

The strategic role of new cultivars: A CASE STUDY OF MALUMA

ZR Ernst & AA Ernst



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru



Introduction

- Development and improvement of current methods , cultivation and plant material is crucial to the sustainability of farmers
- In Subtropical fruit the adoption of new technology and cultivars are understandably slow.
 - Capital investments
 - Unfamiliar production characteristics
 - Marketing risks, etc.



Introduction

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z R Ernst & A A Ernst

- Critical to successful new product = ability to successfully and efficiently produce that product
- Consumer wants and needs not only prerequisite
- Consumers want many things, but they will buy what you sell **TO** them
- Many commercial products that consumers want never make it on to the market because they can't be produced profitably

“It's really hard to design products by focus groups. A lot of times, people don't know what they want until you show it to them.”

Steve Jobs

(certainly one of the greatest inventors of the 20th century)



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru



Introduction

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst

- Entrepreneurs are not in the business of satisfying consumer needs
- They are in business to make profit through the satisfying of needs, through a efficient production and marketing process, *that maximises profit!*
- So why can't farmers do the same?
- If you aren't profitable you won't produce



So what is it that we need to improve on what we are currently doing???

The ultimate aim

How do we improve on current production???

Where is this “*LIST*” of what we need to do to improve for years to come

We are sitting “within” this list every four years, we call it the proceedings of the
World Avocado Congress



WAC 2011 & 2015

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

- Orchard Frost Damage (prevention or handling)
- Alternate bearing
- Growth Hormones (such as Uniconazole, Paclobutrazole)
- Fruit set / Crop enhancement (through Uniconazole & Paclobutrazole)
- Fruit size improvement (through Uniconazole, Paclobutrazole, Florone)
- Dry Matter alteration / Crop planning
- Shade netting / possible improvements on fruit quality
- Sustainable benefits for smallholder farmers
- Spraying Techniques
- High Density & Ultra/very high density
- Dwarfing genetics



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Additionally... a farming perspective

- Harvesting rate improvements
- Amount of chemicals used
- Accuracy of chemical sprays
- Improvement of pruning techniques
- Optimal spatial utilisation
- Cultivars that adopt different management techniques to adapt to needs of the particular farmer
- Sunburn reduction
- Wind damage prevention



In Marketing...

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

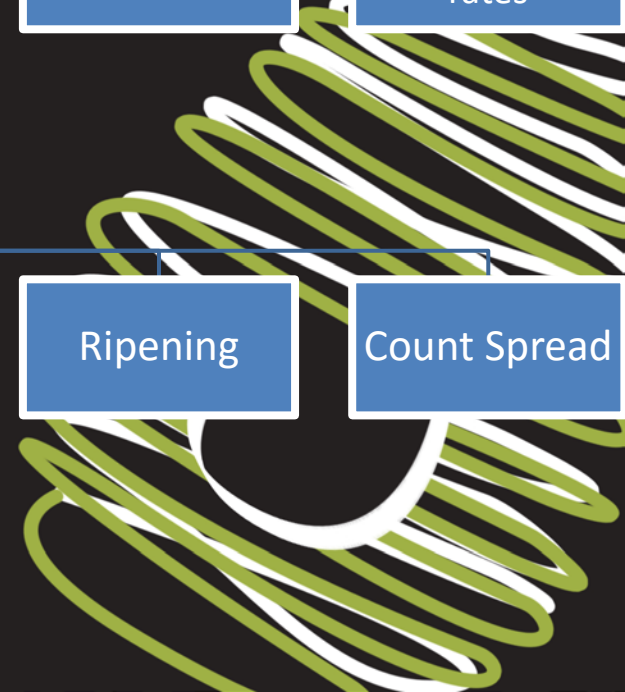
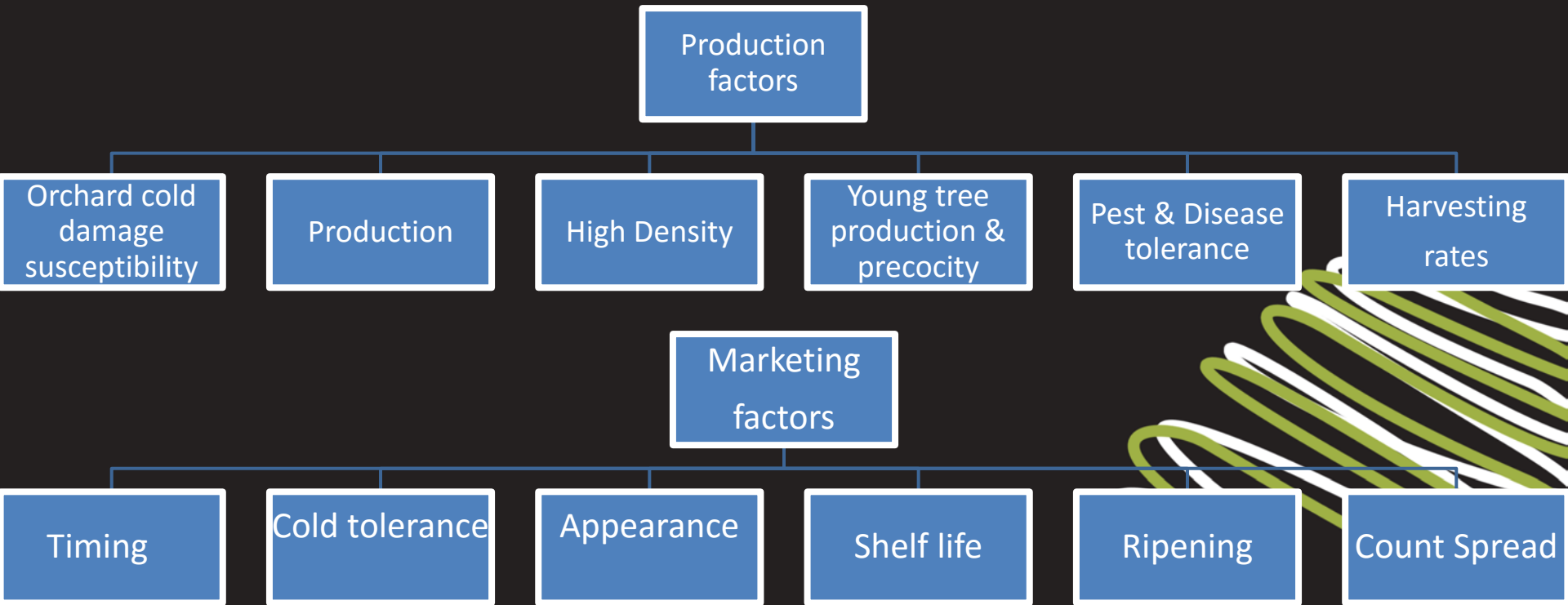
- Harvesting spread
- Cultivar specific timing
- Count spread
- Appearance
- Ease and uniformity of ripening
- Shelf Life



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Overview

The strategic value of Maluma or any other new cultivar will be different for different farmers, and it is through the combination thereof that the farmer will gain a strategic advantage



To some people this is a bird???



*In South Africa we breed these
birds...*



Lets see how Maluma really is??



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

What do we want to achieve?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst

Better Packouts

- Shade netting
- Chemical Sprays (Screen etc)
- Pruning

These all come with a price tag!!!!

Maluma solves this through

Genetics



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Fuerte Side View

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Hass Side View

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst



Boerderij & Knokeberg



avo

CONGRESS 2019
13-18 September, Lima Peru

Maluma Side View

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

And behind that branch...

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst



So this is what Maluma does...



cooperativa avoceros

we

WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru



So this is what Maluma does...

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst



What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst

If you are going to improve your pack-outs with better orchard practices...how much?

10-20%?? – wouldn't that be brilliant?

Yet we still fail to recognise that the 15 – 25 % improvements that Maluma can achieve annually is of any worth to us?



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst

Harvesting rate improvements

- Cherry pickers (only harvests the top of the trees faster)
- Bulkbins

These all come with a price tag!!!!

Maluma solves this through *Genetics*



What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

This costs
money!

To

Save

Money??

And yet the people
harvesting the bottom fruit
still go slower?

Yields remain the same



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

This also costs
money??
But everyone
harvests better

And yields
increase



What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

However this
just harvests
faster especially
when it's 3m off
the ground



What do we want to achieve..?

Aantal arbeiders :	40
Beskikbare ure :	6.5
Benutte ure :	5.46
Gem e/uur :	4.81
Gem e/arbeider :	26.28

A typical Hass harvesting daily report

Werknomb	Werknaam	Ure	Ure	Ure	Ure	Ure
1426	SIPIWE SAMBO	6.5	32.5	31	5	4.77
1432	LEBOGANG MAHASHA	6.5	32.5	33	5	5.08
1435	ABRAM KOMANE	6.5	32.5	35	5	5.38
1437	CALFORNIA MALESA	6.5	32.5	36	5	5.54
1441	NTOMBI HLONGWANE	6.5	32.5	34	5	5.23
1443	TERCIA MALEBELELE	6.5	32.5	40	5	6.15
1444	TEBOGO BALOYI	6.5	32.5	32	5	4.92
1446	LILLIAN LETSOALO	6.5	32.5	33	5	5.08
1455	JEANET PITO	6.5	32.5	28	5	4.31
1466	BATIKI MOKGOMOLA	6.5	32.5	26	5	4
1467	DINEO MOKGOMOLA	6.5	32.5	28	5	4.31
1492	MARTHA MOTSAI	6	30	11	5	1.83
1493	LYDIA SEKGOTA	6.5	32.5	19	5	2.92
1494	BOTHA SEMOSA	6.5	32.5	36	5	5.54
1495	SALPHINA MAHASHA	6.5	32.5	22	5	3.38
1498	GRACE MUKHARI	6.5	32.5	24	5	3.69



What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z R Ernst & A A Ernst

Aantal arbeiders : 58
Beskikbare ure : 5.5
Benutte ure : 5.27
Gem e/uur : 7.52
Gem e/arbeider : 39.6

A typical Maluma harvesting daily report

		1	8	8	8	8
		1	8	8	8	8
126	JEANET SENYOLO	5.5	44	51	8	9.27
131	LINDA MANYAMA	5.5	44	52	8	9.45
134	FLORAH MAKGOPA	5.5	44	47	8	8.55
154	ROSINA SELOWA	5.5	44	61	8	11.09
177	JULIA LEFOHLE	5.5	44	63	8	11.45
178	MARGARET MOHALE	5.5	44	46	8	8.36
194	JOYCE MOPAI	5.5	44	64	8	11.64
1021	DORAH SENYOLO	5.5	44	47	8	8.55
1032	<i>MATOME SENYOLO</i>	5.5	44 38		8	6.91
1041	<i>MARIA MALATJI</i>	5.5	44 35		8	6.36
1189	TSHEPO SEKHWELA	5.5	44	55	8	10
1314	<i>WALTER RASHOPOLA</i>	5.5	44 36		8	6.55
1340	MOKGALE MAKGOPA	5.5	44	60	8	10.91
1343	<i>VIGINIA SESHOKA</i>	5.5	44 38		8	6.91
1373	AGNES RAMOTHWALO	5.5	44	44	8	8
1374	<i>ANNAH SESHABELA</i>	5.5	44 31		8	5.64
1377	<i>LINDIWE KHOSA</i>	5.5	44 43		8	7.82
1377	<i>JULIA MALESA</i>	5.5	44 37		8	6.73
1382	<i>STEPHINAH MAKHUMISANI</i>	5.5	44 35		8	6.36
1385	EMELY MOHALE	5.5	44	44	8	8



What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst

Chemical improvements

- UV Protective – Sunburn
- Growth Hormones – Increased Fruit Size
- Fertigation schemes for fruit size
- Less alternate bearing

These all come with a price tag!!!!

Maluma solves this through

Genetics



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru



What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst

Production per Ha improvements

Hass averages in Tzaneen, South Africa – 5 – 13t/ha??

Maluma solves this through *Genetics*

15 – 20 t/ha averages



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

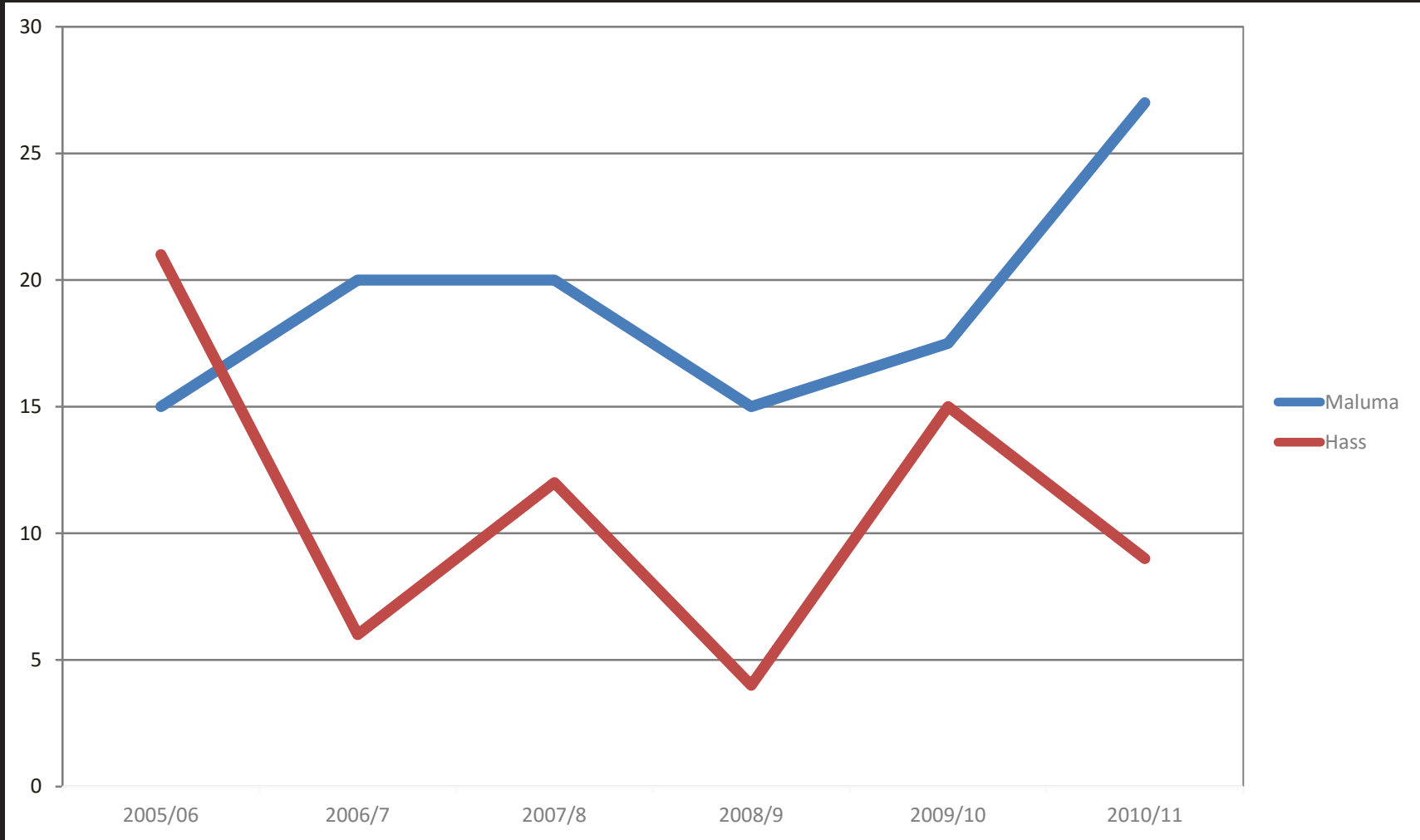


Alternate Bearing

Hass vs Maluma

The strategic role of new cultivars:
A CASE STUDY OF MALUMA

ZR Ernst & AA Ernst



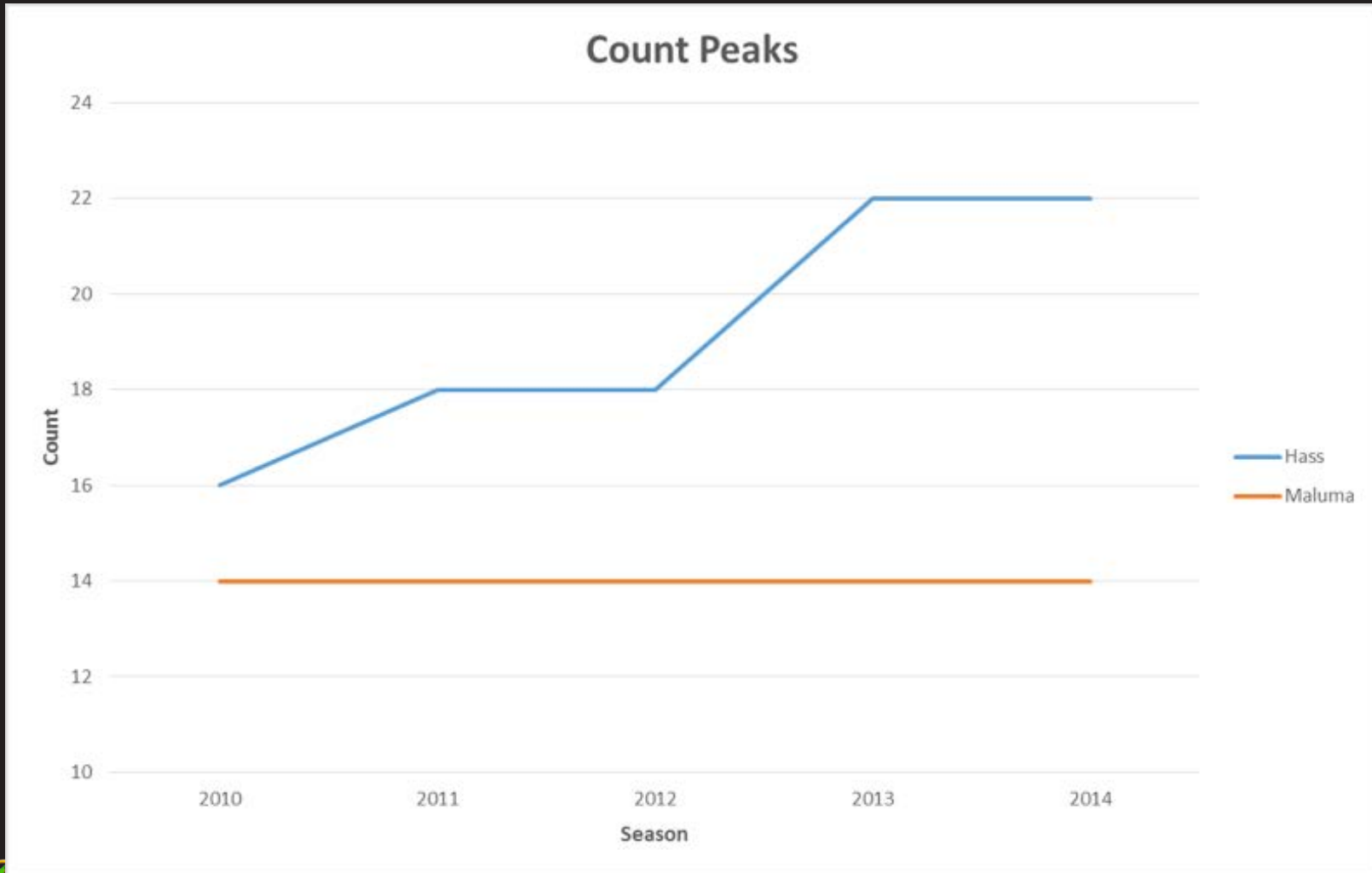
VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Count peaks

Hass vs Maluma

The strategic role of new cultivars:
A CASE STUDY OF MALUMA

ZR Ernst & AA Ernst

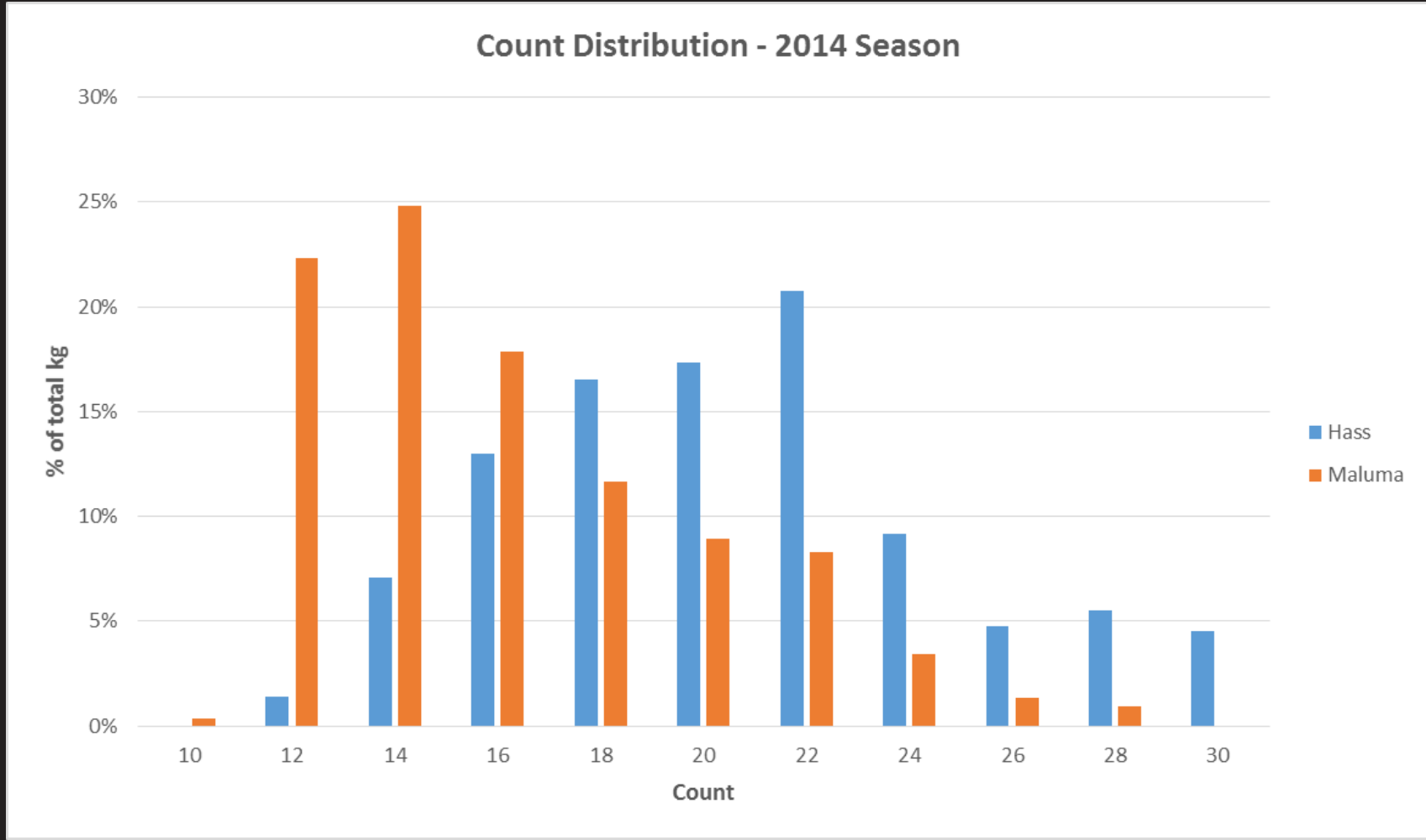


Count Spread

Hass vs Maluma

The strategic role of new cultivars:
A CASE STUDY OF MALUMA

ZR Ernst & AA Ernst



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

What do we want to achieve..?

We want to control our trees & less drastic pruning

- Dwarfing characteristics
- Understand our trees
- Optimal spatial utilisation
- I don't like pruning this way or that way??

Maluma solves this through

Genetics



Maintenance Pruning

Standard Density

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

Maluma

Hass 7x3,5m

Less serious hand pruning

More serious hand pruning

17 1 2006



Maintenance Pruning

High Density - CLP

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Optimal spatial utilisation

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

2,5m x 2,5m planting – First commercial Ultra-High Density orchard in South Africa

1600 trees/ha



Optimal Spatial utilisation

1,5 m high trees

Producing

1600 ton/ha

0,5 – 2,5 kg/tree

Year One



Topping (Open Vase / A-symmetrical)



Central Leader Pruning (CLP)



What do we want to achieve..?

We need to spray less chemicals

- Currently 6 – 8 sprays per annum

Maluma solves this through *Genetics*

- 2 – 3 Sprays per Annum
 - 1 / 2 copper
 - 1 relatively friendly insecticide (Dipel) – Leaf Roller



What do we want to achieve..?

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

Spraying is also perhaps more accurate



Definitely lower application rates



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

What do we want to achieve..?

We want to overcome Orchard Cold Damage

- Shade netting
- Turbines??
- Pulse foggers??
- Near infra-red technologies

These all come with a price tag!!!!

Maluma solves this through

Genetics



Effect of orchard frost

Hass is tremendously sensitive
to cold from below 4°C

2014 – on some blocks even
89% of production was lost

116Ha of 134,9ha Hass - frost
Total hectares are 230Ha

Potential loss

116 x 9500kg = 1102ton

R3/kg? = *R3.306 million*

Approx. : \$243 721



Marketing and the Farmer

- We maintain ownership until final destination
- You do not have much control!!!

Therefore 1 thing is crucial to the farmer...

Risk Management

- Harvest spread vs timing
- Count spread



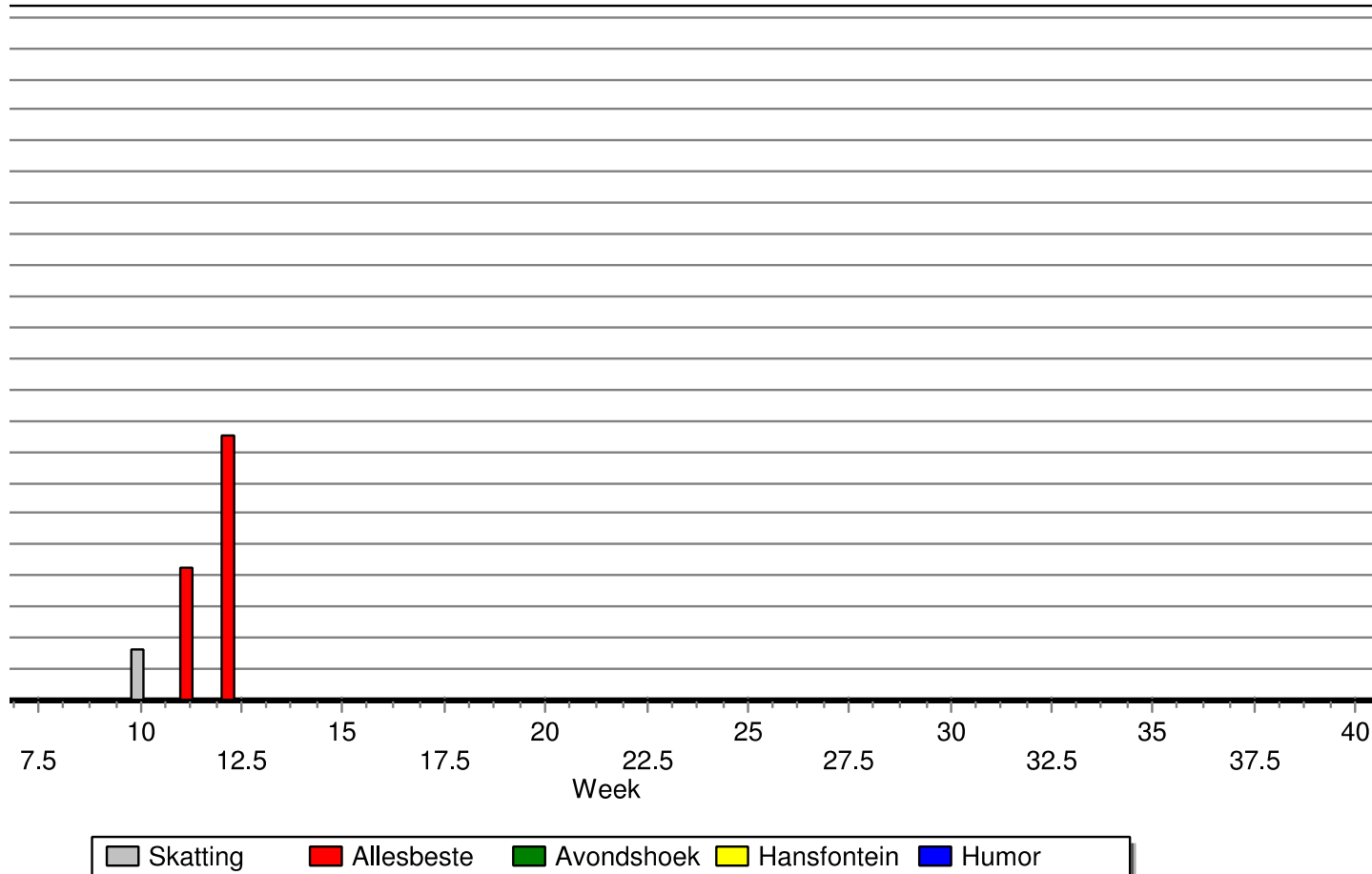
The Allesbeste case study

2014 Harvesting programme

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst

Allesbeste Boerdery

Plukprogram 2010



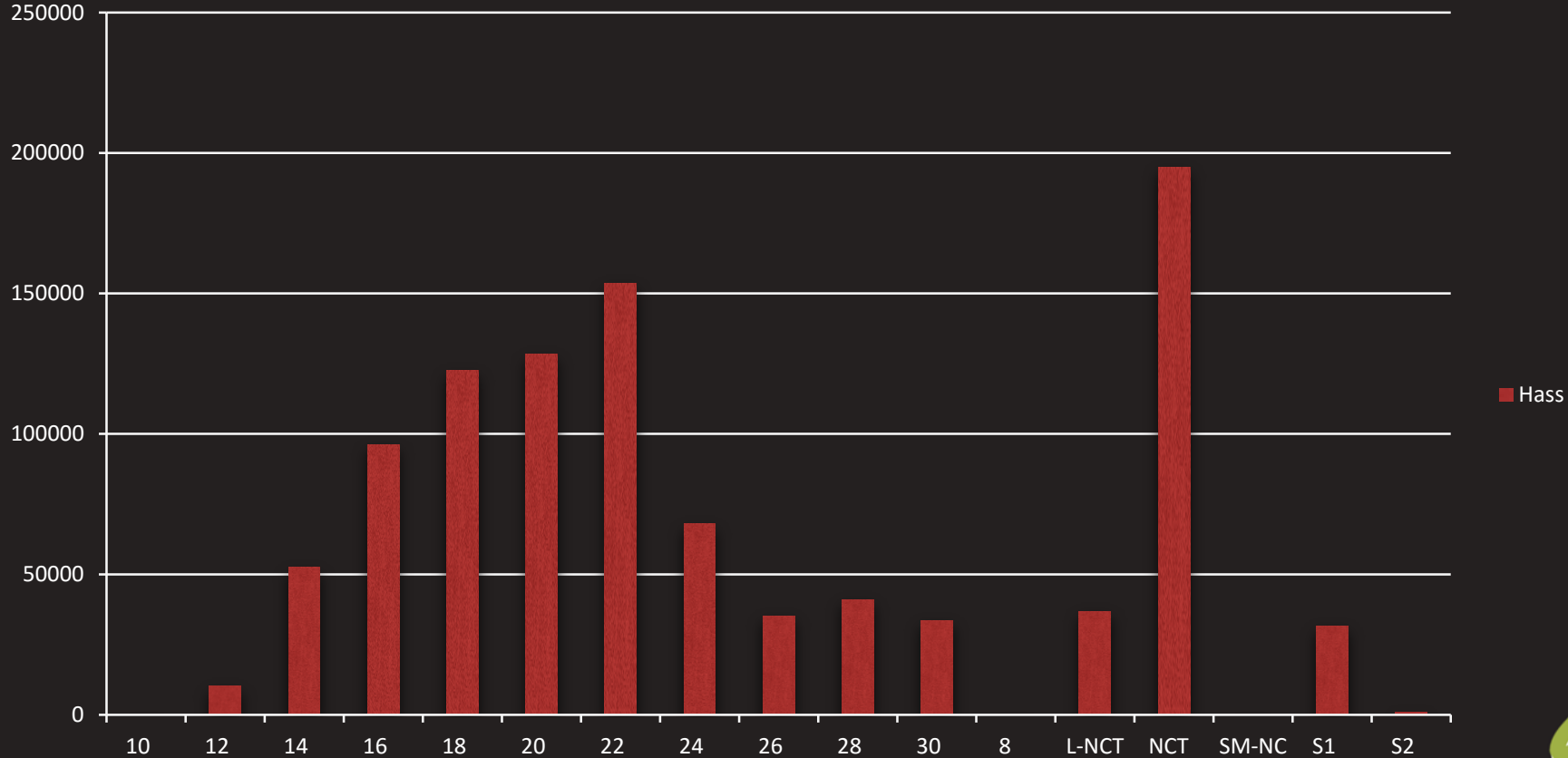
If we were to farm only Hass
as the world's marketing
organisations would prefer it



Hass count spread

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

Hass On Approx 155 Ha



VIII WORLD AVOCADO CONGRESS 2015
13-18 September, Lima, Peru



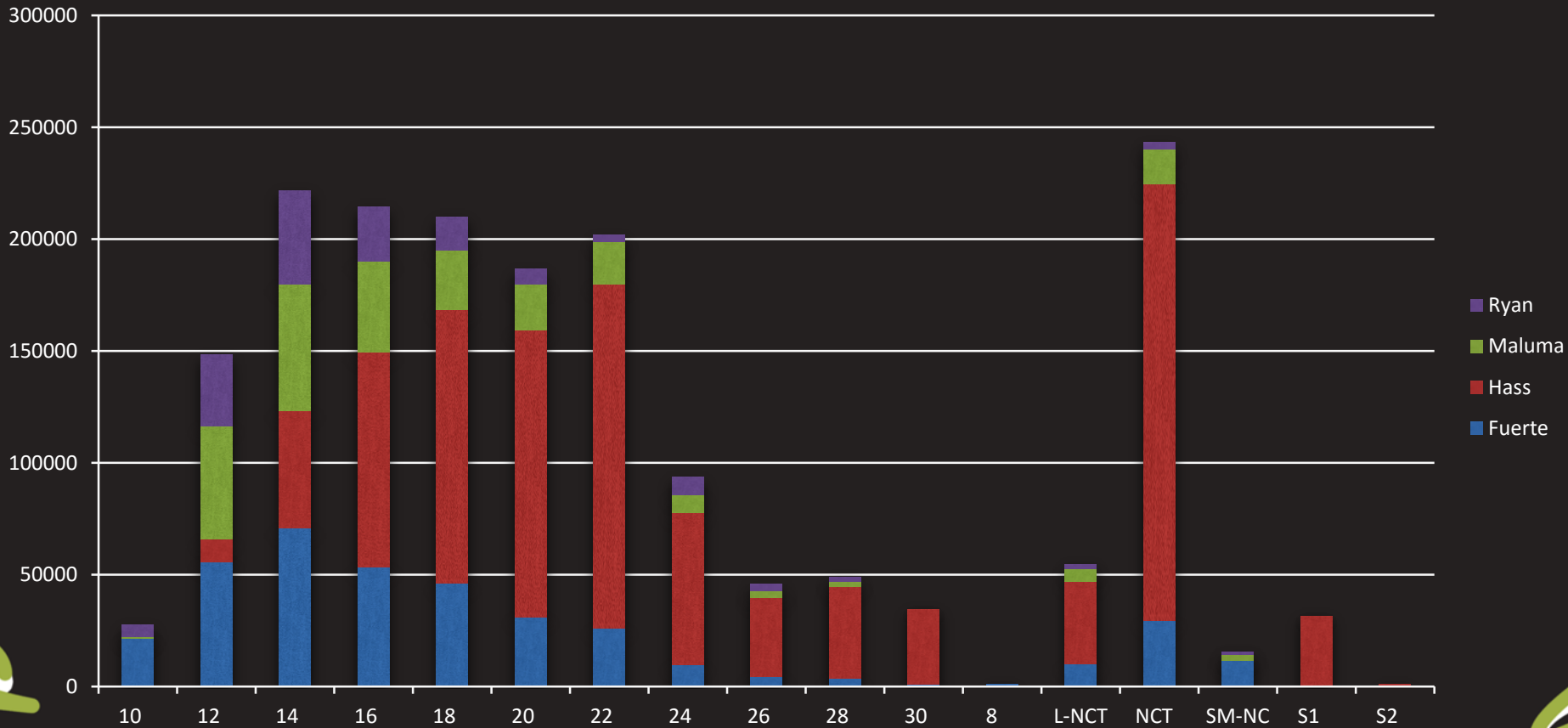
And if we included more cultivars



Another step ahead of the pack

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

66% of this production in Ha is Hass



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima, Peru



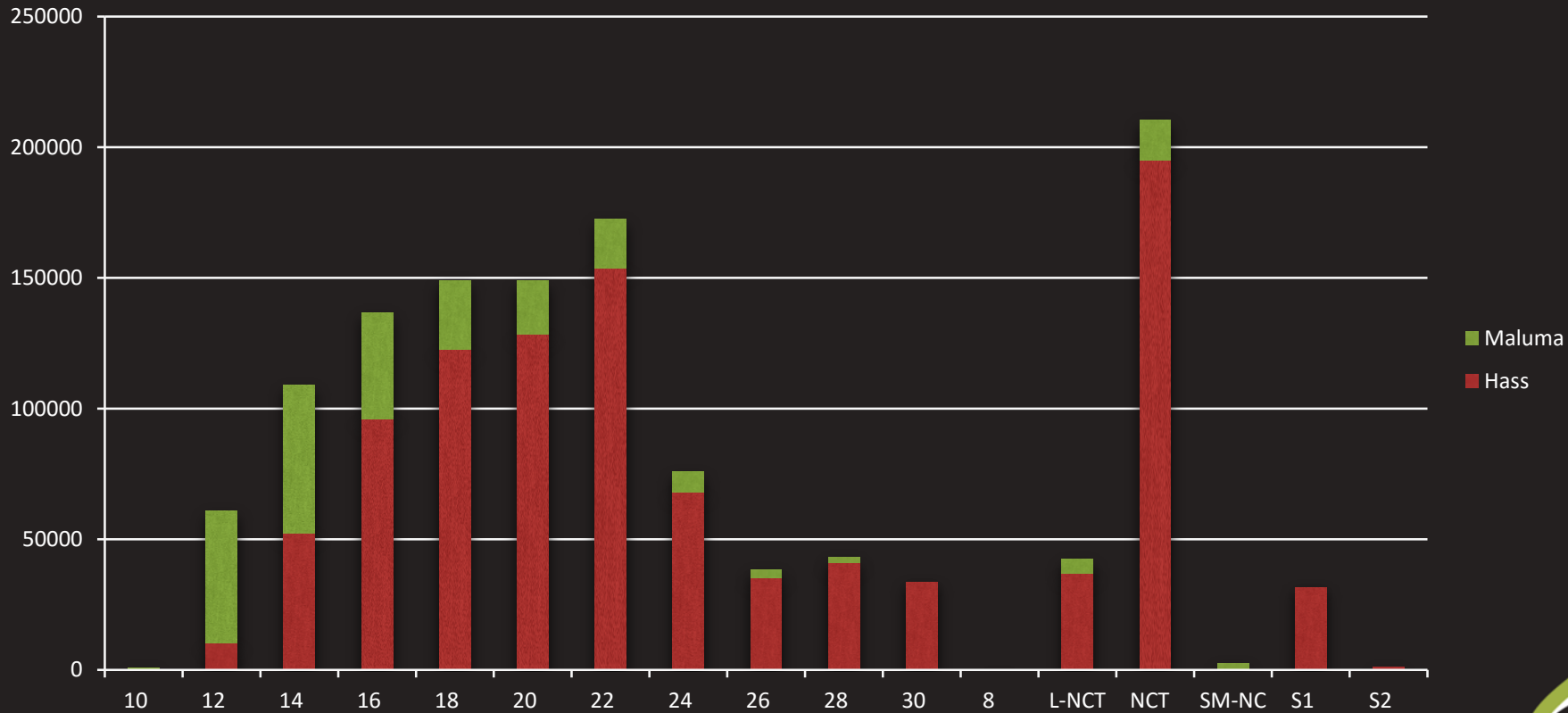
And if the world announced there is
no more place for green skins??

Would you be safe?



The strategic role of new cultivars: A CASE STUDY OF MALUMA

ZR Ernst & AA Ernst



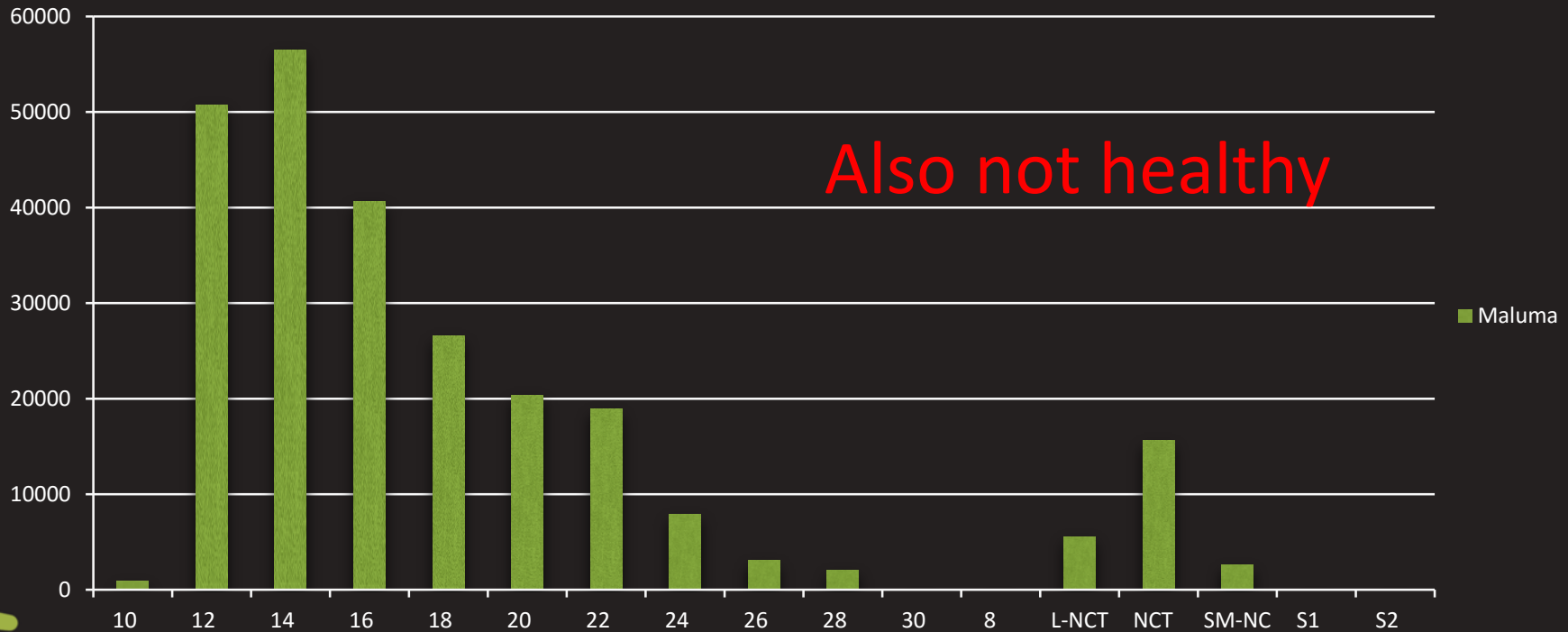
VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima, Peru



A Maluma strategy

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

Maluma



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima, Peru



Shelf-life

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

Stored for **3 months** in a
normal household fridge

Trials and tests will continue...



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima, Peru



Ripening Uniformity

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
Z.R. Ernst & A.A. Ernst



Hass

Ripened together

Maluma



VIII WORLD AVOCADO CONGRESS 2015
13-18 September, Lima, Peru



Appearance

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

Maluma



Pinkerton



Maluma

Maluma

ER
nbe

Appearance - internal

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima, Peru



The Allesbeste Case Study

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

What moved us towards planting more Maluma

- Pathetic Hass Production in some micro climates
 - Fuerte as the only other option (greenskin)
- Orchard frost damage (some micro climates)
- Pruning Techniques – Hass is frustrating on hot climates
- Harvesting and labour rates (speed)
- Harvest spread
- Input costs
- Packout %: count and quality (more marketable product)
- High density suitability
- **Not the fact that it is early**



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

WAC 2011 & 2015

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

- ✓ Orchard Frost Damage (prevention or handling)
- ✓ Alternate bearing
- ✓ Growth Hormones (such as Uniconazole, Paclobutrazole & Cultar)
- ✓ Fruit set / Crop enhancement (through Uniconazole & Paclobutrazole)
- ✓ Fruit size improvement (through Uniconazole, Paclobutrazole Florone)
- ✓ Dry Matter alteration / Crop planning
- ✓ Shade netting / possible improvements on fruit quality
- ✓ Sustainable benefits for smallholder farmers
- ✓ Spraying Techniques
- ✓ High Density & Ultra/very high density
- ✓ Dwarfing genetics



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Additionally... a farming perspective

- ✓ Harvesting rate improvements
- ✓ Amount of chemicals used
- ✓ Accuracy of chemical sprays
- ✓ Improvement of pruning techniques
- ✓ Optimal spatial utilisation
- ✓ Cultivars that adopt different management techniques to adapt to needs of the particular farmer
- ✓ Sunburn reduction
- ✓ Wind damage prevention



In Marketing...

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

- ✓ Harvesting spread
- ✓ Cultivar specific timing
- ✓ Count spread
- ✓ Appearance
- ✓ Ease and uniformity of ripening
- ✓ Shelf Life



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Conclusion – Ask yourself

- So is Maluma's only advantage that it is early???
- Does it only have one production advantage??

Therefore it is clear that Maluma challenges ALL the other cultivars in the world to prove their worth similarly



Conclusion

The strategic role of new cultivars:
A CASE STUDY OF MALUMA
ZR Ernst & AA Ernst

We should be careful not to try and be too smart and fancy, while our industry is so far behind that we could achieve huge improvements with small changes



VIII WORLD AVOCADO
CONGRESS 2015
13-18 September, Lima Peru

Muchas Gracias!!
Any questions?

