Department of Primary Industries

NSW DEPARTMENT OF PRIMARY INDUSTRIES – HONEY BEE INDUSTRY TEAM

Written by Chris Anderson, Rod Bourke, Daryl Cooper, Ania Deutscher, Elizabeth Frost, Nick Geoghegan, Bianca Giggins, Victoria Gow, Stephen Green, Michael Hornitzky, Kelly Lees, Mark Page, Kevin Tracy

2020 NSW Apiarists' Association Annual General Meeting

New South Wales Department of Primary Industries (NSW DPI) is grateful to the NSW Apiarists' Association (NSWAA) for the opportunity given NSW DPI staff working with honey bees to highlight some of their activities and achievements for the past 12 months in the NSWAA proceedings. Our team responsibilities include biosecurity and vocational education, compliance, apiary sites on public lands, laboratory diagnostics, research and development.

NSW BEEKEEPER REGISTRATION STATISTICS – Current at 11 October 2019

REGISTRATION TYPE	BEEKEEPERS	PRODUCTION HIVES	NUCLEUS HIVES	WEIGHTED NO.
Business	852	249,687	29,538	257,072
Recreational	6,275	32,458	14,399	36,058
Recreational Concession	2,067	12,686	3,896	13,660
	BEEKEEPERS	**PRODUCTION HIVES**	**NUCLEUS HIVES**	**TOTAL HIVES**
TOTALS	**9,194**	**294,831**	**47,833**	**306,789**

Note: Weighted hives = production hives + (nucleus hives/4)

NSW DEPARTMENT OF PRIMARY INDUSTRIES STAFF

Chris Anderson – Manager Plant Biosecurity Prevention and Preparedness - Based at Orange, Chris inherited the bee biosecurity portfolio in NSW following changes to how bees are managed under national emergency response mechanisms. Chris manages regulatory policy as it applies to bee health and oversees both the NSW BBO program and Bee Pest Surveillance project.

Rod Bourke - Bee Biosecurity Officer (Commercial) – Based at Tocal, Rod work's to educate NSW commercial beekeepers about their responsibilities under the Biosecurity Act 2015 and The Australian Honey Bee Industry Biosecurity Code of Practice.

Daryl Cooper - Leader Qld Fruit Fly, Regulatory Specialist Apiaries – Based at Yanco, Daryl has worked with the NSW Department of Primary Industries since 2003 as a Regulatory Officer. Daryl is appointed inspector under the Biosecurity Act 2015. Daryl is keen to continue promoting biosecurity in the bee industry in NSW by conducting targeted compliance operations in southern NSW.

Ania Deutscher – Senior Bacteriologist Veterinary – Based in Menangle at the Elizabeth Macarthur Agricultural Institute, Ania leads NSW DPI's Veterinary Bacteriology Diagnostics team. Ania and her team perform the diagnostic tests for AFB, EFB and other bee diseases and are also involved in various bee related research activities.

Elizabeth Frost –Technical Specialist Honey Bees – Based at Tocal, Liz works as the DPI's technical authority for the beekeeping industry. Liz is responsible for the management of the Honey Bee Genetic Improvement Program, provision of technical advice and leadership through research and development, promotion and training of innovative technological developments for the industry. The position is the main point of contact between NSW DPI and greater Australian honey bee and pollination dependent industries and government agencies.

Nick Geoghegan – Program Coordinator Apiculture Resource – Based at Orange Head Office, Nick's work includes the rollout of the apiary sites on Public Land program; simplifying beekeeping on public sites with a consistent approach across government departments and fairer and more accessible allocation of available sites. Prior to joining the DPI Nick has held a number of senior roles in the telecommunications and technology sector, with a strong focus on product development, marketing, stakeholder engagement and customer experience.

Bianca Giggins – Bee Program Administration Assistant – Based at Tocal, Bianca joined NSW DPI formally in 2020 and provides administrative support to the Certificate III in Beekeeping qualification and Beekeeper Traineeship Program.

Stephen Green – Regulatory Officer Apiaries – Stephen is based at Grafton and currently holds a position of Regulatory Specialist Apiaries, focusing much of his compliance effort on ensuring the compliance of NSW beekeepers against requirements under the Biosecurity Act 2015. Stephen managed the emergency feed allocation response for the beekeeping industry in the 2019/20 bushfire season.

Michael Hornitzky – Consultant – Retired NSW DPI microbiological diseases and diagnostics research team leader and bee researcher, Michael now works for NSW DPI as a consultant at the Elizabeth Macarthur Agricultural Institute focused on EMAI's honey bee pest and disease diagnostic services.

Madlen Kratz – Honey Bee Industry Development Officer – Based at Tocal, Madlen joined NSW DPI in 2020. Madlen's background is in honey bee research focused on nutrition, foraging behaviour, and pollination in Western Australia.

Kelly Lees – Education Officer Honey Bees - Based at Tocal, Kelly joined NSW DPI in 2020 and coordinates the Certificate III in Beekeeping qualification and is responsible

for the development, delivery and compliance of accredited beekeeping training and assessment resources.

Danielle Lloyd-Prichard – Danielle has moved on from NSW DPI and Tocal College into the private sector, having contributed significantly to DPI's Certificate III in Beekeeping and Beekeeper Traineeship curriculum, delivery and as lead author of *AgGuide: Australian Native Bees*.

Mark Page – Bee Biosecurity Officer Surveillance – Mark is based at Tocal and is charged with fulfilling NSW duties to the National Bee Pest Surveillance Program including sampling to detect any new pest or disease incursion as well as floral sweeping for exotic bees to NSW. Mark also provides education for amateur beekeeping groups and the public on the specific needs required to keep bees; hive registration, the Biosecurity Act 2015 obligations, bee pest and disease identification.

Mick Rankmore – **Retired – Regulatory Specialist Apiaries –** After 42 years of continuous service to the department, Mick retired on 20 March 2020. Dedicated to his job and passionate about the beekeeping industry, Mick did everything he could within his power to improve outcomes for the NSW bee industry's biosecurity issues. Mick's attention to accuracy, detail and regulation in his working life and keen interest in bees make him an asset in his retirement to the Tocal College Certificate III in Beekeeping Program.

Alex Russell - Manager, Intensive Livestock Industries – Based at Dubbo, Alex is Liz Frost, Nick Geoghegan and Madlen Kratz' supervisor and oversees NSW intensive livestock industries including beekeeping, pork, dairy, chicken meat and eggs. Alex is the current secretariat for the inter-government Apiary Sites Working Group.

Doug Somerville – Retired - Technical Specialist Honey Bees – After 33 productive years with the department Doug Somerville retired on 13 May 2020, having published numerous practical research studies and publications for the beekeeping industry including *Honey and Pollen Flora of South-Eastern Australia*, to name but one of many achievements. Doug will continue to be an asset to industry in his role as Chair of the AgriFutures Honey Bee and Pollination Research Panel and as a subject matter expert.

Kevin Tracy - Beekeeping Traineeship Development Officer – Based at Tocal, Kevin coordinates the Beekeeping Traineeship Program which works with new entrants to the beekeeping industry employed by NSW and QLD commercial beekeepers where they receive a mix of on the job training and training delivery through Tocal College Registered Training Organisation (91166).

BEE BIOSECURITY OFFICER REPORT

Written by Rod Bourke

As you should all now be aware the Australian Honey Bee Industry Biosecurity Code of Practice (the Code) is becoming a condition of registration in NSW from 1st July, 2020. I have spent a lot of time promoting the Code in the last 12 month period, including

getting to 5 of the NSWAA branches to discuss (before the COVID-19 situation stopped any further travel) as well as at other events like the Tocal Bee Field Day. I am also presenting the new qualification of the Tocal Bee Pest and Disease course, called Bee Biosecurity. This 2 day face to face course is a great way to update beekeepers about their bee pest and disease issues. Many beekeepers that do this course are then able to modify and improve their beekeeping operations to better manage AFB and reduce their number of weaker hives (which are a major biosecurity threat).

With July 1st not far away there are still a lot of commercial beekeepers that do not have a current bee pest and disease qualification (valid for 3 years) to comply with the Code. The Biosecurity for Beekeepers BOLT online course is another way of achieving this, so please check your email to see if you have previously received a code from rod.bourke@dpi.nsw.gov.au to do the course, otherwise email your name and bee brand to me and I will send one out.

A valid bee pest and disease qualification needs to be listed on your Appendix 1 every year, along with the period when all hives were given a brood check, mite surveillance done in each apiary and results of honey tests for AFB spores.

If you do receive an AFB spore count in your honey tests (best to check every load) then please contact me so that we can discuss ways in which you may start managing a potential AFB issue. If the result is 2+ or 3+ then you would probably have already found a number of cases of AFB, so we can go through ways in which you can get on top of that problem and clean it up.

In late June-July last year Mark Page and myself went to NZ on a Varroa study tour, hosted by Hayley Pragert of NZ Ministry of Primary Industry. This was an eye opener, and whilst the effects of unmanaged varroa are horrific it did reinforce the fact that if you manage your hives and varroa then you can still have a profitable and productive beekeeping business and industry. Not all beekeepers currently keeping bees would be able to last in the industry if Varroa gets established in Australia, but for those that already do manage their hives well (and for those who would like to learn how to) then a post-Varroa Australia still holds opportunity. In saying that it would still be far better to keep Varroa out, so every beekeeper (large as well as small) needs to do their regular mite surveillance in order to detect any problems early, as then we can manage it.

BEE BIOSECURITY OFFICER SURVEILLANCE REPORT

Written by Mark Page E: mark.page@dpi.nsw.com.au M: 0409 299 415

NSW DPI has once again promoted April as Sugar Shake Month and this initiative has been supported by the NSW Apiarists' Association and the Amateur Beekeepers Association. Not only does this cover a wider area of surveillance for exotics such as Varroa it is also helping beekeepers familiarise themselves with the upcoming Honey Bee Industry Biosecurity Code of Practice requirements coming into effect from 1 July 2020. The Code outlines the requirement to conduct two surveillance inspections for exotics per year. Alcohol wash and drone uncapping are also acceptable methods of surveillance under the code and all beekeepers are required to keep records of their surveillance activities.

The NSW component of the National Bee Pest Surveillance Program has met all current Milestones to date. At this point in time we will be endeavouring to continue delivery of the surveillance program as an essential activity under the Covid-19 situation conditions but will keep this under continuous review as the situation changes. The DPI Biosecurity and Food Safety team have also been busy developing the training material for a Bee Emergency Response Team (BERT) in conjunction with Tocal College. The course is currently at the point of review for validation and is on track to be completed by June 30. A special thanks to Leonie Martin (NSW DPI Biosecurity & Food Safety) for her efforts on this.

Due to Covid-19 we have had to cancel our upcoming community engagement program of visiting beekeeping clubs, field days, shows and conference's delivering on The Code and the upcoming changes. We are still working with the industry associations to keep engaging wherever possible. Key messaging is currently going out through our bee biosecurity newsletter and face book page and will progress this further as things unfold. Until next year when hopefully we will meet again face to face, take care.

COMPLIANCE REPORT: BIOSECURITY & FOOD SAFETY

Compiled by Daryl Cooper and Stephen Green

Commercial apiary industry biosecurity management in NSW

Purpose

The Southern regions of NSW and Northern Victoria have a large commercial almond industry dependent on the Murray & Murrumbidgee River irrigation systems. Each year the planting area in NSW is expanding by 30%. Last season the Australian almond industry was worth $429 million. A total of 39662 hectares is planted to almonds at this time, which produced 85,000 tonnes of crop. Production consisted of 68% grown in Victoria, 19% in SA & 13% in NSW.

The horticultural industry relies on apiarists to assist with the pollination of trees to produce summer fruit. This pollination event sees approximately 140,000 hives from NSW, Victoria, South Australia and Queensland coming into the area to participate in pollination. The convergence of such a large number of hives could increase the biosecurity risks to those participating in the event, with weak or poorly managed hives presenting a potential source of pests and disease.

Two operations have been developed as annual compliance events to assess the biosecurity risk imposed to commercial apiary enterprises by situating substantial numbers of bee hives in close proximity in an intensive pollination event. The Sunraysia operation was carried out jointly by the primary industries departments of NSW & Victoria. Another three operations were conducted to target recreational and small commercial apiarists in the Mudgee, Batemans Bay & Tumbarumba districts.

The purpose of the operations is to inspect live bee colonies for notifiable contagious brood diseases. Action is to be taken if any diseases are identified; thus preventing, controlling and managing the negative impacts of pests and diseases to commercial and recreational apiary enterprises.

Background

Weak and diseased beehives have the potential to be robbed by healthy bees. Brood diseases such as American foulbrood (AFB), may spread to other owner's hives situated within flight range. This can have a significant impact on the cost, efficiency & productivity of businesses within the NSW apiary industry.

These operations were planned with a common goal, which was to address the issue of beekeeper's having weak and diseased hives in pollination events or residential areas. This biosecurity duty impacts recreational beekeepers, the orchardist's production and the health of other commercial apiarist hives.

The *Biosecurity Act 2015* and the *Biosecurity Regulation 2017* allows DPI to take compliance and enforcement action against beekeepers to ensure biosecurity threats are managed and risks are mitigated against their general biosecurity duty.

As well as taking appropriate compliance and enforcement action, the operation aimed to raise awareness, provide education and undertake enforcement action where appropriate against NSW beekeepers that posed a biosecurity risk to other apiarists.

What we did

A total of 2084 brood inspections were conducted as part of the operations. These inspections were carried out on NSW beekeeper's hives in 268 locations within NSW & Victoria.

Details outlined below:

Locality	Apiaries	Number of hives
Almond Farms VIC	16	1607
Almond Farms NSW	182	16227
Tumbarumba	10	1505
Batemans Bay	16	1173
Mudgee	44	1326
Total	268	21838
Total # hives Inspected		2084

Key biosecurity indicators

Biosecurity and Food Safety Compliance officers assessed the following key biosecurity indictors during on-site inspections to determine if there was a biosecurity risk present: e.g.

- Was there any evidence of disease or pests present during the brood inspection (exotic or endemic)?
- Did the weak or diseased hives pose a biosecurity risk to surrounding apiarist's hives?
- Where surrounding apiaries in a state of neglect, or were they being managed appropriately to minimise and manage a biosecurity risk?

After the inspection, apiaries where deemed as either posing or not posing a biosecurity risk.

Figure 1. Smoking hives for brood access

What we found

Inspection results

Of the 268 apiaries inspected:

- **240** (90%) posed no biosecurity risk;
- **26** (9%) posed a Minor biosecurity risk:
- **2** (1%) posed a significant biosecurity risk:

The majority of apiaries inspected were not deemed to pose a biosecurity risk due to the following reasons:

- Biosecurity risks were appropriately managed
- A management plan was already in place; E.g. the weak hives inspected on a previous audit by the broker were moved to a location that posed no risk to surrounding apiaries;
- Weak hives were made bee proof and did not require intervention.

Figure 2. Positive infield test for AFB

Reasons for neglect, (biosecurity risk presence)

Throughout the operations, the primary reasons that apiaries fell into neglect and caused a biosecurity risk were:

- poor management practices;
- environmental issues (drought conditions)
- suspected misuse of prescribed antibiotics
- financial issues;
- succession issues

Compliance and enforcement action

The following action was taken in relation to these non-compliances.

Action/Sanction issued	Number
Biosecurity Direction	4
Biosecurity Direction (Verbal)	21
Biosecurity Undertaking	0
LOW	2
PIN	1
Prosecution	0

Strategies to manage biosecurity risk

Biosecurity and Food Safety Compliance officers proposed the following strategies to owners of the apiaries identified as posing a biosecurity risk in a bid to mitigate these risks: e.g.

- ongoing disease surveillance programs;
- regular suspect brood sample tests;
- removing & culling weak hives from loads going to pollination events;

- compilation of management plans with BBO;
- Disease spread mitigation, such as bee proofing affected hives.

Figure 3. AFB positive hive that was being robbed before intervention

Taking remedial actions

The photo above & below are examples of remedial action being taken as hives had been found being robbed in an apiary. The hives are made bee proof to eliminate the risk of robbing which will manage the potential of disease transmission.

Figure 4,. Dead Out hive made beeproof

Outcomes

The targeted apiary operations were successful in identifying and minimising or eliminating several biosecurity risks associated with notifiable apiary diseases. Each year the standard of compliance is improving. Voluntary compliance in the commercial and recreational areas of beekeeping is encouraging.

Inspections by DPIE provided sufficient motivation for some work to be undertaken by apiarists to satisfy the

requirements of minimising a biosecurity risk. In other cases, enforcement sanctions were issued to assist in addressing biosecurity risks.

The operation raised awareness within the States involved of the need to continue to mitigate biosecurity risks in relation to pollination activities.

Commercial and recreational apiarists subjected to inspections now have a better understanding of their requirements under the *Biosecurity Act 2015* and their general biosecurity duty.

Next steps

Part of the ongoing strategy to manage notifiable apiary diseases is that the Department will undertake future operations to support regular surveillance activities undertaken by the local compliance staff.

Future operations for 2020 are planned for Wollongong, Young & Bega regions.

More information

For further information visit:
https://www.dpi.nsw.gov.au/biosecurity

2019 BEE DISEASE DIAGNOSTICS & AFB MINIMISATION STRATEGY

Written by Ania Deutscher and Chris Anderson

The Elizabeth Macarthur Agricultural Institute (EMAI), located in Menangle, provides diagnostic services for bee diseases in NSW and other states and territories. This service primarily relates to American foulbrood (AFB) and European foulbrood (EFB), although a diagnostic service is also provided for other diseases, such as nosemosis and chalkbrood.

In 2018, the Bee Industry Biosecurity Consultative Committee developed an AFB Minimisation Strategy, which has the goal of reducing the impact of AFB on the NSW beekeeping industry and plant industries that benefit from pollination. EMAI provides the laboratory services for this strategy which primarily involves the examination of larval smears and testing of honey for AFB spores.

Photo 1. Processing of honey samples for *Paenibacillus larvae* (AFB) spore culture. Photo by NSW DPI.

The aim of the strategy is to reduce the incidence of AFB across NSW through five key programmes:

1) Establish an objective measure of AFB incidence;
2) Establish disease reduction goals;
3) Improve diagnostic services and data management;
4) Incorporate the Australian Honey Bee Industry Council Code of Practice into NSW beekeeping regulations;
5) Develop a whole of industry approach to Compliance including regulatory measures and market driven incentives to be compliant with the Code.

DPI has made significant progress in establishing an objective testing regime to annually measure the level of AFB across the industry, identifying the current level of AFB in the state using this method, improving diagnostic services and data management, and incorporation of the Code into NSW beekeeping regulations. Monitoring and implementation of the

strategy is ongoing through the BIBCC. Work is ongoing nationally to mandate the Code into all jurisdictional beekeeping regulations opening up the path for the Code to serve as a quality assurance and market access mechanism for beekeepers.

The following laboratory results for 2019 includes testing of diagnostic samples and samples submitted for the AFB Minimisation Strategy.

Larval smears: 497 larval smears were submitted for examination. Of these 156 were positive for AFB; however, some submissions had multiple smears. 130 were positive for EFB.

***Paenibacillus larvae* (AFB) spore culture on honey samples:** 582 honey samples from NSW were tested. 32.7% were positive for AFB spores. Of the total number of honey samples tested, 8.6% were AFB positive with a 3+ score.

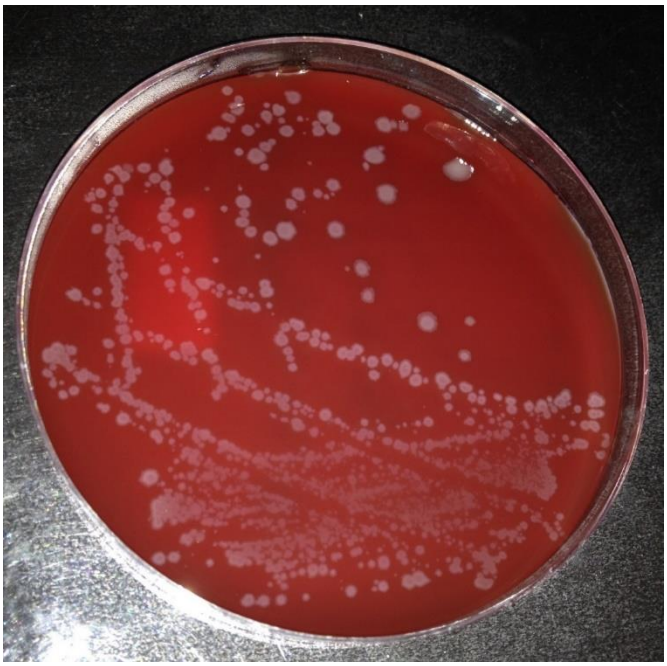


Photo 2. *Paenibacillus* larvae streaked out on a blood agar plate. Photo by Khushbu Gandhi.

In addition to the above, in 2019 the Bacteriology Diagnostic Laboratory at EMAI:

- Introduced a bee diagnostic specific submission form: https://www.dpi.nsw.gov.au/about-us/services/laboratory-services/sample-submission
- Updated the Laboratory Services webpage on bee diagnostic testing services available:
    - https://www.dpi.nsw.gov.au/about-us/services/laboratory-services/veterinary/veterinary-test-list-by-species/bees
    - https://www.dpi.nsw.gov.au/about-us/services/laboratory-services/veterinary/bee-diseases
- Demonstrated that AFB (*Paenibacillus larvae*) isolates from NSW are still sensitive to Oxytetracycline (OTC)
- Introduced OTC testing on powders from hives infected with AFB for NSW DPI Biosecurity and Regulatory officers
- Provided AFB diagnostic services for the Northern Territory Government, after confirming the presence of AFB in the NT
- Reduced the cost of honey testing for AFB spores by culture

TOCAL COLLEGE EDUCATION REPORT

Written by Kelly Lees, Kevin Tracy and Bianca Giggins

ACCREDITED BEEKEEPER TRAINING

In 2019/2020 Tocal College has begun delivery of the new Certificate III in Beekeeping- AHC31818. This new qualification has seen an increase in the units of competency from 16 to 18, with 13 core units required including the new unit AHCBEK311 - Transport hives by road to a new apiary site. Some new units contained in the qualification have been written by the Education team completely from scratch and other units have been updated to reflect industry current changes.

Interest in the qualification has continued to grow with a large number of applications and enquiries. 2019/2020 has seen the enrolment of 4 cohorts of students in the new qualification totalling 39 students and 9 trainees. Unfortunately, the COVID-19 pandemic has seen Tocal postpone some face to face training for existing and incoming Cert III students, however, these students are forging ahead with online training using our Canvas platform and getting to know their trainers in the virtual learning space.

The COVID-19 pandemic has also resulted in Tocal College cancelling its scheduled graduation ceremony for students completing qualifications in 2019, including our final graduates in the previous Certificate III qualification AHC32016, totalling 37 students.

Tocal has also delivered a number of highly successful short courses and funded courses at Paterson and around the state during 2019/2020 including Beginning in Bees, Honeybee Biosecurity, Artificial Insemination and Spring Management. For more information and to apply visit https://www.tocal.nsw.edu.au/courses/bees/certificate-iii-in-beekeeping or contact:

Kelly Lees – Education Officer Honey Bees E: kelly.lees@dpi.nsw.gov.au M: 0438 627 819

TRAINEESHIP PROGRAM

Traineeships is a growth area for the beekeeping industry and Tocal College has a full time Beekeeper Traineeship Development Officer, Kevin Tracy, coordinating this program. Not only is this program available in NSW. The high demand from commercial beekeepers in Queensland has resulted in Tocal College gaining registration in Queensland to deliver subsidised Beekeeper Traineeships. Tocal College has Trainees engaged from the NSW Riverina to Kingaroy, QLD who work under the supervision of their employer gaining on the job training and a Certificate III Beekeeping qualifications at the same time.

Beekeeping traineeships are available to paid employees of beekeepers and can be enrolled in throughout the year at Tocal College. Traineeships can attract substantial subsidies for employers and are a great way to foster best practice in the next generation of beekeepers and sustain the Australian Beekeeping Industry. For more information and to apply visit https://www.tocal.nsw.edu.au/traineeships/beekeeping-traineeship or contact:

Kevin Tracy – Beekeeping Traineeship Development Officer
M: 0428 193 501 E: kevin.tracy@dpi.nsw.gov.au E: tocal.traineeship@dpi.nsw.gov.au

PUBLICATIONS REPORT CARD

Prepared by Victoria Gow

Books sold from 1 April 2019 to 31st March 2020:

Bee Agskills	1787
AgGuide: Healthy bees	869
AgGuide: Queen bee breeding	452
AgGuide: Australian native bees	381
AgGuide: Honey	424
AgGuide: Pollination	158
Honey and pollen flora of South-Eastern Australia	842
TOTAL SOLD	4913

During the 12 month period from 1 April 2019 until 31 March 2020. A total of 4,913 publications were sold Australia-wide with an average of 409 bee publications sold per month. Bee AgSkills is the top publication with 1,787 copies sold. A greater interest in Biosecurity has seen an increase in the number of Healthy Bees AgGuides sold in this period.

PUBLICATIONS

Tocal offers six beekeeping publications available as both hard copy and digital ebooks. Search the Tocal website: https://www.tocal.nsw.edu.au/publications for the latest titles and to order copies. All of these titles are used to support learning in the Certificate III in Beekeeping qualification. There is a discount available to Beekeeping associations for Tocal publications used to train members.

For more information please contact **Victoria Gow, Publications Officer, Tocal College**

T: (02) 4939 8867 E: victoria.gow@dpi.nsw.gov.au

Bee Agskills – A Practical Guide to Farm Skills

Provides a basic guide to some of the skills and practices of bee production. The book contains step-by-step instructions, diagrams and full-color pictures. 114 pages Contributors: Nick Annand, John Rhodes, Doug Somerville, Elizabeth Frost

AgGuide - Healthy bees: managing pests, diseases and other disorders of the honey bee

Pests and diseases can attack specific stages in the lifecycle of the honey bee and they can also attack specific castes. This publication covers the management of pests, diseases and other disorders of the honey bee. 82 pages. Contributors: Doug Somerville, Nick Annand

AgGuide – Queen bee breeding

The definitive publication on queen bee breeding in Australia. Covers cell raising, grafting, nutrition, pests and diseases, reproductive biology, genetics, mating apiaries, queen banking, controlled mating, package bees and much more. 174 pages. Contributors: Elizabeth Frost, Doug Somerville

AgGuide - Australian native bees

Combining the substantial expertise of many of Australia's leading native bee researchers, this book is a guide to observing and keeping Australia's broad range of native bee species. 174 pages. Contributors: Anne Dollin, Katja Hogendoorn, Tim Heard, Saul Cunningham, Romina Rader, Manu Saunders, Tanya Latty, Caragh Threlfall, Tobias Smith, Megan Halcroft, Danielle Lloyd-Prichard

AgGuide – Honey: harvesting and extracting

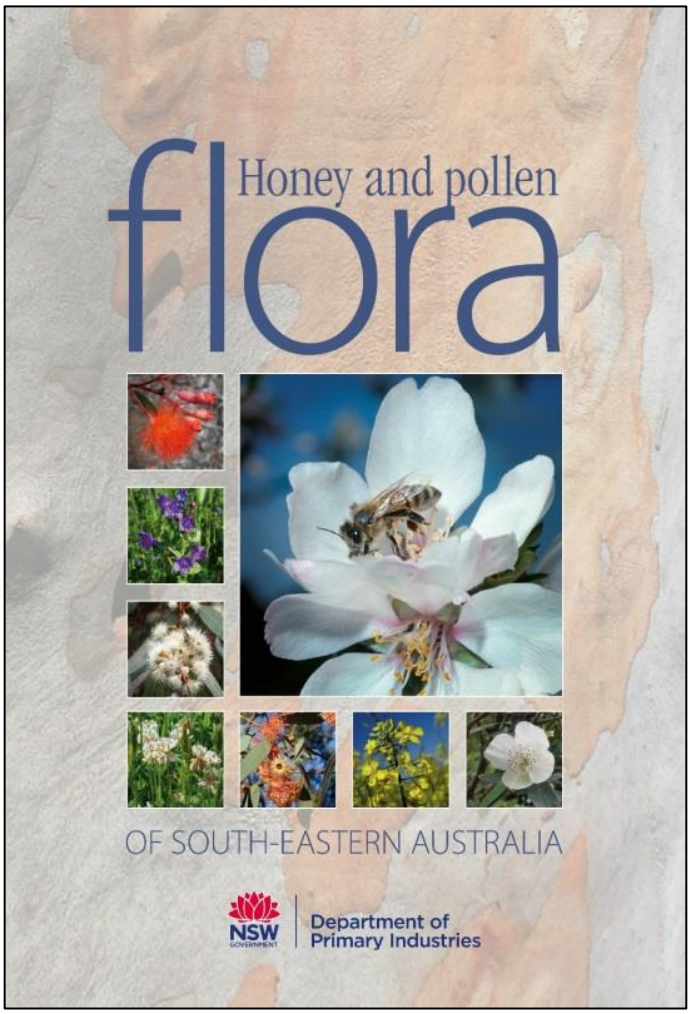
This book informs beekeepers of best practices so that their hard work results in a product of optimum quality. It also informs beekeepers of the threats to honey quality which can occur through poor handling skills or poor design of facilities. It includes references to legislation about food production, where relevant. It shows the way to document procedures so that they can be used as evidence of best practice. 122 pages. Contributors: Bill Winner, Doug Somerville, Elizabeth Frost

AgGuide – Pollination using honey bees

Beekeepers and growers of horticultural crops, broadacre crops and pastures all benefit from bees visiting flowers. This book informs the beekeeper about preparing and maintaining bees so that they are fit for the pollination task and informs the grower about creating an environment for best results. It describes the specific bee stocking rate required for more than sixty plant species and includes a section on making a business agreement between grower and beekeeper. 152 pages. Contributors: Doug Somerville, Elizabeth Frost

Honey and pollen flora of South-Eastern Australia written by Doug Somerville

Honey and Pollen Flora of South-Eastern Australia launched at the 40th annual Beekeeping field Day at Tocal 12th October 2019 it has so far sold 842 copies. The book includes plant profiles of 515 species including descriptions, soil preferences and flowering periods. A 'star rating' system assists the reader in evaluating individual flowering species and their relative value to beekeepers (where available) for both pollen and nectar production.



INTENSIVE LIVESTOCK INDUSTRIES REPORT

Written by Elizabeth Frost

Exciting times in the Intensive Livestock Industries bee unit with the hire of Madlen Kratz as Honey Bee Industry Development Officer, starting full time from 18 May 2020. Madlen's background is in honey bee research focused on nutrition, foraging behaviour, and pollination in Western Australia. Some of you may have met Madlen at the NSWAA Southern Tablelands Supplemental Feeding Field Day this year where she talked about her PhD work on the importance of nutrition for honey bee health and colony performance during crop pollination. Madlen looks forward to helping industry grow and develop with the support of scientific evidence.

After an illustrious career with NSW DPI, Dr. Doug Somerville has retired as of 13 March 2020. The role of Technical Specialist Honey Bees is now filled by Elizabeth Frost, based at Tocal. Please get in touch if you'd like to discuss any industry issues or my current research priorities.

Liz Frost – Technical Specialist, Honey Bees
M: 0473 731 273 E: elizabeth.frost@dpi.nsw.gov.au

Current research and development priorities:

National Honey Bee Genetic Improvement Program (aka "Plan Bee")

Written with collaborators Dr. Nadine Chapman and Fiona Chambers

The program is funded April 2020 to June 2022. Plan Bee aims to foster a sustainable national genetic improvement program using innovative breeding technologies to transform the performance of honey bees in Australia. It will focus on traits of importance to beekeepers, and horticulture and broadacre industries dependent on honey bee pollination. The strength of this project lies in its ability to leverage benefits across multiple industries by creating a more profitable and sustainable beekeeping industry, improving crop pollination efficiency, and enabling industry expansion through enhanced pollination security.

What we will deliver

- A research apiary based at Tocal Agricultural College with 50 breeder queens and 200 production colonies tested under commercial beekeeping conditions
- Standardised selection criteria that improve honey bee performance, decrease the cost and impact of disease, increases the amount of honey produced, and the value of hives as pollination units
- A literature review of past and current bee breeding programs both in Australia and overseas to ensure that we implement best practice
- Modelling of breeding structures to determine the optimal set-up for the program
- Economic modelling and a business plan to ensure a sustainable program
- A study of genetic diversity
- Undertake genetic analysis to establish pedigrees and genetic merit
- An online database of estimated breeding values for selection traits
- Increased value of honey bee colonies as pollination units through crop-specific knowledge of colony characteristics associated with pollination efficiency
- Determine the needs of beekeepers and growers through surveys and workshops
- Extension programs that increase the capacity and skills of queen bee producers, beekeepers, and pollination contractors
- Survey of domestic queen sales to understand buyer and seller patterns and thus help to grow the market
- A strategic plan for the distribution of queens from the program

Team

- AgriFutures Australia – Paul Blackshaw and Annelies McGaw
- NSW Department of Primary Industries – Elizabeth Frost and Alex Russell
- Sydney University – Nadine Chapman and Benjamin Oldroyd
- University of New England Animal Genetics and Breeding Unit – Robert Banks
- Better Bees WA Inc – John Davies and Tiffane Bates
- Wheen Bee Foundation – Fiona Chambers

Who supports us

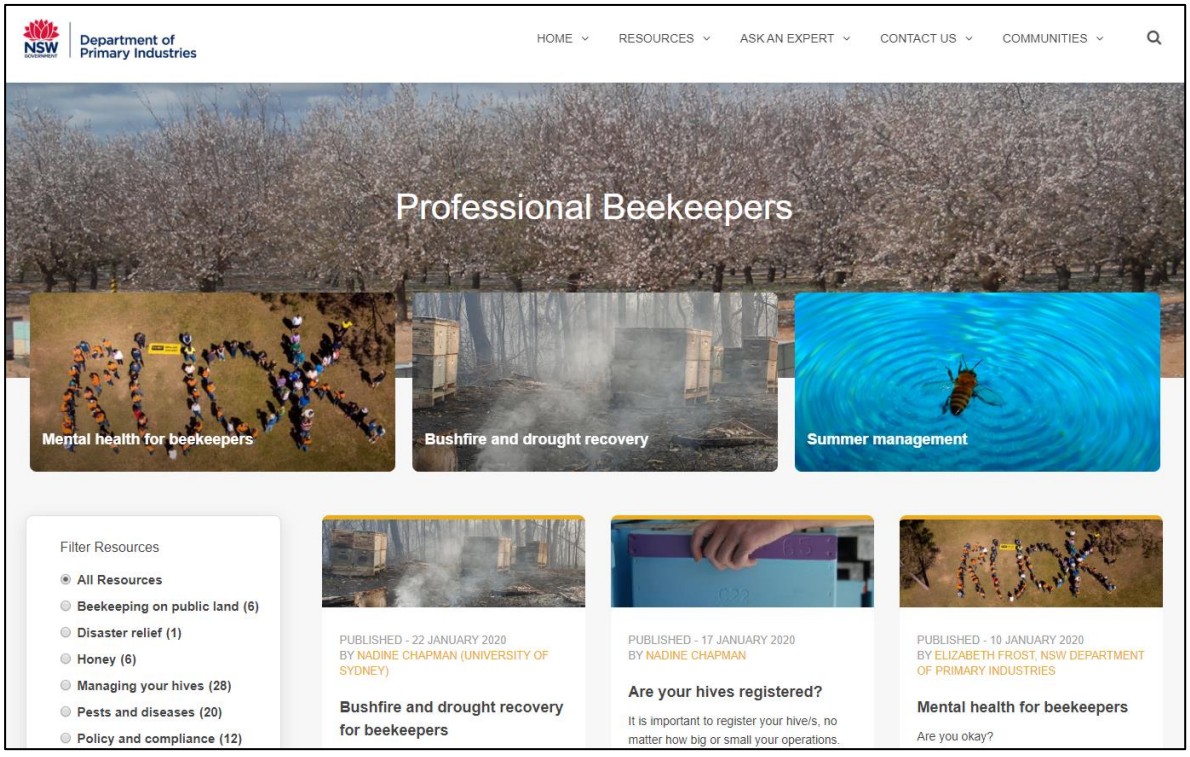
Plan Bee is supported by funding from the Australian Government Department of Agriculture, Water and the Environment as part of its Rural Research and Development for Profit program. The project is further supported by AgriFutures Australia, NSW Department of Primary Industries, University of Sydney, University of New England, Better Bees WA Inc, Wheen Bee Foundation, CostaGroup, Olam, Beechworth Honey, Monson's Honey and Pollination, Auston, South Pacific Seeds, and commercial beekeepers. The program is funded February 2020 to June 2022.

Steering committee

A steering committee will meet twice a year to provide support, guidance and oversight to the projects, review the projects and output, and provide input of the dissemination of the learnings and results of the projects. The steering committee includes the project team, major investors, and industry representatives.

How we will communicate with you

- Bi-monthly AgriFutures Australia newsletters
- An AgriFutures Australia webpage
- The eXtensionAUS Professional Beekeepers website, Facebook page, LinkedIn page, and Twitter account
- Talks at industry conferences
- Manuals, industry publications, and training courses



Professional Beekeepers Community of Practice (CoP) - managed within AgriFutures ExtensionAUS™ platform, Professional Beekeepers CoP is a website which

gets current, relevant information to professional beekeepers from credible sources on topics like: new research, professional beekeeper case studies, pests and diseases, nutrition, queen breeding, seasonal management, education, beekeeping for profit.

Team: Rod Bourke, Fiona Chambers, Nadine Chapman, Casey Cooper, Liz Frost, Steven Fuller, Tom Gillard, Ros Gloag, Michael Holmes, Corinne Jordan, Diana Leemon, Danny Le Feuvre, Danielle Lloyd-Prichard, Ruth Luckner, Sam Malfroy, Ben Oldroyd, Mal Porter, Emily Remnant, John Roberts, Doug Somerville, Bruce White.

Our YouTube channel videos titles, view times and top five shaded in green:

	Video title	Views	Average view duration	Watch time (hours)	Impressions
		841	**0:02:12**	**37.8809**	**3848**
1	10 Bee breeding	67	0:02:05	2.3442	249
2	10 Honey labelling	55	0:02:05	1.9175	291
3	AHBIC	47	0:01:07	0.8811	324
4	Almond pollination Trevor Monson	85	0:00:51	1.2229	310
5	Asian honey bees in Australia	10	0:01:57	0.3266	3
6	Assessing a potential apiary site	92	0:01:25	2.1966	393
7	Barrier management	22	0:00:54	0.332	316
8	Comb and chunk honey	51	0:04:01	3.4166	180
9	Creamed and candied honey	24	0:01:57	0.7846	112
10	Hive management - Autumn and Winter	51	0:02:19	1.9787	370
11	Honey and Pollen Flora of South Eastern Australia	62	0:05:58	6.1813	318
12	Honey levies	36	0:01:08	0.6871	266
13	Honey testing	32	0:00:57	0.5124	284
14	Polyandry	42	0:00:49	0.5814	50
15	Supplementary Feeding with Doug Somerville	165	0:05:16	14.5179	382

Follow us on the web **https://extensionaus.com.au/professionalbeekeepers/home**

Click on the icons above which are linked to the Professional Beekeepers profile on each. Please follow us and let me know if you'd be willing to share your expertise with industry and contribute a case study on something your beekeeping business excels in.

Other outcomes and contributions

- Photography for NSWAA Apiary sites on public lands - a position paper
- Published almond pollination research "*Bloom progression is the preferred predictor of when to remove Honey Bee (APIDAE: Apis mellifera) hives from almond orchards*" in Journal of the Entomological Society of NSW Inc.
- AgriFutures grant approved for extensionAUS Professional Beekeepers 1.5 day workshop for 20 writers and reviewers and operational costs
- AgriFutures grant approved with project lead Dr. Jamie Ayton (NSW DPI) to study the chemical composition of Australian honeys

- Collaboration with University of New England AgriFutures Project Progressing implementation of genetic selection in Australian Honey Bees
- Delivered accredited training through Tocal College Using Bees for Pollination and Artificial Insemination of Queen Bees with co-trainers Casey Cooper, Adrian Grew, and Kevin Tracy.

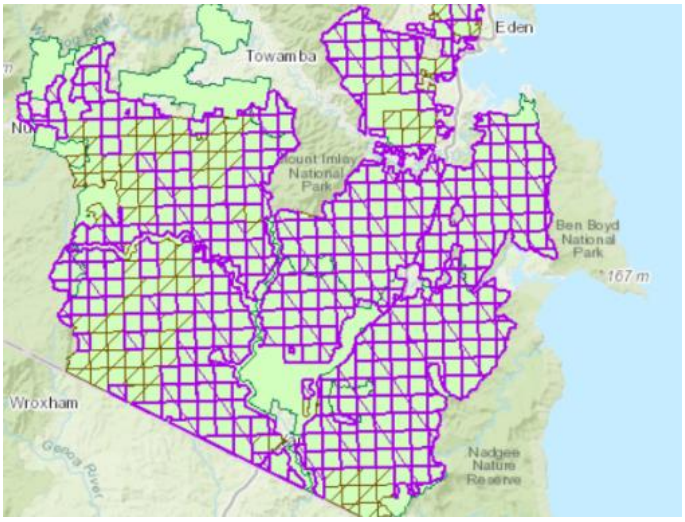
APIARY SITES ON PUBLIC LAND PROGRAM REPORT

Written by Nick Geoghegan

This year has seen major progress in the implementation of the new policy framework for apiary sites. We have achieved some major milestones during the last 12 months to help improve access to public beekeeping sites:

Online Pilot of the Long Term Vacant allocation process with Forestry Corporation NSW

Under the NSW apiary policy, allocation of sites which have been vacant for more than 2 years is managed on a First-Come, First-Served basis. In July 2019 the DPI and Forestry Corporation NSW started an online pilot that involved publishing a map of available potential apiary sites on the DPI website. Over 3,700 potential apiary ranges were published in an interactive online map.



This is the first time apiarists have had this visibility across the whole State Forest estate. It represented a great opportunity but also a challenge to ensure requests were treated strictly in the order in which they were received.

With input from the NSWAA an online hold system was created to ensure that apiarists did not travel unnecessarily while still ensuring the first to enquire or apply got the highest priority for applications.

An additional staff member helped to process the initial rush with 113 hold requests and 87 site applications in the first week. Since the initial rush, requests have slowed down but as of writing we are still receiving hold requests

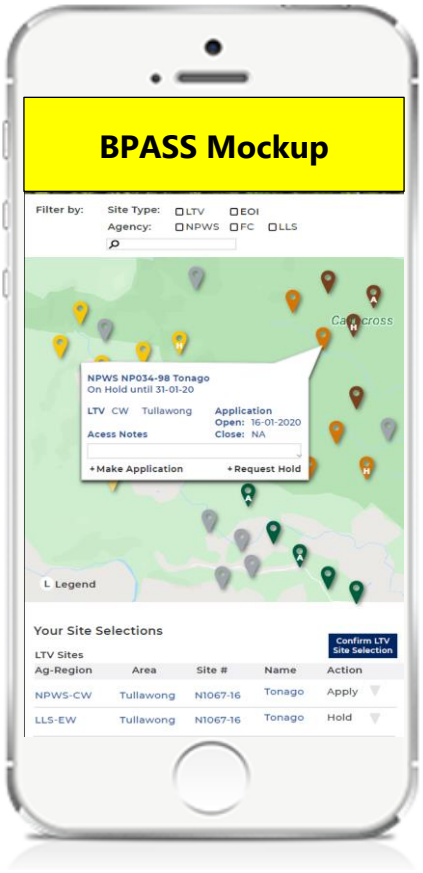
and site applications. 1,671 hold requests have been processed and 650 sites have been allocated through this process as of April 2020.

We acted on apiarist feedback during the pilot: modifying the forms and with support from Forestry Corporation offering an option to defer sites during the last 6 weeks before the new permit year in October 2019. The technology platform performed well and key learnings were gained in the development of the new online apiary site system; BPASS.

The pilot is still available on the DPI website; linked from the Beekeeping homepage: https://www.dpi.nsw.gov.au/animals-and-livestock/bees

Development of the new online apiary system: BPASS.

Now dubbed BPASS (Beekeepers Public Apiary Site System) the development of the new online apiary system has made major progress during the year. After significant investment in analysis the final design work on the system was completed and a budget of over $430,000 committed by the DPI to complete the project.



BPASS brings together the online mapping capability previewed in the previous online pilots together with full online management of permits and licenses across Forestry Corporation, NPWS and the LLS regions; ensuring that apiarists have full visibility of which sites they can access, payment status and the ability to easily self-manage their sites.

BPASS will be at testing stage when you read this with the first licenses migrating to the system estimated to be in July 2020.

Fire Recovery

The summer fires of 2020 damaged or destroyed many of the public apiary sites on Forestry and National Parks lands. As well as continuing to support the existing LTV pilot, we are working with other tenures such as Crown Lands and Water NSW to simplify the process for identifying potential apiary sites on their

lands and issuing permits for them. Further details will be published on the DPI website when available.

If you would like to hear more about the Apiary Sites Program and receive notifications about upcoming site releases please email me at apiary.sites@dpi.nsw.gov.au

---

SAVE THE DATE!

41st Annual Tocal Beekeepers' Field Day – Saturday 17 October 2020: 9am – 4pm
Tocal College, 815 Tocal Road, Paterson NSW 2421

(PENDING COVID GATHERING RESTRICTIONS)

Tocal Beekeepers' Field Day is the longest running bee field day in Australia. Filled with numerous activities, presentations by subject matter experts, a trade show, live demonstrations, honey tastings and food vendors available all day, it is not to be missed. In its 41st year, Tocal Beekeepers Field Day is run collaboratively by the Amateur Beekeepers Association, NSW Apiarists Association, Department of Primary Industry and Tocal College. We hope to see you there!

ACKNOWLEDGEMENTS

NSW DPI staff who enable us all to deliver quality publications, training and online resources include: Noeleen Clarke, Sally Friis, Jessica Green, Vicki Gow, Natacha Hes, Aleisha Holmes, Jennifer Laffan, Ruth Luckner, Vicki Magann, Simone McCarthy, Dean Morris, Stephanie Presland, Vicki Saville, Sophie Smethurst, Michelle Smith, Keran Richards, Julie White, and Jayne Wood. Thanks also go to our beekeeping industry and research collaborators, subject matter expert contract trainers whose expertise attracts students from across Australia (Casey Cooper, Sam Giggins, Tom Gillard, Adrian Grew, Mick Rankmore, Harry Rose) and Tocal College Administration, Domestic Services and Maintenance Staff who keep us operational.
