P 67

Effect of Defoliation in Early September on Reserve Accumulation of Persimmon 'Fuyu' Tree

Seong-Tae Choi[1*], Doo-Sang Park[1], Won-Doo Song[1], Seong-Mo Kang[2]

[1]*Sweet Persimmon Experiment Station, Gyongnam ARES, Gimhae 621-802, Korea*

[2]*Dept. of Horticulture Gyeongsang National University, Chinju 660-701, Korea*

Objectives

When persimmon trees are defoliated severely by typhoons early in the season, reduction of reserve storage could result in a serious problem the next season. This study was conducted to asses effect of defoliation in early Autumn on reserve accumulation of non-fruiting or fruiting persimmon trees.

Materials and Methods

1. Materials: Nonfruiting or fruiting 'Fuyu' (*Diospyros kaki*) trees grown in 70-L containers for three years, were used. Leaf-to-fruit ratio of fruiting trees was adjusted to 20 in early July.
2. Metods: On September 7, 2002, 80% of total leaf numbers per tree were defoliated evenly on the whole shoots. The trees were harvested on Nov. 6 and divided into several parts. The concentrations of soluble sugars, starch, and total nitrogen in each tree parts were determined.

Results and Discussion

Soluble sugars of the nonfruiting trees were not changed significantly in the above-ground parts and roots by defoliation, while those of the fruiting trees were lowered by 14% in 1-year-old woods and by 41% in large roots, compared with the non-defoliated trees. The greatest difference of reserve accumulation was found in starch concentration, which was higher in the nonfruiting trees than in the fruiting trees, and in roots than in above-ground parts. Starch concentration of the defoliated-nonfruiting trees was lowered 1.4- to 2,6-fold in roots, compared with the non-defoliated nonfruiting trees. Defoliation in fruiting trees resulted in 1.9- to 2,4-fold lower starch level in above-ground parts and 1.5- to 2.0-fold in roots than non-defoliation. Difference of total nitrogen was not as high as that of soluble sugars or starch. Our results suggested that detrimental effect of defoliation in early season on reserve accumulation was much severer in fruiting trees than in low-fruiting trees, and that fruit thinning after loss of leaves would be available.

Table 1. Effect of defoliation on starch concentration of roots.

Treatment		Large root	Medium root	Fine root
				(%)
Nonfruiting trees	Non-defoliated	8.1±0.7	21.0±1.1	17.3±1.0
	Defoliated	5.7±0.6	8.2±0.3	8.6±1.3
Fruiting trees	Non-defoliated	5.9±1.0	9.6±0.8	9.1±1.7
	Defoliated	3.6±0.2	4.8±0.6	6.1±0.7

*Corresponding author. Tel 055-211-5690 E-mail stchoi1234@hanmail.net