Genotype and phenotype of *Nicotiana alata* x *Nicotina rastroensis*

Gametophytic self-incompatibility (SI) is a process which enables plants to prevent inbreeding depression by rejecting self-pollen and pollen from closely related individuals. S-specific pollen rejection is controlled on a multi-allelic locus, the S-locus. If the S-allele of the haploid pollen matches either of the diploid pistil S-alleles, pollen tube growth is inhibited. The product of the S-locus is the active ribonuclease, S-RNase. We set out to test whether putative $S_{C10}$ S-RNase growth from *Nicotiana rastroensis* truly segregates as an allele of the S-locus. We used a hybrid of *Nicotiana alata* and *N. rastroensis* for our study. The *N. alata* parent was homozygous for the $S_{105}$ S-allele and the *N. rastroensis* parent had an $S_{C10}$ and another unknown S-allele ($S_{x}$). Our experiment was to find out the genotype of the hybrids, and test the plants for rejection of $S_{C10}$ pollen. We emasculated and pollinated flowers with $S_{A2}$, $S_{105}$, and $S_{C10}$ pollen from *N. alata*. S-RNase expression leading to a pollen rejection phenotype was determined by fruit set. SDS-PAGE and western blot analysis with specific S-RNase antibodies was used to determine the genotype of the hybrids. The result expected was 50% of the plants have $S_{105}/S_{C10}$, and 50% have $S_{105}$ and the unknown $S_{x}$, but we found that 75% contained $S_{C10} + 25\%$ had $S_{x}$. We saw that *N. rastroensis* $S_{C10}$ S-RNase rejects $S_{C10}$ pollen and accepts $S_{105}$ pollen. Thus, we observed allele specific pollen rejection from the $S_{C10}$ allele.