Thick, smooth, green-carpet turf—with no beauty-marring blotches and bald spots—makes happier visitors, members and bosses, or better-satisfied customers. And you turn on more smiles per acre—easier—with advanced Velsicol job-tailored chemicals. Modern Velsicol chemicals give you precise, thorough control of almost every troublesome weed, insect or disease. They’re performance-proved—in the laboratory and on toughest turf jobs. Whatever your turf problem—grounds, parks, golf courses, or sod farm—you can depend on the big Velsicol family of advanced chemicals for the “right answer.” With more and bigger built-in smiles!

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HERBICIDES: Bandane® for crabgrass (and insect) control—Banvel® 4S, and Banvel + 2,4-D for weed control. INSECTICIDES: Chlordane for insect (and crabgrass) control. FUNGICIDES: Velsicol® “2-1”, Memmi® BEC, Thiban™ 75, Thiban-PMA, PMA 10, for disease control. FUMIGANTS: Pestmaster® Soil Fumigant-1 for greens renovation.

Write for Velsicol Turf Chemicals Catalog: Velsicol Chemical Corporation, 341 E. Ohio St., Chicago, Ill. 60611. Dept.GM
Introducing the NEW TURF-MAKER

— the most precise grass seeder made

Brillion's new Turf-Maker is for you — if you want to seed the finest grass seeds and lawn mixtures with miserly accuracy over large areas. It crushes, seeds and rolls in one pass—enables one man to seed up to 50 acres per day without extra help, equipment or seedbed conditioning. Turf-Maker gives you exclusive Micro-Meter adjustment for an infinite range of seed settings — Brillion fluted rolls, the most accurate seeding mechanism known — and the unique reversible sprockets for a dual range of rate settings. The results: Full, thick stands at up to 50% seed savings over conventional methods. It's the best for sod seeding.

You can order Turf-Maker in 8' and 10' seeding widths. Options include transport wheels for both sizes and 3-point Category II pick-up for the 8' model. Seed better — save more with Brillion. Mail coupon, r — 1

LANDSCAPE SEEDERS
— 3 sizes for heavy seeding rates — 5'4", 8' and 10', Drawbar and 5'4" and 8' pick-up models.

SMOOTH ROLLERS
— for smoothing humps and winter heaves in established turf. Single and triple gang models, 9' to 20' widths.

Insect Report

WTT's compilation of insect problems occurring in turfgrasses, trees, and ornamentals throughout the country.

Turf Insects
APHIDS
(Aphis spp.)
Arizona: Heavy in spots in Bermudagrass seed fields at Yuma Valley, Yuma County.

A BILLBUG
(Sphenophorus phoeniciensis)
Arizona: Adults light in uprooted Bermudagrass sod at Phoenix, Arizona, Maricopa County.

RHODES-GRASS SCALE
(Anoplocnemis graminis)
Arizona: Moderate in crowns of Bermudagrass on many properties in Phoenix, Maricopa County.

A SNAIL
(Ramula decollata)
Arizona: Feeding on dichondra lawn at residence in northwest Phoenix, Maricopa County.

Insects of Ornamentals
A CONIFER APHID
(Cinara tujafilina)
Alabama: Moderate to heavy on several 4- to 6-foot arborvitae planting; honeydew heavy.

AN ERIOPHYID MITE
(Calacarus adornatus)
Alabama: Light on numerous camellia plants in central area; up to 100+ per leaf damaging few plants.

HEMISPHERICAL SCALE
(Saissetia coffeae)
Florida: All stages severe on 3,000 coontie plants, Zamia floridana, at Tampa, Hillsborough County.

A PIT SCALE
(Cerceris deklei)
Florida: Adults severe on stems of 342 of 427 hibiscus plants at nursery in Miami, Dade County.

A SOFT SCALE
(Erythorina cupressi)
California: Moderate on juniper nursery stock in Sunland, Los Angeles County.

CUBAN-LAUREL THRIPS
(Gynaikothrips ficorum)
California: Moderate on Ficus retusa in San Francisco, San Francisco County, for a new county record. This is most northern find in State.

Tree Insects
BARK BEETLES
(Dendroctonus terebrans)
Alabama: Adults and larvae inactive, 1-10 per tree, under bark of twenty 10 to 25-year-old loblolly and shortleaf pines at Lee County home. Texas: Total of 330 D. terebrans-infested trees treated in Davy Crockett and Angelina National Forests October through December. D. frontalis decreased to negligible level October through December. Total of 31 multiple-tree spots found over 4.5 million acres during detection flights in October. Total of 66 infestations involving 4,531 trees controlled by mid-November. D. brevicomis light in ponderosa pine stand in western area in October through December. Ips avulsus, I. grandicollis, and I. calligraphus activity continued heavy October through December. Losses heaviest in southeastern area; up to 25 percent tree mortality in localized areas.

Compiled from information furnished by the U. S. Department of Agriculture, university staffs, and WTT readers. Turf and tree specialists are urged to send reports of insect problems noted in their areas to: Insect Reports, WEEDS TREES AND TURF, 1900 Euclid Ave., Cleveland, Ohio 44115.
Woehrle estimates that his bent is approximately 80%, and the bluegrass 5%, with the Poa Annua occupying about 15%. Ted states, “This isn’t bad, considering that we were in the program less than a year.”

Ted noticed more kill both to the Poa Annua and the permanent grasses in low poorly drained areas. Ted believes that the grass dies because of lack of oxygen. Drainage has been improved with the installation of slit trenches filled with pea gravel.

During the summer months the Poa kept fading and the desirable grasses continued to fill in the voids. After a time it became apparent that Ted might have to control the loss of Poa in order to have turf cover for the Western Open in August. He sprayed on a soluble product 12-48-6 and was able to save his Poa through tournament time in August. On Sept. 11, 1967, Ted applied 2 pounds of 85% tricalcium arsenate per 1000 sq. ft. This last application provided a noticeable reduction in the vigor of the Poa Annua. Woehrle suggests that you never attempt to seed grass into a heavy thatch condition with a drill seeder. He believes that the aero blade is better because it brings up some soil for a suitable seededb.

The rate of kill can be controlled with the use of liquid soluble phosphates. Good drainage is a must! Good public relations are a must. The members must be told that the course is going to look bad for a year or two. Aerification and thatch reduction are necessary.

**Case History Analysis:**

1. The granular form of tricalcium arsenate, because of safety and ease of application is suggested.
2. Good management practices should be followed, such as surface drainage, aerification, thatch removal and repeated overseeding.

Avoid applications on frozen ground.

3. Plugging, sodding or vegetative improvement may be needed. Emergency use of liquid soluble phosphates may be used to control the rate of Poa Annua kill.

4. Low or no phosphate fertilization should be followed prior to and while controlling Poa Annua.

5. Light split applications should be followed to avoid objectionable dead spots and retarted overseeding.

6. Suggest start applying 6 to 10 pounds of 48% tricalcium arsenate granular spring and fall applications until toxicity is achieved. This will vary between 24 and 32 pounds per 1000 sq. ft. depending upon the soil type, soil pH, and soil phosphate level. This program should then be maintained annually with 2 to 4 pounds applied either spring or fall.

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**Editor’s Note:** Dr. William H. Daniel, Turf Specialist, Purdue University, has worked closely with Mr. Kerr in assessing the problems which beset turf areas containing Poa Annua. Dr. Daniel assisted Mr. Kerr in editing the material presented here.
Calibrate Sprayers
(from page 10)
determine manpower distribution for spraying programs. This formula calculates the number of acres sprayed in one hour. The formula to determine this factor is as follows:

\[
Y \times \text{MPH} = \text{APH} \\
8.25 \quad \text{(constant)}
\]

With the symbol Y, representing the boom width in feet, we multiply the ground speed (MPH), divided by the constant 8.25. The product is the APH, or acres sprayed in one hour.

As an example, let us say you are using a Model 308 John Bean Duoflex Boom which has 13 nozzles spaced at 20 inches and provides a spray swath of 21 ft. 8 inches or 21.67 ft. You have decided on a spray program which requires a ground speed of 4 MPH. This would be your calculations:

\[
\text{APH} = \frac{21.67 \times 4}{8.25} \\
= 86.68 \\
= \frac{86.68}{8.25} \\
= 10.5 \text{ acres per hour}
\]

Calibrating sprayer equipment is important in your overall operation. Experiment stations and turf advisors should be consulted for their recommendations before a spraying program is started. If their recommendations are followed faithfully, your spraying program will be successful. If not, the best sprayer made cannot do the job for which it was intended.

Another important point to consider is the choice of spraying equipment. Be sure the sprayer has sufficient capacity to carry out your full program. Make sure it has a tank and piping system which are protected against the ravages of modern day chemicals. Be certain it has a good filter or ample capacity; plugged nozzles will upset your rate of application. Be doubly sure it has a pump that can withstand abrasive and corrosive chemicals you will be using. It should have an accurate and reliable pressure gauge and pressure regulator or relief valve. Make sure also that the boom is protected inside against rust and corrosion.

Buy your sprayer from a reliable source, preferably your turf equipment supplier. He has access to factory warranty and service programs which can be very helpful. Take good care of your spraying equipment; keep it in good condition. Periodically check nozzle capacities. Follow closely the recommendations of your turf advisors, and your spraying program will be successful.

Pit Scale Control
(from page 22)

A pesticide free from phytotoxicity. Apparently certain environmental stresses on trees such as excess or deficient soil moisture, or root disease, have an important bearing on the likelihood of foliage injury following the application of a spray chemical. None of the trees, however, showed subsequent symptoms of leaf injury when the treatments were made before bud break. Unfortunately, these California trials indicate that applications made between late April to early June, when trees are in a foliated condition, result in more effective pit scale control than applications made in the late dormant stage. As is the case with many scales, maximum control apparently is contingent on application of the insecticide when the insect is in the vulnerable immature stage.

New Adjuvants
(from page 33)

which may be a 30 or 55 gallon drum.

Development of these application adjuvants when used with the Bi-Vac Inverter have many advantages over straight solutions or conventional emulsion applications. Through the Stull system, the spray mixture becomes a water-in-oil emulsion. The advantages over oil-in-water emulsions include less evaporation, more uniform droplet size, ease of control, and greater leaf penetration. Users also report reductions in run-off, spray drift and application costs.
**THE TURF RACK**

**THE FLAT BED**

**CHIP-CAL GRANULAR**

**Start Your Poa Annua Restriction Program**

Poa annua need not be a problem. Economical applications of Chip-Cal Granular will gradually eliminate it. Desirable grasses fill in and take over completely. No bare spots are left to mar the beauty of your turf.

Start your Poa annua elimination program this spring. Treatments also prevent crabgrass and control chickweed.

Many golf course superintendents and other turf management specialists have experienced excellent results with Chip-Cal Granular.

For additional information write:

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**WEED CONTROL**

**WEEDS TREES AND TURF, March, 1968**