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Breeding & selecting avocados for the future of the avocado industry

Z R Ernst & A A Ernst



Why do we breed?



Rootstock Breeding & Selection

Selection

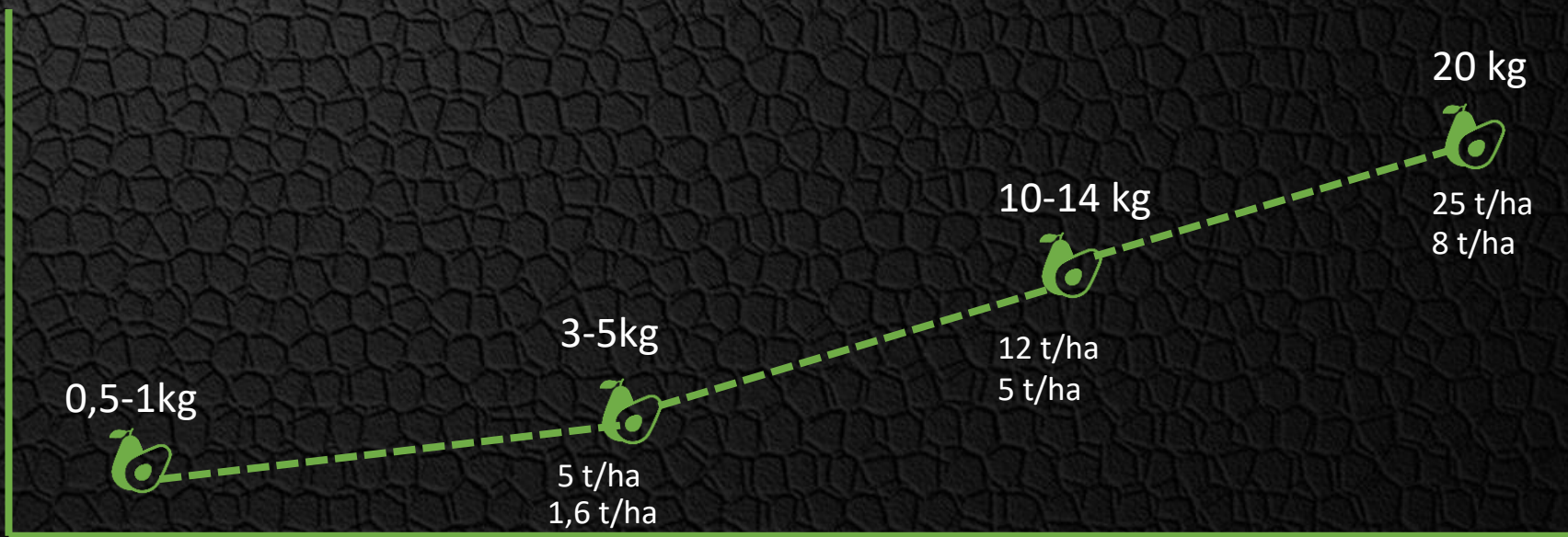
Multiply and Propagate

Commercial Production Trials

Registration & Commercialisation

- Top producing seedling rootstocks
- 50– 70 year old seedling orchards
- Phytophthora soils
- Visible losses of trees to Phytophthora
- Main Selection Criteria is Yield

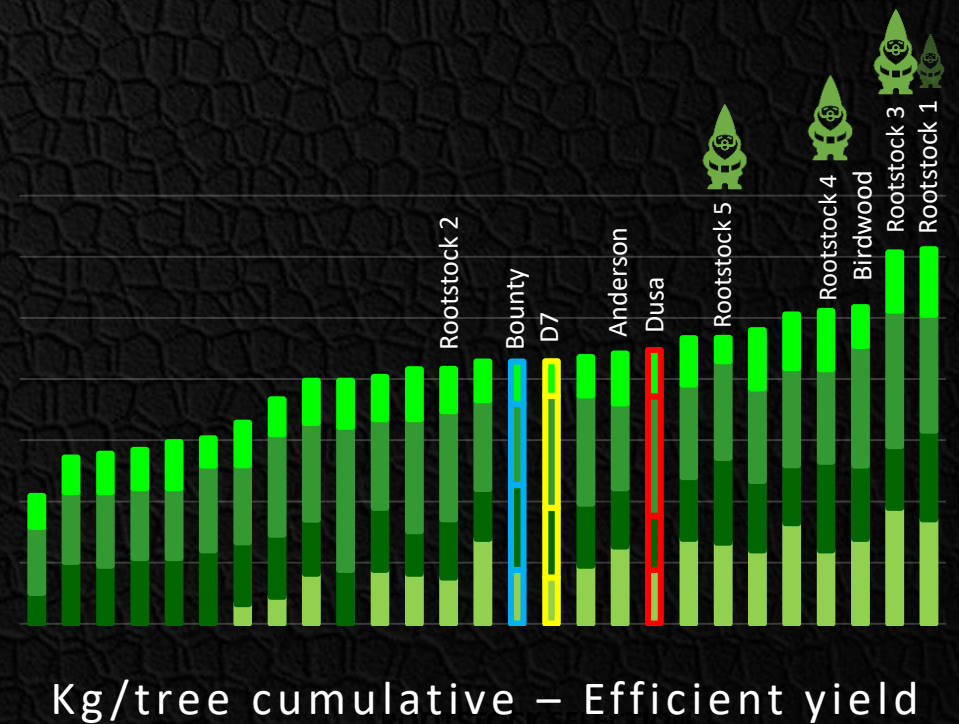
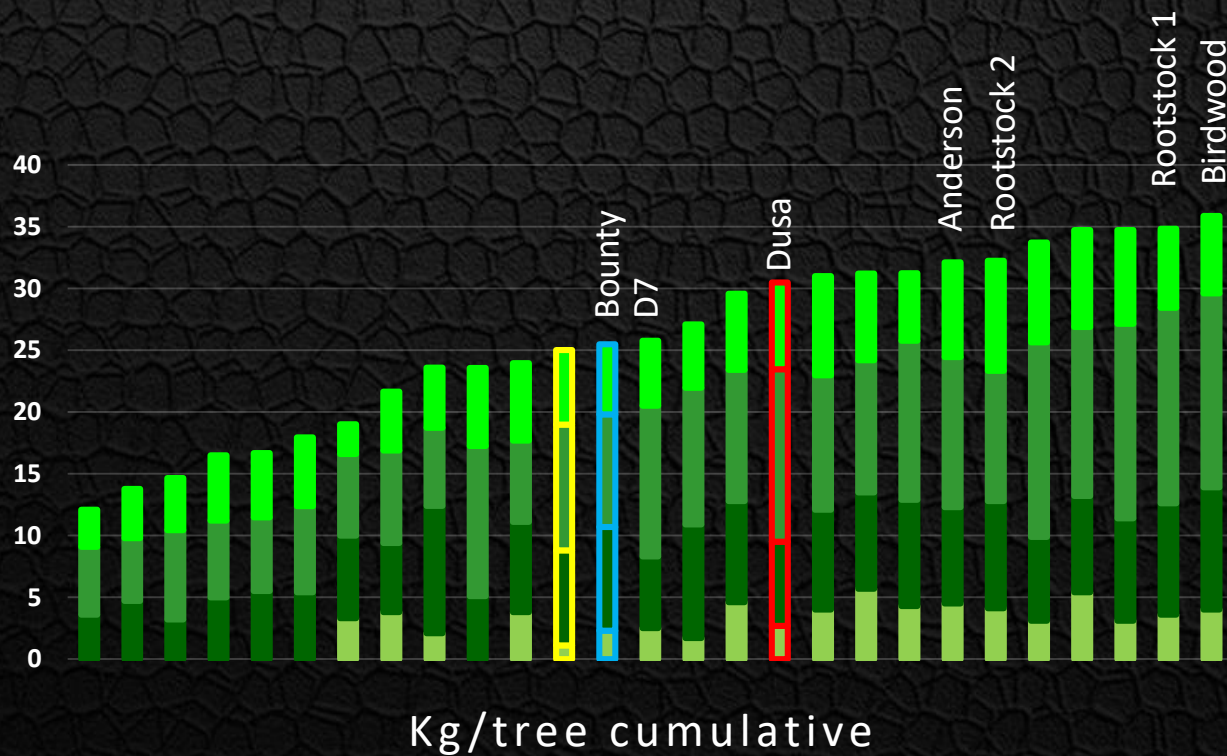
- Maluma – new generation cultivar
- Hass
- Trellis Suitability
- Precocity
- Productivity
- Uniformity
- Dwarfing / Growth vigor
- Efficient yield



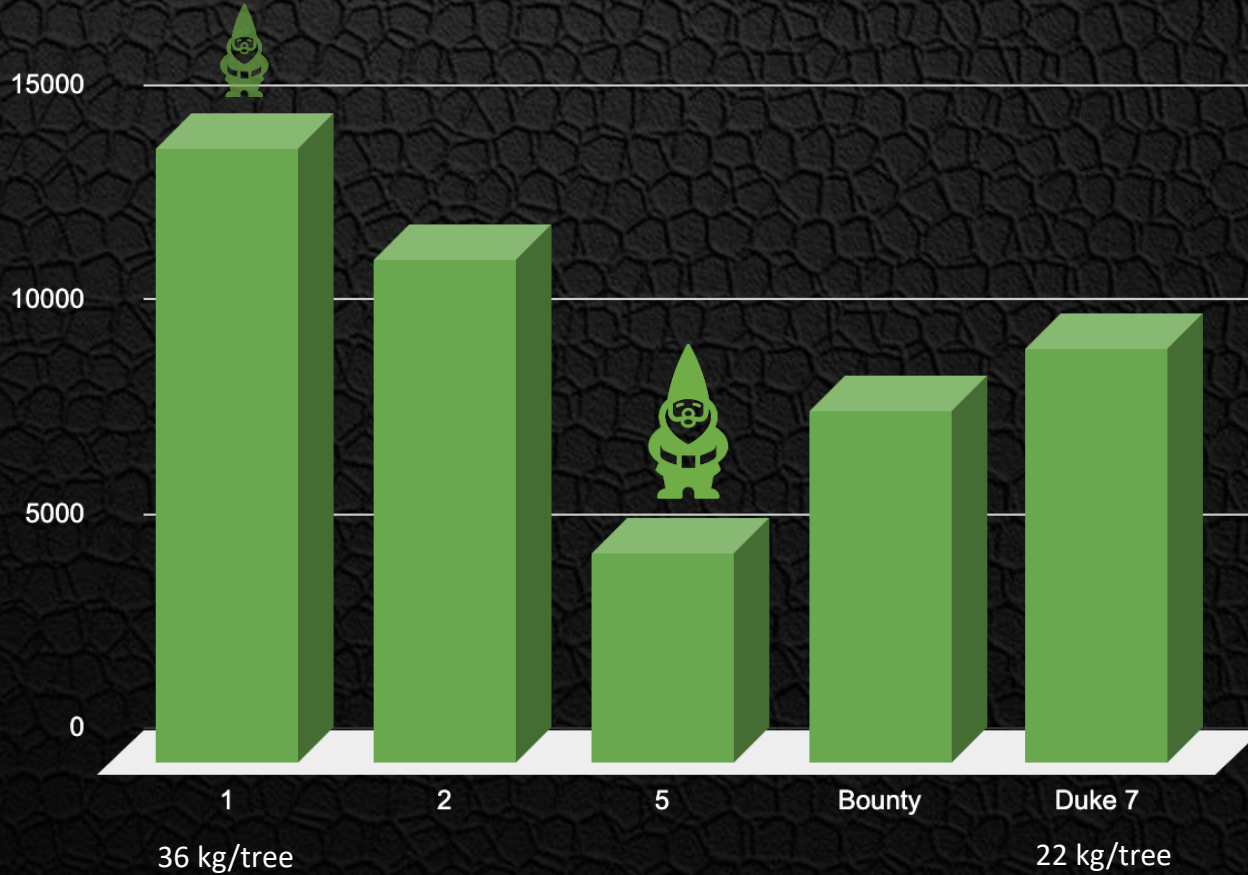
Benchmarks for Rootstocks

- Precocity
- Kg/ha per year compared to commercial Rootstocks
- Growth / energy balance for "terroir" and cultivar selections
- *Phytophthora*
- EC tolerance

Maluma yield



Hass Results



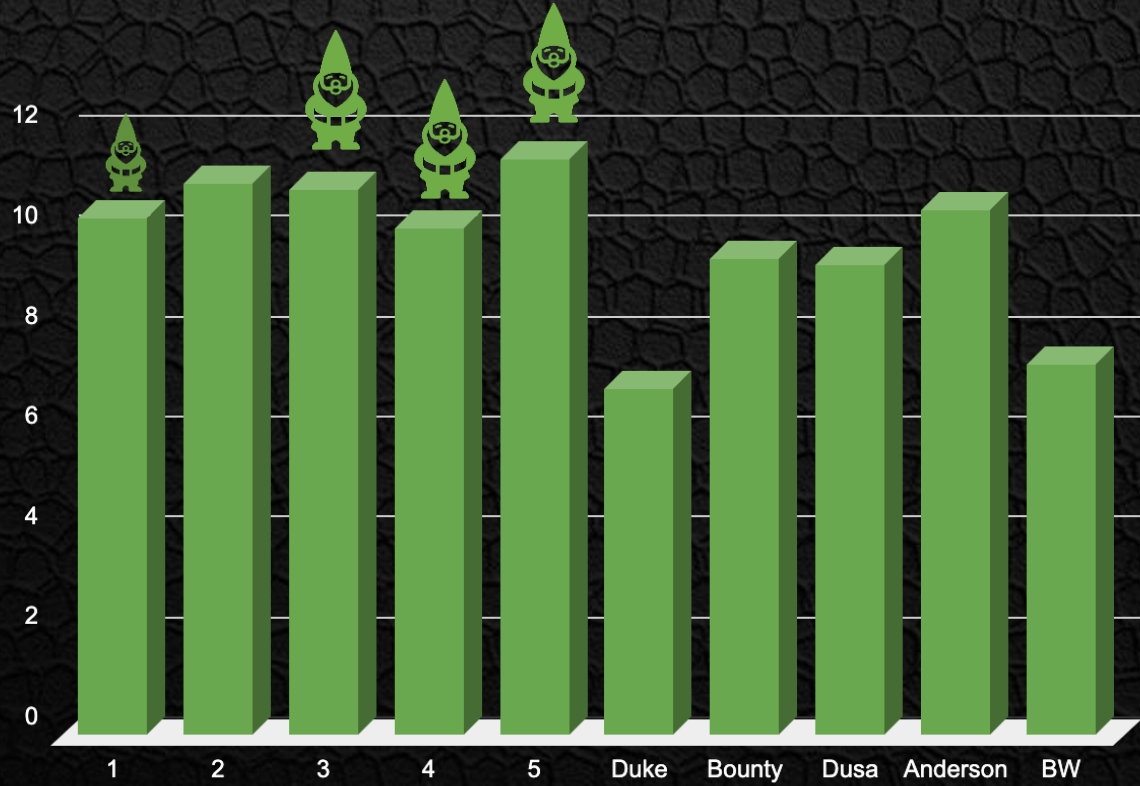
3 year average
All in one block
Affected by hail in 2021



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Trellising Results



Planted end of summer '20
Harvested 24 months after planting

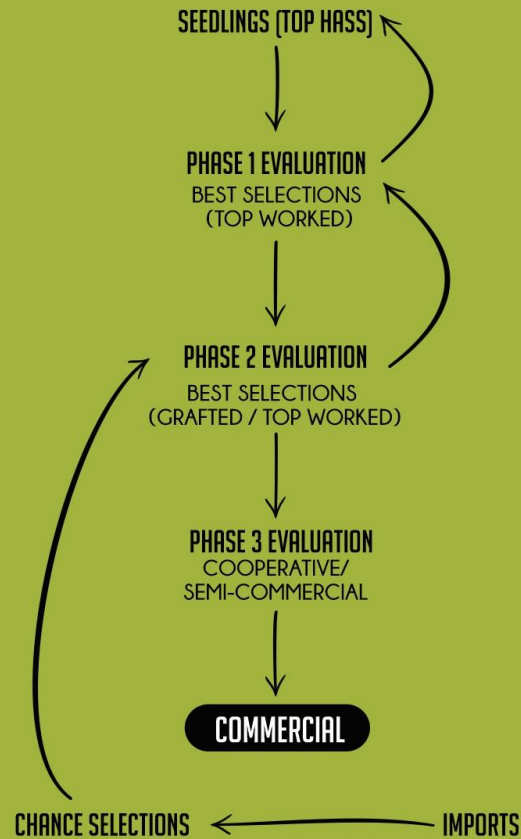
Benchmark 5kg /ha



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Integrated Breeding & Selection Approach



TRAITS OF FUTURE avocado cultivars:



FRUIT SKIN COLOUR, FLESH, TEXTURE, SKIN THICKNESS, TASTE & TEXTURE



PRODUCTION QUALITY & TIMING



HUMIDITY ADAPTABILITY



SEED TO FLESH RATIO



INTERNODE LENGHT



FRUIT SET POTENTIAL



CLIMATE ADAPTABILITY



CROP POTENTIAL



Reduced post cut pulp discolouration



Resistance to pests and diseases



Post ripening shelf live & storability



Harvest Window & Precocity



Cultivar Benchmarks

The must haves

- Seed to flesh ratio
- Precocity
- Post harvest quality
- Shipping and Ripening simulation
- Flavor profiling
- Fruit Size
- Coloring & ripening uniformity
- Skin texture and appearance
- Climate and Micro climate considerations

Nice to haves

- Internode lengths
- Tree shape / canopy type
- Growth vigour
- Flower type
- Trellis Suitability
- Productivity / yield
- Flower potential

The wow factor

- Marketing windows
- Unique characteristics
- Pest and disease resistance



Avocados really can't just be defined based on tastes such as nutty and watery or even bitter.

Texture can not just be on a single dimension of creaminess.

Are avocado's really that boring

Credit: Matt Carter - Allesbeste



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1



2



3



4



5



avor

allesbeste
KWALITEIT WEENS PASSIE

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Maluma
ave

Vidvi
ave

Commercialization plan

- Established agents for Maluma
 - Importing material
 - Setting up mother blocks
 - Production partners in micro-climates
 - Temp, humidity, soil and salinity variations
 - Commercial licensing
- New territories
- Modified club systems for cultivars



avor



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To a man who dedicated his life to avocados. We acknowledge what he did as a private individual where multinationals and large institutions dared not to go. Challenging and often changing the status quo with passion for a better world for all of us!



Dr A.A. Ernst
1953 - 2021

"as jy net daar in die hoek gaan sit en kyk, gaan niks gebeur nie"
"if you only sit on the side and look on, nothing will ever change"

