

size, and color are superior to the others mentioned although it is susceptible to mites. At Keedysville, 'Liberty' typically ripens in mid-September. 'Freedom' is the latest of all the varieties tested but has very poor color and skin surface quality even in cool seasons.

The thrust for breeding programs such as PRI and Cornell has been to control fire blight and apple scab by breeding resistance into new cultivars. In areas where late season temperatures are warm the need exists to breed new cultivars resistant to summer diseases which also produce less ethylene. This way pre-harvest drop and poor color problems might be dealt with while breeding for disease resistance. Hopefully some of the late maturing cultivars that are being released, i.e., 'Enterprise' and 'GoldRush,' may meet these criteria for production in Appalachia.

Crop	Problem	Genetic Solution
Apple	Diseases	PRI Releases Cornell Releases
	Pre-harvest Drop	Low-ethylene (in fruit) Needed
	Summer Rots	Resistance Needed

Home fruit growers and hobbyists have taken interest in the disease resistant apple cultivars. Serious attention has also been given by organic apple growers who are very limited as to the pesticides they can apply. Apple processors are recently beginning to test varieties such as 'Liberty' to see how they hold up under various processing treatments. There is little question that disease resistance will continue to be an important factor in the future as new apple varieties are being bred.

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## Evaluation of Certain Scab-Immune Apple Cultivars

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We planted four trees of the following apple cultivars in 1985: 'Redfree,' 'Chehalis,' 'Prima,' 'Priscilla,' 'Nova Easygro,' 'Sir Prize,' 'Jonafree,' 'McShay,' 'Liberty,' 'Freedom,' and 'MacFree.' The trees were grown without fungicide sprays. High levels of infestation by powdery mildew were observed on 'MacFree,' moderate levels on 'Redfree,' 'Liberty' and 'Freedom,' and low levels on the others. A few fruits of 'Chehalis' did show some scab. Fruits

of 'Freedom' in two of four seasons showed small black spots which might have been caused by *Venturia inaequalis* (scab) or from some other cause. Large taste panels rated the stored fruits in four seasons. Mean ratings for 'Liberty,' 'Jonafree,' and 'Florina' were sometimes as high as for the popular new scab susceptible cultivar 'Empire.' Generally they were not rated as highly as 'Braeburn,' 'Fuji,' 'Jonagold,' or 'Gala.'

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