



Fairway at Country Club of Cleveland after first spray with sodium arsenite and just before second treatment. Used $1\frac{1}{4}$ to $1\frac{3}{4}$ lbs. per acre and about ten gallons of water.

Clover, Chickweed Eliminated in Turf Improvement Program

The fairways at Country Club of Cleveland contained considerable clover, due principally to the use of too little fertilizer in the past. The clover was aggravated by fairway watering. There was some chickweed also, both the mouse-ear and common types.

Frank Dunlap devised a program of fairway turf improvement and obtained the consent of the club directors. The plan included the use of more fertilizer and of sodium arsenite as a spray to speed the elimination of clover and chickweed. Seeding was to be confined to bare spots and areas where grass cover was sparse. There was very little poa annua except on several approaches.

It was decided to spray the fairways three or four times at very light rates. Chipman's liquid sodium arsenite was used first at $1\frac{1}{4}$ pounds per acre, and after that at $1\frac{3}{4}$ pounds. (Arsenic acid could have been used instead, and at the same approximate rate.) A low gallonage sprayer made by Engine Parts Manufacturing Company of Cleveland was used. This machine gave good coverage of the foliage with 10 gallons of water per acre. The interval between spraying was seven to ten days, depending upon clover recovery and the for-

mation of new leaves. Spraying started in August. All fairways were to be aerified before being fertilized. Several where the turf was uniformly thin were to be cross-spiked, after aerifying and fertilizing, and then seeded lightly with Colonial bent grass. On most of the fairways bad clover infestation was in local spots. Dunlap proposed spot seeding of the areas early next spring while the ground is honeycombed from frost, and before rolling.

Discoloration was most noticeable after the first spraying. Browning of the grass occurred in localized dry spots, but was not bad elsewhere. Subsequent spraying, even at the higher rate produced very slight discoloration only.

Clover leaves are succulent and burn readily, so heavy rates of sodium arsenite are not needed. Repeated defoliation, three or four times, is the secret of clover elimination. Defoliating the plant each time new leaves form weakens the main stems so they will be killed by frost action during the winter and early spring. The first spraying, no matter what the rate, seldom defoliates the plant completely. The top leaves protect the ones underneath. The lower leaves disappear after the second spray and then all the leaves are scorched each time sodium arsenite is used.