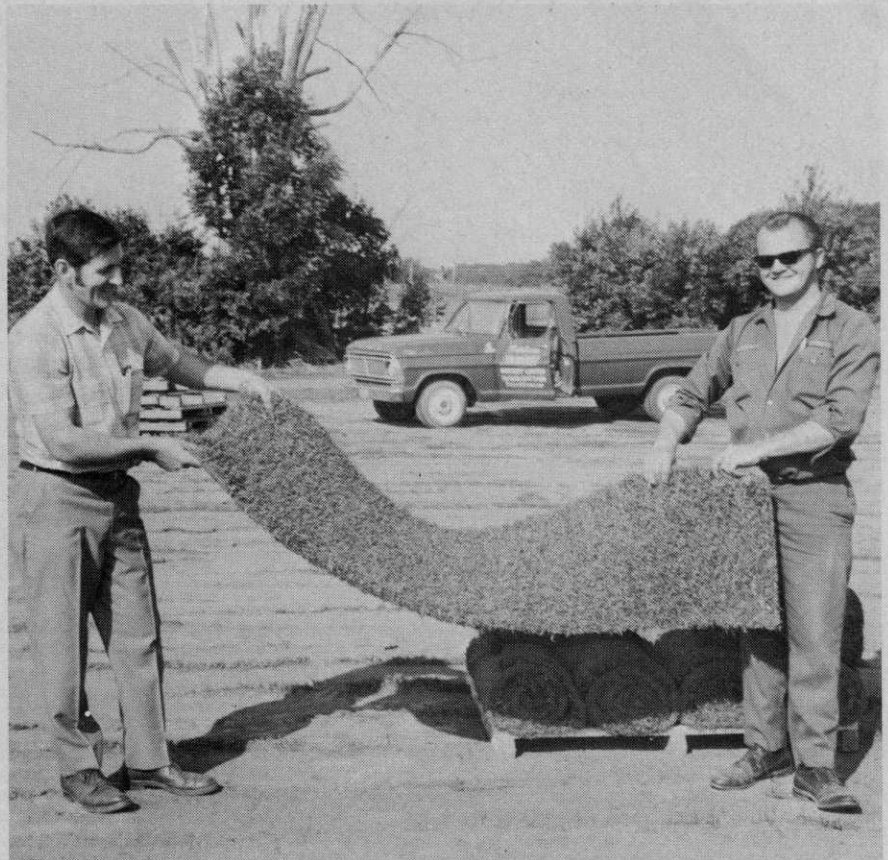


growth of the industry in Canada and indeed, North America, during the past 20 years was probably due to (a) the availability of Merion bluegrass which was a superior variety with an extensive root system which lent itself to rapid production of salable sod, (b) the generally availability of the power sod cutter which first came into use in the late 1940s, and (c) the great surge in all types of construction, accompanied by rising incomes and a buoyant economy.

Today, about 80 growers with acreages ranging in size from 10 to 1500 operate in Ontario. They grow upwards of 18,000 acres. Quebec counts 14 growers with 3600 total acres, all within 40 miles of Montreal. They sell in excess of 4 million square yards yearly. Other areas have fewer growers. In Alberta a few are located near Calgary and Edmonton, and in Manitoba there are at least two growers near Winnipeg, Campbell states. In the Maritimes there is one farm near St. John, New Brunswick. Sod production in British Columbia is small because moisture conditions are such that lawns can easily be established from seed in the Vancouver area.



Campbell, left, and Ed Strome.

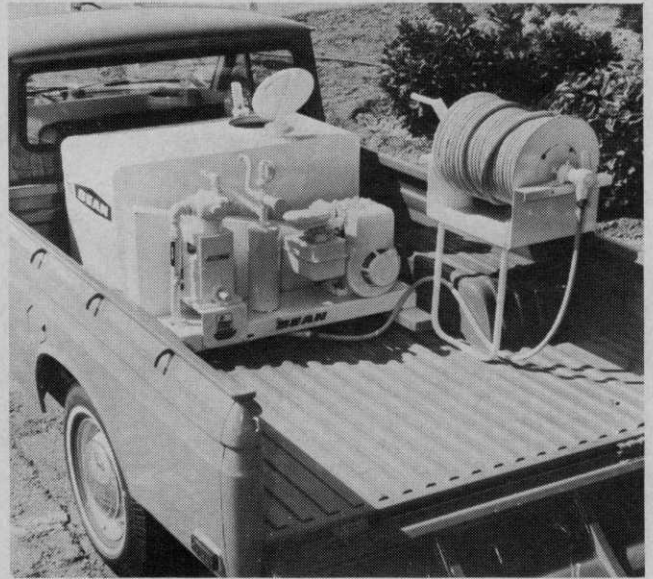


Fairlawn now grows some 1,550 acres of cultivated sod.



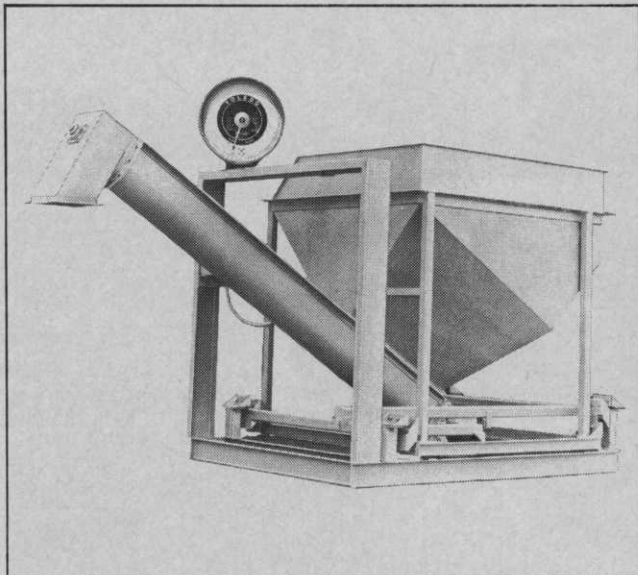
"GRASSHOPPER" MOWER: Scott Company, Hutchinson, Kansas

New drive concept for a mower is cart-like design with a front-mounted three-bladed rotary mower assembly. Conical trans-axle drive combined with the mower's compact design is aimed at the commercial turfgrass market. Forty-inch cut combines with steering mechanism maneuverability. Steering mechanism is simply two handles. Minimum turning radius is little more than the 42-inch width of the unit. Mower drive line is jointed so the deck assembly can follow uneven terrain without scalping or becoming high centered. The mower assembly can also be removed easily so the cart can be used as a run-about. For more details, circle (701) on the reply card.



PEST CONTROL OPERATOR SPRAYER: FMC Corporation, John Bean Div., San Jose, Calif.

Self-contained pest control operator sprayer fits into the back of a small pickup truck with ample room remaining for the transportation of a full working supply of spray materials. Provides curbside reach of all functional parts, including tank lid, starting mechanism, hose reel, and controls. Equipped with 50-gallon stainless steel tank. Mechanical agitator in this tank assures positive chemical mixing at all times, while an in-line filter prevents the introduction of foreign material into the spray line. The tank contains a sealed, vented corrosion-free cover. Features a 5 gpm high-pressure John Bean pump with an adjustable regulator for pressures up to 300 psi. Pump is driven by a gasoline-powered engine, and contains simple drive belt adjustments and special belt guards for added operator protection. For more details, circle (708) on the reply card.



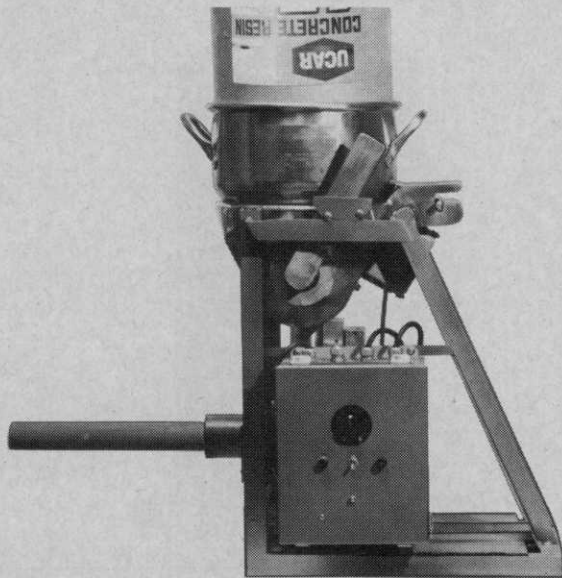
WEIGH HOPPER: Ferguson Industries, Dallas, Texas

Low cost 2-ton weigh hopper is mounted on free Flex-Poise Scale. Hopper is stainless or carbon steel with a removable scalping screen, a 1 ton discharge per minute heavy duty screw conveyor, 5 hp, 3 Phase, TEFC Motor, mounted on the Ferguson Flex-Poise, non-corrosive scale with 5000# Toledo Dial. The utilization of the Ferguson Flex-Poise weighing system provides low maintenance and accurate service. Available in other sizes and with other scale readout systems. For more details, circle (704) on the reply card.



MOUNTED HYDRAULIC CRANE: Ruger Equipment, Inc., Uhrichsville, Ohio

Standard model truck mounted one-ton hydraulic crane features a two-speed hydraulic system, variable effort hand pump and a boom that is 54-inches long. Also available in $\frac{1}{4}$, $\frac{1}{2}$, two- and three-ton models; and also available as portable floor cranes. Variety of optional accessories are available. For more details, circle (705) on the reply card.



AUTOMATIC POWDER DISPENSER: United Utensils Co., Port Washington, N.Y.

Automatic, dust-sealed powder feeder uses the actual 12-gallon fiber drum as its hopper. The dispenser eliminates the transfer of powder from the drum to another hopper prior to dispensing. In operation, the "nose cone" of the dispenser is removed and placed over the open drum. Then the cone-and-drum are rotated as a unit into delivery position. The nose cone has a tight-fitting closure and a valve (in the closed position) to prevent loss of powder during the pivot operation. Once in position, all operations are automatic. Entire assembly is designed for remote operation. A low-level alarm light or buzzer indicates when the drum is empty. Auxiliary vibrator on the drum-side of the assembly keeps the powder moving. For more details, circle (703) on the reply card.



PORTABLE ELECTROSTATIC PAINT SPRAY SYSTEM: Eclipse Systems, Inc., Fairfield, N.J.

Principal that electrically charged paint is attracted to the item to be coated has been in industrial use for sometime, but has been practically limited to that market. Introduction of portable system makes speed and savings in labor and material attributed to this process available to the maintenance painting field. Complete system is trailer mounted. Consists of a gasoline driven 15 cfm compressor and 110 volt alternator, electrical power supply, 3 gpm paint pump, hand electrostatic spray gun and 25 feet of hose. Successful application of all types of materials including aluminum paint, epoxies and water solubles is claimed by the manufacturer. For more details, circle (706) on the reply card.



ALL-TERRAIN BIKE: Huron Tool & Mfg., Lexington, Mich.

"El-Burro" all-terrain, all-season hike-bike, is designed for up to 32 mph; can carry two. Tank of gas lasts for 4 hours. Rolls through snow, sand, marsh, fields. Powered by a 5 h.p. engine with a powerful TC-88 torque converter for toughest trail conditions. Distributorships and dealerships available in choice territories. For more details, circle (707) on the reply card.



SWEEP LOADER: Wayne Manufacturing Co., Pomona, Calif.

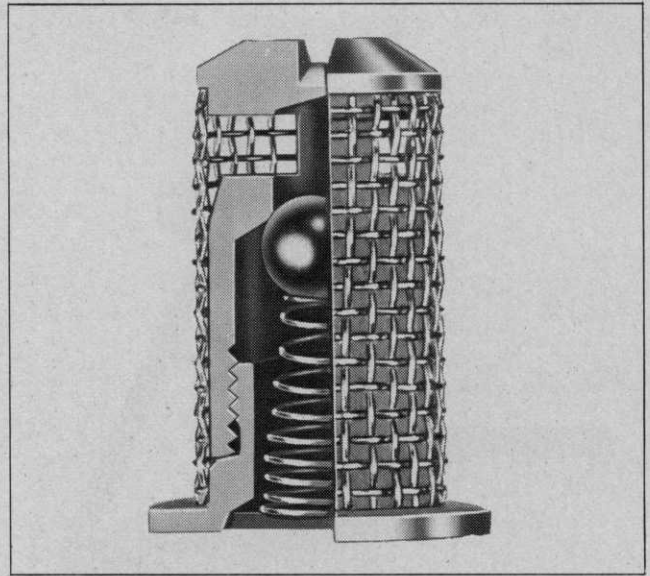
Capability for pinpointing load employs only one lever to automatically maintain proper hopper attitude during the lifting and dump cycle. Powered by 210 hp V-8 engine, the sweep loader features 2-speed power take-off which allows effective sweeping at slow speeds. For heavy sweeping PTO shifts the pickup and gutter brooms to higher speed for one-pass street cleaning. For more details, circle (716) on the reply card.





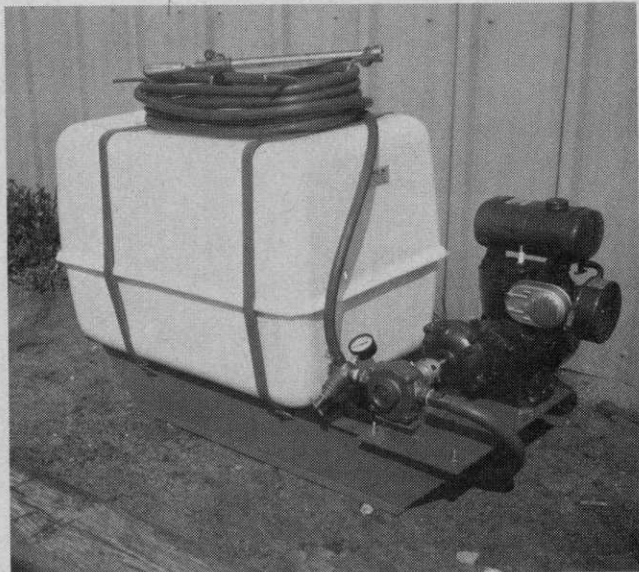
FLAIL LAWN CONDITIONER: Venture Systems, Inc., Fresno, Calif.

Flail type lawn conditioner combines three important lawn care functions in one machine. Free swinging flails are mounted on a spiral that reduces vibrations because of the even load placed on each flail. Neoprene spacers cause flails to bounce on contact with solid objects such as sprinklers or curbs. Flails are staggered to provide $\frac{3}{8}$ " incremental cut across the full working width for each revolution of the shaft. Lawn conditioner removes dead grass, renovates old lawn and mulches leaves. Distributorships are available for the multi-purpose flail type lawn conditioner Model 7011-A. For more details, circle (702) on the reply card.



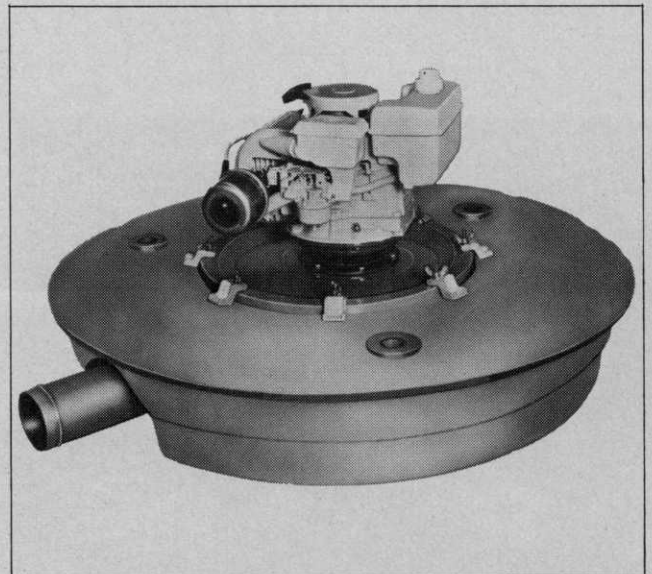
STRAINER CHECK VALVES: Spraying Systems Co., Bellwood, Ill.

Strainer Check Valve for use with TeeJet spray nozzles with tip capacities up to 1.0 gpm. Original design was limited to tips with up to 0.46 gpm capacities. New unit provides the dual function of protecting the tip from clogging as well as preventing dripping from the nozzle after line pressure shut-off. Strainer check valve is offered in choice of brass body and cap with monel metal screen and in body and cap made of aluminum, stainless steel or polypropylene with stainless steel screen. Screens supplied in choice of 24, 50, 100 or 200 mesh sizes. For more details, circle (711) on the reply card.



SPRAY RIG: Public Health Equipment & Supply Co., San Antonio, Tex.

Compact spray rig is skid mounted fiberglass tank of size for a pickup, utility cart or tow cart. Ideal for small area weed spraying, liquid fertilizer application or tree spraying. Unit can be made portable at little cost by mounting axle, wheels and a hitch, or is adaptable for a spray boom. For greenskeeping can be hooked up to most golf course haulers or garden tractor rigging. Complete with 50 gallon fiberglass tank, on skid, 4 hp engine, six roller pump, 25 ft. of hose with handgun, all necessary plumbing and regulator. \$299.50. For more details, circle (709) on the reply card.



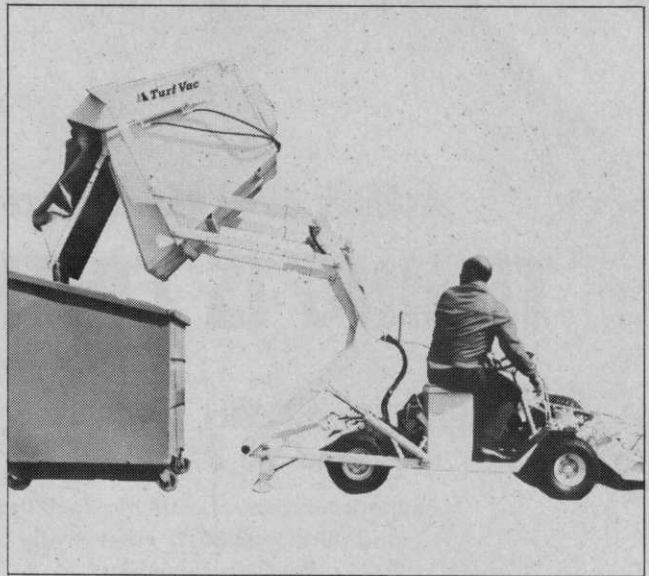
PORTABLE PUMP: Colt Industries Pump Div., Kansas City, Kan.

General purpose portable pump floats on the surface of holding basins, sumps, excavations, lakes and streams. Designed for a wide variety of emergency and constant-use applications. Available in five models of varying sizes and capacities, driven by a choice of gasoline, electric and air motors, and ranging in weight from 40 to 220 lbs. Float ring of polyethylene is filled with 100 percent urethane foam for maximum buoyancy and is resistant to water, sun, hydrocarbons and most chemicals. Adjustable skimming attachments for converting the pumps to fixed-position or self-propelled aerators are available as options. For more details, circle (710) on the reply card.



REINFORCED BUMP CAP: Glendale Optical Co., Woodbury, N.Y.

New series of bump caps, molded from durable, impact-resistant thermoplastic, features decorative star molded into crown to reinforce what is normally the weakest part of a bump cap. Bump cap is designed to stay on the wearer's head under rigorous conditions. Polyethylene nape strap with adjustments on both the right and left sides anchors the cap firmly and comfortably; provides extra gripping power to keep it on securely for full-time protection. Available in variety of colors. Headband is foam padded for comfort and protection; adjustable for all head sizes. Can be used with ear protectors. For more details, circle (712) on the reply card.



TURFGRASS SWEEPER: Turf-Vac Corp., Long Beach, Calif.

Self-propelled turf sweeper — incorporates fast, automatic dumping feature and can be unloaded directly into trash bins, trucks, or over retaining walls. Hydraulic lift system raises the entire hopper, tilts the hopper for maximum dumping efficiency, and opens and closes the hopper door — without the operator leaving the drivers seat. Speeds up to 10 mph. Features include a sweeper-width of 54", front loading (wheels behind scoop), and excellent side-hill stability due to the low profile and four-wheel suspension. All-vacuum pick-up allows it to be used on both turf and paved areas, under both wet and dry conditions. Accessories include a blower unit for curb cleaning and windrowing and a hand-held intake hose for debris removal from hard-to-reach areas. For more details, circle (713) on the reply card.



PICK-UP BROOM ATTACHMENT: Waldon, Inc., Fairview, Okla.

Pick-up broom attachment equips Waldon 5000 tractor for all types of cleaning operations on grass or pavement. Broom and hopper attach to the front of the hydraulic boom. Unit is hydraulically operated off the tractor system. Operator can raise the boom and empty the hopper contents into a truck. Polypropylene brush sweeps 60" swath, while front-mounted, spring-loaded hydraulic gutter brush sweeps curb areas or close to walls. Gutter brush can be raised up out of the way when not needed. Unit has self-aligning bearings, heavy-duty welded steel construction and features safety shielded chain and sprocket brush drives with easily accessible lubrication points. For more details, circle (714) on the reply card.



SUB-COMPACT LOADER: Clark Equipment Co., Gwinner, N. Dakota

Smallest loader on market is new Melroe Bobcat, 35 inches wide (inverting the standard wheel gives it a 41 inch width), 60½ inches long and 71 inches high to top of guard. Loader is powered by a 14 hp single cylinder air-cooled engine, with a load rating of 500 pounds. Features single unit transmission frame, welded steel axle housings and non-pressure lubricated clutches. Standard equipment includes 5.00-12-4 ply tires, overhead guard, 2 section hydraulics and Bob-Tach. Buckets available in 36 inch, 42 inch, and 48 inch size. Unit weighs 1400 pounds, not including bucket. For more details, circle (715) on the reply card.



Athletic Field Maintenance— **TIMING IS CRITICAL**

By MELVIN J. ROBEY
and W. H. DANIEL

Superintendent of athletic facilities
and turf specialist, respectively
Purdue University
Lafayette, Indiana

AN ATHLETIC MAINTENANCE PROGRAM must include many known agronomic principles, combined with common sense and good judgement. The person placed in charge of the athletic field needs to be trained and have some experience in turf management. A person with a little knowledge of turf care is able to do a good job if he is interested in the field's condition and has the ability to grasp new ideas. He can obtain the necessary information from various organizations such as the State Experiment Stations; Extension Offices; Golf Course Superintendent's Association; Turf Suppliers and private consulting firms. Text books and turf magazines also are of value as guides in athletic field maintenance programs. An understanding of what needs to be done and the principles involved will enhance any program; timing of the procedure is critical.

Below is a list of the maintenance work which should be accomplished each year on bluegrass football fields. If a minimum amount of manpower and money is available, do the work during the periods



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marked with an asterisk. Timing of many of the procedures is very important. Putting something off for a week may mean the problems created will be very expensive and time-consuming to correct.

FERTILIZATION—Two to four applications per year is best. Apply four to six pounds actual nitrogen per 1000 sq. ft. per year.

*March 15 to April 15
May 15 to June 15

*August 1 to August 15
October 1 to October 30

WATERING—The weather will dictate when to water the fields.

May 1 to October 15

MOWING—The weather, watering schedule, and fertilizer application influence the mowing schedule.

April 1 to November 15

AERIFICATION—Important if severe soil compaction is to be prevented.

April 1 to April 30

*June 15 to July 15

November 15 to December 15

OVERSEEDING—This is a good way to establish new grass on the fields each year. Should be done before every home game.

March 1 to April 15

*August 15 to November 15

KILLING WEEDS—Application of herbicides at two different times gives adequate control of most weeds.

*April 15 to June 15

September 1 to October 15

PREVENTING CRABGRASS—Chemicals must be applied before crabgrass seed germinates. Exact date depends on locale.

April 1 to April 30

CONTROLLING GRUBS—Apply insecticide only when the grubs, or their damage, is evident.

March 15 to April 15

PREVENTING DISEASES—Observe fields closely during dates listed. Apply fungicides as required. Consider using long lasting systemics.

March 15 to April 15

*May 15 to June 15

*August 1 to September 30

November 15 to December 15

CONTROL FLYING INSECTS—

Only done when insects become a problem during practice sessions and games.

August 15 to November 15

ROLLING—Roll the fields only when the soil is at the best moisture content.

*March 15 to April 15

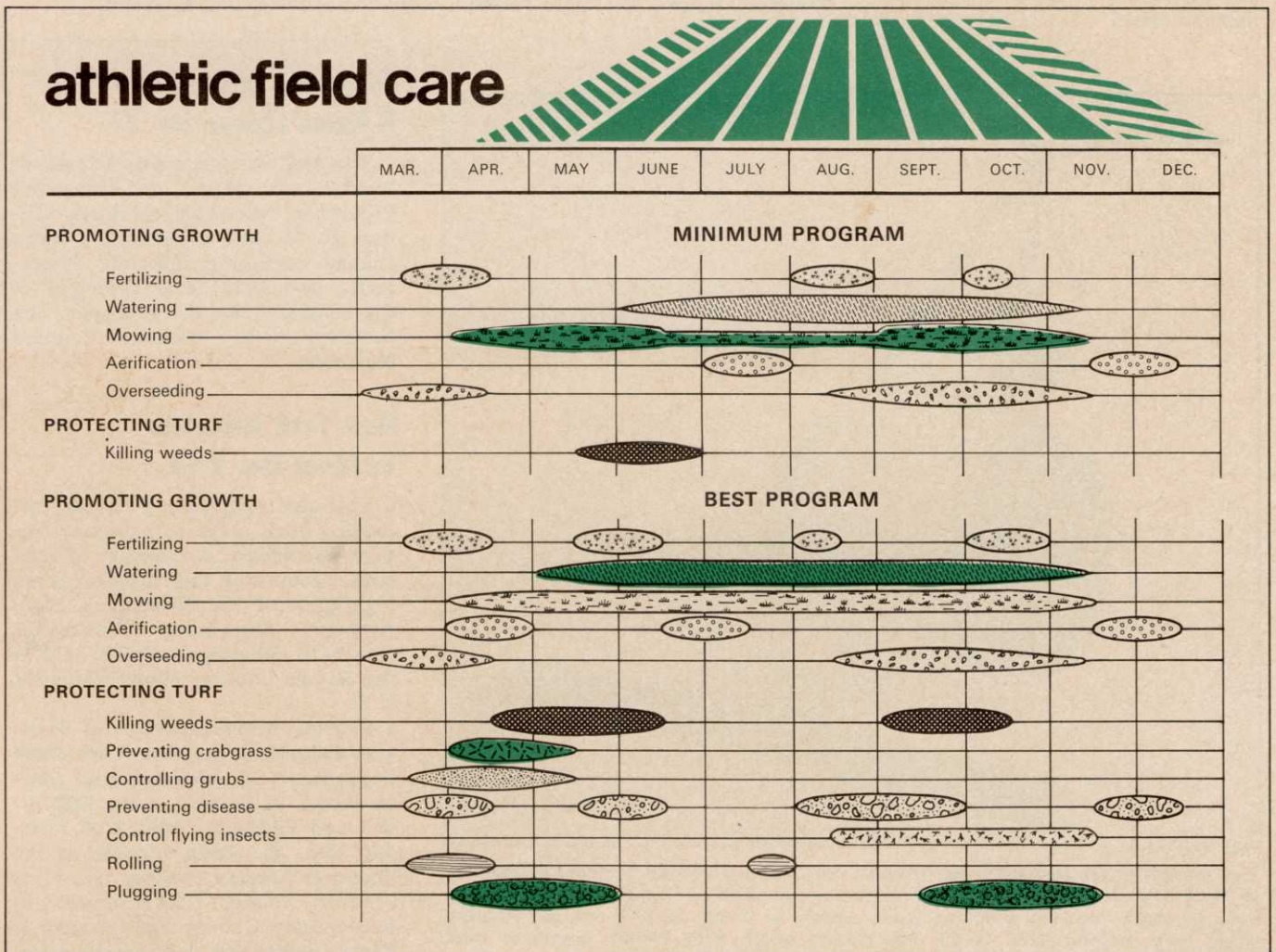
July 15 to July 30

PLUGGING—A sure way to establish grass in small, bare areas.

*April 1 to May 30

September 15 to November 15

athletic field care



Air Pollution Effect Researched On Grasses

New research on how air pollution affects turfgrasses is underway at the University of Guelph, Ontario, Canada.

Professor J. L. Eggens, in charge of the studies, reports that, to date, that the older the grass, the more susceptible it is to pollution damage.

Dr. Eggens reports that early tests indicate perennial ryegrass is quite susceptible to air pollution. A single ozone treatment caused this grass to develop a more narrow and shorter leaf. Creeping red fescue seems the most resistant variety studied, he reports. This, he continues, is probably because it is a highly compressed, almost drought-resistant grass. It prevents water from escaping easily and allows little room for foreign particles to get in.

Other grasses in the test are Kentucky bluegrass and creeping bent grass.

All are being subjected to relatively high concentrations of ozone, a harmless gas at low concentrations but an irritating pollutant in the high concentrations common in urban, industrial areas.



Precision Chipper Corporation officials meet with Alabama Governor George C. Wallace, seated, and other dignitaries to announce Precision Chipper's plans to construct a half-million-dollar headquarters plant in Leeds, Alabama. The firm, which will move its entire operation to Leeds when construction is finished, manufactures equipment and machinery for the sawmill and papermill industry, and is manufacturer of a Tree Harvester unit. Meeting with Governor Wallace, left to right, are: Jack Courson, mayor of Leeds; Robert C. Barnett, attorney; Bob Smith, vice president of Precision Chipper; Fred Denton, state director of industrial development; R. C. "Red" Bamber, Alabama Development Office Director; Harold West, president of Precision Chipper; Mrs. Eddie Mae McDanal, secretary-treasurer of Precision Chipper, and Chase Thoman, consulting engineer and contractor.

Congdon's Announces A Name Change for '71

The well known nursery business known for years as Congdon's Wholesale Nurseries at North Collins, N. Y., has announced a name change beginning this fall. Henceforth, according to a principal of the company, Robert S. Taylor, the company will become Concord Nurseries.

New York Arborists To Meet Jan. 9-12

Business operation subjects, including such areas as salesmanship, fleet operations, purchasing of supplies, accounting and insurance, are highlights of the New York State Arborists Association Convention, Jan. 9-12. Meetings will be held at the Nevele Country Club, Ellenville, N.Y.

Charles Fromer, director of Pesticide Control of the New York State Department of Environmental Conservation, will speak on the 1972 Insect and Pesticide Outlook on Monday, Jan. 10. Guest speaker at the banquet, Tuesday evening Jan. 11, is Charles Pound, Commissioner of Westchester County Department of Parks, Recreation and Conservation.



Two models of the Jari sickle bar mower, now being produced by the Jari Division of Year-A-Round Cab Co., Mankato, Minn., are available — the 3 hp Chief and the 4 hp Monarch. Mowers, built for grass, weeds, or brush, feature non-sag floating sickle bars ranging from 16-60 inch cutting width with 16-inch single or dual wheels and V-belt drive with 2 clutches. Circle Reader Card #722.

meeting dates

S	M	T	W	T	F	S
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Kentucky Plant Food Council, Annual Meeting, The Executive Inn, Louisville, Ky., Nov. 10-11.

National Institute on Park and Grounds Maintenance, Park Maintenance, Sheraton-Schroeder Hotel, Milwaukee, Wis., Nov. 15-18.

Colorado Crop Protection Institute, Colorado State University, Ft. Collins, Nov. 17-18.

Arizona Parks and Recreation Conference, annual meeting, Holiday Inn, Tempe, Ariz., Nov. 17-19.

Metropolitan Shade Tree Conference, 300 N. Park Drive, Arlington, Va., Nov. 18.

New England Chapter, International Shade Tree Conference, Annual, King's Grant Inn, Danvers Beverly Line, Mass., Dec. 1-2.

Minnesota Turfgrass Conference, Normandy Hotel, Minneapolis, Minn., Dec. 1-2.

National Agricultural Aviation Association, Fifth Annual Conference, Fairmont Hotel, Dallas, Tex. Dec. 5-9.

Texas Turfgrass Conference, Texas A&M University, College Station, Tex., Dec. 6-7.

North Central Weed Control Conference, 26th Meeting, Muelebach Hotel, Kansas City, Mo., Dec. 7-9.

Ohio Turfgrass Conference and Show, Sheraton Cleveland Hotel, Dec. 7, 8, 9.

Northeastern Weed Science Society, 1972 Convention, Hotel Commodore, New York, N. Y. Jan. 5-7.

Georgia Golf Course Superintendents Association, Annual Meeting, Augusta Golf Clubs and Holiday Inn, Augusta, Ga., Jan. 9-11.

Western Association of Nurserymen, 82nd Annual Meeting, Plaza Inn, Kansas City, Mo., Jan. 9-11.

Mid-Atlantic Golf Course Superintendents, Annual Conference, Holiday Inn Downtown, Baltimore, Md., Jan. 10-11.

New Hampshire Turf Seminar, University of New Hampshire, Durham, Jan. 13-14.

Southern Weed Science Society, Annual Meeting, Statler Hilton Hotel, Dallas, Tex., Jan. 18-20.

Ohio Chapter of the International Shade Tree Conference and the Ohio State University short course for arborists, turf managers, landscape contractors, garden center operators, nursery men, and others, at the Sheraton-Columbus Hotel, Columbus, Ohio. Jan. 23-27, 1972.

International Turfgrass Conference and Show, 43rd Annual, Golf Course Superintendents Association of America, Convention and Exhibit Center, Cincinnati, Ohio, Feb. 13-18.

Pennstar Kentucky Bluegrass.



Perhaps the best all-around turfgrass available today.

Pennstar Kentucky Bluegrass (*Poa pratensis*) is an improved variety developed by Penn State after more than 15 years of testing. Pennstar is highly resistant to stripe smut, rust and leaf spot. It's not overly aggressive and has a medium blue-green color — ideal for mixtures.

Other Pennstar characteristics include good density, drought resistance, persistence under short mowing and moderate-to-low fertility levels. It does not produce damaging quantities of thatch and is adapted throughout all normal bluegrass areas. Send for complete data.

TO: Pennstar Kentucky Bluegrass
P.O. Box 923, Minneapolis, Minnesota 55440 WWT-11

Please send me prices, availability, test information, purity and germination data on Pennstar Kentucky Bluegrass.

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Club or Company _____

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PLANNING FOR AN IRRIGATION SYSTEM by the American Association for Vocational Instructional Materials, a non-profit organization whose objective is to develop such materials in the area of engineering technology. A 100-page manual; color illustrations. Price, \$6.50. Published June 1971.

Text helps determine the merits of installing a system if a new one is planned, or to determine if an existing installation is the one best fitted to needs.

Information is provided for considerations in selecting an irrigation system. Aids suggested can be adapted to any part of the country. Procedures for estimating sys-

tem costs and returns are included.

Non-technical approaches to various problems such as need for water, time and amount needed, and quality of water being used are a part of text.

Manual also deals with the various methods of applying water and the types of systems available. Merits of each are examined from standpoint of installation site, soil, etc. Portable, permanent and automatic systems plus automatic controls are covered.

Technical Competence

Though the association credit states that the book is published in cooperation with the Soil Conserva-

tion Service, more than three full pages of acknowledgments and credits are listed in the back of the manual. These include many university staff members plus practically every company which manufactures either complete systems or components.

Availability

For copies, write the association direct at its Georgia headquarters (Amer. Assn. for Vocational Instructional Materials, Engineering Center, Athens, Ga. 30601, or Tel. 404/542-2586). A catalog is also available for some 20 additional instructional manuals plus filmstrips, slides, and other visuals.

insect report



**TURF INSECTS
FALL ARMYWORM**

(*Spodoptera frugiperda*)

ALABAMA: Larvae damaged Coastal Bermudagrass in Geneva County field.

CHINCH BUG

(*Blissus leucopterus leucopterus*)

SOUTH CAROLINA: Heavy and some lawn damage in Clemson area, Pickens County. MAINE: Reports of lawn injury continue; invading homes in southern and central areas.

A TREEHOPPER

(*Gargara genitsae*)

OREGON: Collected adults on Scotch broom (*Cytisus scoparius*) on July 27, 1970 near Corvallis, Benton County. This is a new state record. Recorded from Washington, Connecticut, New Jersey, Italy, Spain, Austria, Germany, France, and England.

INSECTS OF ORNAMENTALS

AZALEA CATERPILLAR

(*Datana major*)

VIRGINIA: Larvae damaging azaleas at a home in Gloucester County.

AN ARMORED SCALE

(*Phenacaspis cockerelli*)

SOUTH CAROLINA: Reported from Horry County on magnolia. This is a new county record.

TREE INSECTS

VARIABLE OAKLEAF CATERPILLAR

(*Heterocampa manteo*)

MISSOURI: Heavy moth flights at lights in Boone County.

OAK LEAF TIER

(*Croesia semipurpurana*)

PENNSYLVANIA: Heavy to complete defoliation ob-

served in 1,000 acre area of Cumberland County (second year infestation); light to moderate defoliation (under 60 percent) observed in 700 acre area and heavy to complete defoliation in 6,300 acre area in Union County with increasing trend.

A NOTODONTID MOTH

(*Symmerista canicosta*)

MICHIGAN: Defoliation noticeable in Wolf Lake Area, Lake County and in East Lake, Manistee County. In Muskegon and White Cloud areas, Newaygo County defoliation just started. Complete defoliation expected at all of these sites.

WALKINGSTICK

(*Diapheromera ferromata*)

OKLAHOMA: All stages caused heavy defoliation of oaks (mainly black) in scattered areas of southern Le Flore County. Largest area (3 or 4 square miles) 5 miles south of Big Cedar, but 4 other smaller areas found on State Highway 1 between U.S. 271 and U.S. 259. Defoliation up to 100 percent.

AN EURYTOMID WASP

(*Eudecatoma marylandica*)

PENNSYLVANIA: Sixteen adults emerged from gouty oak gall caused by *Callirhytis punctata* (a cynipid wasp) collected in January from oak (laboratory rearing) near Auburn, schuylkill County. This is a new state record.

A CONIFER SAWFLY

(*Neodiprion* sp.)

OKLAHOMA: Second-generation pupation nearly complete in area; caused heavy defoliation to shortleaf pine in some areas. Latimer County, including Robbers Cave State Park, again had heavy widespread infestations. Smaller spots reported in southern Latimer County, Snow, Albion, and Antlers areas of Pushmataha County, Daisy area of Atoka County, and Halleyville and Hartshorne area of Pittsburg County. Many spots larger and more heavily damaged by this generation than by first.

MIMOSA WEBWORM

(*Homadula anisocentra*)

OKLAHOMA: Light to heavy on mimosa in Antlers, Pushmataha County, for a new county record.