A Chemical-Free Apple Tree Thinning Technique: Using Hail Netting To Achieve Ideal Crop Load

Finnerty, Grace (School: Cotter High School)

Reducing apple tree crop load through thinning is a critical step in the cultivation of a healthy apple crop. Thinning ensures that an apple tree will bear fruit yearly, instead of in a cycle of biennial bearing, and that apples are of the correct size and number so that the tree produces appealing and nutrient-rich apples. The current thinning method used by both conventional and organic growers employs chemical solutions such as lime sulfur, but these can be hazardous to human health and the environment. The option of hand-thinning a crop is highly expensive. A less toxic, cost-effective alternative for thinning is sorely needed. This project tested the use of hail net coverings on apple tree branches to prevent pollination of apple blossoms for a controlled length of time, thereby reducing the apple crop load. Twenty branches were covered with hail netting at each of three treatment times: 0%, 52%, and 98% open blooms. Twenty branches were also assessed in both a chemically thinned and an unthinned control group. The results of this experiment showed a significantly smaller number of apples at the 0% bloom timing compared to the 98% bloom timing, which indicates that covering branches earlier in the bloom period produces a thinning effect. The 0% and 52% treatment groups showed similar results as the chemically thinned control. Apple weights were found to be statistically equivalent among treatment groups. These results demonstrate that netting trees to prevent pollination is an effective alternative to chemical thinning.