

Apple orchard systems in China

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China has a total of over 6 million acres of apple orchards and produces over 30 million metric tons of apples annually. Most of the producers are small landholders with an average farm size of less than one acre. Currently, over 95% of the apple acreage is on seedling rootstocks, which limits the tree training system and planting density growers can use. Central leader system is still the most widely used training system in China. Vigorous scion variety, 'Fuji', combined with seedling rootstocks and heavy pruning during the formative years delays flower bud initiation and fruit production. Mature trees often have very vigorous growth at the top, which causes severe shading to the bottom tier of scaffolds, resulting in low productivity and poor fruit quality. To combat this problem, growers remove both the central leader above the top tier of scaffolds and the bottom tier of scaffolds. This improves light penetration into tree canopy and fruit quality, but reduces fruit yield. Over the last five years, progressive growers and agribusinesses began to import well-feathered trees from Europe and establish high density orchards using vertical axe and tall spindle training systems. It appears the M.9 rootstock is well-adapted to many parts of Shandong and Shaanxi provinces, but cold temperatures combined with lack of snowfall during the winter limits the use of M.9 in the northern producing regions. As a significant proportion of the existing apple acreage was planted in the late 1980's and early 1990's, which needs to be re-planted, it presents an opportunity for growers to adopt the new high density planting systems. It is expected that the apple orchard system will experience significant changes in China in the next 10 to 15 years.