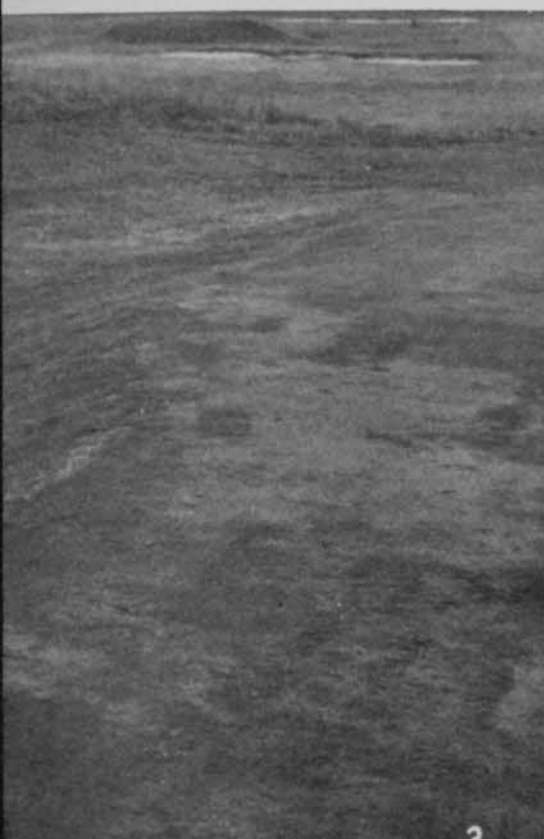




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# Chlorosis: Troublemaker On Velvet Bent Greens

By O. J. NOER

Every now and then velvet bent turf on putting greens behaves badly. It happens on the localized spots of this grass on greens of mixed German bent, and occurs on the pure strains of Piper, Kernwood, etc. It was bad on the velvet bent plots at the Arlington garden in Washington, D. C., but was never a serious problem at the Rhode Island station.

Greenkeepers have been gravely concerned about this behavior of velvet bent and rightly so because it does not have the recuperative powers of other bent grasses. Velvet bent is unable to stage a quick comeback. Clover, poa annua, etc., take possession following severe injury to it.

Velvet bent greens have been torn up and discarded at several New England clubs. The program to change all greens to velvet was abandoned because of being plagued with this baffling trouble continuously. Yet velvet bent has behaved in a normal manner at other clubs.

The summer of 1947 was a bad one for velvet bent in New England. Difficulties started in the spring, but real trouble occurred in July following a heavy rain that ended a month or more of drought. Rain stopped by mid-afternoon and was followed by intense heat and extreme humidity. The velvet bent became chlorotic. It turned a sickly yellow color. The leaves and stems became soft and limp so they bruised easily. Grass that did not recover normal color promptly, soon withered and died. The green, or the damaged area, looked exactly like it had been scalded.

There seems to be some relationship between chlorosis and soil moisture. Overwatering and heavy rains especially when followed by decidedly cooler weather appear to aggravate chlorosis. It is accentuated by the recent previous use of readily available phosphate (super phosphate), or heavy liming, especially with hydrate.

## Causes of Chlorosis Vary

Disease of undetermined origin, either bacterial or fungicidal in nature, has been

generally accepted as the cause. A physiological disorder such as a temporary nutritional deficiency in something other than the usual basic elements (nitrogen, phosphoric acid and potash) would seem like a more likely cause. Lack of iron produces the same kind of chlorosis in other plants. Magnesium is another element associated with leaf color. A deficiency of trace elements such as manganese, copper, zinc, boron, etc., would be another possibility. All were tried on test strips by several greenkeepers with indifferent results.

Arthur Anderson at Braeburn in Newton, Mass. had more than his share of trouble in years past. The patches of velvet in the old seeded German mixed greens kept turning yellow. Some would recover but others would die. He tried spray applications of ferric and of ferrous sulfate alone, and in combination with compounds containing magnesium, and the various trace elements. Iron compounds were the only ones that seemed to do any good. Ferrous sulfate, commonly called copperas, was the best. Benefits were of short duration and sometimes were disappointing with respect to color even with rates of 4 to 5 pounds per 1,000 sq. ft. He tried light rates of 1 to 2 pounds per green of approximately 5,000 sq. ft. with just enough water to cover the green. This procedure left the iron on the leaves and gave far better results.

William Mitchell tried the same procedure on some velvet bent greens in Western Massachusetts. From 1 to 1½ pounds of copperas was sprayed on each green with 20 to 25 gallons of water. Burlap bags were used to cover an odd spot on several greens and provide untreated checks. The sprayed grass started to turn green within less than 24 hours and leaf blades became firmer. Shortly thereafter grass became normal in sharp contrast to the sickly yellow chlorotic velvet bent in the untreated checks.

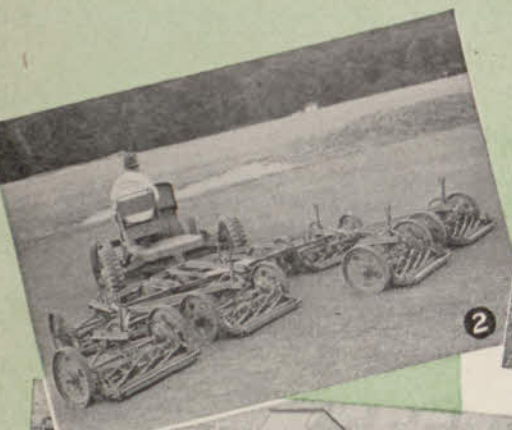
1. William Mitchell points to spot on chlorotic velvet bent green which was covered with a burlap bag before spraying with iron sulphate. This part stayed yellow but the iron sulphate restored normal color to rest of green. Picture taken 24 hours after spraying. 2. Close-up of chlorotic spot where velvet bent has withered and then the area resembles scald. 3. Velvet bent along edge of green is sickly yellow in color and about to wither and die. 4. Bad case of chlorosis on velvet bent green in Conn. Surface soil has high content of peat. Large areas on this green were repaired by sodding.

# For Every Large Area Grass WORTHINGTON



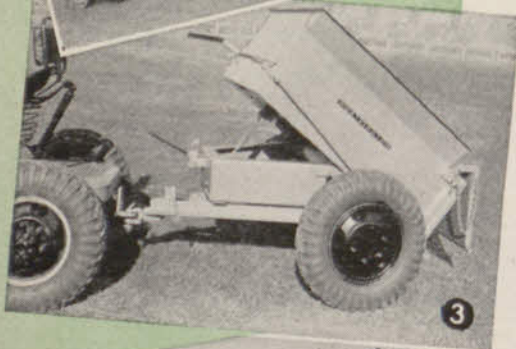
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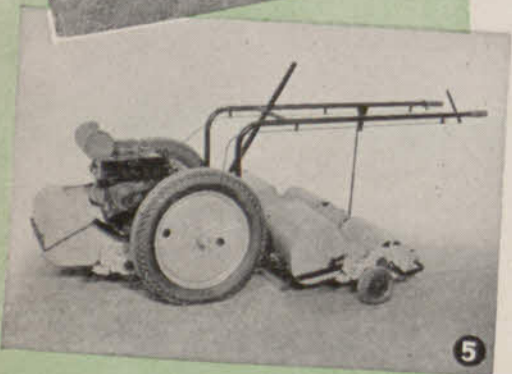
## 3—DUMP CART

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Copperas used in the same manner was equally effective on chlorotic greens in other parts of New England, notably Worcester and Fitchburg. Results were so striking that the greenkeepers intend to have copperas on hand at all times. It will become a regular supply item with them just like fungicide, fertilizer, etc.

The use of iron sulphate in this manner should be tested on any green where the grass becomes chlorotic (sickly yellow color), whether it is velvet bent or another kind of grass. A minimum amount of water should be used and the rate for the iron sulphate should not exceed 1 to 2 pounds per green. Otherwise scorching of the grass may occur.

At clubs where greens contain a high proportion of velvet bent another test should be made. In place of using ammonium sulphate alone, a mixture of 1 pound copperas to each 5 or 6 of ammonium sulphate should be tried. Such a mixture may overcome chlorosis most of the time, although it may still be necessary to spray grass foliage with a little iron sulfate now and then when weather is bad. Such a mixture is used regularly on greens in

Britain where velvet bent is common in greens.

Why velvet bent is unable temporarily to obtain the small amount of iron needed for growth is a problem for the future to solve. Chlorosis seems to be less common on porous sandy soil, and where water is used sparingly. Conversely it seems to be worse on heavy soils especially when they are continuously wet from overwatering or heavy rains. A high humus content of the soil from the excessive use of peat, or due to an accumulation at the surface of partially decayed leaves and stems is another contributing factor. Apparently these conditions immobilize the iron in the soil. It is precipitated as insoluble compounds or converted into ones the plant cannot use. Whether it is lack of aeration, or something else time alone will tell. One club in Connecticut had trouble of this kind until greens were turfed one or two times each spring and fall. Turf has been playable ever since and iron sulfate has never been applied. Besides the routine drilling in spring and fall any green is turfed promptly again at the first sign of yellow color.

---

## Aerifier Makes Quick Work of Cultivating Fairways, Greens

The Green Valley CC, LaFayette Hill, Penn., has come to life on the site of a golf course that was unattended during the war years and permitted to grow up in weeds and grass. A real job awaited Charlie Wilfong, grnkr., when he undertook the reconditioning of the fairways and the rebuilding of the greens. Costs were held to a minimum by using the old fairways—some holes were lengthened, but in the main new construction was confined to the greens.

Opening the fairways to play was no small task. They began cutting with sickle bar mowers and gradually brought the height of cut down to the point where the fairways were in playable condition. 1946 found the fairways in good condition but they became infested with crabgrass and clover during 1947, posing a complete renovation job which Wilfong has devoted his time to during the fall in the hope that he can have first class turf established for the coming season.

Milarsenite was applied to get rid of the crabgrass and clover. The first nine fairways were cultivated with an aerifier set to maximum depth. Seeding followed with the use of an alfalfa drill cutting in the seed in two directions to a depth of about a half inch. The result was an excellent stand of grass which Wilfong believes will solve his crabgrass and clover problem for the approaching season.

After the apparent success with the first nine fairways, the remaining nine were

given the same treatment, including the tees. Fertilizer and seed were applied followed by a Scotch chain-harrow used to work down the soil brought up by the aerifier.

To continue in Wilfong's own words: "Where holes had been lengthened we had a special job to do. The approaches had previously been rough and needed considerable improvement. We wanted to work organic matter down into the existing soil and hit upon the idea of applying the organic matter to the surface and then passing the aerifier back and forth across the area many times. As the soil became loose the spoons worked down deeper until even the discs were in the ground. When we were finished the soil was well pulverized and the organic matter was thoroughly mixed to a depth of five inches. To my knowledge this is something new in soil tillage and may be worth consideration by others. The amazing thing about the whole job is the fact that it took only about an hour to do each approach whereas my experience leads me to believe that it would have taken a full day for each job with any other method.

"We have found the aerifier a time-saver in conditioning greens also. We equipped our aerifier with new half-inch diameter spoons and used them on a trial basis. It took only thirty-five minutes to aerify, mat, roll and mow one green that normally would take four men almost a day to do with hollow-tined forks.

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Seabreeze clubhouse renovated inside and out for reopening after wartime shutdown.

# Winter Pro Job Is Preview of Season to Come

By SAMMY BELFORE

*Pro-Mgr., Seabreeze Golf & Tennis Club, Daytona Beach, Fla.*

Winter season pro department operation in Florida provides a great opportunity for the pro to put to a test the new styles in merchandise and the new ideas he considers for his northern summer job. There no longer is any excuse for the winter job operator to figure he can get by satisfactorily with stocks for emergency purchase by players at his course. He's expected to present a preview of the coming summer's service.

I've noticed during the many years I've been coming from my northern jobs to work in the south that the importance of the annual changes in styling of golf merchandise has been growing constantly. It is a trend that is making necessary a close watch on pro shop inventories and clearance sales as the northern season approaches its finale.

One thing that this means is stopping the old pro habit of being too free to return unsold merchandise for credit instead of regarding purchases as firm purchases as is customary with other retailers. The returned merchandise—if accepted by manufacturers—can't be dumped into the river but has to be sold at salvage prices and sometimes in a manner that handicaps the entire pro retailing job.

The winter resort golfers usually are the most enthusiastic and biggest buying members of private clubs. A great many of

them are very loyal customers of their home club pro. This is a factor that I consider conscientiously on my winter job at Seabreeze. Many of my pro friends send their members to my place and I'm certainly not going to be ungrateful for this by putting on high pressure to beat my pals to sales. This is a factor which accounts for part of my merchandising and advertising being the work of supplying a preview of 1948 styles.

## Style Changes Obvious

Fortunately for pros new wood head materials and marked improvements in iron head design make the style advances so marked that the customers can plainly see the differences and become aware of the reason for higher prices.

In apparel styles Florida is the most certain test market for determining what will go well in the northern and central states the following summer. California may originate many of the sports apparel ideas but in Florida during the winter these ideas go through the sifter. By watching customer reaction closely in Florida I can determine what to stock in my shop at Seabreeze and know pretty well in advance what will go best at my summer job.

Despite the ravages of storms and some unpleasant weather in the earlier period of



the Florida winter season the state has made a great postwar comeback as the winter preview market of the coming national golf season.

The case of the Seabreeze Golf and Tennis Club at Daytona Beach, Fla. is significant of the Florida revival. On January 1, the reconstructed club, now headed by Earl Warner, had its gala opening.

Dormant for many years, the Seabreeze club has had a complete and lavish face-lifting. A rebuilt nine-hole course, spread over 3,107 yards, with another nine earmarked for addition during the coming year, provides play throughout the year. Rebuilding the links was as tough a job as building a whole course straight from scratch, as Florida palms and shrubs which grow back to jungle quickly, had an 8 year stranglehold on the area.

Greens and tees had to be entirely rebuilt and because some of the property surrounding the golf course was sold to and built on by private individuals, the natural drainage system was halted. In order to overcome this obstacle, an artificial lake was built in to take care of the drainage problem. In spite of property sold, however, there is still sufficient land on which to construct the other nine holes.

No cost was spared in getting the links and clubhouse into tip-top shape. Reseeding the fairways and greens ran up a bill of \$4,600. All new Toro equipment was moved in, such as fairway mowers, green power mowers and tractors. Hose, sprinklers, benches for each tee and ball washers all are new. To date, \$22,050 has been spent on reconditioning and maintenance of golf links, and workmen are still going strong. The wiring bill for the clubhouse came to \$6,200. The chandelier in the upstairs dining room swings nonchalantly over the heads of diners to the merry little tune of \$6,000. Painting came to \$3,800, and complete furnishings—which are colorful, modern, and streamlined to the nth degree—ran into \$36,000.

On the main floor, overlooking the fairway is a main, colorfully decorated and furnished glassed in porch. Inside is a bar and cocktail lounge spread out before a mammoth fireplace. The locker rooms—both men's and women's—are completely modern and extremely spacious. Upstairs is a private cocktail lounge and the main dining room.

Two hundred feet of private beach with comfortable cabanas will also be at the disposal of members and their guests, as well as a supervised children's playground.

Entirely new is my well equipped golf shop which will be under the supervision of my brother, Frank.

Other members of the pro staff include my assistants Toby Costan, originally from



Sammy Belfore and (R) brother Frank in Seabreeze shop where resort pro shop merchandising runs pre-season tests.

Rye, N.Y., Frank Pep, from Detroit (Mich.) CC, and Harold Clasen. George Perkins is caddie master. Zeke Haynes is handling locker chores, and Pete Latturda, formerly with the Daytona Beach CC, is greenkeeper. The tennis courts, still under construction, will be under the supervision of Gene Primm, tennis pro.

Memberships are required for social privileges of the club, but the golf course itself is open to the public for daily fees.

### Michigan PGA Presents Film Program

Michigan PGA has prepared a campaign for selling and showing its color sound movie of the 1947 PGA championship at Plum Hollow. Tommy Shannon, chmn., Film committee of the Michigan section, with Florez, Inc., producers of the film, devised the campaign which starts with mailing information on the availability of the film to all PGA members. A follow-up mailing of a brochure about the 16 mm. film gives pros some information on how to make use of the film in showing, without admission fee, to club members and other groups.

PGA members in any section who buy prints are given an exhibition license for shop display. Florez, Inc. prepared for the Michigan Section a Presentation Guide which gives all needed information on how to promote and show the picture.

The material provides a thorough campaign for the effective utilization of the film by the promotion-minded pro. Complete details may be secured from Tommy Shannon, Orchard Lake (Mich.) CC and should be requested quickly so available copies of the film may be used by pros in teeing off with a strong golf promotion campaign early this season.

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