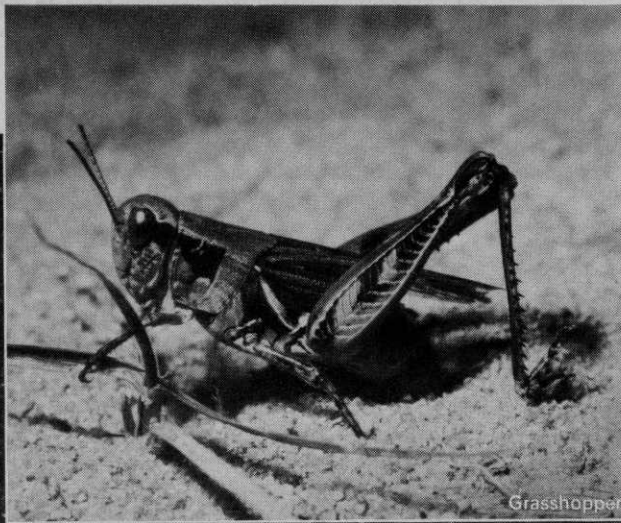
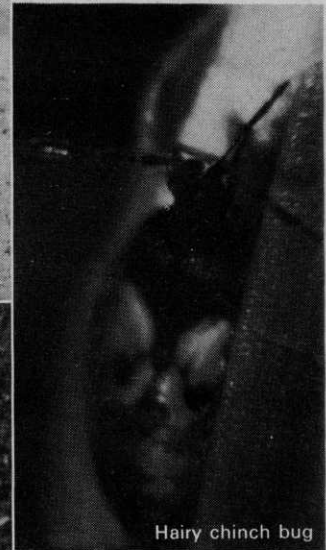


Leafhopper



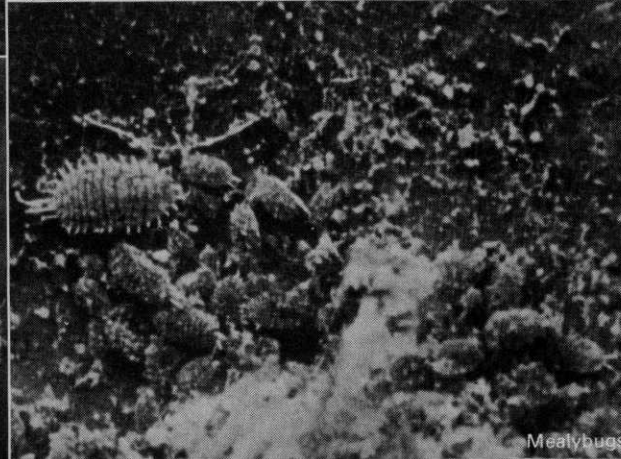
Grasshopper



Hairy chinch bug



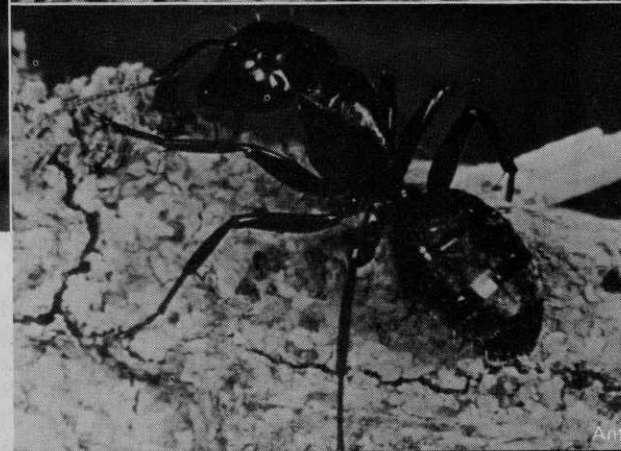
Cutworm



Mealybugs



Bagworms



Ant

Ag-Organics Department, Midland, Michigan 48640

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DOW CHEMICAL U.S.A.

For More Details Circle (111) on Reply Card

AGRONOMIST DR. ORVID LEE TALKS HERBICIDES AND SEED

Editor's Note: The Willamette Valley of western Oregon has become established as the center of world grass seed production, and herbicides are recognized as the best, most complete and least expensive route for keeping weeds out of seed. Choice of herbicide, time of spraying, rate of spraying, soil moisture and method of application spell success or failure for the grower.

Back of the grower, however, are new ideas and trials of investigators such as Dr. Orvid Lee of the USDA stationed at Oregon State University in Corvallis. In the following interview, Dr. Lee responds to some timely questions on grass seed output and development.

Q. There has been dramatic progress in Oregon's \$30 million seed industry in the past 25 years. Research-wise, where are we now?

Dr. Lee: Growers and seed companies have the basis for still more progress. We can identify seed industry needs better today and we have the capacity to undertake joint programs to meet those needs, with a very large reservoir of know-how among the growers.

Q. How would you summarize research progress and industry progress?

Dr. Lee: In a single word it is **precision**. We have always had a target, for example, of growing seed that is free of weeds. But we have been able to raise our standards through new techniques that are increasingly precise. Herbicides have played a key role in these techniques.

Q. Can you be specific?

Dr. Lee: Well, we have half a dozen different herbicides, and most seed growers have learned how and when to use them. Two new ideas in the past few years are the chem-

ical seed bed and charcoal seeding. Both are designed to establish seedling grasses that are completely weed-free.

Q. How are these ideas applied by a grower?

Dr. Lee: When the chemical seed-bed technique is used, the grower prepares the field for planting in the fall. Weeds and volunteer crop plants which germinate during the fall and winter are controlled by spraying with 2,4-D and IPC or with paraquat. The crop is then planted early in the spring without additional tillage. Since most of the troublesome weeds germinate during the fall and winter they are eliminated from the surface soil before the crop is planted. When the charcoal banding technique is used, activated charcoal is sprayed in a narrow band over the crop row at the time of planting. The field is then given a broadcast application of Karmex diuron. The activated charcoal over the row absorbs the diuron protecting the crop plants planted beneath it. The result is a grower can more easily meet his responsibility of producing weed-free seed.

Q. What kinds of grasses are these ideas used for in Oregon?

Dr. Lee: Growers here now produce 100 percent of the nation's annual and perennial ryegrasses, more than 99 percent of the bent grasses, 99 percent of the chewing and creeping red fescues, and about 72 percent of the orchardgrass. If you include Washington and Idaho, we also produce over 90 percent of the bluegrass. Altogether there are at least 1,000 growers of seed in the area, where there is a rather unique combination of climate and soil conditions that are ideal for seed production.

Q. Are new seed varieties developed here?

Dr. Lee: Yes, but our real contribution is our ability to multiply seeds that are developed elsewhere. We increase breeder seed more efficiently than anywhere in the world, and seed companies turn to Oregon growers to meet specific demands for their new varieties.

Q. How does your work tie in with the new varieties of seed?

Dr. Lee: My function is to help keep contaminants out of the seed. By this, I mean weeds and unwanted crop grasses. Seed companies are now going direct to the growers to multiply their new seeds. We have to keep ideas and know-how flowing to the growers, so they can meet their seed contracts on the new varieties. With about 40 trials and tests underway every year, many on growers' fields, we are able to generate a lot of understanding rather quickly.

Q. Does this apply to how growers use herbicides?

Dr. Lee: It certainly does. Split applications of Karmex, for example, have been found useful in fall and winter, when we get most of our rains. But we have found it necessary to adjust the rates, depending on specific grasses that are being grown. A grower must learn this, and field trials are a great teaching tool . . . as well as a learning experience for any investigator.

Q. What kinds of tolerances does a grower have to meet?

Dr. Lee: When it comes to weeds and contaminating crop seed, he must have 100 percent control or he is penalized on price. A decade or so ago, a grower was permitted 3 percent annual bluegrass in certified seed; today annual bluegrass

seed cannot exceed 0.30 percent in certified seed. In some states today the tolerance for annual bluegrass in seed is zero. A grower can usually earn a seven to ten cent or more per pound premium for weed-crop-free seed — that's a very worthwhile target.

Q. How has all this affected his use of herbicides?

Dr. Lee: Where a grower was once concerned with establishing his crop first and then eliminating the weeds, now he is working to keep the weeds and unwanted grasses out of his seedling crop right from the start. That's where the chemical seed bed, the charcoal seeding with Karmex, split applications and alternate applications of herbicides all fit in. Our growers are combining these ideas.

Q. What is the most critical period, when it comes to herbicide use by a grower?

Dr. Lee: Getting a clean grass seed crop established is the most sensitive part of his operation. His first responsibility, of course, is to plant clean seed on clean land. Then he must keep weeds out as seedlings develop — this can be difficult.

Q. What kinds of gains have growers realized through new herbicide programs?

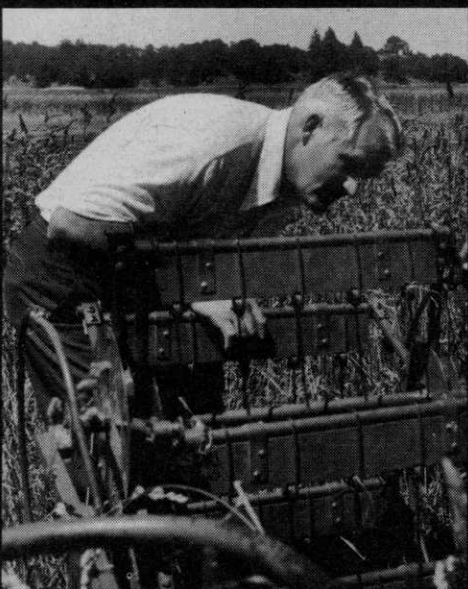
Dr. Lee: The chemical seed bed concept provides a good example. Prior to 1965, a 20-30 percent failure in stand establishment was normal. The loss stemmed from competitive grasses and weeds. But this loss has been sharply reduced — especially on flat areas, where the new techniques can be employed. Use of the chemical seed bed or charcoal seeding has already established new standards in getting a crop started.

(continued on next page)





Dr. Lee runs more than 40 trials each year. Here, John Couch of Du Pont and Dr. Lee review results of 1973 trials.



Equipment check of seed harvest reflects Dr. Lee's interest in diverse aspects of his field trials. This unit is used in small scale tests.

Q. What kinds of problems do growers face today?

Dr. Lee: One is the possible application of new regulations that will limit a grower's opportunities to try new compounds and new techniques. The grass seed grower is in a key role, when it comes to the environment. His crop is needed and wanted by the turf and forage industries, but he must have a measure of flexibility in herbicide use to be able to deliver seed. If we limit this flexibility, we cannot look for the quality seed that we have come to expect.

Q. Is the seed grower aware of this situation?

Dr. Lee: Many are not. They are accustomed to precision application of herbicides; they understand risk-benefit ratios in these applications. If broad spectrum herbicides or long-lasting herbicides were suddenly banned, a grower would be handcuffed in his program to deliver weed-free seed. The trend to eliminate some of the residual herbicides should be a matter of concern not only to seed producer and turf producer — but also the consumer who wants a weed-free lawn. Without these products, we could not keep the U.S. green and there would be no export of grass seed, which today is a flourishing, useful business.

Q. Any other problems on the horizon? What about Oregon's proposed ban on field burning of straw, after a crop is harvested?

Dr. Lee: This ban, now scheduled for 1975, has cast a shadow on the entire seed industry in the state. Quality is going to be a problem. Burning now helps to destroy most of the weed seeds in a field and creates conditions which are

favorable for herbicide activity. It also helps control disease and provide a means of disposing of crop residues. Seed growers have depended on field burning as a basic cultural practice. There is work on a mobile incinerator to make it possible to continue burning with much less smoke. We are exploring concepts for alternating crops in vegetable areas, but as of now, we have no real solution. Field burning has been needed — it is still needed.

Q. How long does it take to introduce a new idea to seed growers?

Dr. Lee: Four or five years are usually involved. We started our initial studies on charcoal seeding, for example, back in 1967; we have had a label on the idea with Karmex for two years, and much of our current program is still involved with this technique. The practice is quite widespread in Western Oregon, but it is still being developed east of the Cascades.

Q. What, then, are basic resources of the seed industry?

Dr. Lee: It comes down mostly, I think, to people. The industry is a complex one that uses a wide range of techniques just to control weeds, for example. In Western Oregon, we have a unique combination of physical elements, but we also have the people who have learned how to use these elements and their know-how is irreplaceable, when it comes to growing seed on 275,000 acres of land. The same situation applies in Central and Eastern Oregon, where another 25,000 acres of seed are grown each year. Our growers have a vast amount of experience in seed production. It is an extremely valuable resource. □

Shade Trees Symbols Of Freedom

International Shade Tree Conference Report



General chairman Daniel W. Warren, Jr. opens the 49th convention. More than 900 ISTC members and guests attended the Boston meeting.

"A Tree Party In Bean Town" turned out a record crowd as more than 900 delegates attended the 49th annual convention of the International Shade Tree Conference, Inc., in August.

This was the first time since 1960 that ISTC had met in Boston and the warm hospitality of the New Englanders prevailed throughout the meeting to make it a success. A program as varied in scope as the members who registered and yet as comprehensive in subject coverage as a professional spray job sounded the bass drum of realism for every speaker.

Although the local papers carried little, if any, reports as to the magnitude of the meeting, it is of interest to note that most arborists went home knowing much more about the environment, pesticides, disease control, physical damage of shade trees and a host of other important subjects. More specifically, the subjects discussed will likely play a decisive role in shaping events of the future for the arborist — and the general public.

Probably the hottest subject — and best attended — on the program was the Federal Environmental Pesticide Control Act

(FEPCA). Acting as interpreter between the Environmental Protection Agency (EPA) and the arborist was Hyland R. Johns Jr., Asplundh Tree Expert Co., Jenkintown, Pa. He cut through much of the bureaucratic language surrounding the new law and explained the act in common terms to the group.

Using two slide projectors and two screens, Johns reviewed the need for governing the use of environmental protection chemicals and the need for developing criteria to regulate the application of these products. He pointed out that about 70 percent of the population lives on about 3 percent of the land. Agricultural and forest land is being turned into parking lots, shopping center, housing and other uses at the rate of 1.2 million acres per year.

We've had control of the manufacture, registration and shipment of pesticides since 1947, said Johns. The new law expands this control to include users and applicators of these materials.

He pointed out that FEPCA is complex. When it was passed late last year (See WTT, Nov. 1972, p. 7), only certain parts became effective immediately. There was a specific timetable set up in EPA for

the rest of the law. This is:

- Jan. 21, 1973 — Publication of Disposal and Storage Regulations. Proposed regulations were actually published May 23, 1973; final version to be published near the end of the year.
- Oct. 21, 1973 — Publish standards for application certification; Publish regulations for registration of establishments.
- Oct. 21, 1974 — Promulgation of regulations governing classifications and registration of all pesticides.
- Oct. 21, 1975 — Deadline for state compliance on certification of applicators.
- Oct. 21, 1976 — Certification of applicators and registration/ (continued on next page)

News And Opinion...

By JAS

The afternoon session of the commercial and municipal arborists turned out to be rather lively. It opened with a speech on "Research Developments and EPA Regulations Affecting Dutch Elm Disease Control," by Dr. Charles L. Wilson of the Shade Tree Laboratory, a USDA funded institution in Delaware, Ohio.

Dr. Wilson drew his conclusions from research conducted by the Shade Tree Laboratory and studies at universities and labora-

tories. It is well-known that many tax dollars have been used to investigate pressure injection and Wilson has been a strong proponent of this method of injection over the low or no pressure injection.

He pointed out early in his speech that knowledge in the area of pressure injection is limited. Yet he said that this is where the action is today. "Up to now we have been letting the tree do the work of carrying ma-

terial," he said.

Ignoring the manufacturers of low or no pressure injectors, he affirmatively stated that high pressure "is the best way to get material into the tree. It beats the Mauget injector," he alleged.

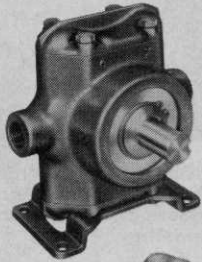
Yet Wilson could offer no proof or solid conclusions for his beliefs. He stated that currently there is no labelling for pressure injection of benomyl into trees. "Everything is experimental," he

(continued on page 46)

Hypro Pumps

for applying weed and turf chemicals

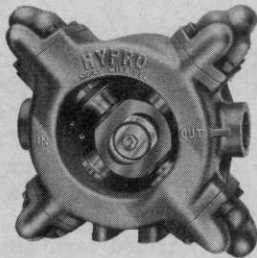
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Series
**C5210
BIG TWIN**
10 gpm (at 600 rpm)
400 psi pressure
also available with gas engine

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4-CYLINDER
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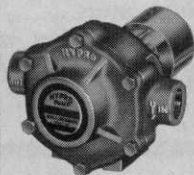
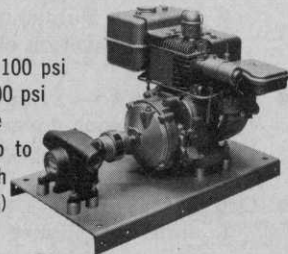
25 gpm output
at 600 psi



ROLLER PUMPS

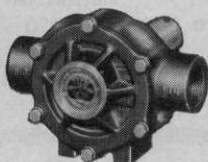
Series
GN6310R

6.9 gpm at 100 psi
5 gpm at 200 psi
3 hp engine
(develops up to
250 psi with
4-hp engine)



Series **7560
8-ROLLER PUMP**

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A colonial militia replete with fife and drum and honor guard demonstrated their authenticity during the opening session. The New England Chapter, ISTC, was host for this year's meeting.

reclassification of all pesticides.

Hyland Johns said that although this is a Federal law, it is basically designed to be administered by the various states. "Any state that makes a reasonable effort to comply with this new pesticide control act will be allowed to administer its own program," he said. "Many of the details have yet to be worked out at Federal and state levels. Guidelines are being written for benefit of the states, but they are not law — and they can be changed. Our job will now be to work with the states as they implement FEPCA."

The next day delegates toured the Arnold Arboretum, an expansive tree sanctuary. It is directed by Dr. Richard A. Howard. A cafeteria ap-

proach of activities surrounded the day. Commercial field demonstrations by allied manufacturers of equipment and chemicals were on display near the main gate of the Arboretum. Buckets, chain saws, chippers, sprayers, tree spades, and other power tools were demonstrated for arborists. Of particular interest was the new "whisper chipper" by Asplundh. Its noise emission is well under the maximum.

In addition, classes in Bonsai, poisonous plants, terrarium construction and maintenance, and other interesting programs were offered to men and women alike.

Bus tours of the Arboretum grounds were scheduled throughout the day.

In the session involving utility



Delegates visited with manufacturers of tree care equipment at the exhibit area. Exhibitors also demonstrated equipment at the exhibit area. Exhibitors also demonstrated equipment during the field day.



Supplier personnel and delegates exchange ideas about equipment needs. Operator safety and performance were stressed both at the static display and in the demonstration area.

arboriculture, Robert J. Kelly, regional representative of Detroit Edison Co. said that the business of starting and maintaining good public relations appears to be gaining interest. He mentioned that while public relations is being honest with yourself and your fellow man, the ultimate responsibility for the success or failure of a P. R. program lies with the firm's chief executive officer.

Kelly cited several instances where good internal relations — one key to external or public relations — built company goodwill. He also listed the ten commandments of human relations as a guideline to follow for a public relations program. They are: 1. speak to people; 2. smile at people; 3. call people by name; 4. be friendly and helpful; 5. be cordial; 6. be genuinely interested in people; 7. be generous with praise; 8. show consideration to others; 9. be thoughtful of other's opinions; 10. be alert to give service.

A panel discussion on rights-of-way clearing was held in the afternoon. Speaking on his experiences as supervisor of chemical programs for Penn Line Service, Inc. Scottsdale, Pa., John Lee Gillespie told the audience about some of the methods he's employed in removing brush from rights-of-way. He said that prior to burning bans, brush would be cut and burned and stumps would be disposed. But now different methods are used. He discussed in detail the use of tree chippers manufactured by Morbark Corporation. He also pointed out that most

rights-of-ways, once they are cleared, have their brush managed and controlled by means of herbicides. However, there is an increasing need in some areas for mechanical methods of brush control to augment these chemical methods, he said.

He mentioned his experiences with equipment such as National Hydro-Ax and Brush Hog as a means of keeping brush in check.

William J. Neidig, vice president, Asplundh Brush Control, Hamden, Conn. then talked about the changes in public attitude in the past two

decades. "Twenty years ago the announcement of a new transmission line was a symbol of prosperity," he said. "Today the announcement of a new transmission line is considered an encroachment on the environment."

Neidig said that about 3,600 electric utilities in the U. S. operate over 300,000 miles of overhead lines which occupy 4 million acres of land for rights-of-way. "With the demand for electric power doubling every ten years, it is estimated that approximately 100,000 miles of new

(continued on page 44)



F. Lewis Dinsmore, new ISTC president, proceeds to the rostrum during the opening session. He is followed by Daniel W. Warren, Jr., general chairman, and Dr. John A. Weidhaas, Jr. ISTC past president.

... most overhead jobs are within easy range of this 40ft. HI-RANGER's reach

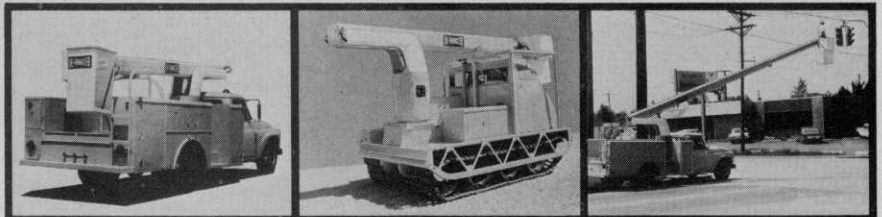


Lighting and signal maintenance and tree trimming men move up-around and in-out faster and safer with HI-RANGER Model 4E with fiberglass-insulated telescoping boom. 8'10½" low profile for over-the-road travel lets it go anywhere, and the operator is up to a maximum 40' working height in seconds. No outriggers are required with option of hydraulic torsion bar for rigid stability.

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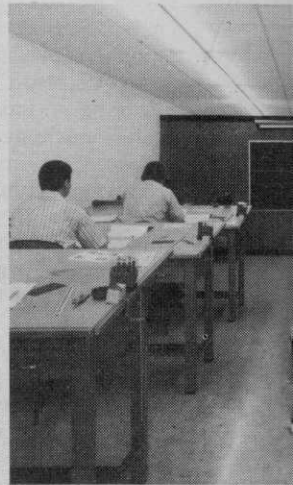
Over traffic or near power lines, HI-RANGER versatility demonstrates unique capability.



Students actually install an irrigation system as part of their training. Practical experience such as this is invaluable in understanding the problems installers have.



Sprinkler head assembly knowledge is important. These students may be faced with a head repair job. Knowing how to disassemble and repair a head may save many hours of work later.



Bruce Camenga discusses problems with sprinkler heads during the classroom. Students are limited to only a few student contact.

Irrigation University ... Teaching

IN MAY 1973 WEEDS TREES AND TURF initiated a two part irrigation survey among its readers. Part I was to golf course superintendents and Part II included parks and grounds superintendents, Weeds Trees and Turf commercial turfgrass managers, irrigation contractors, etc.

One of the most profound findings was that more of our readers are planning on installing underground systems themselves than ever before. Fifty percent reported they would do it themselves and 50 percent stated that they would have it installed. A similar study conducted by this magazine in 1970 showed that 80 percent would have the job done by someone else and 20 percent would do it themselves.

Why this sudden change? The answer is threefold: Dollars involved; people more aware of the mysteries of underground irrigation; and, poor design and function of installed systems. In defense of this latter statement, many systems have been installed on a dollar basis alone, whether the system was one of proper design or not.

The irrigation survey showed that the four major complaints of an underground irrigation system are: 1. lack of reliable water men to work manual systems; 2. poor design; 3. system not designed to cope with wind; and 4. broken plastic pipe and pipe joints.

In addition, it is a well-known fact that this industry is under the stress

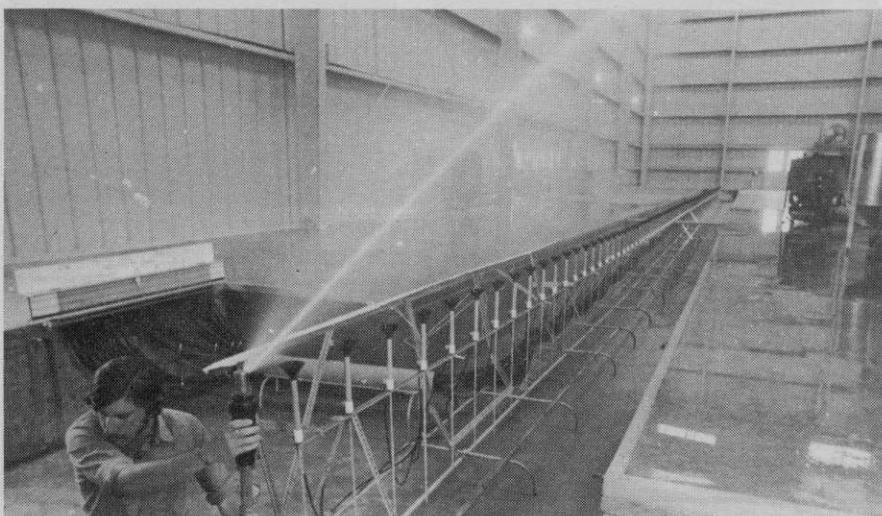
of tremendous growth. Witness the construction record of new golf courses, the conversion from manual to automatic irrigation systems on existing golf courses, openings of spacious shopping plazas and the increasing use of irrigation in parks and you will quickly see that the greening of America is no myth.

This tremendous rate of growth has not been matched by people who have the practical and technical skills. While experience in irrigation systems still is a good teacher, the pace of the market is such that few have time to benefit from this slow process. Extra emphasis placed on individual product sales has in some cases worked to the detriment of the industry as a whole.

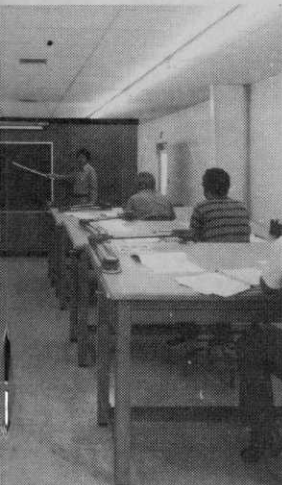
A degree of confusion floats about as to system names, sprinkler heads, controllers, valves, pipe, pressure, cost and as many as a score or more variables. With the number of variations possible from one manufacturer alone, a user could easily become confused and flustered in trying to design and implement a system.

Small wonder, then, that some architects, installers and even distributor salesmen tackle irrigation system design without complete knowledge of the problem at hand. They've all seen underground sprinkling systems that do a poor job of watering. Their only hope is not being forced to design one that duplicates an already bad mistake.

With this information in mind, WEEDS TREES AND TURF concluded that the greatest challenge facing the irrigation industry today



Inside the test facility at Toro is an elaborate hydraulic measuring device. Here, worker determines the dispersment of water over an area. Note hydraulic gauge at left.



placement and selection of instruction period. Classes students for greater teacher/



Designing an automatic underground irrigation system requires knowledge of heads, pipe, product strengths and weaknesses, special product features and design techniques.



Individual and small group classes give the student time to bring out individual problems. Bruce Camenga creates an informal atmosphere in his discussions and instruction.

ng Industry The Fundamentals

is in providing knowledge and practical training to individuals to cope with system design. This challenge has brought forth many new ideas. But perhaps the most unique is one developed by the Toro Company.

They, too, had been concerned with the widening gap of trained vs. untrained people. So a little over a year ago they formulated a plan which formed the cornerstones of an

industry-wide school on irrigation that is now starting its second year.

It's called "Irrigation University," and it is the only one of its kind in the country—or the world for that matter. What makes it different is that the course of instruction is built around the physical application of irrigation rather than product, product, product.

Toro states their reasons for start-

ing the university as: 1. knowledge of equipment, accessories and assembling must be correctly used to develop a system that does the job; 2. innovative features of product lines will reduce overall cost, when properly applied; 3. strengths and weaknesses of products is paramount for profitable success; 4. the need to extend knowledge to the in-

(continued on page 31)

Toro's 1973-74 Schedule Of Classes

Enrollment in technical training courses during the 1973-74 season is expected to be at least three times higher than last year, according to Bruce C. Camenga, manager of field technical training for Toro's irrigation division at Riverside.

He's expecting enrollment to exceed 175 in eight different courses, scheduled from now to next June.

Organization of the courses has been completely restructured to relate course content and class schedules to specific areas of irrigation interests, says Camenga.

Classes are scheduled for residential contractors, distributors management, distributor specialists, landscape architects, golf course architects, governmental designers, golf course superintendents, parks and grounds superintendents and college and

Classes scheduled include:

- Distributor specialists, a university instructors.

program for irrigation technicians on design for all markets. To be scheduled.

- Landscape architects, reviewing fundamentals of irrigation design and product applications for the commercial market, Oct. 29 - Nov. 1.

- Residential contractors, for the beginning contractor and new distributor personnel dealing with these contractors, Nov. 6-15 and Dec. 8-17, (two courses).

- Golf course architects, to review and strengthen the concepts of golf course irrigation design, Dec. 17-20.

- Governmental designers, to upgrade the skills of city, county, state and Federal agency irrigation designers, Nov. 27-29 and Dec. 11-13.

- Commercial turfgrass superintendents, including superintendents of parks and grounds, golf courses and other turfgrass areas. Course will bracket the annual

convention of the Golf Course Superintendents Association of America, Feb. 5-7 and Feb. 11-21 (two courses).

- College and university instructors, a course in hydraulic theory, design theory, product application and installation procedures for instructors who teach turf irrigation, Jun. 18-27 and Aug. 21-30. (two courses).

All of the courses will be held in Toro's new training and research center at the Riverside, California plant. All of the instructors are Toro personnel except for representatives of pumping equipment manufacturers and several invited guests.

Tuition is \$50 for three-day programs; \$75 for four-day sessions; and \$175 for the eight-day classes. No tuition is charged for college and university instructors.

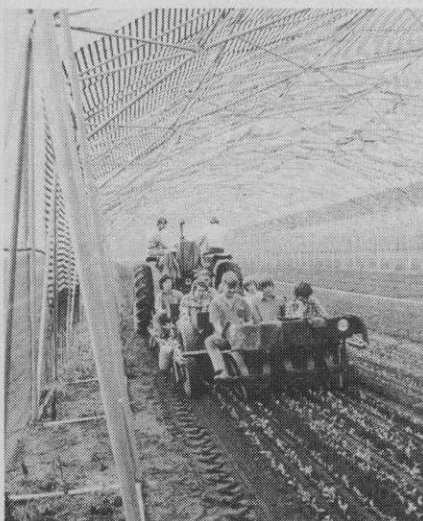
For more details about courses of instruction, circle (719) on the reply card.

Green Industry Newsmakers

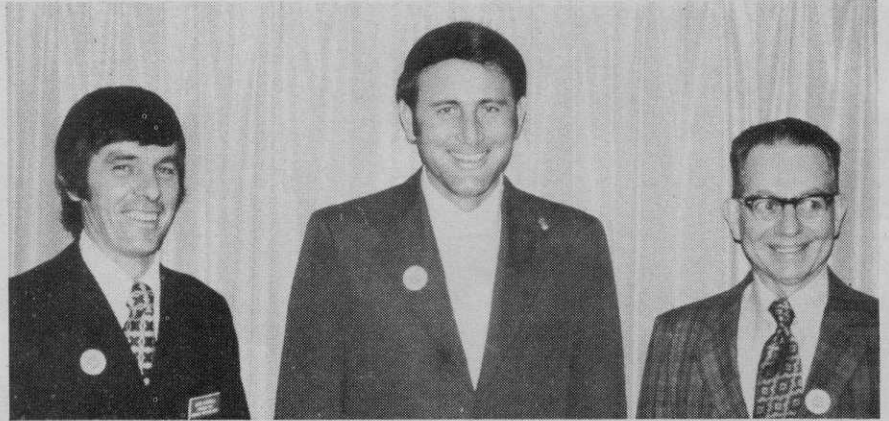
PEOPLE PLACES EVENTS



J. C. "Jake" Jacobsen (l) turns over the keys of his Tehachapi turf growing grounds to R. W. "Wad" Young of Nunes Turfgrass, Patterson, California. Nunes assumes ownership and operation of the Jacobsen Turf Farms. The move gives Nunes broader market coverage of California.



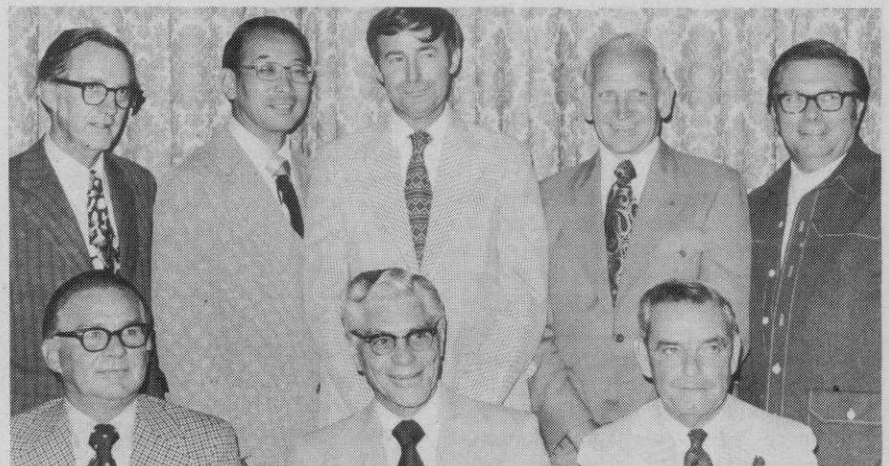
Look closely at the building surrounding this operation. It's designed and built by Space Age Industries, Grand Haven, Mich. Construction is two-inch steel tubing bolted together in rugged trusses and support towers. Covering is snow fencing and experimental shade cloth. Location is John Zelenka Evergreen Nursery and the building covers 10 acres of seedlings and rooted cuttings.



New officers of the Virginia Turfgrass Council are: (l-r) J. L. Kidwell, Culpeper, Va., president; Jack Henry, Richmond, Va., vice president; and Earl H. Odell, Chesapeake, Va., secretary-treasurer. New directors are W. P. Mooney, superintendent, Langley Air Force Base golf course, and David C. Harmon, superintendent, Golden Horseshoe and Spottwood Golf Course, Colonial Williamsburg.



Here's a typical early morning scene. Superintendent M. S. "Denny" Dennison (r) at Pines Country Club in Morgantown, W. Va., consults with spray operator prior to spraying greens for disease control. Constant checking on turfgrass conditions is part of the overall management needed by golf course superintendents.



The American Association of Nurserymen have named the following to the board of directors: Seated from left are Kenneth J. Altorfer, McKay Nursery Co., Wisc.; Harold S. Crawford, Willis Nursery Co., Kans.; Louis Hillenmeyer, Jr., Hillenmeyer Nurseries, Ky. Standing from left are Hugh Steavenson, Forrest Keeling Nursery, Mo.; Itsuo Uenaka, Cupertino Nursery, Inc., Calif.; Palmer W. Bigelow, Bigelow Nurseries, Inc., Mass.; L. J. Hilscher, Hilscher Nursery & Garden Center, Tex.; Ernest Tosovsky, Home Nursery Greenhouses, Inc., Ill.