

to more than one pest at a time. It would be foolish to work for 25 years to develop a fire blight resistant pear, and then start over again and work for another 30 years to add resistance to pear psylla, the major insect pest of pears," says Dr. Faust.

Apart from the breeding of pear for psylla resistance (9), strawberries for mite and aphid resistance (10), and raspberries for aphid resistance (10), information on breeding temperate zone fruit crops for insect resistance is scarce. There have been reports, however, of differences in susceptibility for major insect pests in apple (2), peach (4), almond (8), and chestnut (6).

The above examples indicate that development of insect resistant fruit cultivars is possible. But before this can become a reality, insect resistance must become a major goal of both fruit breeders and entomologists.

Literature Cited

1. Adkission, P. L. and V. A. Dyck. 1980. Resistant varieties in pest management sys- terms. p. 233-251. *In* F. G. Maxwell and P. R. Jennings (eds.) Breeding plants resistant to insects. John Wiley & Sons, New York.
2. Brown, A. G. 1975. Apples. p. 3-37. *In* J. Janick and J. N. Moore (eds.) Advances in fruit breeding. Purdue Univ. Press, West Lafayette, Ind.
3. Ellis, H. C. and J. D. Arnett. 1978. Disease and insect control in home orchards. Univ. of Georgia Coop. Ext. Service Circular 552.
4. Hesse, C. O. 1975. Peaches. p. 285-335. *In* J. Janick and J. N. Moore (eds.) Advances in fruit breeding. Purdue Univ. Press, West Lafayette, Ind.
5. Janick, J. and J. N. Moore. 1975. Preface. xiii-xiv. Advances in fruit breeding. Purdue Univ. Press, West Lafayette, Ind.
6. Jaynes, R. A. 1975. Chestnuts. p. 490-503. *In* J. Janick and J. N. Moore (eds.) Advances in fruit breeding. Purdue Univ. Press, West Lafayette, Ind.
7. Johnson, H. W. 1972. Development of crop resistance to disease and nematodes. *J. Environ. Quality* 1:23-27.
8. Kester, D. E. and R. A. Asay. 1975. Almonds. p. 387-419. *In* J. Janick and J. N. Moore (eds.) Advances in fruit breeding. Purdue Univ. Press, West Lafayette, Ind.
9. Layne, R. E. C. and H. A. Quamme. 1975. Pears. p. 38-70. *In* J. Janick and J. N. Moore (eds.) Advances in fruit breeding. Purdue Univ. Press, West Lafayette, Ind.
10. Moore, J. N. 1979. Small fruit breeding—a rich heritage, a challenging future. *Hort-Science* 14:333-341.

Apple Performance on M.8 and M.9 Interstems

DAVID C. FERREE

'Empire' and 'Miller Sturdeespur Delicious' with a 6 inch interstem of either M.9 or M.8 on Antonovka seedling rootstock were compared to trees on MM.111 all planted in 1975. The first significant crop occurred in 1979 with trees on M.8 interstems producing less than trees on either M.9 interstems or MM.111. Trees on MM.111 were 61 or 52% larger than trees on M.8 and M.9 interstem trees respectively. Tree height and across row

spread of trees on M.9 and yield efficiency of M.8 interstems was lower than interstems on M.9. Thus M.9 would be preferred as an interstem over M.8.

'Miller Sturdeespur Delicious' was generally smaller than 'Empire' likely due to its spur habit and compact nature. The larger 'Empire' trees out produced 'Delicious' in this 10 year trial, but there was no difference in tree efficiency.