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Survival and Growth of Hickories and Pecan After Containerization and Field Planting

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INTRODUCTION

Hickories (*Carya*) include many stately, native trees, that offer superior ornamental and adaptable features with great promise for application in managed landscapes, especially urban environments. Immense interest exists in effectively producing these trees, however, due to their lag-phase shoot growth and strong development of a taproot with minimal fibrous-root branching, these trees exhibit resistance to standard growing techniques and reduced transplant success. New commercial products such as modified nursery containers are touted as better alternatives to traditional production techniques. If these new products are effective, they provide new opportunities for developing hickory crops for nursery production. We questioned whether traditional field production, standard plastic containers, or new fabric nursery pots could be used to effectively grow bare-root whips of hickories and northern pecan.

Our objectives were to:

1. Characterize the growth and viability of bare-root whips of hickories and northern pecan under different production regimens.
2. Assess species differences after containerization and field planting.

METHODS

Species studied: *Carya cordiformis* (bitternut hickory), *C. illinoinensis* (northern pecan) *C. laciniosa* (kingnut hickory), and *C. ovata* (shagbark hickory).

Treatments: Bare-root whips (12 in.–24 in.) of each species were purchased and either lined out in a field or grown out in standard plastic #10 containers or Root Trapper Series II grow bags (#10 equivalent). There were 12-single plant replicates/species with standard #10 and Root Trapper Series II, and 14-single plant replicates of *C. illinoinensis, C. laciniosa, C. ovata* (12-single plant replicates *C. cordiformis*) in field.

RESULTS AND CONCLUSIONS

This study characterized the differences between hickory species when purchased as bare-root whips and as they are grown out using three different production systems. General trends of increases in both caliper and height were observed in plants grown with standard #10 or Root Trapper Series II containers that were not consistent with plants grown in the field. At least one instance of within species differences was observed with each taxon in response to the production treatment(s). In each example, one or both of the container treatment(s) resulted in higher values of growth (caliper or height) compared to field-grown plants. Most plant mortality occurred with pecan and shagbark and was associated with the field-production treatment. Overall, growth was similar between standard #10 and Root Trapper Series II containers. Based on these data, we recommend nursery producers consider container production over field culture of bare-root liners when growing *Carya cordiformis* (bitternut hickory), *C. illinoinensis* (northern pecan) *C. laciniosa* (kingnut hickory), and *C. ovata* (shagbark hickory) (Fig. 1).

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Figure 1. Left to right: *Carya cordiformis* (bitternut hickory), *C. illinoinensis* (northern pecan) *C. laciniosa* (kingnut hickory), and *C. ovata* (shagbark hickory) shown in standard #10 plastic container (top row), and Root Trapper Series II (bottom row).