

HORTGRO CONCEPT ORCHARDS PROGRAMME

- PHASE 2 OF THE ORCHARD OF THE FUTURE.

The first phase of the Orchard of the Future programme (OoF) taught us some valuable lessons (see *issue 12 of the Fresh Quarterly* for a comprehensive summary on phase 1 - <https://www.hortgro-science.co.za/fresh-quarterly/>). One important learning over the 10 year period was that innovation is an ongoing process, which means that we need to continuously look at new ways of doing things in order to remain a competitive industry. Therefore, we're excited to get the 2nd phase, i.e. the **Hortgro Concept Orchards** programme, underway.

The **Hortgro Concept Orchards** programme is a demonstration of innovative and viable orchard systems that aim to increase the uniformity, efficiency and profitability gains in the deciduous fruit industry. The 2nd phase will include both pome and stone fruit (including cherries) and aim to have orchards in all the major production areas.

A steering committee assisted Hortgro Science in reassessing the objectives and determining the major focus areas of the programme. The committee will also aid us in selecting and evaluating proposals of the orchards to include in the programme. The steering committee members are Graeme Krige, Mico Stander, Willie Kotze, Angelique Pretorius, Charl Stander, Pierre Rossouw, Matthew Addison, Marno van der Westhuizen and Wiehann Steyn.

Why the name change?

One of the main objectives of the programme is to focus on future needs. Future needs could, however, entail both short and long term

innovations/ideas/changes. As Orchard of the Future has a long term connotation to it, the **Hortgro Concept Orchards** programme steering committee decided to rename the programme to a more generic title which is representative of all future aspects.

Main focus areas of the Hortgro Concept Orchards programme:

a. Orchard Systems

Training systems: The Orchard of the Future clearly showed the value of dwarfing and precocious apple rootstocks planted at high density under local conditions. However, the relatively high orchard establishment cost, especially if shade nets and/or reflective mulches are added, is a major limiting factor to intensification. One way to potentially reduce establishing cost, while maintaining the benefits of high density plantings, is through multi-leader trees. We therefore invite Hortgro Concept Orchards **planted to double- and multi-leader trees** in order to determine to what extent multi-leader trees can reduce establishment cost and increase profitability.

Shade nets: The Orchard of the Future demonstrated the benefits of shade nets on apple fruit quality, especially in a hail prone region or where sunburn is a significant cull factor. Given these results, **Hortgro Concept Orchards** determining **the potential benefits of shade netting on pears and plums** are of interest. A partly covered pear and plum orchard would be preferred for comparative purposes. Furthermore, a **plum orchard covered with drape nets** to determine to what extent drape nets addresses concerns regarding fruit set under fixed nets might also qualify as a Hortgro Concept Orchard.

Rootstocks: Standard rootstocks are still prevalent in the stone fruit industry. There are, however, better adapted rootstocks available that might be a better fit to a specific site and its edaphic and climatic profile. We therefore invite **comparative plantings in the same orchard of an industry standard rootstock versus a potential**

better rootstock. We would also be interested in **comparing pear rootstocks, OHxF40 and BP1**, within an orchard.

b. Water Management

Water scarcity is a major concern in South Africa. Even though the risk of water shortage is not severe in all regions, it is bound to become more problematic under climate change. More efficient and productive water use is and must thus remain a priority in deciduous fruit production. Therefore we would like to invite innovative projects aimed at optimizing/reducing water usage – such as:

- **Large areas under drip irrigation, especially Ultra Low Flow Rate Drip.**
- **Implementation of micro irrigation technology**

c. Orchard Floor Management

Weed management: The number of available herbicides is fast decreasing. At the same time the effectiveness of some available options is declining as weeds acquire resistance. We are therefore **interested in alternative strategies to manage weeds**, for example an integrative approach with mulches. Furthermore, we are also interested in **diverse cover crop plantings** adapted to the unique South African conditions and able to fulfil the required ecosystem services.

Carbon sequestration: Organic soil carbon plays a pivotal role in orchard soil ecology and affects soil health, tree productivity as well as the environment. Considering the benefits of increasing soil carbon levels, we are inviting **Hortgro Concept Orchards** aimed at sustainably and cost effectively **maximizing carbon sequestered in soils** through practices such as mulching, cover cropping etc.

d. Market Access

MRL management: Due to market demand and foreseeing the increasing loss of key chemistry, fruit production with minimum to no

chemical residues is a driving force of the **Hortgro Concept Orchards** programme. Therefore, we are interested in orchards aimed at **low residue/ residue free (organic) commercial production**.

e. Ergonomics and Economics

Both ergonomics and economics are overarching focusses of the **Hortgro Concept Orchards** programme. Economics refers to the drive to increase net farm income through new and innovative practices. Ergonomics refers to the efficiency gains in control and available time for growers and labourers through practices and technology that facilitates and/or improve physical, timely and repetitive work. Examples of such practices and technology include different orchard systems, hydraulic pruning shears, platforms, remote sensing technology and other tools that enables precision farming. These two factors will form part of the interpretation of the **Hortgro Concept Orchards**, if relevant.

Key decisions and resolutions taken with regard to the Hortgro Concept Orchards:

- **Hortgro Concept Orchards** should incorporate learnings of Phase 1 OoF (i.e. high density, 2D systems, precocious and efficient rootstocks).
- **Hortgro Concept Orchards** must address a specific question(s) that aligns with the focus areas of the programme.
- Both existing and new orchards will be considered.
- There is no size limit to a **Hortgro Concept Orchard**, as long as it's of sufficient size to answer the specific question(s).
- Data of the **Hortgro Concept Orchards** should preferably be comparative for interpretation purposes, e.g. one halve of the orchard planted to BP1 and the other halve to OHxF40.

- Participants must be willing to share general production, quality and financial data, depending on the question(s) being addressed by the orchard.
- Participants must consent to field days at their orchards.
- All participants will be part a forum that will meet once to twice a year to share and discuss the results of the **Hortgro Concept Orchards**.

Process to submit a Hortgro Concept Orchard proposal

- Hortgro Science would like to invite fruit growers to submit potential **Hortgro Concept Orchards**.

Applications can be done by:

- Completing the online application form – <https://www.hortgro-science.co.za/hop-application-form/>

OR

- Email the offline completed application form (<https://www.hortgro-science.co.za/wp-content/uploads/docs/2021/06/Hortgro-Concept-Orchards-Application-Form.pdf>) to Marno van der Westhuizen at marno@hortgro.co.za.

- Please supply sufficient information about the orchards (whether in existence or in planning) to allow the **Hortgro Concept Orchards** Steering Committee to consider their merit.
- The proposal should be submitted via the technical advisor who will be collaborating on the project. **The involvement of a technical advisor is a prerequisite for consideration for the programme.**
- New applications need to be in accordance with the main focus areas listed above.
- Please note that although we would love to accept all proposals, Hortgro Science will only be able to handle a limited number of **Hortgro Concept Orchards**.