

CRABAPPLE (*Malus* 'Spring Snow')
CRABAPPLE (*Malus ioensis* 'Klehm's Improved Bechtel')
Gray Mold; *Botrytis* sp.

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SPECIAL LOCAL NEED (24C) FOR EXOTHERM TERMIL IN COLD STORAGE WAREHOUSES – NURSERY LOCATION B, 2001: The objective of the trial was to obtain experimental evidence as to the effectiveness of Exotherm Termil against storage molds on nursery stock in cold storage warehouses. Trials were conducted at two different locations (see separate Hydrangea write-up). At nursery location B, a section within a commercial warehouse was fumigated with Exotherm Termil. Plastic tarps were arranged such that a space of approximately 6,000 cubic feet (20 ft wide x 50 ft long x 6 ft high) could be sectioned off from the rest of the warehouse. The trial consisted of the following crabapples, *Malus* 'Spring Snow' and *Malus ioensis* 'Klehm's Improved Bechtel'. These trees had been dug from the field and then stored in the warehouse for approximately 1 month prior to initiating the experiment. Zerotel (or OxiDate containing hydrogen peroxide) and Cleary's 3336 (at 20 oz/100 gal water) were injected into the warehouse's internal misting system during this time. Trees were bundled together using twine in groups of 5 (or 10) trees. Five bundles of each tree cultivar were placed horizontally on each of 4 wooden pallets located in the fumigated area (for a total of 20 bundles). A can of Exotherm Termil, located in the middle of the tarped enclosure, was ignited using a propane torch. This was accomplished by heating the outside wall of the can with the torch until a consistent white smoke was observed. The plastic tarped fumigation area was closed and then warehouse doors were closed and locked after the can was ignited. Three sets of 20 bundles of each tree were placed up-right and sprayed with either Daconil Weather Stik at 1.5 pt/100 gal water, Decree at 1.5 lb/100 gal water or left nontreated. Approximately 0.5 gal of fungicide solution was applied to 20 bundles. These trees were stored in the same warehouse adjacent to the enclosed fumigation area. During the next scheduled work day, about 2 to 3 days later, only the sides of the fumigated area were raised so air could flow through from the rest of the warehouse. The variously treated bundles were then arranged into a randomized complete block design with 4 replications. Five tagged bundles from each treatment were randomly placed horizontally onto each wooden pallet within the tarped fumigation area. Plants were randomly placed into a large pile on each pallet. This was similar to how nursery stock was generally stored at this nursery. To summarize the experimental design, the result was 4 separate pallets piled with 5 bundles from each of 4 fungicide treatments. Several weeks later when treatments were reapplied, the nursery stock was resorted back into their respective treatments, stood upright, treated, stored until fumigation was finished and then re-randomized back into the same design. Although bundles from each replicate were kept together, individual bundles would have ended up in different positions within their respective pile each time treatments were finished. Treatments were applied on 12 Jan 01 and 26 Jan 01 and 9 Feb 01. The trial was randomized on 15 Jan 01 and again on 29 Jan 01 and 12 Feb 01. The warehouse was kept between 34 – 36°F. Occasionally, additional water was applied to trees in a fine mist to keep roots from drying out. Plants were monitored for moldy growth periodically during storage.

Warehouse conditions remained cool and visibly wet during the experiment. Other stock plants heavily infected with *Botrytis* from other areas of the warehouse were also moved into the fumigation area. By mid March, no *Botrytis* sporulation was observed on trees used in the experiment. It is possible that exposure of the trees to fungicides through the mist system prior to the experiment had an impact on the lack of disease development. Trees that retain fruit even into cold storage have been observed with more *Botrytis* sporulation and thus may be better suited as experimental trees.

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