

Here's an Estimate Of Weed Control Costs In Long-Season Areas

Railroad beds treated with modern herbicides can be weed and brush free. Yards are cleaner, promoting safety and improved efficiency by maintenance personnel.

tation, (3) equipment at hand, (4) availability of manpower, (5) chemicals required to get the job done.

Technical Support Expected

The industrial customer should expect technical support from his chemical suppliers and custom applicators in the selection of the proper chemical, advice as to correct timing of the application, and assistance in assuring proper application of the treatment.

First, a comprehensive survey of the problem is needed to decide what chemicals to use and what rates to apply. In the course of this survey, climatic conditions should be recorded; soil studied as to type and organic matter content; species, density, and height of vegetation studied; surrounding areas charted; equipment inspected to determine what modifications may be necessary; analysis of the size and proximity of area to be treated; sources of supplies needed for the application; and results the company expects to receive.

Major Market and Problems

It is well established that the degree of control needed by diverse markets varies due to the need and/or economics. Some of the ma-

major markets and their problems include:

1. **RAILROADS** — Treatment of road beds probably represents the greatest return on investment to railroads from the standpoint of protecting their maintenance dollar. For \$50 to \$75 per mile, a railroad can protect a \$2,000 to \$4,000 per-mile maintenance investment with an effective road bed vegetation control program. This usually involves the use of a residual, a translocated and possibly a contact herbicide applied once or twice during the growing season. Weeds in the ballast section may cause poor drainage of the ballast which is pertinent to the condition and safety of the road bed. Wavy track, faster deterioration of ties, and poor ballast are results of poor track drainage.

Railroads need bare ground under bridges and trestles, on industrial sidings, around signals and switches, and in some storage yards. Dry chemicals as well as sprays are used. Herbicide costs up to \$200 per acre may be requested for bare ground treatments. The major concern is to protect these facilities from fire.

In yards, a chemical treatment that results in clean ground is often desired. Some railroads are satisfied with an abatement program of achieving bare ground over a two-

or three-year period. The elimination of fire hazards, reducing employee complaints, and ballast drainage are the major concern here.

Many states now have laws setting standards on vegetation heights at crossings. A selective weeding program to control tall species and promote the development of low-growing grasses involving costs up to a maximum of \$100/acre/year, and is usually accomplished with cost in the range of \$50/acre. Mowing costs are greatly reduced.

Right-of-way brush control facilitates inspection during movement of trains at curves, prevents brush from encroaching onto the railroad tracks, and protects communication lines. Costs vary from \$30 to \$60 depending on the geographical location.

Bindweed, Canada thistle, musk thistle, Johnsongrass, bur ragweed, leafy spurge, and Russian knapweed, are classed as noxious by several states. Laws requiring their control have been recorded. All require the use of specific chemicals timed to obtain the optimum control.

Many counties, cities, and municipalities also have laws regulating the height of vegetation to be allowed on the railroad rights-of-way within city limits or in urban areas. Herbicides for trimming and rotary



Utility companies are realizing great savings in manpower and dollars by using herbicides to chemically trim trees and brush along rights-of-way. Here, herbicides are sprayed on foliage adjacent to power lines.

mowing machines are used. Chemicals used must not volatilize and should be applied when atmospheric drift is not a factor. Also, they should be low in toxicity to man and animals. Costs for areas in the Southwest range from \$15 to \$25 per acre.

2. HIGHWAY WEED CONTROL

—Increased costs, more road mileage, and decreased availability of manpower to cut weeds demand that chemical methods be used to control vegetation on roadsides. Herbicides are a necessity and their use is now accepted practice in many areas of the country.

The successful and economical highway vegetation control program utilizes both the mechanical and the chemical methods on a well-planned and coordinated basis. The overall objective is to beautify highways with smooth, green turf, free of tall, unsightly weeds.

Conversely, bare ground is desirable in storage yards, at bridge ends, around signs and markers, mailboxes, and under guard rails, and fences. But care must be exercised in the use of soil-active herbicides to prevent erosion problems on steep slopes and damage to roots of desirable trees. Adequate control can be obtained by using reduced rates of soil-active herbicides plus a systemic or contact herbicide and a surfactant, at costs of \$50 to \$75 per treated acre in southwestern states.

On road shoulders and medians, an abatement program is usually adequate. In the southern areas this prevents Bermudagrass encroachment and controls annuals and perennials whose root system might cause rapid erosion of the asphalt.

On the rights-of-way, use of selective chemicals and brush control materials may be used to reduce the frequency of mowing and improve highway beautification. Some of these materials may present volatility hazards; therefore, regulations regarding their use must be observed and necessary precautions taken to circumvent damage to valuable off right-of-way property.

Other special treatments employed by various highway departments are: chemical control of poison ivy and poison oak in parks, chemical trimming around trees and shrubbery beds, and interstate fence line control. These treatments can be made chemically at a fraction of the cost of hand cutting.

3. THE PETROLEUM INDUSTRY

—Weeds pose serious problems to the petroleum industry. They directly affect the maintenance, efficiency and safety of operations. The enormous cost of petroleum facilities necessitates that weed eradication or prevention be obtained to eliminate fire hazards around storage tanks, processing equipment, valve manifolds, compressors, along rod lines, in pipe yards, in storage areas, at meter settings, and around pipe-

line markers. Labor rates at the present high levels make hand control uneconomical. So, the use of herbicides is standard procedure.

Many open rights-of-way are still being mowed with rotary cutters. In other areas the use of selective weed control chemicals has been employed with economic success. Experience is proving that this treatment controls woody plants, also. As the undesirable species are controlled and grasses become established, the right-of-way becomes more accessible. Properly maintained, grass cover controls erosion and improves the efficiency of pipeline crews.

The use of a contact herbicide for side trimming of branches encroaching over the rights-of-way is a new practice that seems to offer cost reductions of almost 50% over hand trimming, depending on height of the trees, density and length of limb encroachment. Ammonium sulfamate is widely used because it is non-volatile, translocates only to a limited degree and is highly safe to man and animals.

4. UTILITY WEED AND BRUSH CONTROL

—Trees and brush create operational problems by disrupting or interfering with communication lines. Hand cutting is expensive for utilities. In some areas, rotary cutting is practiced on transmission lines, particularly in areas with flat, wide open rights-of-way which are free of stumps and stones. Most util-



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Bare ground around storage tanks from application of soil active herbicides eliminates fire hazard and boosts maintenance efficiency at petroleum refineries.



Clean shoulders on modern superhighways are kept weed-free with short-residual herbicides that enable landowners to plan housing or industrial developments without limitation.

ity brush control programs, however, involve the use of mechanical and chemical methods of control, with the chemical applications being made to stands of brush growing in areas where the terrain is not level. The cost of a chemical brush control program to utilities is determined by species, density, accessibility, and height of brush. There are many treatments that are currently being used. Some include:

a. Summer foliage sprays of phenoxy herbicides and "Ammate" X weed and brush killer.

b. Basal Treatment—The application of "Hyvar" X-P bromacil brush killer or "Dybar" fenuron weed and brush killer or Tordon in pellet form at the base of the plant, phenoxy herbicides in oil applied to the stem and base of the plant.

c. Aerial Applications — Usually restricted to areas inaccessible to ground spray equipment.

d. Dormant Cane—Phenoxy herbicide applied to canes of dormant plants in the wintertime in areas where valuable crops make spring or summertime application non-feasible.

A long-range program might be:

a. Initial applications — Summer foliage spray using "Ammate" X in crop areas and the phenoxy herbicide or trichloropicilinic acid in non-crop areas.

b. The third or fourth year, treat remaining species with one of the formulations of "Hyvar" or a 4% phenoxy in oil basal treatment.

c. Sixth or seventh year, clean up with pelleted herbicides.

d. Re-treat as necessary on spot basis with pelleted herbicides.

Utilities also have a need for complete control of vegetation in pole yards, substations, storage yards, parking areas, scalping at the base of poles and around pedestals. One application per year usually will suffice.

Side trimming offers considerable promise in reducing maintenance costs. This treatment may only be practical in rural areas and certainly will not eliminate tree trimming. However, where applicable, it could mean substantial savings (up to 50%) to utilities over the hand method.

5. PLANT SITE VEGETATION CONTROL—A better looking plant not only improves community relations but also boosts employee morale. Employees take pride in the plant's appearance and more importantly, may perform their jobs more efficiently. Tall weeds dry in the fall to form serious fire hazards. During summer months they clog ditches, hampering drainage and form mosquito breeding areas. Two methods of vegetation control normally employed on plant sites are

bare ground and chemical trimming for control of vegetation growing under fences, around flower beds, along shrubbery borders, along buildings and areas where roots of valuable trees extend. Lawn areas are usually improved and mowed.

6. CITIES, MUNICIPALITIES AND PARKS—The high cost of labor as well as the need for beautiful facilities is sufficient incentive to make management personnel consider the use of herbicides. The use of soil-active herbicides is restricted to storage yards, around the base of telephone poles and signs, in pavement and asphalt cracks, beneath some overpasses and around fire hydrants when such areas are not near root systems of valuable trees.

Selective weeding programs along roadsides and drainage ditches, would maintain the desired degree of vegetation control, encourage the establishment of Bermudagrass to reduce erosion problems and improve the beauty at a cost of one-half or less of hand programs.

Weed control technicians must assist top management to operate their plants at optimum efficiency with the greatest of safety. It is their responsibility to properly satisfy the customer's needs. Therefore, long-range vegetation control programs that will do the best job, the safest, at the lowest possible cost must be developed.

Meeting Dates

Dates for this column need to reach the editor's desk by the 10th of the month preceding the date of publication.

41st International Turfgrass Conference and Show, Golf Course Superintendents of America, Albert Thomas Convention and Exhibit Center, Houston, Tex., Feb. 8-13.

Georgia Weed Control Society annual meeting, Center for Continuing Education, University of Georgia, Athens, Ga., Feb. 10-11.

National Arborist Association annual convention, Del Webb's Towne House, Phoenix, Ariz., Feb. 13-19.

Regional Lawn and Garden Retailers Day sponsored by the University of Connecticut and New York State Cooperative Extension, Holiday Inn, Route 84, Fishkill, New York, Feb. 18.

Pennsylvania-Delaware Chapter, International Shade Tree Conference 5th annual shade tree symposium, Marriott Motor Hotel, City Line and Monument avenues, Philadelphia, Feb. 20-21.

14th Annual Ohio Garden and Flower Show, Ohio State Expositions Center in Columbus, Feb. 28 through Mar. 8.

Southern Chapter, International Shade Tree Conference, Hampshire Motor Inn, 7411 New Hampshire Ave., Langley Park, Md. Mar. 1-4.

University of Massachusetts Annual Fine Turf Conference at Highpoint Motor Inn in Chicopee, Mass., Mar. 4-6.

36th Annual Turfgrass Conference, Iowa Golf Course Superintendents Association, Roosevelt Motor Hotel, Cedar Rapids, Mar. 9-11.

North Carolina State University Turfgrass Conference, Faculty Club at NCSU, Mar. 10-11.

Western Society of Weed Science annual meeting, Sacramento Inn, Sacramento, Calif., Mar. 17-19.

University of Maine Mid-Winter Turf Conference, Steer Inn Motor Lodge, Rte. 1, Maine Turnpike Exit No. 7, South Portland, Me., Mar. 18-19.



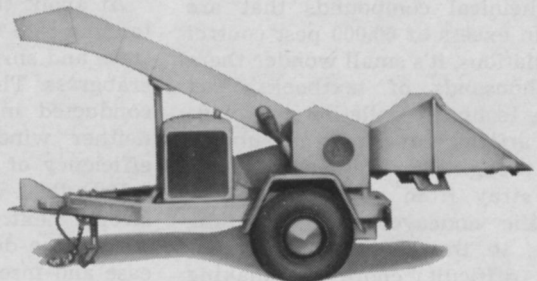
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Applicator Bob Wright Tells How He Tries To Make a Profit

By ROBERT G. WRIGHT, Owner
Precision Spraying
Wayzata, Minn.

A QUARTER-CENTURY as an independent custom applicator has taught me many lessons; a few bitter, many sweet.

Having made my share of mistakes, I consider myself an authority on what *not* to do, and reasonably knowledgeable on some things *to do*.

Considering there are more than 600 chemical compounds that are used in excess of 60,000 pest control formulations, it's small wonder there are thousands of textbooks, fact sheets, technical bulletins and magazine articles covering the subject.

My thoughts for this article, however, stray from any technical or scientific endeavor. They pertain, rather, to the pleasant but sometimes difficult chore of making money as a custom applicator.

Profit Factors

The most important factors involved in squeezing out some profit, in my opinion, are: Diversity, advertising, pricing, and quality control.

Let's look at diversity.

As dependent as we are upon weather conditions, with such brief periods in which to work each season, with further limitations by pest life cycles . . . it's vital that we chase more than dandelions.

Our season begins with early dormant spraying of ornamentals and shade trees. Once frost is out of the ground, non-selective vegetation control—or the so-called soil sterilization—activities begin. Because

this work may be stopped by wind or rain, we do considerable fertilizing of turf, shrubs and trees. We prefer granular applications of slow-release fertilizers. We also make liquid applications, that can be done in almost any kind of weather, utilizing our hydraulic spraying equipment.

At about the same time—but extending into early cover spraying of trees and shrubs—we do battle with crabgrass. This activity also can be conducted in bad weather because neither wind nor rain affect the efficiency of the chemicals used.

Broadleaf weed control comes on strong next. Before this is over, we're knee-deep in spraying for disease and insect control of deciduous trees and mite control on evergreens.

During late summer and fall, broadleaf weed control and non-selective vegetation control resumes. In late fall, we're fertilizing everything in sight.

For good measure, we dabble in the bat, bee and flea business!

Advertising

I'm not about to offer a short
(Continued on page 20)

Robert Wright, left, owner of Precision Spraying, Wayzata, Minn., and Ed Sorgatz, field representative for Geigy Agricultural Chemicals Corp., consult the layout of a herbicide demonstration at the Savage, Minn., facilities of Continental Grain Company. Twenty-three plots are under test, and will be reviewed at a public clinic and tour in June.





Geigy Uses 'Maxi-Plot' To Introduce Herbicides

By ED SORGATZ
Field Representative
Geigy Agricultural Chemicals Corp.

FANTASTIC potential exists in the industrial weed control business. Our question was: How could this potential be developed?

With seven triazine herbicides, our company felt it had one of the most versatile and effective lines of soil sterilants for industrial weed control. Yet sales of these products had been small in the Minneapolis-St. Paul area relative to the acreage that should be treated.

One primary reason was that we had been involved in a rather explosive corn herbicide market in the Midwest. Most of our effort had gone in this direction. As this market matured and solidified, we turned more attention to industrial weed control.

Introduction of our products to potential users in the Twin Cities area became a major objective for 1969.

With hundreds of potential users, individual calls were not feasible.

We decided the greatest number of people could be reached in the least amount of time by establishing a large-scale industrial weed control demonstration. We planned to follow through with an industrial weed control clinic and tour of the plots.

Custom chemical applicator Bob Wright, owner of Precision Spraying, Wayzata, Minn., was consulted for advice on locating the demonstration. He selected a site that exhibited characteristics that would test the maximum capability of ours and competitive companies' products.

The site was the Continental Grain Company in the Minneapolis suburb of Savage.

Testing Criteria

Working with Wright, these criteria were set up for establishing and spraying the plots:

1. Wright would spray all plots with the same equipment and in the same manner he used on any similar commercial job.

2. All plots would be at least $\frac{1}{8}$ acre with the exception of a few smaller plots where our research department wanted to test some new pellet formulations.

3. Chemical cost/acre would be kept in the \$45-\$60-per-acre range.

4. Major competitive products (duPont, Amchem and Niagra) would be tested also.

5. Applications were to begin in the fall of 1968, and continue with pre-emergence and post-emergence treatment in the spring of 1969.

Continental Grain Company property provided an excellent test because of the weed control problems that would be encountered.

First, we had about 20 species of weeds to deal with. Secondly, the organic matter content of the soil and railroad track ballast was extremely high because of the continuous rain of grain chaff that is normal for this type of facility. Thirdly, we had to contend with the constant track spillage from railcars loading and unloading.

Fall applications were made on Nov. 11, 1968, on about two acres.

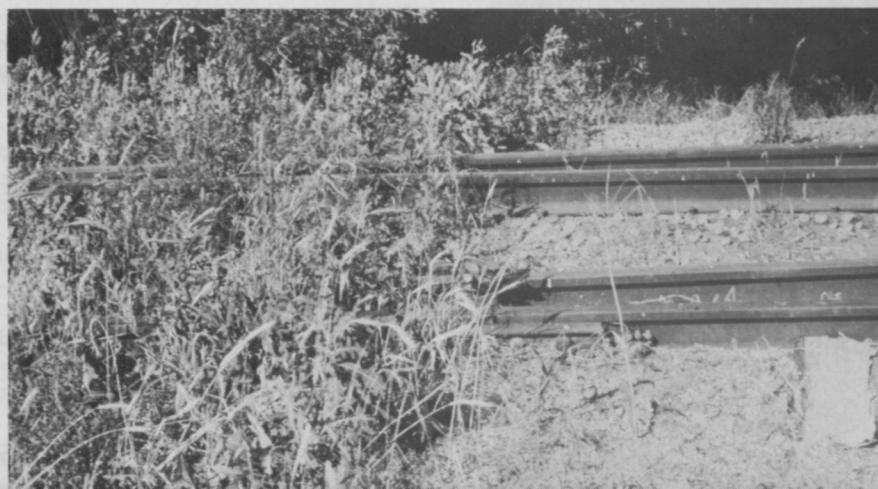
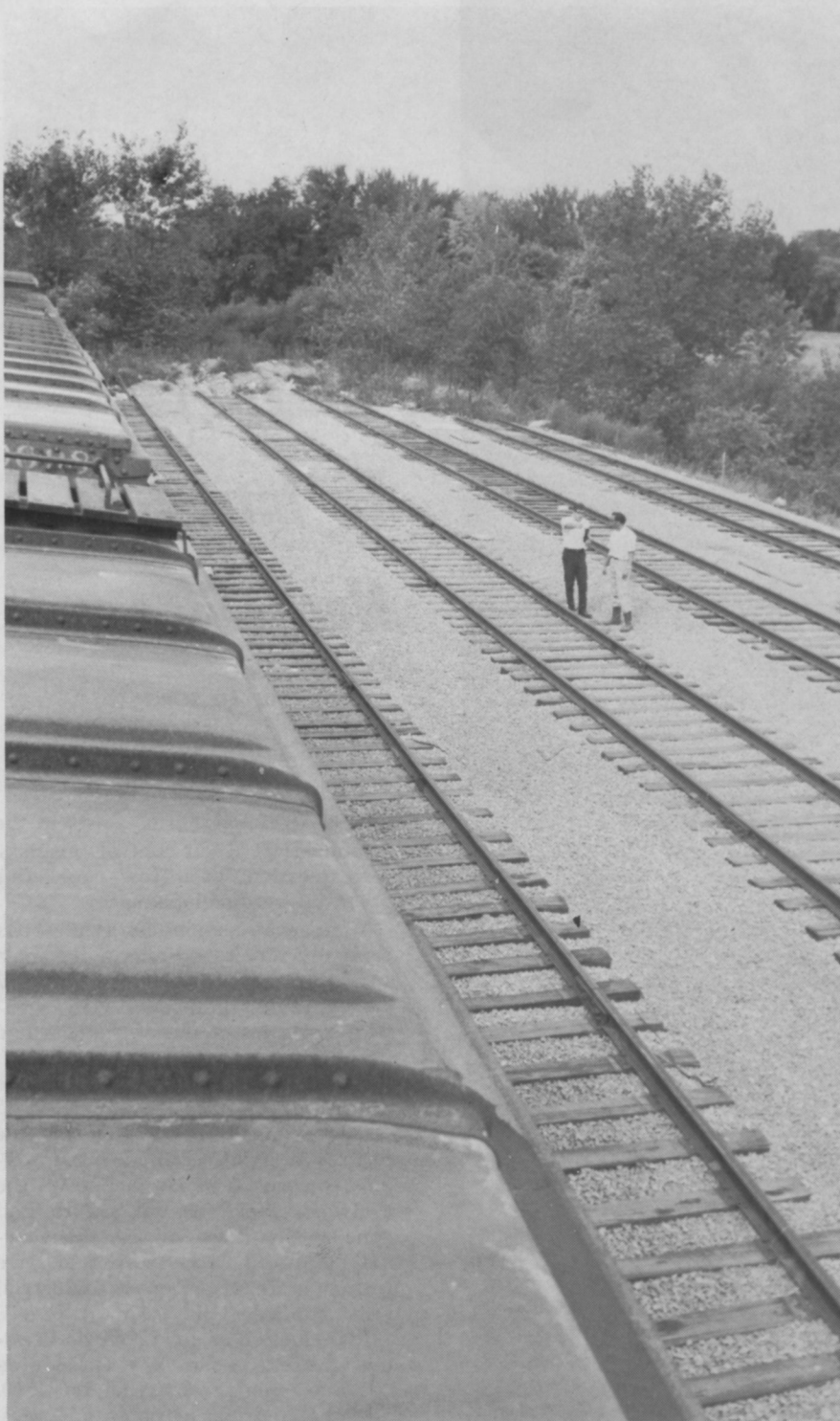
Unexpected Obstacle

Mother Nature deposited an unexpected and major obstacle upon the test during the winter and spring. Winter brought record snowfall. Continental is situated near the banks of the Minnesota River. When the record snowfall melted, most of our plots were inundated with six feet of water. Only areas close to the elevator that had been diked remained dry.

Most of our fall work was destroyed, but we did make at least one interesting discovery. Our Pramitol 25E, though flooded, did not have to be retreated.

Pramitol 25E, a relatively soluble liquid herbicide, is formulated to control both deep-rooted and shal-

A check plot tells the real story of just how effective the various herbicide combinations were. The picture above covers all or portions of Areas 17 through 21. Refer to the sketch and key on the facing page to determine what herbicides were used.



low-rooted weed species. Whereas other herbicides either on or very close to the surface of the soil washed away, Pramitol 25E apparently moved into the soil far enough to give weed control all summer.

At the time the fall plots were re-treated, on May 27, 1969, the spring pre-emergence treatments were also made. These encompassed about two more acres. Post-emergence treatments on another acre were made on June 10, 1969.

Clinic and Tour

Sixty persons came to a clinic and tour in late June. Guests included representatives from the oil and gas industries, lumber industry, state and county highway departments, city park and health departments, state agronomy services, and others.

This broad cross-section of guests gave us a variety of answers to the question: What is your weed problem? The clinic confirmed our belief that tremendous potential exists in industrial weed control.

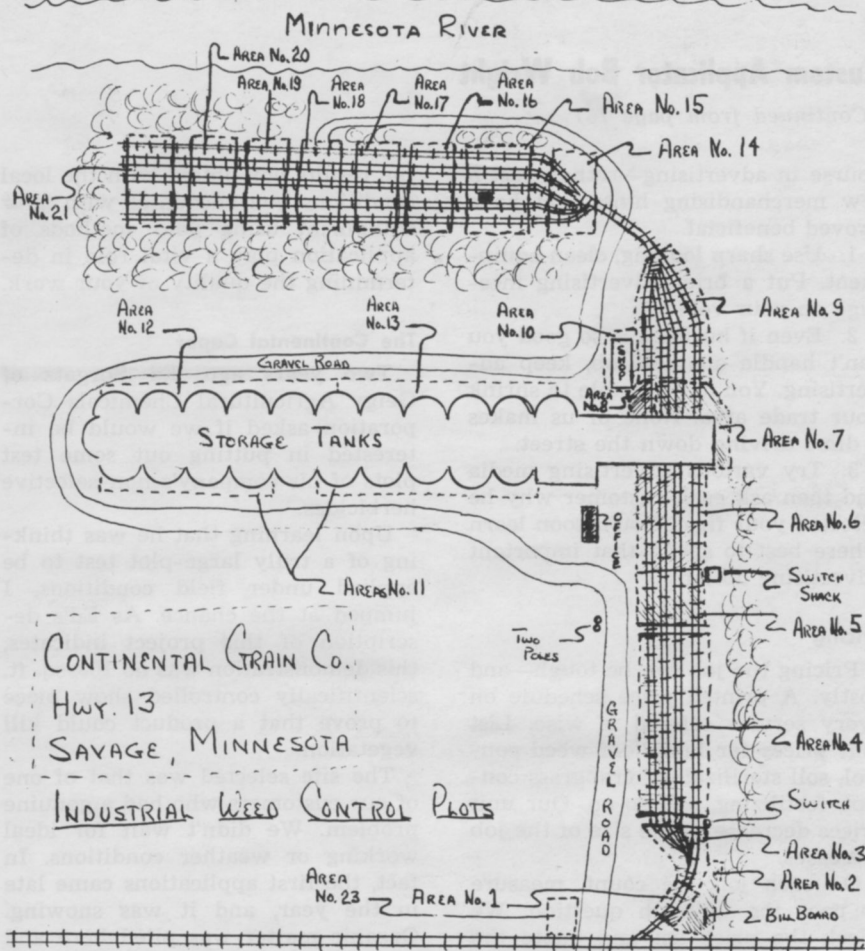
After a noon luncheon, guests were given sketch maps of the demonstration site, and a tour of Continental Grain property was conducted.

Just about all of the applications were giving good weed control at the time of the tour. Guests were invited to tour the plots again at any time in the future.

Most treatments looked good throughout the summer of 1969. But the true test of the residual capabilities of these herbicides will be disclosed in the coming spring and summer. By this time, all the chemicals will have been down at least a year.



Grain spillage from truck and rail traffic complicated the weed control problem.



KEY TO INDUSTRIAL WEED CONTROL PLOTS

- Area No. 1 — Small scale granular herbicide research plot contains 20 different applications. Applied 11-20-68.
- 2. Amchem's Fenamine, 5 gal./acre, sprayed 11-20-68.
- 3. Sprayed 11-20-68 with Atrazine and Simazine. 10# plus 10#/acre; flooded in spring, did not hold; resprayed 5-27-69 with 5# Atrazine and 4 gal. crop oil/acre.
- 4. Sprayed 11-20-68 in three strips, western tracks with 20# Atrazine/acre, middle tracks with Amchem's 68-5, 10-gal./acre, eastern tracks with Simazine 20#/acre, flooded in spring, did not hold. Resprayed 5-27-69 with 5# Atrazine and 4 gal. crop oil/acre.
- 5. Sprayed 11-20-68 with Pramitol, 10 gal./acre south area outside dike flooded. North unflooded. Nothing resprayed.
- 6. Sprayed 11-20-68 with Fenamine, 5 gal./acre.
- 7. Sprayed 5-27-69 with 6# Simazine 80W plus 6# Hyvar X plus 6 gal. crop oil/acre.
- 8. Sprayed 11-20-68 with Pramitol 25E, 8 gal./acre.
- 9. Sprayed 11-20-68, Pramitol 4 gal. plus Simazine 10#/acre.
- 10. Sprayed 11-20-68, Atrazine 10# plus Simazine 10#/acre.

- 11. Sprayed 11-20-68, with Fenamine 5 gal./acre not flooded. Resprayed 5-27-69 with Pramitol, 4 gal./acre.
- 12. Sprayed 11-20-68, Pramitol 4 gal. plus Simazine 10#/acre.
- 13. Sprayed 11-20-68. Atrazine 10# plus Simazine 10#/acre.
- 14. Sprayed 6-11-69 with Pramitol, 8 gal. plus Dacamine 4# plus 4 gal. crop oil/acre.
- 15. Sprayed 6-11-69, Niagra's Tandex, 10# Dacamine 4#/acre.
- 16. Sprayed 5-27-69. Simazine 20# plus Dacamine 4#/acre.
- 17. Sprayed 5-27-69, Atrazine 20# plus Dacamine 4#/acre.
- 18. Sprayed 5-27-69, Pramitol 8 gal. plus Dacamine 4#/acre.
- 19. Sprayed 5-27-69, Telvar, 25# plus Dacamine 4#/acre.
- 20. Sprayed 5-27-69, Hyvar X, 10# plus Dacamine 4#/acre.
- 21. Sprayed 5-27-69, Hyvar X 10# plus Dacamine 4#/acre.
- 22. Number skipped.
- 23. Sprayed 6-11-69, Pramitol 25E, 8 gal. plus Dacamine 4# plus one pint Surfol surfactant/acre.

Custom Applicator Bob Wright

(Continued from page 16)

course in advertising—rather, just a few merchandising hints that have proved beneficial.

1. Use sharp looking, clean equipment. Put a brief advertising message on your vehicles.

2. Even if business is so good you can't handle another job, keep advertising. You may be able to shrink your trade area. None of us makes a dime driving down the street.

3. Try various advertising media and then ask each customer why he selected your firm. You'll soon learn where best to spend that important advertising dollar.

Pricing

Pricing the job can be tough—and costly. A printed price schedule on every service offered is wise. List unit prices for broadleaf weed control, soil sterilization, crabgrass control, fertilizing, and so on. Our unit prices decrease as the size of the job increases.

On each job, we count, measure or pace the units in question. We check the price list and quote the total cost. This method is fair to all customers, and is the equivalent of hanging a price tag on our merchandise. This minimizes guess-work, argument and second-guessing the next time the customer calls.

We don't pass these price lists to our customers, but our local competitor is welcome to a copy. We want him to charge as much as we do!

Quality Control

With those 600 chemical compounds and 60,000 formulations plus the custom applicator's ability to create an infinite number of his own formulations, quality control has to be a complex—if not bewildering—aspect of our business.

Obviously, we've got to know quite a bit about the materials we work with. Chemical houses, salesmen, technical bulletins, etc., are all very helpful. But the fact remains that

the results *you* obtain with the local conditions *you* encounter with *your* equipment using *your* methods of application play a vital role in determining the quality of your work.

The Continental Caper

Two years ago, Ed Sorgatz of Geigy Agricultural Chemicals Corporation asked if we would be interested in putting out some test plots of his company's non-selective herbicides.

Upon learning that he was thinking of a truly large-plot test to be applied under field conditions, I jumped at the chance. As Ed's description of this project indicates, this demonstration was no 100-sq. ft. scientifically controlled show piece to prove that a product could kill vegetation.

The site selected was that of one of our customers who had a genuine problem. We didn't wait for ideal working or weather conditions. In fact, the first applications came late in the year, and it was snowing. Organic matter was piled here and there. There were a number of box-cars on the trackage to be treated.

This job was handled as though it were another day's work in the life of a custom applicator. We covered the several acres working rapidly with both booms and hand guns. We measured our chemicals carefully and watched our rates per acre. Simply routine. We tried various rates with many different chemicals. We followed up at different seasons with additional formulations.

The Crux of the Plot

To me, the most important benefit of the demonstration is this:

We've gone back many times to inspect our handiwork. Ed knows, I know, and the many interested people who came to the field day know the effectiveness of the materials we used.

At *those* times of year, using *those* chemicals, with *those* soil con-

ditions, with *those* weeds and *those* methods of application, we obtained *specific* results. The results are varied—but they're there!

The very same plots established in an arid portion of the West Coast—or anywhere else, for that matter—would have produced different results.

As sound as the advice might be from your county agent, from the Department of Agriculture, university, or chemical salesman, that advice necessarily must be general in nature to cover maximum conditions.

Each case of pest control, however, is unique. As an oldtimer once told me: "Circumstances alter cases."

I don't mean custom applicators should become a bunch of "mad scientists" experimenting wildly. To quote another oldtimer, offended at my mixing 2,4-D with 2,4,5-T instead of buying his pre-mixed brush killer: "Remember, Bob, you're an applicator, not a fabricator."

Seriously, don't do anything with chemicals that could conceivably be harmful to any living thing you don't wish to destroy. Don't ever use any material not on the recommended list and for its intended purpose.

In the hundreds of times I've used such a common material as low-volatile 2,4-D, I'm always fascinated by the results.

I inspect as many of our jobs as I possibly can. Occasionally, these inspections prompt me to drop a chemical or change its exact formulation, or make some other modification.

If we all would inspect as many of our jobs as humanly possible, we would accomplish many things. Sometimes, we would be able to go to a less expensive chemical. We would retain more old customers and make new ones. We certainly would improve our quality. Emphatically, we would make more money!