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Effects of Training on Tree Growth, Yield and Dry Matter Production in Japanese Pear 'Kousui' in a Soil Mound Rhizosphere Restricted Culture System

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We evaluated the effects of training and culture methods on tree growth and dry matter production in the Japanese pear 'Kousui'. We adopted two culture methods: conventional culture and rhizosphere restricted culture, and two training methods: conventional training and training with a soil mound.

and Y-shape, to make four test plots: 1) pergola/conventional (P/C), 2) Y-shape/conventional (Y/C), 3) pergola/rhizosphere restricted (P/R), 4) Y-shape/rhizosphere restricted (Y/R). Leaf Area Index (LAI) in Y/R was double that of the other test plots. Brix in Y/R was the highest. Fruit yield in Y/R was 18.5, about double that of the other plots. When the leaf/fruit ratio was about 35 in all the plots, yield in Y/R was as high as 61 t·ha⁻¹, because of the high Brix. Though shoot number and tree vigor in Y/R were between those of the other plots, trees demonstrated superior shoots and the greatest number of flowering shoots. Total dry matter production per ha in Y/R was the greatest. Partitioning rate of dry matter to fruit was 43.0% in Y/R and 39.1% in P/R. Assimilate partitioning rate to fruit in rhizosphere restricted culture methods were higher than those in the other methods. It was concluded that a high yield of 61 t·ha⁻¹ and a high Brix of 12.5 were the result of 1) increase in fruit-bearing shoots due to an increase in fine root density by drip irrigation methods, 2) increase in dry matter production due to an increase in leaf area index, and 3) increase in partitioning rate of assimilates to the fruits due to a competitive effect of rhizosphere restricted culture methods.

Key Words: [assimilate partitioning rate](#), [leaf area index](#), [root restriction](#)

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