

The Southern African Citrus Improvement Scheme

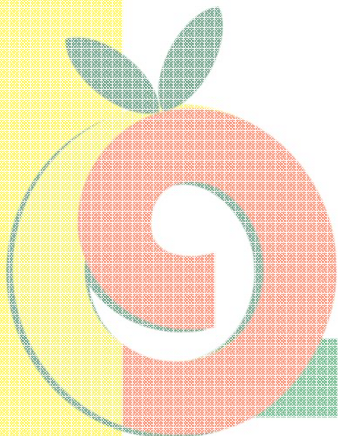
Paul Fourie
CIS Manager



CGA CITRUS SUMMIT
Research

Citrus Improvement Scheme (CIS)

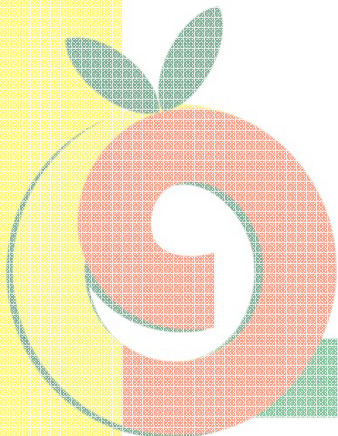
- 🍊 Aim is to increase the profitability of the southern African Citrus Industry, by ensuring that citrus growers are supplied with nursery trees of
 - ✓ the highest possible quality
 - ✓ made from true-to-type citrus material and
 - ✓ being free from harmful pathogens



Research

Certification Scheme

- 🍊 Certified propagation material supply
 - ✓ Rootstock seed and budwood supply
 - ✓ Disease-free and True-to-Type
- 🍊 Certification scheme
 - ✓ Audit and certify registered citrus nurseries
 - ✓ Certify citrus trees that comply with Scheme standards
 - Made from disease-free propagation material
 - Made in certified citrus nursery (Phytophthora and nematode free)
 - True-to-type



CIS Certified Nurseries

EASTERN CAPE PROVINCE

Apapanzi Kwekery	KIRKWOOD
BF Joubert Kwekery	KIRKWOOD
Gamtoos Kwekery	PATENSIE
Mistkraal Nursery	KIRKWOOD
Sondagsrivier Kwekery	KIRKWOOD
Tweeling Kwekery	KIRKWOOD
Waterfall Nursery	ADELAIDE

WESTERN CAPE PROVINCE

Augsberg Nursery	CLANWILLIAM
Cederberg Tree Nursery	CITRUSDAL
HJ Joubert Kwekery	MONTAGU
Namakwaland Citrus	CLANWILLIAM
Stargrow Kwekery	CITRUSDAL
Tulbagh Kwekery	TULBAGH

NORTH-WEST PROVINCE

Casmar Kwekery	MOOINOOI
Witkrans Kwekery	BOSHOEK

LIMPOPO PROVINCE

Du Roi Kwekery	LETSITELE
Henley Nursery	LETSITELE
Letsitele Kwekery	LETSITELE
Loskop Kwekery BK	MARBLE HALL
Rietvlei Kwekery	TZANEEN

MPUMALANGA PROVINCE

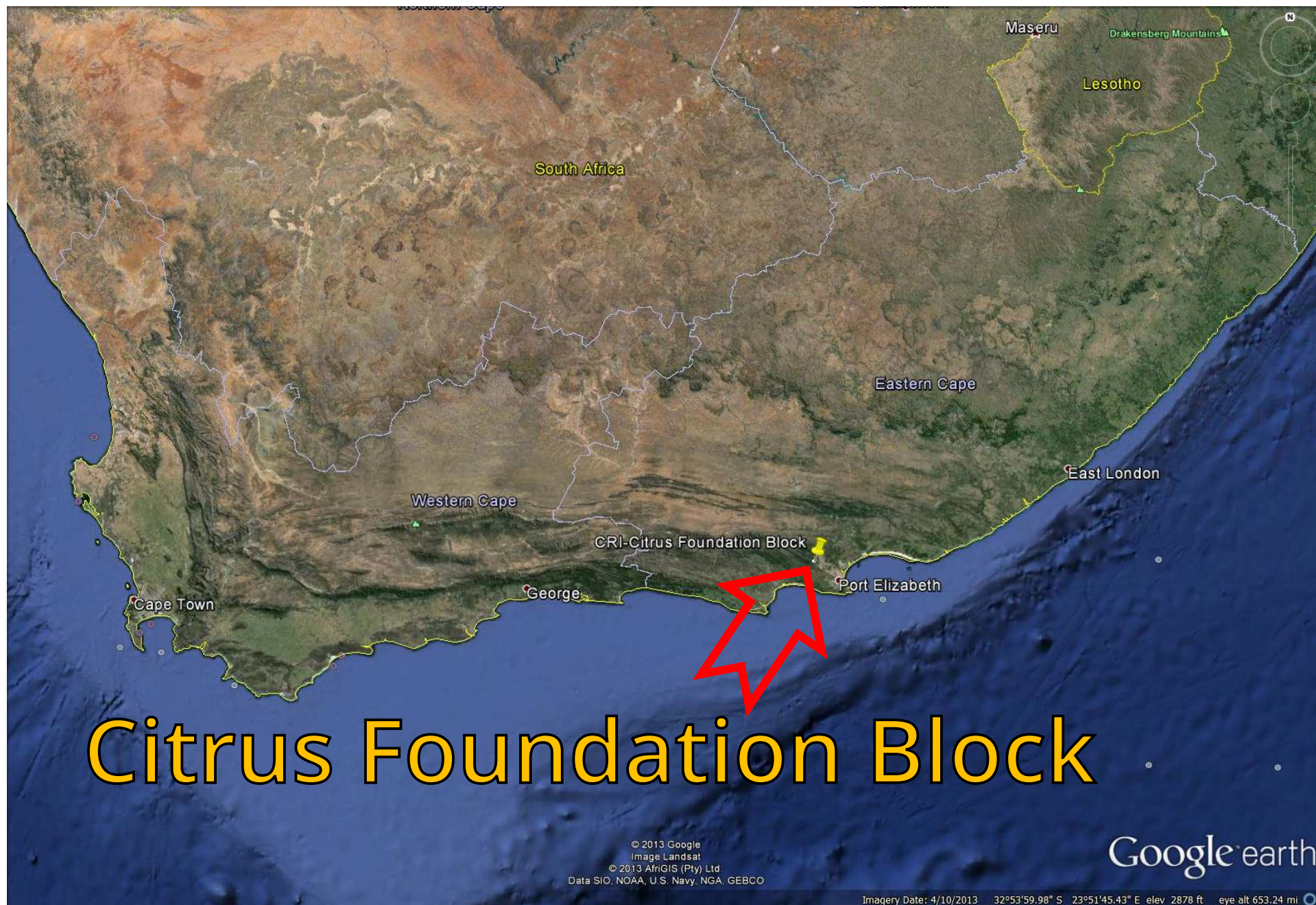
Esselen Kwekery	MALELANE
Ngwenya Kwekery	MALELANE

NORTHERN CAPE PROVINCE

Oase Kwekery	HARTSWATER
Oranjerivier Citrus Kwekery	KAKAMAS

Current capacity to increase by >40% from 3.5 to 5 million trees/yr

Research



Citrus Foundation Block

Research

Citrus Foundation Block

Kruisrivier, Uitenhage

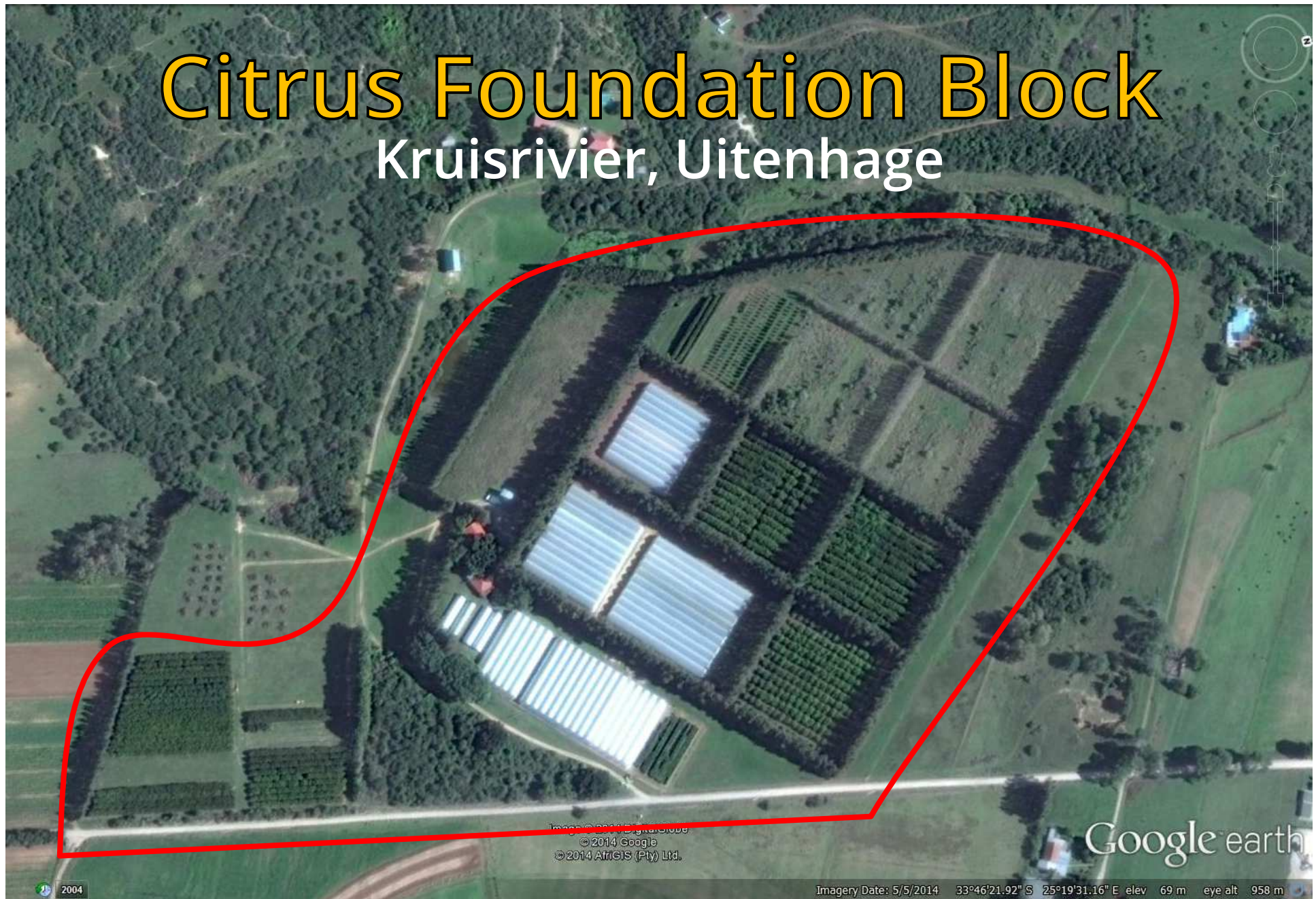


Image © 2014 DigitalGlobe
© 2014 Google
© 2014 AirGIS (Pty) Ltd.

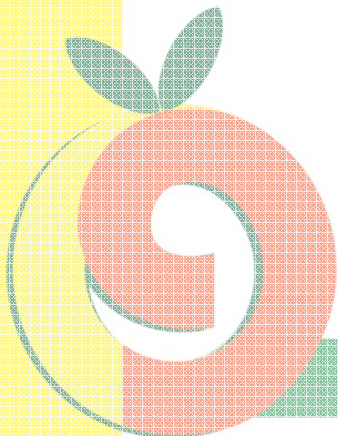
Google earth

Imagery Date: 5/5/2014 33°46'21.92" S 25°19'31.16" E elev 69 m eye alt 958 m

Research

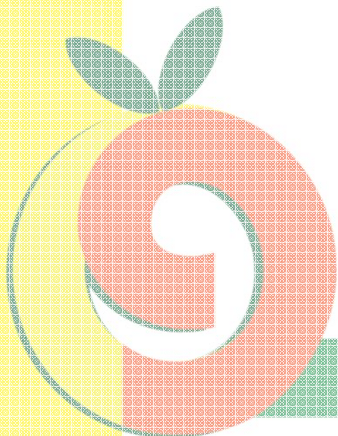
Citrus Improvement Scheme (CIS)

- 🍊 RSA's primary source for citrus propagation material
 - ✓ Rootstock seed
 - 5 hectares with 13 rootstock cultivars
 - ✓ Budwood
 - >100,000 increase trees of >300 cultivars
 - Housed in >2 ha insect proof greenhouses
 - Total potential stock of >7 million buds per annum



Citrus Improvement Scheme (CIS)

- 🍊 Secluded position to ensure biosecurity
 - ✓ > 30 km away from commercial citrus production areas
 - ✓ 5 km buffer zone surrounding CFB
 - No commercial or home-garden plantings of citrus or related genera allowed
 - ✓ Official annual inspections to confirm freedom of regulated diseases (Citrus Greening and Citrus Black Spot)



Rootstock seed supply



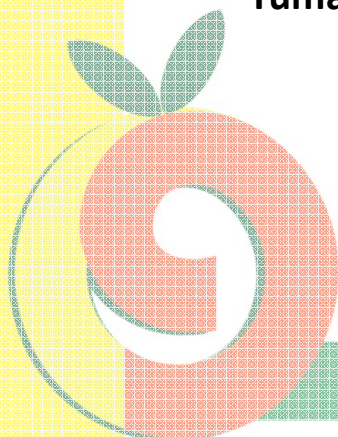
International

Research

Statistics: Seed Supply (fin-year summary)

Rootstock seed supplied per cultivar (% of annual total)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Carrizo Citrange	58.2	45.6	35.2	36.1	38.7	41.3	40.9	41.4	48.6	40.1	44.6
Troyer Citrange	9.1	4.8	6.6	12.8	14.6	14.4	10.9	4.0	2.2	1.1	0.0
C35 Citrange	4.0	7.1	19.3	13.2	11.5	14.6	11.7	14.6	11.4	25.6	14.6
Swingle Citrumelo	16.0	16.9	17.4	21.1	16.9	13.6	17.0	14.2	12.5	9.7	12.2
Rough Lemon	6.7	10.2	12.2	4.1	8.2	5.2	9.2	8.7	11.5	12.8	10.5
X639	1.9	10.7	2.8	4.1	5.3	5.6	5.5	6.4	2.3	2.1	9.5
Minneola X Trifol.	1.1	1.8	2.5	2.0	3.0	1.5	2.9	2.2	2.1	2.5	3.3
Volkameriana	3.0	1.2	3.2	3.7	0.3	3.5	1.5	1.8	1.6	1.9	1.3
Flying Dragon			0.7	1.3	0.5	0.1		5.7	6.6	3.0	3.2
Cleopatra Mandarin		1.5				0.0		0.7	0.1	0.3	0.3
Yuma Citrange		0.2		0.2		0.2	0.5	0.4	1.0	0.9	0.2
TOTAL	4,041	2,087	1,624	2,871	5,098	5,041	4,267	3,644	3,465	3,962	4,375



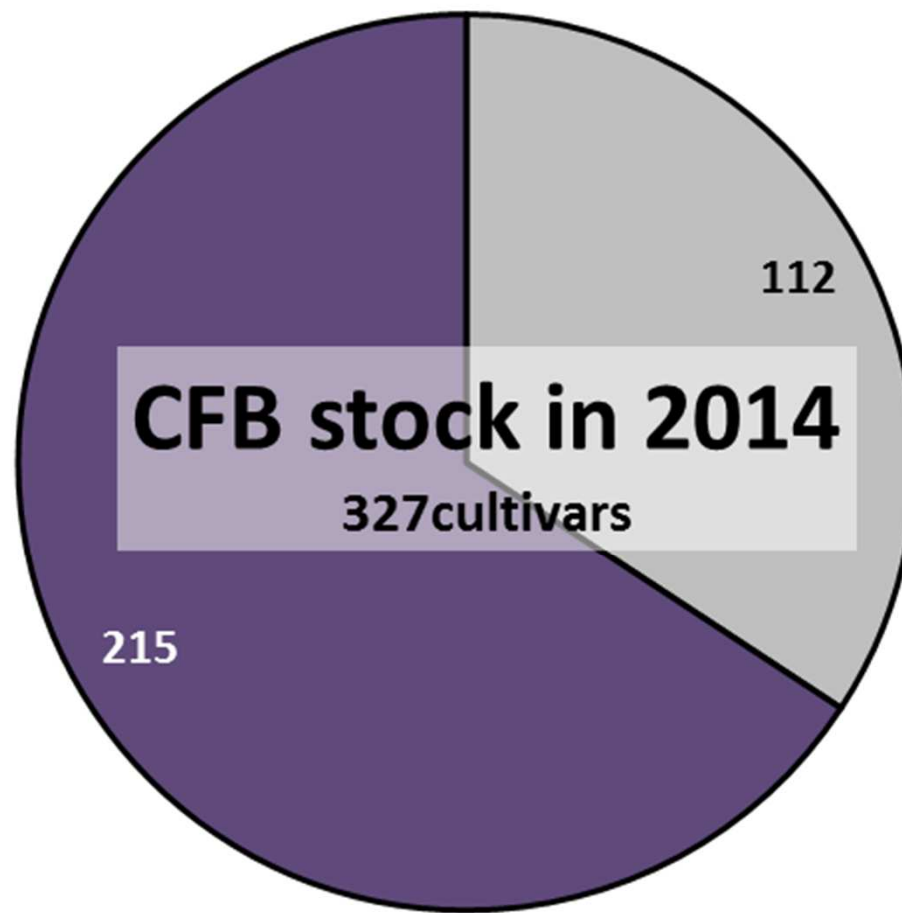
Research

Budwood supply

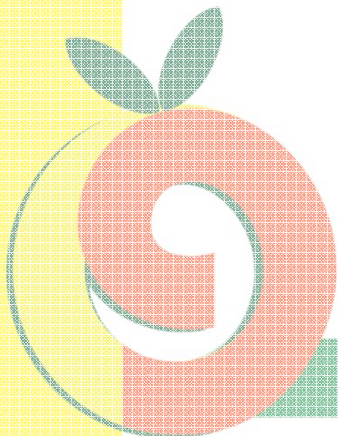


Research

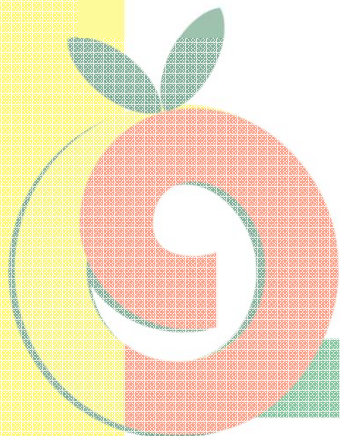
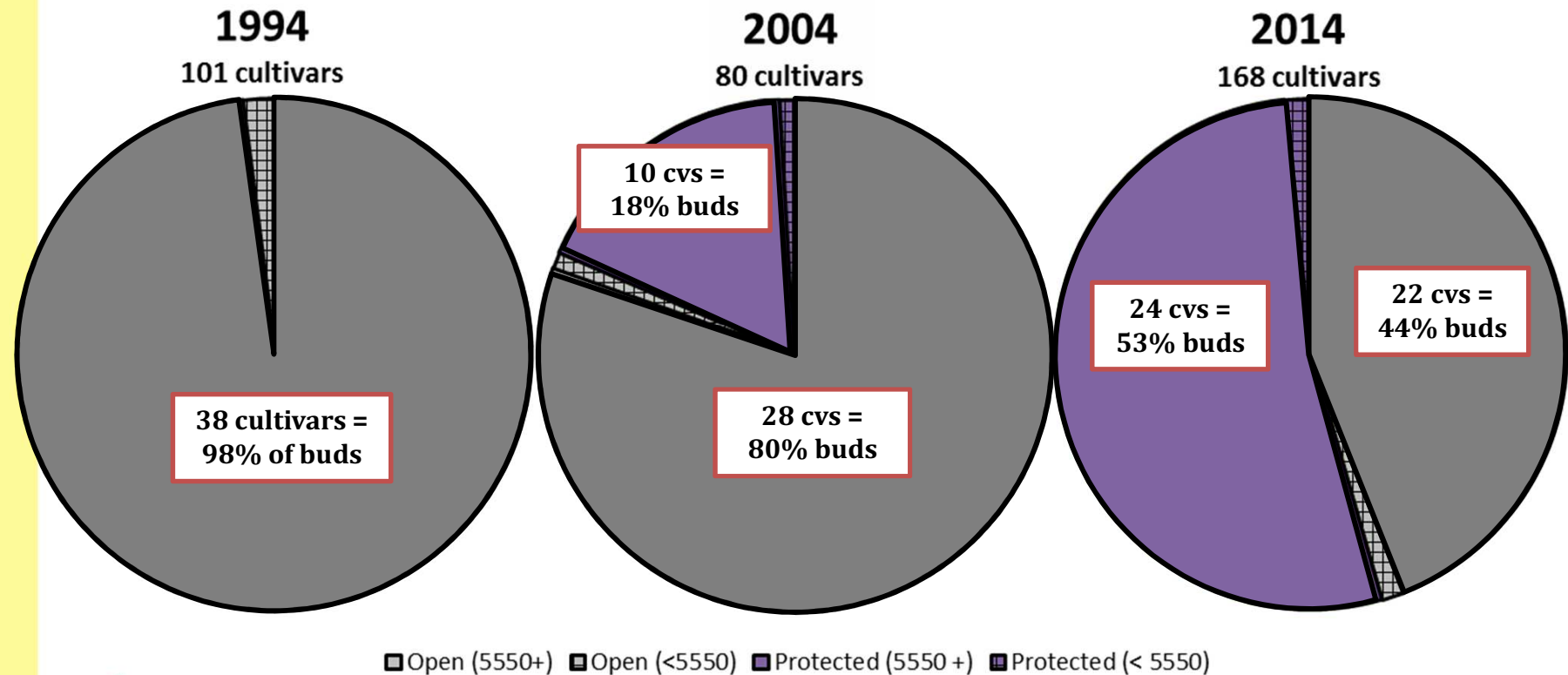
Statistics: Number of cultivars at CFB



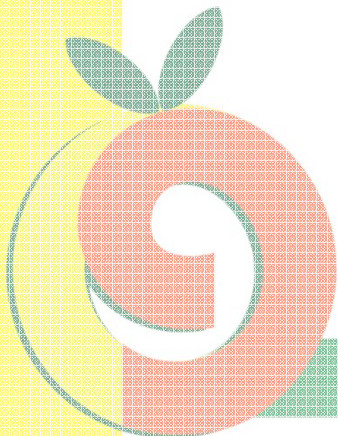
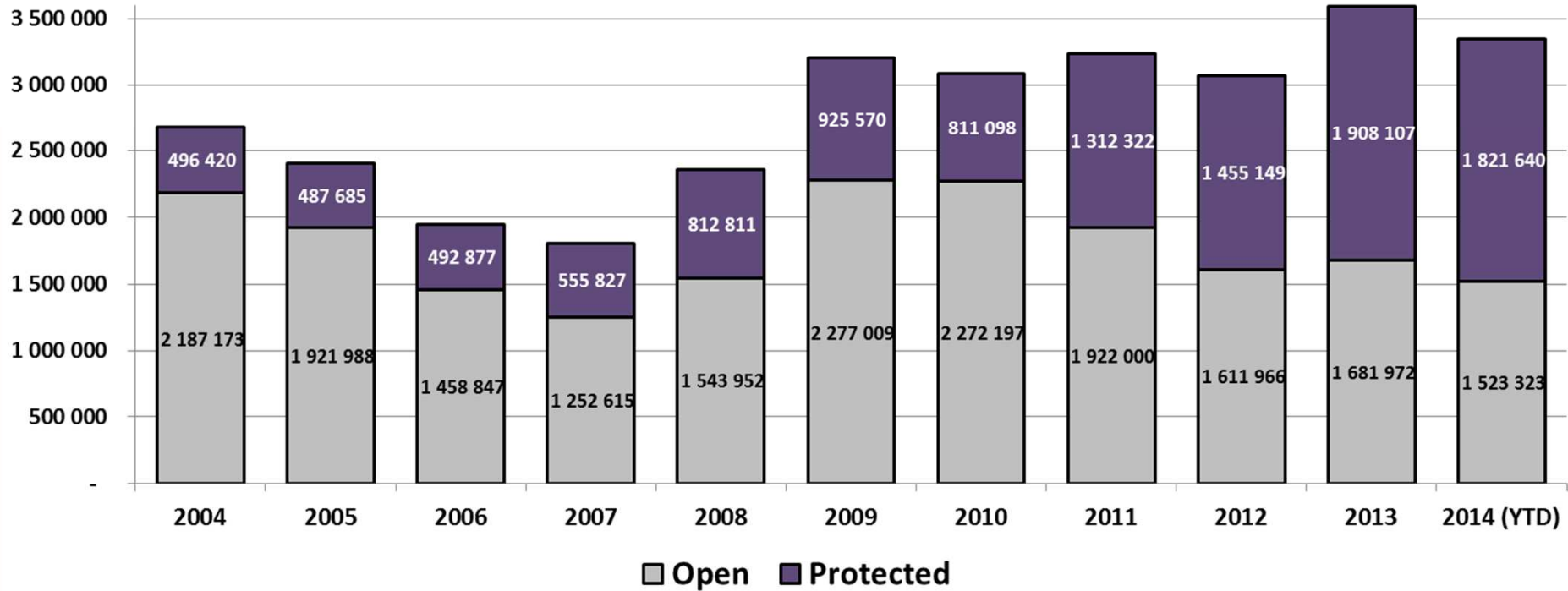
□ Open ■ Protected



Statistics: Number of cultivars supplied



Budwood supplied: Open vs. Protected cultivars



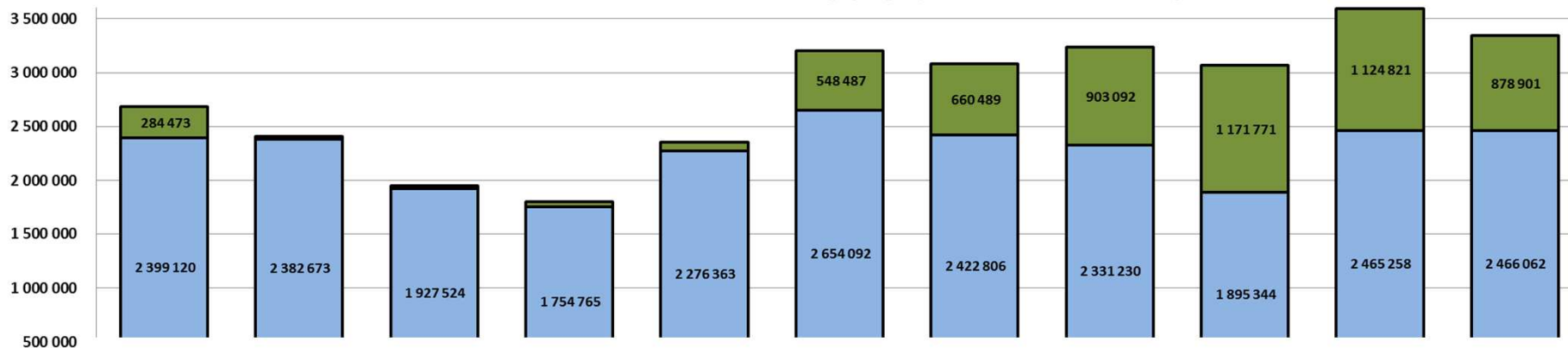
Centralised budwood supply from CFB

Authorised budwood cutting in certified nurseries allowed, if CFB cannot timeously supply demand (BCIN)

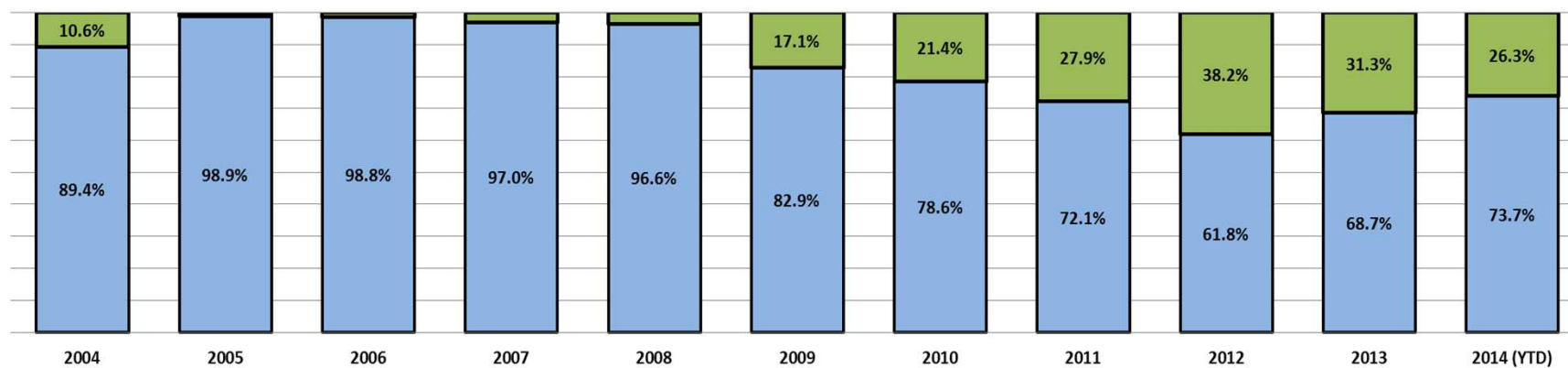
Aim to supply >80% of budwood demand directly from CFB

Research

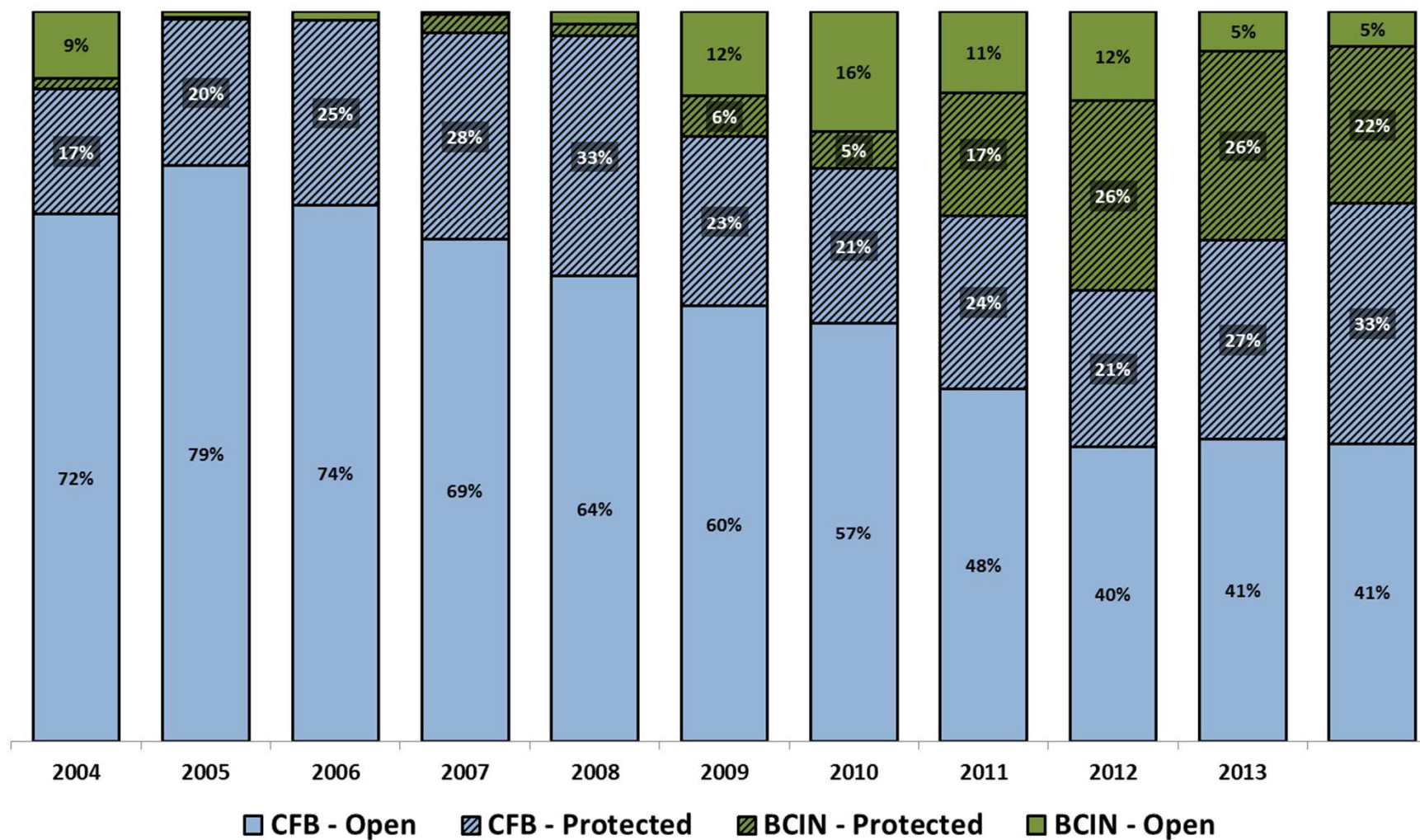
CFB vs. BCIN Budwood Supply (Buds / Season)



CFB vs. BCIN Budwood Supply (%)



Budwood: Open/Protected - CFB/BCIN (%)

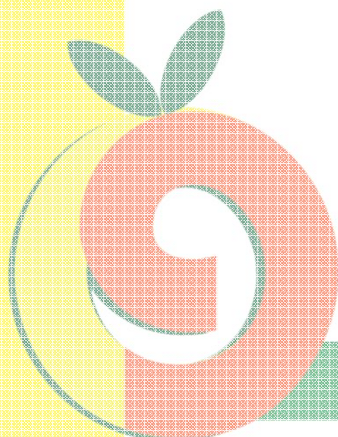


Statistics: Budwood supply (fin-year summary)

Budwood supplied per citrus type (% of annual total)

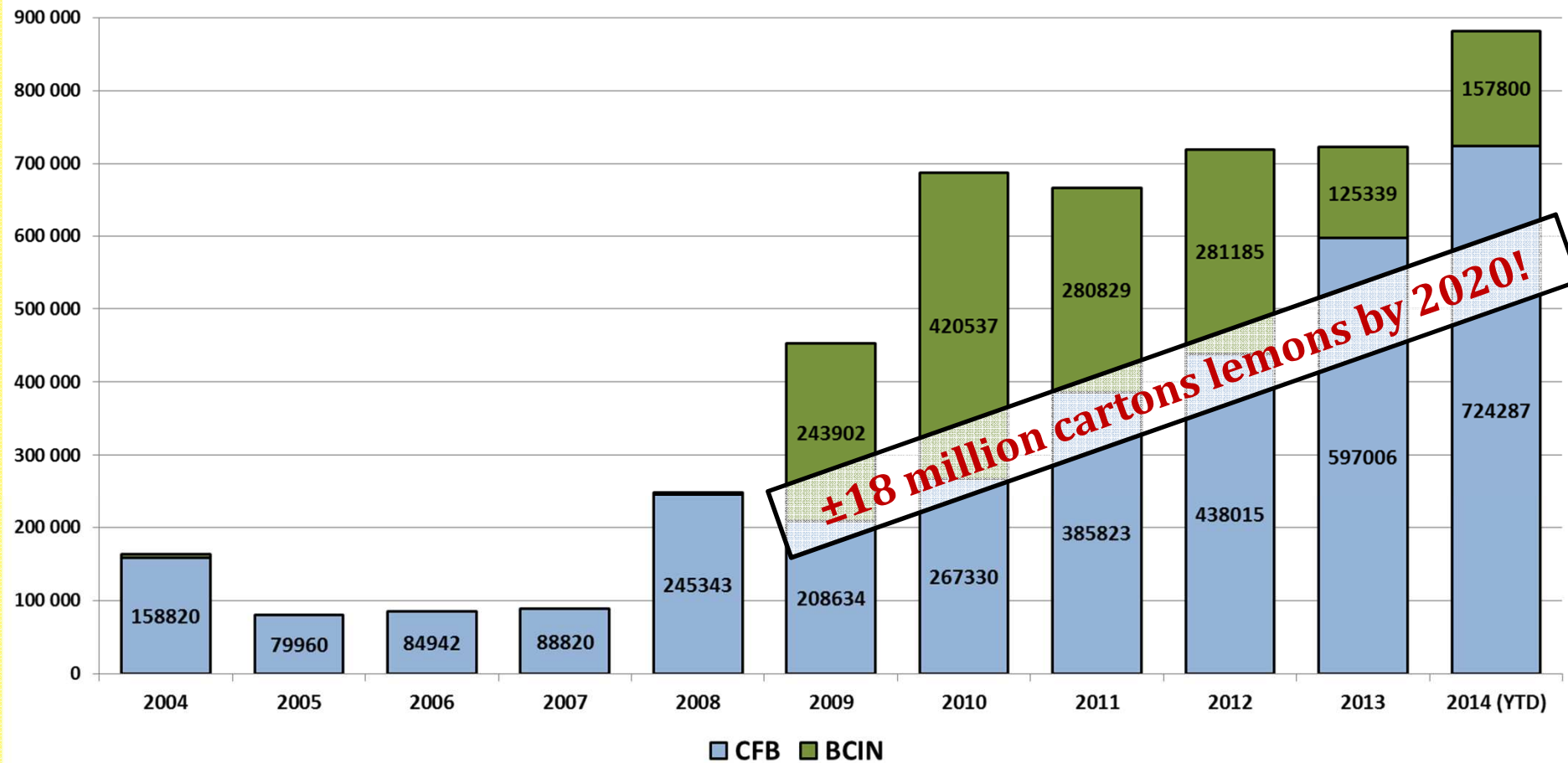
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mandarin Hybrid	2.9	9.0	16.2	17.6	20.7	21.3	21.1	26.8	28.5	42.8	43.8
Lemon	6.1	3.3	4.4	4.9	10.6	14.1	22.3	20.6	23.4	20.1	26.4
Clementine	2.1	1.7	1.4	1.3	0.8	1.2	2.6	4.1	3.8	2.3	4.3
Satsuma	2.4	2.7	1.2	2.1	1.7	4.0	5.7	4.3	1.2	1.1	1.9
Navel	32.4	36.1	19.6	26.3	22.5	22.4	18.6	20.6	17.9	10.5	9.5
Valencia	30.6	31.8	34.7	28.4	24.3	21.0	23.2	21.0	20.3	18.4	11.5
Grapefruit	22.4	13.5	19.2	17.2	18.5	14.8	4.9	0.7	2.9	3.6	1.2

Grand Total 2,683,593 2,409,673 1,951,724 1,808,442 2,356,763 3,202,579 3,083,295 3,234,322 3,067,115 3,590,079 3,344,963

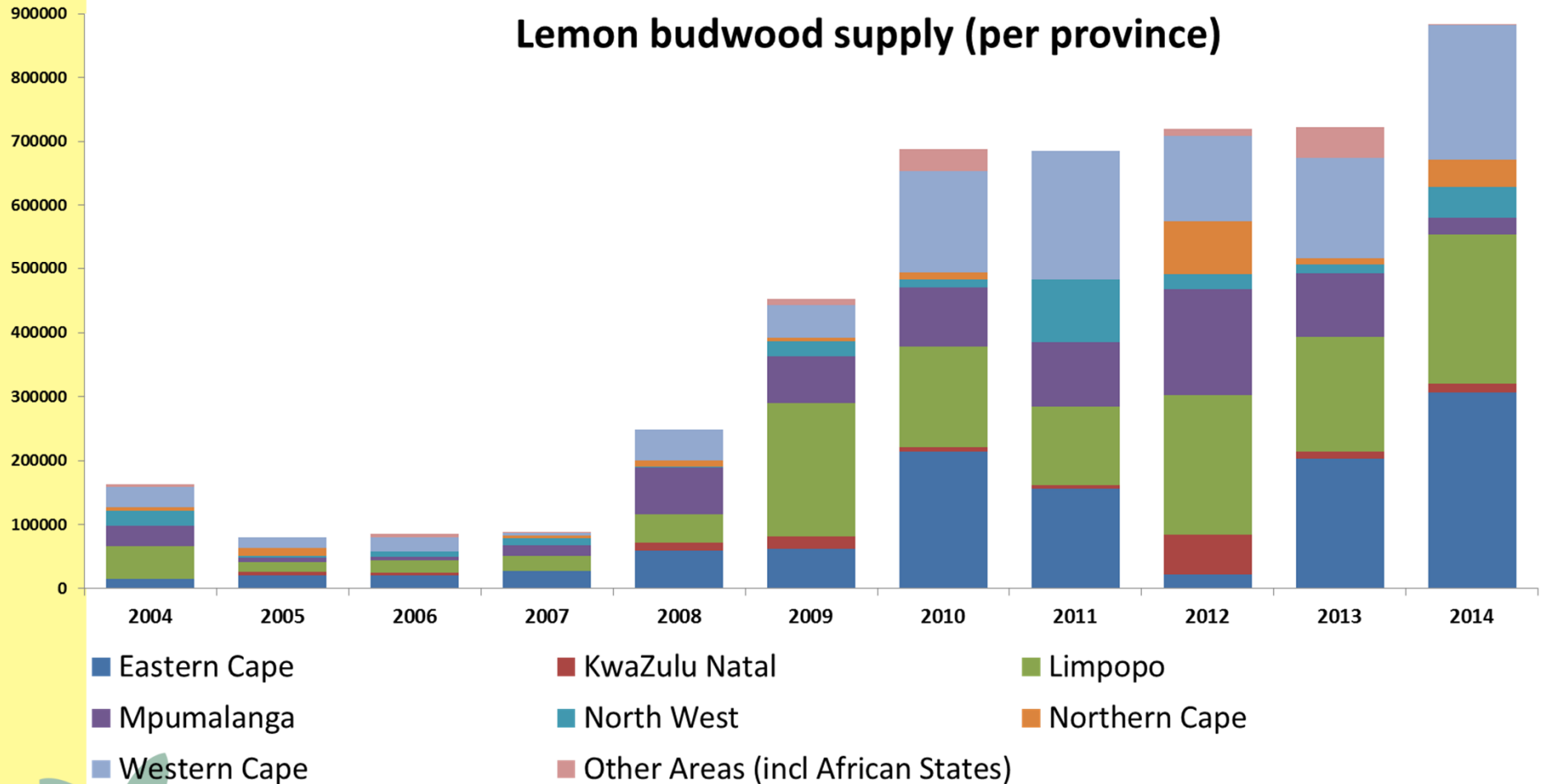


Research

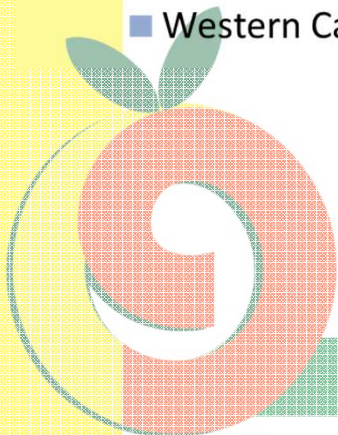
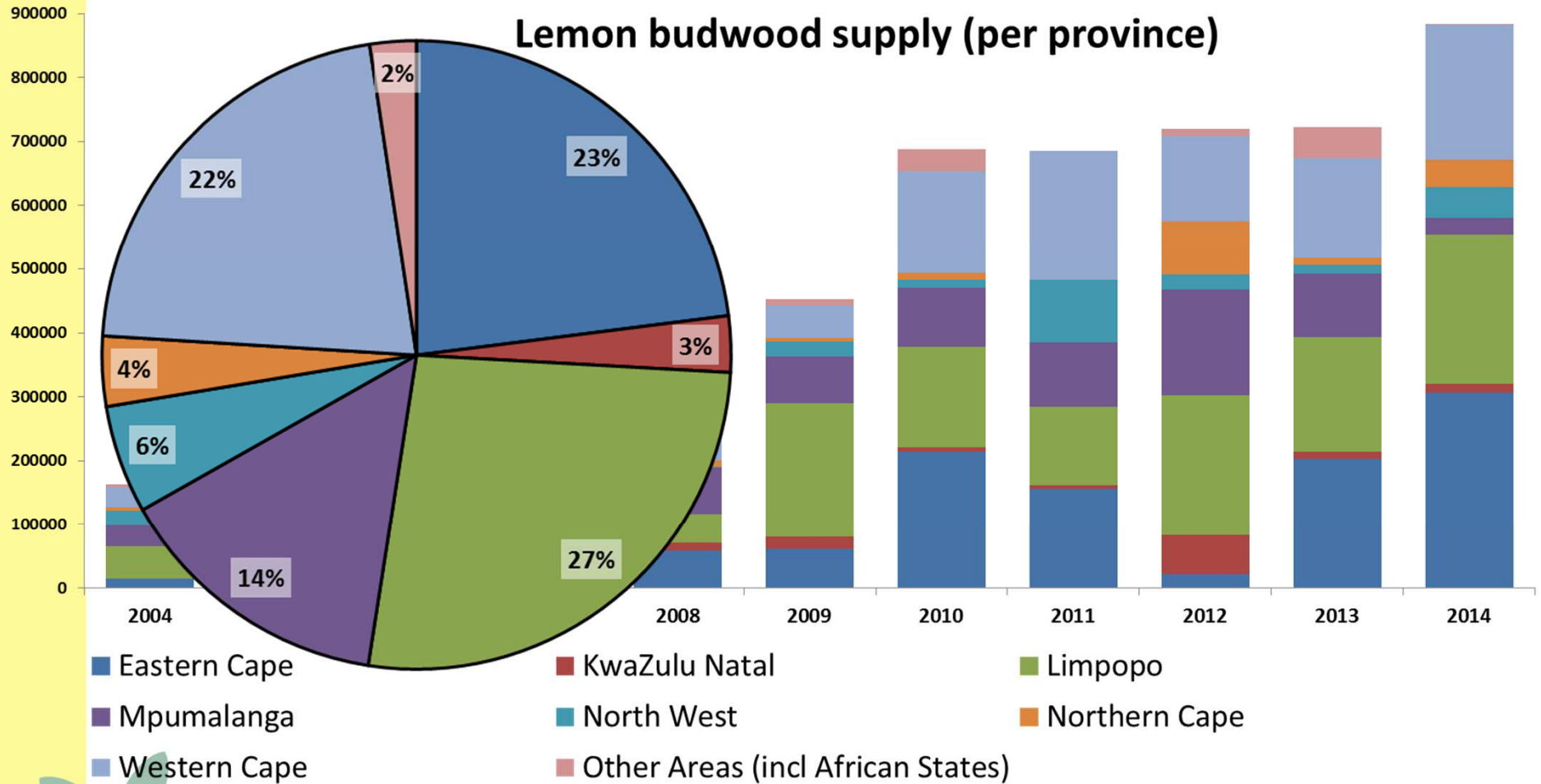
Budwood: Lemons (buds/season)



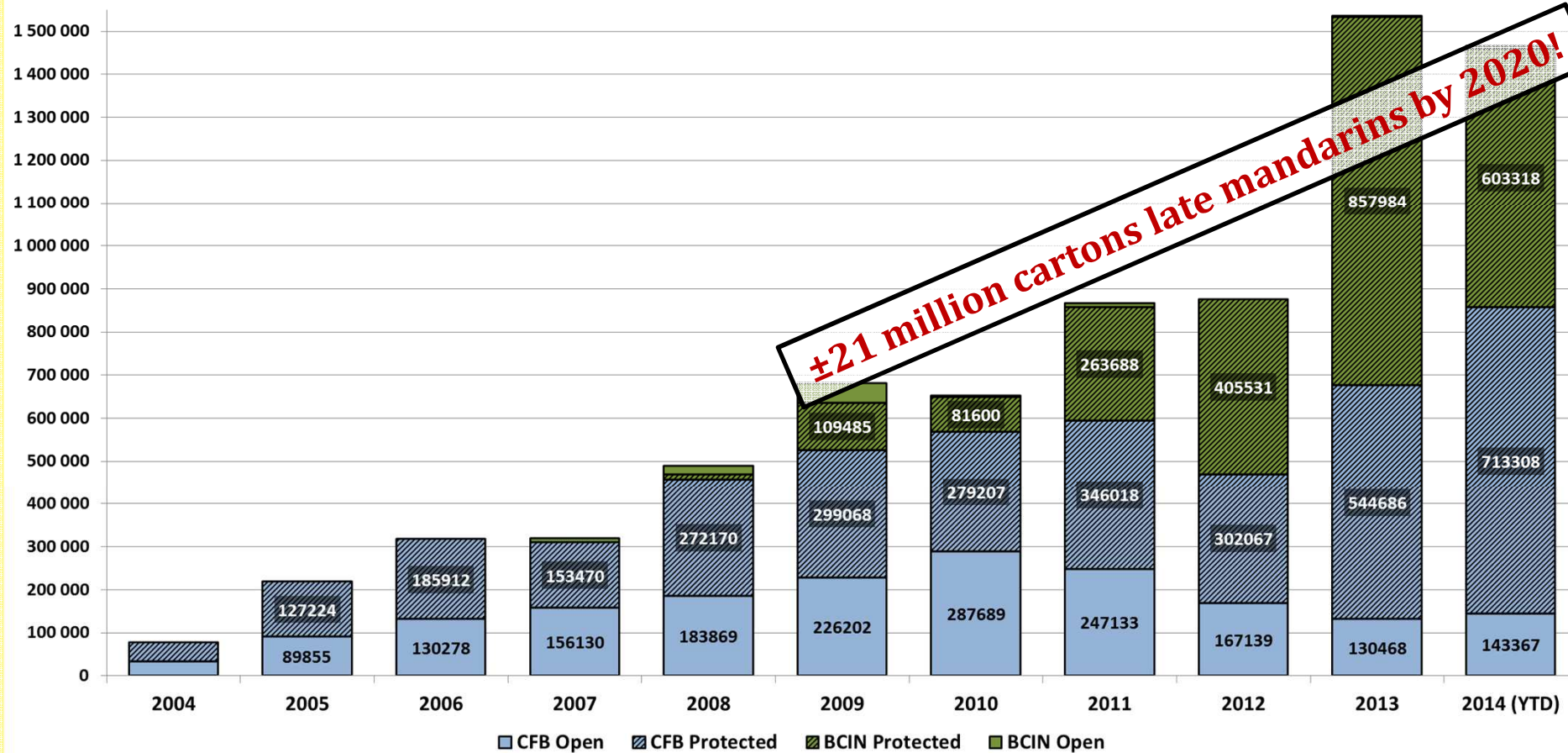
Lemon budwood supply (per province)



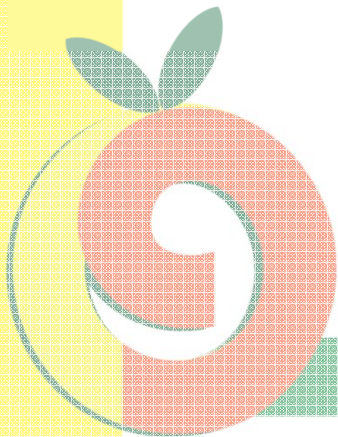
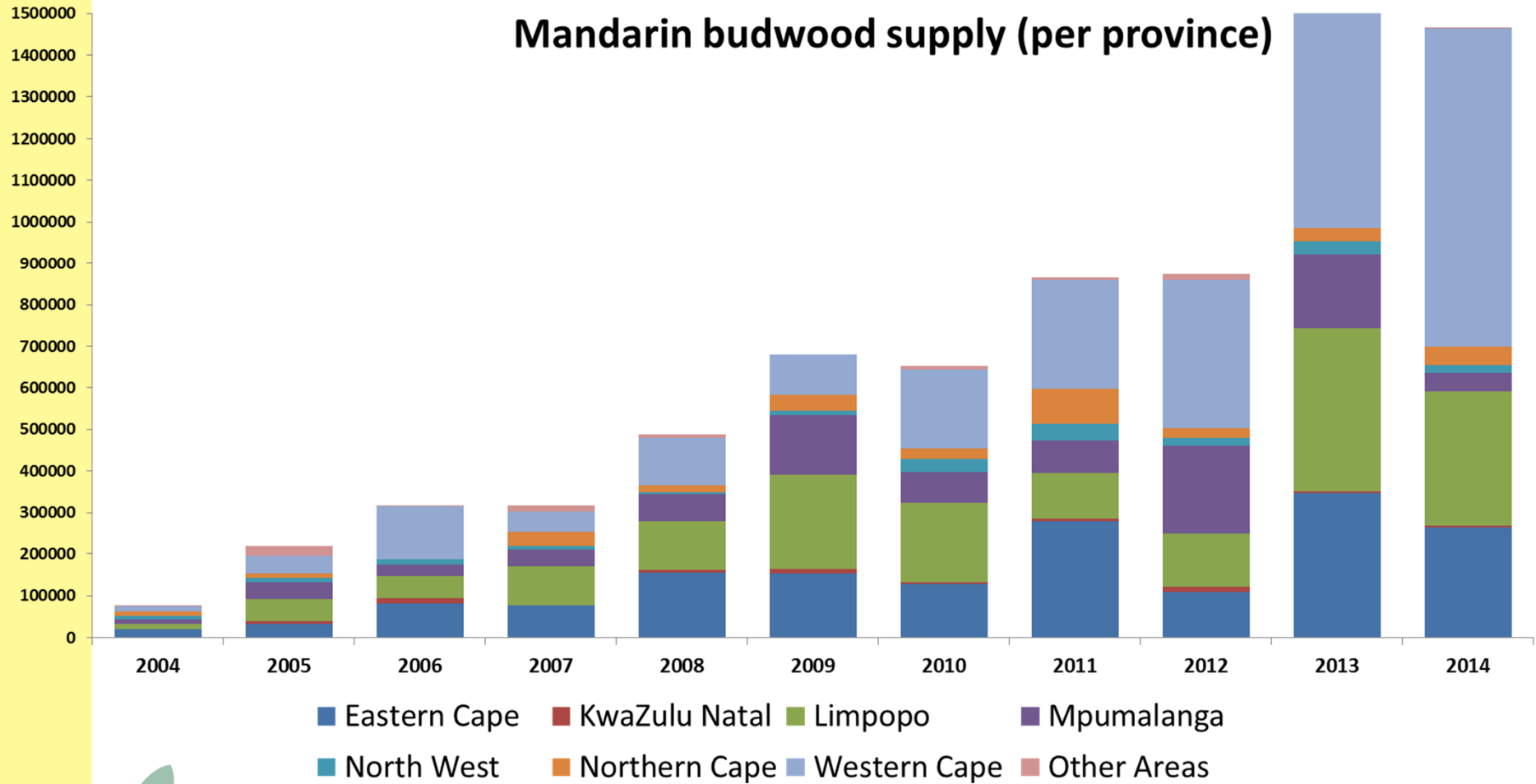
Lemon budwood supply (per province)



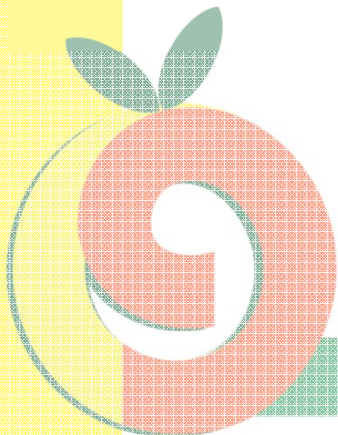
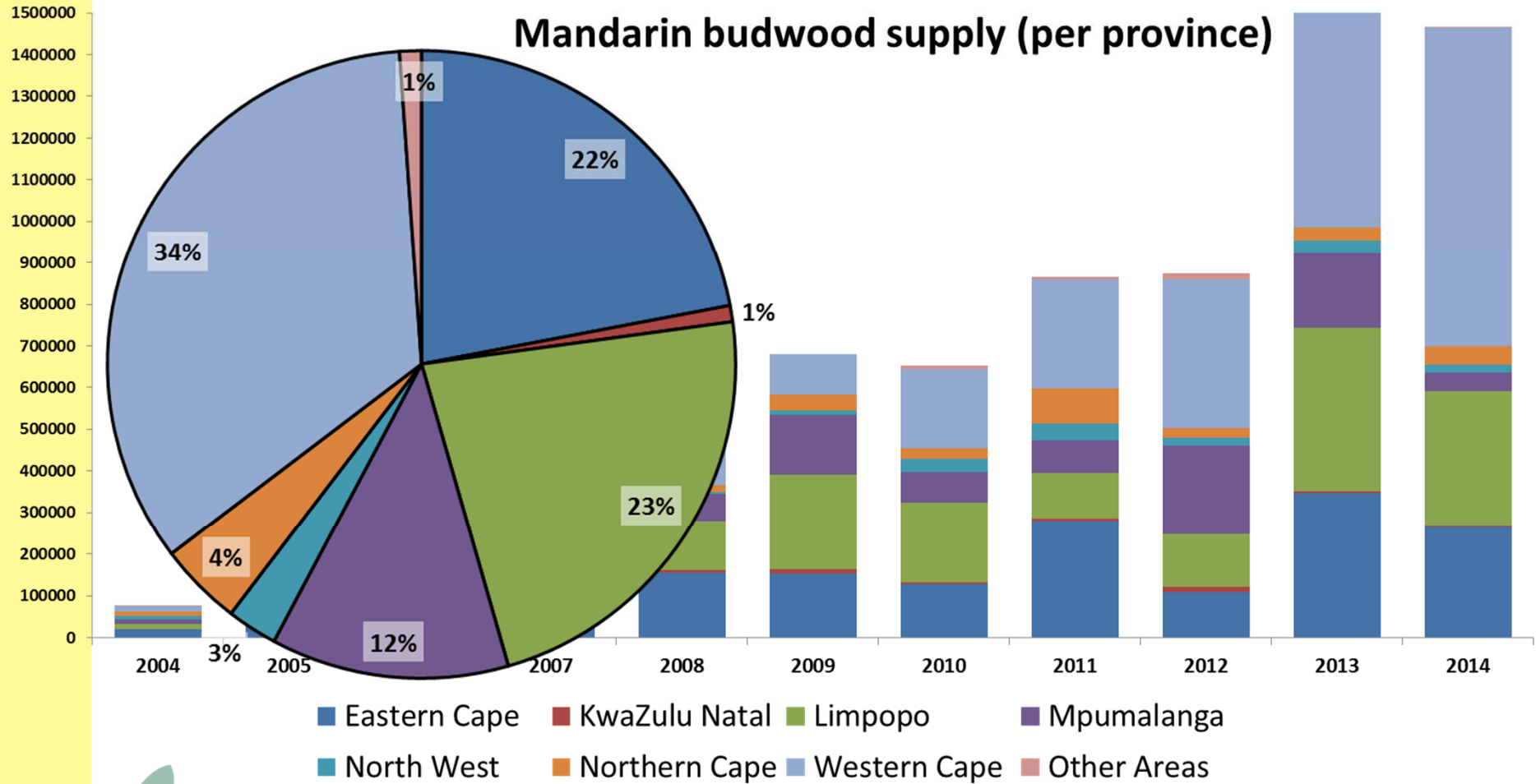
Budwood: Mandarins (buds/season)



Mandarin budwood supply (per province)



Mandarin budwood supply (per province)



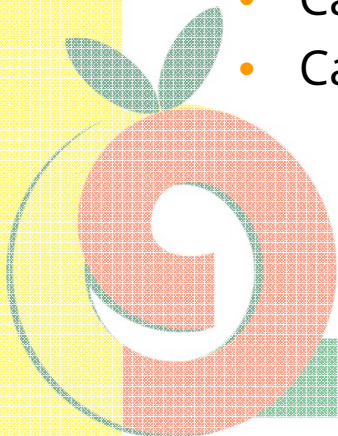
Centralised Multiplication and Supply

Advantages

- 🍊 Improved traceability
- 🍊 Improved biosecurity
- 🍊 “One-stop-shop”
- 🍊 Economy of scale
- 🍊 Self-regulating
 - Limited government support
 - Limited resources available
- 🍊 Industry support
 - Not profit driven
 - Can carry non-selling stock
 - Capacity expansion

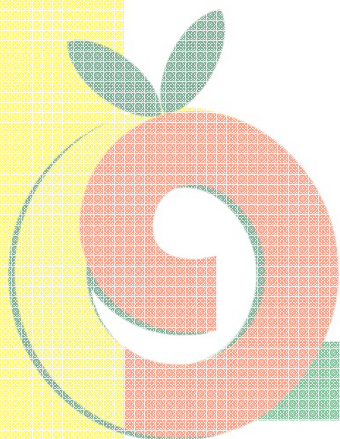
Challenges

- 🍊 Reliability of service + supply
 - Maintain industry support
- 🍊 Ability to supply demand from CFB
 - Reduce proportion of **Budwood Cut In Nurseries (BCIN)**
 - Prediction of future demand
 - Increased proportion of protected cultivars
- 🍊 Sufficient greenhouse space
 - Optimal use of space
- 🍊 Maintain biosecurity



CIS – Success Story

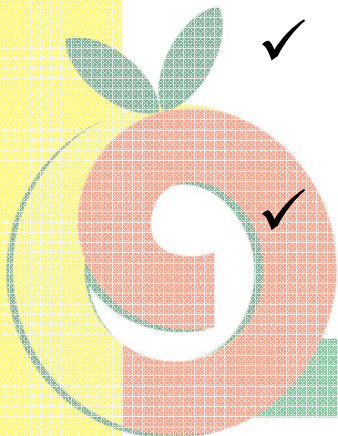
- 🍊 CTV and graft transmissible diseases controlled
 - ✓ Clean industry
- 🍊 Excellent industry support
 - ✓ Voluntary scheme with >95% participation
- 🍊 Continually striving to improve...



Research

Biosecurity Initiatives

- 🍊 Citrus Biosecurity in southern Africa
 - ✓ Citrus Greening, HLB and ACP action plan
 - ✓ Angola and Mozambique
- 🍊 Statutory CIS proposal
 - ✓ Compulsory CIS promulgated under Plant Improvement Act with CGA as DAFF-designated authority and CRI as operational management agent
- 🍊 Compulsory CIS =
 - ✓ All citrus trees made and sold in RSA will be from CIS approved material
 - ✓ Regulation of the presently unregulated domestic market

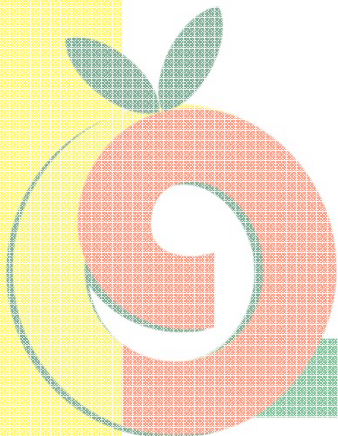


Status of Statutory CIS Proposal



Stakeholder engagement

- ✓ NAMC workshop indicated majority support for compulsory CIS
- ✓ Individual nurseries and cultivar management companies opposed compulsory CIS, due to...
 - CGA as designated authority
 - Stakeholder representation on CIS Advisory Committee not sufficient



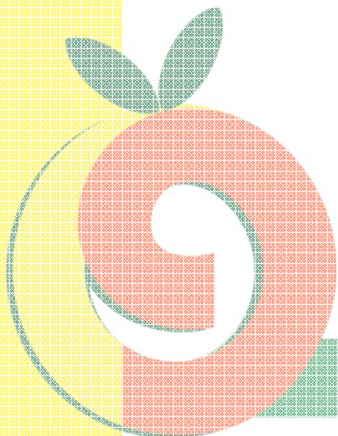
Research

Status of Statutory CIS Proposal



Way forward...

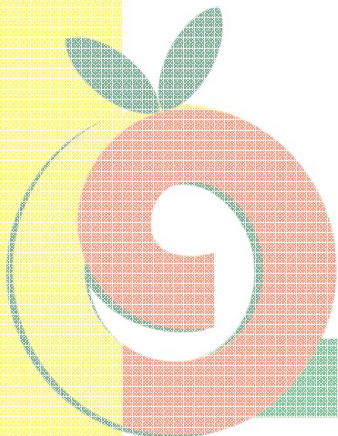
- ✓ MoU between Minister-DAFF and CGA
- ✓ Finalisation of CIS regulations to be promulgated under Plant Improvement Act
- ✓ Further stakeholder engagement
- ✓ Submission to Minister, hopefully with unanimous, but at least with majority support



Research

Acknowledgements

- 🍊 Thys du Toit, Michelle le Roux, Louise Olivier and Citrus Foundation Block staff
- 🍊 CRI and ARC personnel involved in Scheme support services
- 🍊 Citrus growers, nurseries and cultivar management companies supporting the Scheme



Research



Thank you

Paul Fourie

phf@cri.co.za | 083-290-2048



CGA CITRUS SUMMIT

Research