.9

will concentrate near the soil surface, whereas some nitrogen may be lost into the air when applied with irrigation water.

5. Improper handling of the fertilizer may damage the irrigation system.

"Just as some of the advantages could be voided by improper management, so could some of the disadvantages be overcome by proper management," summarized Dr. Snyder.

"Fertilization of turf through the irrigation system is potentially a labor-saving device which should result in the production of quality turf with minimum of fertilizer loss through leaching. However, this will be dependent upon a well-designed irrigation system."

Weed Control Research

Dr. Evert O. Burt of the Plantation Field Laboratory, summarized other research:

—weed control in St. Augustinegrass. Atrazine at 2 lb. ai/a on sandy soils, or 4 to 5 lbs. ai/a on organic soils has continued to give good control of broadleaf weeds, except creeping beggarweed. Usually good control of water sedge is obtained. Good to poor control of annual grasses, such as crabgrass and bullgrass is obtained when atrazine is used prior to seed germination. Control of grassy weeds in St. Augustine can best be achieved by three or four applications of atrazine at the recommended rate over a 12-month period.

Some atrazine injury had been reported, but Dr. Burt said it most likely occurred on turf under stress for other reasons.

—weed control in bahiagrass. 2,4-D gives good control of most broadleaf weeds, except beggarweed and oxalis. For controlling this pair, use silvex or dicamba. Research during the past three years has shown that many grassy-type weeds were controlled with paraquat. This treatment, Dr. Burt emphasized, gives complete top kill of all vegetation, including bahiagrass, but bahiagrass resprouted quickly. Two light applications were better than one heavy dosage, he said.

If the stand is thin, and not to be reseeded, he advised using a preemergence herbicide, such as Azak, Balan, Dacthal, Presan, or Betasan.

—Two new nematicides, Tirpate and Nemacur, have given excellent control of nematodes and are safe for use on the five warm-season turfgrasses. Label approval, however, is still pending.

—Bermudagrass mite is becoming an increasing problem in south Florida, found primarily on coarse textured bermudas, such as common, St. Lucie, Ormond, and Tifway.

—In 1969 and 1970, six experiments were conducted on the germination and stand of bahiagrass and ryegrass as affected by depth of seeding. Four were given adequate moisture; two under drought conditions. Seeds were planted at 0, 0.5, 1.0, 1.5 and 2.0 inches. Deep planting gave as good, or better, germination as shallow planting. Under dry conditions, the surface and half-inch depth resulted in poor germination. Under good moisture, the half-inch gave germination equal to greater depths.

New Officers

Leroy Fortner succeeded Bill Colburn as president of the Florida Turf-Grass Association. Other officers are: Vice-president — William F. Lewis; secretary-treasurer, Charles G. Mascaro; and directors—Charles Butterworth; supplier; John Parker, cemeteries; C. David Peeling, landscape; Robert B. Sanderson and Joseph F. Yuzzi, golf; Guy W. Smith, public turf; and Michele W. Valletta, mobile parks.

Superintendent Jerry Palmer, Chula Vista Municipal Golf Course, Chula Vista, Calif.

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insect report

TURF INSECTS

A BILLBUG

(Sphenophorus phoeniciensis)

CALIFORNIA: Adults 15 per square yard in Tifgreen lawn at San Diego, San Diego County.

A MARCH FLY

(Dilophus orbatus)

CALIFORNIA: Larvae heavy in lawns at Santa Maria, Santa Barbara County.

INSECTS OF ORNAMENTALS

A CONIFER APHID

(Cinara tujafilina)

OKLAHOMA: Increasing on Payne County arborvitae. Older, undisturbed colonies range up to 75 aphids each and many small, newly formed colonies found in favorable locations. Numbers of alate aphids increased slightly but this stage still not common.

WHITE PEACH SCALE

(Pseudaulacaspis pentagona)

VIRGINIA: Severe and widespread on Kwansan cherry in City of Alexandria.

IVY APHID

(Aphis hederae)

OREGON: Nymphs and adults spotty, mostly adults found on young shoots of English ivy at Salem, Marion County. This is a new state record.

TREE INSECTS

PEACHTREE BORER

(Sanninoidea exitiosa)

TENNESSEE: Infestation light but tree damage heavy on flowering almond in Warren County.

AN ERIOPHYID MITE

(Eriophyes canestrinii)

OREGON: Heavy under leaf scales of boxwood at Corvallis, Benton County. This species forms small flower gall but generally not considered injurious to host. This is a new state record.

PINE TUBE MOTH

(Argyrotaenia pinatubana)

MISSOURI: Larvae collected from white pine at Chesterfield, St. Louis County. This is a new state record.

PITCH PINE TIP MOTH

(Rhyacionia rigidana)

MISSOURI: Collected at Licking, Texas County, on loblolly and shortleaf pines. This is a new state record. The following are new county records: Elsberry, Lincoln County; Willow Springs, Howell County; Eugene, Miller County; and Gladden, Dent County on shortleaf pine.

ASIATIC OAK WEEVIL

(Cyrtepistomus castaneus)

MISSOURI: Adults collected from oak in Dallas County. This is a new county record.

ENGRAVER BEETLES

(Ips sp.)

CALIFORNIA: Infested knobcone pine saplings and poles in two stands of 1,000 to 1,500 acres in Coffee Creek area, Shasta National Forest. About 5,000 trees involved.

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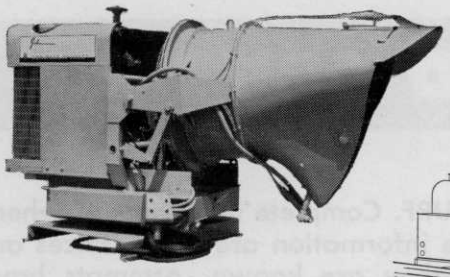

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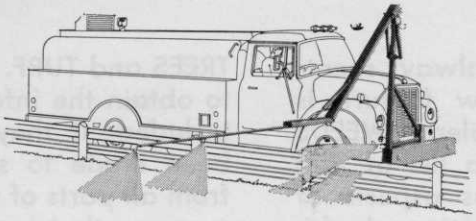

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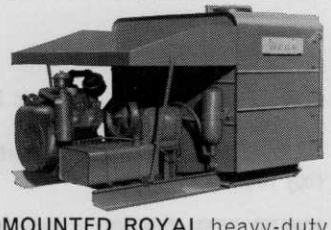

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INFORMATION INDEX

REFERENCES FOR WEED CONTROL

Information is a commodity that always seems to be in short supply. This new feature is designed to alleviate that problem. WEEDS TREES and TURF has compiled a list of 400 references that relate to various aspects of weed control — species identification, herbicides, equipment, control techniques, successful programs, and so on. The references have been gathered from universities, industry, government, professional associations, book publishers, and from the back issues of WEEDS TREES and TURF. Complete addresses of where to obtain the information are listed. Prices are included, if they are known. Attempts have been made to secure sources of information from all parts of the country. If you have found a source that has proved helpful and it is not listed, let us know. Extra copies of this reference index for weed control are available at $1.00 per copy. Write WEEDS TREES and TURF, 9800 Detroit Ave., Cleveland, Ohio 44102.

Weed Identification And Control Methods

References carrying an asterisk (*) indicate these are not available to out-of-state residents.

ALGAE, An easy way to keep a pond free. WTT article. Xerox copy 75¢.

ALGAE CONTROL IN INLAND WATER by S. J. Toth and D. N. Reimer, Department of Soils and Crops, Rutgers University. WTT article. Xerox copy 75¢.

ALLIGATOR WEED and the Agasticles flea beetle by Robert N. Hambric, aquatic biologist, Texas Parks and Wildlife Department, Houston, WTT article. Xerox copy 25¢.

ALLIGATOR WEED eradication by William R. Clark, Visalia, Calif. WTT article. Xerox copy 75¢.

AMIZINE for use around highway ornamental plantings. No. 2470. Free. Amchem Products, Inc., Ambler, Pa. 19002.

ANTI-TRANSPLANT 50-page technical manual of applications. Free. Wilt-Pruf, Nursery Specialty Products, Inc. 410 Greenwich Ave., Greenwich, Conn. 06830.

AQUATIC AND BANK WEEDS, Research Techniques and Challenges are unique. By F. L. Timmons, leader of weed investigations, USDA Agricultural Research Service, Laramie, Wyo. WTT article. Xerox copy 75¢.

AQUATIC VEGETATION OF NEW JERSEY—Ecology and Identification, Problems and Methods of Control. E 382, $1.50. Bulletin Clerk, College of Agriculture and Environmental Science, Rutgers Univ., New Brunswick, N. J. 08903.

AQUATIC WEED CONTROL. 219B, Free. Agricultural Extension Service, Univ. of Fla. Gainesville, Fla. 32601.

AQUATIC WEED CONTROL, carbon dioxide laser. WTT article. Xerox copy 75¢.

AQUATIC WEED CONTROL, Hydrionic Method for controlling weeds in running water, by Robert W. Hyde, Crystal River, Fla. WTT article. Xerox copy 75¢.

AQUATIC WEED CONTROL in potable water by Raymond V. Corning, Virginia fish biologist. WTT article. Xerox copy 75¢.

AQUATIC WEED CONTROL of Stockbridge Bowl by Jason M. Cortell, aquatic biologist, Allied Biological Control Corp., Wellesley, Mass. WTT article. Xerox copy 75¢.

AQUATIC WEED CONTROL, Total Lake Management by Norman J. Schein, lake biologist, Onalaska, Wis. WTT article. Xerox copy 75¢.

AQUATIC WEED CONTROL, USDA report on hydrilla verticillata by Robert D. Blackburn and Lyle Weldon, Agricultural Research Service, Ft. Lauderdale, Fla. WTT article. Xerox copy 75¢.

AQUATIC WEED CONTROL with Ortho Diquat. 12-page booklet. Free. Chevron Chemical Co., Ortho Div., 200 Bush St., San Francisco, Calif. 94120.

The Dow Chemical Company, Agricultural Department, Midland, Michigan 48640.

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AQUATIC WEED HARVESTING by Brate Bryant, president of Aquamarine Corporation, Waukesha, Wis. WTT article. Xerox copy 75¢.

AQUATIC WEED SERVICE, 3M Company. WTT article. Xerox copy 25¢.

AQUATIC WEEDS—Their Identification and Methods of Control Fishery Bulletin #4, Free. Division of Fisheries, Room 102 State Office Building, Springfield, Illinois 62701.

ARKANSAS LAWN WEEDS—EC 528, Free. Agricultural Extension Service, P.O. Box 391, Little Rock, Arkansas 72203.

BANVEL HERBICIDE. 8-page booklet. Free. Velsicol Chemical Corp., 341 East Ohio St., Chicago, Ill. 60611.

BARBERRY ERADICATION—E600, Free. MSU Bulletin Office, P.O. Box 231, East Lansing, Michigan 48823.

BETASAN control of crabgrass and poa annua in greens and turf. 16-page guide. Free. Stauffer Chemical Co. Agricultural Chemical Division, 299 Park Avenue, New York, N.Y. 10017.

BETASAN control of crabgrass and poa annua in turf. No. A-10172R. Free. Stauffer Chemical Co., Agricultural Chemicals Div., 299 Park Ave., New York, N.Y. 10017.

BI-FLUID SPRAY SYSTEM by David Petersen, president of KDM Company. WTT article. Xerox copy 75¢.

BLUE FLOWERING LETTUCE, PNW106, Free. Mailing Room, College of Agriculture, Agri. Science Bldg., Univ. of Idaho, Moscow, Idaho 83843.

BROADCAST SPRAYING—EB-229, Free. Agricultural Publications Distribution, Agricultural Publications Annex, Univ. of Md., College Park, Md. 20742.

BULRUSHES & BULRUSHLIKE PLANTS OF EASTERN NORTH AMERICA, Circular 221, 20¢. U.S.D.I., Fish & Wildlife Service, "C" St. Between 18th & 19th, Washington, D.C. 20204.

CALIBRATION OF PESTICIDE APPLICATORS, 275A, Free. Bulletin Room, Cooperative Extension Service, Room G031, McCarty Hall, Univ. of Florida, Gainesville, Fla. 32601.

CALIBRATING SPRAYERS by Herb P. Hill, John Bean Division, FMC Corporation. WTT article. Xerox copy 75¢.

CANADA THISTLE, Ext. 338, Free. Mailing Room, College of Agriculture, Agri. Science Bldg., Univ. of Idaho, Moscow, Idaho 83843.

CANADA THISTLE AND ITS CONTROL, No. A1.35: 523/2, 5¢. Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. 20402.

CANADA THISTLE AND ITS CONTROL,* L523, Free. Information Office, Extension Service, University of Nebraska, Lincoln, Nebraska 68503.

CARE AND MAINTENANCE OF MERION LAWNS, Free. Merion Bluegrass Association, 101 Park Ave., New York, N.Y. 10017.

CARE OF LAWNS, 452A, 10¢. Bulletin Room, Colorado State Univ. Fort Collins, Colo. 80521.

CHEMICAL APPLICATION RECORD, FS AgChem 2, 2¢. Bulletin Room, 3 Coffey Hall, Univ. of Minn., St. Paul, Minn. 55101.

CHEMICAL CONTROL OF WOODY PLANTS, B812, Free. Agricultural Publications, 207 University Hall, Univ. of Calif., Berkeley, Calif. 94720.

CHEMICAL CONTROL OF WOODY WEEDS, FS For 5, 2¢. Bulletin Room, 3 Coffey Hall, Univ. of Minn., St. Paul, Minn. 55101.

CHEMICAL HERBICIDES FOR HORTICULTURAL CROPS, 148, Free. Resource Information Off., 16 Woodward Hall, Univ. of Rhode Island, Kingston, R.I. 02881.

CHEMICAL "LAWN MOWERS"—HOW CLOSE TO PERFECTION? Fs1227, 3¢. Publications Distribution Center, Printing and Publications Bldg., Iowa State Univ., Ames, Iowa 50010.

CHEMICAL PREPLANT CONTROL OF JOHNSONGRASS, EL 348, Free. Agricultural Extension Service, P.O. Box 391, Little Rock, Ark. 72203.

CHEMICAL SURFACTANTS. Free. Rhodes Chemical Co., Gate, Wash. 98545.

CHEMICALS THAT CONTROL WEEDS, 70 EC70-130, 10¢. Information Office, Extension Service, University of Nebraska, Lincoln, Neb. 68503.

CHEMICAL WEED CONTROL, NURSERY CROPS, MM297, 25¢. Extension Office of Information, The Ohio State University, 2120 Fyffe Rd., Columbus, Ohio 43210.

CHEMICAL WEED CONTROL FOR FLORIDA VEGETABLE CROPS, 196B, Free. Bulletin Room, Cooperative Extension Service, Room G031, McCarty Hall, Univ. of Fla., Gainesville, Fla. 32601.

CHEMICAL WEED CONTROL FOR IRRIGATED AREAS, A-1, Free. See Local County Extension Agent, Arizona.

CHEMICAL WEED CONTROL IN CITRUS, 191, Free. Agricultural Publications, 207 University Hall, Univ. of Calif., Berkeley, Calif. 94720.

CHEMICAL WEED CONTROL IN CROPS, 1969, SB522, Free. Distribution Center, Umberger Hall, Kansas State Univ., Manhattan, Kansas 66502.

CHEMICAL WEED CONTROL in Conifer Plantations (Oregon and Washington west of the Cascades) Atrazine Information Sheet No. 23, Free. Geigy Agricultural Chemicals, Saw Mill River Rd., Ardsley, N.Y. 10502.

CHEMICAL WEED CONTROL IN CROPS—1970, FS498, Free. Bulletin Room, South Dakota State Univ., Brookings, South Dakota 57006.

CHEMICAL WEED CONTROL IN FIELD CROPS, FS-13, Free. Agricultural Publications Distribution, Agricultural Publications Annex, University of Md., College Park, Md. 20742.

CHEMICAL WEED CONTROL in flowers and ornamentals. Free. Stauffer Chemical Co., Agricultural Chemicals Division, 299 Park Ave., New York, N.Y. 10017.

1968 CHEMICAL WEED CONTROL IN FORESTRY AND HORTICULTURAL CROPS, SB-516, Free. Distribution Center, Umberger Hall, Kansas State University, Manhattan, Kansas 66502.

CHEMICAL WEED CONTROL IN LAWNS, IG 1, Free. Mail Service, Hewitt Hall, Durham, New Hampshire 03824.

CHEMICAL WEED CONTROL in ornamental plantings. Simazine Information Sheet No. 27, Free. Geigy Agricultural Chemicals, Saw Mill River Rd., Ardsley, N.Y. 10502.

CHEMICAL WEED CONTROL IN PASTURE, RANGE AND HAYLAND, FS 426, Free. Bulletin Room, South Dakota State Univ., Brookings, South Dakota 57006.

CHEMICAL WEED CONTROL IN TREES, A418-Free. Agri. Information Dept., Univ. of N. Dak., Fargo, N. Dak. 58102.

CHEMICAL WEED CONTROL IN TREES, FS 414, Free. Bulletin Room, South Dakota State Univ., Brookings, South Dakota 57006.

CHEMICAL WEED CONTROL, ornamental plantings, with Princep. Free. Geigy Agricultural Chemicals, Saw Mill River, Rd., Ardsley, N.Y. 10502.

CHEMICAL WEED CONTROL, Industrial, Southwest. Free. Van Waters & Rogers, 4707 Alpha Rd., P.O. Box 34749, Dallas, Tex. 75234.

COMMERCIAL ORNAMENTALS WEED CONTROL GUIDE, 307A, Free. Bulletin Room, Cooperative Extension Service, Room G031, McCarty Hall, Univ. of Fla., Gainesville, Fla. 32601.

COMMON AQUATIC WEEDS, No. A1.76:352, 50¢. Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. 20402.

COMMON LAWN WEEDS, 577-A, Free. University of Kentucky, Cooperative Extension Service, Agriculture and Home Economics, Lexington, Ky. 40506.

CONTROL AND ELIMINATION OF LEAFY SPURGE, FS449, Free. Bulletin Room, South Dakota State Univ., Brookings, South Dakota 57006.

CONTROL AND ELIMINATION OF NOXIOUS WEEDS, FS 448, Free. Bulletin Room, South Dakota State University, Brookings, South Dakota 57006.

CONTROL AND ELIMINATION OF QUACKGRASS, FS497, Free. Bulletin Room, South Dakota State Univ., Brookings, South Dakota 57006.

CONTROL AND ELIMINATION OF RUSSIAN KNAPWEED, FS 144, Free. Bulletin Room, South Dakota State Univ., Brookings, South Dakota 57006.

CONTROL AND ELIMINATION OF THISTLES, FS450, Free. Bulletin Room, South Dakota State Univ., Brookings, South Dakota 57006.

CONTROLLING BROADLEAVED LAWN WEEDS WITH 2,4-D, WC2, 5¢. Publications Distribution Center, Printing and Publications Bldg., Iowa State Univ., Ames, Iowa 50010.

CONTROLLING BROADLEAF WEEDS IN TURF, Free. Mailing Room, Ohio Agricultural Research