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Title: Dwarfing rootstocks for smaller, more efficient pear trees

Did you know that rootstocks can affect growth, production and fruit quality? Researchers at the Agricultural Research Council (ARC), Infruitec-Nietvoorbij Campus have been gathering data on 'Forelle' pears for more than seven years!

Profitable fruit production requires early, sustained production of high quality fruit. More than 11000 Ha of pears are planted in South Africa, with 'Packhams Triumph' (29%), 'Forelle' (25%) and 'Williams Bon Chretien' (17%) being the main cultivars.

The vigor induced by a pear rootstock is very scion cultivar and soil dependent. Thus pear rootstocks have to be evaluated with all commercial cultivars under a range of soil conditions. The SA deciduous fruit industry has invested in research to evaluate more efficient rootstocks for pears.

Trees grafted on dwarfing rootstocks should be smaller and more yield efficient, allowing for higher density orchards and improved production per unit area. Most fruit trees are grafted or budded on to a rootstock that may provide tolerance to adverse soil conditions, vigor control and improved fruit quality. Many smaller fruit trees per hectare should capture more light and produce fruit more efficiently. The increasingly competitive export market has forced fruit farmers to produce more intensively using higher density orchards.

European pears are grafted either on pear or quince rootstocks. Most pear rootstocks are too vigorous for intensive orchards while quince rootstocks induce less vigor but incompatibility may be a problem.

'Forelle', an exported blushed cultivar, suffers from insufficient fruit set and colour associated with excessive tree vigour and low light interception. 'Forelle' was used as the scion cultivar to compare promising rootstocks at four farms for over seven years. Under

evaluation were the pear (*Pyrus*) rootstocks 'Old Home Farmingdale' (OHxF40, 97, 217 and 333), Pyrodwarf (PD), BU3/33, BP1, BP3 and the quince rootstocks BA29, QA and QC51.

At Riverside Farm trees were planted on a sandy loam soil at 2500/ha on a Tatura trellis and drip fertigated.

At Stettyn, trees were planted on deep, well drained, fine alluvium sand at 1666/ha, supported on a three wire trellis and drip fertigated.

At Bo Radyn, trees were planted on ridges in a sandy clay loam under fertigation and supported on a wire trellis

At High Noon trees were planted in a sandy clay loam soil at 1250/ha under microjet irrigation.

Overall, no signs of incompatibility were observed between any rootstock and 'Forelle'. In terms of vigor, all the OHxF selections, PD and the quince rootstocks were more dwarfing than BP1 and BP3 and could be considered for higher density orchards. In terms of kg/tree, yield efficiency, cumulative yield efficiency, and fruit quality, the pear rootstocks OHxF217, OHxF97 and possibly OHxF40 should be considered under average soil conditions and where incompatibility is a risk. The quince rootstocks BA29 and QC51 could be considered under good soil conditions and no risk of incompatibility.

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