



## The Herbicide Market GOLF COURSES

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**S**OME FIFTEEN MILLION or more golfers currently play the eleven thousand-plus United States golf courses. Almost twelve million play at least 15 rounds per year, and the number of both golfers and rounds is rapidly increasing.

Characteristic of American golfers is their continuing demand for better playing conditions, especially more carefully manicured turf. This, of course, stems from their determination to continually improve their scores. One of their strongest demands is that the turf be free from weedgrasses and broadleaf weeds. This overall attitude contrasts with that in Europe and some other areas, where less-than-perfect turf is accepted as part of the "challenge" of the game of golf itself, particularly on fairways and in roughs.

On the other hand, it coincides with that of golfers in Japan, where the demand for immaculate golf turf, including freedom from weeds, follows the traditional pattern of Japanese precision, neatness and care in grooming parks, gardens, home lawns and other aesthetic and recreational areas. Long before the advent

of herbicides, Japanese golf courses were hand-weeded by scores of maintenance crew members.

The late fifties and early sixties saw a strong surge of excellent weed control chemicals, including pre-emergence herbicides, which killed weedgrass seeds as they tried to germinate in soils, so that mature weedgrass plants would just never be seen. Full-season weedgrass-prevention thus became a reality.

Presently almost 1.5 million acres are devoted to golf course facilities in the United States. Of course, not all this acreage is in weed-free turf, or even in turf at all, because the facilities normally include forested and ornamentals areas, roads, the club house, maintenance buildings, tennis courts, parking areas, and the like.

At the same time, the recreational turf area on any course is sizeable and normally is considered, in order of maintenance quality, to consist of greens, tees, fairways and the rough. As freedom from weeds in roughs is of least concern, only a broadleaf weed control program is usually followed in these areas. Thus, the golf course market for herbicides is made up essentially of greens, tees and fairways.

Roughly half of the estimated eleven thousand golf courses are 9-

hole layouts. These 5500 courses, divided by 2, would yield approximately 2750 "18-hole equivalent" courses, which, added to the number of actual 18-hole courses, give an estimated total of about 8250 18-hole equivalent courses.

The average 18-hole course contains some 2½ acres of greens, 2½ acres of tees, and 40 acres of fairways, or a total of 45 acres of fine turf actually in play, and high quality-maintained for the golfer.

Simple arithmetic then shows the 8250 18-hole equivalent courses, with 45 treatable acres, each, to comprise around 371,000 acres, on which both preemergence weedgrass herbicides and postemergence broadleaf herbicides should be used routinely.

The dollar golf course herbicide market depends of course on such things as product used, cost (not per pound or gallon, but per application per acre per season), whether combination formulations are used (meaning a "one time" labor expense) or separate applications of individual chemicals, each requiring the expense of a separate application, the residual effect of the product used, and other factors.

Typically, any course will strive for 100% fine turf coverage of greens, tees, fairways and the clubhouse lawn. In this market bare ground is not wanted, and in many cases simply is not tolerated. The superintendent's weed control program, therefore, is essentially one of preventing weedgrasses (preemergence control) and eliminating already-growing broadleaf weeds (postemergence control) from the desirable turf cover. As to weedgrasses (crabgrass, goosegrass, poa annua and other annuals), excellent preemergence herbicides are available, including Pre-San (Mallinckrodt), Betasan (Stauffer), Balan (Elanco), Dacthal (Diamond Shamrock), and others. The facts to remember about these are:

1. They must be applied before the weedgrass seed germinates.
2. They must be well watered-in, to form an inch-deep or more soil "barrier" to stop the weedgrass seeds as they try to germinate.
3. The treated areas must not be disturbed, after a preemergence application, by turf renovation of any kind (aerating, vertical mowing, etc.) as this would break the "barrier" and bring to the surface weedgrass seeds in untreated soil where they would germinate and thrive, thus destroying the application's effectiveness.

Costs for pre-emergence materials  
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range from \$20.00 per acre up to \$55.00 or so per acre, per treatment, depending upon many factors. Those costing most per acre per treatment are usually regarded as least expensive in the long run. This is because (a) they have several times the residual control, thus requiring far fewer applications, (b) they control all major annual weedgrasses, not just one or two, and (c) they usually are the safest on the desirable grass, being the only ones actually registered and labelled.

Caution must be observed in using any preemergence weedgrass control. It should not be applied at all if the turf cover is mostly annual weedgrasses. The residual soil effect will prevent germination of any grass seeds planted during the working life of the product after application, including seeds of the desirable bluegrasses, bentgrasses, etc.

Where a fairway contains more than 25% *Poa annua*, best control would be via a new approach, such as with Po-San (Mallinckrodt) which, when sprayed on fairways (not watered in) kills no grass — not even existing mature *Poa* — and produces no preemergence effect or harmful soil residues. It simply stunts the existing poa and prevents its production of seedheads. Thus desirable grasses fill in. The poa crop the following year is prevented. After a few years the poa population is down to where preemergence materials may be used safely.

As to broadleaf weeds, these are normally best eliminated by post-emergence applications of one or more of the many herbicides marketed for years, such as 2, 4-D, 2-4-5-T, MCPP, dicamba and others. Recently, superintendents are using a 3-way synergistic combinations of 2,4-D, MCPP and dicamba marketed as Trex-San (Mallinckrodt) and Trimec (Gordon). These latter are so effective that the manufacturers assert, "We have yet to find a broadleaf weed that Trex-San won't control." A single treatment, properly applied, will safely control most broadleaf weeds from any fine turf, and at the same time destroy the seed-producing capacity of these weeds, thus greatly reducing the likelihood of a serious infestation the ensuing year.

Further, a Trex-San or Trimec application is inexpensive — about \$4.50 to \$5.00 per acre. These materials are systemically absorbed through weed leaves, and thus should

not be watered in. One application controls all emerged weed plants. A second application is not needed until weed seeds germinate and produce new plants.

Figuring a single preemergence treatment in early spring and another in fall, along with roughly two applications per year of a post-emergence broad-spectrum broadleaf herbicide, the turf manager can readily devise his own program to eliminate weeds and weedgrasses, and calculate his "per application per acre" cost. Above all, he's sure his costs over the first few years will greatly diminish during succeeding years. As the weedgrasses and broadleaf plants are eradicated and replaced by fine turf, fewer weeds will have the opportunity to invade desirable turf areas. Thus, less frequent weed control applications are needed resulting in lower weed control costs. It is axiomatic that the best weed control is a strong stand of healthy turfgrass.

The golf course weed control market is nationwide. However, it is more strongly concentrated in the major population centers, because the number of golf courses tends to relate to such factors as numbers of people in the area, general affluence (or lack of it) of those people, and so on. Weather, too, determines not only golf course concentration, but often golf course quality and length of playing season.

In the more affluent Northeastern states, for example, there may be an 18-hole equivalent course for every 11 or 12 thousand people, whereas in some of the less affluent southern states there might be only one course for every 35 or 40 thousand people.

Further, the ravages of winter in northern states may limit the length of the playing season to two or three months per year, while courses in the milder climates of the south will be in play year-round.

This should be kept in mind in assessing market sizes and characteristics to determine weed and weedgrass control opportunities.

## EQUIPMENT

Weed control application equipment should normally be of the boom type, with adequate pressure to drive the spray solution into the turf. Boom sprayers in this usage are particularly important. They produce little or no drift, which is characteristic of the high pressure gun sprayers. Of course, for spreadable granular types of weed control chemicals, the drop-type spreader is

considered best for uniformity and accuracy. Centrifugal types may offset these features with broader coverage and greater speed of application.

Preemergence control applications are usually made in early spring and/or early fall, so that actual marketing of preemergence chemicals precedes these periods by several months. Postemergence chemicals for broadleaf control, on the other hand, are used over a longer season — often throughout the year (depending upon the area). Postemergence chemical marketing begins well before the active weed-growing season and extends throughout the season.

For an excellent picture of the place of herbicides and other turf chemicals in golf course turf maintenance, turf managers should obtain, from WEEDS TREES AND TURF magazine, its significant survey on turf chemicals usages which this important journal published in 1969. It is well worth reading and careful study. □

## CUSTOM APPLICATION

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until the last four to five years. In many areas, it still isn't available. Also, people are devoting more time to recreation and they simple would rather play golf than fool with their lawn. Let's face it . . . when the average home owner does take a stab at growing turf, a great number either streak, burn, or don't get enough product on to do the proper job.

**WTT: You mentioned that this business was increasing. How do you measure this increase?**

**Carruth:** My best yardstick is Diamond's sales to turf custom applicators. In the past two years, our sales of Dacthal to this market has doubled. If it weren't for shortages in liquid fertilizer, our sales would probably double again in 1974.

**WTT: Is there any one goal you feel a lawn applicator should adopt?**

**Carruth:** Definitely. Give your customers a good-looking lawn all season long. The home owner doesn't know or care what you do to his lawn. His real concern is what his lawn looks like. □