

## The results of a study of the vegetative growth, yield, fruit quality and fruit storability of the apple cultivar 'Krista'

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Long-term field trials with the apple cultivar 'Krista' on different vegetative rootstocks were held from 2005 to 2015. The trials were located in Southern Estonia at the Polli Horticultural Research Centre (58°07'N, 25°32'E). Trees were grafted on 13 rootstocks: 'M26', 'M27', 'P59', 'E75', 'B9', 'B396', 'B491', 'MMT1', 'Supporter 1', 'Supporter 2', 'Supporter 3', 'Supporter 4' and 'MM106'. Two-year-old trees were planted into an orchard with the scheme of 4 × 2 m (1250 trees per ha). The comparison trial lasted 11 years (from 2005 to 2015).

The vegetative growth, start of bearing, yield and fruit quality of the different grafted combinations of the apple cultivar 'Krista' were studied, as well as the chemical content of the fruit and the storability of fruit in different controlled atmosphere conditions.

The apple cultivar 'Krista' is well suited for growing in commercial orchards in the climatic and soil conditions of Estonia. The cultivar performs best on well-adapted vegetative rootstocks 'MM106', 'E75', 'B396', 'M26', 'M27', and 'P59'. The rootstocks 'Supporter 1', 'Supporter 2' and 'Supporter 3' did not turn out to be suited for growing in Estonia.

The fruit of the apple cultivar 'Krista' is sweet-sour and with a firm flesh. These apples can be stored until the end of December in an air-cooled storage and until the end of February in controlled atmosphere. The trees grafted on rootstocks 'MM106', 'E75', 'MTT1' and 'M26' grew taller, had bigger crown spread and bigger crown volume. The trees grafted on 'MM106' and 'E75' would be suited for planting with the 5 × 3 m scheme. In dense orchards with the planting scheme 4 × 1.5 m, trees with a smaller crown diameter may be grown on rootstocks 'MM27', 'P59' and 'Supporter 4'.

During the trial, largest yields were harvested from trees grafted onto rootstocks 'MM106', 'MTT1', 'B396', 'M26', 'E75', and 'B9'. During the long trial some rootstocks appeared to be positively related to average fruit weight in some years, but the same cannot be concluded for the whole duration of the trial.

**Keywords:** apple storability, apple vigour, apple yield, Estonia, *Malus ×domestica*, plant growth, rootstocks