

Evaluation of Cold Storage for Unrooted Jojoba Cuttings

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ABSTRACT

Jojoba stem tip cuttings were stored under refrigerated conditions of 34^o and 42^oF for up to 2 months with no loss in rooting potential. Rooting percent for cuttings of two clones which were rooted with no prior storage was 64.8%. Rooting after 7, 14, 28 and 56 days of storage was 81.7, 72.9, 71.7 and 81.2%, respectively.

INTRODUCTION

During the past ten years, jojoba has increasingly been used as a landscape plant. Being native, it is well adapted to our area. It is a low water requiring broadleaved evergreen which has few problems. To date, most jojoba plants grown for ornamental use have been propagated by seed. Plants grown from seed are quite variable in size and appearance, as well as being of unknown sex until 2-3 years old. When plants of a particular appearance or sex are desired, asexual propagation must be used; stem cuttings work very well for jojoba.

Two problems faced with cuttings are that rooting percent decreases during winter months, and potential stock plants are often located far from the nursery. The ability to store unrooted cuttings for long periods (months) would allow them to be collected when their rooting potential was at its maximum and stored for later rooting. It would also allow collecting cuttings at any time or locations when they were available and keeping for later use. The objectives of this study were to determine whether jojoba cuttings could be stored for up to 2 months under refrigerated conditions and whether there were clonal differences in storability.

MATERIALS AND METHODS

Four-node stem-tip cuttings were collected from five-year-old stock plants of three jojoba clones (designated A,B, and C) on February 23, 1985. Stock plants were growing in a field at the University of Arizona Overpass Farm in Tucson, Arizona. Cuttings were placed in ice-chilled coolers and transported to the University of Arizona Campus Agricultural Center.

For each of the clones, cuttings were randomly assigned to three different storage treatments: a) unstored control cuttings were re-cut, treated with 1000 ppm IBA and immediately stuck in a 1:1 mixture of perlite and vermiculite and placed on a propagation bench under intermittent mist and with bottom heat; b) cuttings were placed in a 4-mil polyethylene bag and placed in refrigerated storage at 34^oF; and c) cuttings were placed in a 4-mil polyethylene bag and placed in refrigerated storage at 42^oF. At 7 days, 14 days, 28 days and 56 days after the start of the study, cuttings were withdrawn from refrigerated storage and stuck in the rooting medium described above in randomly pre-assigned spaces on the propagation bench.

At approximately 8 weeks after sticking, cuttings were removed from the propagation bench and evaluated for rooting. Harvest dates of cuttings were staggered to provide the same length of time on the propagation bench for each set of cuttings. Rooting results are given in Table 1.

RESULTS

Storage of cuttings of three jojoba clones for up to two months at 34°F or 42°F resulted in increased rooting percent. The average percent rooting of the three clones was 64.8, when stuck without cold storage. Overall averages (average of three clones and two storage temperatures) after 7, 14, 28, and 56 days of storage were 81.7, 72.9, 71.7 and 81.2%, respectively. Prior practice has been to stick cuttings as quickly as possible after they are collected. Results of this study indicate that rooting actually improves following refrigerated storage.

As has been found previously, there were clonal differences in percent rooting, however, the patterns discussed above were similar for each of the clones.

These studies were conducted at one time of the year and with only 3 clones and under one propagation system, so large-scale storage should be approached with caution. The results of this single study are encouraging because they indicate that jojoba cuttings can be stored for at least 2 months without loss of rooting potential.

Table 1. Rooting (%) of stem-top cuttings of 3 jojoba clones stored for up to 56 days at two temperatures.

| Days in storage | Storage temp (°F) | Clone A | Clone B | Clone C | Ave. |
|-----------------|-------------------|---------|---------|---------|------|
| 0 | — | 83.3 | 59.7 | 51.4 | 64.8 |
| 7 | 42 | 88.0 | 76.4 | 57.0 | 74.1 |
| | 34 | 84.7 | 80.6 | 82.0 | 82.4 |
| 14 | 42 | 74.4 | 70.8 | 51.5 | 66.2 |
| | 34 | 72.2 | 80.6 | 61.1 | 71.3 |
| 28 | 42 | 81.9 | 72.2 | 61.1 | 71.7 |
| | 34 | 76.4 | 70.8 | 69.4 | 72.2 |
| 56 | 42 | 86.1 | 75.0 | 77.8 | 79.6 |
| | 34 | 94.4 | 87.5 | 66.7 | 82.9 |
| Clone average | | 82.4 | 76.8 | 65.9 | |