# INTERACTION OF NAKED SEED LOCI

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## Abstract

Segregating populations were developed to evaluate the expression of the fuzzless seed alleles, $N_1$ and $n_2$. Accession 143 of the Mississippi Obsolete Variety Collection (MOVC) carries the $n_2$ locus which is recessive to the seed fuzz phenotype. Data from the $F_2$, $BC_1F_1$, $F_2$:$F_3$, and $BC_1F_2$ populations of DP 5690 X 143 fit a two loci model for expression of the recessive fuzzless seed phenotype. Expression of the $n_2$ locus required a second recessive locus which we have designated $n_3$. The dominant $N_3$ allele found in DP 5690 reverses the expression of the fuzzless seed phenotype in homozygous $n_2$ plants. Accession 243 of the MOVC carries the $N_1$ locus which is dominant to the presence of seed coat fuzz. No variation from expected ratios occurred when the 243 X DP 5690 cross segregated in the $F_2$, $BC_1F_1$, $F_2$:$F_3$, and $BC_1F_2$ populations. The $N_3$ allele had no apparent effect on the expression of the $N_1$ locus. In a cross between accessions 243 X 143 a wide variation in the lint percent of individual plants was observed, including lines which were completely devoid of lint and fuzz fiber (fiberless). A line was derived from an individual fiberless plant which was designated MD 17 fiberless. In a cross between DP 5690 X MD 17 fiberless, we demonstrated that three alleles, $N_1$, $n_2$ and $n_3$, were involved in the expression of the fiberless phenotype. The involvement of $n_2$ and $n_3$ in the expression of the fiberless phenotype was demonstrated in the $F_2$ progeny of the cross between MD 17 fiberless X 143. This was the first demonstration that $N_1$, $n_2$ and $n_3$ epistatically interacted to produce fiberless seed.