

Beecome

European Beekeeping Congress



Queen breeding and breeding goals in Italy and New Zealand

Graz 25.02.2018

Raffaele DALL'OLIO



europaean **p**rofessional
beekeepers **a**ssociation

Österreichischer
Erwerbsimkerbund



Presentation Structure



Queen breeding in Italy (35')

- Governmental Breeding Programme
- Private Breeding Programmes
- SMARTBEES (EC FP7 KBBE program)



Beekeeping in NZ (25')

- Overall Numbers
- Commercial Queen Rearing Experience



Q&A (10')

National Registry of Bee Breeders

- founded with official act of Ministry of Agriculture in 1997 (**D.M. 20984**)
- Managed by government institute CREA
- 2 sections corresponding to autochthonous subspecies
 - *A. m. ligustica*
 - *A. m. siciliana*
- Voluntary enrollment (60€/y)



api.entecra.it/index.php?c=66



ALBO NAZIONALE ALLEVATORI API ITALIANE

[Che cosa è l'Albo \(guarda il video\)](#)

[Come iscriversi](#)

[Disciplinare](#)

[Valutazione genetica: BANCA DATI](#)

[Commissione tecnica centrale \(2016-2018\)](#)

[Aziende iscritte all'Albo](#)



**MINISTERO DELLE POLITICHE
AGRICOLE ALIMENTARI
E FORESTALI**



≈ 50.000 € / y

Contatti

Dott.ssa Patrizia Bergomi

telefono/fax: +39 0522 285532 (lun - ven: 11.00 - 17.00)

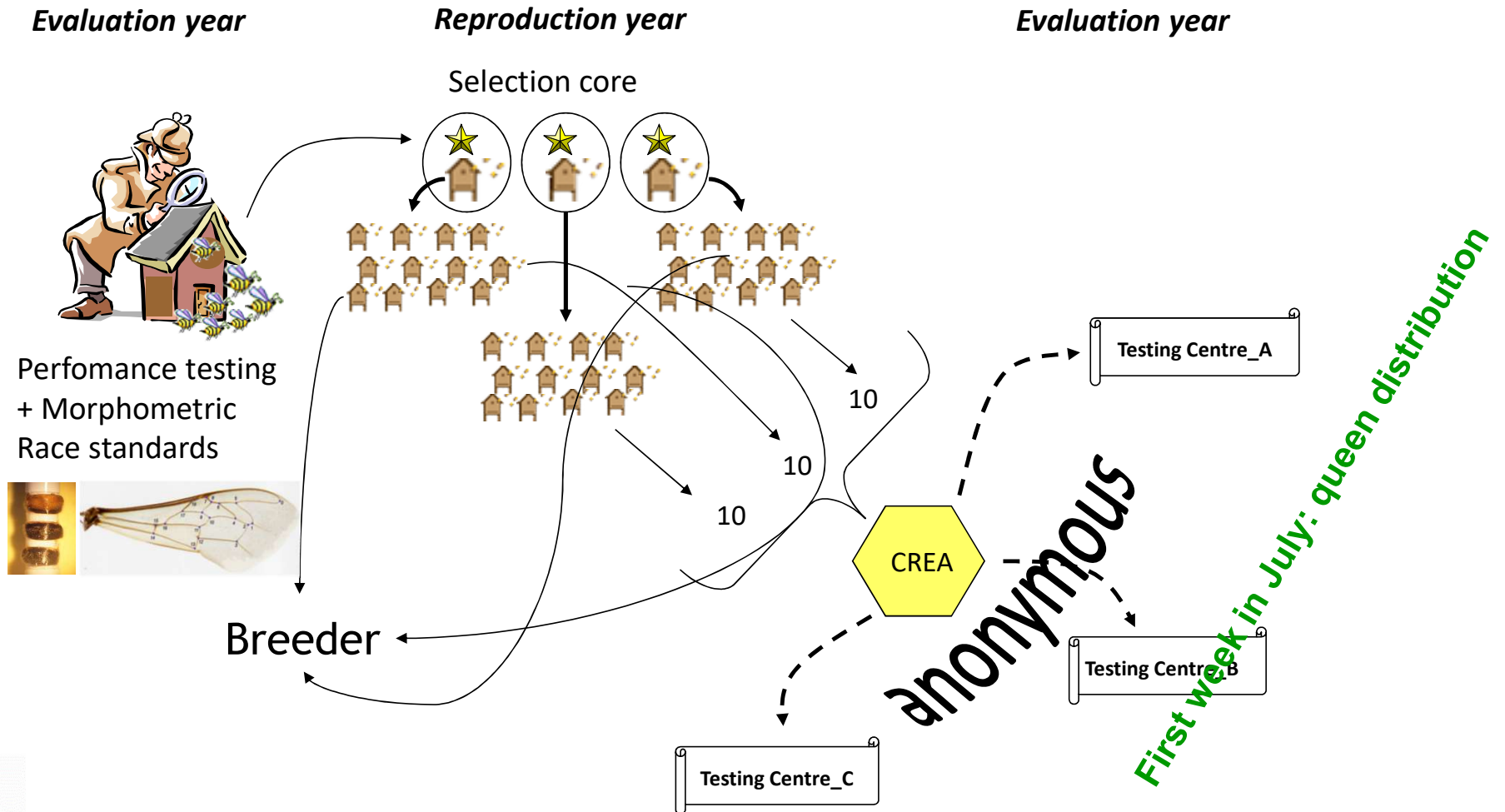
e-mail: alboregine.api@crea.gov.it



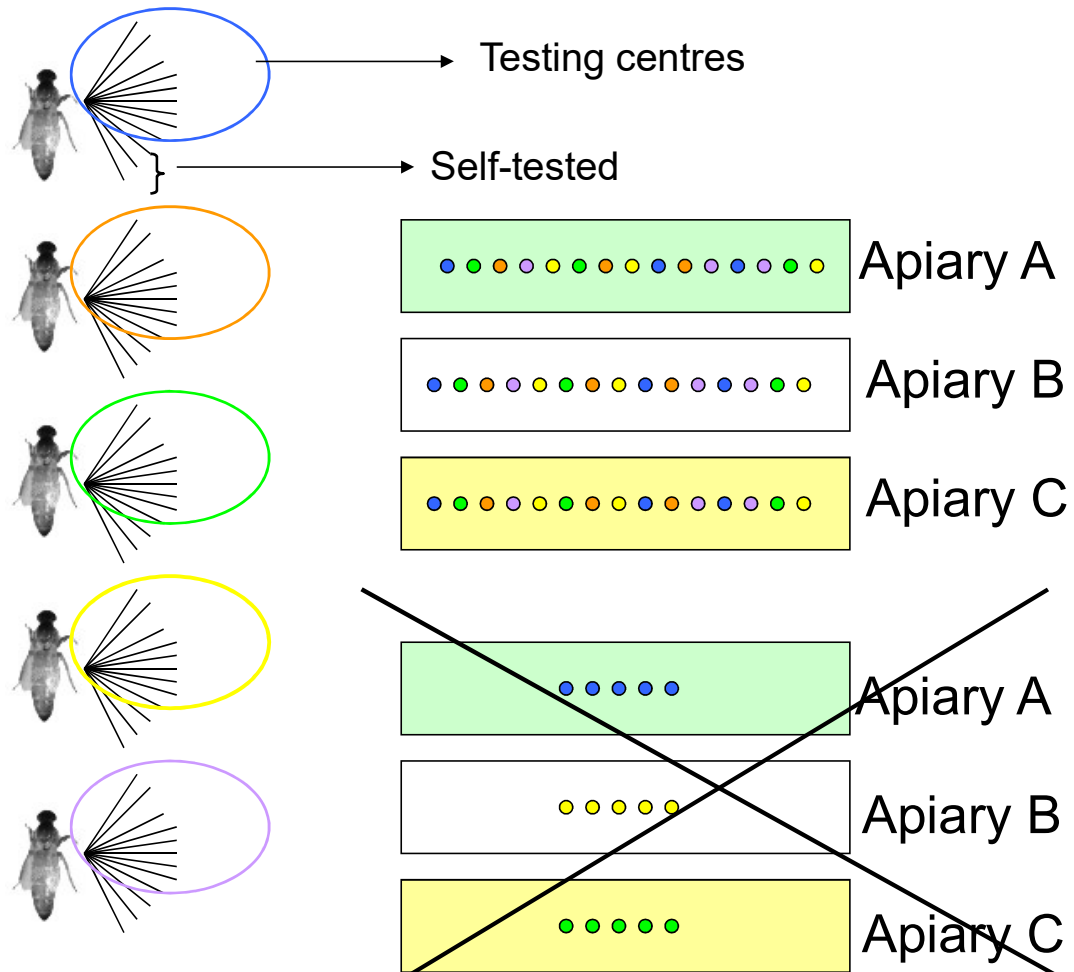
BeeSources
una nuova risorsa
per la filiera apistica

Queen breeding in Italy

Evaluation Program



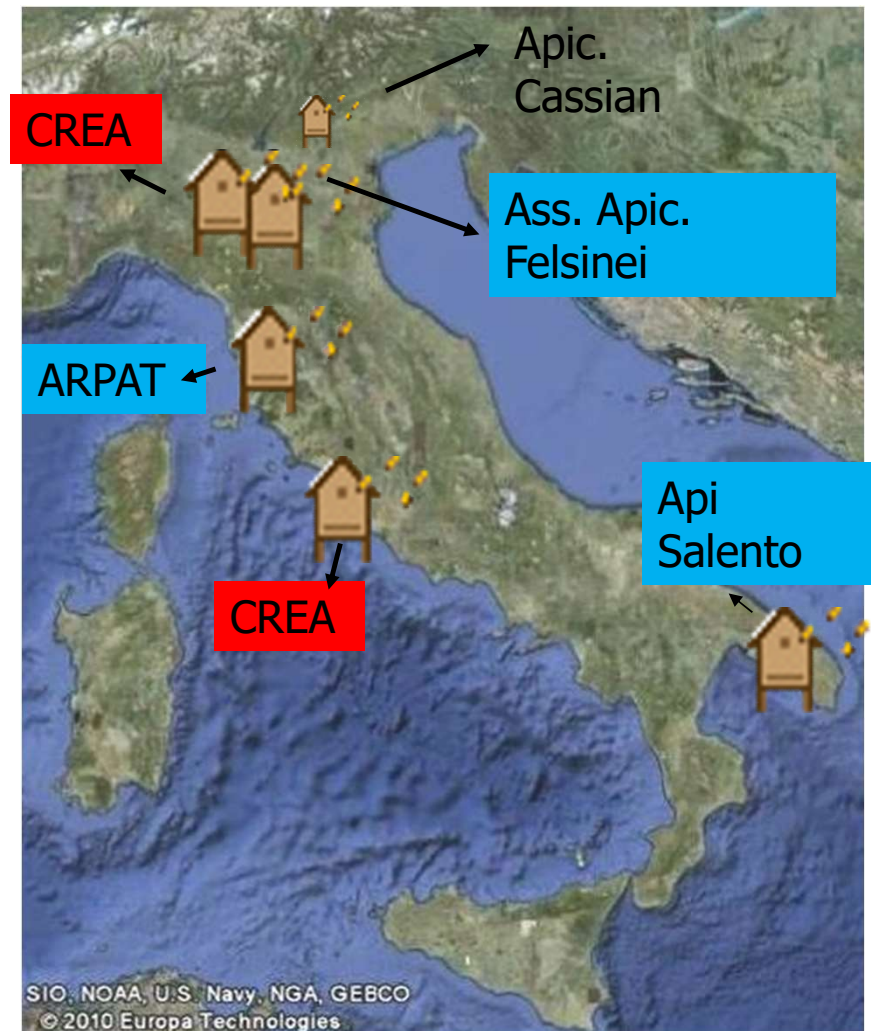
Selection core



Queen breeding in Italy

Testing centres

- ✓ beekeeper associations
- ✓ registered breeders
- ✓ bee research institute
- ✓ at least 10 queens per apiary
- ✓ reimbursement for performance testing (35€/q)
- ✓ agreement to give back queen if asked



Evaluation year: performance testing



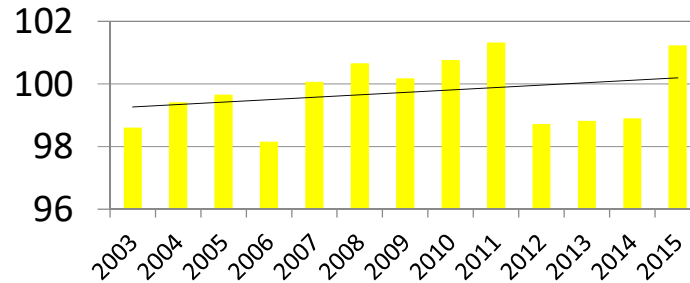


Open access on-line database:
www.cra-api.it & www.beebreed.eu

Breeding Values Trend (n=4005)

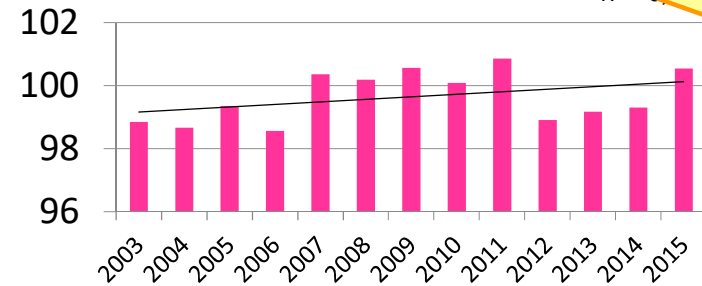
Honey BV

$R^2 = 0,0816$



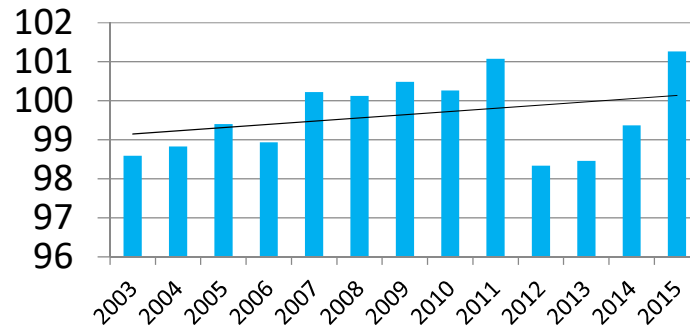
Gentleness BV

$R^2 = 0,0816$



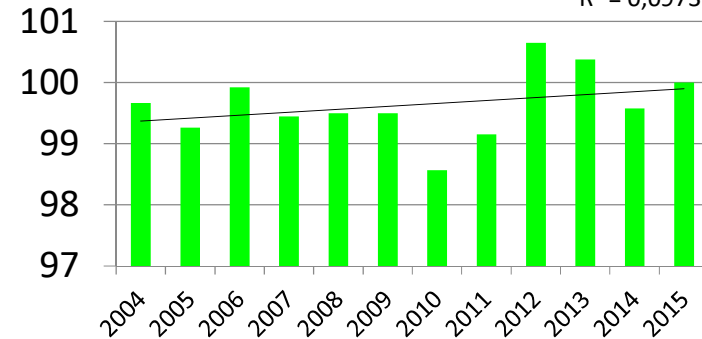
BV Swarming

$R^2 = 0,1043$



BV Hygienic behaviour

$R^2 = 0,0973$



New BV published every
year around 15° February



Bee|Sources
 una nuova risorsa
 per la filiera apistica

Queen breeding in Italy



PRIVATE



AIAAR – Associazione Italiana Allevatori Api Regine

- 50 Members - producers
- Over 100.000 queens/year
 - ✓ 10% export**
 - ✓ 70% national
 - ✓ 20% internal



«Italian Queens»
2015 to

Let's grow together!



Common actions

- Implementing services to Breeders
- Set a minimum Standard Operating Procedures
- AIAAR Studbook
- Training for Breeders

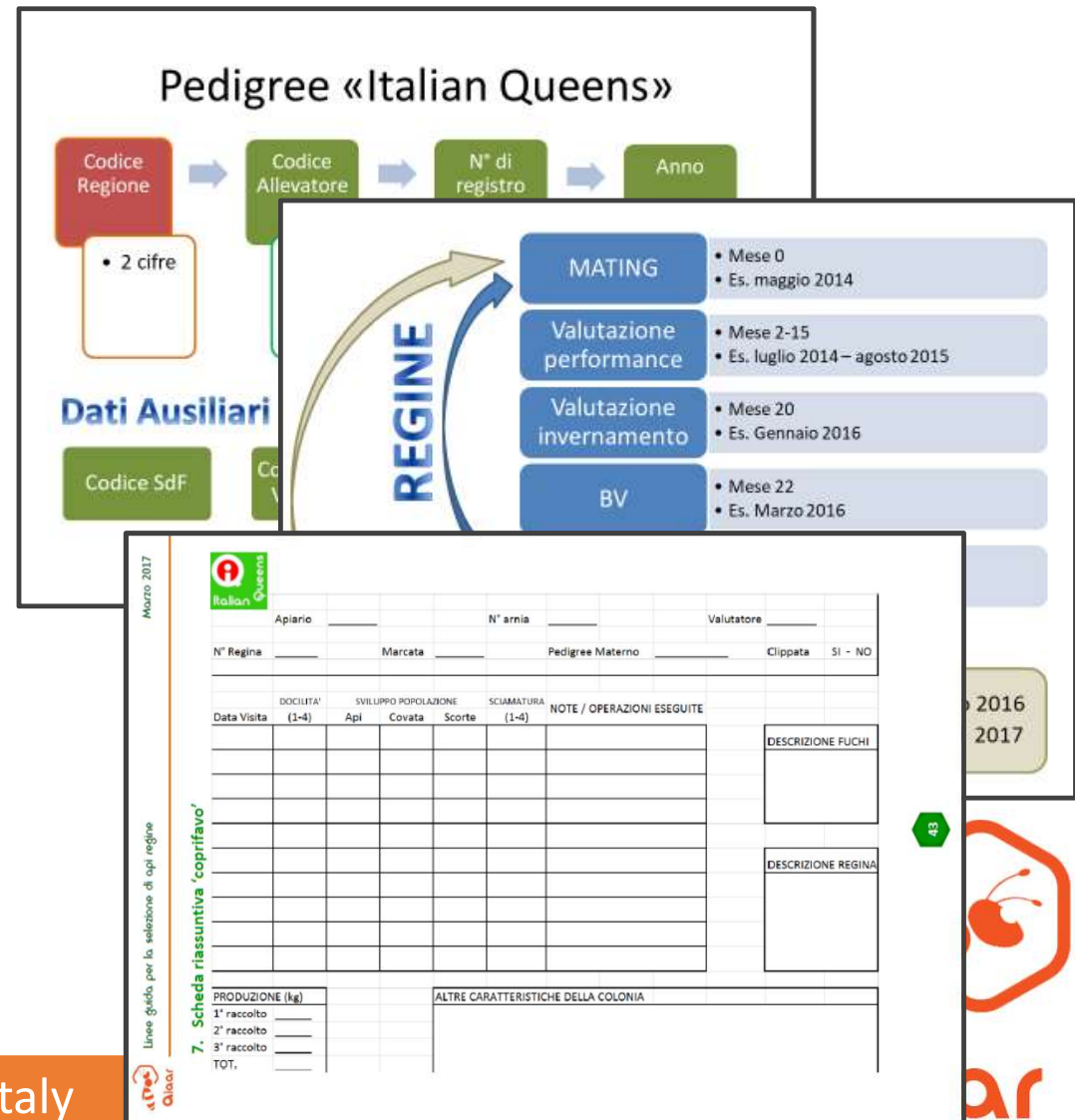


Aiaar



Queen breeding in Italy

Guidelines (SOP)

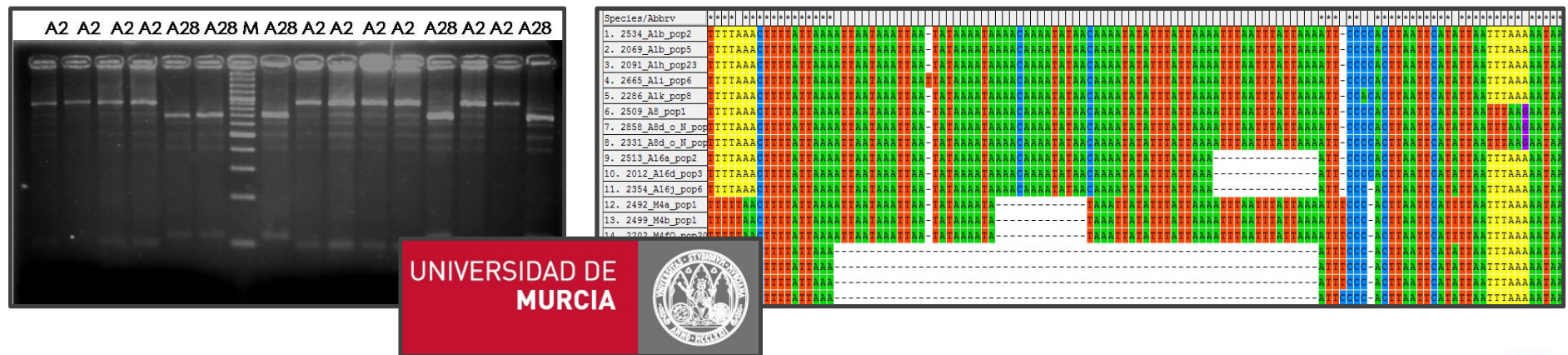


Bee|Sources
una nuova risorsa
per la filiera apistica

Queen breeding in Italy

Matrilines → mtDNA

Breeders → morphometry



Training



Somebody is ready to GO!

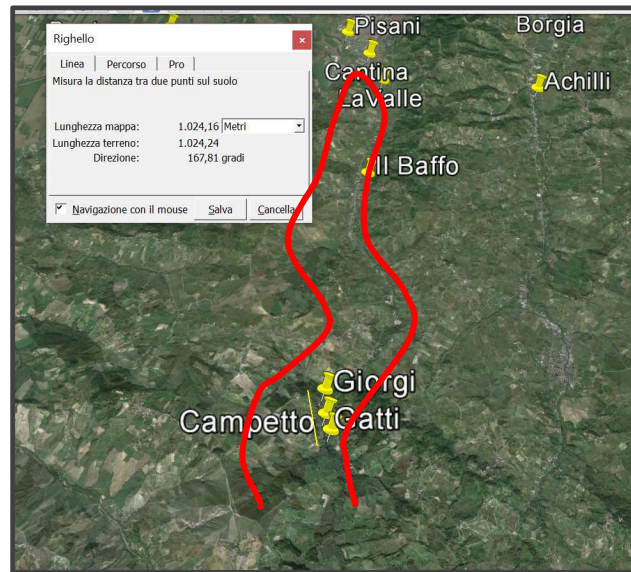
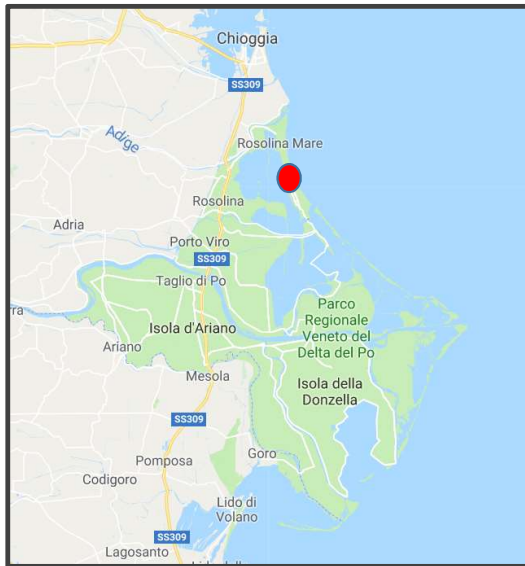
Breeding plan set up

- On site activity (4 days)
 - Monitoring
 - Training employee
 - Practical demo
- Tailor-made Selection scheme



€ 1500 each
breeding group

Study on Mating Stations



Performance Testing Apiaries



Data elaboration & BV

Raccolta dati Valutazioni RD - Excel

Layout di pagina Formule Dati Revisione Visualizza Che cosa si desidera fare?

Generale Formattazione Formattazione condizionale Formattazione come tabella Stili Inserisci Elimina Formato

Unisci e allinea al centro Allineamento Numeri Celle

=Misure!E49*250

	C	D	E	F	G	H	I	J	K	L	M	N
Data	Colonia	Api	Covata	Miele (kg)	Sesti Covata Opercolata	Polline	Api/Covata	Individui	pe	gMiele/A	gMiele/In dividuo	
30/09/17	20	3875	5850	6,125		650	66,2%	9725	1,581	0,630		
30/09/17	71	5625	11050	6,875		975	50,9%	16675	1,222	0,412		
30/09/17	65	5500	8125	6,625		325	67,7%	13625	1,205	0,486		
30/09/17	70	4125	4875	6,375		325	84,6%	9000	1,545	0,708		
30/09/17	10	3250	4550	7,5		975	71,4%	7800	2,308	0,962		
30/09/17	72	4375	5850	6,875		325	74,8%	10225	1,571	0,672		
30/09/17	67	3125	3250	9		325	96,2%	6375	2,880	1,412		
30/09/17	85	4250	6175	5,125		650	68,8%	10425	1,206	0,492		
30/09/17	21	5125	6175	5,75		650	83,0%	11300	1,122	0,509		



Genetic Evaluation in the Honeybee





Language: English

Breeding Values

Breeding Date

Info

Administrative Functions

Contact

Home

Log out

About us

Breeding values (State from 10.02.2016)

for

Association=4 / Breeder= / Studbook number= / Year=2014

number of matching colonies: 39

What do the numbers mean?

More info	Association	Breeder	Studbook number	Year	Queen		Inbreeding Coefficient (in %)		Breeding values in % (Average over last 5 years (100%))										Breeding license
					Worker	Worker	Honey yield	Defensive behavior	Calatness during inspection	Swarming drive	Varroa index	Total breeding value	Chall-brood						
* 4	1	244	2014	2,8	3,1	202	105	104	107	104	103	97	A						
* 4	1	206	2014	0,1	0,9	101	106	106	96	103	103	99	A						
* 4	1	499	2014	0,1	0,9	129	108	129	123	114	128	131	A						
* 4	1	495	2014	0,1	0,9	117	102	122	118	115	122	135	A						
* 4	1	496	2014	0,1	0,9	122	108	127	116	107	123	136	A						
* 4	1	479	2014	2,0	3,2	115	115	116	112	94	108	130	A						
* 4	1	491	2014	2,8	3,2	119	112	114	114	92	109	139	A						
* 13	4	13	2014	0,1	0,9	113	112	122	121	113	131	1							
* 4	4	16	2014	5,1	0,4	110	116	116	123	111	131	1							
* 4	5	2581	2014	40,7	0	115	115	116	103	113	131	1							
* 4	7	1	2014	18	16	110	97	97	109	102	109	90	B						
* 4	7	16	2014	18	16	106	96	96	96	102	109	90	B						
* 4	7	63	2014	18	16	107	96	96	96	103	102	90	B						
* 4	9	33	2014	0	0,9	106	105	105	103	105	104	A							
* 4	9	38	2014	0	0,9	116	112	112	109	112	104	A							
* 4	9	35	2014	0	0,9	109	111	111	106	109	104	A							
* 11	11	51	2014	11,8	11,8	115	107	107	106	110	90	A							
* 11	11	51	2014	11,8	11,8	112	107	107	107	109	90	A							
* 23	18	2014	24,9	16,7	111	107	107	107	107	107	107	90	A						
* 46	33	2014	11,5	6,2	111	107	107	107	107	107	107	90	A						
* 240	2	2014	10	0	106	106	106	106	106	106	106	90	A						
* 240	5	2014	10	0	106	106	106	106	106	106	106	90	A						
* 240	14	2014	18,7	0	106	106	106	106	106	106	106	90	A						
* 277	10	2014	11,5	7,1	110	107	107	107	107	107	107	90	A						



Queen breeding in Italy



«Carniolian» bee in Friuli



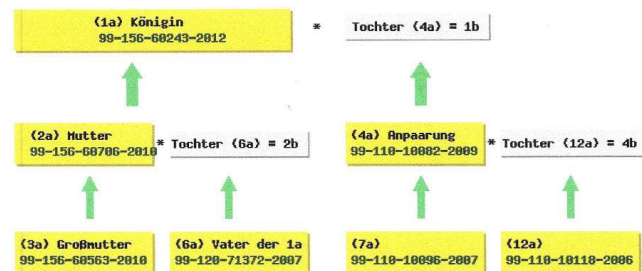
2016 Visit Prof. H. PECHHACKER
Genetic Stock from A.C.A.

[zurück](#)

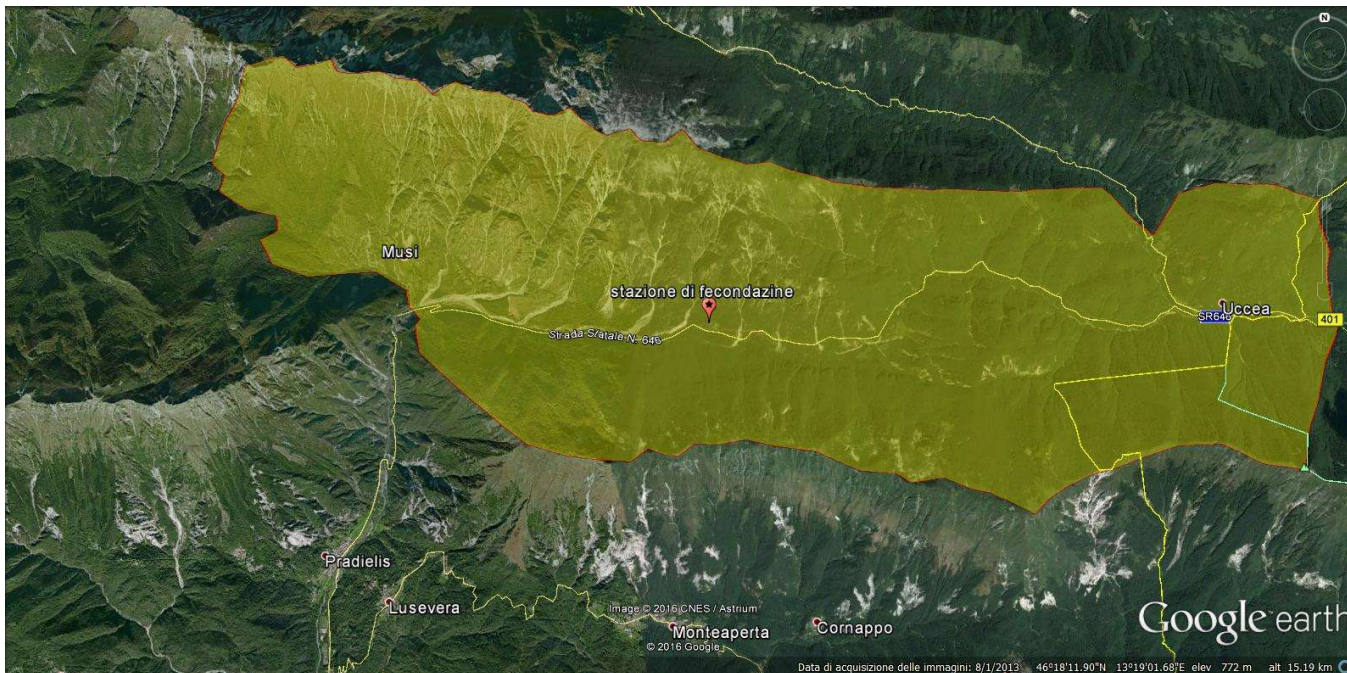
Angaben zu einer bestimmten Königin
Landesverband= 99 / Züchter= 156 / Zuchtbuch-Nr.= 60243 / Jahr= 2012

[Kontakt zum Züchter](#)

Abstammung



Mating Station



Lusevera valley
1300m slm

Production:
150/400 queens





Breeding for resistance



SMARTBEES / FP7-KBBE.2013.1.3-02 / WP6
Sustainable Management of Resilient Bee Populations
www.smartbees.eu



Test apiaries



A. m. ligustica (hybrids and pure lines)



A. m. ligustica x *A. m. carnica*



A. m. siciliana (pure lines)



Isolated populations



A. m. siciliana (pure lines)



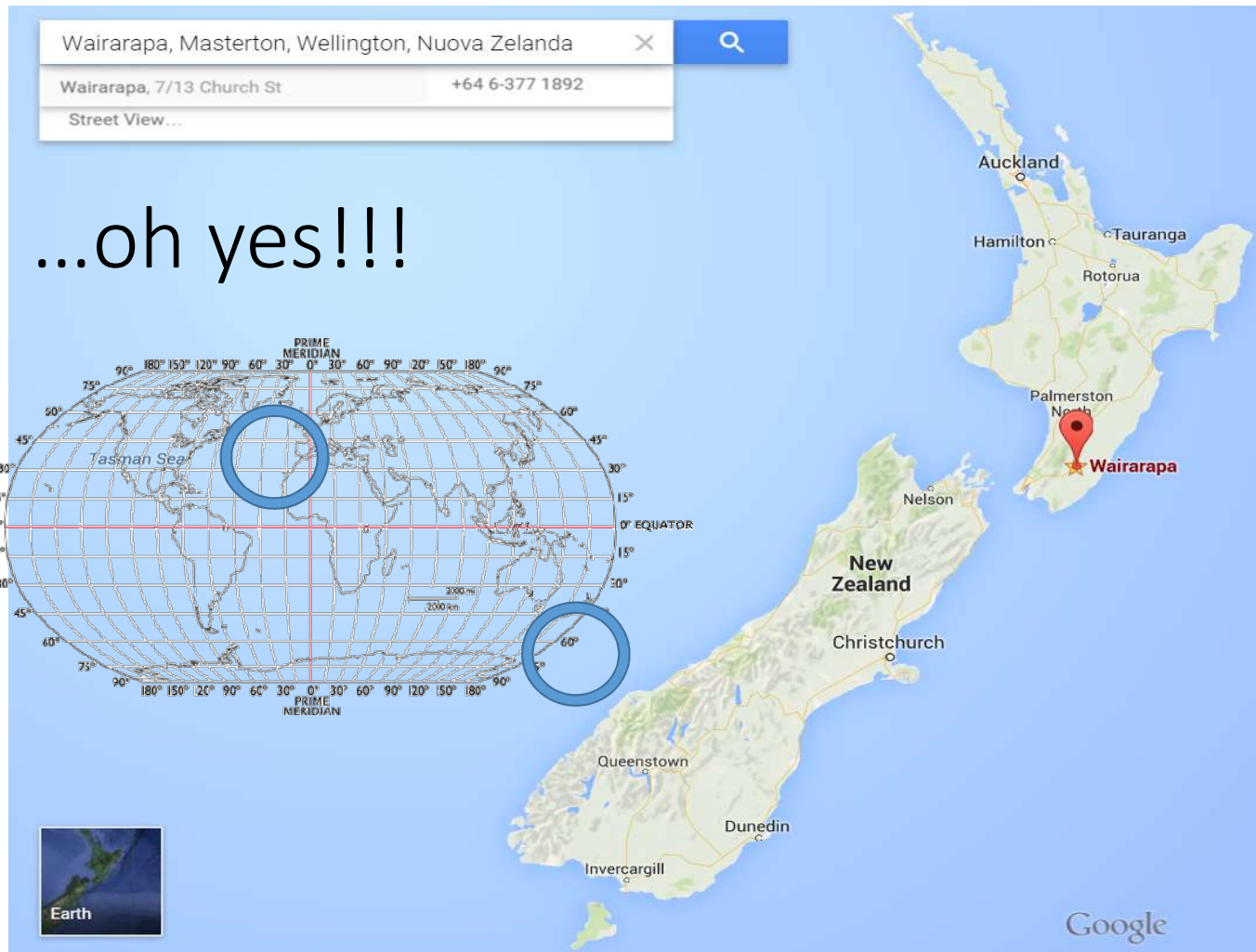
Queen breeding in Italy



...such a weird map
of Italy...



Beekeeping in NZ



Beekeeping in NZ



Beekeeping in NZ



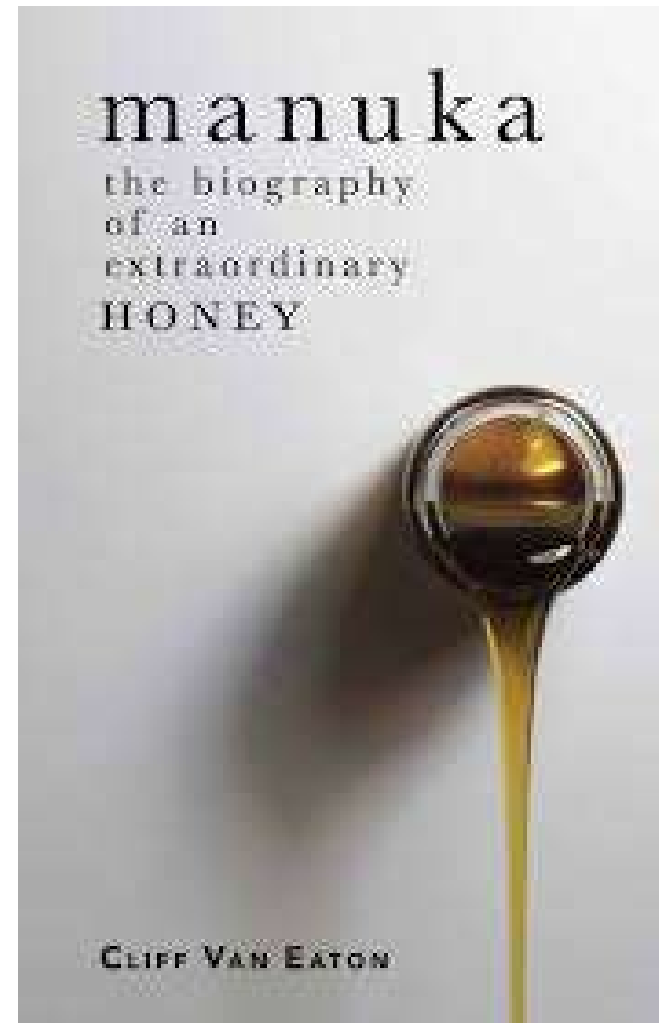
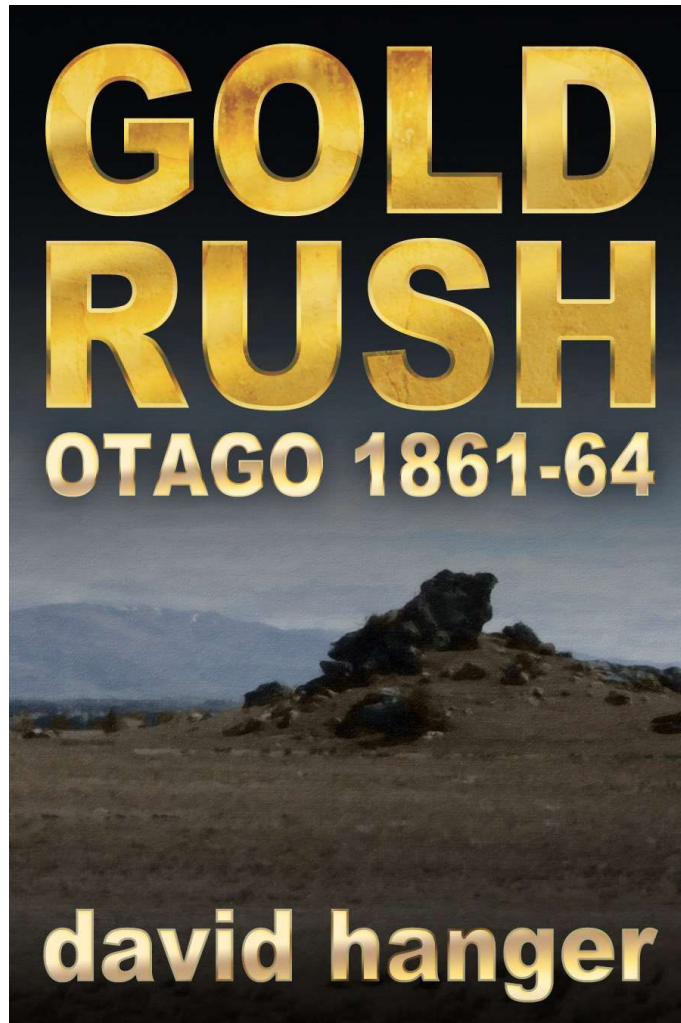
Beekeeping in NZ



**100%
PURE
NEW ZEALAND**



Beekeeping in NZ



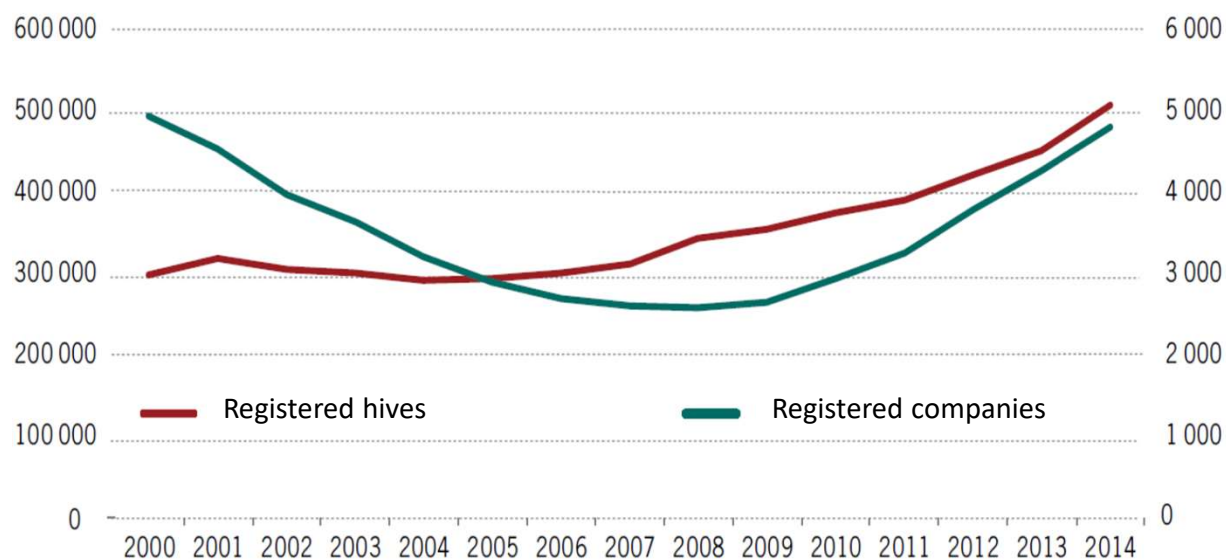
Beekeeping in NZ

Leptospermum scoparium



Beekeeping in NZ

NZ Beekeeping sector



- Production 2014 : 17000 tonns
- Export value2014 : 187 million \$ (8700 tonns)



Beekeeping in NZ

NZ Beekeeping structure

As at 30 June	2010	2011	2012	2013	2014
1 to 50 ²	2 440	2 722	3 237	3 671	4 126
5 hives or less	1 745	2 044	2 463	2 828	3 162
51 to 500 ³	319	336	351	379	443
501 to 1000	99	109	115	122	124
>1000	99	100	103	107	121
Total	2957	3267	3806	4279	4814

Notes

1 Registered beekeeping enterprises and hives under the National Pest Management Strategy for American Foulbrood.

2 Beekeepers with 1–50 hives are considered hobby beekeepers.

3 Beekeepers with greater than 350 hives are considered commercial beekeepers.

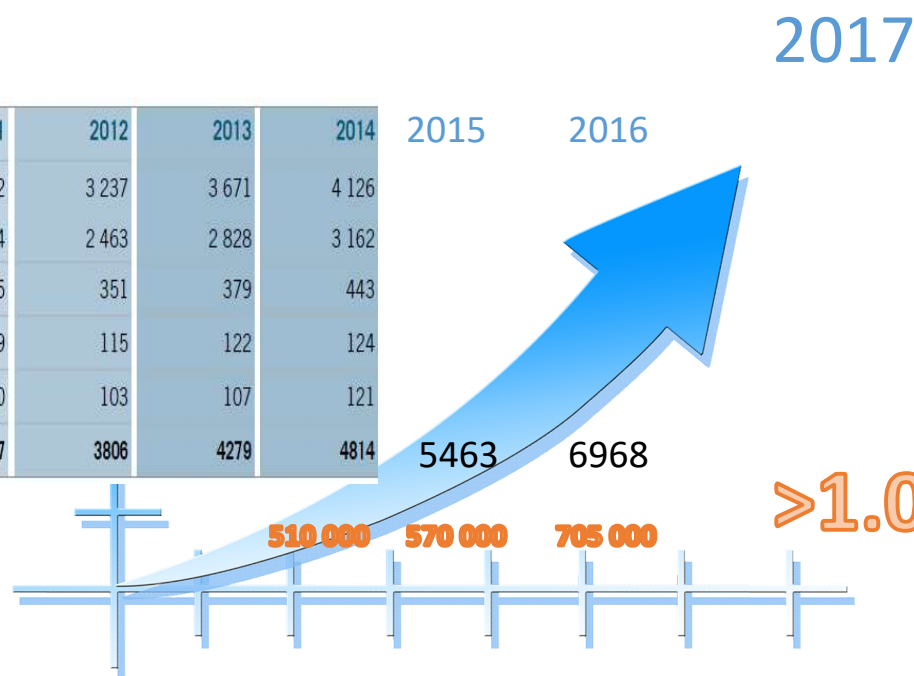
Source: AsureQuality Limited.

- 1 National Association – NBA
- Reference MPI – Ministry of Primary Industry

The «gold rush» is not over....

As at 30 June	2010	2011	2012	2013	2014
1 to 50 ²	2 440	2 722	3 237	3 671	4 126
5 hives or less	1 745	2 044	2 463	2 828	3 162
51 to 500 ³	319	336	351	379	443
501 to 1000	99	109	115	122	124
>1000	99	100	103	107	121
Total	2957	3267	3806	4279	4814

Hives



**Largest
company
100.000**



Beekeeping in NZ

Steens bulletts



- Family owned company born late '70s
- Starting business focused on Kiwi pollination service (Tauranga - Bay of Plenty)
- Manuka Honey exporter from late '90s (UK, Asia)
- 2005 Production Division moves to Masterton (Wairarapa)
- Employee : 3 managers + 10 admin + 15 beekeepers + 10 extraction
- Approx 7.000 hives & 3.000 mating nucs
- Yearly production: 150-200.000kg **manuka** + 9.000kg wax

Beekeeping @ Steens

What's a HUM?

Hive Unit Manager: experienced beekeeper leading a team of three people, managing 1.500 hives the whole season.

My HUM

Jerry Lunes
Queen Bee Manager



- Queen Rearing Team (QRT) – 3 people
- Managing 800 hives & 3.200 mating nucs
- Goal: 10.000 mated queen (internal needings) – est. market value 290.000€

Facilities

3200 mating nucs

800 hives

6 selected breeders
(*A.m.carnica* ???)

20 sites <60km from HQ

(extra staff Jan/Feb)



Grafting sites / Production sys

2 «twin» sites, each:

- 3 selected «breeders»
→ grafting units
- 4 queenless hives
→ «starters»
- 16 queenright hives
→ «finishers»
- 40 hives (body $\frac{3}{4}$; $\frac{3}{4}$)
→ brood & drones





Transport 0,5-4h



Mating sites

20 sites

160 mating nucs

4/pallet

2-ways langstroth $\frac{3}{4}$ boxes

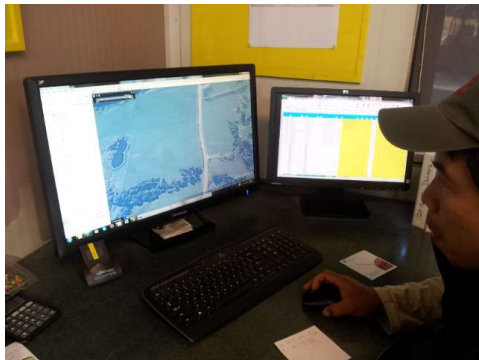
40 hives

drone production

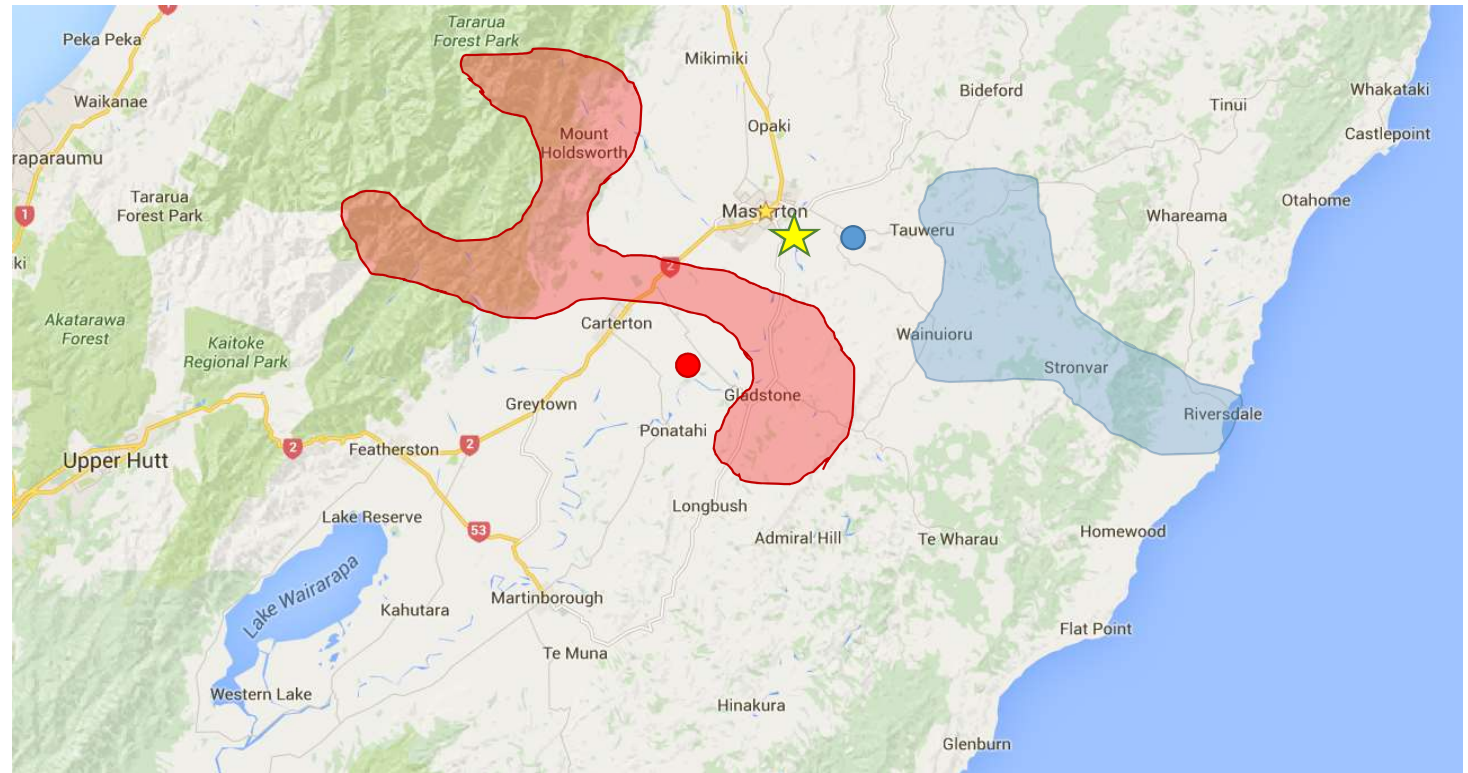
brood / honey needs



Organization



Logistic



Bee|Sources
una nuova risorsa
per la filiera apistica

Beekeeping in NZ

Nucs building



Nucs building



Nucs building



Nucs building



Nucs building



Nucs building



Beekeeping in NZ

Queenless starters 24-48h



Queenright finishers 10dd



Beekeeping in NZ

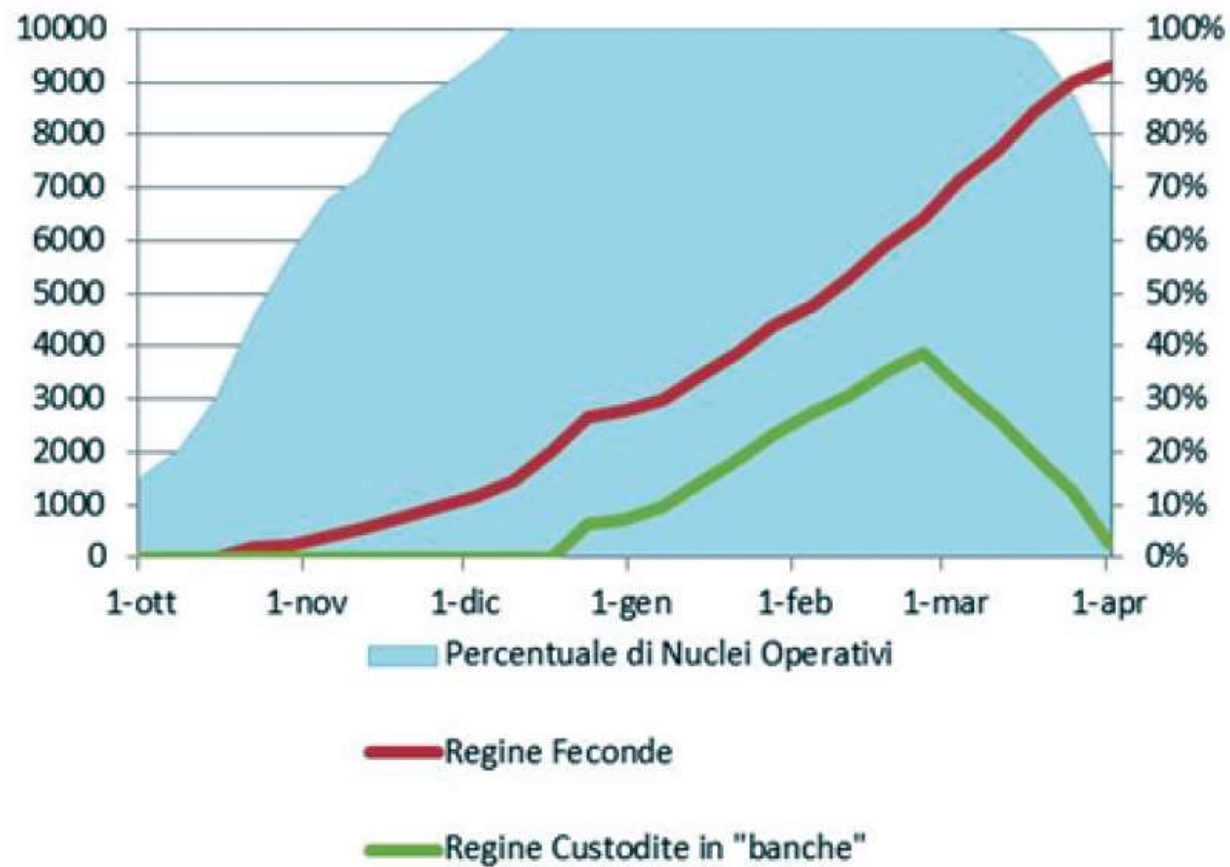
Harvesting (dd21to28 p.e.)



Queen banking



Season summary



Beekeeping in NZ



Beekeeping in NZ

DANKSCHEEN
 SPASSIBO
 SNACHALHUYA
 MUHUN
 CHALTU
 YAQHANYELAY
 TASHAKKUR ATU
 YUSPAGADATAM
 HUI
 WABEEJA
 MATTEKA
 SUKSAMA
 EKHMET
 MERSI
 SPASIBO
 DENKAUJA
 NEMACHALHYA
 UNALCHEESH
 TINGKI
 BIYAN
 SHUKRIA
 GRACIAS
 ARIGATO
 SHUKURIA
 TAVTAPUCH
 MEDAWAGSE
 BAIKA
 JUSPAXAR
 MERASTAMHY
 GAEJTHO
 GOZAIMASHITA
 EFCHARISTO
 AGUYJE
 FAKAAUE
 KOMAPSUMNIDA
 SANCO
 LAH
 MAKE
 GRAZIE
 MEHRBANI
 PALDIES
 YOU
 BOLZIN
 MERCI
 MINMONCHAR
 MAKETAI
 EKOJU
 SIKOMO
 HATUR
 GU



Bee|Sources
 una nuova risorsa
 per la filiera apistica

Beekeeping in NZ