AGRICULTURAL SCIENCES

Is Pawpaw Self-Compatible? Determining Compatibility and Its Impact on Fruit and Seed Set in North American Pawpaw

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Pawpaw (*Asimina triloba*) is a tree fruit native to North America. It is emerging as an alternative high-value niche crop to tobacco among Kentucky farmers. There is literature that claims pawpaw to be a cross-pollinated crop; however, there is evidence of self-compatibility in few varieties. The objective of this study was to determine the self-compatibility and its impact on fruit and seed set in pawpaw. Two advanced selections ‘Sunflower’, and ‘Susquehanna’ were selected for this study at Kentucky State University’s Research and Demonstration Farm. 250 self and cross pollinations were carried out for each variety with open flowers in April 2016. Flower buds observed after pollination were pinched in May. The fruit clusters along with fruit number were then recorded on three dates, first on 24th May, second on 22nd July and third on 22nd August. The seeds from each treatment were collected, recorded and stored at chilling temperature (4˚C) with wet peat moss for at least 110 days. The stratified seeds, 20 seeds of each cross, were then sown in the greenhouse. The leaf of parent material and newly germinated offspring were collected for DNA extraction. Parentage analysis was done using microsatellite (SSR) DNA markers. The initial fruit set recorded was highest in self-pollination of Susquehanna (65.2%). However, cross-pollination of Sunflower to Susquehanna was significantly higher than the rest in final fruit set (23.2%). The seed set was comparable between self and cross-pollination of Sunflower.

 Horticulture, fruit, new crops