

Post-harvest Spray Applications

Decree®

Botrytis fungicide for preventative control

Storage decay of bare-root ornamentals has become a serious problem for many growers. A wide variety of crops, from woody plants to perennials and forest seedlings, are stored over the winter each year. Fungicide applications are routinely made for some crops, including strawberries and roses, but their benefits are not as clear on many of the perennials currently grown. *Botrytis* is one of the leading culprits to losses from fungi (Figure 1). *Penicillium*, *Rhizopus*, *Alternaria*, *Fusarium*, and *Rhizoctonia* are other fungi that have been found to cause storage decays. Storage conditions are usually not open to manipulation, and control of storage rot is often based on fungicide application before storage.

One of the most effective products for *Botrytis* control is Decree fungicide. It has been available to commercial greenhouse and nursery producers for 2 years and has been used extensively in production of such important crops such as geraniums, poinsettias and cut flowers. Decree represents a new class of fungicide for *Botrytis* control on ornamentals and is a critical component of any effective disease management program. Decree controls *Botrytis* by interfering with fungal metabolism at four different disease stages: spore germination, germ tube elongation, appressoria formation, and mycelial growth. Decree has shown excellent efficacy when used as a preventative treatment and it has demonstrated its ability to stop disease spread from an existing infection or source of inoculum. Decree's unique characteristic in stopping *Botrytis* sporulation makes its use in storage disease control especially attractive.

Decree may be applied as a spray to field- or container-grown ornamentals at any stage during the production cycle. Additional post-harvest spray applications may be made to ornamentals brought in from the field or greenhouse prior to cooler storage. A determination has been made, by state and county regulatory agencies in California, that post-harvest sprays of Decree on ornamental plants or plant parts in various stages of harvest (eg. unrooted, bare-root, ball-and-burlap, potted) is congruent with the present product label. On bare-root roses for example, Decree is presently being applied as a heavy spray after canes are field-dug, bundled and boxed prior to placement in cold storage. The application rate of Decree for any post-harvest use is the mid to high labeled rate, specifically 1.0-1.5 lbs. product per 100 gallons of spray.



Fig. 1. Post-harvest infection of *Botrytis cinerea* cane blight on roses from cold storage.

In June 2000, spray trials were initiated by Dr. Ann Chase of Chase Research Gardens, Inc. in cooperation with Bear Creek Production Company (producers of Jackson & Perkins-brand material) to compare effectiveness of Decree and Chipco 26019 for prevention of *Botrytis* blight in cold storage of bare-root roses. Whereas both fungicide treatments provided excellent control of *Botrytis* storage rot, the higher rate of Decree gave slightly better control, especially for the more *Botrytis*-sensitive cultivar 'Taboo,' at 8 weeks after treatment (Figs. 2 & 3). A sub-sample of the treated and cooler-stored plants was removed from 8 weeks of cold storage and potted on 30 August, grown out, and evaluated 4 weeks after potting (on 28 Sept.). Plants showed no differences in growth or quality between treatments in the cooler and nursery, and there were no signs of *Botrytis* infection during the grow-out phase. Though differences were not statistically significant in this small-scale test, enhanced control from Decree may be more evident when used in wide-scale commercial production.

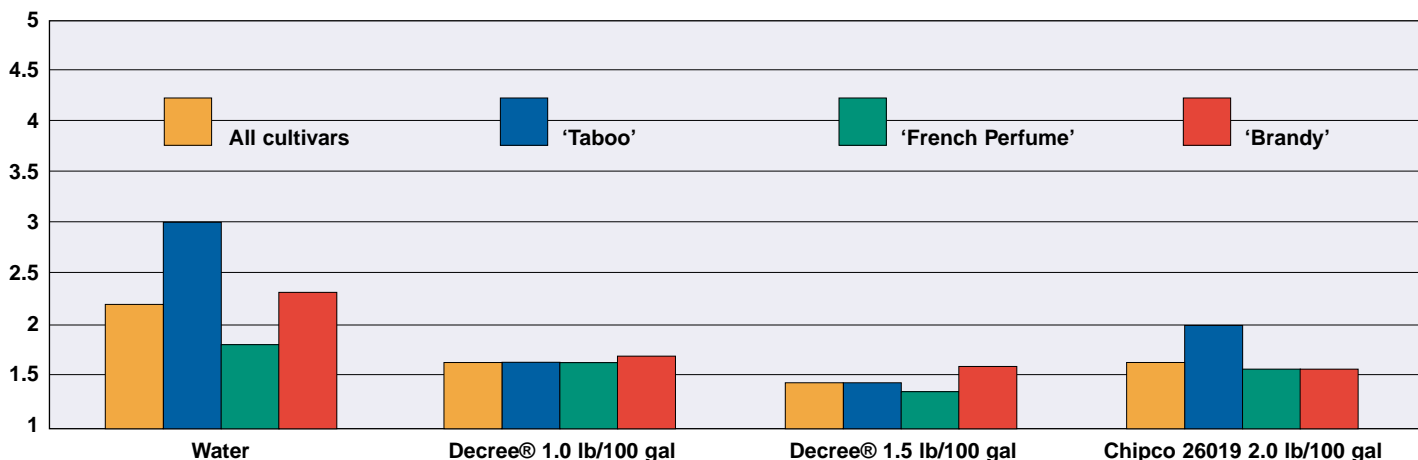


Fig. 2. *Botrytis* storage rot on three cultivars of bare-root roses were rated for disease severity on a 1-5 scale (1 = none to 5 = completely covered with spores and dead tissue). Evaluations were made 8 weeks after roses were boxed, treated, and placed into the cooler. Chase Research Gardens, Inc. and Bear Creek Production Co., summer 2000.

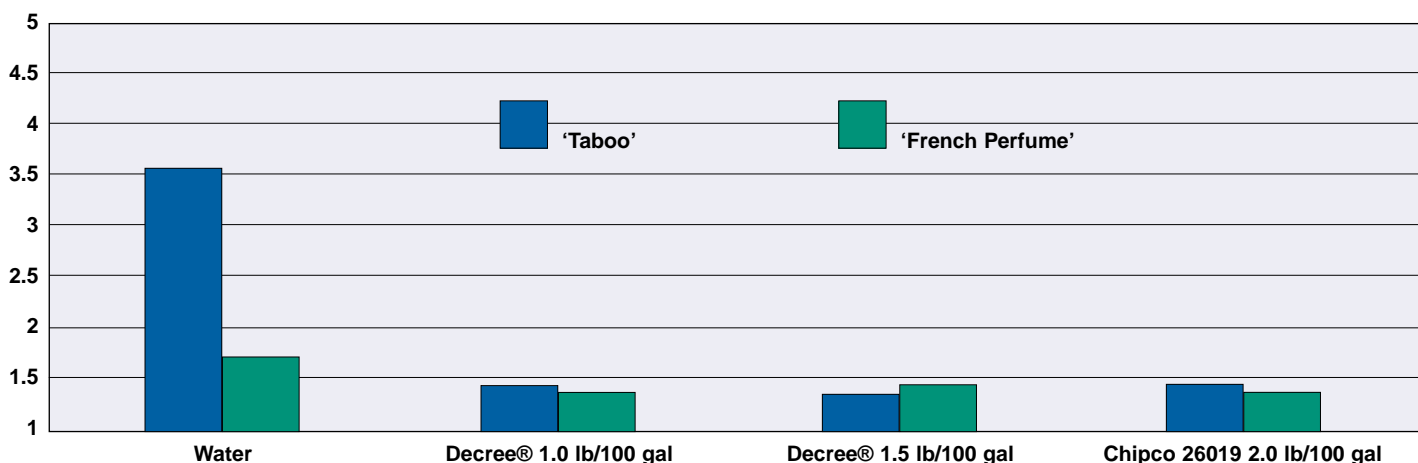


Fig. 3. *Botrytis* storage rot on two cultivars of bare-root roses were rated for disease severity on a 1-5 scale (1 = none to 5 = completely covered with spores and dead tissue). Evaluations were made 14 weeks after the roses were boxed, treated, and placed in the cooler. Chase Research Gardens, Inc. and Bear Creek Production Co., summer 2000.

In some production systems where post-harvest fungicides are frequently used, the likelihood of developing resistance to these products is great. Since Decree® represents a unique chemical class, resistance management strategies such as alternation (rotation) or tank mixtures with any other broad-spectrum fungicide currently recommended for *Botrytis* control is highly recommended. The other two fungicides labeled for use in coolers include the dicarboximide fungicides, vinclozolin (Curalin, Ornalin) and iprodione (Chipco 26019). Chipco 26019 has a 12-hour re-entry interval and some growers claim *Botrytis* resistance as a result of intensive use in production together with post-harvest. Additionally, vinclozolin formulations, registered to control various types of rot caused by *Botrytis* spp., *Scelerotinia* spp., and other molds and blights, have been taken off the market for regulatory reasons. Decree may be used in place of commonly used products or as a season-to-season rotation strategy.

