

# How We Licked Our Weed Problem

By RICHARD D. MANSFIELD

Greenkeeper, Mink Meadows GC, Vineyard Haven, Mass.

THE matter of weed control and elimination is of great importance in producing a fine turf. Considerable success in this direction has been attained with our program at Mink Meadows.

A brief history of the construction at Mink Meadows will help explain where all our weeds came from. A strip about 100 ft. wide was cut around the property for a fire line. During summer of 1926 this area was plowed after having the stumps pulled out. For two years afterward it was cover cropped, as the soil is very sandy and had to be built up before grass seed could be planted. After the last cover crop in the spring of 1928, the area was plowed and harrowed. Nothing was done from then till 1933, at which time it was seeded with seed swept out of nearby barns, and hayseed was again sown in 1934 and 1936 over these same areas. In the meantime, a 9-hole golf course had been laid out on this area and the lanes were widened. During 1937 and 1938 these widened areas were seeded to a fairway mixture.

The hayseed areas are the ones that have become covered with weeds, while the parts of the fairways seeded to the fairway mixture are nearly clear of weeds. Therefore, the only parts of our fairways that needed treatment were these "hayseed" areas, so from here on only this part of our golf course will be considered.

## Fairways 50% In Weeds

Some of our fairways had at least 50% weeds. There was English buckhorn or narrow leaved plaintain, dandelion, both the common and fall variety, yarrow and clover. The plaintain and the clover were the most troublesome of all. The plaintain sends up seed stocks continuously and so fast that it is very difficult to keep them cut off. During the height of our playing season, the clover blossoms caused great difficulty to the players in locating their balls.

After considering several weed eradicators, it was decided to use sodium arsenite mixed with Milorganite in a dry form. It seemed that this would be the only way to rid the course of these weeds as there were so many it appeared im-

possible to crowd them out with a fertilizing program; also, equipment to apply sodium arsenite in a liquid form was not at hand.

A spreader made primarily for distributing lime was used first. Unfortunately, this spreader had round openings and did not spread material evenly, so it was decided to try to improve the spreader board. This was done by using a board 8 inches wide and driving 6 penny nails in four rows, staggering  $\frac{1}{2}$  inches apart along the lower edge of the board.

The mixture was put on at the rate of 400 lbs. per acre. It consisted of 4 lbs. of sodium arsenite mixed with every 100 lbs. of Milorganite; therefore, we were

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putting on about 6 oz. per 1000 sq. ft. of the sodium arsenite. This first application was started on Sept. 18, 1940, doing half of the golf course, and the next day all the fairways were finished. The weather was clear, but application of the material did not start until the dew had dried.

The next day all the weeds showed severe burns, but the grass was unharmed. On the second day the grass began to wilt. Two days later the grass showed signs of burns which ran in lines, these being much more distinct where the right side of the spreader had been. Upon checking this point, it was found that the right side of the spreader gave out slightly more material than the other side and even with our new spreader board the machine would not put the material on evenly as the discharge holes were too far apart. It was also obvious that the rate was too high even if the spreader had been perfect, as the burnt lines soon ran into a solid burn.

The next thing to determine was the correct rate and get a better distributor. Three 1,000 sq. ft. plots were made and the mixture applied with a Master hand spreader; the first at the rate of 200 lbs., the second at 300 lbs., and the third at 400 lbs. It was found the 200 lbs. had no effect on either grass or weeds; the 300 lbs. burnt the grass very slightly but burnt the weeds severely and the 400 lbs. burnt everything, so from this it was decided to use the 300 lb. rate, which would mean about 4½ oz. of sodium arsenite per 1,000 sq. ft.

The McCormick-Deering distributor was selected as one that would do the job accurately. With this machine it was possible to spread the mixture with great precision.

A lot of time was lost before our second application. While experimenting with the rates to apply and procuring a distributor, most of the weeds had grown nearly to their ordinary size as it takes from two to three applications for a complete kill.

On Oct. 14 the second treatment was applied on Nos. 2, 3, and 4 fairways and on Oct. 16 the rest of the course except No. 1 fairway was finished. After the application on the 14th, we had an unexpected shower amounting to .02 of an inch within 24 hours after we had applied the material. The same thing happened after the application on the 16th except the rainfall amounted to .11 and it oc-

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curred about 12 hours after we had finished. Both times it was naturally assumed that the arsenite had gone to waste, but surprisingly, it began to work. The first dose showed a slight burn on the grass and the second none at all but the weeds were severely burnt on both occasions.

On No. 1 fairway the material was applied on Oct. 19 at the 300 lb. rate as usual and no rain showed up for over a week. Clear and warm weather followed with the exception of a couple of cool days. The turf on this fairway received a severe burning and did not begin to recover until we had a heavy four day rain beginning on Nov. 12. The weeds had the same degree of burning as on the other fairways.

The turf was in good condition going into the winter, except for No. 1 fairway which showed some of the effects of the burning. With the two applications there was possibly 60% of the weeds permanently killed. Of course a third application should have been made, but as it was so late in the season, and the growing season lasts into November, it was thought better to wait till the spring. By so doing, the new plants that come up from seed could also be killed. The weeds did not get much of a start before winter so were weak in the spring.

### Third Application This Spring

This spring we started our third application of sodium arsenite on April 29. The Milorganite mixture was again applied at the rate of 300 lbs per acre. On the two days previous to this application there was a total rainfall of one inch. Half of the course was covered on the 29th and the remainder completed the following day.

The clover began to show signs of burning two days later and the buckhorn showed very slight burning. The burning was very slow as the temperature was low until the fifth day, which apparently had a lot to do with it.

The clover was severely burnt with this treatment as it had not wholly recovered from the fall injury. Yarrow and buckhorn were partly burnt, but only a small percentage was completely killed.

The grass was burned only very slightly except where the tractor and spreader wheels had been over it. This injury recovered slowly but seems to be unavoidable as even where the rubber tired trac-

tor wheels had been, some burns appeared.

The cost of the material delivered at our shed plus the cost of application, exclusive of the tractor and spreader, was \$7.52 per acre, per application. This is slightly higher than it would be elsewhere as our club is situated on an island which adds to the transportation cost.

As a matter of caution, care should be used in the handling of sodium arsenite as the dust from it causes severe irritation to the nose and throat. A respirator should be worn and kept clean.

We obtained about an 80% kill on the buckhorn and clover which has improved our fairways tremendously. The Milorganite has given the grass a good start toward filling in the bare spots left by the weeds.

### Dandelions Not Loosened

The dandelions were not loosened to any great extent as I believe they would require four applications nearer together than we were able to do. We are not greatly troubled with them so are using a Root weed gun which will kill them with one shot of our mixture.

The most important things to consider in applying sodium arsenite by the dry method are:

1. Determine experimentally the correct rate to apply material on your particular course. The rate of material will undoubtedly vary on different courses. Probably slightly lower rates should be used on a sandy soil than on a clay soil.
2. Use an accurate spreader. The use of an accurate spreader cannot be emphasized too much as was shown by our first treatment. Our old spreader had always been satisfactory for our other work of applying fertilizer and lime, but would not do the work correctly with sodium arsenite. Whether a hand or tractor spreader is used, it should be the best obtainable.

3. Make due allowance for the amount of moisture in the soil. A very important factor in this work is the moisture content of the soil. If the soil is very dry the sodium arsenite will take too much moisture from the grass plants and if there is an abundance of moisture it will not take enough from the weeds to kill them. From our work I found that we had better success with the fall applications than those made in the spring. During the fall the temperature is higher and there is less rainfall. The best time to start is the day following a heavy shower and when clear

warm weather is expected for at least the next three or four days.

A second dose should follow in about 10 days or when the leaves of the weeds are at least nearly half their normal size. Also, it would be best to have this application follow a light rainfall.

A third application should follow this in the same manner and a fourth might be found necessary in some cases. I believe that four of the lightest applications that can be put on effectively would be better than two or three put on heavily. The less injury caused to the grass during these treatments, the quicker will be its recovery to take over the space left by the dead weeds.

## Don't Forget Arlington Meeting on Sept. 22-23

ONE of the year's most important turf meetings will be held Monday and Tuesday, September 22-23, at the Arlington Turf Garden, Washington, D. C. The meeting, to which any golf course would be justified in paying the expenses of its greenkeeper as a regular course maintenance expense, is sponsored jointly by the USGA Green Section and the GSA.

Most of the educational activities will take place at the Arlington Garden where a review of the experiments on the turf garden now in progress will be inspected and studied. Experimental plots on the grounds of the Bureau of Plant Industry as well as those in the National Capitol Parks will also be studied.

Hamilton Hotel in Washington will again be general headquarters. The annual banquet will be held Monday evening at the Hamilton. There is no charge for any of the informative activities and all persons are welcome to attend the sessions.

**Bill Aids Retailers**—House Bill 329 approved by the Illinois state legislature curtails "buy it wholesale" operations as done by corporation purchasing departments making discount purchases of merchandise for resale to employees. Golf goods, especially balls, were handled in considerable volume in this channel to the disadvantage of pros and other established retailers.

The Illinois Federation of Retail Associations conducted an energetic campaign for the bill, which went into effect July 10.

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