Clonal Replacement as a Tool for Seed Orchard Managers – Year 3 Update

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Topgrafting scion from selected genotypes of loblolly pine (Pinus taeda L.) into the crowns of sexually mature seed orchard ramets (interstocks) has been extremely successful in producing both female and male strobili one to two years following grafting. In fact, this practice has become routine in many southern tree improvement programs for use in breeding programs. The reduction in time for flower production is an economic advantage for breeding and could prove to be economically attractive for entire crown replacement of seed orchard or clone bank trees.

The objective of the current study is to test the feasibility of using topgrafting to replace all or much of the crown of ramets in loblolly pine seed orchards. Data have been presented on graft survival, scion quality and male and female flower production one year after topgrafting. Interstock effects were significant for both male and female strobili production. Updates on female and male strobili production as well as seed production from the first cone harvest will be presented. Interstock effects on flowering will be examined to determine if early trends are maintained.

The big question remains – can we afford to do this? Using cost data compiled during this process, we will investigate the economic limitations to converting a small orchard from one genotype to another. How much a seed orchard manager can spend on this conversion will be dependent upon the marginal costs between conversion through topgrafting and establishing a conventional seed orchard. Therefore, the benefits of this strategy will be dependent upon the gain differential in the topgrafted orchard and the time to production realized from topgrafted trees. Both factors will be examined in determining the economics of entire crown replacement .