A Summary of the Postharvest Characteristics of Different Types of Christmas Trees

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Providing consumers with high quality Christmas trees requires trees that have excellent moisture and needle retention characteristics. This is particularly true when trees are harvested early, shipped to distant markets, and displayed for extended periods of time. Conifer species that tend to dry out rapidly and/or shed needles as they dry are ill suited for use as Christmas trees.

During the past twenty years, postharvest tests have been conducted on a number of different types of Christmas trees as part of Washington State University's postharvest Christmas tree research program in an effort to identify species that have superior postharvest moisture and needle retention characteristics.

POSTHARVEST STUDIES

Although test conditions and length of time between harvest and display have varied slightly from year to year, all of the tests were conducted in a similar manner. Freshly cut trees were transported to WSU Puyallup where all tests were conducted in a temperature controlled display room. Trees were usually displayed with their bases dry and with freshly recut bases in water during each test. Trees were typically displayed for a minimum of 4 weeks at 20C (68F) with 30 to 50% relative humidity.

Data collected during each test usually included: Stem diameter and tree height; volume of water consumed by each tree that was displayed in water; moisture retention (pressure chamber and/or % moisture content); needle loss; and tree quality. In most cases, multiple tests have been done with each species.

RESULTS

The following is a summary of the postharvest characteristics of the different trees that have been tested. The ratings are based on the length of time trees could be displayed and still be expected to have acceptable quality. Ratings are: Excellent (E) – lasts 4-6 weeks; Good (G) - lasts 3-4 weeks; Fair (F) - lasts 10 days to 3 weeks; Poor (P) - lasts only 7-10 days; and Unacceptable (U) - exhibited moderate to severe needle shedding/discoloration within 7 days of being placed in the display room. Although it is always recommended that trees be displayed in a water holding stand, ratings are given for trees that are displayed dry as well as in water. It should be noted that many of the species with severe needle loss problems are not commonly grown as Christmas trees.

Arizona corkbark fir: Displayed dry – U/F, wet - E. About 40% of dry trees exhibited moderate to severe loss of green needles within 1 week.

Balsam fir: Displayed dry – U/F, wet – G/E. About 50% of dry trees exhibited moderate to severe loss of green needles within 1 week. By 4 weeks about 10% of wet trees exhibited some loss of green needles.

Canaan fir: Displayed dry – U/F, wet – G/E. About 25% of dry trees exhibited moderate to severe loss of green needles within 1 wk. Almost all of the dry trees had brown needles within 2 weeks.

Concolor or white fir: Displayed dry – U/G, wet – P/E. There were major differences in the postharvest quality of trees from seven different provenances of concolor trees that have been tested. Overall, trees from the Rio Grande, Cibola, San Isabel and Lincoln provenances performed best. Some trees from the Kaibab, and particularly the Siskiyou provenances were of poor quality when displayed dry because of rapid drying and needle loss.

Douglas-fir: Displayed dry - P, wet – F/G. Limited needle loss on dry trees. Limited water uptake after about 7 days.

European silver fir: Displayed dry – U/P, wet – G/E. About 50% of dry trees exhibited severe loss of green needles within 1 week and all dry trees had needle loss problems within 2 weeks.

Fraser fir: Displayed dry – F/G, wet - E. About 60% of the dry trees had some brown needles after 2 to 3 weeks.

Grand fir: Displayed dry – P, wet – G/E. About 20% of the dry trees exhibited moderate loss of green needles within 1 week. The rest of the dry trees dried out very rapidly. About 20% of the wet trees exhibited some loss of green needles after 3 weeks.

Greek fir: Displayed dry – U, wet – G/E. All of the dry trees exhibited moderate to severe loss of green needles within 1 week.

Monterey pine: Displayed dry – F, wet – F/G. Wilting of current season shoots evident on dry trees.

Noble fir: Displayed dry – F/G, wet - E. Dry trees did not lose needles, but color faded after 2 to 3 weeks.

Nordmann fir: Displayed dry – U/G, wet - E. About 25% of dry trees exhibited moderate to severe green needle loss within 1 week.

Pacific silver fir: Displayed dry – U/F, wet – G/E. About 10% of dry trees exhibited moderate green needle loss within 1 wk. Needles on dry trees were brown by 2 weeks.

Scotch (Scots) pine: Displayed dry - F/G, wet – F/G. Very stiff needles on dry trees. Variable needle loss on trees.

Shasta fir: Displayed dry – U/F, wet – U/G. About 20% of dry trees exhibited rapid drying and some loss of needles within 7 days. About 20% of wet trees exhibited loss of green needles within 1 week.

Subapline fir: Displayed dry - U/P; wet - U/G. About 25% of the dry trees exhibited slight to moderate needle loss. Some dry and wet trees also had random needles brown. About 25% of the wet trees also exhibited needle-shedding problems.

Turkish fir: Displayed dry – P/G, wet - E. About 20% of dry trees exhibited severe loss of green needles within 2 weeks.

Veitch fir: Displayed dry – U/G, wet - E. About 10% of dry trees exhibited moderate loss of green needles within 1 week. Needles of remaining dry trees were olive/brown and twisted after 3-4 weeks.