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Differences in pollen to ovule ratios and reproductive organ size between autogamous and crossing species of *Nicotiana*

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Nicotiana is commonly studied due to the presence of both highly autogamous species, such as *plumbaginifolia*, and crossing species, such as *alata*. There are also species that expend energy to a mix of selfing and crossing, such as *longiflora*. It has been speculated that there are morphological differences between these types. Specifically, my study concentrates on the differences in pollen to ovule ratios and the size of the sexual parts. I hypothesize a lower pollen to ovule ratio in selfers as the plant will not need excessive pollen for dispersal. Sexual parts of the plant should be larger in cross breeding plants to hold the larger quantity of pollen or ovules. It is important to understand the differences between autogamous plants and cross breeding plants so as to better understand the costs and benefits associated with autogamy. Measurements that I took include anther length and width, ovary length and width, and position of the flower on the inflorescence. I have developed protocols to evenly spread the pollen of one locule in a solution on a slide and to show and preserve one carpel of the ovary. These protocols were designed so that I was able to take pictures through a compound and dissecting scope, save the pictures as JPEG files and count the pollen and ovules with the help of a computer program. Currently there is not enough data to run any statistical tests. I will run all measurements and counts through an analysis of variance test to determine statistical differences. Judging on the data I have thus far, I predict a significant difference between pollen to ovule ratios. There may be little difference between anther and ovule size.