# THE VERIFICATION, DESCRIPTION AND INHERITANCE PATTERNS OF PUTATIVE P. virginiana x P. clausa and P. clausa x P. virginiana

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Abstract.--A study examining reciprocal interspecific pine control crosses of sand pine ( Pinus clausa (Chapm. ex Engelm.) Vasey ex Sarg.) and Virginia pine (Pinus v irginiana Mill.) was undertaken with the primary objectives of verifying individual F1 hybrids and describing each of the crosses. Secondary objectives included determining the mode of inheritance of individual traits as to whether intermediate or dominant in both crosses and determining whether there are significant reciprocal hybrid differences for these traits. Thirty-three different morphological, anatomical, biochemical and phenological characters were finally chosen for evaluation and description of parental species and hybrids. Putative hybrids and their parental species were analyzed by canonical discriminant analyses and a comparison of trait means. Several good discriminating characters were found between the parental species and putative hybrids. Pollen shedding stage was by far the best and is recommended for future interspecific pine hybrid verification studies.

Reciprocal crosses between sand pine and Virginia pine were verified, but contamination during pollination was suggested by a few putative F1 hybrids which closely resembled the female parent in each cross. These crosses indicate a very close taxonomic relationship between these species. Only four of 18 useful traits (parental species significantly different at $P < .05$) measured were intermediate for the sand by Virginia hybrids and only 62 percent were intermediate for Virginia by sand hybrids. Significant reciprocal hybrid differences were evident in 16 percent of 32 traits measured for P. virginiana x P. clausa and P. clausa x P. virginiana. The hybrids of Virginia with sand pine were healthier and better adapted to the site at Tillery, N.C. than sand pine and performed as well if not better than Virginia pine based on observations of survival, height and diameter. This indicates that this hybrid might be useful on other sites in the southeastern United States.

Keywords: Pinus clausa (Chapm. ex Engelm.) Vasey ex Sarg.) Pinus virginiana Mill., inter specific hybridization, pine hybrid verification, reciprocal crosses, dominance, P. clausa x P. virginiana.

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