

New Approach to Control of Crabgrass and Poa Annua

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Our method of crabgrass control at the Lehigh Country Club, using one pound of sodium arsenite per acre is a new approach to an old problem. All previous methods of crabgrass control were designed to kill the plant, before the seed developed. Our method is to treat the seed before it matures. We have used the phenol mercuries and potassium cyanate on greens and tees, but the cost of these materials on a large area, is prohibitive. There is no comparison between the phenols at 5 pints per acre and sodium arsenite at 25¢ per pound per acre.

Back in 1938, we sprayed several fairways with sodium arsenite at 4 lbs. per acre to control clover in good bluegrass turf, cut at one inch or higher. We had no crabgrass or Poa annua. We killed the clover all right, but from the howls of our golfers, I thought that we had killed some of them also. They objected to the burned turf. In 1945, I was requested to cut our good bluegrass fairways down to five-eighths of an inch because that is the way they were cut in the big tournaments. I refused. In 1946, I was told to cut them down or else, and we wound up with a turf composed of crabgrass, clover, Poa annua and a small amount of bluegrass and bent. One of our members remarked, "With clover hay at \$20 a ton, we could pay off the mortgage by allowing the fairways to grow into hay." He was right, but our golfers still liked them cut short, so we disked and seeded a colonial bent mixture at 25 lbs. per acre into fairways fertilized with Milorganite.

In 1947 we had developed a fair bent turf, but we had considerable crabgrass, Poa annua and clover. In our experiments we had observed that one pound of sodium arsenite per acre, applied when the seed is immature, would kill crabgrass seed. We all know that when you kill the seed of an annual plant, you also destroy next year's crop. We had also found that light, frequent applications would not discolor the existing turf and would reduce the howls of our members to a minimum.

We started to spray on August 18th, 1947 when one inch of crabgrass seed was exposed from the sheath, using a three hundred gallon sprayer with a twenty foot boom. One pound of sodium arsenite was applied per acre in 75 gallons of water at

75 lbs. pressure. The amount of water and the pressure are not too important and low gallonage sprayers work very well with 10 gallons or less of water per acre. The time of application is the vital factor and will vary in different sections of the country.

You must wait until one inch of seed is exposed. We like to spray when the grass is dry and when the soil is moist.

The second spray was applied on September 3rd, when the second inch of crabgrass seed was exposed. About ten days later a third application, at the one pound rate, was applied. In sections of the country having early frosts this third application may not be necessary.

Aerifies Fairways

Immediately after this third spray, the fairways were aerified several times, fertilized and seeded with a bent mixture at 10 lbs. per acre. We renovated six fairways in 1947 and the remainder in 1948. The results were so outstanding that even our own members commented favorably on the excellent fairways. They were forced to confine their complaints to the fact that several of our tees are not exactly level and that is a bad situation. A golfer should have an alibi for a poor shot or it takes a certain amount of pleasure from his game.

In 1949 and 1950 no seeding of fairways was done except in repairing divot holes. The fairways were aerified each year and sprayed one time each year, in September, just for the "hell of it". We are now spraying the rough, as we get around to it, on the theory that crabgrass in the rough will eventually re-infest the fairways. Clover and chickweed have been eliminated, as a problem, by the light sodium arsenite sprays and it has been proven that the residue of arsenicals in the soil will help to control grubs and earthworms.

We are now working on Poa annua in the Spring, when it is seeding profusely. I am convinced that sodium arsenite has the same effect on immature Poa annua seed as it has on crabgrass seed. We have collected Poa annua seed sprayed with one pound per acre of sodium arsenite and planted it in flats alongside of unsprayed seed. In each case, the treated seed did not germinate while the untreated seed grew vigorously. The Poa annua seed in the soil

from years past, will germinate under optimum conditions. When this happens, spray it to prevent the seed on the plant from maturing and eventually, in theory at least, no more *Poa annua*. This thing seems so simple that it sounds unbelievable and probably is. At least sodium arsenite, at one pound per acre, does no harm to existing turf and the best way to find out how much good it does is to try it out for yourself on a small scale.

Let me repeat one warning which must be observed in the use of sodium arsenite. Never apply sodium arsenite when the soil is bone dry. Severe discoloration will result, even with the one pound method, although the turf will recover quickly when water is applied.

Research Boosts Seed Yields of Japanese Lawn Grass

Superior strains of Japanese lawn grass (*zoysia japonica*) can be managed to produce more than 500 pounds of seed an acre, report plant scientists of the U. S. Department of Agriculture and the U. S. Golf Association Greens Section.

This means that research has overcome a big obstacle to its use in this country—a shortage of planting material. Small amounts of seed are being released through commercial seed firms and will be available to the public as rapidly as it can be increased.

Widely adapted, the new selections are of special interest in the Crab Grass Belt—the Middle Atlantic States west through Missouri. They produce a slow-growing, dense, tough, springy turf that can hold its own against invasion by weed pests.

The current work on seed production was initiated at the Plant Industry Station, Beltsville, Md. in 1945 to improve turf species for the United States.

The Oriental zoysias—Japanese lawn grass and Manila grass—were among the species selected for study, says Dr. Fred V. Grau, in charge of the research, because of their ability to make a dense turf. Although they had been known in this country for many years, this was the first basic research work to be done on them from the standpoint of breeding and seed production.

Seed production on common Japanese lawn grass is low and unpredictable. One of the first studies at Beltsville was to find nutritional factors that increased seed production in the superior strains. Dr. Marvin H. Ferguson, plant scientist, found that high levels of nitrogen, required for grass production, are not necessarily conducive to seed production. His results indicated that boron, together with balanced feeding, holds the key to increased seed yields. On the basis of these findings the Beltsville plots receive a mixed fertilizer (10-6-4) and then a separate application of boron.

In studying seed yields the Beltsville re-

searchers have found some strains yield no seed at all, others may produce several hundred pounds to the acre. Cooperative studies are in progress in other parts of the country to determine seed production possibilities in other areas.

Zoysia Spreads Rapidly

Dr. Grau makes the point that a little zoysia seed goes a long way. He estimates that an ounce of seed of the superior new strains will produce enough seedlings—spaced at 2 feet intervals—to plant 6 acres. Once established, the zoysia spreads rapidly. Experimental plantings at various locations across the country show that a square inch of turf will give full coverage over a square foot of soil within two years.

Other studies at Beltsville have shown that mechanical hulling or chemical treatment speeds up seed germination and that fungicidal seed treatments increase the emergence of seedlings.

Although zoysia makes a thick turf in shade and in sun, it has one marked disadvantage. A warm season grass, it turns brown during cold weather, becomes green again when the temperatures rise. For an attractive year-round lawn, the plant scientists say zoysia should be teamed with blue grass, fescues, or other cool-season species that remain green in fall and winter.

The scientists believe that continued research will produce zoysias that stay green over a longer period and have other good qualities. But that will take several years. Meanwhile, the superior strains now being increased on small plots at Beltsville promise valuable planting material for lawns, parks, athletic fields, golf course fairways, and cemeteries.

USGA Green Section Turf Field Days, Oct. 7-9

The 1951 National Turf Field Days will be held October 7, 8 and 9.

Sunday evening will be devoted to progress reports by Turf Research workers and graduate students and a discussion of plans for further research to meet current needs.

Monday will be the big day, during which visitors will see the experimental plots at Beltsville as well as practical demonstrations of new grasses and new practices at a local golf course. Monday evening again will be devoted to a dinner and talks by leading turf authorities.

Tuesday, October 9, will be a "free" day for anyone's choice.

Reservations for rooms should be made directly. Tourist cabins near the Plant Industry Station include:

Del-Haven White House Cottages, Berwyn, Md., Canary Cottages, Beltsville, Md., Stewart Cottages, Beltsville, Md. and downtown hotels, are available.