SEPTEMBER, 1970

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Special for This Issue

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The founder of the Crownvetch industry, Dr. Fred V. Grau, and the biggest users of this legume discuss its merits for controlling slope erosion.

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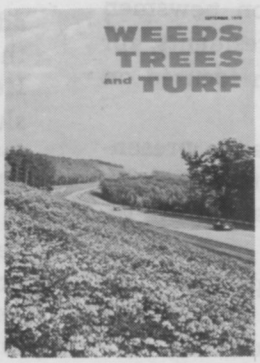
The Cover

You don't need to mow it, fertilize it, weed it, or water it. You just look at it and enjoy it. That's what the proponents of Crownvetch say. It's hard to get started, but the rewards come later. The result can be like the cover picture, taken along Interstate 80 in Pennsylvania. Crownvetch is planted along the entire length of this super highway from New Jersey to the Ohio line. But highways are just one area the legume can be used. Anywhere there is a slope that needs to be preserved and landscaped, Crownvetch is a prospect. The cover feature discusses why, beginning on page 6.



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WEEDS TREES and TURF®

Volume 9, No. 9 September, 1970

Your Interest in Building Public Interest in Trees

If you're traveling and pass me by, stop, for you're as welcome as can be.

The sun is hot, the day is long. Listen. The wind and my leaves will play a song.

Stop and rest, if just for awhile. Later, you'll be rested and ready to walk another mile.

But while you're here, take care of me. For I must be here for the future to see.

SUE COPENHAGEN, ninth grader at Wayne Central School, Ontario, was writing about trees. She and a flock of other pupils from grades five through nine were asked to write a poem or essay on the subject: "The World's Heritage—Trees." The phrase was the theme for the International Shade Tree Conference and the contest was part of the 46th annual conference at Rochester, N.Y., recently. Cash prizes were given and grand winners also attended the conference and were recognized.

All in all, the contest generated a great deal of interest in trees on the part of the youngsters and their teachers.

During the shade tree conference, several executives of the National Arborist Association presented a plaque to Rochester University representatives for an outstanding purple beech, estimated to be 125 to 135 years old. Television newsmen were present, so thousands of area residents, for a moment or two, had their attention focused on trees.

NAA plans to conduct a similar plaque presentation in each host city where it meets, hopefully to draw attention to trees and the organization, reports Dan Lynch, executive secretary.

The writing contest and NAA's program are just two of many projects you could duplicate in your town to create more interest in trees.

Your interest in building public interest in trees is at least two-fold. Such a project contains excellent public relations value, through the publicity of your company's efforts. With concern establish for trees, either by a poem like Sue's that carries within it a plea for tree care, or in some other way, it follows that people might begin thinking about professional tree care.

Attaching value or significance of some kind to trees is a quick way to draw attention to them. For example:

Mr. H. P. Bowser, manager of Keystone Tree Service—Has anyone called attention to the national champion thornless honeylocust in your town of Chambersburg, Pa.? And Mr. F. C. Henderson, your company might give some thought on what to do about the champion spruce pine there in Tallahassee, Fla. Mr. P. M. Cecrle and Mr. C. E. Sowell—your tree companies can weave your program around the champion eastern wahoo there in Manhattan, Kan.

If a plaque or other recognition already has been thought of, perhaps you might consider donating your services to care for these special trees.

You need not have champions, however, to have a successful program. Give some thought to picking the outstanding specimen for just your town and how you might publicize the fact. An ongoing program could be to select the outstanding specimen of each variety. What about plaques to the property owners?

Do some trees have historical significance, or are there interesting stories about them?

Arbor Day is the natural timing for a once-a-year a program, but events could be scheduled periodically.

You might be as surprised as Wilbur Wright, administrator of the New York State Parks, at the enthusiasm that can be developed over trees. He told the story at the shade tree conference of slum residents who descended upon a young tough bent on defacing a neighborhood tree planted in a once-treeless community.

Besides improving your company image and perhaps increasing business, a program of tree promotion could also perform a valuable industry service. With people's concern aroused over trees, there is greater likelihood that you can spray and the public will realize that rather than killing birds and polluting the air, soil and water, you're actually protecting trees and improving the world we live in. You have every right to sit in the front seat of the environmental bandwagon. Why not climb aboard?

Gene Ingalsbe

Asplundh is speeding up delivery dates on Aerial Lift Trucks

Asplundh has scheduled regular production on the Forestry or General Service bodies, both complete on GMC chassis. These 45′ lifts with a capacity of 350 pounds in all positions are fully insulated and have high pressure hydraulic systems to the baskets. Ready for fast delivery.
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For Erosion Control, 'No Maintenance,' and Beauty:

CROWNVETCH

ONCE YOU KNOW the characteristics of Crownvetch, you'll think of any number of uses. Its adaptation to environmental variations and omnipotence over natural and man-made destructive forces are that outstanding.

This broad endorsement is not to imply that Crownvetch is *the plant* for all purposes; rather, it conveys the opinion that the plant has qualities that make it supreme for a wide variety of uses.

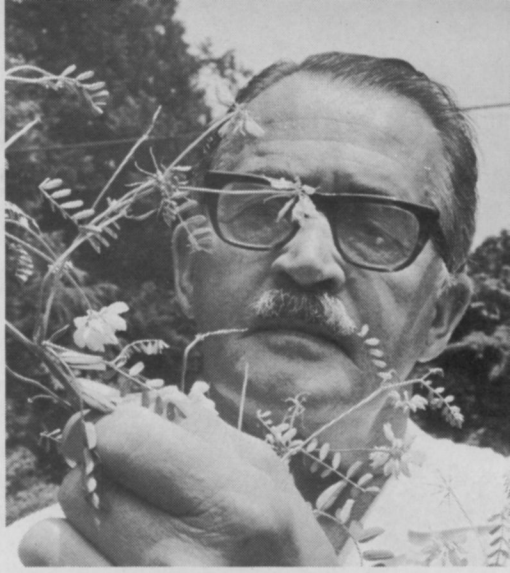
For openers, Crownvetch, *Coronilla varia,* is described as having extreme drought and cold tolerance and almost complete freedom from insect disease troubles. It flourishes in extremely poor soil, and crowds out grasses and weeds. Hedging not at all, proponents state Crownvetch has "zero maintenance." And in the words of its discoverer, Crownvetch is "utterly beautiful," blooming in colors from white to pink to reddish purple flowers all summer long.

A perennial legume, Crownvetch seeds profusely and also spreads by strong fleshy rhizomes. The Penngift strain (others are Chemung and Emerald) has coarse stems from two to six feet long that are strongly branched. Numerous rhizomes may develop to 10 feet or more, with new plants rising from the nodes.

Crownvetch is known best for its use to control erosion on highway slopes. Says Dr. Fred Grau, discoverer and founder of the Crownvetch industry:

"Every slope is an advertisement for Crownvetch, whether it has been planted or not. Once you've seen slopes covered with a Crownvetch blanket, you wonder why other slopes haven't been protected in the same way."

Those who might not agree with Dr. Grau's opinion of the beauty of its pink and purple flowers and deep green foliage, nevertheless will be impressed by another contribu-



Dr. Fred V. Grau, College Park, Md., founded the Crownvetch industry. He discovered the plant growing near Virginville, Pa., in 1935. He later formed his own company, Grasslyn, Inc., to produce and market seed. He's holding a white-flowering strain he hopes to market in the future. It's growing on a vacant lot in College Park near his home.

tion characterized by the color green —money.

Pennsylvania highway officials estimate that the 18,000 acres of Crownvetch planted along rights-of-way since 1947 are now saving taxpayers in excess of $100,000 annually in mowing costs alone.

No estimate is possible on the amount of money saved that would have been used in rebuilding slopes that had eroded away.

The great opportunity for the Crownvetch industry, believes Dr. Grau, is in "revitalizing eroding, degenerating grassed slopes which have been improperly maintained. Success has been remarkable when Penngift Crownvetch seed has been hydroseeded into the gullied slopes without seedbed preparation."

Crownvetch is an ideal cover from the standpoints of beauty, erosion control, soil enrichment and "zero maintenance" for any hard-to-maintain area. Among these, Dr. Grau suggests medians on highways, slopes around factories, commercial buildings, parking lots, schools, parks and golf courses; ski slopes, cemeteries, strip-mined areas, and decorative plantings around homes.

Penn Central Endorses It

Penn Central Railroad has established Crownvetch around its Big Four Yard near Indianapolis. Penn Central right-of-way specialists see Crownvetch as a "valuable ally" in maintaining yards and roadbeds where mowing is extremely expensive and chemical control not always effective.

"Chemical weed killers," a Penn Central release stated recently, "frequently defoliate but leave stalks standing which obstruct vision along rights-of-way and grade crossings until they are removed. Crownvetch hugs the ground in a dense green mass and eliminates this problem entirely."

But doesn't the mass of vines constitute a fire hazard? In the truly dormant season, "no more than any other plant," replies Dr. Grau. He adds that Crownvetch more properly can be described as "fire retardant."

Because of the plant's exceptional drought tolerance, it stays green in extremely dry weather. Large quantities of moisture in its stems prevent flash fires as happen with grasses and weeds.

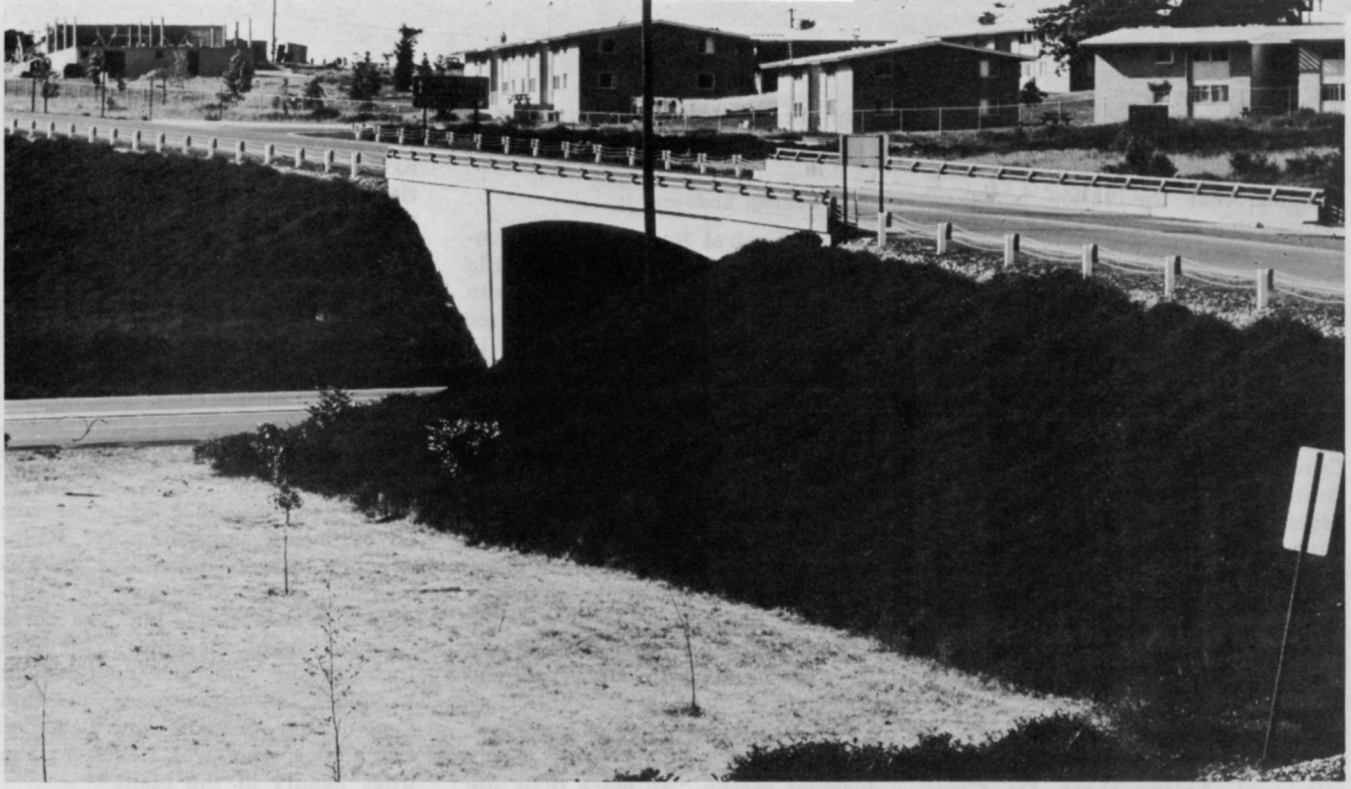
When and Where Discovered

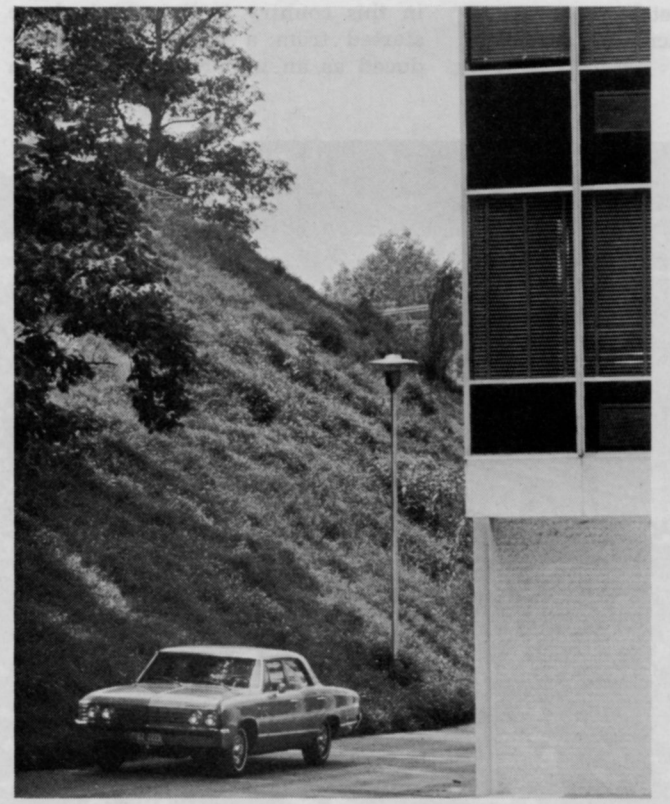
Dr. Grau, agronomist, world turf authority, and president of Grasslyn, Inc., College Park, Md., attributes his discovery of Crownvetch to his taking the right forks in the road.

The year was 1935 while he was an extension agronomist for Pennsylvania State University. "I was traveling from Allentown to Reading for a meeting, but had some time to spare. I came to several forks in the road and just happen to take the right ones to find Crownvetch growing on a cinder and shale pile. I was struck by the utter beauty of the plant."

The entire Crownvetch industry in this country is thought to have started from a single plant introduced as an impurity in an alfalfa

Highway interchanges, like the one at far left on Interstate 81 near Winchester, Va., are ideal places to plant Crownvetch. Mowing would have been practically impossible; cost of planting shrubbery prohibitive. The legume had covered almost everything except solid bedrock. Rights-of-way are steep and tiered in the mountainous region of Pennsylvania along Highway 322 northwest of Harrisburg. Crownvetch is working well to cut down erosion. Numerous uses, as for the lake bank above, serve both utilitarian and esthetic purposes.





Crownvetch offers a number of advantages over other types of plantings in urban areas. The legume soon envelopes and conceals trash. It stays a deep green through extremely dry weather, as shown above in State College, Pa., and moisture retained in its coarse stalks gives it fire-retardant qualities. Commercial developments on land carved out of hillsides have used Crownvetch to control slope erosion. The picture at left is a business office building in College Park, Md. At right, Crownvetch worked its way into crevices of this cliff edge to Pennsylvania Highway 322.

field sometime between 1905 and 1910. The site was the Robert Gift farm near Virginville, Pa. Because of Dr. Grau's discovery on the Gift farm and the university-sponsored research that followed, the name Penngift Crownvetch was assigned for identification purposes. Other varieties have been developed from Penngift with the help of Dr. Grau.

Dr. Grau hand-harvested some seed and collected some crowns from the Gift field and started a new planting for commercial seed production in 1940. The first commercial seed harvest was in 1946; the first ton produced in 1951. The Penngift name was assigned in 1954, and the first Blue Tag Certified seed came in 1961.

Before Dr. Grau could sell the seed to state or federal governments, he found that he had to establish his own competition to comply with

regulations requiring that more than one source be available for products purchased.

Dr. Grau, through Grasslyn, Inc., has some 2,000 acres in production now around State College, Pa., and Omaha, Neb.

Attesting to Penngift Crownvetch's ability to spread, Dr. Grau said a single clump planted eight years ago along Highway 36 near Omaha has now spread to 5,000 sq. ft.

The longest continuous highway usage, he said, is the recently completed Interstate 80 stretching from New Jersey to the Ohio line.

Though Pennsylvania has made greatest use of Crownvetch, Dr. Grau said seed or crown shipments had gone to 40 some states. It grows in most parts of the country, from almost the entire length of Trans-Canada Highway 401, to coal strip-mined areas of Kentucky to irrigation ditchbanks in El Paso, Tex. As other examples, you can view it at parks in Peoria, Ill., and Dallas, Tex.; on a golf course as Moselem Springs, Pa.; and on the slopes of a recharge water basin on Long Island.

But to really view Crownvetch "en masse," just take a drive through Pennsylvania.

University-Tested Since 1947

A joint research project by Pennsylvania State University and the state highway department was begun in 1947 to evaluate various legumes and grasses for slope control.

J. M. Duich, agronomist at Penn State, reporting at the first Crownvetch Symposium in 1964, summed up that early testing this way:

"The specific results of the tests showed that certain grasses produced an adequate cover but later showed evidence of serious thinning out, in spite of additional fertilization. In contrast, Crownvetch when seeded alone, established full cover by the end of the second full growing season, but because of the slow rate of seedling development, did not provide adequate protection during the first season of growth.

"It was very evident that, where grass-legume mixtures were used, the development of the legume was directly affected by the competition of the faster-growing grasses."

Because the study showed a grass-legume mixture to be the best for establishing a permanent cover, another series of tests was conducted to find which mixture was best.

In studies continued through 1961, Duich concluded that Crownvetch seeded with either red fescue, Kentucky-31, or domestic ryegrass provided excellent slope protection, with the Crownvetch taking over as the permanent cover after the second growing season.

Under the conditions of the experiment, the ryegrass-Crownvetch combination showed the best indication of permanent Crownvetch cover.

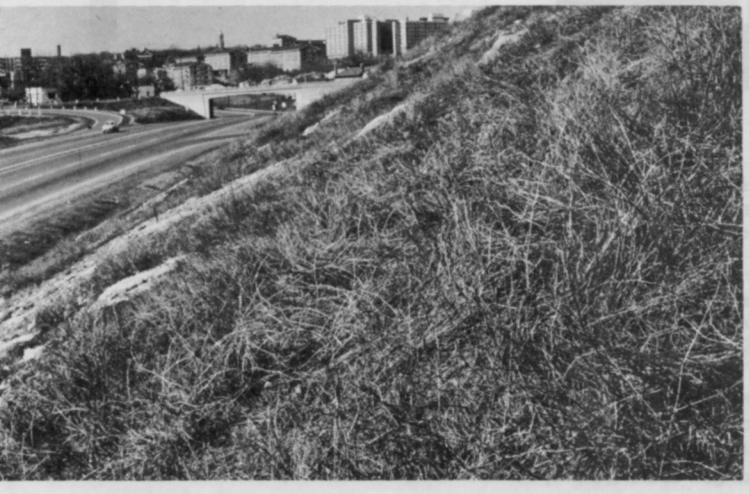
Seeding rates per acre ranged from 25 to 60 pounds of grass seed to 20-30 pounds of Crownvetch seed. The recommended rate at present from Grasslyn, Inc., is 20 pounds of Crownvetch and 40 pounds of either red fescue or ryegrass. (See Planting Suggestions).

Highway Department Evaluation

Also at the 1964 symposium, Pennsylvania roadside engineers D. R. Rodgers, H. P. Judd and R. S. Ross reported that Crownvetch had proved "highly satisfactory" on all roadside soils except where toxicity is apparently present. These soils ranged from silts to solid bedrock, with many sands, gravels, shales, clays and schists, they said.

"Benched cuts have permitted us

Penngift Crownvetch Planting Suggestions



From the top, Crownvetch is shown actual size in bloom (colors can be any shade from white to purple); seed pod; and in the dormant stage.

SEED

BEST TIME. Anytime slope is ready—spring, summer or fall.

INOCULATION. A must! Add fresh inoculant as directed on package. Use quadruple rate when hydroseeding to account for dilution. Dump into tank with seed, lime and fertilizer. Keep inoculant as cool as possible until used. Temperatures above 75-80 degrees F. weaken bacteria and make inoculant less effective.

LIME. Adjust pH levels to 6.5 to 7.0. Apply 2 tons ground agricultural limestone to the acre (100 lbs. to 1,000 sq. ft.) in absence of soil test.

FERTILIZER. Use 0-20-20 farm-grade fertilizer at 500 lbs./A and ureaform (38-0-0), Blue Chip Nitroform, Kapco-38, or equal at 400 lbs./A. Ureaform nitrogen is slowly soluble, non-leaching, non-burning, long-lasting, and gentle with the tender young seedlings. In large measure, it compensates for "no topsoil."

SEED RATE. 20 lbs. Blue Tag Certified Penngift seed to the acre.

COMPANION. 40 lbs. red fescue or ryegrass to the acre. In southern regions, use Kentucky 31 fescue at same rate. On small areas, use one pound of Penngift and one pound of companion per 1,000 sq. ft.

SEEDBED. Leave it rough and cloddy with stones and trash in place where no mowing is planned. Seed can be sown without seedbed preparation into weedy, grassy areas. Cutting the weeds and grass with a sickle or similar method on small areas will provide mulch.

MULCH. A must! Use two tons straw or hay to the acre, tied down with asphalt emulsion or by other method to hold mulch in place. On small areas, use two bales of straw per 1,000 sq. ft. tied down with twine or branches. Do not remove mulch.

HYDROSEEDING. For Penngift Crownvetch, use two-step method: STEP I—To water in tank add limestone, fertilizer, seed, inoculant and 200 lbs./A. wood cellulose pulp. The wood pulp acts as a "glue" to hold the seed tightly to the soil surface. STEP II—Immediately apply mulch. Mulch may be clean straw or timothy hay (with asphalt tack) at 2 tons/A. or wood cellulose pulp at 1,200 lbs./A. Long exposure between steps I and II will permit the sun and wind to kill the inoculating bacteria, which may result in failure.

OPTIONAL MANUAL METHOD OF INOCULATING FOR DRY SEEDING

1. Spread seed on tarpaulin.
2. Sprinkle lightly with a mixture of 9 parts water, 1 part molasses, or a sweet sweet soda pop. One-half pint of mixture should adequately moisten 100 pounds of seed.
3. Roll to alternate corners until all seeds are sticky-moist, not sloppy-wet.
4. Spread seed, scatter inoculant, roll again until each seed has black coating.
5. Spread seed, scatter cornstarch (½ lb. to 100 lb. seed) roll again to dry seeds for free-flowing quality.

OPTIONAL MECHANICAL METHOD OF INOCULATING FOR DRY SEEDING USING SMALL CEMENT MIXER

1. Load seed into mixer, agitate continuously.
2. Sprinkle with a mixture of 9 parts water, 1 part molasses. One-half pint to 100 lbs. seed.
3. Sprinkle inoculant.
4. When all seeds are coated black, sprinkle cornstarch (½ lb. to 100 lbs. seed).

CROWNS

BEST TIME. Anytime soil is not frozen or baked dry. Soil moisture is essential.

LIME AND FERTILIZER. As for seed, but spread two weeks before planting crowns.

SEEDBED. No special preparation. Crowns can be planted in bare soil or into existing cover.

SPACING. Staggered, on 3-ft. centers. Closer spacing will yield coverage sooner.

COMPANION. As for seed, sown just before applying mulch.

CARE. Keep crowns moist until planted. Pour soak-water on planted crowns.

PLANTING. Create vertical or slanting hole with mattock, pick-axe, or tree-planting tool. Pour water in hole, bury all but tip of crown, then firm soil to exclude air. Leave a depression or "rain-pocket" above crown to catch rain water. Never plant crowns in hot, dry soil.

MULCH. As for seed, but best applied before crowns are planted.

Linda Treichel of Penn Central's Cleveland Research Center staff, inspects the root system of Crownvetch. The low-growing, vine-like plant may be, according to the railroad's researchers, the answer to the rail industry's weed control problem. Penn Central Photo.

to seed Crownvetch on slopes up to 10 feet in height (slope measurement) and achieve establishment on gradients of ¼:1," they added.

At a second symposium, in 1968, Ross and Rodgers reported on four points of minor contention that exist: (a) Crownvetched roadsides are not attractive; (b) winter coloration is objectionable; (c) extensive mileage is monotonous; and (d) vetch smothers out and impedes regeneration of native plant material.

To answer the first point, they reported that in 1967 an estimated 1,500 to 2,000 unsolicited complimentary and informational contacts were received. To cut down on the mail load, numerous signs have since been installed along highways.

Ross and Rodgers contend that since Crownvetch is "golden brown" for a five-month period in Pennsylvania (of which two months are normally under snow) and winter tourists are fewest and least concerned with roadside scenery, the dormant unattractiveness factor is negligible.

Concerning monotony, they cited research that indicates highway pavement takes up 28% of the visual field at 60 mph and does much to channel views and distant panorama. "In Pennsylvania with the varying topography created by valleys, mountains, and rolling farmland, the problem of any specific roadside vegetation becoming monotonous is quite remote."

While Crownvetch does smother out grasses and weeds, Ross and Rodgers said there is plenty of evidence of a large number and variety of plants establishing themselves in Crownvetched roadsides where adjacent seed trees were present.

Ross and Rodgers reported that based on 1966 figures, Crownvetch seeding cost $213 per acre (exclusive of mulching)—a unit cost, they said, identical for seeding other grass seed mixtures.

Continuing their evaluation, Ross and Rodgers stated:

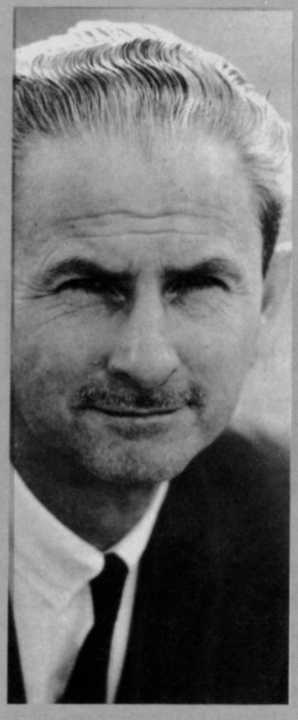
"The fertility requirements for Crownvetch are about as undemanding as any plant known to the Department. It responds favorably to liming and fertilization, but also does a remarkable job many times when completely neglected. The principal concern then must necessarily be establishment.

"The economics of Crownvetch in design and construction must be fairly obvious to all by now. While flatter highway slopes were always the cry of people dealing with erosion, today that cry is sounded by those dealing with more rigid roadway safety standards. Crownvetch has clearly demonstrated its ability to stabilize slopes 2:1 and steeper.

"This ability has greatly reduced the need for massive slope plantings of shrubs and vines. For example, 300 erosion control shrubs on 5-ft. centers would cover 7,500 sq. ft. at a cost of some $300, while the same areas could be seeded with Crownvetch for about $36 plus a similar amount for mulching.

"All this ties in beautifully," they concluded "with the two most significant considerations before those individuals concerned with roadside maintenance today, namely (1) how to provide the most attractive and effective erosion control measures with minimal maintenance and (2) restore the naturalistic effect as quickly and economically as possible before traffic demands necessitate widening or relocation of the roadway."

OCTOBER:
Big Tree Chippers



ACCIDENTS AND FIRES

How Much Profit Are You Losing?

By J. L. SHOPEN
Director of Safety
Farmland Industries, Inc.
Kansas City, Mo.

Concerning That New Employee

1. *Has his physical examination been approved?*
2. *Has the employee been shown where he can get the necessary safety equipment, such as goggles, masks, hard hats, etc.?*
3. *Does he know where the fire fighting equipment is located?*
4. *Does he know how to use it?*
5. *Is he familiar with the particular hazards connected with his duties?*
6. *Is he familiar with the routine of reporting all injuries promptly to the first aid section?*
7. *Does he know how to call the fire department, ambulance, doctor, or police in case of an emergency?*
8. *Has he been told about your company's interest in promoting safety?*
9. *Has he been thoroughly instructed in his duties?*
10. *Has he been instructed to report all unsafe conditions to his superior immediately?*
11. *Has he been advised that working safely will benefit both himself and the company in various ways?*

SOME SAY that in 1970 and the years to follow it is going to be more difficult to make a profit. Costly interruptions from any source could mean the difference.

The particular source to which I refer is that caused by fires and accidents. Many employers do not realize the tremendous financial loss potential ahead because they fail to take some basic precautions in these two areas.

Most management personnel agree that programming for fire and accident controls are fine from the humanitarian standpoints. However, often obscured is the fact that these control programs may produce unanticipated revenue for the employer on an annual basis.

Obscure, also is the *real cost* of fire and accident losses. An employer who loses his property through fire can never fully recover his losses with insurance. He still is going to lose the trade of some customers, for example, who, because of the fire, must necessarily bypass his firm for others. Safety specialist H. W. Heinrich has determined that paid medical bills for employees are far from being the total cost of an industrial accident. Heinrich has found that so-called *incidental cost* is *four times as great.* (See fig. 1.)

Fire Prevention

Management problems multiply when fire experience is bad. Insurance costs increase. Tremendous disadvantages are imposed upon operations when fire occurs. The alternative is a major fire prevention effort.

A fire department inspection is extremely helpful in elminating fire hazards. Visits by firemen also familiarize them with the layout of your business. Such knowledge enables the department to attack a fire with greater effectiveness — when they know plant layout, equipment, and products handled.

What If Fire Occurs?

Fires may occur despite your best efforts. Adequate equipment is then vital, from portable first aid extinguishers to bigger units, such as 150 lb. dry chemical equipment. Consideration might be given to installing fire hydrants on the property.

Information on spacing and placement of fire extinguishers can be obtained from most fire insurance carriers. Or, your local fire department can advise you.

Fire Training

Every employer should assure that his employees are knowledge-

ANTICIPATE the Hazards!

able in fire fighting. Most fires can be controlled within the first five minutes — if proper fire-fighting equipment is available and well-trained employees are present.

In other words, the trained employee will see that the fire department is called; he also will take immediate action to control the fire. Often he will be successful before firemen arrive.

The employee should have basic knowledge of the chemistry of fire, so he understands the fire-fighting principles involved, depending on the type of fire he is fighting.

When fire department personnel are used to train employees, a dual purpose can be served. Your employees learn how they can fight fires; the firemen become familiar with your business layout.

A system should be worked out to insure that fire extinguishers are checked at periodic intervals. Equipment should be serviced at least once a year. Use of detailed check sheets for fire inspections is helpful.

Accident Control

Accident prevention must be an integral part of operations if a program is to be successful. Management support at every level is vitally necessary. Last, but certainly not least, the program requires the enthusiastic cooperation of employees. Some methods employed to attain these objectives include:

PRE-EMPLOYMENT PHYSICALS—A good physical examination prior to employment is a must to get on the right track to prevent accidents.

An applicant with a herniated disc, a severe heart condition, etc., may trace all his troubles to the employer without prior knowledge of such conditions.

Has the individual drawn disability compensation? If so, from whom, for what, when, of what duration? Does the individual have any health impairment — allergies, lung disease, etc.? These and other points in the analysis of the individual's qualifications are important when choosing him for a specific job.

EMPLOYEE ORIENTATION—The new employee must be aware of dangerous areas within a plant. He must have a thorough knowledge of safety equipment required. He must be trained in his particular job assignment. Stressing personal cleanliness is a most important part of the control program.

A safety manual or safety literature pertinent to the job should be given to the new employee.

KEEPING RECORDS—A good record system is of paramount importance in determining progress in accident prevention. Such records do not need to be elaborate, but they must be complete. A master file should be kept for every accident receiving a physician's attention. Good injury files should include this information:

—Date of accident.

—Classification; in other words, fatality, permanent partial disabili-

Fig. 1 Case history of accidents on building construction job.*

Number and description	Compensation and medical cost
3 Fractures and contusions	$106
18 Rivet burns, cuts, bruises	76
21 Falling materials	15
30 Slips and falls	12
Incidental Costs	
Time lost by injured employees, paid directly by employer	$116
Time lost by other employees	310
Time lost by foremen and superintendent	78
Property damage	158
Payment of forfeits (two days) for failure to complete job on time	200
Portion of overhead-cost loss during delay	75
Total cost of compensation and medical aid	**$209**
Total additional incidental cost, paid directly by employer	**937**

* Basic Philosophy of Accident Prevention, H. W. Heinrich.

ty, permanent total, temporary total, or non-disabling.

—Accident cause.

—Compensation and medical costs paid.

—Severity, or number of days charged to the disabling injury.

—Part of body affected by the injury.

Monthly reports of safety experience, both fire and accident, are important. These would state the number of man-hours worked, number of employees, number of accidents, and whether time was lost. These data enable you to measure accident and fire frequency and to determine emphasis areas.

STIMULATING INTEREST—Personal contact, through inspections and corrections of unsafe practices or working conditions, is important. Employee safety meetings held on a regular basis are of value. Programming must be thorough, varied in approach, interesting and informative.

One effective technique, for example, is to use 35mm slides to visually point out difficiencies — such as poor housekeeping, or failure to wear protective equipment. A Polaroid camera also can easily and quickly capture visual proof.

Safety awareness among employees can be maintained with signs and posters, constantly changing. A safety sign indicating the number of days worked safely with no disabling injuries is an ever-present reminder to each individual.

Perhaps the most important avenue to achieving safety consciousness is a recognition program for outstanding safe work performance. This program might include both individual and group awards, such as pins, plaques, banquets, or written commendations.

Employer Benefits

Can money be saved through a safety program? Of course. Insurance companies grant rate credits when accident experience is good. Conversely, in the face of a continuing poor accident record, the insurance carrier has only two recourses — raise the rate, or cancel the risk. In either case, the employer is in trouble.

No program, however, no matter how well-planned and organized, will succeed without the real key — *Follow Through.*

insect report

TURF INSECTS

HAIRY CINCH BUG

(Blissus hirtus)

NEW HAMPSHIRE: Very numerous, lawns brown in Hillsborough County. Migrating into houses.

SOUTHERN CINCH BUG

(Blissus insularis)

TEXAS: Heavy infestations numerous in St. Augustine grass lawns in Brazos County.

INSECTS OF ORNAMENTALS

A SPIDER MITE

(Platytetranychus thujae)

NEW HAMPSHIRE: Collected on arbovitae at Durham, Strafford County. This is a new state record.

BAGWORM

(Thyridopteryx ephemeraeformis)

GEORGIA: Severe in scattered location in much of Piedmont area. OKLAHOMA: Heaviest in 35 years on evergreens in Mayes County. Moderate to heavy in most areas. TENNESSEE: Damage moderate to heavy across state. Damage very heavy to native cedars in some central areas. TEXAS: Heavy, about 200 per pyracantha bush in Kinney County. Very heavy on post oak trees at Franklin, Robertson County.

TREE INSECTS

HICKORY TUSSOCK MOTH

(Halisidota caryae)

OHIO: Statewide on maple, oak, and crab apple trees. Moth activity heavy earlier in season, and damage expected to be more severe this year.

SADDLED PROMINENT

(Heterocampa guttivitta)

NEW HAMPSHIRE: Defoliation extensive on thousands of acres; particularly troublesome in recreational areas in Carroll County.

MIMOSA WEBWORM

(Homadaula anisocentra)

PENNSYLVANIA: Aerial survey indicates nearly 100 percent defoliation to honeylocust throughout Greene County. MISSISSIPPI: Moderate on mimosa in Lowndes, Oktibbeha, Webster, and Montgomery Counties.

A SPITTLEBUG

(Clastoptera arborina)

COLORADO: Heavy on junipers from Pueblo, Pueblo Counyt, to Ft. Collins, Larimer County. As high as 3-6 per foot of branch, 3 times level of 1968. Controls recommended.

FALL WEBWORM

(Hyphantria cunea)

MICHIGAN: In second instar. Nests 1.5-2 feet long on apple, birch, and oak. Severe damage of ornamental trees anticipated if not controlled. INDIANA: Webs beginning to appear in Marion County. NEW HAMPSHIRE: First instars on linden in Merrimack County July 14. Small web on elm in Strafford County July 15.

WISCONSIN: Webs more noticeable statewide. Hosts include tag alder, pin cherry, dogwood, and alpine currant. MINNESOTA: Tents with second and third instars common on alder in northern area; also on apple, Juneberry, and aspen.

Beetle Eats Aquatic Weed

By ROBERT N. HAMBRIC, Aquatic Biologist
Texas Parks and Wildlife Department
Houston, Tex.

ENDEMIC to Argentina but introduced to this country some 70 years ago, perhaps on the ballast dump of sailing ships, Alligatorweed has now infested thousands of acres

Efforts to control the plant have included dredging, burning, flaming and flooding, and spraying with various herbicides. The degree of plant control has often been both negligible and disappointing.

The Entomological Research Division of the United States Department of Agriculture was asked to search for insects that might act as a biological control. Researchers soon began host specificity tests on a flea beetle of the genus *Agasticles* in its native habitat near Buenos Aires, Argentina. This beetle, perhaps assisted by several other agents, apparently prevents alligatorweed from becoming a major pest plant in South America. Extensive tests in that area indicated that the insect fed and completed its life cycle on the host plant only.

The first shipment of flea beetles was received in the U.S. at the Entomology Research Laboratory at Albany, Calif., for additional study. Further testing there confirmed the beetles total dependence on alligatorweed for food as well as the plants hollow stem for important phases of the reproductive cycle.

In the spring of 1964, the first release of beetles was made on alligatorweed at the Savannah National Wildlife Refuge in South Carolina. Additional releases were made later there and in other southern states including two Texas sites in May 1967.

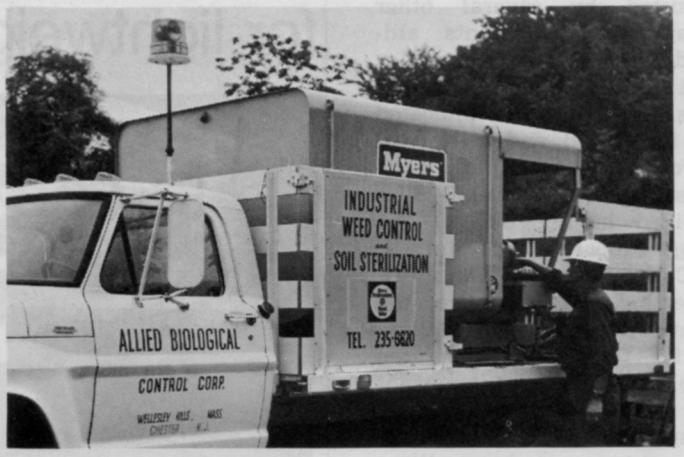
The small black and yellow beetles multiply rapidly and spread readily from the release site to adjoining stands of alligatorweed. The female generally lays one cluster of eggs per day, throughout her productive period of about 45 days, which develops through several immature stages into sexually mature adults in about 25 days. Several generations per year are normally produced. Flea beetles prefer areas of high humidity and mild temperatures, but have overwintered in areas where temperatures dropped considerably below freezing.

Although the initial study has been of short duration, some aspects of the project in Texas are promising. Flea beetles appear to have a spring and fall population peak at Dam B Reservoir and Murphree Wildlife Area, which are the initial release sites of Southeastern Texas. During these periods of abundance, the insects have affected considerable temporary damage on rather extensive areas of alligatorweed and have populated adjoining areas. In 18 months, the 1,000 insects initially released have multiplied many times and have advanced several miles up the slough and along the shoreline. The major point of speculation is how well can the imported flea beetle adapt to local environmental conditions.

The next few years of observation and research will, hopefully, yield information showing a high degree of successful adaptation by the beetle and perhaps its importance as a major biotic suppressant on the rapidly expanding alligatorweed in the South.

Urban, Industrial Weed Control

How Allied Biological Control Approaches Problems



Late in the summer, a community's appearance goes to pot. Weather's hot and dry. Everything moves slower — except weeds. It doesn't need to be that way. A season-long weed control program prevents weeds from taking over, trash from collecting, fires from starting, and so on. That's the story Allied Biological Control Corp., Wellesley, Mass., keeps telling — with success. Albert Trusas, field specialist, checks out a truck before it leaves on a clean-up mission. Karmex diuron did the neat roadside job.

CLEANER, more attractive industrial and commercial plant grounds are in prospect for New England firms. Improvements can be achieved economically through planned programs of chemical weed control. These programs offer great potential for helping to relieve fire hazards, eliminate unsightly trash and establish an exterior plant appearance that will help stimulate positive employee attitudes and performance. These improvements can help also to spark public interest in community clean-up programs.

That's the view of industrial specialists who have been following nationwide weed and clean-up programs. And it is the conviction, too, of Jason M. Cortell, graduate biologist from Boston University, vegetation consultant and president of Allied Biological Control Corporation, of Wellesley. Cortell's 10-year-old firm specializes in prescription weed control for plant sites, for roadsides, and for aquatic areas.

Solved Airport Bird Problem

When the subject of weeds comes up, Jay Cortell has an amphibious expertise that has proved useful to major airport and turnpike authorities as well as to maintenance superintendents, engineers and executives of utilities, construction companies and various individual plants throughout New England. Nearly a decade ago, for example, when Logan International Airport was plagued by huge flocks of birds that were responsible for a tragic takeoff crash of an Electra, the Massachusetts Port Authority called in Cortell as a consultant. Wildlife and bird specialists had been trying numerous approaches to the problem of too-many birds on airport property, but it was Cortell who came up with a practical solution that moved the birds away from marshes and grassy areas adjoining the runways. And the solution was a planned program of vegetation control, involving chemical weed and brush killers. These simply eliminated the overly-attractive airport feeding grounds for the birds and the birds moved out.

Cortell has since been called in to

help Kennedy and LaGuardia Airports with similar bird and vegetation problems. He has developed special equipment and techniques for controlling unwanted aquatic and marshland weeds. Today he has expanded his operations and interests to include terrestrial or "dry-land" weed control programs. And he is bringing new knowledge and dedication to the problem of weed and brush control that bedevils many firms in the Northeast.

Industrial Sites and Roads

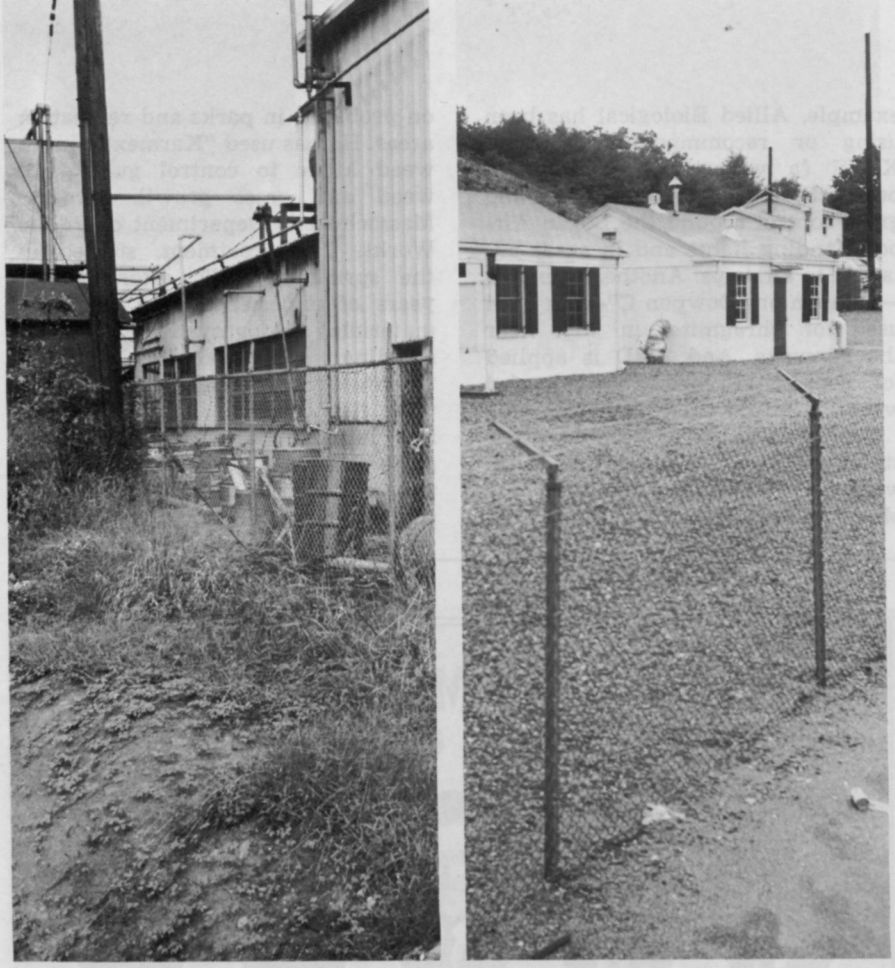
Weed problems on industrial sites and roads in New England are both numerous and complex. Cortell's firm uses a variety of contact and residual-type chemical weed killers to tackle the problems. The contact chemicals are fast acting; they work through plant foliage and in effect "burn out" the weeds. The residual-type, such as "Hyvar" X bromacil weed killer or "Karmex" diuron weed killer, work through a weed's root system. The chemical weed killer is applied when weeds are small or have not yet appeared above ground. Natural rain carries the herbicide into the soil, where it goes to work on weed roots. And so weeds are destroyed, and germination of new weeds is prevented, usually for a full growing season. This provides long-lasting, economical weed control — and it can often be achieved through single application of a residual-type herbicide.

The Allied Biological seasonal program for effective weed control in industrial sites starts with a survey of the existing weed problem. A written program is developed and reviewed with a firm's management. Proper timing of herbicide application is an integral part of the program and this phase, of course, is Allied's responsibility. The initial application of residual herbicides normally occurs in the spring and it is followed later by a "spot" or "follow - up" herbicide treatment. And finally, comes a recommendation for continuing attention to weeds in succeeding years.

When a firm like Allied steps into the picture, most area business and government executives have found they can stop worrying about weeds. Chronic late summer and early fall infestations of weeds can be halted before they start, primarily because chemical weed know-how has been brought to bear where and when it counts.

Experience in Greater Boston suggests what chemical weeding can do. During the past several years, for example, Allied Biological has been using or recommending "Hyvar" X-WS (a water soluble form of bromacil) for bareground weed and grass control around the Logan Airport landing lights and in areas adjacent to airstrips. Another chemical —dalapon or "Dowpon C"—has been used for phragmites in bogs near the runways. And 2,4-D is applied for control of certain broadleafed weeds in grassy areas.

Jay Cortell has helped other state and local agencies deal with weeds. He has consulted with the Metropolitan District Commission on problems in parks and recreation areas. He has used "Karmex" diuron weed killer to control guard rail weed and grass growth for the Massachusetts Department of Public Works. This treatment, started in the spring of 1969, after several years of experience with alternate materials, has proved to be outstanding. A two-foot band of "Karmex" was applied under more than 1900 roadside miles of guard rail in April and May. Adjacent gutters and abutments were also treated with the herbicide. So effective was the application that treated



In contrast to the plant at left, ripe for a fire, is the distribution center of Algonquin Gas Company. One application of Hyvar X-WS in the spring keeps an area like this clean all season.

areas did not require mowing all season long. Costly hand cutting was once the only method of keeping grass and weeds down around the guard rails, but now state landscape specialists are considering other places where chemical weed control may offer advantages.

Gas and Electric Utilities

Similar success in bare-ground weed control has been established in nearly two dozen gas distribution sites of the Algonquin Gas Transmission Company. These sites are located from Portsmouth to Fall River. They are relatively small and about two or three tennis courts in size; but Algonquin wants a weed-free and grass-free surface inside its protective fence. And Allied has been able to keep weeds completely out by applying "Hyvar" X bromacil weed killer in the spring—with follow-up treatments in early fall. But the need for these follow-up treatments has been dropping sharply. So now Allied is initiating a three-year herbicide cycle in which each Algonquin distribution site will receive a treatment with "Hyvar" X bromacil weed killer for two years —then no treatment at all in the third year. Cortell expects this program to provide an application saving, yet he expects no loss in weed control quality.

A related program has been used at Boston Edison plant sites. Weed control on tank farms, on power slabs and in terminal areas has been extremely effective and, as a result, Allied Biological has received recommendations for other work on rail sidings and on construction sites. Around Boston Edison's power slabs, for example, Allied has been using a two-year program that calls for a seven-pound-per-acre application rate of "Hyvar" X the first year. This is followed by a four-pound-per-acre rate the second and following years. Where ornamental plants are close by, Cortell usually treats with other chemicals, i.e. Casoran, Paraquat.

Radar Installations

Allied Biological handles weed problems for the radar "dishes" at MIT's Lincoln Laboratory and also for plant sites and for new parking and drive areas for new plant units. The aim, in the latter situation, is to prevent tough weeds from popping through pavement. "Hyvar" X is applied at a relatively high rate—20 to 30 pounds per acre — before the pavement goes down to avoid cracking of paving by weed growth.

Multi-Benefits in Weed Control

It is sometimes difficult to compare costs of controlling weeds with an outside firm vs. control with in-plant labor. Maintenance supervisors are agreed, however, that when you try to control weeds in the Northeast on a do-it-yourself plan, the plan has such low priority that the job rarely gets proper attention. Untrained people back away at overgrown vegetation **after** it has become an eyesore. The result is an untidy look outside the plant—and there is little chance that this appearance can help develop a positive on-the-job attitude in a plant's work force.

Environmental concern is currently developing in many New England communities. Plant managers and maintenance supervisors have been faced with rising costs in labor; and many are now turning to chemical weed control as a practical, economical approach to vegetation problems. This has become interesting even for small to medium-sized plant sites through organizations like Allied Biological Control.

"We take a positive approach to the weed control problem," says Jason M. Cortell. "We take over the problem, we plan the treatment at the right time, then we get back after the treatment to be sure things work out right."

Cortell's ideas do indeed work out for industrialists who want clean, attractive plant sites, rail spurs, parking areas and related facilities. They not only build a better work environment for employees, but they also eliminate fire hazards in the dormant season.

"In one sense," notes Cortell, "weed control with residual herbicides like "Hyvar" X bromacil weed killer seems almost too easy—or too simple. If you have the know-how and the equipment and it is used at the right time, you can treat a full acre of ground in half an hour or less. The job is done quickly and cleanly. And it lasts a full season. But this is not the place for an amateur, or the inexperienced man. Herbicides must be carefully applied. A professional applicator has what it takes to get the most out of the residual weed killers. They should go on in the spring, before weed growth really starts. The professional is really equipped to help a plant executive save time and money—and so he takes the annual weed nuisance off a man's worry list."

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		

Michigan State University Northern Michigan Turfgrass Field Day, Traverse City Country Club, Sept. 9.

Virginia Polytechnic Institute Turfgrass Field Day at Blacksburg, Va., Sept. 9 and 10.

Helicopter Association of America eastern operators management seminar at the Holiday Inn, Media, Pa., Sept. 9-12.

Sprayorama '70 Pacific Northwest Pesticide Applicators, Inc., annual meeting, Thunderbird Motel, 1401 N. Hayden Island Dr., Portland, Ore., Sept. 10-12.

1970 Illinois Turfgrass Field Day and open house at the turf plots of Lincoln Avenue one mile south of Florida Avenue in Urbana, Sept. 11.

Turf and Ornamentals Day, Ohio Agricultural Research and Development Center at Wooster, Sept. 15.

University of Minnesota Technical College Fall Horticultural Day, Waseca, Sept. 20.

60th Convention, California Association of Nurserymen, Yosemite, Sept. 22-24.

National Association of Professional Gardeners 56th annual conference, "Salute to the Gardeners of the Future," The Carolina Hotel, Pinehurst, N.C. Sept. 22-24.

California Park and Recreation Society fall Park Operations Workshops. 9:30 a.m. to 3:30 p.m. Region 1 — Sept. 29 at Civic Center at Los Gatos; Region 2 — Oct. 1 at Holmes Playground at First Street and Platt Avenue, Fresno; Region 3 — Oct. 1 at California State Polytechnic College, 3801 West Temple Avenue, Pomona.

Roadside Development 29th Annual Short Course, Department of State Building, 65 South Front St., Columbus, Ohio. Oct. 5-9.

Florida Turf-Grass Management Conference, Flagler Inn, University of Florida, Gainesville. Oct. 6-8.

10th Annual Southern California Turfgrass Equipment and Materials Educational Exposition at Brookside Park, Pasadena, Oct. 14-15.

Texas A&M University 5th annual Industrial Weed Control Conference, on campus at College Station, Tex., Oct. 19-21.

Louisiana Turfgrass Association annual conference at the Holiday Inn, Alexandria. Nov. 4-5.

10th British Weed Control Conference at Hotel Metropole, Brighton, Sussex, England. Nov. 16-19.

Metropolitan Washington, D.C., Shade Tree Conference, Lubber Run Recreation Center, 300 N. Park Drive, Arlington, Va. Nov. 19.

Ohio Turfgrass Conference and Show at the Cincinnati Convention Center. Dec. 7-9.

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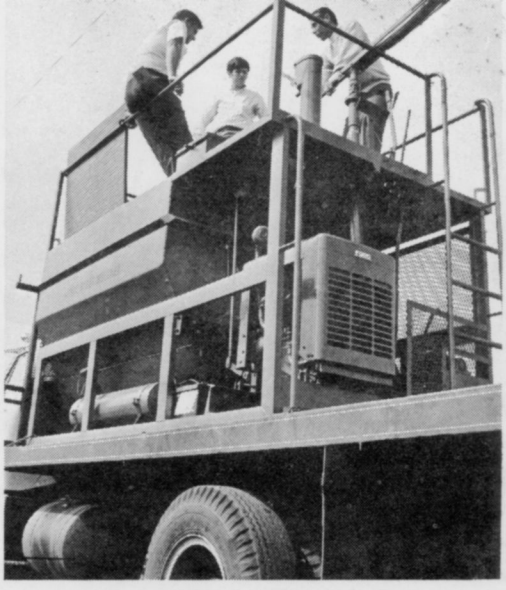
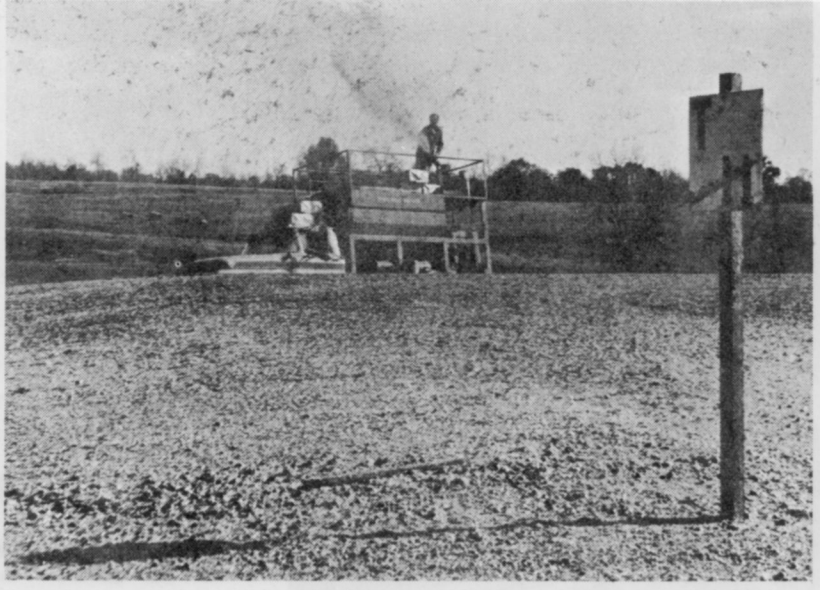




Bowie Hydro Mulcher — as exhibited at the American Sod Producers meeting and in action on the Greenbrier golf course.

Grass Seed Sprayed on Kentucky Golf Estates

IN JUST 2½ MONTHS, between August and November, Greenbrier Country Club and Golf Estates at Lexington, Ky., was converted from 400 acres of idle land into an 18-hole golf course that was built and seeded and staked lots for 170 residences and a clubhouse.

Hydro-mulching was used by landscape agronomist Ken Arnold to establish golf greens and to stabilize golf tees for the winter. The bentgrass greens were seeded with Penncross. The tees were seeded with rye; zoysia will be plugged in the spring.

Fertilizer was applied in the hydro-mulching operation. This permitted two jobs to be done at once. For the seedbed, Arnold recommends a 5-20-20 at the rate of 15 lbs. per thousand square feet and "Nitroform" organic nitrogen 38-0-0 at the rate of 5 lbs. per thousand square feet. Good seed germination was apparent in 2 to 2½ weeks.

According to Arnold, "By use of modern hydro-mulching techniques, not only can turf establishment be achieved almost any season of the year, but the man-hours can be cut as much as two-thirds.

"With slow-release, high-nitrogen fertilizer like Nitroform in the seedbed, the tender young turf has a constant source of food without danger of burning and without added labor for subsequent fertilizer applications to the seedbed."

"Conwed" hydro-mulch was applied at the rate of 1,500 lbs. per acre or 300 lbs. to each of the 6,000-sq. ft. greens.

Arnold used the same seeding-fertilizing - hydro - mulching technique to complete the landscaping of sample houses at Greenbrier. The Conwed hydro-mulch, he said, holds the seed, plant nutrients, and moisture on the soil surface for rapid germination and protects the seedbed from temperature extremes. Fertilizer rates were the same as for the golf course.

With 170 homes to be built and lawns to be seeded before new owners can move in, Arnold will continue to use hydro-mulching to establish the turfgrass as efficiently as possible.

Florida Pesticide Group Backs Up on Sodium Arsenite Ban

A Florida pesticide regulation committee has reversed its decision to ban sodium arsenite from all herbicide uses.

The decision affects the nationwide use of a specific product, a non-leaching grade sodium arsenite, made by Sheff Chemical & Supply Co., Bradenton, Fla.

After reviewing documented research of safe usage over a 13-year span, the Pesticide Technical Council unanimously accepted an amendment to allow continued use of the product on golf courses. The amendment was presented by Dick Sheff, president of Sheff Chemical.

The council had banned sodium arsenite, effective Jan. 1, 1970. The amendment was accepted after a public hearing at the University of Florida, June 12. An earlier hearing in February produced no action.

The product, NO-GRO Liquid Concentrate, was described as a selective herbicide that would not leach, even from sandy soil or pure sand. Extensive testing to prove the label for the State Department of Agriculture by Turf Grass Specialties, Inc., Ft. Lauderdale, was introduced as evidence.

Sheff credited this independent documented research and "strong customer testimonials" for bringing about the reversal.

"Considering the state of public opinion, Sheff said, "the decision was a courageous and intelligent action on the part of the Florida Pesticide Technical Council to reverse the ban and pass the amendment. When the evidence was all in, the Council acted with conviction."

NO-GRO is sold in most states east of the Mississippi River, Sheff said. It also is manufactured in Marietta, Ohio, at the Alfco Rokeby Co., Inc., he added, under licensing agreement and is sold in northern areas under the trade name of STOPZ.

Golf Course Builders Form National Trade Association

Men who build the nation's golf courses have formed a trade association.

Golf Course Builders of America, with headquarters in Washington, D.C., has been created by golf course contractors as an organization to permit golf course builders to meet and solve business and industry problems.

Officers of the association are: David Canavan of Moore Golf, Inc., Culpepper, Va., president; Robert T. Vincent, Jr., of the Robert Vincent Co., Benton, Pa., vice-president; and J. James Shipe of Turf Industries, Bel Air, Md., secretary-treasurer.

Golf Course Builders has retained Harry J. Lambeth of the Washington firm of Barton and Lambeth to serve as executive director of GCBA. Its offices in the Shoreham Building are in the heart of Washington's financial district.

Membership in the golf contractor's group is open to golf course contractors who have constructed at least three golf courses. There also are associate and commercial membership classifications. Associates may be subcontractors such as irrigation specialists or others. Commercial members are industry suppliers such as equipment manufacturers, turf growers, and other firms whose products are used in constructing golf courses.

Association members will meet at periodic intervals to discuss mutual business and industry problems and have an opportunity to become acquainted with other leaders in their industry.

Contractors interested in joining the new trade group should write its executive director, Suite 632, Shoreham Building, Washington, D.C. 20005.

Sprinkler Companies Negotiating Merger

Turf Irrigation Corporation, Commack, N.Y., and Melnor Industries, Moonachie, N.J., have entered into preliminary negotiontions for Turf Irrigation to join Melnor.

Proposed terms, according to a joint statement, are for Melnor to purchase for cash the assets of Turf Irrigation equal to about $2 per share of Turf stock with possible additional payment based on future earnings.

Turf Irrigation would operate as a division of Melnor with the same management.

Turf Irrigation makes underground sprinkling equipment for residential and commercial uses. Melnor's principal products include traveling water sprinklers, oscillating, revolving and specialty sprinklers, garden hose accessories, hose reels, lawn edgers, and garden cutting tools.

Davey Tree Acquires Campe Tree Service

Davey Tree Expert Co., Kent, Ohio, has purchased the Campe Tree Service Company of Richmond, Va.

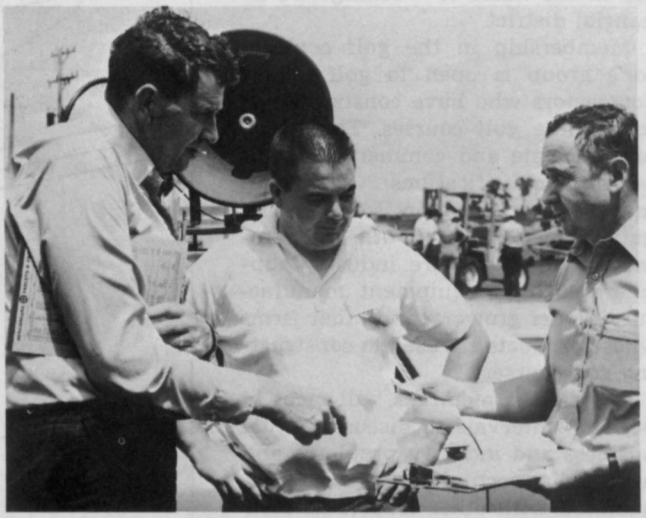
Campe Tree Service, which has specialized in residential and estate tree maintenance and landscaping services for the past 20 years, will be operated as the Campe Tree Service Division of Davey Tree. Former owner Carl Campe will be the District manager.

Davey Tree Expert Company, called the original and largest complete tree service organization, operates from coast to coast and in Canada. Besides tree care service to residential, municipal and industrial customers, Davey offers landscape and tree-moving services, and is a leader in utility line clearing.

A record crowd of 447 attended the field day at the H & E Sod Farm, Momence, Ill.

COSTS, QUALITY SEED SUPPLIES, INDUSTRY GROWTH

These Stories Were Heard At Record Meeting Of American Sod Producers



New president of the American Sod Producers Association is Tobias Grether, Cal-Turf, left, discussing field day procedure with host Dale Habenicht, H & E Sod Farm, center, and Dr. Henry Indyk, executive secretary, ASPA. Habenicht is a newly elected director.

MEMBERS of the American Sod Producers Association staged their 4th annual conference and field day the last week of July. This 1970 version was the most sophisticated to date. It verifies the fact that ASPA has become a viable organization.

A new feature was a pre-conference tour — a bus tour of Warren Turf Nurseries at Palos Park, Ill.— attended by 187 growers plus additional guests. President Ben Warren of the Warren organization served as host for the entire ASPA annual meeting. An educational tour proved more successful than ever. Registration at this second day climbed to 253. The annual field day demonstration — always a big event for ASPA drew 447, a record count. Held at the H & E Sod Farm, Momence, Ill., the field day produced 31 special machinery demonstrations. Dale and Carl Habenicht of H & E served as hosts.

Growers are joining this association and more quality-conscious producers need to take this step. They are being encouraged to do so by present members of ASPA in order to better serve the industry. Much of the business meeting was devoted to means by which the group could further enhance the "instant lawn" idea. Along these lines, many feel that communication among growers is tantamount to more realistic pricing and marketing procedures. Robert Daymon, Emerald Valley Sod Farm, Howell, Mich., enlarged on steps Michigan growers have taken in regular communications with each other. Via a unique reporting system, each reports on sod sales each week. Put together in a communique, the weekly reports eliminate some buyers from shopping and playing the alleged price of one grower against that of another.

During the educational program, Michigan County Extension Director Don Juchartz, Wayne County, discussed in detail how growers in that state organized this system and established it as part of their own

A similar crowd gathered a day earlier for educational sessions.

marketing program.

Also on the educational program, Art Edwards, editorial director of WEEDS TREES AND TURF magazine, released information on a new sod survey made in conjunction with ASPA. The new data shows considerable growth in the industry, when compared with a study made two years earlier. Biggest increase is in size of farms and the subsequent acreage of sod sold per farm. Two years ago, sod farms were averaging about 180 acres. Today, the average is 220. Total acres in the earlier study of 1968 amounted to 161,000 grown by just under 900 growers. Today an estimated 938 cultivated sod producers (an increase of 42 growers) in this country grow 217,298 acres. They market (on an annual basis) about 102,000 acres — or an average of 109 acres per farm. Applying wholesale field rates to this total marketed acreage gives some indication of the growth of this industry. The wholesale price of sod alone pushes the industry value to more than $125 million. At installed prices, this figure may be doubled or tripled. (Complete data on this survey will be printed in a coming issue of WTT.)

Dr. Fred Grau, Grasslyn, Inc., State College, Pa., gave the group his views on the future of the turfgrass industry. As banquet speaker, Dr. Grau related steps taken in founding the H. B. Musser Turfgrass Fellowship, Inc., an international turfgrass foundation which is commonly becoming known as the International Musser Turfgrass Foundation. The organization has been established to raise funds for teaching and research in the turfgrass industry throughout this nation, and the world as well. The name chosen is in honor of the late H. B. Musser, professor emeritus of agronomy at Pennsylvania State University, who was known throughout the world for his leadership in this industry.

Seed availability which affects the success of every sod producer was discussed at length by Doyle Jacklin, Jacklin Seed Company, Dishman, Wash. "More Fylking than ever will be available this year," he said. "To elaborate somewhat," Jacklin continued, "We have had extremely hot temperatures in spells during the month of June and early July which has reduced the set of seed in the panicles or seed heads. Within the florest are many blanks instead of seed. Most of the fields produced good seed with good weight and fill, however, some fields in some areas are producing some withered seed of light test weight per bushel."

Jacklin continued by saying, "Although the common Kentucky bluegrass varieties were affected some by the higher temperatures, Merion seemed to be the variety hurt the most. We expect, therefore, a shortage of Merion seed this year and a continued strong Merion market. It's hard to believe, I know," he said,

(Continued on page 26)

"particularly when only 14 months ago Merion was less than half the price of what it is today. It demonstrates further, however, the influence of not only weather, but the grower's ability and desire to switch from crop to crop, depending on price, which creates major market fluctuations based on supply and demand.

"As expected," Jacklin pointed out, "We are learning more and more about Fylking Kentucky bluegrass seed production and expect a slightly higher than average crop this year.

"The heat didn't affect it nearly as much as Merion. This will mean a continued stable price and as we continue to learn more about this variety's seed production idiosyncrasies, we naturally expect a somewhat higher seed yield sometime in the future, providing we can find a substitute for field burning."

Jacklin reported harvesting about 40% completed as of July 29, and, barring any unforeseen windstorms or long, rainy spells, he believes the crop essentially made in the swath, and ready for cleaning.

In summary, he said, total availability will be lower this year and generally stronger prices across the board will predominate.

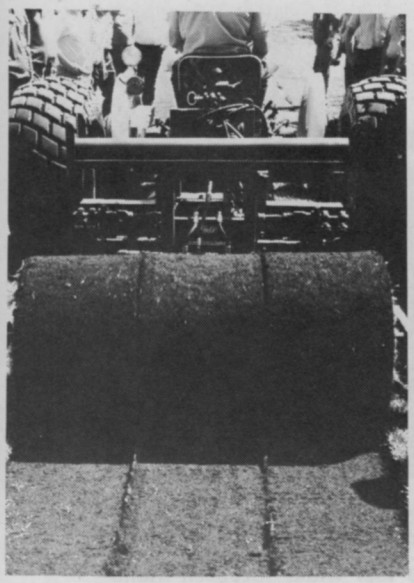
In an informal night session, Glenn Hadfield, Hadfield Sod Farms, Oxford, Mich., showed a movie of his new sod loader. The unit attaches to the truck frame and picks up rolled sod from the field, passing it directly to the truck bed. Unloading is accomplished by a specially designed dump bed. Hadfield is now producing and marketing the loader.

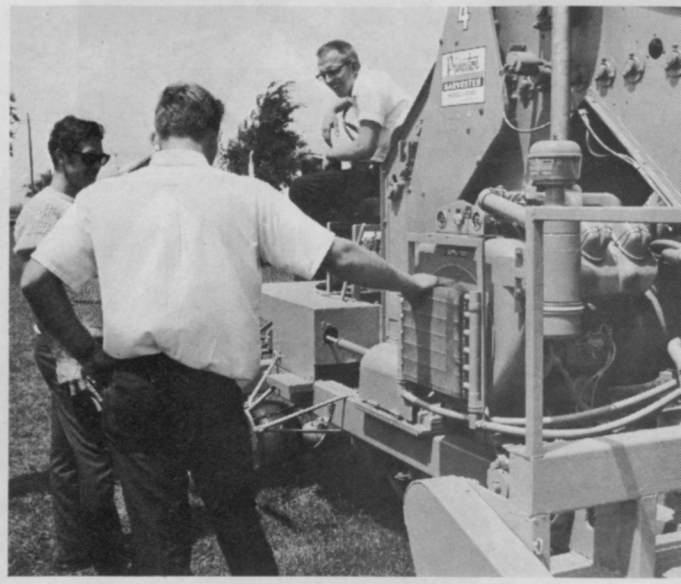
A major action at the meeting this year was addition of two directors, bringing the total to nine. New directors elected were George Stewart, Karandrew Turf Farms, Suffield, Conn., and Dale Habenicht, H & E Sod Farm, Momence, Ill., and the site of the field day. Officers for 1971 are: Tobias Grether, Cal-Turf, Inc., Camarillo, Calif., president; Joe McDermott, Loveland Lawns Sod Farm, Omaha, Neb., vice-president; J. E. Ousley, Sr., Ousley Sod Company, Pompano Beach, Fla., secretary; and Jack L. Kidwell, Kidwell Turf Farms, Culpeper, Va., treasurer. Dr. Henry Indyk, Rutgers University, New Brunswick, N.J., continues as executive secretary. Other directors are: Ben O. Warren, Warren's Turf Nursery, Palos Park, Ill., Robert Daymon, Emerald Valley Sod Farm, Howell, Mich., and Wiley Miner, Princeton Turf Farms, Inc., Highstown, N. J. Miner is the outgoing president.

Gieringer Mfg. Co. showed its "Sod-Cropper," built around a lawn-garden size tractor.

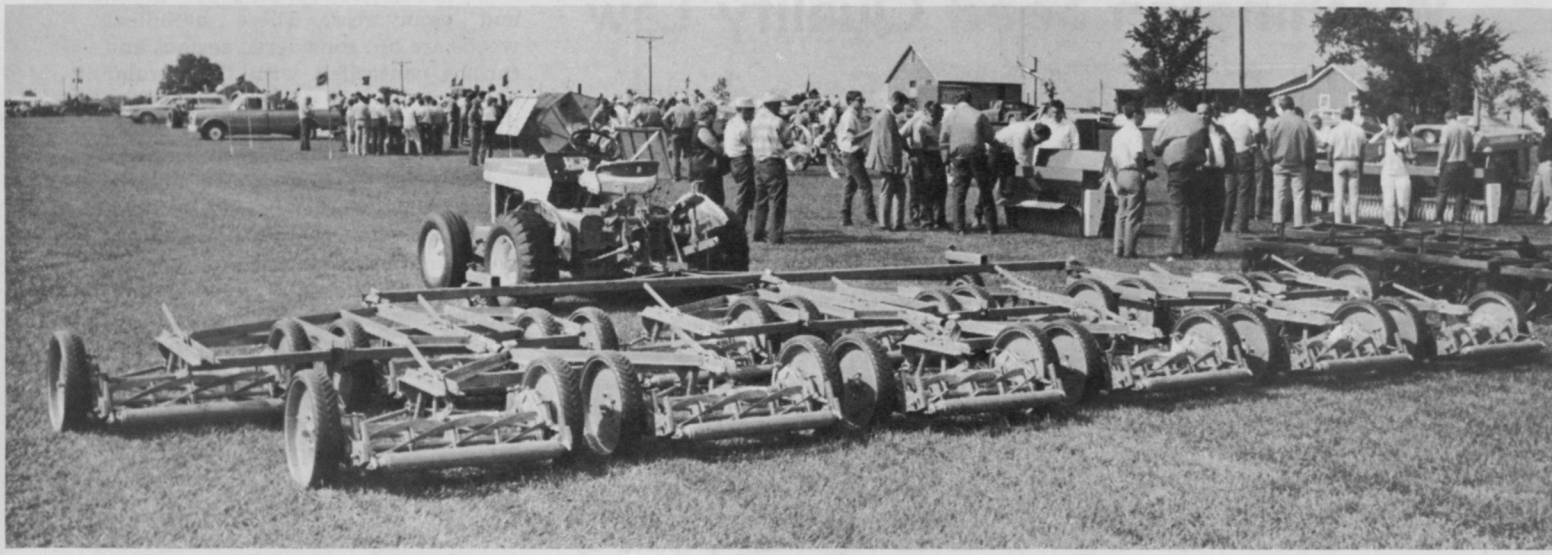
Mowing equipment ranged from this three-gang flail . . .

Four companies operated sweepers and grounds groomers. The one above is made by Giant-Vac Corp.



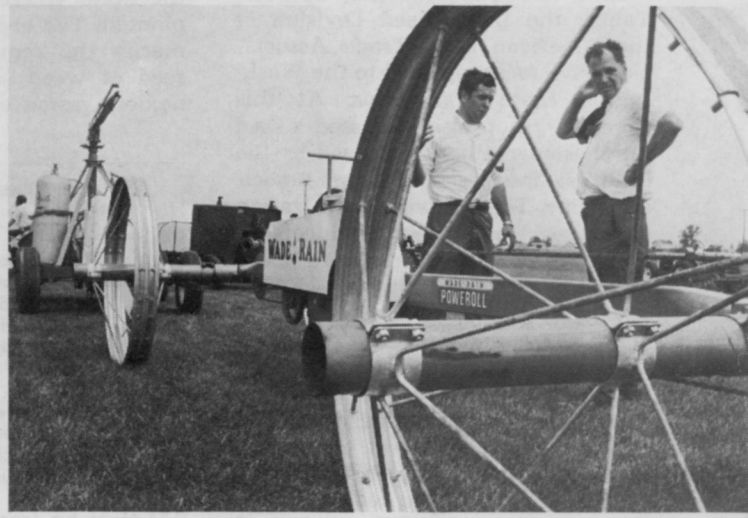


Beck Mfg. Co. demonstrated a new concept in sod rolling. Its Sod-O-Matic rolls three strips at a time, each 16" wide and up to 60 ft. long. Improved versions of big equipment, such as the Princeton Harvester, also performed for field day visitors.

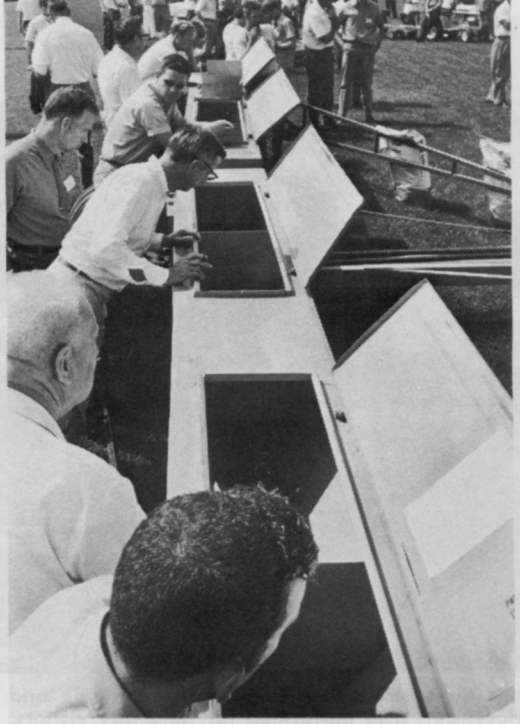


. . . to 9-, 11-, and 13-gang reels cutting up to a 28-ft. swath.

Larson Machine, Inc., Princeville, Ill., demonstrated several models of seeders, fertilizer spreaders and sprayers.



This is the Wade Rain Poweroll sprinkler irrigation system. Thirty-one companies displayed products.



Wide-swath coverage in seeding and fertilizing was the feature of this equipment shown and demonstrated at the American Sod Producers Association. The spreader at left, distributed by O. M. Scott & Sons, Marysville, Ohio, lays down a strip of fertilizer about 30 feet wide. Jacobsen Manufacturing Co., has ganged the Rogers Seeder it bought recently and offers hydraulic lift capability for turn-around and transporting.

Washington Seed Quality Law Likely Sod Industry Standard

Sod growers are quality conscious. They want lawngrasses that are free of serious lawn weeds and coarse field grasses. Better quality seed is the norm. Growers expect far superior seed than that of a few years ago.

To this end, Washington State's new sod quality standards right now promise to become the standard for the industry. The Washington regulations, released May 18 of this year, are somewhat more stringent than previous certification programs. However, this is in keeping with the general march toward quality which has had a great effect in building the "instant lawn" business. It promises to do even more.

In a late June meeting at Lake Tahoe, the Lawn Seed Division of the American Seed Trade Association gave tacit approval to the Washington State regulations. At this time the group also discussed a seed purchase agreement proposed by the Midwest Turfgrass Growers Association, Inc. The Midwest organization comprises leading sod producers in a six- or seven-state area with headquarters at Kansas City, Mo. Better seed quality was but one of several goals of this association at its inception some two years ago.

The American Seed Trade industry group at Lake Tahoe in its discussions of the Midwest Seed Purchase Agreement questioned three of Midwest's proposed requirements. First, a 60-day period for testing of seed by an independent laboratory before acceptance of any lot of seed proved to be a primary objection among seed suppliers. Suppliers said samples, if not correctly or uniformly drawn from a lot of seed, can produce varying test results. Price may change radically during any 60-day market period. Turfgrass seed on the commodity market varies from day to day, week to week, and so on. Suppliers do not feel they can assume the risk of a changing market over a two-month period.

A second objection among suppliers was the requirement proposed by Midwest growers for grass seed free of some 73 weed seeds in addition to any other weeds declared noxious in the state where the seed is to be planted. The objection here was primarily the requirement to rid the seed of weed seeds which are not noxious, some examples being dandelion, shepherds purse, peppergrass, and pennycress. These broadleaf weeds are not considered serious and can be controlled with the regular chemical weed control programs. Further, since these broadleaf types are already present in most or many sod growers' soil, suppliers believe the chemical treatment will be mandatory in any case. Even in situations where methyl bromide is used to fumigate the soil, the broadleaf problem must be faced within about two years. Native weeds are quickly reestablished by wind, traffic, birds, machinery, etc. By this time, however, sod is generally well established in the lawn and chemical spraying is simply a maintenance factor.

A third facet of the Midwest proposal which suppliers felt would be difficult to meet in some years was an 85% germination standard. Generally, if the seed production season is fair or better, seed will germinate at 85% or higher. But in some years because of variables such as high or low temperatures or rainfall, 80% is

Washington State Sod Quality Certified Seed Standards

Variety	Min. Purity	Min. Germ.	Max.* Other Crop	Max.*** Weed
Special Turf Varieties				
Merion, Fylking and Sodco Kentucky Bluegrass**	95%	80%	0.1%**	0.03%
Other Varieties of Kentucky Bluegrasses	97%	80%	0.1%	0.03%
Red Fescue	98%	90%	0.1%	0.03%
Chewings Fescue	98%	90%	0.1%	0.03%

* Must be free of ryegrass, orchardgrass, timothy, bentgrass, Big bluegrass, Canada bluegrass, Poa trivialis, Smooth bromegrass, Reeds Canarygrass, Tall fescue, and clover.

** Kentucky bluegrass in Merion — maximum 2%. Canada bluegrass in Merion — maximum 0.1%.

*** Must be free of dock, chickweed, crabgrass, plantain, Black medic, Annual bluegrass, velvetgrass, and prohibited noxious weed seeds.

more likely to be the norm. Neither growers nor suppliers have found this to be a major factor, so long as they have an accurate test as a basis for planting.

Contrasting with the Midwest group's proposals, the Washington State regulations are tougher in some requirements. For example, Washington State allows only .03% weed seed content in Merion. Midwest proposed .10%. Purity, crop and weed content are identical.

As things stand at this point, the Washington regulations listed below will likely prove to be the accepted standard. A spokesman for the Midwest growers at the recent American Sod Producers Association field day said that certain stipulations in their sod purchase agreement would be changed. At the same time, this group and others as well will insist on superior quality — a situation which bodes well for the industry. Few suppliers, if the Lake Tahoe discussions are indicative, will object.

The Washington State SOD QUALITY CERTIFIED SEED standards as promulgated by the Washington State Department of Agriculture order provide that:

(1) The general rules for seed certification and grass seed certification standards are basic and together with the following specific rules constitute the rules for sod quality grass seed certification.

(2) The varieties eligible and certification scheme of each; the certification fees; the land requirements; the isolation requirements and field tolerances shall be listed in grass seed certification standards.

(3) Seed standards for sod quality grass seed are as illustrated in the accompanying table.

(4) A sod seed analysis certificate which is a 25-gram purity, and includes noxious, all weed, all crop, 10-gram Poa annua check, and germination will be the basis of determining seed standards.

(5) In addition to the certified tag, seed meeting sod quality certified seed standards will be tagged with a special "Sod Quality Seed."

These Washington State sod quality standards came about because existing standards for certified seed have been considered too lenient in their minimum mechanical purity, and maximum allowable crop and weed allowances for the high quality seed demanded by sod growers. Industry support for the new regulations should provide great assurance to these growers.

This move in the industry has to be a step in the right direction. The commercial sod grower has every reason to be concerned with serious lawn weeds and coarse field grasses that deface or foul the field prior to lifting. The homeowner consumer shares the same concern when associating with the finished product.

Help Offered on Turf For Athletic Fields

A publication on turf for athletic fields has been written by agronomists Carl T. Blake and William B. Gilbert at North Carolina State University. They describe how to design football fields, baseball fields and general playgrounds for best survival of the grass. They tell how to prepare the soil and care for the grass, and have outlined the best grasses for the Mountains, Piedmont and Coastal Plain.

Copies are available free from local offices of the Agricultural Extension Service, or by writing to the Department of Agricultural Information, N.C. State University, Raleigh, N.C.

Demonstrations included Amchem's Slinger, in this case TVA-owned, and, Amchem-designed granular applicator built by West Point Products.

New Hyacinth Society officers are, from the left: Gordon Mobley, director; Brandt Watson, director; Robert Gates, secretary-treasurer; Paul Cohee, vice-president; Stan Abramson, president; Robert Blackburn, editor; and William Dryden, director. The group hired Mrs. Blanch Farrow, Ft. Lauderdale, to assist Blackburn in publishing a newsletter and the Society Journal.

RECORD AQUATIC MEETING

The field day was at the Tennessee Valley Authority Guntersville Lake water impoundment. A record 173 persons registered.

A GROUP which for the past 10 years has led the fight to control water weeds—the Hyacinth Control Society, dedicated to the control of all noxious aquatic weeds—has truly become a national organization.

Started in the Southeastern U.S. and pulling a membership largely from Florida, the Society has steadily grown. Membership is now 527 and comprised of custom applicators, commercial and educational researchers, public officials, and others responsible for keeping water clean and usable for whatever its intended purpose.

This year—a first for the Society—the annual convention and field demonstration — was held outside the state of Florida. A whopping 70 percent of the membership, 173, registered. Another 80 guests and family members attended. This 250 plus figure set a new attendance for this event. The group on hand represented four countries, 20 states, and Puerto Rico.

Tentatively, the 1971 annual event is to be held at Cocoa Beach, Fla. However, a Tampa, Fla., site is also being discussed following election of Stanley C. Abramson as president. Abramson is technical representative for Southern Mill Creek Products Co., with headquarters at Tampa. Dates for '71, also tentative, are July 11-14.

On the educational program, Paul R. Cohee, president of the Society for the past year, and a professional weed technologist with Hercules Inc., headquartered at Birmingham, Ala., discussed the goal of the Society in helping return waterways to a healthy and functional status. Cohee pointed out that freeing water of water weeds is a major step in restoration of lakes and srteams. He emphasized that a public majority, motivated by emotion and sincere concern, but lacking patience, foresight or wisdom cannot always be aware of consequences of their action. In further alluding to restrictive legislation demanded by a majority public and rampant throughout the country right now, Cohee said there is good sound logic in recognizing that on some issues, the minority—made up of professionals (such as in this Society) can be better equipped to speak and act for the majority. "If you have doubts about this," Cohee said, "ask your doctor or dentist." He further pointed out that Society members are a minority group, and also a professional group; a group seeking a methodical, scientific approach and drawing on both experience and research to halt the takeover of waters by aquatic weeds.

Cohee, in one of his last duties as president, presided over the formal 1970 business session. A memorial section of the 1970 Hyacinth Journal will be dedicated to four members and the wife of another, all of whom died during the year. These are: Dr. Lyle W. Weldon, USDA, ARS, Fort Lauderdale, Fla.; John D. Rogers, Pahokee Drainage District, Canal Point, Fla.; Harold J. Elser, Maryland Fishery Biologist, Annapolis, Md.; William A. Galletta, Vero Beach, Fla.; and Mrs. Fred John, wife of member Fred John, Belle Glade, Fla., Drainage Dist., Belle Glade, Fla.

Some 35 technical papers were presented by participants at this

1970 Society event. Most will subsequently appear in Journal form and are available at $5 for each Journal copy from the Society.

Gordon E. Smith, chief of the Environmental Biology Branch for TVA, Muscle Shoals, Ala., and host for the meeting, presented a resume of TVA control programs regarding Eurasian watermilfoil. First found in TVA waters in the Watts Bar Reservoir, this water weed had infested 25,000 acres by 1969 in eight TVA reservoirs. Damage, Smith said, depressed real estate values, stopped recreational activities such as boating, fishing, skiing, and swimming, clogged municipal and industrial water supply intakes, and provided extensive new breeding areas for mosquitoes in surface mats from July until midwinter.

Most efficient method of reproduction has been the spread by fragmentation. Either large, mature plant parts break off and float to new areas, or small 2- to 6-inch plant tips are abscised, float for a time, and then settle to the lake bottom often to develop roots and start new colonies. A single, 2-inch fragment, Smith reported, may take root and grow 4 feet or more in one season. During the second year, multiple stems arise from the rooted base and may achieve lengths of 8- to 15 feet.

Smith reported that more than $1.5 million had been spent in the '62-'69 period in treating an accumulative 35,636 acres. Treatment varied but mostly consisted of a granular preparation containing 20% 2,4-D acid equivalent (butoxyethanol ester) dispersed by helicopter at a rate of 100 pounds of granules per acre, a 20% granular formulation of butoxyethanol ester of 2,4-D on attaclay granules, a liquid dimethylamine salt of 2,4-D, both applied at rates of 20 and 40 pounds of 2,4-D acid equivalent per acre. Diquat was also used at the rate of 1 gallon (2 lb. cation Diquat) per acre. Such chemical control, Smith said, brought control but areas he said are normally reinfested by new fragments either from other areas or from a few surviving plants. In brief, he stated that even 99% control was insufficient to keep this weed permanently in check.

Experience with keeping raceways and ponds used by commercial trout producers free of weeds and algae was related by Dennis L. Vedder, director of fishery ecology, Marine Biochemists, Waukesha, Wis.

Vedder related that water weeds in raceways slow the flow of water and cause temperatures to rise. In the case of trout, a 3 or 4 degree rise during the summer can be lethal. Also, when water slows down, fecal deposits and waste food accumulates in the bottom and further adds to the problem of fertilizing weed growth. Weeds in turn make har-

Dave Petersen Forms KDM Company

David P. (Dave) Petersen, formerly with Stull Chemical Company of San Antonio, Tex., has organized a new company to make and sell water-in-oil emulsifier systems.

Petersen, who has 20 years experience in the herbicide industry—ranging from agricultural through industrial and military—will develop custom systems for use in both agricultural and industrial chemical formulations. The new company, operating as the KDM Company, P.O. Box 6814, San Antonio, Tel. 512+ 826-4040 will include chemical development and manufacturing services. Market planning and development services will be available.

Among Petersen's experience has been research and development of the original water-in-oil "invert" emulsion technology for pesticide applications. He worked closely with the first field applications in which inverts were used via helicopter applications. This work was mostly on industrial rights-of-way vegetation control programs. He has also been active in plant design and production, and in advertising and sales promotion along with market planning and development. His military service was partly concerned with armed services anti-crop and defoliation programs.

The KDM Company formally began operations July 20.

Dave Petersen, right, talking about invert emulsions at the Hyacinth meeting.

vesting of fish difficult and among other problems results in food waste since trout are sight feeders. Weeds also retard the growth rate of trout by diverting metabolism from growth to locomotion. Algae may even taint the flavor of fish flesh, Vedder related.

Vedder said that from a 1½ to 1 pound conversion ratio, weeds can be a contributing factor to a 2 or 2½ to 1 pond food to flesh conversion ratio. This obviously would raise the cost per pond of marketable fish flesh. Vedder related that for the past 18 months, Marine Biochemists of Waukesha, Wis., has been assisting trout growers in that state with chemical control of both weds and algae. Marine is doing research involving toxicity and residual effects of various combinations of herbicides and their own product, Cutrine. Marine has also perfected a portable drip system for applying chemicals to flowing water. The US departments of agriculture and the interior have also done research in this area. Applied Biochemists of Milwaukee, Wis., has been working along like lines with trout and catfish growers throughout the country.

Harold R. Nickel, right, Greenleaf Nursery Co., Muskogee, Okla., assumes the presidency of the American Association of Nurserymen. He succeeds William Flemer, III, who was elected a director at large. L. J. Hilscher, Hilscher Nursery and Garden Center, Fort Worth, Tex., succeeds Nickel as director from Region V.

Nurserymen Hear Progress Of Government Research

Planet Earth is like a spacecraft tied to a dying supply ship. There is no source of fresh supplies, no untapped frontier, and we're taking poor care of our life support systems.

Keynoter Dr. Henry M. Cathey of USDA's Agricultural Research Service, conjured this cosmic view of our environment at the 95th convention of the American Association of Nurserymen recently in San Francisco.

We must get down to earth, however, to attack the multitude of problems, he said.

"We need to fragment the environment crisis into many small goals which are within the grasp of a part of society. We, the horticulturists, must apply our expertise in solving these problems through the use of living plants."

Plants have the life-giving function on Spaceship Earth, Cathey reminded, of recirculating carbon dioxide and oxygen. To maintain the present level of photosynthesis on earth, we must recycle all of the CO_2 every 250 years, he said.

Man-made pollution is steadily reducing the efficiency of plants to accomplish this task, he added.

Chemicals in the air, he illustrated, such as ozone, sulfur dioxide, carbon monoxide, ethylene, and so on, affect the life support systems of plants. We use an excess amount of water to grow things, and in the process leach materials that contaminate our fresh water supplies.

Man has brought almost "constant moonlight" to the plants that live where the Spaceship Earth crew lives—the urban environment. Urban lighting often has attracted insects that damage plants, and the types of lighting also have upset the onset of dormancy of some plants, resulting in damage.

While there may be too much of the wrong kind of light at night, Dr. Cathey reported that, as the result of air pollution, plants in our urban environment are receiving 16% less light than they did a generation ago.

The goal of nurserymen, he said, cannot be just to grow more plants at less cost, assuming that the needs for plants will increase and that man and his life styles will remain unchanged.

"Methods we will use to propagate, grow, and protect our plants must change to battle the constantly modifying closed system of our spacecraft," he said.

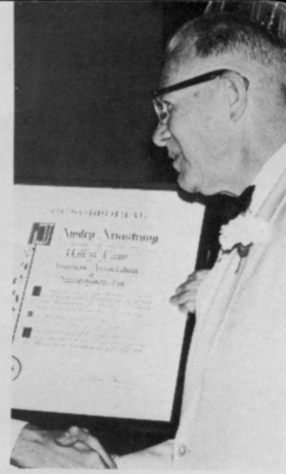
"We will be too impatient to wait years to determine if a seedling possesses desired color, form, resistance, sound baffling, fragrance, or tolerance of polluted air, soil and water. We will learn to relate the early stages of growth with the desired performance of mature plants. We will resort to encouraging plants to utilize their own innate characteristics to ward off pests and diseases."

R. D. Lane of the U.S. Forest Service, reported that federal research effort is now focused on insect control, management of forested municipal watersheds, and air pollution.

Two major projects at Lane's station in Upper Darby, Pa., concern the discovery and development of biological agents for insect control. Some have been found, Lane said, and that details are now being worked out on production and safety.

Research new this year, Lane continued, concerns a project with Health Education and Welfare with the objective of finding hardwood

Recipients of the 1970 AAN Retail Advertising Awards and Honorable Mentions are, from the left; Itsuo Uenaka, Cupertino Nursery & Florist, Cupertino, Calif.; Henry H. Chase, Sr., Chase Nursery Co., Chase Ala.; William Harlow, John Harlow's Nursery, Tucson, Ariz.; Angella Musso, Pine Knoll Nurseries, Suffern, N.Y.; Donald Kamban, Schoenbrunn Evergreen Gardens, New Philadelphia, Ohio. Recipients not able to attend are Klonsky Landscape Associates, Inc., Cedarhurst, N.Y.; Gibbs Home & Garden Center, Jamesburg, N.Y.; and Holsinger Nursery Co., Kansas City, Kan.



Other awards, from left—Garden Writer's Award, Charles H. Potter, Milwaukee, Ore.; Norman J. Colman Award, Dr. Hudson T. Hartmann, University of California; Hall of Fame, J. Awdry Armstrong, Armstrong Nurseries, Ontario, Calif.

trees that are resistant to air pollution and finding ways to using hardwood trees to reduce pollution.

Lane announced the initiating of a joint research program to solve the forestry problems in the great eastern seaboard megalopolis. Several universities are involved in the "Pinchot Institute of Environmental Forestry Research," as the program is called.

Initially, Lane said, the program will concentrate on these areas:

1. Improving the social well-being of urban people through recreation and esthetics in a forest environment.

2. Improving the amenities derived from trees and forested land in an urban environment. "Here, we are searching for better ways to use trees and forests for reducing air pollution, for improving temperature and humidity, for abating noise, and for controlling air movement," he said.

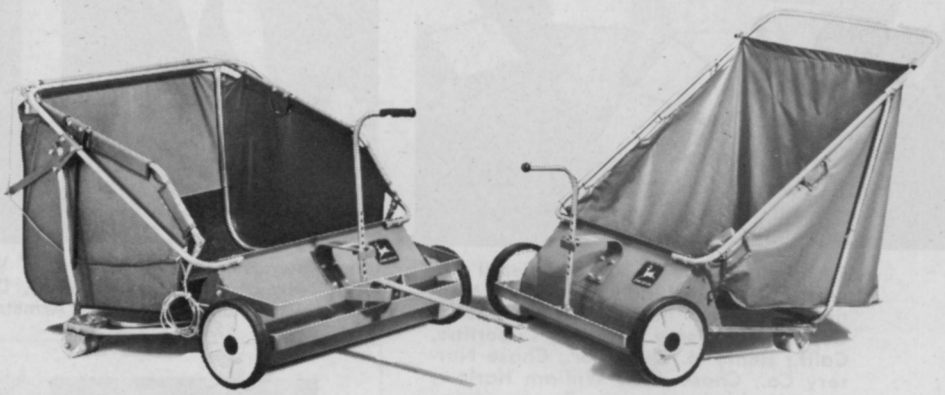
3. Improving municipal forest watersheds and their management for both water production and urban recreational uses.

4. Improving wildlife habitat in forested urban areas—with emphasis on non-game species and spectator enjoyment.

Additional research areas will be added later, Lane continued, to include: (1) tree culture and genetics; (2) protection from fire and other destructive agents; (3) use of forest vegetation to improve urban and interstate highways; and (4) the economic aspects of improving the urban environment with trees.

RAKE-THATCHER ATTACHMENT, Rake-O-Matic, Lindenwood, Ill.

This attachment is for rotary lawn mowers. It thatches, loosens and removes dead grass, helps prevent lawn fungus, allows lawn to breathe for better growth. The Rake-O-Matic is quickly installed and comes in a 10-pack/weight of 17 lb. Comes complete with mounting hardware and installation instructions. For more details, circle (704) on the reply card.

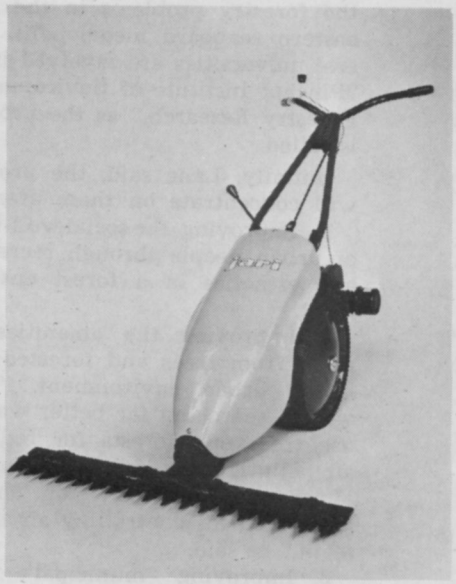


LAWN SWEEPERS, Deere & Company, Moline, Ill.

One sweeper is designed for towing behind a lawn and garden tractor or riding mower and has a 31-inch sweeping width. The second is a push-type with 26-inch sweeping width. The 31-inch pull-type has heavy-duty plastic hamper with easy emptying direct from the tractor seat. The 26-inch push-type has a reinforced plastic hamper with easy lift-out emptying, and can be converted to a pull-type with the addition of an optional hitch. Both have three replaceable, polypropylene brushes. For more details, circle (701) on the reply card.

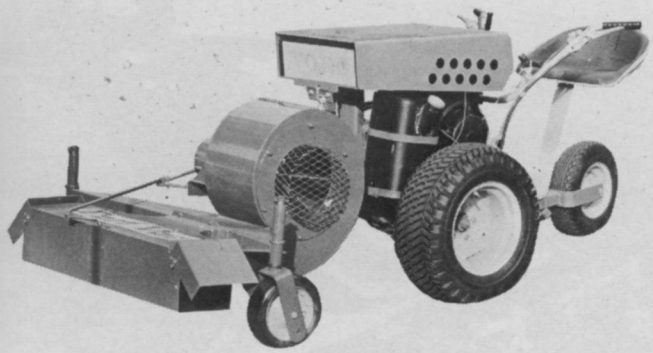
POWER RAKE, F. D. Kees Mfg. Co., Beatrice, Neb.

New features have been added to the 1970 line of power rakes and aerating units. The features include a front-mounted lifting bar and an out-of-the-way kickstand, which combine to make transporting and starting easier and more convenient. The 1970 Powerslice is powered by a 5 hp Briggs & Stratton 4-cycle engine. It's available with 6, 8, or 15 straight or offset blades. It covers 20-inch swath and has two-inch deep slicing range. The semi-self-propelled 1970 Powerake is equipped with rubber tires and zirk-fitted bearings for easy, complete lubrication. It rakes a 20-inch swath. For details, circle (705) on the reply card.



SICKLE BAR MOWER, Year-A-Round Cab, Corp., Mankato, Minn.

The Jari line of sickle bar mowers is now being produced by Year-A-Round Cab. A full line of parts is available. Highways, parks, institutions and resorts are among the biggest users of Jari Mowers. They are especially useful under fences and in uneven terrain such as ditches alongside roads. For more details, circle (706) on the reply card.



BLOWER ATTACHMENT, Turf-Vac Corporation, Long Beach, Calif.

This new Turf-Vac blower provides a 150 mph blast to windrow leaves and blow debris from gutter and curb areas. It mounts on the Toro unit in place of the mower attachment. It is easily installed without modification. The Turf-Vac attachment blows to the right or left and is controlled by levers from the driver's seat. Adjustable deflectors are provided to direct the blast in the desired path. For more details, circle (702) on the reply card.

SELF-PROPELLED VACUUM, Giant Vac Manufacturing, Inc., South Windham, Conn.

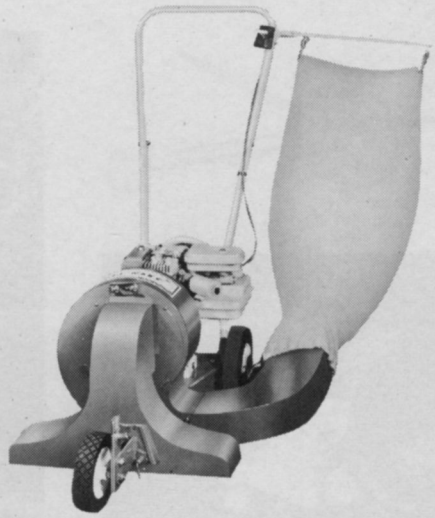
Self-propelled units are powered by either 7 or 8 hp engines and are propelled by means of a heavy-duty gear box, full floating differential and chain drive. Model 1800 (8 hp unit) has sufficient power to pull a sulky, which is supplied as an extra. All models have welded and balanced steel impellers with four blades ¼-inch thick. The 12.5-cu. ft. debris bags are made from specially woven fleece-lined material and will hold 85 pounds. For more details, circle (703) on the reply card.

POWER SWEEPER, Lindell Pattern Works, Fresno, Calif.

New changes have been announced for some of the power sweepers and blowers. All hose models are now equipped with heavy-duty 2-ply plastic hoses. Model 722-30 shown offers a power vacuum sweep and an optional hose sweep. Four of the eight multi-purpose sweepers and blowers are hose models. The optional vacuum hose makes it possible to clean the lawn or ground area with the sweeper and clean out flower boxes, corners, and other hard-to-get-to areas. Dealerships available. For more details, circle (707) on the reply card.

YORK RAKE, York Modern Corp., Unadilla, N.Y.

Model LFT is designed for a garden tractor. Removes thatch, leaves, grass clippings, apples, acorns, twigs, pine needles and cones, and all other kind of debris. Raking is achieved by three rotating tine bars, which contain a total of 117 spring teeth, closely spaced and mounted in synthetic rubber. Rake clears a three-foot wide swath with discharge to the right. Two six-inch wheels are adjustable for height. Variety of hitches permits easy attachment to all makes of lawn and garden tractors. For more details, circle (708) on the reply card.

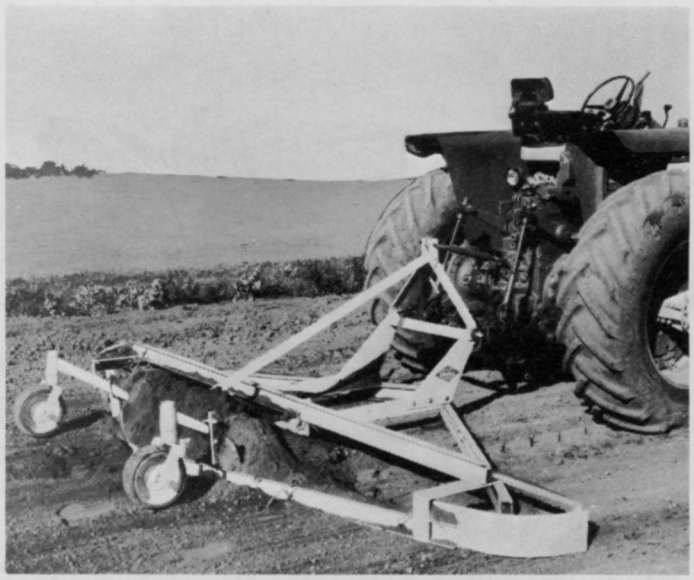


"EVERYTHING MACHINE," Air Rake Mfg. Corp., Chicopee, Mass.

The 1970 Air Rake has been called the "Everything Machine" because it is five machines in one: Air Rake, Shrub-Vacuum, Lawn Vacuum plus Air Rake, Vac'n Bag it, and Outdoor Vacuum. The basic 2½ hp Air Rake can rake swath up to 5' across. Converts to Shrub Vacuum in less than one minute by attaching 10-ft. hose to the front snout. Rake and Vac consists of vacuum head attached to basic unit. For Vac'n Bag It, a disposal plastic bag replaces the dust-proof canvas bag. For more details, circle (709) on the reply card.

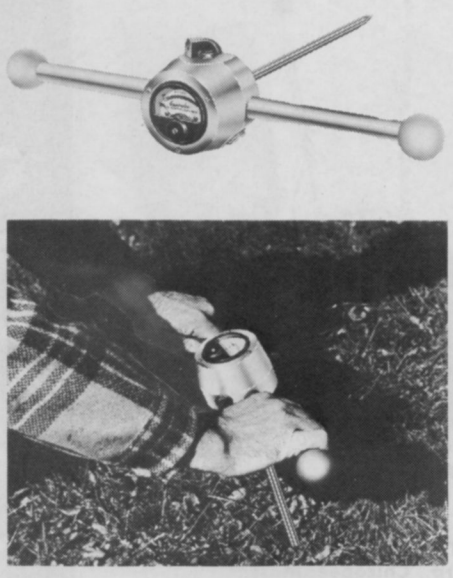
SKID-MOUNTED MULCHER, Reinco, Inc., Plainfield, N.J.

This portable unit incorporates the principles of the large, high-production, tow-type highway power mulchers. Model TM7-30 is ideally suited for highway or park maintenance work, and also satisfies the ever increasing demands of the commercial landscaper. One man can operate the unit. 30 hp air-cooled engine propels material up to 60 feet in calm air with a 4-ton/hr. capacity of dry mulch material. Over-all skid length is 5½ feet and width 2½ feet. Can be used with 10-ft. rack body. For more details, circle (710) on the reply card.



LEVLER, DriALL Driers, Inc., Attica, Ind.

DriALL introduces the LevLer, a patented low-cost leveling tool that eliminates ridges and depressions as well as headlands and dead furrows, giving a smooth seed bed. The LevLer is equipped with a disc hitch to use behind a disc or a three-point hitch for field leveling or road maintenance. Four models—11, 13, 15 and 17-foot sizes. Also available is a six-foot model for the compact tractor and a highway LevLer that has removable and replaceable scraper blades. For more details, circle (711) on the reply card.

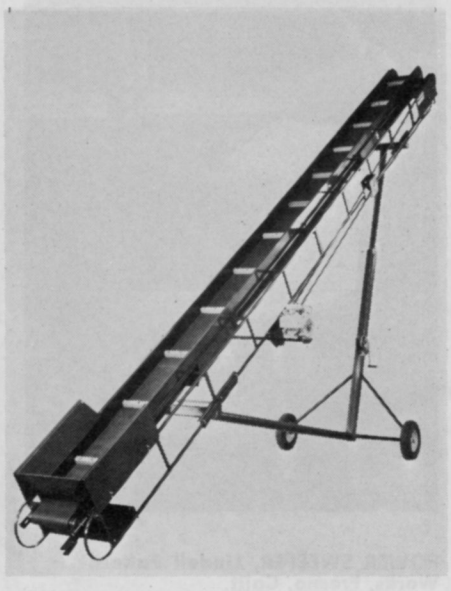


SOIL MOISTER TESTER, Howard S. Crane, Inc., Oneida, N.Y.

The Aquaprobe is being introduced in the U.S. and Canada. The lightweight, self-contained unit gives fast, reliable moisture readings at soil depths ranging from two inches to 26 inches. Moisture determined by the amount of electricity soil will conduct. Moisture content easy to read. Powered by six penlight batteries. These is no digging, no fixed point of measurement, and guesswork by the operator is eliminated. For more details, circle (714) on the reply card.

HOME SPRINKLER SYSTEM, Rain Jet Corporation, Burbank, Calif.

Using these Rain Jet adjustable sprinklers, full-flow fittings and flexible pipe, this system is easy enough for the homeowner to install. Four patented Rain Jets outperform 24 ordinary sprinklers. Only four are needed to cover 25-ft. deep by 50-ft. wide lawn area. Photograph shows a Rain Jet square-pattern sprinkler head, together with a Rain Jet Tee assembly and Rain Jet flexible polypropylene pipe. A detailed, easy to follow "How to Install" brochure is available free. For more details, circle (715) on the reply card.



BELT CONVEYOR, Thrifty-Lifty, Inc., Honeoye, N. Y.

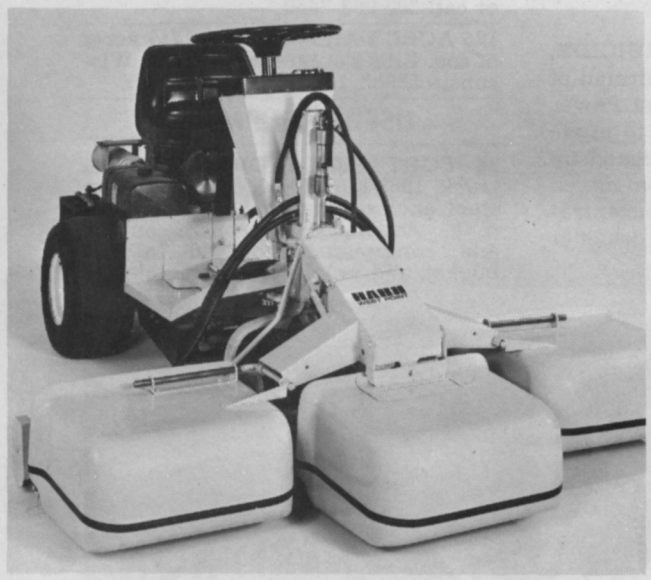
This portable belt conveyor moves material up inclines to 40 degrees. Standard lengths start at 7-ft., and increase in 6-ft. increments to 55-ft. and up. 12" wide 3-ply belt has 1½" hardwood cleats spaced on 2-ft. centers. Belt speeds of 60, 90, or 120-ft./min. available. Electric or gas engines available. Road-type undercarriage is a hand-winch operated telescoping type and has 400x8 pneumatic tires. Tow hitch standard on all except 13-ft. model. For more details, circle (716) on the reply card.

UTILITY SPREADER, Highway Equipment Co., Cedar Rapids, Ia.

Improvements have been made in the HI-WAY Model "P" utility spreader. This self-contained, self-powered material spreader comes in sizes and capacities suitable for use on all light-duty and small four-wheel drive trucks. They're used to maintain ice-free areas. Protective shield over conveyor and tarpaulin hooks are included to facilitate spreading sand, salt, cinders, lime, and other pelletized or granular materials. For more details, (712) on the reply card.

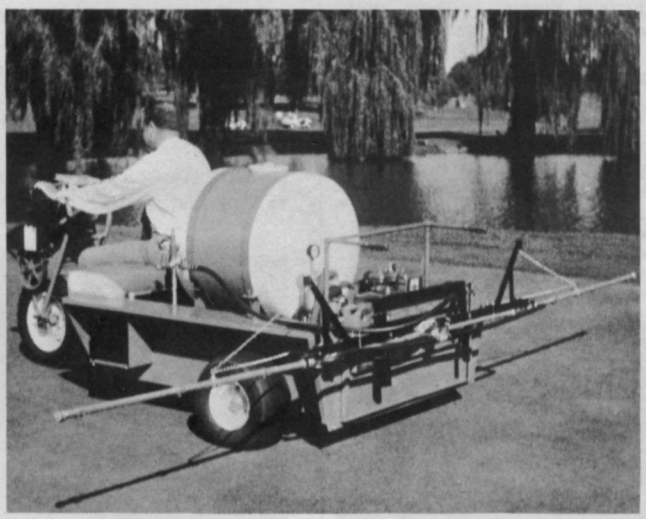
3½-TON SPREADER, Willmar Manufacturing, Willmar, Minn.

A new addition to the dry fertilizer line, the unit is dubbed the "Trophy Model," a heavy-duty machine having the same features as the Willmar W-4 but selling for less than $1,200. The W-35 has nearly the same capacity as most standard four-ton models. Accurate spread pattern, rustproof phenolic plastic floors, catalytic epoxy paint, and 12.5x15 high flotation tires are among features. For more details, circle (713) on the reply card.



GREENS MOWER, Hahn-West Point Div., Kearney National, Inc., Evansville, Ind.

A new Tri-Plex greens mower will be in production by early 1971. Features include variable control of reel and ground speeds to permit precision greens cutting under all conditions. Speedometer and tachometer minimize operator error in setting and maintaining independent speeds. Patent is pending on unique steering gometry that will eliminate scuffing. Electric hydraulic circuit for each reel gives stop motion the moment the reel leaves ground contact. For more details, circle (717) on the reply card.



LOW-VOLUME SPRAYER, Smithco, Inc., Wayne, Pa.

An all-new, low-volume sprayer for greens, tees, and trees has been introduced by Smithco. Called Red Rider's Spraymate, it is a self-contained, four-wheel piggy-back sprayer that needs only one man to load and operate. It's equipped with a 65-gal. fiberglas tank; a pump that generates 400 psi; and a 16-ft. boom. Power is supplied by a Briggs & Stratton 4 hp. engine with gear reduction. For more details, circle (718) on the reply card.

trimmings

ON A 90-DEGREE DAY, baseball and football players can expect to play in temperatures up to 123 degrees if artificial turf is under foot. That's the finding of testing in Busch Stadium, St. Louis, and corroborated by similar data from the Orange Bowl, Miami.

Bill Simmons of the St. Louis football Cardinals said that on one day when the official temperature was 90 degrees, the field surface temperature was 123 degrees. It was 116 degrees at one foot and 114 degrees at six feet.

Testing by the Miami News produced similar conclusions. Artificial grass gets about 20 degrees hotter than natural turf, the News said. At an air temperature of 93 degrees, natural turf remaining in the stadium pushed the mercury to 96 degrees. Where the artificial grass had been installed, the temperature was 116 degrees.

* * *

MORE LEGISLATION is wanted by Oregon Associated Landscape Contractors. The group has proposed a law that would require landscape contractors to meet certain qualifications and apply for a license through the Oregon State Agriculture Department. Ronald Vandehey of Portland, original president of the group, said the move was to protect the public from "fly-by-night" operators.

* * *

DENVER, COLO., has had more than one fight on its hands over Dutch Elm Disease. The scourage has invaded the city's estimated 200,000 elms, or 60% of the total tree population. Some 3,000 have been determined by infrared aerial photography to be diseased. Tree experts believe the total could skyrocket to 20,000 to 30,000 in the next few years. Sanitation is essential to reducing the spread of the disease, including tree removal and destruction. But pollution proponents managed to ban open burning last January. The problem had been on how to dispose of the trees, for mere stockpiling of dead trees wouldn't eliminate the brooding places for the elm bark beetle. Verbal fighting has been torrid, but as of the first week in August the state health department issued special burning permits for destroying the dead and dying trees.

* * *

TORDON IS A SAFE HERBICIDE, said Dr. Gordon Shrum, chairman of British Columbia Hydro and Power Authority, Vancouver. And to prove his point to reporters, he picked up a six-ounce glass of Tordon mixed with water at twice the concentration of spray formulas and drank it to the last drop.

classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: "Position Wanted" 10¢ per word, minimum $3.00. All other classifications 20¢ per word, minimum $4.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Boldface rule box: $25.00 per column inch.

FOR SALE

AUSTRALIAN BUSINESS — Agricultural Chemicals — Custom Applicators. This firm specializes in Agricultural and Industrial Weed Control. It is firmly established in three eastern States and there is potential for expansion to the remaining States and New Zealand. Opportunities in allied fields are excellent. An ideal proposition for a chemical or pest control company seeking a comprehensive introduction to the Australian Market. Any reasonable proposition will be confidentially considered by the Founder-Manager who is anxious to ensure the future of this unique organization before retiring. Address all inquiries to: "Chemicals," P.O. Box 767 G, G.P.O. Melbourne, 3001, Vic., Australia.

SMALL Tree Business for sale in Santa Barbara, California. Well established . . . excellent equipment. For details write David Gosnell, P.O. Box 4396, Santa Barbara, Calif. 93103. or call 805 963-2450.

125 ACRE FARM includes 17½ acres of sod. Ellis Foulkes, Fall River, Wisconsin 53932. Phone 414 484-3941.

USED EQUIPMENT

36 FOOT SKY-WORKER bucket truck, 1963 Ford F600, diamond plate steel enclosed dump body for chipping. Auxiliary Wisconsin engine and compressor mounted to run bucket and/or air tools. Completely

James "Pat" Brock, service manager of Forshaw Chemicals, Inc., Charlotte, N.C. is the 100th graduate of the Hypro Pump Repair School. A Certificate of Achievement was given to Brock, Center, by Thomas Forshaw, left, president of Forshaw Chemicals and H. C. Berkeley, Hypro factory representative.

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BEAN 35 GPM SPRAYERS, 400 gallon steel tanks, Continental engines, skid mount. Completely reconditioned and ready to work. $1,250.00 each. Equipment Sales Co., 5620 Old Sunrise Highway, Amityville, N.Y. 11701.

SPRAYERS, chippers, log splitters and other equipment at large savings. Let us know your needs. Equipment Sales Company, 4744 Sunrise Highway, Massapequa Park, N. Y. 11762.

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GRASS SOD and Sprigs, Tifway 419 and Tifdwarf. 100 acres of clean sod. Hybrid Bermuda 419 — 328 No-Mow, Tif Dwarf and other varieties. 7¢ per Sq. ft. F.O.B. We will arrange for truck. Bayou Pierre Turf Grass Farms, Inc., Carpenter, Mississippi 39050. Phone AC 601 922-3213.

HELP WANTED

WORKING superintendent, married, over 30, full charge 75 acres Memorial Park Cemetery in Suburban Philadelphia. Must have 3 years ground maintenance experience, 2 years as foreman. Able to handle men, coordinate work, familiar with equipment. Comfortable apartment, utilities, $7,800 year, plus benefits. Those resumes giving full details of education, experience and equipment knowledge considered. Strict confidence. Write Box 59, Weeds, Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

WORKING Tree Foreman: with a minimum of three years experience needed for a well established company in suburban Philadelphia. Wage commensurate with experience. Heyser Landscaping, Inc., 400 North Park Avenue, Norristown, Pennsylvania 19401. 215 539-6090.

SALESMEN WANTED

EXPANDING Tree Service Company in Northeast—looking for aggressive and experienced salesmen to develop new territories and build up existing ones. Starting pay of $10-15,000 commensurate with education, experience, and ability. Commission also paid on profits earned. Company car furnished; pension plan; paid hospitalization; excellent future. Send resume (with current annual sales and earnings) to: (Box 60, Weeds, Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

REAL ESTATE

FLORIDA Sod Farm. 115 acres near booming Orlando, DisneyWorld and Cape Kennedy. Established 13 years. Will sell land and equipment at market value. 1969 net profit approximately one third of investment. Owners health requires sale. Central Fla. Sod Farms, P.O. Box 434, Oviedo, Fla. 32765.

MISCELLANEOUS

AUTOMATIC IRRIGATION CORRESPONDENCE COURSE — A ten lesson course written for Superintendents and foremen working with automatic turf irrigation systems. Straightforward text and diagrams showing the selection, operation and maintenance of vacuum breakers, valves, pipe, spray and rotary heads, controllers, etc. Streamlined step by step system trouble shooting methods on pressure and voltages. Special lessons on corrosion, water quality, moisture measurement and sensing, fertilizer injection, salinity and soils. For free course outline and information write to Larson Company, P.O. Box 4453, Santa Barbara, Calif. 93103.

SITUATIONS WANTED

GREENS superintendent, Country Club experience. Desires to make change. Resume sent on request. Box 62, c/o Weeds, Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

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