

(Art of Spraying continued)

4. Nozzle Flow Rate. The last number in the nozzle identification number indicates its flow rate at 40 PSI. The 8008 has a greater flow rate than either an 8005 or an 8003, and it is interesting to note that at pressure from 10 to 80 PSI the larger flow rate nozzle has fewer drops in the smaller VMD range. The droplet size is smaller when 100 degree nozzles are used over the same range of pressure. The better method of increasing spray volume rates is to change nozzle size, not to increase pressure. A method of reducing drift is to lower the pressure at the nozzle. Nozzles sold to reduce drift usually operate at a lower pressure due to designs that have lower pressure at the exit opening. Standard nozzle operating pressure is 40 PSI; below that the angle of coverage can be reduced and above that a higher percentage of driftable drops result. Pressure from 35 to 40 PSI at the nozzle is desired with fan type nozzles for most effective spraying.

5. Delivery Volume or Dilution Rate. A surface area of 1,000 square feet covered to a depth of 12 inches requires 7,480 gallons of water. Sixty-two point three (62.3) gallons of water will cover that same 1,000 sq. ft. to a depth of 0.1 inch, while 6.2 gallons will only produce a layer of water 0.01 inch deep and 0.62 gallons results in a very thin water layer, 0.001 inch. How thin is a layer of water 0.001 inch? Take a 1-inch piece of paper and cut in half ten times. What is left is 1/1024 inch. When spraying one gallon of water per 1,000 sq. ft. a layer is produced 0.0016 inch thick; at two gallons per sq. ft. the layer is 0.0032 inches thick. This assumes all of the

volume is spread evenly and none is lost. Sprayer technology and operator skill are seldom so exact.

6. Disease Control/Delivery Volume. It was shown that the length of effective disease control with Bayleton was dependent on the delivery volume. Significantly less disease control was reported at 23 and even at 37 days after treatment if delivery volume was reduced from 2 to 1 gallon of water. Optimum dilution ranges are 1 to 2 gallon for many products. Some new fungicide labels provide dilution guidelines.

7. Post Spray Water. Maximum disease control was obtained from contact and some systemic fungicides when they were applied to dry turf and allowed to dry before rain or irrigation was applied. The period of time from initial wetting from spray application until dry on the leaf appears to be important for uptake and disease control. While the mechanism is not understood, the basic effectiveness of a fungicide is reported to be established by the initial water amount when applied; therefore application to dry turf is desired and the turf should not be rewet until the product has dried. Watering systemic fungicides after the leaf is dry may not reduce effectiveness, nor will it improve product performance. Contact fungicides do suffer a significant drop in disease control if watered before they dry. Products with sticking agent(s) remain effective if the spray has dried on the leaves before wetting.

The application of fungicides for turf winter disease management last fall began a study to evaluate three dilution rates: 2, 1 and 1/2 gal. per 1,000 sq. ft., two rates of a combination, tank mix fungicide program and three noz-

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(Art of Spraying continued)

zle types. The results are not yet completely in, but initial readings at Duluth suggest some differences related to all variables. One year does not make a good test and future results are needed. I'll be preparing a first year summary after the next set of notes are taken at Duluth.

I'd suggest that you very carefully consider the dilution rates used for fungicide application, as low dilution rates of products appear to perform poorly in research reports and in the first trial for winter disease control. It is possible, not proven, that low dilution rates are part of the problem in allowing for rapid development of fungicide resistance. Clearly the repeated use of fungicides with the same mode of action and application of such products at lower than label rates are important and significant factors in resistance development. Application of fungicides at the tested/recommended dilution rates may result in better disease control and fewer reports of resistance or product failure concerns. Nozzle type, size and pressure are significant factors affecting fungicide performance.

The sprayer output should be tested following procedures given in operation manuals or in spray nozzle catalogs. Your goal is to measure the delivery of product per unit area of turf. This is a function of nozzle size, number, pressure and speed of the sprayer. How well does your sprayer perform? **Credit: Hole Notes 6/95**

Bentgrasses

Past, Present & Future

by Skip Lynch, National Technical Representative
Seed Research of Oregon

Not long ago, the golf course superintendent had very few choices of creeping bentgrasses for new green construction or overseeding of existing putting greens. Since 1987, the choices seem to have grown exponentially. Because of the introduction of so many new bentgrasses, knowing which bents do what, where and for whom is getting to be a full time job in itself.

So, how is a superintendent to keep up with the barrage of new varieties entering the bentgrass market?

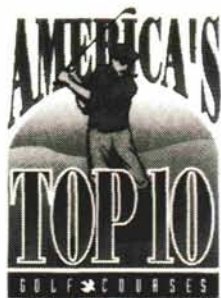
So, how is a superintendent to keep up with the barrage of new varieties entering the bentgrass market? Study, study, study. Perhaps the next few paragraphs will provide you with a brief guide to the bentgrass market's past, present and possible future.

THE PAST

As golf was emerging on the North American continent, the only "bentgrass" seed for greens available to the

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| ➤ | 8. Shadow Creek Golf Club
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