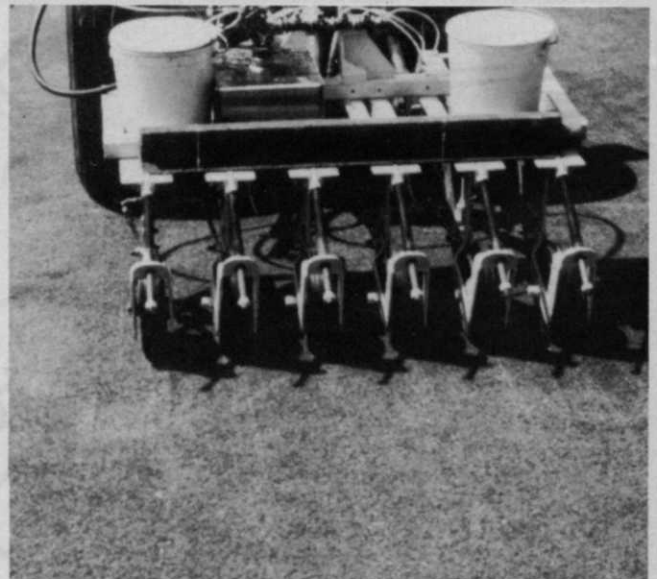




John Russell, son of owner, operates the greens model fumigating rig. It is smaller than the fairway model rig developed about three years ago.



Note that there is very little damage created by the fumigating rig. Golfers can play almost immediately after injection. These photos were taken by Dr. Don Dickson, extension nematologist, Univ. of Fla.

Simplified Nematode Control On Golf Greens

EDITOR'S NOTE: In May 1972, WEEDS TREES AND TURF published an article on Jack Russell, owner of Soil Fumigants Inc. At that time he had developed a way to inject Nemagon soil fumigant in the control of turfgrass nematodes. We recently visited with Jack Russell again to inquire about new developments. The following article reports on these changes and the increased interest in Russell's business.

BARE or sparsely covered areas of golf greens and other turf areas have been a maintenance problem as long as high turf maintenance has been practiced. Soil insects, extreme pH conditions, soil fungi, poor drainage and dry spots can often cause such problems. However, it is now being recognized that nematode damage to turf roots in many areas is the most frequent offender.

One company to take advantage of research tests on this problem is Soil Fumigants Company, Orlando, Fla. They've witnessed the worked accomplished by Dr. Vernon Perry and Dr. J. R. Christie of the University of Florida. Results of field demonstrations by Dr. Granville Horn have been carefully stored in their files for customer use. Yes, Soil Fumigants Co. is definitely in the business of fighting nematodes. And

equipment developed by them is dealing a decisive blow to these voracious pests. Jack Russell, owner of Soil Fumigants Co. uses Nemagon soil fumigant because it has been proven to be reliable.

Most highly maintained turf areas such as golf greens must be handled with care, he says. Machinery must be used that disturbs or damages the turf the least.

"We first selected a lightweight but adequately powered tractor unit, he continues. "Then soft balloon tires — actually used airplane tires — with little or no tread were mounted on the tractor so that the turf surface would not be marred with cleat marks." Another requirement of the tractor was an adequate hydraulic lift to handle the weight of the injection unit.

The next requirement of their injection machinery is a set of six sharp and thin shanks to slice the turf and allow the nematicide into the root area. Russell sets shanks at eight inch intervals to give the best fumigant distribution. Packer wheels close the slits in the sod with such perfection that particular golfers may play immediately following the treatment with no putting problem.

"In fact, it is very often difficult to follow the line of last injection," Russell inserts. "The thin cut in the turf is usually not visible after three or four days."

For three years Jack and his son John have been treating fairways and other large turf areas with similar but heavier equipment. Results have been extremely satisfying, according to the duo. Most superintendents have voiced the opinion that this method of turf nematode control using the injected Nemagon has been the best money they have ever spent for improving the vigor of turfgrasses, reports John.

The cost of fairway fumigation averages about \$50 per acres for material and application. "A single treatment will remain effective for one to two years," says Jack. "We've noticed that fumigated turf appears to be healthier. This vigor has reduced the need and the cost of numerous applications of herbicide. A vigorous stand of turfgrass crowds out many problem weeds. Plant parasitic nematodes are harmful to most turfgrasses, but unfortunately the weeds seem to survive best. In fact, weeds seem to thrive in soil with a high nematode count."

Since the Russell's small fumigation rig is usually used on turf areas of high maintenance, they use a slightly higher rate of Nemagon — from 30 to 35 pounds per acre — for more complete control. There's a decided response in turf at this slightly higher rate, notes this applicator.

What does it cost for fumigation of
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NEMATODE CONTROL

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greens? Russell calculates it this way. Green fumigation is made by square footage. Average charge is between \$6 and \$7 per 1000 square feet for material and application. That's for the complete job. Average cost then is about \$35 per green.

The irregular areas of most golf greens are hard to measure accurately. Russell came up with the idea of mounting a surveyors measuring wheel on the injection rig. "When the shanks are inserted, the wheel engages the surface of the turf and accurately records the linear feet of injection," he says. "This makes it a simple job to calculate the square footage and cost per green."

There's an added advantage to this method of measuring that has become a hit with superintendents. "Most of them are keeping these accurate area figures for each green as future reference in calculating rates for fertilizer and environmental protection chemicals," he says.

Accuracy of rate is of prime importance in doing a good job of fumigation. For this reason, Soil Fumigants Company have installed a pump and constant pressure on the system to insure a uniform and accurate delivery. Pump pressure with controlled psi is employed on both the small greens rig and the larger fairway machine. Rate is regulated by ground speed, adjusted pressure and orifice size on the shank outlet.

After three years experience with the fairway fumigation and two years with treating greens, the Russells offer these tips for nematode control in the Gulf States: The best nematode control maintenance program should be annual treatment of greens, tees and other high maintenance areas. For fairways and other low maintenance turfgrass, treat-

ment should be scheduled every two years.

"This gives preventive nematode control that should eliminate at least 95 percent of the turf problems," says John Russell. "Further north, where colder winters are the rule, the turf nematode problem is not as serious. I feel the problem should be dealt with as it arises."

Should a superintendent consider building equipment and doing his own treating? Or should he rely on custom applicators such as Soil Fumigants Company? Jack Russell strongly believes that there are real advantages for having the job done by the applicator. There is the initial high investment in equipment, about \$12,000 for a large fairway rig or roughly \$7000 for the smaller greens unit. In addition, there is the necessity of learning how to apply the nematicide. An experienced custom applicator has this training and the people to do the job professionally the first time.

"Let's not forget about the environment," cautions Russell. "With the increased emphasis being placed on protection of wildlife, fish and man, it is becoming important to know what the label on the product says, but also how to use the material to the best advantage without infringing on the surrounding environment.

"We've found that with this method we can apply much lower rates of Nemagon and minimize surface runoff. Contact with the chemical is reduced to a negligible degree," he continues. "We feel that we're using one of the safest nematicides on the market, particularly when injected at the recommended rate of 20 to 35 pounds per acre."

What about the future? Says Jack Russell: "No doubt new and improved chemicals for turf nematode control will be developed. Better

equipment to simplify application even more will enter the picture. But we believe that until these improvements are available and proven, our two applicators units are giving us the best possible results."

Results is what counts. Vigorous turfgrass free of thin and bare spots is what Soil Fumigants Company is after. And at the rate business is coming in, you'd think there was a reward posted for nematodes! □

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ProTurf Division of O. M. Scott & Sons has introduced a new product specifically developed for the needs of Southern and Western golf courses and Western golf courses and other turf areas.

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For additional information write George Horn, ProTurf Division, O. M. Scott & Sons, Marysville, Ohio 43040.



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