

ULTRA-HIGH DENSITY PRODUCTION AND THE VALUE OF TRELLISING ZR Ernst



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Practices to increase CVY

- Tree health
- Rejuvenation pruning – Mechanical & Hand
- Cultivar Choice



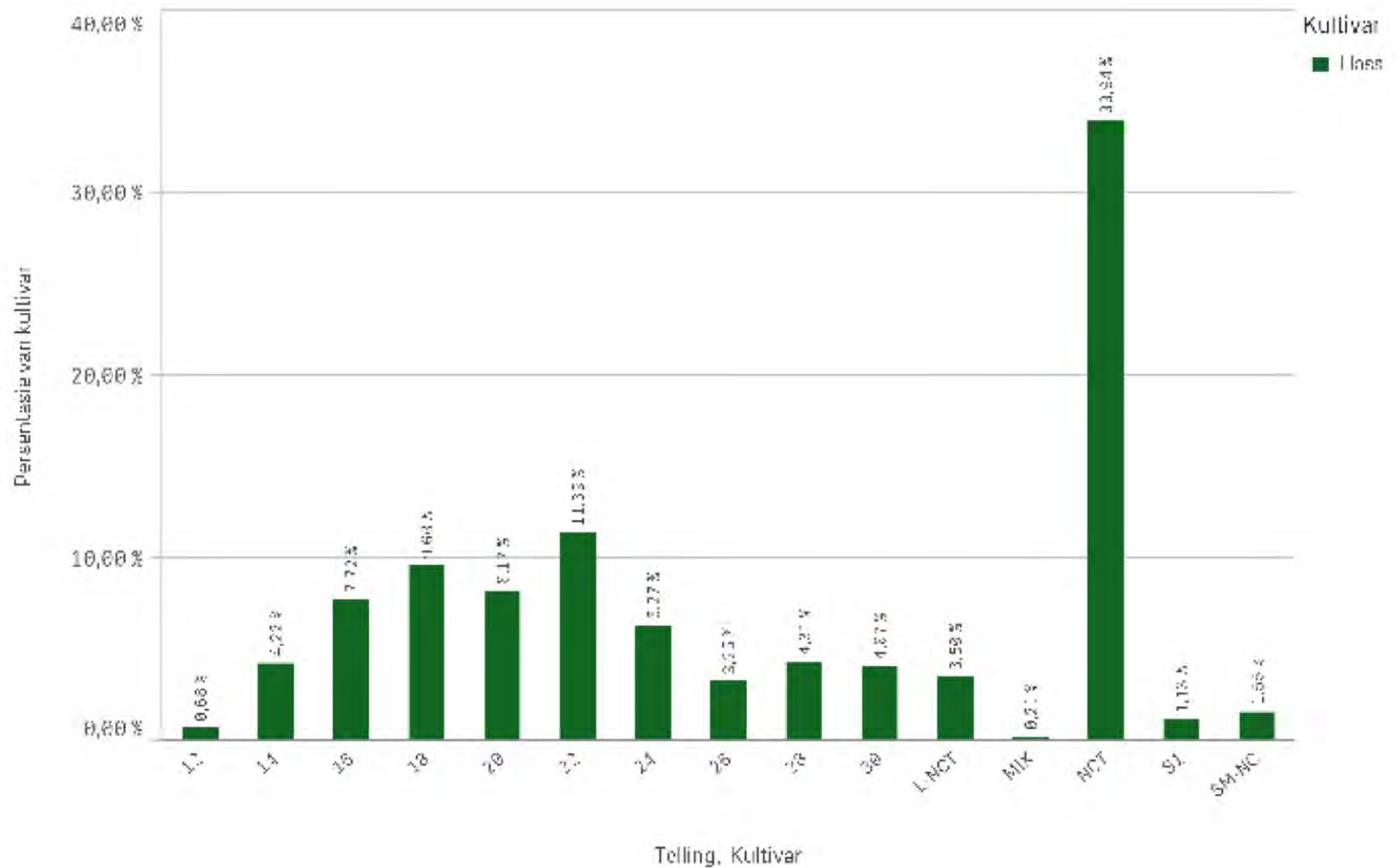
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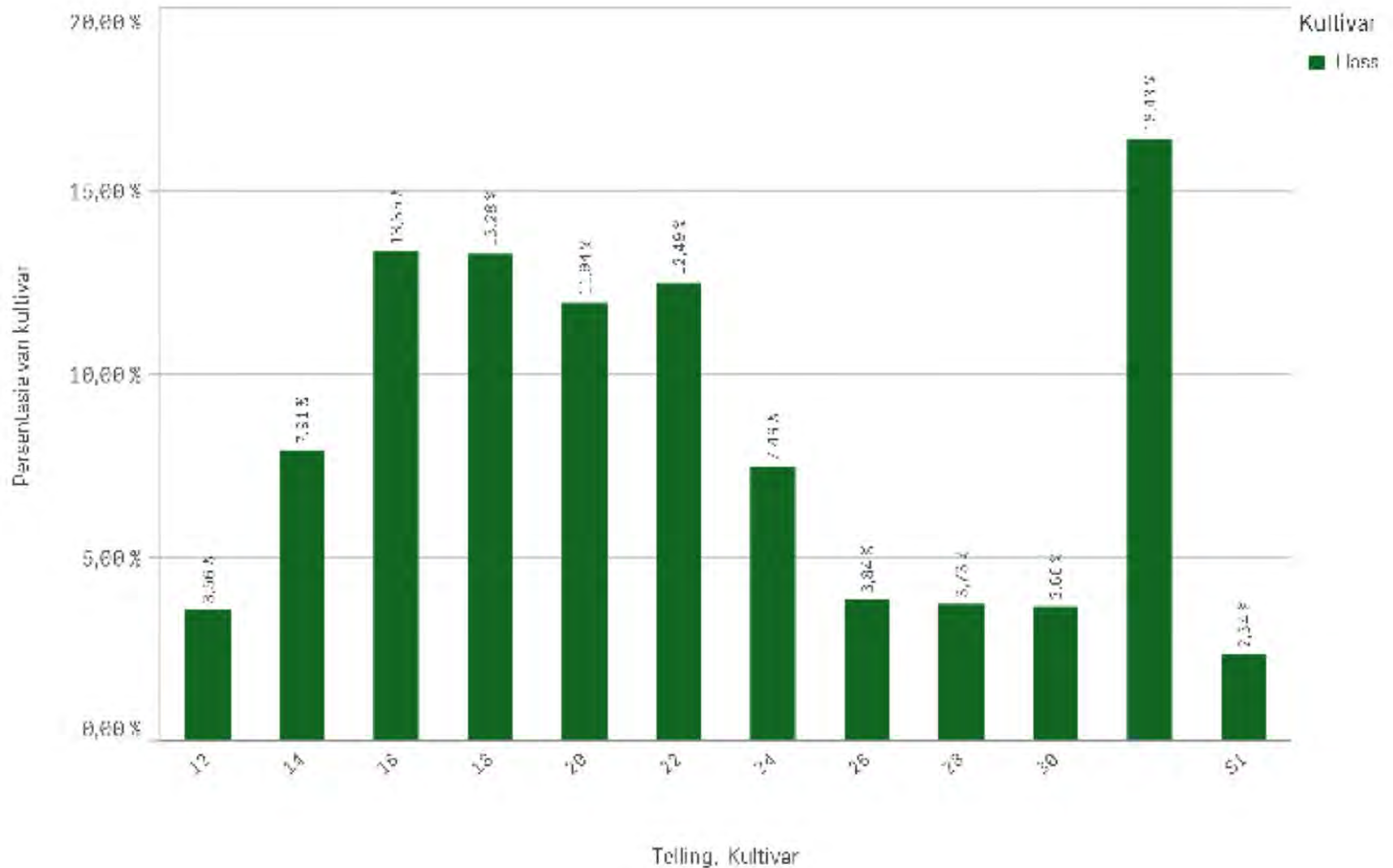


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Practices to increase CVY



Practices to increase CVY





Micro management objectives

1. Increase production
2. Accuracy of tree management
3. Preventing / managing alternate bearing
4. Harnessing the full potential of a tree/orchard/hectare through careful branch selection

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...



Our method's

Tatura trellis



Vertical axis trellis



Input costs = R8000 – R25000 /ha (depending on spacing)

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Trellising on Avocados

What makes it different.

- Evergreen
 - No dwarfing rootstocks
- Precocious cultivars often need support systems
 - Manage sunburn & Light penetration
- Need 4-6 month old wood to produce flower – planning
 - Natural sylleptic attachment angle
 - Cropping pattern of fruit

So let's not play around

What are the assumptions?

- Sunburn will be higher
- High pruning cost
- High input cost
- Higher cumulative production
- Avos are too complex
- Improved spatial utilisation

Production comparison

Central leader

Vertical axis trellis

Tatura trellis



1,9 kg / tree – 1,5t/ha



1,58kg/tree – 1,2t/ha



1,72 kg/tree 1,3 t/ha

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So trellis is not worth it!?






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Perhaps...

| | Export | Waste | Kg/tree |
|----------|---|-------|---------|
| Vertical | 41,5 | 6 | 1,58 |
| |  87% | 13% | |
| Tatura | 43,5 | 8 | 1,72 |
| |  84% | 16% | |
| Control |  58% | 37% | 1,98 |



Packout is not enough...



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But what really excites me...



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And then you realise how
interesting it is that some things
changes your perspective

Peru 2015



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Allesbeste 2017



Sunlight is KEY!!

We did not achieve a better crop yet, but
flowering has improved
tremendously...

The real question now...are we really supporting
our flower with good enough nutrient
management and even more..pollination!

A tick box system then?

- Wind Protection
- Spatial utilisation 
- Increased flowering 
- Increased fruit set
- Higher yield
- Better quality 
- Fruit Size Improvements
- Which system is better
- Wire Spacing
- Inter-row spacing
- Drip irrigation

What do we know after year one

- Need to start on younger trees, train early
- Flowering improved
- Quality improved
- Spacing can increase
- Wire spacing at 300mm might be too big
- Production not yet higher
- No significant negative effects
- Often branches rather have to be tied up than down to open for sunlight









First full commercial Trellis

Maluma / Bounty
1,9 ha, 2338 trees
Spacing 4 x 2 m
Various wire spacing
Vertical mainly
Some Tatura





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High density production

- Why...more Ha are so much better???
- Not really
- Capital layout is expensive if you can get your first 4 years production on one ha in stead of 3 you've effectively saved 2ha's worth of Capital
- More hectares are more expensive to develop and manage

Ultra High Density vs more Hectares developed

| Hectares | Trees | | Land preparation | | Irrigation | | Total Cost |
|----------|---------|-------|------------------|--------------|-------------|--------------|--------------|
| | Tree/ha | Total | Per ha | Total | per Ha | Total | |
| 1 | 1250 | 1250 | R 60 000,00 | R 60 000,00 | R 60 000,00 | R 60 000,00 | R 120 000,00 |
| 3,1 | 408 | 408 | R 60 000,00 | R 183 823,53 | R 50 000,00 | R 153 186,27 | R 337 009,80 |

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Maluma / Bounty

Planted: April 16

Drip irrigation

Ridges

Ave tree height:

1,8-2,2m

1 out of 2338

trees died (wind)



Thank you!

