



Successful commercial

Trellising

of avocado: a case study of 'Maluma'

- Z R Ernst



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Introduction

A key to **higher production** is improved **pruning practices**, yet to do this we need a better understanding of the bearing pattern of the tree (Iturrieta, 2019).

Trellising provides a crucial first step in this as the **visual identification** of branches are simplified although complexity is increased.

- Started 2015, Commercial 2017
- 2021 – 21 ha in production
- Other fruit crops produced good results
- Avocado increase in densities (200 trees to more / ha) over the years didn't really increase production – introduced alternate bearing
- RSA climate – massive restriction to production induces growth vigour
- Biggest threat to trellis in avo is growth vigour

“Avocados produce crop on terminal shoots, which are decreased through rigorous pruning regimes, which furthermore increases growth vigour and reduces production” (Toerien & Basson, 1979).





Why trellising

- Need to optimize on
 - tree volume efficiencies
 - activity efficiencies
- New genetics are more precocious – need support on young trees yielding 2-6kg per tree after 12 months.
- Return on Investment considerations
- Alternate bearing



High Density orchards enables micro management, as the decision making process is simplified with a less complex and smaller tree. Yet... "we need limbs to produce fruit" this however might be one of the major limitations of high density pruning...

We have the urge to move beyond previously known boundaries in production. We want to push these boundaries to the limits not previously known.



Trellising on Avocados

What makes it different on avocados?

Precocious cultivars often need support systems

No dwarfing rootstocks

Evergreen

Cropping pattern or habits of fruit on trees

Manage sunburn & Light penetration

4-6 month old wood to produce flower – planning

Natural sylleptic attachment angle



Tatura



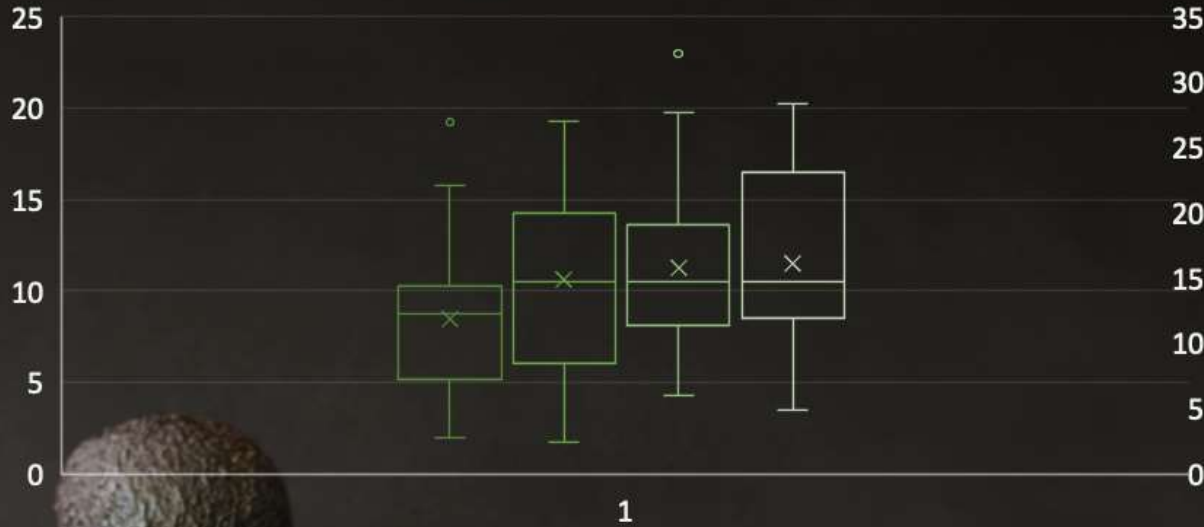
Vertical



Wire spacing results

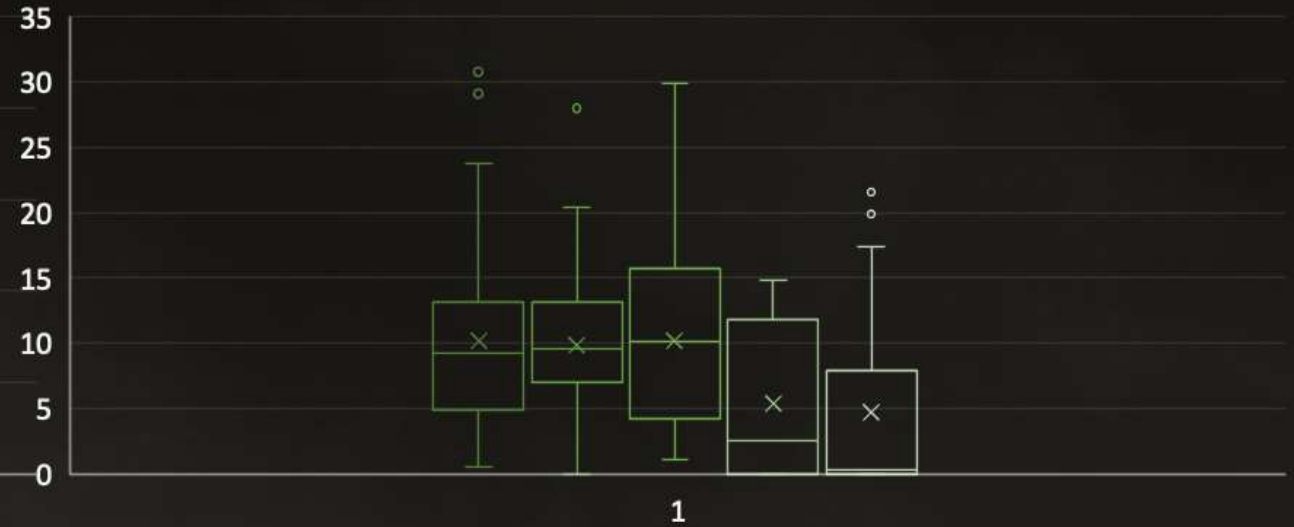
2019 Production Estimates (kg/tree)

Min , Max and Average Kg/tree



2020 Wire Spacing estimates

Min , Max and Average Kg/tree

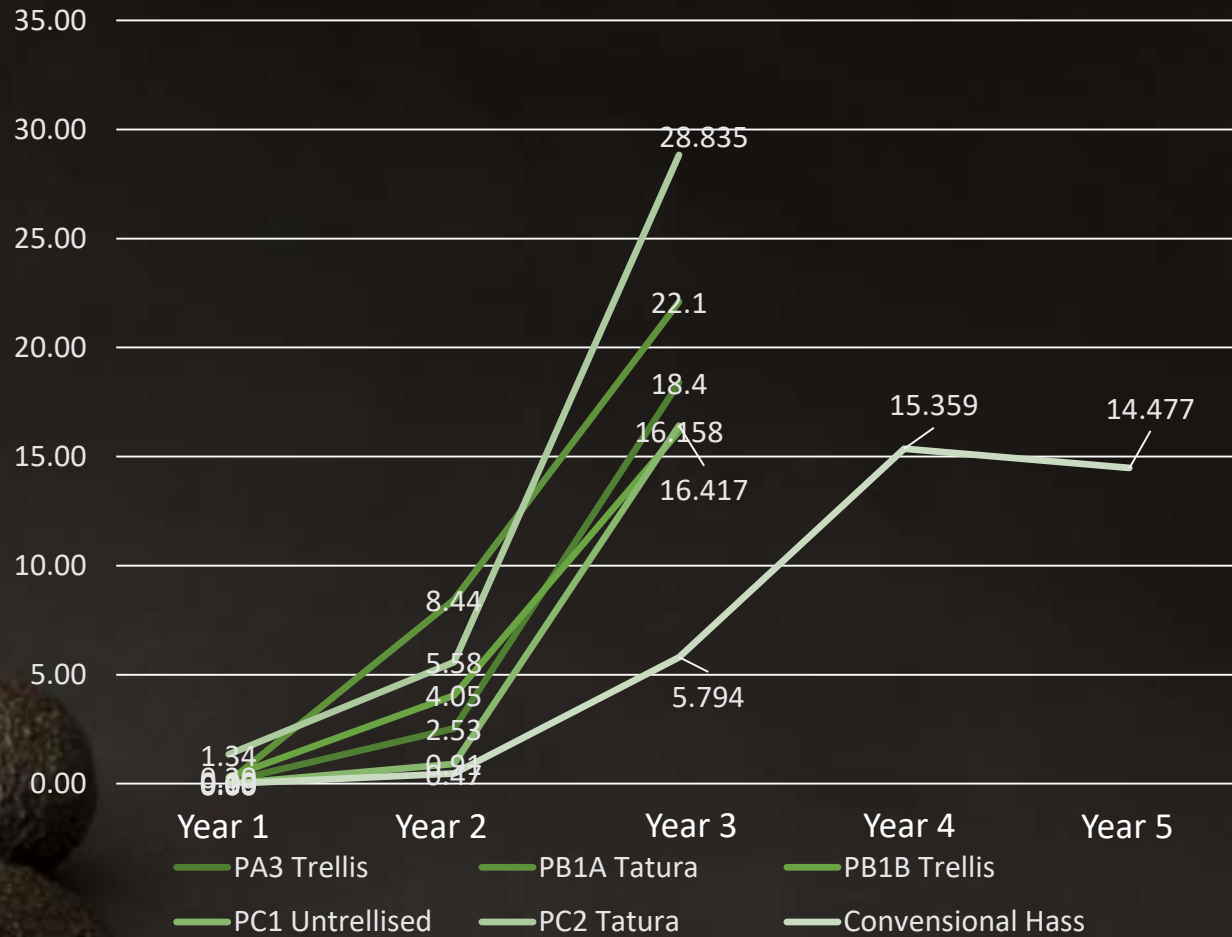


150MM 200MM 300MM Tatura

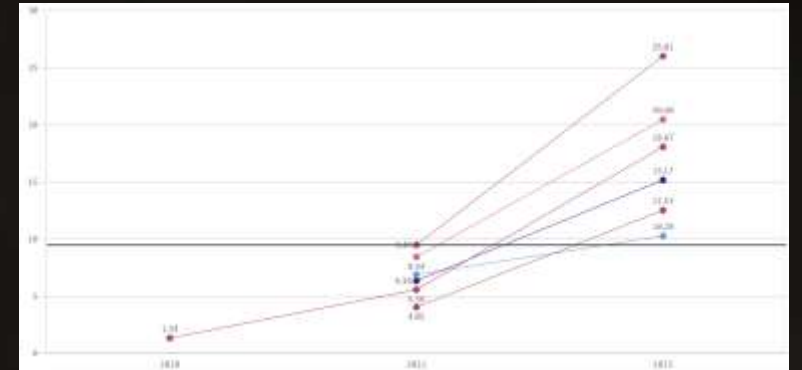
150MM 200MM 300MM Tatura - Single tree Tatura Double



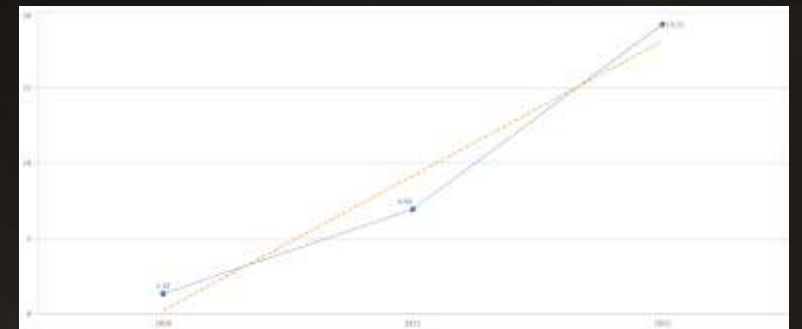
Annual Production per ha



Tatura and Vertical yield / ha



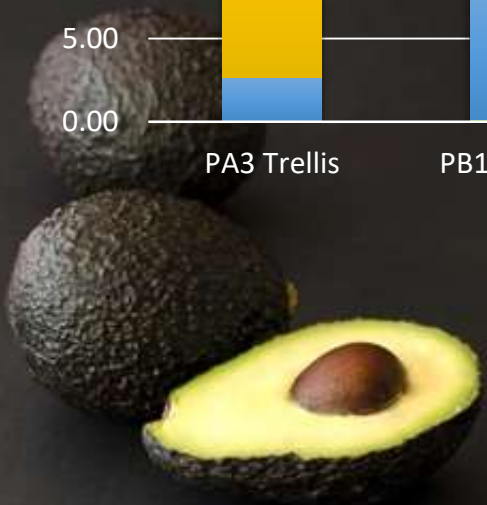
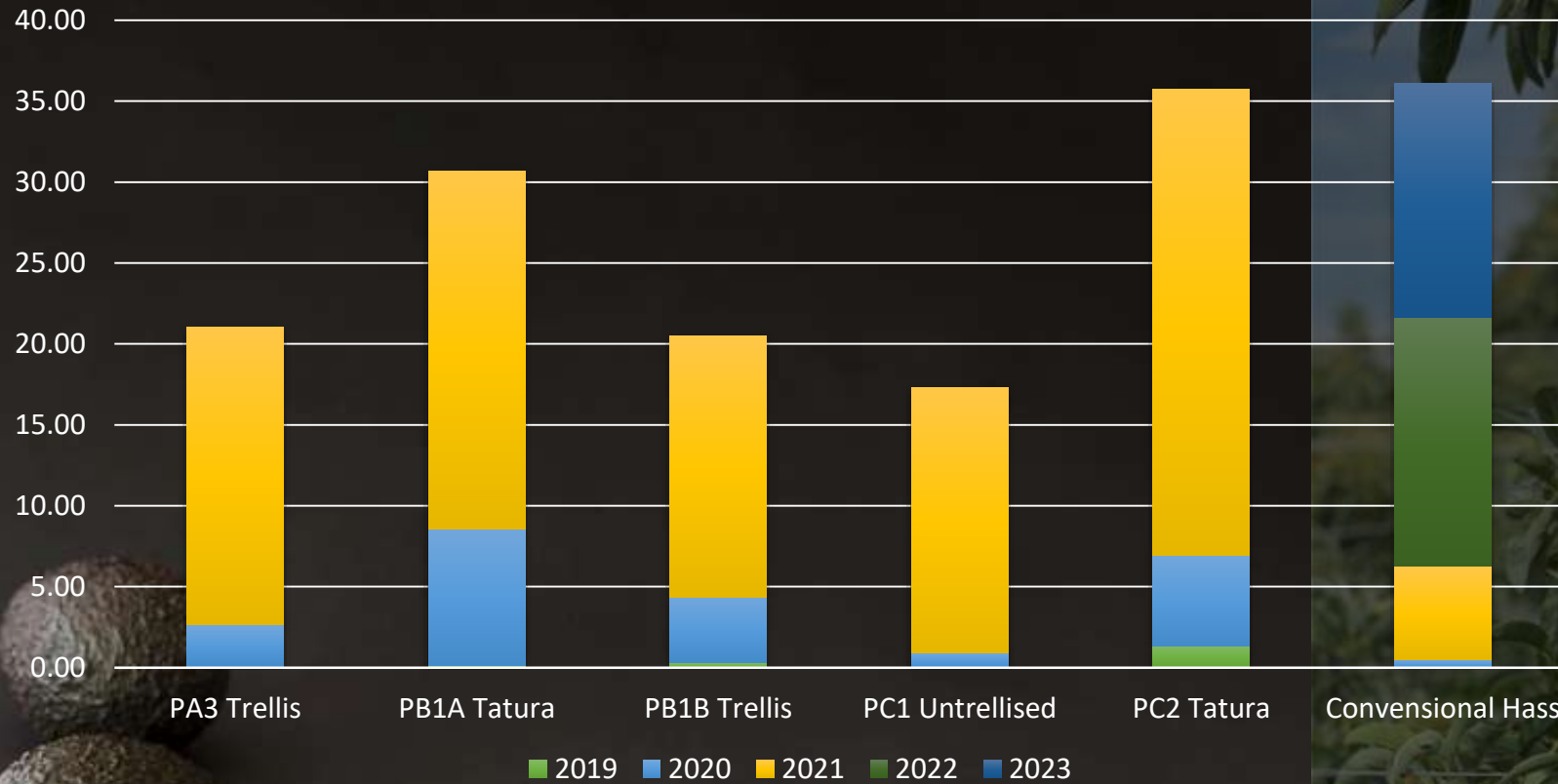
Ave Tatura annual growth



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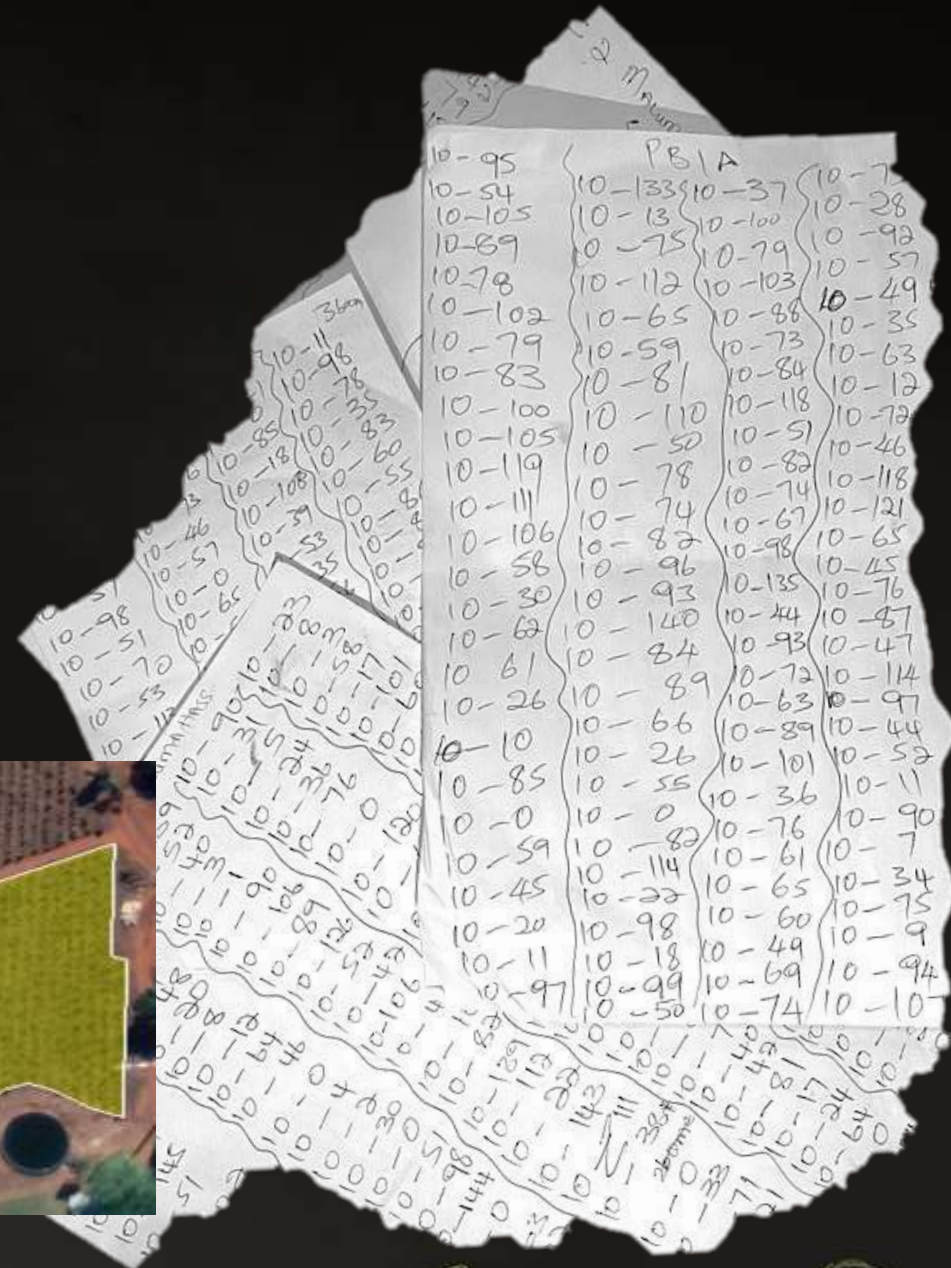
Cumilative Production



	<i>Tatura</i>	<i>Tatura</i>	<i>Vertical</i>	<i>Conventional</i>
	PB1A	PC2	PB1B	PC1
bome	116	44	92	163
avg kg / tree	17,7	23,1	12,9	13,1
kg /ha	22136,3	28835,2	16158,3	16416,8
max kg/tree	36,5	38,5	31,8	36,3
Std Dev	8,1	8,0	7,1	10,4

1250 / ha 2500 / ha

	Single	Double
Ha	0,52	0,36
Kg	5078	2949
kg/ha	9765	8191



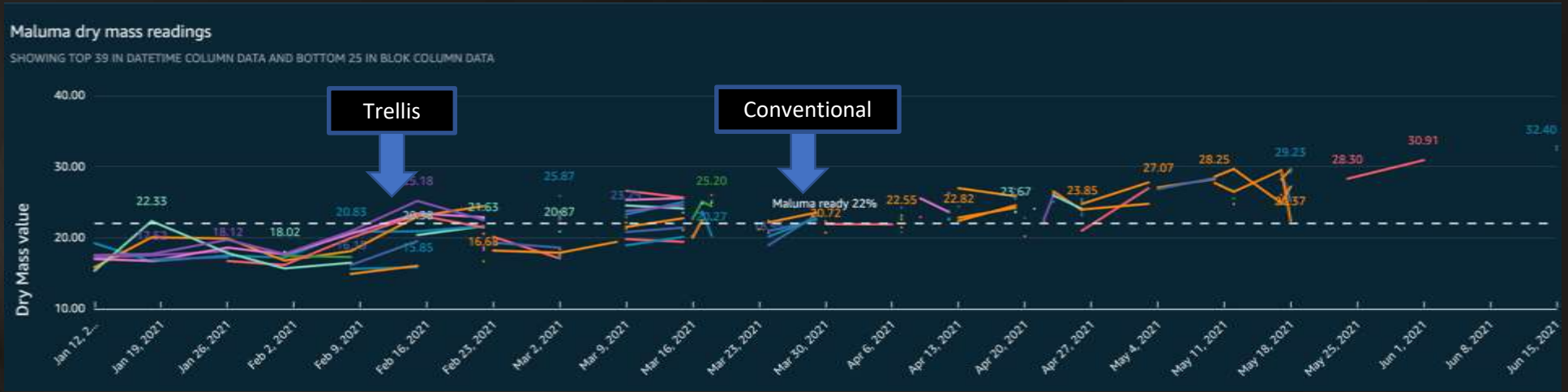
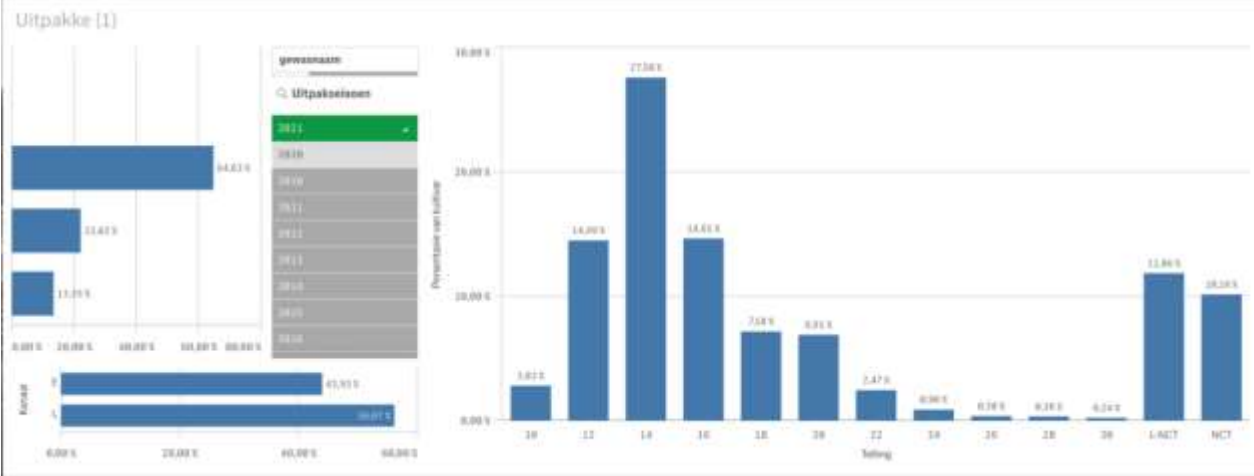
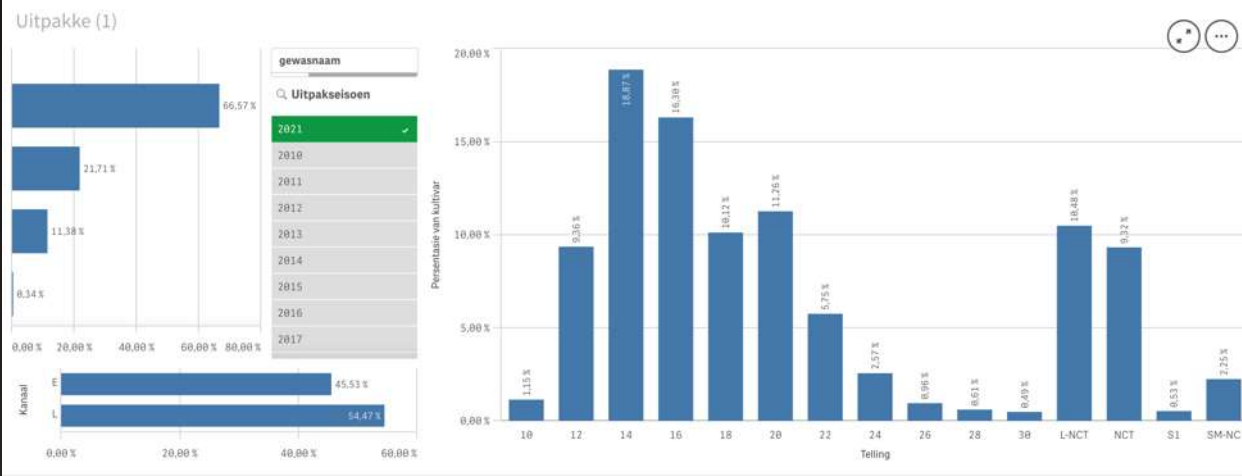
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Maluma
avo



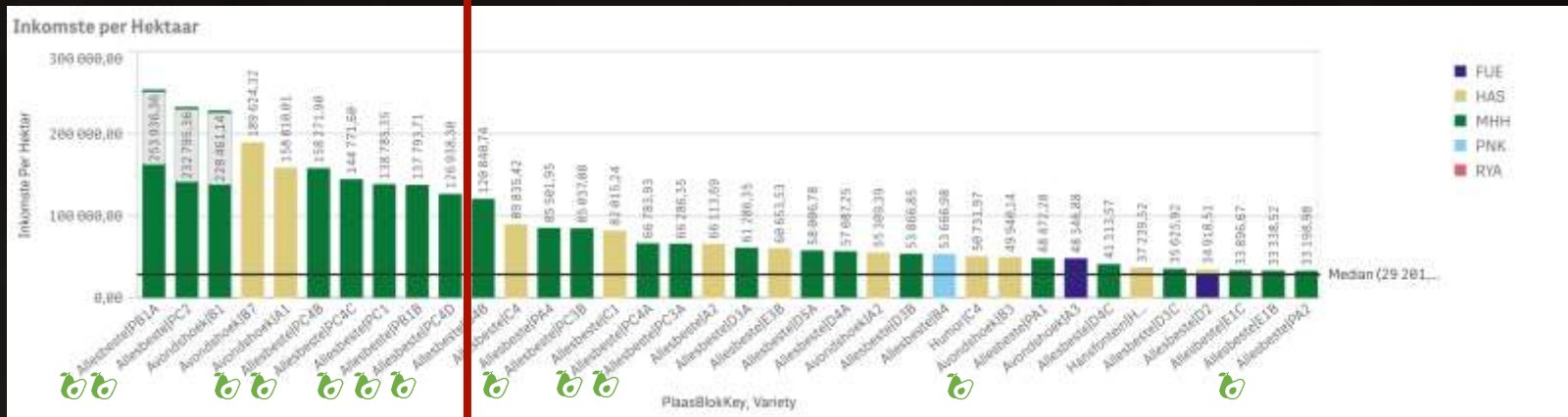
Vivi
avo



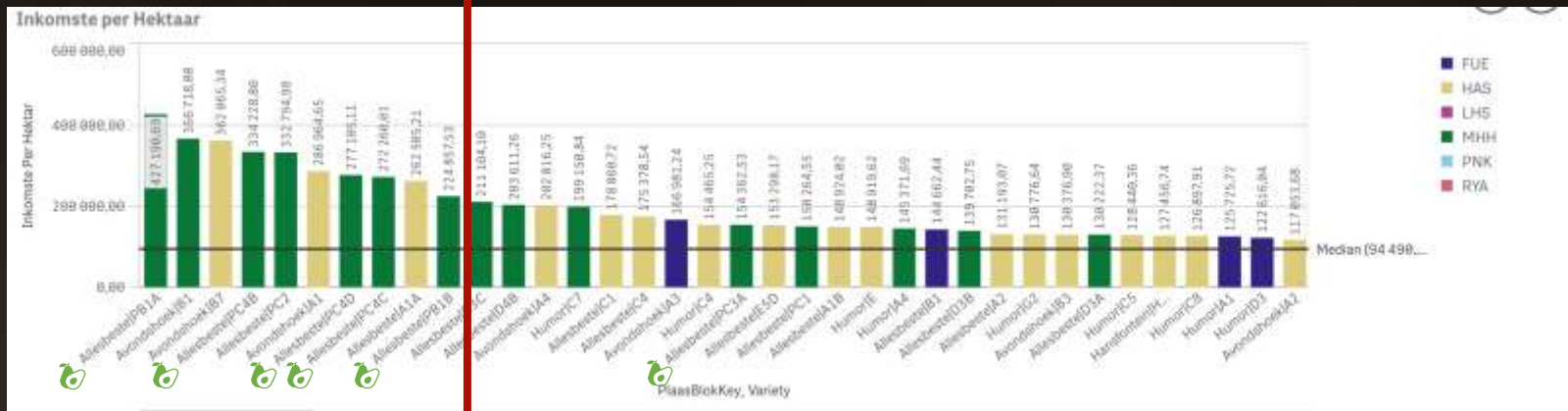
Top 10



Income / ha 2022



5 years cum' Income / ha





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ViaVi
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Fruit hang in clusters possibly due to higher percentage of fruit per inflorescence

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 Maluma
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 ViaVi
ave





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Ultimate *rejuvenation!!!*



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Trellis Suggestions

- Use of PBR's in vigorous climates
- Adapted Tatura system – vertical axis split tree
- Will be even easier in "terroir" with inherent stress
- Undoubtably the way to higher efficiencies
- Match between rootstock, climate, soil and ultimately cultivar is crucial
- Balance between Nutrition , tree growth and optimal yields



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Conclusion



- Reaching 20+ ton without filling the entire structure
- Tatura now is manageable and no more complicated than Vertical
- Maturity and harvesting hypothesis
- Breakeven after 24-36 months.
- Rootstock – Dusa – Precocious & Vigorous
- Trellising New-generation precocious cultivars like **'Maluma'** is *successful*
- Even in Warm climates semi-dwarfing cultivars can be trellised
- Enables Micro management and production planning
- Optimal Light penetration
- Tatura is expected to be the preferential system
- Increase in production not yet equal to increase in flowering
- Vegetative regrowth under control – not a threat
- Production is significantly improved through trellising



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Thank You
Gracias - Dankie



Rodrigo Duarte

4 April from 09:20 - 09:35
Micro-cloning as a nursery propagation technique for a global avocado industry.



Donovan Lewis

4 April from 04:15 - 04:30
Protocol precision ensures good quality arrivals on Maluma and growth worldwide.



Matt Carter

The route to the avocado flavour wheel.



Zander Ernst

5 April from 12:35 - 12:50
Breeding & selecting cultivars and rootstocks set for the future of the avocado industry.



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Maluma *ave*



Vidvi *ave*