

THE INTERPLOIDY HYBRIDIZATION BARRIER IN *ZEA MAYS* L.

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ABSTRACT

The failure of endosperm development due to interploidy crosses could be due to two reasons, neither of which has been studied on its own. 1) There is an imbalance of inherited imprinted loci in the endosperm (HAIG and WESTOBY 1989; HAIG and WESTOBY 1991). 2) There is an altered dosage of gene regulators to their target loci in the endosperm cell after fertilization (BIRCHLER 1993). This dissertation presents results that address three topics dealing with the molecular genetics of endosperm development: 1) dosage of regulators to target loci is important for normal endosperm development; 2) evaluation of spontaneous central cell development as a cause of defective kernels in lines that induce high frequencies of haploid embryos; 3) examination of endoreduplicated chromosomes in endosperm and impact of interploidy crosses on chromosomal organization.