

Establishing a New Fairway

Carl Beer, superintendent at Mission Hills Country Club, Kansas City, Kan., had a problem a few years ago. He had just initiated a zoysia sprigging program in bermuda fairways that had suffered from winter kill and spring dead spot. The sprigging was completed in 1972 and some bluegrass seeding was done to provide cover while the zoysia was becoming established. Dacthal was used for crabgrass control and banvel + 2,4-D for broadleaf weed control, but the biggest deterrent to establishment of zoysia was *Poa annua*.

The *Poa annua* would compete with zoysia in early spring and not allow the zoysia to fill. In some areas, the *Poa annua* stand had even reduced the zoysia cover. To develop a full stand of zoysia in reasonable time, something had to be done to eliminate the *Poa annua* while the zoysia was still dormant. This would allow the zoysia to develop in the spring without serious competition.

During the winter of 1970, Beer read about the characteristics of paraquat. The unique feature was that it would be effective at low temperatures and would control only those weeds and grasses that were green. He started getting ideas about applying it on dormant zoysia since the product was registered for control of broadleaf weeds and grasses.

By applying it to dormant zoysia, this could mean the elimination of early competition from annual grasses without injury to zoysia. The first experiment with paraquat was on a limited basis in 1971 with good control and no injury to the zoysia sprigs. However, the cover was not sufficient through-

Use of paraquat eliminated annual grass competition without injury to zoysia sprigs on this Kansas City course

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out 1971 to prevent annual grasses and broadleaf weeds from developing.

In 1972, no effort was made to apply paraquat as Beer decided maybe it would be better to wait until a percentage of zoysia had developed. In 1973, again the application was made over more area than in 1971 in an attempt to verify the earlier results. The results were better primarily because of the better zoysia cover to shade against late maturing weeds.

In the fall of 1973, the fairways were seeded to bluegrass to provide additional cover on some of the fairways sprigged to zoysia in 1971 and 1972. No paraquat was applied in 1974 because of the bluegrass present from the seeding.

Then in 1975 paraquat was applied to the entire 40 acres of fairways on March 20th at a rate of one quart per acre with 50 gallons of water with excellent results. The application was made at a time when most of the *Poa annua* had germinated, yet before the zoysia had started to green up in April. The timing is very critical in that an application too early would allow germination of the *Poa annua* after the application. A late application could cause injury to the zoysia. But one only has to look at a few skips in the treated fairways to see the bene-

fit of the application to the zoysia development.

Princep was used to treat areas where skips had occurred, but those areas do not have the zoysia cover because the *Poa annua* did compete successfully with zoysia when the zoysia was breaking dormancy.

There are some precautions that should be taken when applying paraquat on dormant zoysia to produce good fairways:

- Do not apply it in heavy shade areas as cool-season grasses may be all that can develop in these areas and the application would eliminate this stand.

- Be accurate on your rate of application as excessive rates can be injurious.

- Be careful to shut off the sprayer when turning as the increased concentration from the overspraying of the inside boom can cause zoysia damage.

- Use gloves and respirator when handling because careless handling can be harmful.

- One of the most important points is to advise your membership as to your program and the results that can be expected immediately following the application (completely brown fairways) weighed against the long term benefits.

- If possible, make the application on a day the course is closed as the oral toxicity is quite high.

As with most chemical controls, there are advantages and disadvantages. But used properly, the benefits to establishing zoysia can be very rewarding and provide a good zoysia cover far quicker than with the conventional weed control methods. □