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FRUIT AND NUT CROPS RESEARCH IN TEXAS, 1987

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SUBJECT MATTER TOPIC: Rootstock research and development for fruit and nut crops.

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CROPS: Blueberries
Pecans

ABSTRACT:

Objectives:

1. Explore the feasibility of pecan rootstock selection for nutrient ion efficiency, toxic ion exclusion and dwarfing ability.
2. Characterize the effect of selected pecan rootstocks on scion cultivar growth and yeild.
3. Evaluate the potential of using the farckleberry, (Vaccinium arboreum) as a rootstock for blueberries, (V. ashei) in areas with soil pH of 6.0 to 7.0.

General Approach:

a. Evaluate methods of clonally propagating selected pecan rootstock clones.
b. Devise methods of retaining juvenility in propagation materials from pecan rootstock clones.
c. Develop an understanding of the requirements for growing V. arboreum seedlings under nursery conditions.
d. Evaluate methods of asexual propagation of selected V.arboreum rootstock clones.
e. Evaluate propagation techniques for budding and grafting blueberry scions onto farkleberry stocks.
f. Evaluate soil pH requirements of V. arboreum.

Findings:

A. Selected pecan rootstock clones can be propagated by several methods. Rooting of dormat 16 inch stem sections can be accomplished utilizing stem cuttings which have recieved appproximately 190 hours of chilling by utilizing a 10 second basal dip of 10,000 ppm IBA, in beds with bottom heat maintained at 21° (70°F). Rooted cuttings can be produced from 12 inch taproot cuttings placed 6 inches deep in beds with bottom heat maintained at 21°. Shoots growing from the upper portion of the root cutting will develop sufficient roots on basal sections of the shoot to allow survival when removed as rooted cuttings after 6 months. Rooted clones can be produced in vitro from bud explants taken from shoots from very young seedlings under greenhouse conditions. Unfortunately, the seedlings shoots become rapidly contaminated. None of the above methods are

commercially economical at present.

B. Juvenile pecan stem tissue can be obtained from mature bearing trees by either cutting the tree off near the ground to produce stool beds, or by taking tap root cuttings from the mature tree and rooting as described.

C. During a two year study, germination tests have shown that V. arboreum seed have maximum germination after approximately 13 weeks of moist cold temperature at 2°(36°F). Fruit appear to be ripe in early September when soluble solids show a refractometer reading of 9.0% Brix, but remain attached to the plant until late December when the Brix reading rises to 14 - 16%. Seed harvested from fruit early in September just after fruit coloration are more viable than seed from fruit harvested in late December. Captan seed treatments were detrimental to germination and seedling viability. Seedlings reached splice grafting size, 1.0 cm (3/8 inch), after 1 year in 3.78 l (1 gal) pots.

D. Successful propagation techniques include bark grafting, 3.8 cm (1.5 inch) trunk diameter, dormant splice grafting 1.0 cm (3/8 inch diameter), chip budding, and T-budding only when a thin sliver of wood is left attached to the scion piece. Blueberry bark is very thin and flexible, easy to damage when inserting the scion piece into the T-slot of the stock.

E. Soil samples from eighteen stands of native V. arboreum have been evaluated. Native stands were established and growing well at pH levels as high as 6.8.

NEW INITIATIVES:

A. A study to evaluate the effect of GA4 on growth of pecan bud explants in vitro will be initiated in fall 1987.

B. Asexual propagation studies to determine rooting response of V. arboreum cuttings will be undertaken fall 1987. Effects of chilling, time of cutting, type of cutting, plant growth regulators, and bed temperatures will be evaluated.