USDA Bans DDT in Four Categories

DDT registration is now cancelled in four general categories of use described as "non-essential" and "not in the public interest."

These categories are:

1. All uses on shade trees, including elm trees for control of the elm bark beetle which transmits Dutch Elm Disease.

2. All uses on tobacco.

3. All uses in or around the home except limited areas for control of disease vectors as determined by public health officials.

4. All uses in aquatic environments, marshes, wetlands, and adjacent areas, except those which are essential for the control of disease vectors as determined by public health officials.

The cancellation of federal registration took effect Dec. 25, or 30 days from the announcement by the pesticide regulation division of USDA's Agricultural Research Service.

Manufacturers, formulators and distributors were directed that "such uses are no longer considered to be in compliance with the provisions of the (Federal Insecticide, Fungicide, and Rodenticide) Act." The directive said withdrawal or relabeling is not considered necessary for products already in channels of trade.

ARS officials say the announcement was an indication that ARS planned to ban all "nonessential" uses of DDT. Exceptions, a USDA release stated, will be made only where DDT is needed "for prevention or control of human disease and other essential uses for which no alternative pest control means are available."

Action on the cancellation of nonessential uses is expected to be completed by the end of next year, the release continued.

Persons desiring to submit written data, views, or arguments regarding the proposed cancellation, USDA said, should file them with the Directors, Pesticides Regulation Division, Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C. 20250. All submissions must be made no later than 90 days after publication in the Federal Register. (That makes the deadline Feb. 25, 1970.)

or skipping. The color, however, quickly disappears into the lawn on watering, or as a result of dew or rain.

4. Can be manufactured in low-cost, bulk-blending plants with substantial manufacturing cost savings over conventional processes. This can, in turn, lead to possible freight savings due to ease of manufacture near point of sale.

5. Formulation can be quickly changed in the manufacturing process to obtain various grades of fertilizer.

Results of the Tests

After development, Georgia Tech field-tested a 20-10-5 formulation of the new fertilizer in which the nitrogen was all in a water soluble form. The tests were conducted in the Southeastern part of the United States. The 20-10-5 formulation was chosen because it was considered typical of lawn and garden requirements. The field tests revealed that the new fertilizer flows well from cyclone or roll type spreaders, providing even distribution. They also found that it does not cake in the spreader and is not prone to blow in a light breeze.

Most important, tests showed that the new fertilizer does not burn at 2 pounds of nitrogen per 1000 sq. ft. (normal application for grass is 1 to 2 pounds of nitrogen per 1000 sq. ft.), and that the grass treated was deep green in seven days—was still green after 4 weeks.

While applying the fertilizer in a cyclone-type spreader, it was noted that on occasion it tended to bridge in the spreader. This minor problem was overcome by hitting the spreader with the hand, or by bending or extending the existing scraper wire.

Storage Tests

In order to determine shelf life and other marketing factors, the bagged product from the production test run was stored in an Atlanta warehouse 12 bags high for six months. After six months, bags were taken from the bottom of the pile and dropped from waist-high two times, once on each flat side. The bags were then cut open for examination. No evidence of caking.

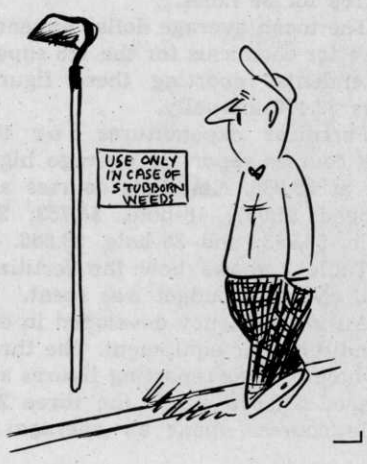
Bags stored in the laboratory at Georgia Tech show no caking after a year.

Manufacturing

Feasibility of commercial production was proved in a fertilizer bulk-blending plant utilizing a "one-ton" rotary mixer. This is a 56-in. long by 66-in. diameter rotary horizontal mixer rotating at 13 rpm. The unit was driven by a 10-hp motor. There were lifting flights inside the mixer. The water spray pipe was inserted horizontally into the center of the mixer and rotated so that it discharged at a 45-degree angle downward onto the bed of material. Water was supplied from an air pressure tank and was discharged into the mixer through a Spray Systems Company (Chicago) ¼-in. BSS8 Whirljet nozzle. It was found that this method worked well, achieved a satisfactory blend and resulted in no production problems.

The selection of raw materials for this new fertilizer blend is important, particularly with regard to particle size but also, of course, as to chemical makeup of the particulate matter.

Raw materials required for a 2,000-lb. batch are: 478 lbs. diammonium phosphate fines, wet process, 18-46-0; 720 lbs. white fine crystalline urea, 45%N; 164 lbs. solution grade potash, 62% K_2O; 14 lbs. 200-mesh bentonite; 524 lbs. expanded perlite; and 100 lbs. water.



WTT Surveys Costs Of Golf Course Upkeep

It's an immensely expensive task to provide the entertainment of golfing — which probably comes as a surprise to nearly everyone but those involved with course maintenance.

Questions of how expensive and what constitutes the expense were answered this summer in a golf industry survey conducted by this magazine. A computer random sampling of the more than 6,000 golf course readers of WEEDS TREES and TURF provided the inside look on golf course maintenance costs.

Eighteen-hole courses constituted nearly two-thirds of the courses reporting. Their maintenance budgets average $65,123. The nine-hole courses averaged $27,550. Three 27-hole courses averaged $111,666 and three 36-hole courses, $143,666.

As could be expected, labor accounted for more than half (56.8%) of the budget. About 11% went for equipment, 7% for fertilizer, and 4.4% for chemicals.

A significant cost break is evident between the nine- and 18-hole courses, apparently reflecting more professional management and upkeep for the latter. Fertilizer, chemical, labor and equipment expenditures for 18-hole courses were three and four times greater than for the nine-hole courses.

A considerable difference in total maintenance budget was discovered for 18-hole courses. Budgets varied from $25,000 to more than $100,000 (See Table I).

Average expenditures for chemicals were $703 for nine holes; $3,009 for 18 holes; $5,600 for 27 holes; and $5,166 for 36 holes.

The mean average dollar expenditure for chemicals for the 128 superintendents reporting these figures was $2,470 annually.

Fertilizer expenditures for the 128 courses reporting average higher, at $3,986. Nine-hole courses averaged $1,097; 18-hole, $4,753; 27-hole, $8,983; and 36-hole, $8,666.

Table 2 shows how the fertilizer and chemical budget was spent.

An inconsistency developed in expenditures for equipment. The three 36-hole courses reporting figures averaged $13,666, while the three 27-hole courses spent an average of $20,750. Averages dropped considerably for 18 holes — $6,862 — and for nine holes — $2,232.

Average dollar expenditure for new and replacement equipment for the 124 superintendents reporting figures was $6,286.

Equipment inventory for the average course looks like this: one aerator, one earth auger, one dozer, two granular chemical applicators, one liquid chemical applicator, two turf combs, one disk cultivator, one field drill, one fumigant applicator, one grader, one turf blower, one leveler, one backpack mistblower, one truck-mounted mist blower, 13 mowers (one flail, three gang, six reel, two rotary and one sickle bar), one dethatcher, one soil proportioning system, one chain saw, one soil shredder, one sod cutter, two seeders, two sod pluggers, 11 sprayers (one boom, one bifluid two cart or wheel-barrow type, one compressed air, three hose end, two knapsack, and one mobile turf), three tractors, 16 electric carts, eight gasoline carts and one vertical turf slitter.

Private courses accounted for 41.3% of the total; public, 34%; and semi-private, 24.7%. Nearly a third of the courses were on acreages between 101 and 150 acres. Better than 20% were between 50 and 100 acres; another 20% between 151 and 200 acres.

The average labor expenditure of $32,236 went for five year-around employees and six part-time employees. Only 16% of the courses reported that uniforms are required for employees, but in 96% of these instances the club paid for them.

Watering systems look like this: Greens — 70% are hose and/or quick coupler, 6% sod cup, and 24% automatic; tees — 82.5% are hose and/or quick coupler, and 17.5% automatic; fairways — 82.2% hose and/or quick coupler and 17.8% automatic.

Irrigation water came primarily from wells, lakes, or city supply sources. Nearly 32% of the superintendents reported they tested water before using it on the courses. Water pressure for most courses was from 70 to 150 lbs./sq. in.

TABLE I. GOLF COURSE BUDGETS

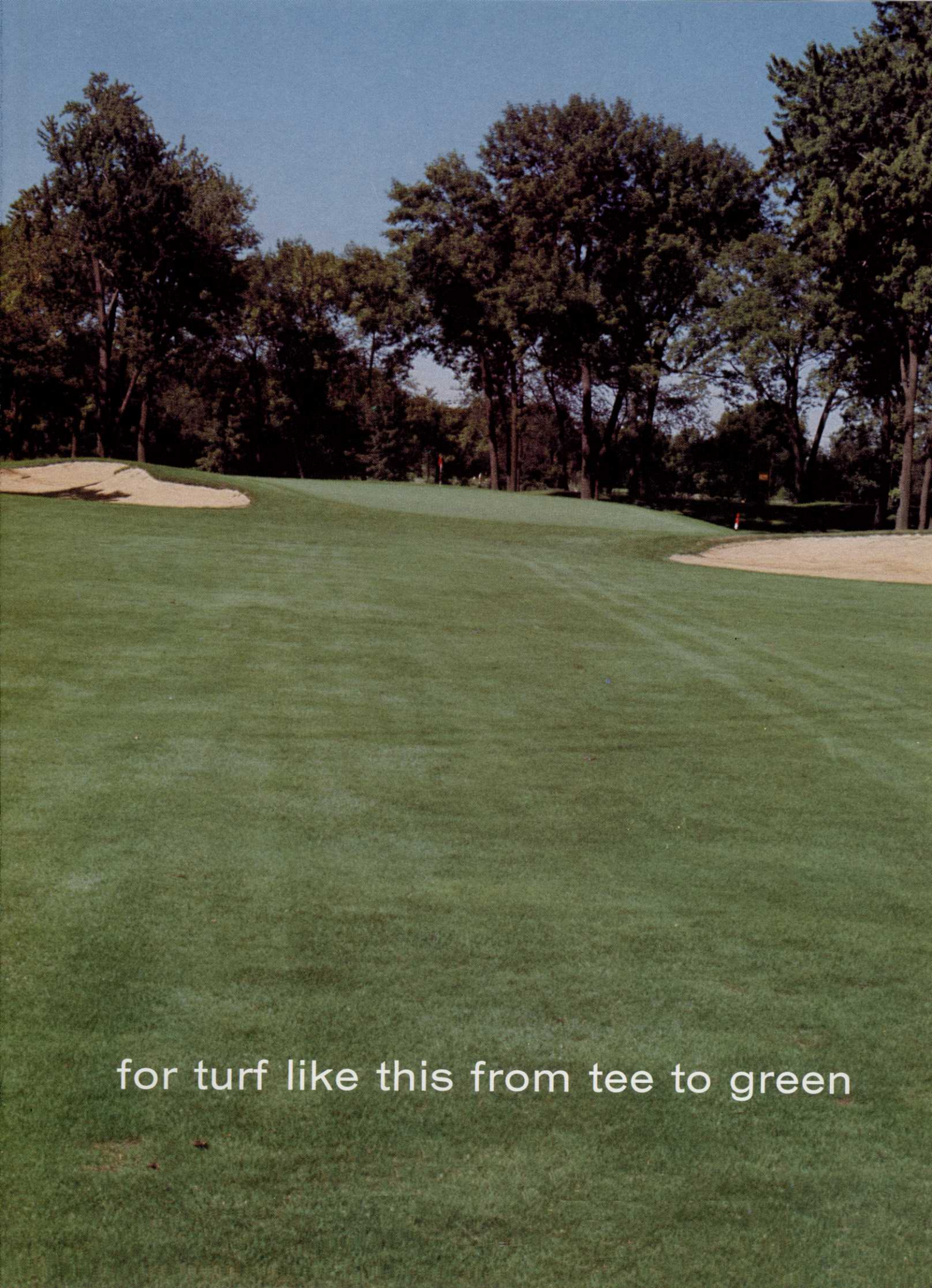
Budget	Number Reporting 9 holes	18 holes	27 holes	36 holes	Other*	Percent**
Less than $10,000	6					4.4%
$10,000-$24,900	7					5.2%
$25,000-$34,900	16	14				22.5%
$35,000-$49,900	7	8				11.0%
$50,000-$74,900	3	25				20.9%
$75,000-$99,900	1	21	1		1	18.0%
$100,000 or more		19	2	3		18.0%
Total	40	87	3	3	1	100.0%

*A 27 hole course plus seven practice holes.
**Based on average budgets of courses in each budget category as reported by 134 respondents answering the question.

TABLE II. FERTILIZER AND CHEMICAL 1969 EXPENDITURES

	Number Users Reporting	Total 1969 Expenditures	Average Per User Reporting
Fertilizer	111	$322,914	$2909
Broad-leaf weedkillers (Post-emergence)	95	35,064	369
Post-emergence crabgrass/ poa herbicides	47	13,806	298
Pre-emergence crabgrass/ poa herbicides	47	23,478	500
Fungicides	97	111,940	1154
Growth retardants	13	2,675	206
Insecticides	82	24,710	301
Soil amendments	34	13,855	408
Wetting agents	41	11,611	283
Turf dyes/colorants	18	1,580	88
Soil fumigants	14	4,705	336
Peat moss	24	7,865	328

* Based on the number of respondents who answered each segment of this question; a total of 150 golf course superintendents returned questionnaires.


for turf like this from tee to green

follow the

TUCO Acti-dione®

fairway spray program

The same antibiotic fungicide proven for years on golf greens *at hundreds* of courses now provides a program for economical treatment of fairways.

NOTE: The cover photo, the untreated fairway at left and the closeups below were all taken the same day in August, 1968, at courses less than 40 miles apart. All are unretouched. Below left is bluegrass; right is bent grass.

why a fairway disease control program?

1. Golf course superintendents set increasingly demanding standards for themselves to provide superbly conditioned courses regardless of weather and other obstacles.
2. Demand by golfers for high-quality turf at all times. They want the good lie for fairway woods and iron shots.
3. Growing numbers of golfers increase this pressure, and increased traffic is too much of a challenge for anything less than healthy turf.

why Acti-dione® for a fairway spray program?

The use of Acti-dione Ferrated or Acti-dione RZ has demonstrated effective, economical control of many turf diseases when combined with good management practices.

Acti-dione Ferrated is a formulation of the antibiotic Acti-dione and Ferrous Sulfate designed for the control of specific turfgrass diseases. Acti-dione RZ is a broad spectrum turf fungicide formulation containing the antibiotic Acti-dione in combination with PCNB. Both products are used in a preventive and eradicative treatment program for:

Kentucky Bluegrass-leafspot, going-out, and melting out
Merior Bluegrass—rust, fading-out and powdery mildew
Bentgrass—dollarspot, melting-out and fading out.

how to use Acti-dione® in a fairway spray program

Acti-dione may be applied as a spray with a conventional boom sprayer or with a broadcast boom jet spray nozzle. The Acti-dione spray should be allowed to dry in the grass—do not water in.

Your fungicide program should begin in the spring as soon as possible after the first mowing. Succeeding applications should be made as often as necessary throughout the growing season. Usually an interval of 21-30 days between applications will maintain satisfactory control. The recommended rate of Acti-dione Ferrated for fairway disease control is one package per acre; the recommended rate of Acti-dione RZ is 1.5 pound per acre.

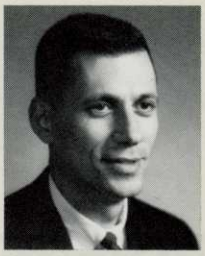
Prepare a fresh solution each day spraying is done; use at least 30 to 40 gallons of water per acre. For severe disease infestations, increase dosage rate of Acti-dione Ferrated to two packages per acre. If you are using Acti-dione RZ, one package of Acti-dione Ferrated per acre may be added as a tank mixture to increase effectiveness.

When mixing Acti-dione for fairway spraying:

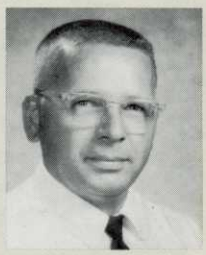
1. Fill the spray tank ½ full with clean water
2. Start agitator and add the recommended amount of Acti-dione for the number of acres you plan to spray
3. Add remaining water while agitator is running

For sprayer calibration, request our Acti-dione sprayer calibration guide.

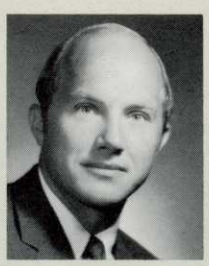
When it comes to turf problems—



STANLEY CAPLAN has a B.S. in agriculture from Delaware Valley College of Science and Agriculture in Doylestown, Pennsylvania. Stan has had several years of experience as a manager and buyer of nursery and garden supplies for a large company in California prior to joining TUCO in 1965.



HENRY LYON graduated from Cornell University with a major in ornamental horticulture. He has a broad agricultural background which includes wholesale sales and garden store management. Henry has been with TUCO since 1964.



ROBERT SCOBEE was raised on a golf course (his father is a superintendent). Bob graduated from Purdue University with a degree in agronomy. Former secretary of the Indiana Golf Course Superintendents Association, Bob is a member of the Golf Course Superintendents Association of America. Bob has been with TUCO since 1965.

THESE MEN UNDERSTAND AND CAN HELP!

TUCO realizes maintaining healthy, top quality fairways, tees and greens is far from easy. That's why this outstanding team is available to help you with your turf growing problems. Just a call will put one of these highly trained and experienced men to work for you. TUCO has the products and the personnel to do the job.

CARMEN BOONE is a native of Arkansas and studied at Arkansas A & M College. He has a broad agricultural background and has had experience in the agricultural equipment field. Carmen joined TUCO in 1968.

CARL MARTIN is a graduate of Texas A & M University with a degree in entomology. Carl is exceptionally well versed in the field of Entomology. He is a member of the Entomological Society of America and has been with TUCO since 1964.

ROBERT LIPPMAN is an honor graduate of Pennsylvania State University's turf management course. While attending college, Bob was awarded a scholarship and certificate of merit from the Golf Course Superintendents Association of America and has had actual field experience as a golf course superintendent. He is a member of the Metropolitan Golf Course Superintendents Association and the Hudson Valley Golf Course Superintendents Association in New York state. Bob joined TUCO in 1967.

TUCO

DIVISION OF THE UPJOHN COMPAMY, KALAMAZOO, MICHIGAN 49001

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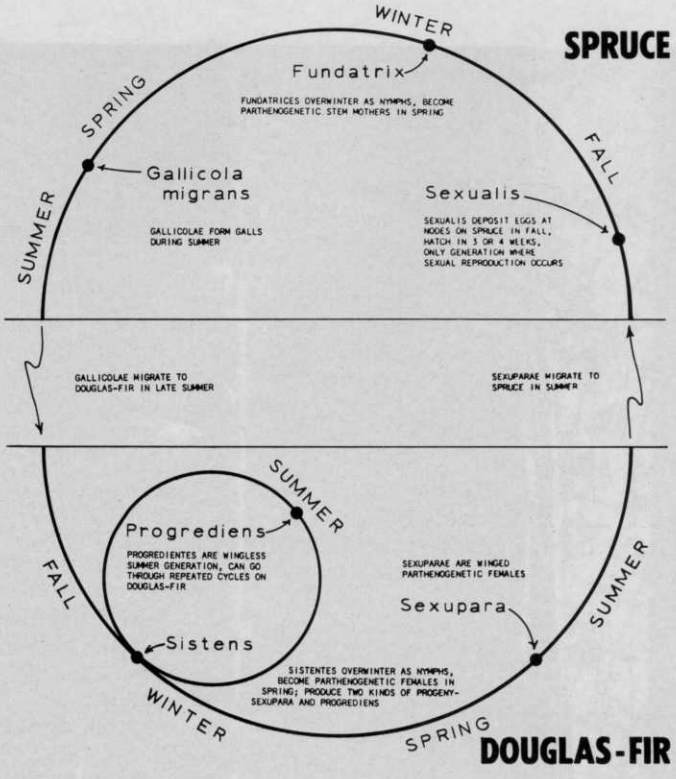
How to Control the

Cooley Spruce Gall Aphid

By J. L. SAUNDERS, entomologist
Washington State University
Puyallup, Wash.



THE COOLEY spruce gall aphid, *Adelges cooleyi*, is both literally and figuratively a "wooly" problem on Douglas-fir and a "galling" problem on spruces as it is a challenge to people involved in pest control.

Most broadspectrum insecticides presently used for general pest management do not adequately control adelgids. Poor control is usually related to incorrect timing or treatment inadequacies that yield marginal control and thereby perpetuate the problem year after year. Increases in infestations have been noted where an insecticide is used that is selective for parasites and predators but does not kill the pest.

There are several reasons why the adelgids (more commonly known as "woolly aphids," "gall aphids," or *"Chermes)* present such a perplexing problem and nearly all of these reasons involve a lack of understanding the pest. The adelgids are not true aphids and are not killed by some of our accepted aphicides. Their biology is among the most complex of all insects and at least a rudimentary knowledge of the various forms and life cycles is needed to formulate a control program.

The Cooley spruce gall aphid has at least five different morphological forms and requires two years and two host plants for these forms to complete their cycle. In addition to this "normal" cycle, there is a special form on spruce and another on Douglas-fir that, under some conditions, can live indefinitely on one host by producing progeny identical to the parent and thereby perpetuating its own kind. By piecing together bits of information from various sources and from our own knowledge, the life cycle may be presented generally as shown above.

Fortunately, it is not necessary for us to understand all of the intricacies of this cycle. With either host it is only necessary that we time spray applications to coincide with, or be just prior to, bud break. Properly timed applications kill the young nymphs when they are unprotected.

Attack on Douglas-fir is restricted to the needles and is usually most severe when the trees are young, i.e. in the "thicket" stage such as occurs in Christmas tree plantations. Severe damage occurs in the early spring when young nymphs attack and distort the newly elongating needles. Damage to spruce is most noticeable as cone-shaped galls formed by swelling of stems and needle bases. These galls are manifestations of host response to pest feeding. Nymphs are enclosed in chambers inside the galls and there is no known practical way of controlling the pest in this stage.

During 1967 and 1968, sprays, soil granules and bark paints of several pesticides were tested for Cooley spruce gall aphid control on Douglas-fir in western Washington. Thiodan (endosulfan) gave excellent control and is presently being recommended to Christmas tree growers, nurserymen and other professional people involved in pest management. Baygon also effectively controlled the pest both as a spray and a bark paint, but this product is not yet registered for use on ornamentals and Christmas trees. Several systemic insecticides were applied as bark paints to the basal portion of trunks. Baygon and Meta-Systox-R (oxydemetonmethyl) both gave good control when applied at one gram actual toxicant per inch diameter at the tree base. It should be noted that Meta-Systox-R spray at the same rate of actual toxicant per tree did not give significant control. If only a few trees are to be treated or if spraying is undesirable, apply- or if spraying is undesirable, bark paint might well be justified.

General coverage sprays with 0.5 lbs. actual Thiodan per 100 gal. water applied in the spring controls the young nymphs and is presently the most practical approach under most conditions. The trees should be sprayed to runoff and care taken to obtain complete coverage.

For More Details on Preceding Page Circle (109) on Reply Card

For More Details Circle (114) on Reply Card

Huge Park Protects

Land of the

By Grover Brinkman
Okawville, Ill.

WITH A FEW strokes of an executive pen, recently, a very impressive segment of the American landscape was saved for posterity.

Signed into law were bills creating the following: A two-unit, 58,000-acre national park in the towering coastal redwoods area of northern California;

A 1.2 million-acre park, wilderness and recreation area in the North Cascades of Washington, the heartstone of which would be the 504,000-acre North Cascades National Park;

A National Scenic Trails system; and

A National Wild and Scenic Rivers System.

Approval of this package of "preserve America" bills was greeted as a great achievement by conservationists and naturalists all over America, interested first in saving our redwoods forests from commercial exploitation by lumber companies.

Creating a Redwoods National Park has been proposed in one form or another for more than a century, but was never brought into full focus. Now it is a reality in the year 1969.

Quoting former President Johnson: "The park created by the bill will stand for all time as a monument to the wisdom of our generation. In preserving the redwoods, we have rescued a magnificent and meaningful treasure from the chain saw."

The 58,000-acre National Redwood Park contains some of the largest and oldest redwoods in the northern California coastal range. For 50 years, the Save-the-Redwoods League has attempted to get this legislation passed.

The core of the authorized Redwoods National Park consists of three state parks, Jedediah Smith, Del Norte Coast and Prairie Creek, all near the coast in northern California.

Gratifying additions of virgin forest, notably on Lost Man Creek, Little Lost Man and to a lesser extent on Mill Creek have been made. The area of "The Tall Trees," and a scenic corridor along the Pacific Ocean have been assured of preservation as well.

Some of the federal acquisitions

Tree Giants

consist of cut-over lands on which in the centuries ahead second-growth forests will ultimately mature. This is important for watershed protection.

There is much yet to be done, according to the conservationists. But what is now under federal and state protection is an impressive nucleus for the ultimate ideal Redwoods National Park of wide domain. Although many of the big trees are already gone, this will stop the lumberman from cutting on land now protected by the government.

The Sequoias (or Redwoods) known the world over for their size and beauty, grow only in California and the southwest corner of Oregon. Yet the paleobotanist tells us that at one time they were widespread in the northern hemisphere including eastern Oregon, Yellowstone Park, some of the Rocky Mountain region in Canada, England and western Europe.

The giant Sequoia is known for its extremely large diameter, and its great age, probably 3,500 years for the very large trees. It overtops the pines, firs and cedars with which it grows. Some of these trees are 300 feet tall.

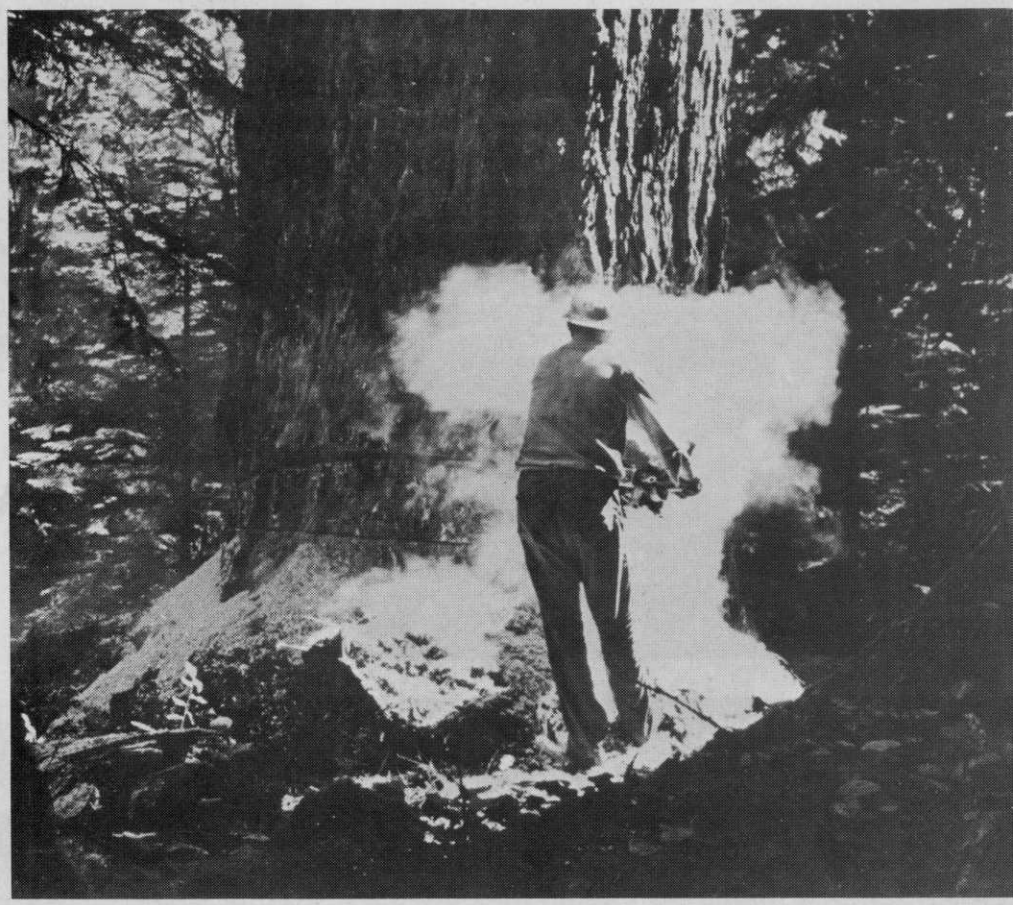
The coastal redwoods average smaller in diameter but exceed the Sequoia in height. The National Geographic Society has measured a redwood 367.8 feet tall, and since then even a taller tree has been found.

The giant Sequoias are largely in public ownership, protected in three natural parks, a state park, and in the national forests. Now the move is on to stop further waste of the redwoods remained. Some conserva- privately owned tracts.

Several years ago an estimate was made that 300,000 acres of virgin Redwoods remained. Some conservationists today believe the figure has dwindled to the 200,000-acre mark.

Fog is necessary for the growth of the redwoods, scientists say. Oldest tree checked in the coastal area of California by ring count is about 2,200 years old. To cut a giant of this size and age means it will take another two thousand years to reproduce it in like size.

That is the challenging thought that prompted Senate Bill 2515, preserving many of these old trees.



THIRD ANNUAL

N-TRIPLE A FLY-IN

Fifty companies exhibited for the third annual National Aerial Applicators Conference, Dec. 7-10 in New Orleans. Upper left, perhaps the best pulling power was the wives of Aeromotive International representatives, Sarah Hooker, left, and Linda Steele. Linda's husband, Bill, left and behind the women, is talking with Tom C. Ewing of Valley Flying Service in Mississippi. Upper right, Don Chase of Villisca, Ia., looks over the award-winning booth of Dusters & Sprayers Supply, Inc., Chickasha, Okla. The noon luncheon shows most of the more than 600 attending. Lower right, Tom Campbell, left, Dow Chemical, explains the new perticulating agent Norbak (it cuts down on spray drift), to Richard Green of Buckingham, Ia. In the background is Jim Welton, also of Dow.

Aerial Applicators See Increased Safety Indispensable in 70s

SOME 600 aerial applicators were grounded, but active, in New Orleans four days in December. Their out-of-cockpit mission was to consider together how they might achieve greater "Safety in the Seventies."

Safety is to be pursued at the broadest level of its definition, indicated William Marsh, president of the National Aerial Applicators Association, as he opened the group's third annual conference.

Our aim should be, he said, "to pay more attention to the health and welfare of the general public." This increased effort is desired, "even though there is less contamination of food than 30 years ago."

Aerial applicators already are among the most restricted businesses in the country, said Marsh, coming under—by one count—17 departments and agencies of government. What the housewife must understand, he said, "is that additional