

DEVELOPMENT of the CRI Rootstock Seed Farm

Budwood and rootstock seed are produced at the CFB farm outside Kariega and shipped across Southern Africa. By **Jacolene Meyer, Mpaballeng Mlangeni, Michael Nell and Paul Fourie**

The Citrus Improvement Scheme (CIS) ensures the availability of disease-free budwood that is horticulturally true to type and of superior quality, for the propagation of trees in SA.

The CFB is surrounded by a 5 km buffer zone prohibiting the cultivation of citrus and related genera, as promulgated under Regulation 110 of the Agricultural Pest Act. This buffer zone is regularly inspected to ensure compliance. Trees for budwood production are cultivated in insect-secure structures.

Despite these measures, an international peer review of the CIS in 2016 highlighted the risk that detection of a quarantine pest in the CFB seed source trees might lead to the budwood sources being placed under quarantine. The trees are planted in orchards next to the insect-secure structures. Rootstock seed orchards are closely monitored by trapping and scouting, and subjected to comprehensive pest and disease control programmes, but cannot be grown in insect-secure structures to better manage the risk of a pest or disease incursion. This biosecurity risk had to be managed, in preparation for incursion of HLB or other exotic pests or diseases.

This background, as well as the development of the HLB/ACP Action Plan in SA, led to the strategic decision to develop a citrus rootstock seed farm outside the

5 km buffer zone. Criteria for a suitable farm were at least 10 ha of soil and water suitable for citrus production, and to be located in a safe area within comfortable commuting distance from the CFB. A suitable property was finally found in the Kouga district of the Eastern Cape, near Thornhill, 50 km by road from the CFB. This 232-ha portion of the farm, Cypherfontein, is surrounded by the Longmore state forest and natural vegetation, and a mixed farming (vegetables, flowers, and cattle) neighbour. The nearest citrus orchards in the Loerie valley are >2 km away. The farm was purchased by the Citrus Research Trust and transfer went through on 7 September 2022, whereafter development started.

As its name suggests, Cypherfontein has an abundance of surface water and because

Figure 1. One of the five earth dams that collect water from the natural catchment area Figure 2. The new pumproom with the installation team. From left: Gawie van den Berg (GN Pumps and Motors), Michael Nell, Mpaballeng Mlangeni, Jacolene Meyer and Paul Fourie (all CRI) Figure 3. Michael Zamxaka at one of the first Swingle rootstock trees planted at Cypherfontein. Nearly 50 years ago, Michael's father, the late Willy Zamxaka, planted the first rootstock orchard tree at the Citrus Foundation Block in 1984.

of the mean annual rainfall of 800 mm the five earth dams are usually filled. Three boreholes were sunk, two of which will be equipped to supplement the surface water for irrigation of the planned 10 ha planting.

Initial soil classification, done by Coenraad Fraenkel from CRI, revealed Tukulu and Westleigh soil types. During soil preparation an unforeseen layer of mud-rock was unearthed in one section of the planned 10 ha. This required removal of the big rock boulders with earth moving equipment. Prepared soil was ridged, and irrigation installed in five blocks comprising a total of 10 ha. A new store was built together with a pump room fitted with a computer-controlled irrigation system (Fig. 2).

In September and October 2023, 4 659 trees were planted (Figs. 3, 4 and 5), which should yield approximately 7 000 t of rootstock seed based on historic averages (Table 1). All trees were made on X639 rootstock at the CFB. Currently, there is space for another 700 trees where new experimental varieties or promising new rootstocks can be established.

The area surrounding the Seed Farm is in a high fire risk area. CRI has joined the Sarah Baartman West Fire Protection Association and works closely with the neighbouring MTO Longmore Forestry company and other neighbours to manage the fire risk. An ongoing strategy is to remove the invasive

Table 1. Rootstock cultivars established at the CIS Seed Farm

Rootstock cultivar	Percentage of planting	Percentage of estimated yield
Experimental and other ^b	3	4,5
C35 Citrange	10	9,7
Carrizo Citrange	14	37
Minneola x Trifoliolate	8	1,7
Rough Lemon	12	15,8
Swingle Citrumelo	8	11,2
US-812 (Sunki x Benecke)	19	7,5
X639	22	12,7
Grand Total	4 659 trees	6 736 t of seed

blue gum and black wattle on large tracts of the farm to prevent fires, restore natural vegetation and open water catchment areas.

CIS Nursery Advisor Michael Nell and his family have settled into the newly renovated farmhouse from where he can assist with general management. The CIS team looks forward to the first harvest in three to five years. During this time, the rootstock trees at the CFB will be gradually phased out. Once concluded, the CIS budwood sources in insect-secure structures should be the only citrus trees within the >8000 ha citrus-free buffer zone, which will make the CFB the safest place to grow budwood in SA.

