ECOLOGICAL EFFECTS OF VIRUS-RESISTANT TRANSGENIC SQUASH ON WILD SQUASH POPULATION DYNAMICS. Holly R. Prendeville*, Graduate student, and Diana Pilson, Associate Professor, University of Nebraska, 348 Manter Hall Lincoln, NE 68588-0118.

Several genetic and environmental factors can influence the degree of assortative mating in natural plant populations. In many, perhaps most, natural plant populations assortative mating occurs because plants do not have identical flowering schedules. When only one phenotype is in bloom, mating is necessarily assortative, leading to increased genetic variance for flowering phenology. This is important because increased genetic variance allows a trait to be more responsive to natural selection. Thus, fixation of a trait favored by selection will be faster when a population mates assortatively. For example, if the presence of a transgene in a wild population leads to assortative mating, then the transgene will introgress into that population more rapidly than expected. In a common garden experiment healthy and virus-infected squash had different flowering phenologies. These differences in flowering phenology will lead to assortative mating among virus susceptible and virus resistant plants. In another set of common garden experiments we found that bumbles bees spent more time in flowers on virus infected plants, while squash bees spent more time in flowers on healthy plants. These data suggest that if a transgene for virus resistance were present in a wild population it could lead to assortative mating, and thus increase in frequency more rapidly than anticipated. In contrast to differences in flowering phenology and pollinator preference, which cause assortative mating, temporal variation in sex ratios results in disassortative mating. Thus, different flowering phenologies and pollinator preferences will lead to assortative mating and increased genetic variance, while temporal variation in sex ratios will lead to disassortative mating and reduced genetic variance. Interactions between these processes and their effect on character evolution (e.g. transgenic virus-resistance) are under investigation.