



Above-water portion of parrotfeather, a perennial aquatic plant which roots in bottom mud.



Eurasian watermilfoil is also a rooted perennial, is newly established and spreading rapidly.



Close-up of Eurasian watermilfoil leaf. Plant is a threat to all of Florida's fresh and brackish waters.

whorled, generally 1 to 2 inches long, and have 10 to 18 narrow segments on each side of the midrib. The above-water foliage is yellow-green and has a dainty graceful appearance. The flowers are formed in the axils of the submersed foliage. The fruit is 1.5 to 2 mm. long. It could also be classified as an emersed plant.

It grows well in aquariums, small fish ponds, as well as in larger bodies of water and slow-moving streams. It is found only

in fresh water and seems to grow best in neutral or slightly alkaline ponds and streams.

Parrotfeather is a native of South America as the species name, *brasiliense*, denotes. Since the plant is commonly grown in aquariums, the spread has been facilitated with escapes throughout the southern and some of the more northern States. Small fishponds may become completely infested with the plant excluding other desirable plants and

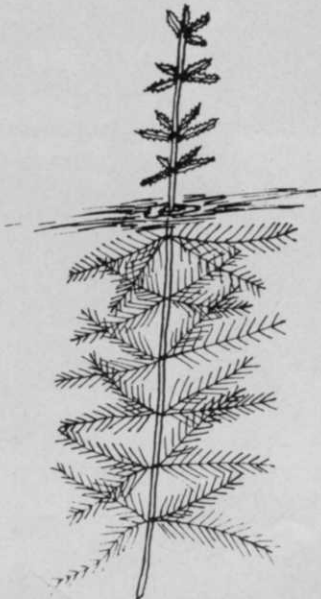
fish. Small drainage and irrigation channels also become clogged with growth of this weed.

Broadleaf watermilfoil, *Myriophyllum heterophyllum* michx. is a rooted perennial with most of the foliage submersed. The stems are quite variable in width, from 5 to 10 mm, but are generally stouter than other species in this group. The leaves are usually whorled in groups of 4 or 6. The submersed leaves usually have 6 to 10 pairs of dis-

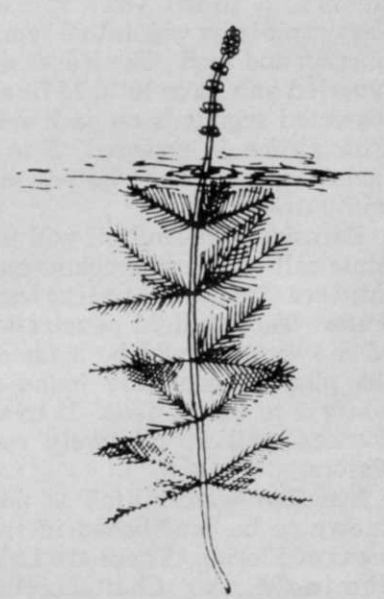
Parrotfeather, long an inhabitant of Florida is minor problem.

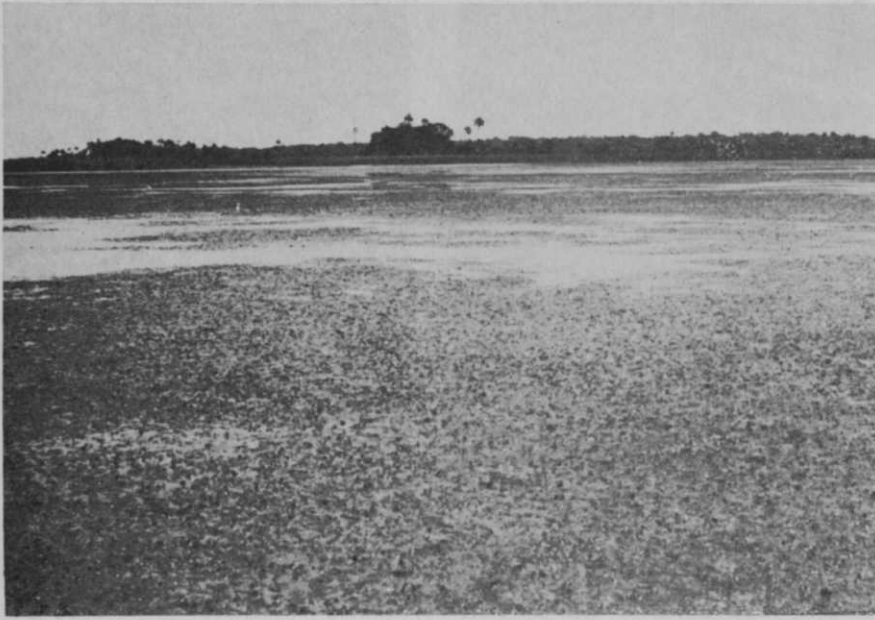


Broadleaf watermilfoil. Note serrated above water leaf.



Eurasian watermilfoil can be compared to the common milfoils.





Infestation of eurasian watermilfoil in Homosassa River near Chassahowitzka National Wildlife Refuge.

sected segments. The spikes are emersed and commonly 3 to 6 inches and occasionally more in length. The emersed leaves are 1.5 to 5 mm. wide and up to 2 cm. long. The margins are somewhat serrated. The fruit is formed on the emersed spike in the leaf axils.

**Species Common
In Ponds And Lakes**

Broadleaf watermilfoil is common and is found throughout the country. It is most common in shallow ponds and lakes in the northern part of the State. Large growths interfere with fish production and harvesting.

Eurasian watermilfoil, *Myriophyllum spicatum*, is a perennial submersed plant that spreads very rapidly by vegetative reproduction and seed. The leaves are whorled and have 10 to 14 finely dissected segments on each side. The spike is emersed, 2 to 4 inches above the water, and without leaves.

Eurasian watermilfoil will tolerate salt water, as much as one-third sea strength, as well as fresh water. Though light penetration of the water would be a factor, the plant is generally found in water 1 to 9 feet deep. It overwinters well in relatively cool water.

Eurasian watermilfoil is now known to be established in two areas of Florida. These are Lake Seminole near Chattahoochee

and the Crystal-Homosassa River Basin. The rapidity with which it has become established in our waters, and the history of its spread in other areas of the USA illustrates the potential problem an unchecked spread of the plant may cause to our water resources.

The infestation of eurasian watermilfoil in Lake Seminole is located in the Spring Creek arm of the lake in Georgia. However, the dam of the lake is located in Florida on the Apalachicola River. Nothing prevents the plant fragments from floating out of the lake into the Apalachi-

cola River and infesting Apalachicola Bay. Once established, it could severely damage the Florida oyster industry.

It is believed that eurasian watermilfoil was introduced into Lake Seminole in 1965.* It was first collected and identified in September, 1966 and at that time was infesting over 500 acres. In April, 1967 the infestation had spread over an estimated 1,200 acres. Fragments of the plant were observed floating in most of the Spring Creek area of the lake.

Eurasian watermilfoil, being a beautiful and popular aquarium plant, is reported by local fishermen to have been planted in the Crystal-Homosassa river basin in 1964 by tropical aquatic plant dealers.** It was not positively identified as eurasian watermilfoil until the summer of 1966. In March, 1967 watermilfoil had spread over an estimated 3,000 acres in an area from the Withlacoochee River to Weekiwachee Springs. It is also well established in the brackish waters of Chassahowitzka Bay where the Homosassa River empties into the Gulf of Mexico.

The establishment of eurasian watermilfoil in this area of Florida could drastically affect the economy of the State. Homo-

*Angus Gholson, personal communication.
**William McClellan, personal communication.

Outboard motorboat loaded from Crystal River is entwined with eurasian milfoil on both motor and trailer.



sassa Springs, Crystal River, and Weekiwachee Springs are only a few of its famous water attractions.

**Eurasian Watermilfoil
Dominates and Damages
Water Resources**

Eurasian watermilfoil, now well established along the west coast of Florida, is a submersed vascular aquatic plant which produces a mat of vegetation several feet thick. It dominates the water where it grows. It can severely damage water resources by stopping recreational activities such as fishing, skiing, boating, and swimming; by clogging channels used for navigation and drainage; by destroying commercial fisheries; and by limiting the appeal of these areas as tourist attractions.

Florida now has three common species of watermilfoil. Parrot-feather and broadleaf milfoil have been established for many years. Eurasian watermilfoil's adaptation to a wide range of environmental conditions makes it a potential problem plant throughout Florida. It can be distinguished by its emersed flower spikes 2 to 4 inches long, or by its leaf whorls which are 10 to 14 finely dissected segments on each side.

The complex problem facing Florida is where and how rapidly watermilfoil will spread. The most efficient method of reproduction and spread is by fragmentation (4). A single 2-inch fragment may take root and grow 4 feet or more in 3 months (5). The interconnection of many of the rivers, and the movement of small boats from one area to another, increase the chances of its spreading to the other watersheds. The spread of milfoil over 200,000 acres in Chesapeake Bay in 10 years should illustrate the problem. Florida is well aware of how rapidly a plant can be disseminated, as a result of experience with the water hyacinth (*Eichhornia crassipes*) and a more recent aquatic plant, Florida elodea (*Hydrilla verticillata*). The public and also its State agencies must be convinced that eurasian watermilfoil is a serious threat.

The future of the water re-

sources may be determined by action taken in the next few years. Research is urgently needed on the ecology of the plant and on its control. Florida should evaluate methods successful in other parts of the USA. A successful method of control should be found and then utilized in a program. This will depend on early identification of the weed and on prompt treatment. Anyone who finds this plant in areas other than those discussed here should report it to a local Florida Game and Fresh Water Fish Commission office. Cooperation between the public and its State agencies will be an important factor in preventing spread.

Literature Cited

1. Anderson, Richard R., Russel G. Brown and Robert D. Rappleye. 1966. The mineral content of *Myriophyllum spicatum* L. in relation to its aquatic environment. Ecology 47:844-846.
2. Beaven, G. F. 1960. Watermilfoil studies in the Chesapeake Area. Maryland Dept. of Res. and Ed. Ref. No. 60-52, Mimeo. 5 pp.
3. Crowell, Thomas E., John H. Steenis, and John L. Sincock. 1967. Recent observations on eurasian watermilfoil in Currituck Sound, N.C. and other coastal southeastern states. Proc. SWC 20:348-352.
4. Smith, Gordon E. 1962. Eurasian watermilfoil in the Tennessee Valley. Proc. SWC 15:258-264.
5. ———, T. F. Hall, and R. A. Stanley. 1967. Eurasian watermilfoil in the Tennessee Valley. Weeds 15:95-98.
6. Steenis, John H., Vernon D. Stotts, and Charles R. Gillette. 1961. Observations on distribution and control of eurasian watermilfoil in Chesapeake Bay. Proc. NEWCC 16:442-448.

Information for this material is from cooperative investigations of the Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture; the Central and Southern Florida Flood Control District; and the Florida Agricultural Experiment Station, Fort Lauderdale, Fla. The original paper was presented by author Blackburn at the 1967 annual meeting of the Hyacinth Control Society and will be published in the proceedings of the Society.

**Meeting
Dates**



Fertilizer Industry Round Table, 17th Annual Meeting, Hotel Mayflower, Washington, D. C., Nov. 15-17.

Entomological Society of America, Annual Meeting, Hotel New Yorker, N.Y.C., Nov. 27-30.

National Fertilizer Solutions Association, Annual Convention, Denver-Hilton Hotel, Denver, Colo., Nov. 27-30.

National Aerial Applicators Association, Annual Conference, Marriott Hotel, Dallas, Tex., Dec. 3-5.

North Central Weed Control Conference, Civic Auditorium, Fargo, No. Dak., Dec. 5-7.

Louisiana Turfgrass Association, Annual Conference, University of Southwestern Louisiana, Lafayette, La., Dec. 7-8.

Illinois Turfgrass Conference, University of Illinois campus, Urbana, Ill., Dec. 7-8.

Ohio Turfgrass Foundation Turfgrass Conference, Sheraton-Cleveland Hotel, Cleveland, O., Dec. 11-13.

American Society of Agricultural Engineers, Winter Meeting, Cobo Hall, Detroit, Mich., Dec. 13-15.

Northeastern Weed Control Conference, Hotel Commodore, New York, N. Y., Jan. 3-5.

Southern Weed Conference, 21st Meeting, Deauville Hotel, Miami Beach, Fla., Jan. 16-18.

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

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

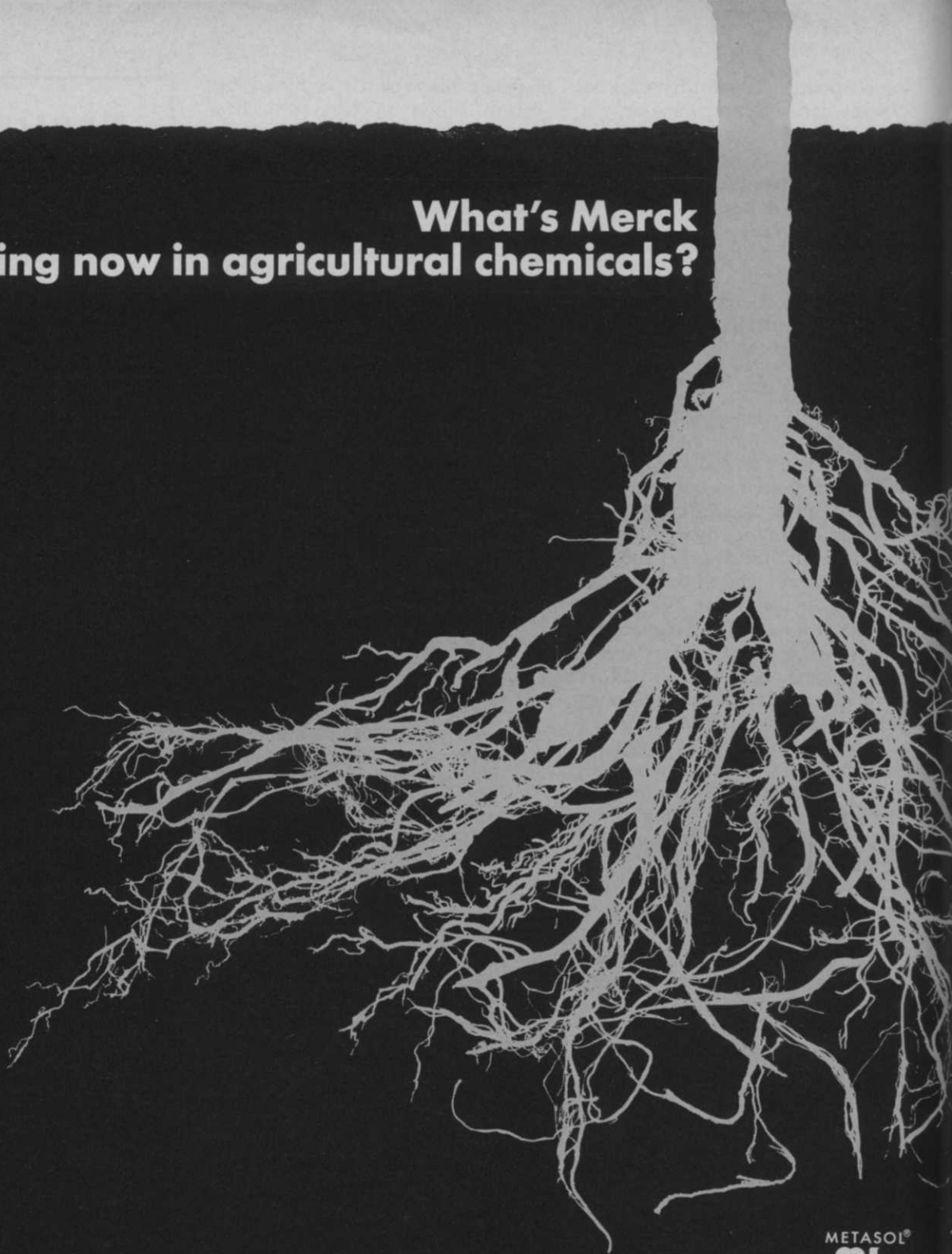
Weed Society of America, 1968 Meeting, Jung Hotel, New Orleans, La., Feb. 5-8.

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.

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.

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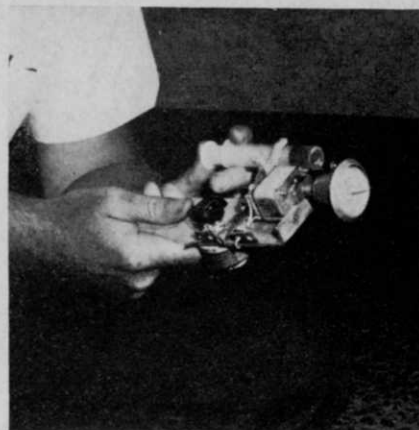
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PRODUCTS



New officers and board who will direct activities of 1967 Pacific Northwest Spraymen's Association, Inc., are, left to right: Board member, Lew Seflon, Lew Seflon Spray Co., Portland, Ore.; Vice-president, Stanley Raplee, Washington Tree Service, Seattle, Wash.; Board member, Jack Daniels, Greenup Spray Service, Seattle, Wash.; Secretary-Treasurer, Charles Seibold, Major Spray Service, Portland, Ore.; and President, James Overton, Miller Products, Portland, Ore.



Ultra low volume applicator with only a 12cc tank was demonstrated by Washington research entomologist Dr. Joseph L. Saunders. He predicts that similar units will become practical for commercial use in the future.

Spraymen Concerned With New Products And Better Service At Seattle Annual

A WTT report of the annual meeting of the Pacific Northwest Spraymen's Association, Inc., at Seattle, Washington, during September.

SPAYMEN are looking ahead. They are truly becoming professional pesticide applicators. Awareness of their public image, care in application techniques to help that image, concern with effectiveness of their service, efforts to work together, and other factors point to improved stature for spraymen.

Such was evident at the recent Spray-O-Rama staged at Seattle Center, Seattle, Wash., by the Pacific Northwest Spraymen's Association, Inc. Most of their 2-day program was tied to new techniques in service, new methods of control, and new products and equipment coming on the market. Even telephone use techniques were covered by Mrs. Judi Simonis of Pacific Northwest Bell, who told the group to expect microwave units and picture phones in the foreseeable future.

Among new products creating group interest was Slo-Gro, a growth inhibiting chemical developed by Uniroyal. Known earlier as MH-30T (a formulation

of maleic hydrazide), the registered trademark for marketing purposes by Uniroyal will be Slo-Gro. Thomas E. Cowan, technical representative for the

Dr. Joseph L. Saunders, assistant entomologist at Western Washington Research and Extension Center, Puyallup, Wash., center, discusses Systex-R use which he says can control Dutch elm disease with Robert Mitchell, Agricultural Chemicals, Portland, Ore., left, and Stan Iversen, Neil A. Maclean Co., Seattle, Wash.





Discussing growth regulators, and MH-30T in particular, are, left to right: Don Mock, Shamrock Spray Service, Seattle, Wash.; T. P. Strand, Weaver Exterminating Co., Yakima, Wash.; and Thomas E. Cowan, Uniroyal technical representative, Los Angeles, Calif. Cowan presented research and field test results of new chemical, Slo-Gro, developed by Uniroyal.

same rules apply for trees sprayed with Slo-Gro as for grass. Most rapidly growing trees and wood shrubs respond favorably to treatment. Among those successfully tested to date are elm, sycamore, ash, maple, alder, athols, eucalyptus, oak, mulberry, black walnut, pepper, liquidambar, and a number of shrubs. Cowan says the chemical has proved particularly applicable over top trimming to prevent regrowth interference with utility lines.

Apply Only On New Vigorous Growth

By way of summary, Cowan said that Slo-Gro is effective only when applied on new, vigorous growth. Spray must thoroughly wet and cover all new growth, though he cautioned against excess drip or runoff on lawns and under trees. Slo-Gro is soluble in water and once mixed does not need further agitation. Spray must be applied so that it penetrates through the upper foliage and down to the new growth.

Dr. Roy Goss, agronomist at the Western Washington Research & Extension Center, Puyallup, Wash., provided the group with turfgrass management recommendations. He tied his turf management recommendations to those most often affecting the ground sprayman. In discussing soil fumigants, Dr. Goss pointed out that all soils in

company, presented results of field test work with the chemical. He also discussed Alar 85, another new growth regulator for which clearance is expected within the next year.

Cowan predicted that spraymen will be using more growth regulators in the immediate future. Such chemicals, he said, change growth pattern only. They do not kill the plants, but merely change the physiology of the growing vegetation.

Slo-Gro, according to Cowan, has been found particularly useful on steep highway banks which are difficult to mow. Grass, when mowed at 3 inch or greater heights, can be held back to the point that it need be mowed only 2 or 3 times during the year. The same type maintenance is applicable for golf course roughs, cemeteries, and certain industrial areas. Slo-Gro for such treatments can be applied for about \$20 per acre using the full rate of 1-1/3 gallons in 75 to 100 gallons of water, usually with a boom sprayer. Use of X-77 as a surfactant is very important (1 quart/acre if humidity is 60% or less and 1 pint if humidity is 80%).

Also, Cowan said it is practical

to cut the dosage of Slo-Gro to 2/3 gallon per acre if less reduction in growth is wanted. There is also less chance of any discoloration at the reduced rate. However, Cowan stressed that any browning lasts only about 2 weeks. Grass sprayed at 3" to 4" heights has been easily maintained at 6" to 8" heights for the year in Uniroyal's field tests.

Cowan said that about the

Only the left half of the locust, below, was sprayed with Slo-Gro, a new Uniroyal growth inhibiting chemical. Note retardation of growth during the single season after treatment. Spraying is done just after growth begins in spring season.



their natural state contain weed seeds, fungi, nematodes and other soil borne pests. Fumigation before planting is about the only way to clean them up, he said. But it is often a questionable practice because of costs and the waiting period of 2 to 3 weeks before planting. Herbicides will kill most weeds and may be more practical. Yet, he suggested that spraymen weigh the disadvantages of using a herbicide at a time when young grass seedlings are also susceptible. Waiting until grass is established to kill weeds means that the weeds have already crowded out some desirable turf.

If soil is fumigated, Dr. Goss reported an easy method for determining the time when it becomes safe to plant grass seed. He suggested placing radish seeds at the regular planting depth at random spots over the area. Keep the area moist. If the radish seeds germinate in the normal time, it is safe to proceed with planting. If not, allow a few more days.

Entomologist Dr. Joseph L. Saunders of the Western Washington Research and Extension Center, Puyallup, Wash., stirred the group with the statement that he could guarantee control of the elm leaf beetle with one application of Systex-R. This chemical, Dr. Saunders said, will protect large trees, those 10 to 15 inches in diameter, for two months. Within 2 hours after application, he said, beetles leave the trees. He has been field testing the J. J. Mauget Company's injector, using the Birdin systemic injector capsule. Dr. Saunders also demonstrated an ultra low volume applicator with 12 cc tank. Smaller tanks of 1 or 2 cc's, he said, have also been used as a research tool. The spray unit he demonstrated was designed and built by Chemagro Corporation for specially formulated chemicals.

Elected to offices for the coming year were: James Overton, Miller Products, Portland, Ore., president; Stanley Rapple, Washington Tree Service, Seattle, Wash., vice-president; Charles Seibold, Major Spray Service, Portland, Ore., secretary-treas-

urer; and board members, Lew Seflon, Lew Seflon Spray Company, Portland, Ore., and Jack Daniels, Greenup Spray Service, Seattle, Wash.

Fusarium Blight Bluegrass Investigation Scheduled

Symptoms similar to those of Fusarium blight have been spotted on Merion bluegrass in Michigan for the past 2 years. As

a result, Dr. Robert P. Scheffer, plant pathologist, and Dr. Nicky A. Smith, Extension plant pathologist, both of Michigan State University, have started an investigation to determine if Fusarium blight is present. If so, they will survey sod growers, landscapers, golf course superintendents, and others to pin down extent and prevalence of the disease.

National In Scope—Staged for the Professional

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Special recognition for service to the Alabama-Northwest Florida Turfgrass Association came to Mike Johnson, left, and Dr. D. G. Sturkie, center, during turfgrass short course at Auburn University. Johnson, Birmingham turf specialist, was chairman of the program committee, and Dr. Sturkie, agronomy researcher of Auburn's Agricultural Experiment Station, headed overall planning committee. Presenting the plaques is Bill Norrie, association secretary, Pensacola, Fla.

Alabama-N.W. Florida Turfgrass Group Meets

More money is spent on turf than any other crop in Alabama, according to Dr. T. B. Hagler of that state's Extension Service. In a session with members of the Alabama-Northwest Florida Turfgrass Association at a recent special course, Dr. Hagler said turf is grown on grounds of a million homes, 100 golf courses, 600 schools and colleges, and many parks, cemeteries, public areas, and rights-of-way on highways.

Meeting with the group to discuss management of this Number 1 state crop which has become a multi-million dollar business was James M. Latham, Milwaukee Sewerage Commission agronomist, Milwaukee, Wis. Latham said that turf production is not the hay business. Over-fertilization, he said, causes excess mowing and should be avoided. Quality of turf is now the major consideration, not rate of growth, Latham believes.

He called for a complete fertilizer program with regular applications for best appearance of turf areas. Too often there is a delay in fertilizing until grass shows deficiency, followed by use of excess amounts. Timing of fertilization in relation to irrigation is especially important, he explained.

The problem of thatch devel-

opment was also covered by Latham. He said this comes about because of too fast growth rate or irregular mowing. His suggestion for prevention of thatch calls for fertilizing enough to maintain color and growth, but not enough for excess growth.

Results of fertilization studies with zoysia and Tiflawn bermuda were presented by Dr. D.

G. Sturkie, turf researcher at Auburn University Agricultural Experiment Station.

Lederer To Serve Both AAN and NLNA

Robert F. Lederer has been named executive vice-president of the National Landscape Nurserymen's Association. He serves in the same position and holds the same title with the American Association of Nurserymen.

The two associations' boards of directors have made a joint statement announcing the umbrella management. In the move the NLNA acquired the administrative services of the entire AAN staff and moved their headquarters to the AAN headquarters in the Southern Building, Washington, D. C. Each organization will continue with its own governing body, separate bylaws, and independent association goals and management priorities.

Already operating with this type management program with Lederer as executive vice-president are the Wholesale Nursery Growers of America, the Horticultural Research Institute, and the Nurserymen's Group Insurance Trust.



Members of the Northeastern Weed Control Conference will stage their 22nd annual meeting Jan. 3-5, 1968, at the Hotel Commodore, 42nd at Park and Lexington Avenues, New York City. Program plans are being finalized by the executive committee, left to right: Dr. George H. Bayer, Agway Inc., Syracuse, N. Y.; Dr. John F. Ahrens, Connecticut Agricultural Experiment Station, Windsor, Conn.; Homer LeBaron, Geigy Agricultural Chemical Corp., Ardsley, N. Y.; Arthur Bing, Cornell Ornamentals Research Laboratory, Farmingdale, N. Y.; John Gallagher, Amchem Products, Inc., Ambler, Pa.; Dr. Richard D. Ilnicki, Rutgers University, New Brunswick, N. J.; Dr. John A. Meade, also of Rutgers; and Dr. J. R. Hansen, Hercules Inc., Wilmington, Del. Gallagher, who works with research and development at Amchem, is N.E. Weed Control Conference president for the current year.



Maine Helicopters, Inc., Vice-President Andrew Berry, right, and Chief Pilot Gene Herrin, center, accept delivery of their new Bell Ag-5 from Joe Moak of the Bell commercial sales staff.

Advanced Helicopter In Service In Maine

A major new piece of equipment, the Bell Ag-5 helicopter equipped with an Agmaster spray unit, has been put into service in Maine by Maine Helicopters, Inc.

This aerial applicator company has added the new model to a previous fleet of two Bell Models, the 47G and the 47H-1.

Delivery was made to Andrew Berry, vice-president, and Gene Herrin, chief pilot, at the Textron Bell Helicopter Company's Fort Worth, Tex., facility.

Among Maine Helicopters' contracts are odor abatement control for S. D. Warner Paper Products and Dead River Com-

pany of Bangor. Berry says the company is also doing experimental application work for the U. S. Forest Service's spruce budworm control program.

Besides aerial application work, Maine Helicopters also does powerline patrol work for Central Maine Power, Bangor Hydro-Electric, and Rangely Power companies. Pipeline surveillance is carried out from Portland to the Canadian border for the Portland Water District.

Maine Helicopters operates equipment from the Augusta State Airport and has office headquarters at Portland. The company has been operating since 1960 as a full-time helicopter service in the state.

0217 Fylking Kentucky Bluegrass Seed For Sale

A new bluegrass seed from Sweden is now available in this country. Tested for 10 years and found an excellent performer as an all-around lawngrass, 0217 Fylking Kentucky bluegrass seed is now on the market.

Doyle Jacklin, Jacklin Seed Company, Inc., Dishman, Wash., said demand for seed of the pedigreed, genetic stock of 0217 is expected to be heavy because of its performance in an extensive field testing program throughout the country.

Two desirable features of 0217, Jacklin says, are its low, dense growth and its resistance to disease. Bright green leafblades, unmarked by lesions, are found on short leaf stalks. These escape damage by mowers even when grass is cut low. The blade itself bends back and downward more than is true with most bluegrasses. In this way, grass blades underlie the cutting edge of the mower, and Jacklin reports, some turf specialists have suggested it might be adaptable for a golf green.

0217 brand Fylking is spread by rhizomes, weaving into a strong sod underfoot. It is uniform and dense, Jacklin reports, yet responsive in handling as is generally the case with bluegrasses.

Winterize Your Spray Rigs

The following recommendations are guidelines for keeping equipment in good shape for next spring:

1. Drain all spray material from tank, pump, boom and hoses. Store in safe place.
2. Remove end plugs from boom (if present), so any accumulation can be flushed out.
3. Fill spray tank with clear water, run pump, and flush water through the boom in safe area.
4. Again fill with "flush" mixture recommended by your county agent, depending on the last-used pesticide material.
5. Disassemble nozzles, clean screens, and store screens and nozzle parts dry or immersed in a jar of fuel oil.

6. Drain pump thoroughly and then coat the inside with a rustproofing material such as soluble oil or regular auto radiator rust inhibitor. This will prevent a stuck pump. Be sure pump is dry so it will not be damaged by freezing.

7. If tank is susceptible to rust, rinse or spray interior with soluble oil in water or other rust inhibitor. Do this whenever sprayer will be idle for a few days.

8. Support boom so it won't be damaged by other machinery. Avoid leaving aluminum boom material in contact with soil or manure accumulations.

9. Remove hoses, wipe clean of oil, and store them inside, coiled neatly in a five-gallon pail or straightened out on a shelf. Avoid sharp kinks or hanging over a nail.

Weed Turf With Fertilizer

Director, The Lawn Institute, Marysville, Ohio
By ROBERT W. SCHERY

EVERYONE wants a lawn of fine-textured grasses such as Kentucky bluegrass, fine fescue or bentgrass. There is no better way to achieve success than to sow quality seed of "fine-textured" species to a nicely prepared seedbed, at a favorable season, usually late August or September, for these topnotch grasses. Given a good start then, each is able to gain a jump on the weeds and generally remain topdog under average care.

But did you ever consider that attractive grasses can be greatly aided by so simple a procedure as fertilizing? Here is what, in one year, a single turf feeding accomplished at the Lawn Institute grounds.

Sod of an old pasture there that merely has been mowed contains a mixture of haygrasses (timothy especially) with bluegrass, and of course many broadleaf weeds. Clover is prominent. Wild carrot is abundant, as is dandelion and miscellaneous other broadleaf weeds such as



Grass in foreground area received heavy fertilizer treatment one year prior to time picture was made. Note almost complete absence of weeds as compared to background (area beyond string) which received no fertilizer. Broadleaf weeds are specially evident near tractor wheel.

occasional chickweeds, veronica and various Compositae. The particular turf in this test had not been fertilized for at least a decade since retired from pasture usage.

In the late spring of 1966 a heavy fertilization (perhaps 2-3 lb. N/M) was made with a 15-5-5

lawn fertilizer. Neither the fertilized area nor the surrounding unfertilized turf received further attention, except for mowing at approximately a 3 inch height. What was the result one year later? The chart tells the story.

Where the fertilizer had been applied the weed population dropped to an average of about 23 broadleaf weeds (of all kinds) per square foot, as compared to 50 for unfertilized areas. And conversely, the grass was increased to as much as 90% of the cover in a number of the sampling locations, compared to only occasional spots with as much as 50% grass on the unfertilized portion. On a square foot basis the frequency of wild carrot was cut fivefold, clover and other broadleaf weeds nearly in half, by application of the fertilizer. Grass was encouraged, and there seemed even to be a slight gain for the Kentucky bluegrass over the haygrasses, although this was not nearly so manifest as

Table 1. Results of Weeding Turf With Fertilizer at Lawn Institute Grounds, Marysville, Ohio, 1966.

Species checked	Average number of plants per square foot, or % cover ^a	
	Fertilized	Unfertilized
White clover	7.6	14.6
Hop clover	4.8	5.8
Wild carrot	3.2	16.4
Dandelion	1.6	3.6
Miscellaneous broadleaves	6.0	9.4
<i>All Dicotyledonae</i>	23.2	49.8
Fine-texture (Kentucky bluegrass).....	55.5%	25.7%
Coarse haygrasses	11.9%	7.6%
<i>Estimated % grass in total cover</i> . . .	67.4%	33.3%

^a Mid-June sampling of old turf, part of which received a single heavy fertilization about a year previously. Based upon counts within a 6" square randomly dropped.