



Westfalia Fruit Launches 2 new rootstocks

Theo Bekker, Wilna Stones, Consuelo Fernandez, Stefan Köhne, Zelda van Rooyen



Brief History



- Westfalia has been testing and selecting avocado rootstocks for more than 40 years.
- In 2003, Dusa[®] was released, which became the leader in the avocado world, with more than 1 million trees sold in 2022.
- Evaluation of new rootstocks has continued, with Dusa[®] as the industry standard.
- The South African Avocado Growers' Association part-funded a programme in the early 2000's

Origin and Ownership

Fire tower (FT) - Leola

64 trees, all 3 races. Geographically isolated.

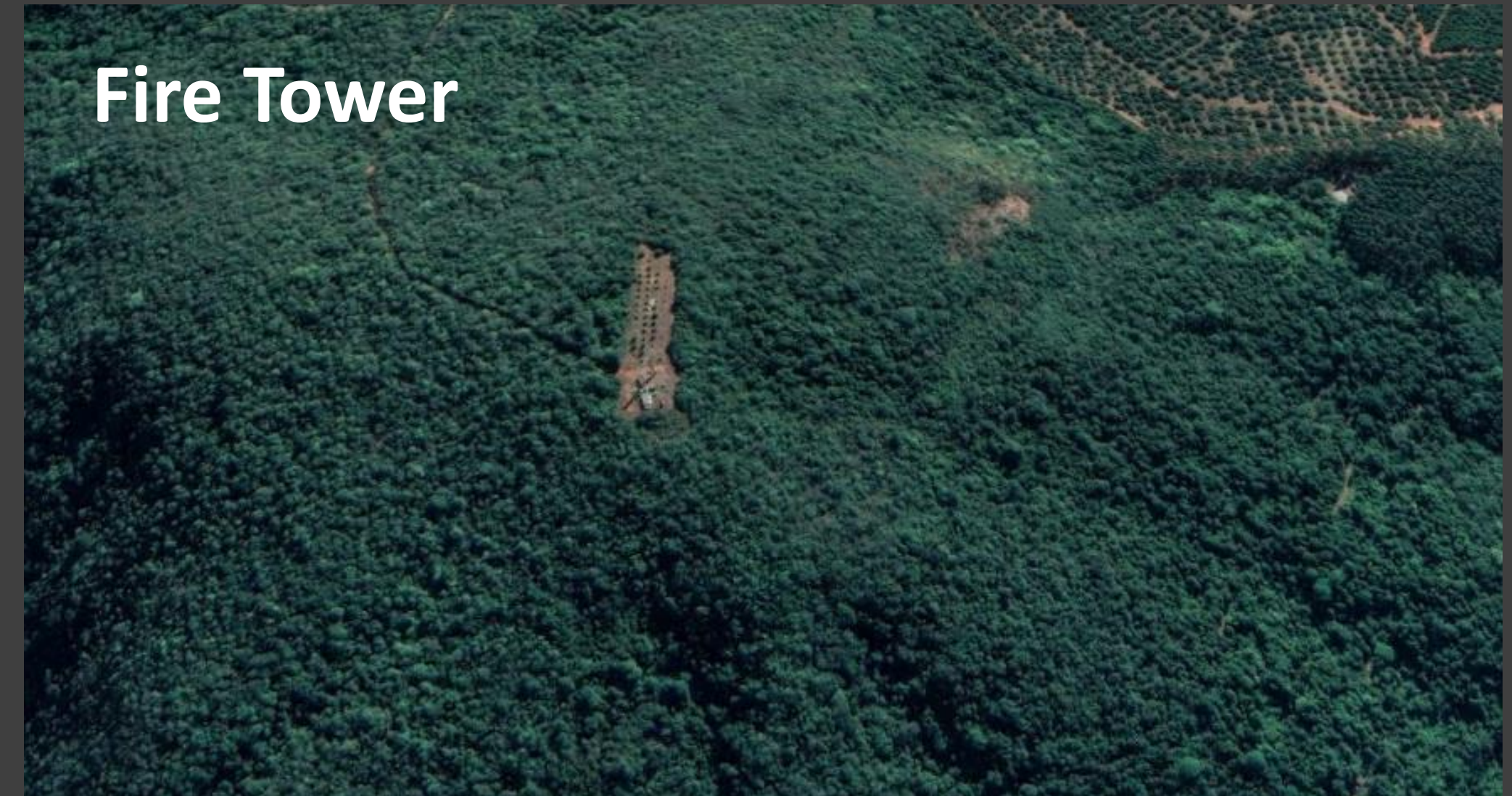
- P.c tolerance
- Salt tolerance
- Good mothers (precocious and high yielding)
- Good rootstocks

Westfalia Super-tree Unit (WSU) – Zerala

- Seedling trees, superior yields for several successive years
- Induced to grow shoots and then cloned.

Ownership

- Both Westfalia Fruit and SAAGA contributed resources.
- Ownership of any selections commercialized would be shared on an equity basis.



Process of Rootstock development



Phase 1 - Mistbed

Seedlings subjected to *Phytophthora cinnamomi* in a mistbed; Survivors are cloned and retested



Process of Rootstock development



Phase 1 - Mistbed

Seedlings subjected to *Phytophthora cinnamomi* in a mistbed; Survivors are cloned and retested



Phase 2 – Killing field

At least 20 trees of a selection is tested in a field trial compared to the industry standard under high infection pressure
Measure tree health and yield



Process of Rootstock development



Phase 1 - Mistbed

Seedlings subjected to *Phytophthora cinnamomi* in a mistbed; Survivors are cloned and retested

Phase 2 – Killing field

At least 20 trees of a selection is tested in a field trial compared to the industry standard under high infection pressure
Measure tree health and yield

Hass/11 rootstocks (Triplets)

NIC HUMAN (TZN DAM)	MOOKETSI (GOEDGELEGEN)	SOEKMEKAAR (MOREBENG - Agrivet)
<ul style="list-style-type: none">• Warm and humid• Max temp 25°C – 32°C• Min temp 12°C - 22°C• Hutton type soils• 752 m asl• 6 rootstocks + 3 industry standards (Bounty, Duke 7 & Dusa)• Planted Nov 2013• Recently drought conditions	<ul style="list-style-type: none">• Hot and dry• Max temp 25°C – 35°C; Min temp 10°C - 22°C• Clay loamy soils• 802 m asl• 7m x 4m• 6 rootstocks + 3 industry standards (Bounty, Duke 7 & Dusa)• Planted Dec 2014• Regular droughts – borehole water• Salinity problems	<ul style="list-style-type: none">• Cool, mild climate (no frost)• Max temp 25°C - 30°C; Min temp 6°C – 15 °C• Mostly deep soils• 1191 m asl• Spacing 8m x 4m• 6 rootstock + 4 industry standards (Bounty, Duke 7, Dusa & Velvick)• Planted Nov 2014• No salinity problems, but wind is a problem• Occasional hailstorms

PAGE 5

Phase 3 – Large scale testing

Material is distributed to international partners
Conduct large scale trials in a range of climatic conditions
Measure yield

Process of Rootstock development



Phase 1 - Mistbed

Seedlings subjected to *Phytophthora cinnamomi* in a mistbed; Survivors are cloned and retested

Phase 2 – Killing field

At least 20 trees of a selection is tested in a field trial compared to the industry standard under high infection pressure
Measure tree health and yield

Production is the key driver for rootstock commercialisation



Phase 3 – Large scale testing

Material is distributed to international partners
Conduct large scale trials in a range of climatic conditions
Measure yield

Phase 4 – Staggered commercialization

Material is distributed further.
Protection and licensing.



Why these
rootstocks?

Why Leola®?



OVERVIEW

Good results with Hass & Gem®

PRODUCTION



ROOT ROT TOLERANCE



VIGOR

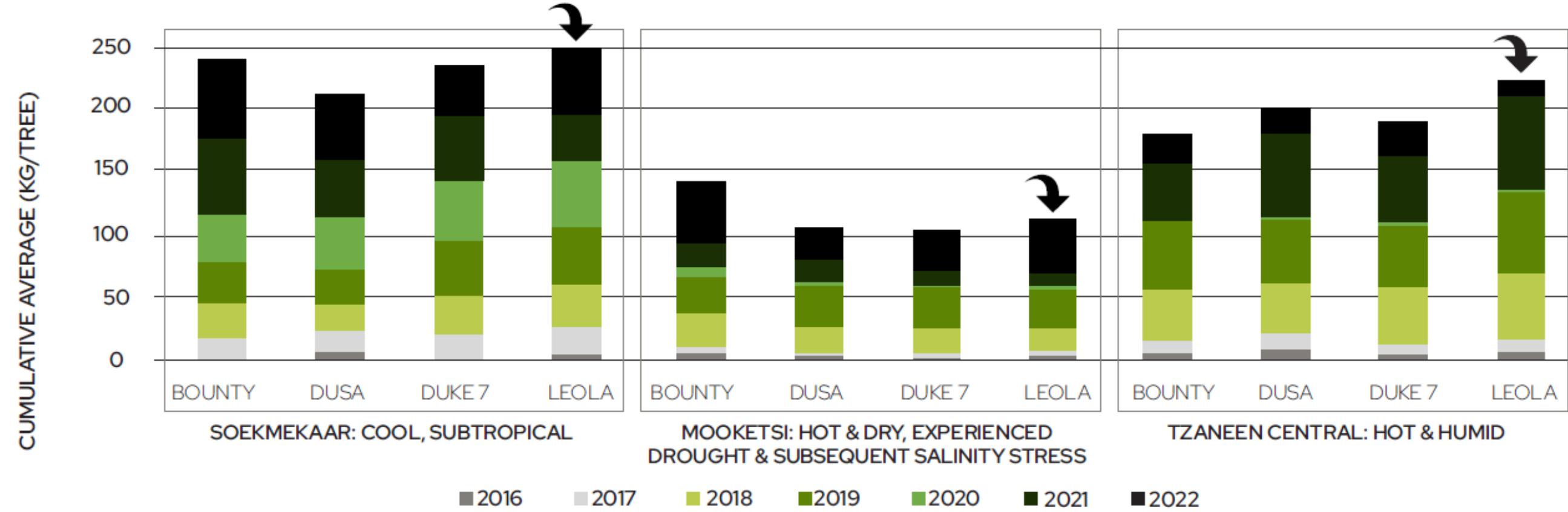


SALINITY TOLERANCE



HASS ON LEOLA® - PERFORMANCE IN SOUTH AFRICA

CUMULATIVE HASS YIELD OF THREE FORMAL TRIALS CONDUCTED IN SOUTH AFRICA UNDER VARYING GROWING CONDITIONS

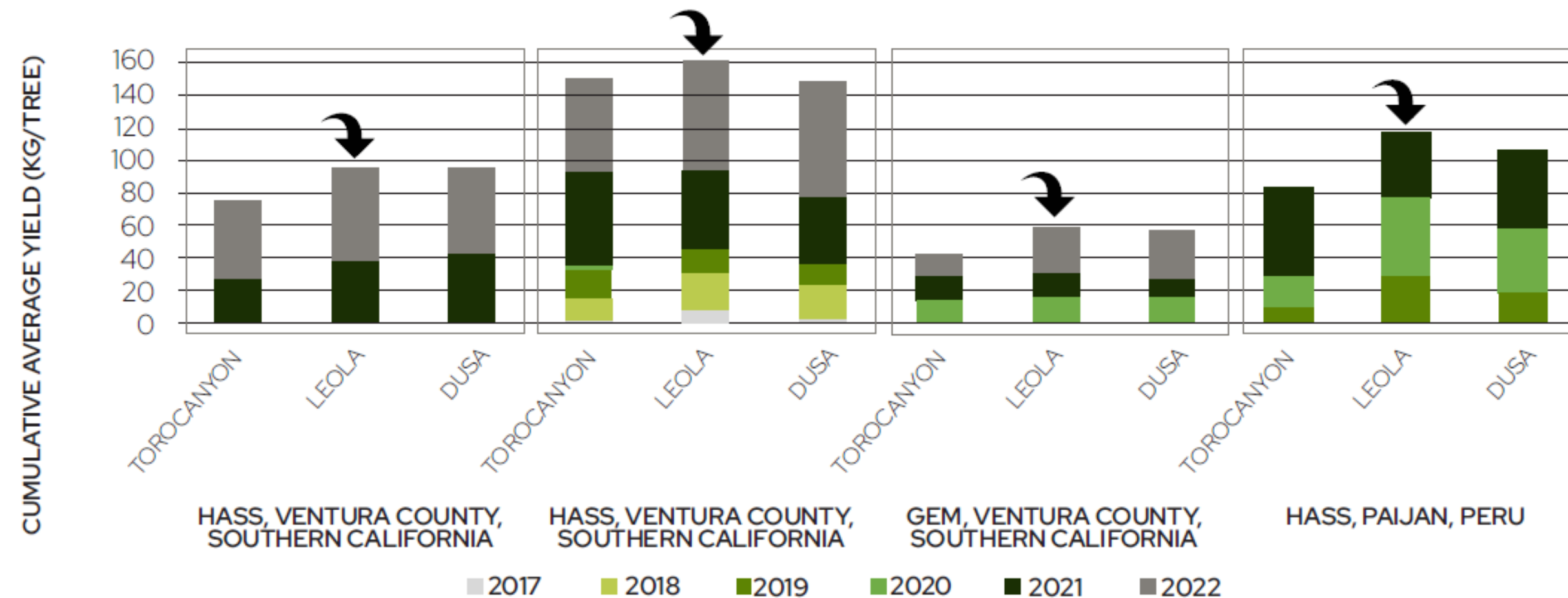


In a range of additional trials conducted in several provinces, Leola® proved to be a good rootstock for not only Hass, but also other varieties



LEOLA® - PERFORMANCE INTERNATIONALLY

CUMULATIVE AVERAGE YIELD BY ROOTSTOCK FOR A RANGE OF TRIALS IN THE USA AND PERU



Why Zerala®?



OVERVIEW

Good results with Hass & Gem®

PRODUCTION



ROOT ROT TOLERANCE



VIGOR

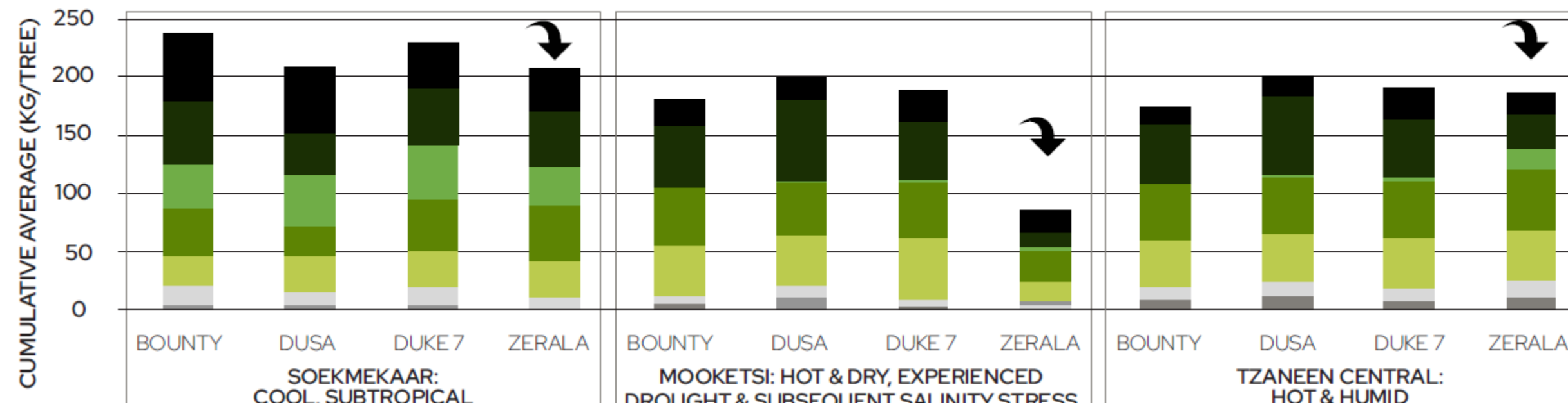


SALINITY TOLERANCE



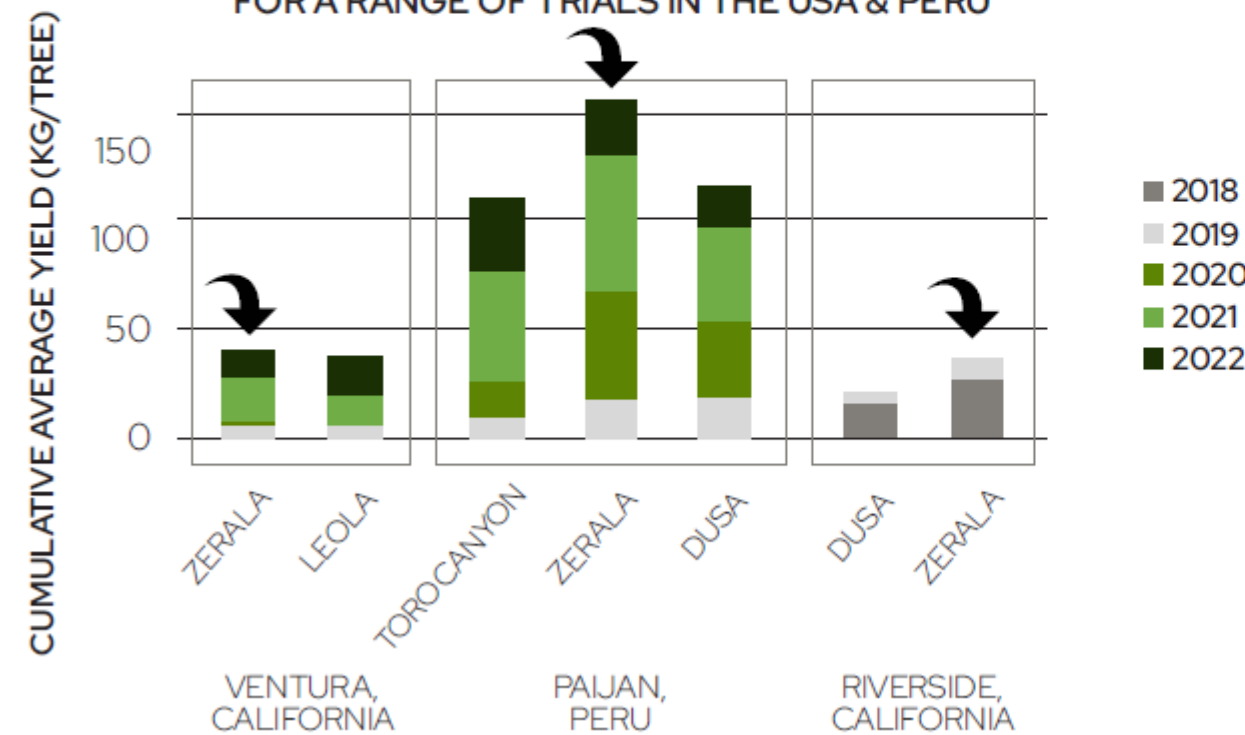
HASS ON ZERALA® - PERFORMANCE IN SOUTH AFRICA

CUMULATIVE HASS YIELD OF THREE FORMAL TRIALS CONDUCTED IN SOUTH AFRICA UNDER VARYING GROWING CONDITIONS

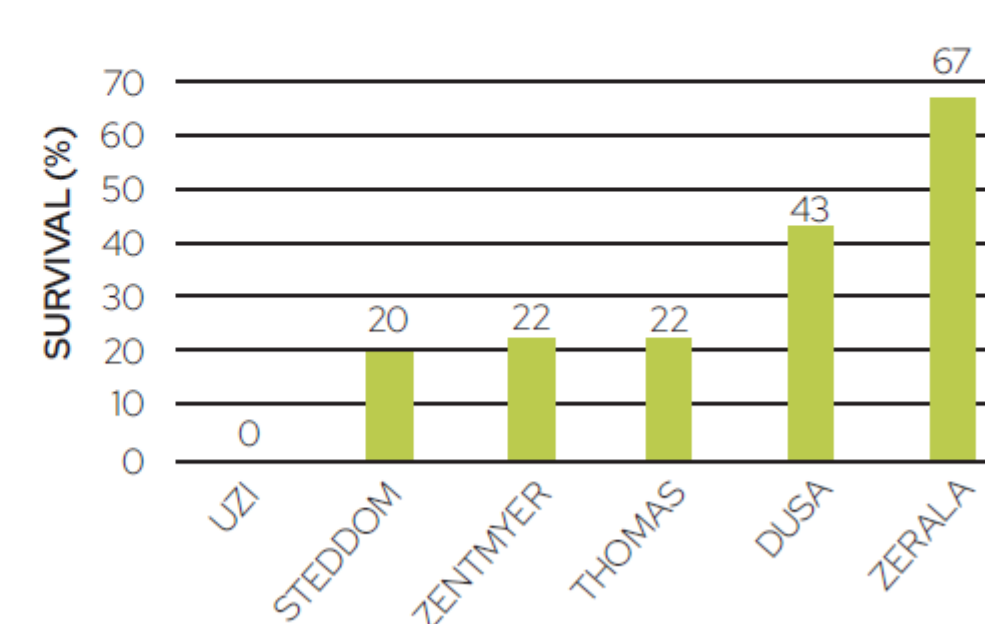


HASS ON ZERALA® - PERFORMANCE INTERNATIONALLY

CUMULATIVE AVERAGE YIELD BY ROOTSTOCK FOR A RANGE OF TRIALS IN THE USA & PERU



AVOCADO SURVIVAL % PER ROOTSTOCK



Avocado survival percentage by rootstock in saline treatment in 2015. Graph modified, from Cells, Nydia et al. "Salt Tolerance and Growth of 13 Avocado Rootstocks Related Best to Chloride Uptake." HortScience Vol 53, 12, 2018.

Availability



Availability

Westfalia works closely with Brokaw Nursery and other industry partners to continue the testing and commercialisation of these rootstocks

If you are interested to test these rootstocks, please contact us.

Available for commercial sale:

- USA
- South Africa

Testing Completed

NZ*

Testing Continues

- Chile
- Peru
- Colombia
- Australia*

Testing to Commence

- Israel
- India
- Brazil



Westfalia launches LEOLA® and ZERALA® with pride and confidence, and with great expectation that these rootstocks will make a major contribution to the avocado world by delivering good and consistent yields



www.wac2027.com