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(84) Application of AFLP Markers on Taxon Discrimination of Cultivated *Stewartia*

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The natural distribution and cultivated areas of *Stewartia* taxa are USDA cold hardiness zones 6 or warmer. One cold-tolerant clone, named *Stewartia* 'UMaine' (UMaine Silk Camellia), has been growing well at the University of Maine Littlefield Ornamentals Trial Garden (USDA Zone 4). The plant also has brilliant red fall color and biennial flowering. Since cold hardiness field evaluation could not provide genetic information and no other taxa could grow in Zone 4, AFLP markers were employed to figure out its genetic relativeness with other 16 named *Stewartia* taxa. The three primer-pairs generated 360 useful markers with an average of 120 markers for each taxon. The genetic distance between *S. sinensis* and *S. rostrata* is only 0.031, which indicates that these two species are very similar and should not be treated as two species or cultivars, at least the plants in cultivation. The largest distance (0.533) occurs between *S. pseudocamellia* and *S. malacodendron*, two distinguished species accepted by all taxonomists. UMaine Silk Camellia is a distinguished taxon from all other 16 taxa and *S. malacodendron* 'Delmarva' has the largest genetic distance of 0.453 to it. Although *S. ×henryae* 'Skyrocket' has the smallest genetic distance of 0.183 to *Stewartia* 'UMaine', UPGMA phenograms showed that they are not in a clad at all. AFLP data support that *Stewartia* 'UMaine' is a new cultivar, which originated from a gene pool of *S. pseudocamellia*, *S. sinensis*, and *S. koreana*. These molecular results will also be used as guidance for future *Stewartia* breeding.