

Conservation tillage implements and operations for soil and water management

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Abstract:

We investigated whether resistant pollen genotypes can be selected for when the maternal plants are infected and whether infection can result to changes in the pistil nutrient level influencing reproductive outcome. Both resistance and susceptibility come with costs that may affect pre- and post-fertilization reproductive functions. We performed the study by crossing zucchini yellow mosaic virus resistant and susceptible pollen (from a hybrid donor) to infected and healthy maternal plants. We also analysed the pistil nutrient content in both treatments and found an increase of the susceptible and not resistant genotypes when maternal plants were infected. The level of nutrients K, P and S was higher in the pistils of the infected maternal plants than the healthy ones. Pistil nutrient level did not affect pollen tube growth rates, as indicated by seed siring patterns along the fruit. We propose that the effect on the siring ability of pollen carrying the susceptible and resistant alleles occurred at the post-fertilization stage, possibly as an indirect result of different growth rates of the two embryo genotypes under elevated nutrient conditions. We discuss our results with respect to possibilities of differential selection, costs and reproductive implications.