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Overview of Peach and Nectarine Rootstocks in South Africa

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Twenty trials with more than 40 rootstocks were conducted over a period of 30 years. For many years Kakamas seedling was the standard rootstock for the South African peach industry. However many soil conditions occur that limit the use of this rootstock. In soils with a high pH (free lime with iron-induced chlorosis), GF 677 showed no symptoms and yielded significantly better than Kakamas seedling rootstock. Fruit mass of the scion however was not more on GF 677 than that on Kakamas seedling. The rootstocks Cadaman and Viking, gave the same high yield as GF 677 but fruit mass was higher than that of Kakamas and GF 677. Flordaguard showed serious chlorosis symptoms in high pH soil. Kakamas seedling is susceptible to root knot nematodes (*Meloidogone incognita* and *M. javanica*) that occur in most sandy soils. Flordaguard performs better than Kakamas in poor sandy condition with or without root knot nematodes but are too vigorous for higher potential soils. Atlas, Viking and SAPO 778 also perform better than Kakamas where root knot or ring (*Mesocriconema xenoplax*) nematodes occur. SAPO 778 is currently the preferred rootstock for many situations but with a high chilling requirement it is not recommended for low chilling (less than 300 CU) requirement areas. This rootstock and Viking perform better than Kakamas where sporadic rising water tables occur. The rootstocks Cadaman, Atlas, GF 677, Flordaguard and Kakamas on the other hand are sensitive to wet soil conditions. Kakamas as rootstock still performs well in higher potential soil without any limitations. In such situations Atlas and Viking also perform well.

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Cold Temperature Tolerance of Apple Roots

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Root tissue cold hardiness of G.16 and M.26 EMLA rootstocks was compared in 2007 using controlled freezing to -14°C. Rootstocks were dug from the nursery in late October and stored in a cold room at temperature of -1 to 0°C until late February. Rootstocks were subjected temperatures from -6 to -14 °C at a rate of 3°C per hour. Significant root death (>10%), based on visual estimates, occurred in both rootstocks following exposure to temperatures below -10 °C. Following 40 days in a greenhouse, root survival and shoot growth were reduced by exposure to -10 °C and colder. There was no difference between G.16 and M.26 in root survival or shoot growth. The lethal temperature was -12 for both rootstocks. Root tissue cold hardiness of G.5935 and M.26 EMLA rootstocks was compared in 2008. Trees were grown in pots outdoors until late Oct. at which time they were placed in cold storage at 0 °C. Trees were subjected to controlled freezing temperatures of -8 to -16 °C in Feb. Root tissue survival was assessed by measuring electrolyte leakage of root tissue and by growth analysis after 40 days in a greenhouse.