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INHERITANCE AND PHENOTYPE OF A CHLOROTIC MUTANT FROM *G. HIRSUTUM* X *G. MUSTELINUM*

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Abstract

Genetic, cytogenetic, reproductive and other incongruities or incompatibilities accumulate during and after speciation. We are engaged in an effort to introgress germplasm from the non-cultivated Brazilian 52–chromosome species, *G. mustelinum*, into cultivated Upland cotton, *G. hirsutum*. We observed chlorophyll-deficient seedlings in BC1F2 families. The occurrence of mutants is noteworthy because they often act as a barrier or impediment to interspecific introgression. We analyzed the segregation of BC1F2 families at seedling stages, which suggested a digenic basis to the yellow-white chlorotic seedling phenotype, e.g., where *G. mustelinum* parent might be temporarily designated as *Ch1Ch1ch2ch2*, the *G. hirsutum* parent (TM1) as *ch1ch1Ch2Ch2*, and the F1 as *Ch1ch1Ch2ch2*. Homeology of the two genes is expected, but has not been determined. We suspect some of these families were also segregating for another chlorotic mutant, which had much milder phenotype, and seemed to be independent of the yellow chlorotic mutant. Additional studies are underway to test these hypotheses, and to determine if the digenic loci are allelic with those responsible for the digenic chlorotic seedling trait that often appears in *G. barbadense* – *G. hirsutum* hybrid populations. We gratefully acknowledge support from Cotton, Inc., TAES, the Texas Food & Fiber Commission (TFFC), and Texas State Support Committee (TSSC).