

South African Low Chill Stone Fruit Variety Programme

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South Africa vs Australia



- are the Wallabies winning?





Introduction

- Production LC - Northern province, micro-climates of Eastern and Western Cape provinces.
- No indigenous, low chill stone fruit genetic resources.
- Dependent on foreign genetic resources - fellow researchers.
- Excluded from exchanging - political reasons.
- Gradually diminished - early 1990's.
- Relationships - fellow researchers abroad
- Broaden and strengthen - genetic base.
- Significant success - careful selection and breeding.
- Comparing favorably - foreign LC varieties available in South Africa.



SOUTH AFRICA'S PROVINCIAL DEMARCATION





Blossom: 2w July
Harvest: 1w October
FDP: 70-80 days
TSS: 11-12°B
Size: 56-62 mm
Remarks: <Earligrande

Honey Blush



Honey Blush





Honey Blush



Blossom: 2w July
Harvest: 2w October
FDP: 80-90 days
TSS: 11-12°B
Size: 56-62 mm
Remarks: <May Gjo

Ruby Sweet





Ruby Sweet



Ruby Sweet





Blossom: 3w July
Harvest: 2w November
FDP: 100-110 days
TSS: 13-14°B
Size: 62-67 mm
Remarks: >May Glo

Alpine



Alpine
Bien Donné
—50mm—
21 November 2000

Alpine





Alpine



COMMERCIALIZATION

- Ruby Sweet, Honey Blush, Alpine etc....!
- Low Chill areas - least chance frost.
- Medium chill areas - crop, small, harvesting later
- Less of a proposition.
- Competitive advantage - early = early areas etc.





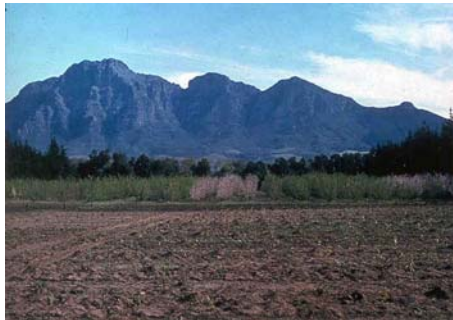
RESEARCH AND DEVELOPMENT

- Bien Donné, Simondium, 60km NE Cape Town.
- AVG chilling: 400-600 ICU (Apr-Aug).
- Chilling 2005: 312 ICU (May-July). [See table](#)>
- AVG hours: <math><7,2^{\circ}\text{C}</math> is 500-700 (Apr-Aug)
- Hours 2005: <math><7,2^{\circ}\text{C}</math> is 366 (May-July)
- Complicated - evaluation low chill with short FDP.




RESEARCH AND DEVELOPMENT...

- Following the success - HB, Ruby Sweet and Alpine.
- Phase 1 and 2 - number of plum, apricot, peach, nectarine.
- Progeny - 8289 PE/NE seedlings 4m x 1m
- Past 8 years - 23 Peach and 106 Nectarine <math><w50</math> LC char.
- Identify ready to eat.- <math><7</math> days ready for export.






 **RESEARCH AND DEVELOPMENT...**

<u>Year</u>	<u>APRICOTS *</u>	<u>PLUMS *</u>
1998	27	1
1999	14	0
2000	66	5
2001	18	3
2002	36	6
2003	11	2
2004	43	4
2005	23	2
TOTAL	238	23

- * < Harvest week 50 Bien Donné, ready to eat!
- **Supergold**, **Charisma**, **Pioneer** and **Red Beaut**







PR00-01



PR00-01





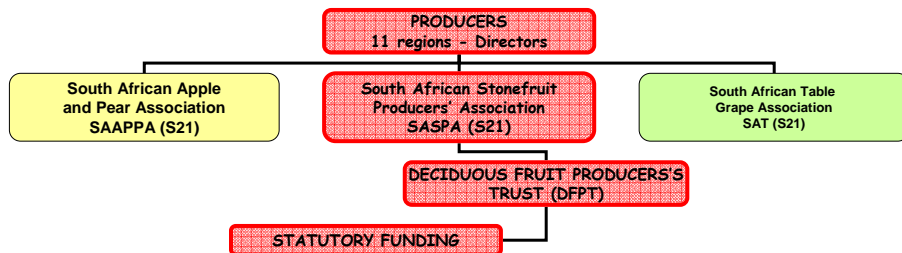
RESEARCH AND DEVELOPMENT...

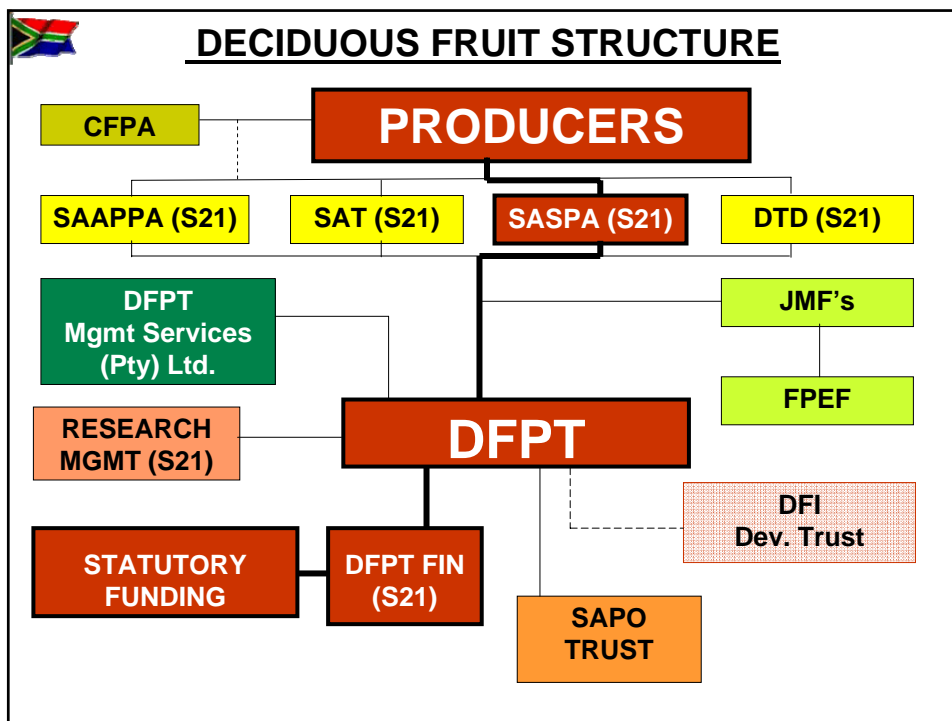
- Varieties planted LC areas - 14 days earlier than BD.
- New varieties - similar time or earlier than commercial.
- ARC producing significant numbers - LC, characteristics.
- Good relationships - keep up with the "Jones's" LC world.
- ARC close to be or par - LC breeders of the world.



RESEARCH AND DEVELOPMENT...

- Not a separate programme - integral part national mandate.
- Objectives - in cooperation with industry (DFPT-SASPA).
- Market driven - close cooperation marketers.





 **RESEARCH AND DEVELOPMENT...** 

- Traditional conventional breeding - limitations breeding LC.
- Recent more effort - development precocious, early ripening.
- Suitability - export, local and informal markets.
- Short FDP early maturing - embryo culture.
- Practical problems - sterilization, germination, growing seedlings.
- Additional research - germinate embryos short FDP.(80-90 days)



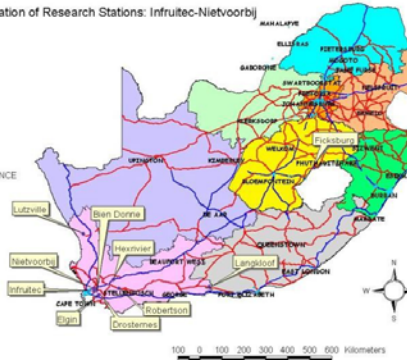



ADAPTABILITY

- Broad range climatic regions - low to high chilling areas.
- Elevation and slopes - Var. suitable low to medium chilling.
- Not ideal situation - early LC = early and late HC = late areas.
- Maintain competitive advantage at all times!!!

Location of Research Stations: Infruitec-Nietvoorbij

Research Stations
I
Aerial
Trunkway
VW_Route
K9
EASTERN CAPE
FREE STATE
GAUTENG
KWAZULU-NATAL
NORTH-WEST
NORTHERN CAPE
NORTHERN PROVINCE
WESTERN CAPE



ADAPTABILITY....

- Calculation chilling units - Richardson (RCU) limitations warm areas.
- LC peach - performs equally, low or negative RCU expected
- Positive Chilling Units model - Infruitec Chilling Units (ICU).
- Assumption - physiological process, irreversible 30-39 hours.
- Adapted further - 24 hour calculation cycle, same accuracy.





ADAPTABILITY....

COMPARISON BETWEEN INFROUTEK, RICHARDSON AND AUSTRALIAN CHILLING UNITS

Mth	SIMONDIUM (Acc)				ROBERTSON (Acc)				GROBLERSDAL (Acc)			
	ICU	RCU	<7.3°	ACU	ICU	RCU	<7.3°	ACU	ICU	RCU	<7.3°	ACU
MAY	30	17	22	180	43	3	52	190	31	17	128	229
JUN	248	224	152	560	203	158	198	562	114	99	379	530
JUL	312	280	226	743	283	199	330	746	158	133	556	783

ICU = Infruitec; RCU = Richardson; <7.3 = Hours below 7,3°C; ACU = Australian Chilling Units



ADAPABILITY

- Bien Donné - end May 30 ICU, promising performance.
- More selections suitable LC conditions than anticipated.



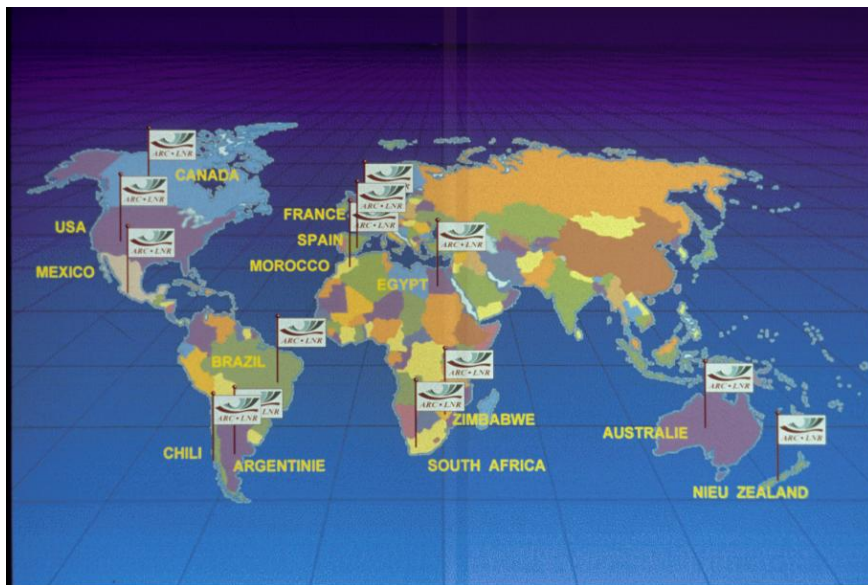
Ruby Sweet 4w July 2004





OPPORTUNITIES AND PARTNERS

- ARC partnerships internat. - evaluation and commercialization.
- AUSTRALIA:
 - a) ANFIC (Gavin Porter) - African Pride and Sun Breeze plums.
 - b) TEAK, WA (Alley McKay) - Pioneer, Sapphire, Souvenir plums.
- Long standing relation ships - trust build over time.
- Certain prerequisites - partners should adhere to.
 - a) Protection and control.
 - b) Track record organization.
 - c) Financial advantage - cost of breeding programmes.
 - d) Individual cultivars - agreements.
 - e) Single channel marketing - effective control.





**The big question
remains ?**



**Can the Australian
low chill industry
work more closely
with South African
researchers?**



