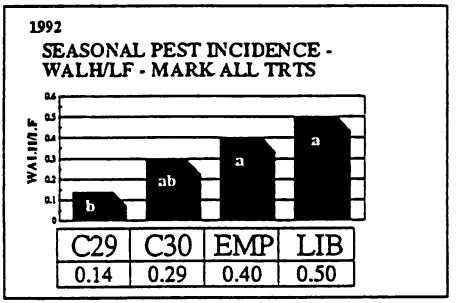

Figure 2. Second generation white apple leafhopper populations at the end of August on Mark trees, 1992.

higher levels in 'Empire' (Mark), with few differences seen in the M.7 planting, although fewer mines were present in 'Freedom' and 'Nova.'

'Co-op 29' showed the lowest leafhopper populations on Mark, while 'Freedom' and 'Nova' had the highest levels on M.7. Fruit samples during 1992 showed no differences except in plum curculio injury, which was greatest on 'Liberty.'

Conclusions

The tested cultivars did show varying degrees of pest susceptibility. 'Liberty' seems particularly susceptible to plum curculio, while 'Co-op 29' seems least susceptible to leafhoppers and leafminers.

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Developing Scab-Resistant Apple Cultivars with Increased Quality and Ability to Store

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The Rutgers apple breeding program is working in collaboration with Purdue University and the University of Illinois (the PRI breeding program) to develop new disease resistant cultivars with superior quality and storage potential. Selections which store for several months and produce much lower levels of ethylene have been identified. Storage studies were conducted to examine factors controlling ethylene production in these unusual selections and to determine if there is a relationship between ethylene evolution at room temperature (20C) and the ability of the fruit to store. DR101-T110 and PAR14T238, both low ethylene producing selections, readily converted ACC to ethylene. Although ethylene induces ripening, there were no significant relationships between ethylene evolution and respiration or the other quality parameters measured. DR101T110, which produced less than 10 $\mu L^{*}kg^{-1}{*}hr^{-1}$ even after five months in refrigerated storage, had one of the highest respiration rates and softened rapidly. Alternatively, 'Liberty,' the variety with the highest ethylene evolution rate, stored for up to 5 months and softened at half the rate of DR101T110. Clearly, respiration and ethylene evolution rates are inadequate predictors of the ability of a variety to store. Of the scab-resistant varieties evaluated in these studies, PAR14T238 was one of the most interesting. This selection maintained its firmness with a crisp texture for the duration of this study. The ground color of this selection also changed from a yellow-green to a bright yellow. Although this apple is somewhat bland and lacks sweetness, it should make an outstanding parent in future crosses.

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