RURAL DIVERSITY

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Rural Industries Research and Development Corporation

News from the Rural Industries Research and Development Corporation

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Mary Retallack: 2012 Rural Women's Award Winner

full story pg. 4

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Mary Retallack, a viticulturist from the Adelaide Hills in South Australia was announced as the 2012 RIRDC Rural Women's Award winner in October last year. ..... **Full story page 4**

Message from the Managing Director

It is still early in 2013 but it is one of the busiest times of the year for the Rural Industries R&D Corporation.

Two of RIRDC's flagship capacity and skill building initiatives, The Horizon Scholarship and the Rural Women's Award, are going through or have recently reached important milestones in their calendars.

The Horizon Scholarship supports first-year university students studying agriculture-related degrees with a $5,000 per annum bursary. In addition to the bursary the Scholarship provides students with mentoring, annual work placements and professional development opportunities.

Applications for the Horizon Scholarship closed on 1 February and the successful applicants will have been advised soon after this edition of Diversity had gone to print.

In its fourth year, the Scholarship continues to see impressive year-on-year increases in the number of applicants and feedback from the Scholars is consistently very positive.

The national winner of the 2012 RIRDC Rural Women's Award was announced in October last year, with Mary Retallack from South Australia handed the prestigious title.

Mary, a third generation viticulturist, was presented with the Award at Parliament House in Canberra in front of more than 250 politicians, industry leaders and special guests.

All states and the Northern Territory are currently going through their selection processes for the 2013 Rural Women's Award. All state and territory winners and runners-up will have been announced by the end of March, with the winners then in the running for the National Rural Women's Award announced in October.

On the research front, this year will see RIRDC begin several important regional studies. These regional studies will help develop a better understanding about the impact of agricultural issues for industries and communities at a regional scale. These case studies will be used to investigate and understand the implications of particular policy issues and will be conducted in such a way that they will also predict how certain issues may play out in other regions across Australia.

The regional case studies are a new initiative unique to RIRDC and will be a valuable resource for policy and decision makers at all levels of government and industry.

Our thoughts and best wishes are with all of the farmers and their communities who have been impacted by the recent storms, floods and bushfires. On behalf of everyone at RIRDC we hope you get back on your feet as soon as possible.

I wish all of our readers a productive and safe 2013 and we look forward to keeping you up-to-date with what RIRDC is doing throughout the year.

Craig Burns

New study uncovers how often rural land is changing hands

A new study released by the Rural Industries R&D Corporation has found that just over 4 per cent of Australia's rural land is changing ownership each year.

The study – titled 'Rural land in Australia' – is the first of its kind to reveal land ownership patterns across rural Australia and covered the years between 2004-2008, which was a period of severe drought.

The study showed that the incidence of land ownership change tended to be higher in the more densely populated states of NSW, Victoria and Tasmania when compared to SA, WA and Queensland, which have comparatively lower population densities. The likely reason for this was due to greater demand for land in NSW, Victoria and Tasmania for non-agricultural purposes.

The study includes five detailed regional case studies of land ownership change in north-west NSW, the Murrumbidgee region of the NSW Riverina, peri-urban SA, coastal north Queensland and north-west Victoria. Data from 2004-08 was chosen as it provides a baseline which can be used for future comparative research.

The study will provide a strong platform for further research into land ownership patterns in Australia and could help to inform some of the public debate about land use change and corporate ownership.

The report's lead researcher, Associate Professor Bill Pritchard from the University of Sydney said the land title databases used in the report could potentially play a role in informing debate on foreign and corporate ownership of rural land in Australia.

"The report is based on 2008 data so it pre-dates the more recent high profile sales involving foreign buyers but there is potential for this data to better inform that debate in the future. For instance, when we used the data to examine the impact of corporate land ownership in NSW we discovered that the Riverina and the upper Hunter had relatively high levels of corporate land ownership." Assoc. Prof Pritchard said.

"However, it won't provide a single source of knowledge and should be considered alongside other data."

The publication 'Rural land in Australia' is available from the RIRDC website: **www.rirdc.gov.au**

For more information contact Sam Nelson, Senior Research Manager: **sam.nelson@rirdc.gov.au**

Just over 4 per cent of Australia's rural land is changing ownership each year.

RURAL WOMEN'S AWARD CONTINUES TO INSPIRE AND EMPOWER

The national winner of the 2012 RIRDC Rural Women's Award was announced in October last year, with Mary Retallack from South Australia handed the prestigious title.

Mary, a viticulturist from South Australia's Adelaide Hills, was one of seven state winners at the gala ceremony where the Hon. Joe Ludwig, Minister for Agriculture, Fisheries and Forestry presented the Award.

Mary, a third generation viticulturist and Managing Director of Retallack Viticulture – a business consulting to the Australian wine industry – was presented with the Award at Parliament House in Canberra in front of more than 250 politicians, industry leaders and special guests.

Catherine Marriott of Kununurra in Western Australia was announced as the Award's runner-up for her work in the beef industry and live export awareness activities.

Catherine consults to a select group of companies and private clients involved in the live cattle export industry, pastoral training and leadership capacity building. In August 2012 she travelled the live export journey to Indonesia with a group of women from Australia.

Each of the state winners were recognised for their contribution to primary industries and rural communities, and their role as advocates for rural, regional and remote Australia.

For the past 17 years, Mary has worked in vineyard management, technical, research, consultancy, training and extension roles in Australia and overseas. Mary's award-winning project involves establishing a website for 'Women in Wine' to provide support and skills development opportunities for women in the viticulture sector.

Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Joe Ludwig with 2012 RIRDC Rural Women's Award national winner Mary Retallack.

"Winning this award has spurred me on even more and I'm honoured to work with women in the industry to help them to meet their full potential," Mary said.

"As primary producers, and women, we have so much to offer and it's vital to support one another, stay connected and empower other women, as some great people have done for me. This is my way of giving back," Mary said.

Mary will use her additional $10,000 bursary received as winner of the Award to expand her 'Women in Wine' website, which will also serve

as a central meeting place and comprehensive information sharing hub for women in the wine industry.

RIRDC Managing Director, Craig Burns said the award was very highly regarded by industry groups, the Government and rural communities, and it was encouraging to see such a broad range of ideas, actions and individuals driving the future of Australian agriculture.

"Mary and all the finalists are our leaders of the future; breaking new ground and helping keep Australia's primary industries amongst the best in the world," Mr Burns said.

"Mary has already made an outstanding contribution to the viticulture industry over the course of her career and her project has the potential to revolutionise the Australian wine industry and furthermore, change the way women network in the bush."

The 2012 Rural Women's Award finalists were:

- **Mary Retallack** – viticulture consultant, SA
- **Catherine Marriott** – beef industry consultant, WA
- **Annette Smith** – natural resource management advocator, QLD
- **Fiona Ewing** – salmon industry community engagement officer, TAS
- **Danica Leys** – lawyer and AgChatOZ co-founder, NSW
- **Tania Chapman** – citrus industry leader, VIC
- **Barbara Koennecke** – aquarium industry pioneer, NT

2013 Tasmanian, WA and Victorian winners and runners-up announced

The 2013 Tasmanian, WA and Victorian Rural Women's Award winners and runners-up have already been announced.

Katie Coad was announced the Tasmanian Award winner in December and Georgie Bond was runner-up.

Danielle England was announced the winner of the WA Award with Lailani Layland runner-up.

Michelle Freeman is the Victorian Award winner, with Jo Clifford that state's runner-up.

NSW, Queensland, SA and the Northern Territory will be announcing their state winners and runners-up during February and March this year.

The 2012 Rural Women's Award state winners at the celebratory dinner, L to R: Danica Leys (NSW), Annette Smith (QLD), Barbara Koennecke (NT), Mary Retallack (SA), Catherine Marriott (WA), Fiona Ewing (TAS), Tania Chapman (VIC).

Meet two of our Horizon Scholars

Shared love of agriculture inspires Ashlee

Ashlee Hammond has grown up with cows, cows and more cows as her family moved around various dairy farms in Victoria before settling in Kerang, near the Victorian-NSW border.

Now a third year student at Latrobe University in Melbourne she has discovered a passion for sharing the story of agriculture, rather than just working in the industry, although she is not sure yet where this will take her.

She originally enrolled in a Bachelor of Animal and Veterinary Bioscience, but when it seemed the field might be too narrow she changed to the broader Bachelor of Agricultural Science.

For Ashlee, the shared passion for agriculture is also a highlight of the Rural Industries Research and Development Corporation's Horizon Scholarship program. As one of the program's scholars, she attends the annual workshops in Canberra that bring together the growing number of young participants, all of whom are enthusiastic about the future of the industry. "It's a great network base; we all have such a shared interest, we just talk and talk," she said.

Ashlee's Horizon sponsor is the Australian Egg Corporation and through the program she has taken part in a work placement at a chicken farm near Bendigo, Victoria, which she said had given her a whole new perspective on the industry. "I already had some experience with cattle and sheep, but this was really different and very interesting." A second work placement has been proposed in Queensland, with the costs of travel met through the program, in addition to the annual $5000 scholarship bursary.

"The work placements are amazing; they expose you to a diversity you might not otherwise have the chance to experience, and give you a chance to travel. They also count towards work experience requirements for university," she said.

Ashlee discovered the Horizon Scholarship while trawling the internet for information about programs that might help with the cost of her studies, and she is keen to spread the word about its benefits to other potential applicants. "It's a great program, I don't think there's anything else like it in other industries. It's amazing the help that you get and the people you meet."

Networks and new perspectives for Richie

Richie Quigley is a fifth generation farmer; his family first settled on their property 'Muntham' at Trangie in Central Western NSW more than 125 years ago. In the long term, he expects the family farm will be his future too – a 6000 hectare mixed-cropping, cotton and livestock operation.

But in the meantime he is completing the third year of his four-year Bachelor of Agricultural Science degree at the University of Sydney, and looking at "what else is out there" that he can learn from and bring back home. In 2013 this includes exploring agriculture in the developing world with a field trip to Laos.

At home, a Horizon Scholarship awarded through the Rural Industries Research and Development Corporation is supporting his studies and broader ambitions to promote agriculture. The scholarship provides a $5000 a year for the duration of his course, as well as mentoring, personal and leadership development programs and work placements.

Richie's Horizon sponsor is Woolworths, and he has spent two weeks on a work placement in the fresh food division at Woolworth's head office. "I've seen what happens from the producer's perspective, so it was really interesting to see the other half of the supply chain, what happens when the product leaves the farm, through to the retail store. The sheer volume of what Woolworths does is amazing. I was also able to visit sheep and beef abattoirs in Tamworth with the buyer, and a smallgoods processor."

He said one of his most rewarding networking experiences – also a result of the Horizon Scholarship – was his involvement in the Art4Agriculture Young Farming Champions program. As part of Art4Agriculture he has visited three secondary schools in Sydney, talking to students about agriculture. "It's fantastic to help people understand how their food and fibre is produced, and to represent the agricultural industry. Most of the students I talk to are from the city, so they haven't been exposed to agriculture on the kind of scale we work on." Richie said it was because of the Horizon Scholarship that he was approached for the Art4Agriculture program.

"The Horizon workshops in Canberra are also great because you get to meet a lot of other young people who are passionate about agriculture. It is really refreshing, and it keeps you motivated," he said.

The Horizon Scholarship

the HORIZON scholarship

The Horizon Scholarship is open to students entering their first year of university and studying a degree related to agriculture, such as agricultural science, rural science, livestock/animal science, veterinary science or agribusiness.

Sponsors of The Horizon Scholarship are Woolworths, Quality Silage Systems, the Australian Department of Agriculture, Fisheries and Forestry, the Australian Egg Corporation, Australian Pork Limited, the Cotton Research and Development Corporation, the Grains Research and Development Corporation, the Grape and Wine Research and Development Corporation, Horticulture Australia Limited, Meat and Livestock Australia, the Sugar Research and Development Corporation and the Rural Industries Research and Development Corporation.

Nuffield Australia – profile of 2013 Scholar Peter Kaylock

Peter Kaylock, from Moulamein in New South Wales, was awarded a 2013 Nuffield Scholarship supported by RIRDC and the RIRDC Rice R&D Program to research direct drill rice farming systems.

Peter Kaylock, from Moulamein in New South Wales, was awarded a 2013 Nuffield Scholarship supported by RIRDC and the RIRDC Rice R&D Program. Peter is currently researching direct drill rice farming systems.

With his wife, sister and brother in law, Peter is owner/manager of 7,000 hectares with a major focus on rice and dryland cereals. The family operation also produces stonefruit, seasonal fat lambs and cattle.

For Peter, a Nuffield Scholarship has been an opportunity to investigate a topic not well understood in Australia - direct drilled rice systems. He believes that there is still a lot to be understood about its agronomy and how to influence yields, and is researching the machinery, establishment methods, fertiliser and weed control practices.

The first part of his scholarship study takes Peter to Ontario in Canada where he will join the 50 other 2013 Nuffield Scholars for a week-long Contemporary Scholars Conference in March.

From there, Peter will travel to the USA, in particular southern states such as Arkansas, Louisiana and California, to get an understanding of their rice systems, machinery and new technologies. He is also planning to visit southern Italy, Spain, France and Germany later this year to get an overview of how direct drill cereal systems can be used to supplement the rice rotation.

The International Rice Research Institute in the Philippines has also embarked on developing similar systems and Peter believes a visit there would be an invaluable learning opportunity.

Nuffield Australia scholarships

Primary producers wanting to gain access to the world's pre-eminent farming network are urged to apply for a 2014 Nuffield Australia Farming Scholarship.

The Nuffield Australia Farming Scholarship is a unique program that awards primary producers with a life-changing scholarship to travel overseas and study an agricultural topic of their choice.

Successful applicants spend a total of 16 weeks travelling the world – including six weeks of group travel through the global powerhouses of agriculture, including countries such as China, Brazil, USA, Canada and Europe.

Scholars then travel for a further 10 weeks by themselves, to drill down into a research topic of interest to them and of value to industry.

Scholars are selected annually on merit, as people who are committed and passionate about farming or fishing, are at the leading edge of technology uptake and potential future leaders in their industries.

Applications open on the 1st of April and close on the 30th of June and are for travel in 2014.

There will be 25 scholarships offered by Nuffield Australia, sponsored by a range of Australia's leading primary sector organisations.

For more information and selection guidelines please visit **www.nuffield.com.au** or email **enquiries@nuffield.com.au**

Nurturing new rural leaders

By Lauren Oehme,
RIRDC Program Coordinator

The RIRDC Rural Leaders program has been designed to help Australia's new, developing and maturing rural industries grow and prosper by building the leadership skills of the people involved in them. The program will be run for the first time in March this year, and aims to help foster collaboration, focus and vision for rural and regional Australia's new, developing and maturing primary industries.

Colin Valverde is one of the participants in the RIRDC Rural Leaders Program.

"The Rural Leaders program is a fantastic opportunity for individuals to gain the leadership skills and training required to foster real development and growth within their industries," said Julie Bird, RIRDC Senior Research Manager.

"Here at RIRDC, we've witnessed the value of strong leaders within small industries. Having individuals that bring industry members together to form a clear direction or plan for growth and development makes a huge impact on a small industry's performance."

"The Rural Leaders program aims to develop the communication, facilitation and leadership skills of the participants, so that they may become true industry leaders."

The program is an eight day course held in Canberra, and is facilitated by the Australian Rural Leadership Foundation (ARLF). Participants will undertake an outdoor, challenge-based component to foster strong group cohesion, communication and dynamics, as well as a residential, theoretical component with interactive workshops on specific leadership skills.

Participants in this year's program come from a diverse range of new and emerging industries, including olives, native foods, alpaca, and truffles.

RIRDC
RURAL
LEADERS

Colin Valverde is a redclaw producer based in northern Queensland. Colin will participate in the 2013 program, and aims to develop the skills necessary to promote and encourage greater industry involvements and growth. In addition to being a farm and hatchery manager, Colin is Vice President of the North Queensland Crayfish Farmers Association (NQCFA), and Treasurer of the Queensland Crayfish Farmers Association (QCFA). Colin is also a redclaw delegate on the Queensland Aquaculture Industries Federation (QAIF), and member of the QAIF management committee.

"In order for us to continue building the industry, we need individuals to step up into leadership roles and work to expand the industry. I would like to gain the skills required to encourage new participants into the industry, and to develop a plan for industry growth," Colin said.

For more information contact Julie Bird, Senior Research Manager: **julie.bird@rirdc.gov.au**

Breeding better redclaw

Redclaw is a species of freshwater crayfish native to rivers of Queensland's Gulf of Carpentaria.

In what is the first research project undertaken by the reclaw industry to improve their productivity, James Cook University worked in close collaboration with industry to produce a strain (the Tolga Strain) of redclaw that is faster growing, genetically diverse and free of disease. Along the way a new method of farming redclaw (S3J Farming) was developed which offers significant productivity gains to the industry.

Basic, proven research techniques were adopted that could be used by the farmers conducting the project overseen by scientists from James Cook Univeristy. As part of the project, incubator technology from Europe was adapted to Australian conditions and to the biology of the redclaw crayfish.

Over five years, the genes of eleven genetically diverse strains of redclaw were mixed by cross breeding in strict accordance with a "Circular Mating Design". Selections were made for the subsequent year's mating on the basis of fastest growth. The eggs were stripped from the females and hatched in an incubator to break the disease cycle.

The results of this project show that significant gains in growth rate, typically in excess of 50%, can be achieved by a selective breeding program in a relatively short time. Results also show that ridding the animal of inherent disease by means of hatching eggs in an incubator plays a considerable part in this improvement in growth rate.

Australian redclaw farmers now have access to improved disease-free Tolga Strain Stage Three Juveniles (S3J) which can be delivered 10,000 at a time in one box. The S3J Farming method developed as part of the project can assist to make existing farms more viable, and increase the attractiveness of farming redclaw to new industry entrants.

The industry has been encouraged by the results of this project, and is collaborating with James Cook University on another RIRDC funded project to improve feeding and nutrition for redclaw.

For more information contact Julie Bird, Senior Research Manager: **julie.bird@rirdc.gov.au**

Eggs being stripped from the female reclaw.

A new study has confirmed the importance of both supportive neighbours and social involvement in organised community activities.

Staying healthy in difficult times

A study has just been published into how farmers and fishers maintain their physical and mental health, and what information, resources and community services would help them to stay healthy in difficult times.

The research, funded by the Collaborative Partnership for Farming and Fishing Health and Safety was carried out by a team of researchers from Deakin University, the University of Sydney and the University of Tasmania, led by Professor Sue Kilpatrick of the University of Tasmania.

Professor Kilpatrick said most participants drew a clear link between difficult times in their industry, caused mainly by drought and/or changes to regulation, and their physical health and mental health.

"For some participants, working in a rural industry had a positive impact on mental wellbeing but for a larger group the farming or fishing lifestyle imposed social isolation that required deliberate action to counter for mental wellbeing," Professor Kilpatrick said.

Professor Kilpatrick said the study confirmed the importance of both supportive neighbours and formal social involvement in organised community activity.

"Both farmers and fishers are very isolated, but more so fishers and like farmers they also have the weather to worry about, high levels of debt and changes to industry regulations and quotas," she said.

"The fishing participants were less likely to mention deliberate attention to mental wellbeing and rarely mentioned social connectedness as part of their health maintenance strategy. They appeared to be more socially isolated than other participants."

The study found industry groups are key sources of health information and group settings are favoured sources of mental health information.

"The farmers and fishers in the study relied on GPs for most health services, including mental health," she said.

"Despite there being mental health services available, very few of the participants reported using them.

"Most agreed that it was important that such services exist although some participants at the fishing site viewed accessing mental health services as a sign of weakness."

Professor Kilpatrick said a key message from the research was that provision of programs and services and internet and print information alone was not sufficient to increase preventative health behaviours amongst farmers.

"Farmers must be supported and assisted to use available services effectively in a way that is personally and occupationally relevant and that there needs to be a focus on regional development initiatives such as community capacity building, leadership development and employment creation," she said.

"Most farmers, particularly males, are less likely to access formal health services and more likely to prefer soft entry points such as farmer field days and farmer education programs.

"Group information sessions and education programs are preferred by many farmers and fishers, especially for mental health topics."

Professor Kilpatrick said a stronger focus and wider rollout of preventive strategies and programs was needed, and rural GPs needed to ensure they provide regular check-ups to farmers and fishers.

"Mental health first aid training should be promoted and supported, particularly in the fishing industry," she said.

The study has recommended industry associations and organisations should work with their constituents to promote health and wellbeing and fund research into effective strategies for supporting fishers' health and wellbeing.

The research report can be downloaded for free from **www.rirdc.gov.au**.

For more information contact Simon Winter, Senior Research Manager: **simon@swinter.com.au**

From the backyard to the farm, the time to plant is now!

BEE FRIENDLY

Honeybee foraging on a zinnia flower. Image courtesy *Kathy Keatley Garvey*

Help save the honeybee by making the right plant choices

Every Australian can help boost the survival of honeybees and protect the food we eat that depends on their pollination services by growing the right plants and trees.

A new guide is now available that highlights pollen and nectar planting choices – from the backyard to the bush – which will provide food for honeybees. Everyone can make a difference by considering bees when they are planning small and large scale planting.

Chairman of the Pollination Program R&D Advisory Committee, Gerald Martin, says there's increasing public concern for the wellbeing and survival of global honeybee populations, so this guide is timely.

"65 per cent of agricultural production is reliant on pollination by bees to produce fruit, vegetables and seeds and honeybees are coming under increasing pressure from urbanisation, bushfires, changing agricultural practices and changing land management practises," Mr Martin said.

"Pests and diseases are an ever increasing threat, including the deadly bee pest Varroa mite which has wreaked havoc across the globe.

65%
of agricultural production is reliant on pollination

Australia is one of the last countries free of the mite but it is accepted by scientists that it will eventually reach our shores. Small hive beetle and American foulbrood are major pests that our beekeepers already have to manage.

"The guide lists herbs, shrubs, trees and other plants, broken up into suggestions for domestic gardens, streetscapes, urban open spaces, rural environments and stationary beekeeping, and further categorised by type of climate.

"Growing plants that provide food for honeybees can be accomplished at any scale, from a pot of herbs on a balcony to thousands of hectares of revegetation or pastures.

Many of these plants are also beneficial to a range of other insects, birds and small mammals that live on nectar and pollen," he said.

The guide has been developed with funding from the Honeybee Program, which is managed by the Rural Industries R&D Corporation.

Bee Friendly - A planting guide for European honeybees and Australian native pollinators can be downloaded for free from **www.rirdc.gov.au**. Hard copies can also be ordered online.

For more information contact Dave Alden, Senior Research Manager: **dave.alden@rirdc.gov.au**

Protecting bees and our pollination industries

Australia remains free from Varroa mite thanks to our rigorous quarantine procedures.

In November, Australian Quarantine inspectors found a swarm of 2000 Asian honeybees carrying Varroa mites (species *Varroa jacobsoni*) on a ship from Singapore docked at Kurnell in Sydney. The bees, which were in the ship's loading cranes were destroyed as were the mites.

The Asian honeybee is a natural host of Varroa mite, which has devastated European honeybee populations throughout the world. Australia is the only significant honey-producing country to be free of Varroa mite, which reached New Zealand's shores in 2000.

European honeybees are important pollinators for many horticultural and agricultural crops, including those in our backyard veggie patches. It is estimated that 65 per cent of agricultural production in Australia depends on pollination by European honeybees.

In 2007 a number of horticultural industries joined forces with their honeybee counterparts to implement a multi-industry research effort to ensure industries are ready for this exotic pest and food pollination is protected. The result was the Pollination Program, which is a jointly funded partnership between RIRDC's Honeybee Program and Horticulture Australia Limited.

Some of the initiatives the Pollination and Honeybee Programs are investing in that focus on biosecurity include:

Pre-border

- Surveillance of Asian Honey Bees – this project will develop prototype surveillance traps for Asian honeybees to provide an early warning system pre-border. The traps will be placed in cargo vessels to record the presence or absence of bees on the vessel prior to the ship entering an Australian port (this project is managed by Horticulture Australia Limited.)

At the border

- The development of a new system of electronic and remote hive monitoring at ports to identify the arrival of bees in a hive (this project is managed by Horticulture Australia Limited.)
- A project to assess which ports are the highest risk for the arrival of bee pests (such as Varroa mite) and pest bees (such as the Asian honeybee) to help focus the surveillance effort.

Post-border

- An investigation into the role urban beekeepers can play in the national surveillance of exotic pests of bees through BeeForce. In this project ten beekeepers around Port Melbourne were trained by Department of Primary Industries apiary officers to inspect hives for the presence of exotic mites. In year two beekeepers near the port of Geelong were trained. This project demonstrated that urban beekeepers can play a vital role in detecting exotic pests
- An application has been made to the Australian Pesticides and Veterinary Medicines Authority to allow the use of three Varroa mite control products in the event of their arrival

For more information visit **www.rirdc.gov.au/pollination** or contact Dave Alden, Senior Research Manager: **dave.alden@rirdc.gov.au**

Asian honey bees (*Apis cerana javana* workers.) Image courtesy Dr Denis Anderson.

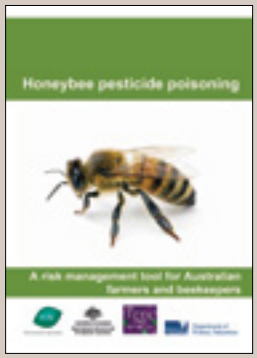
Profiling pollination publications

The Pollination Program, managed by RIRDC and jointly funded by Horticulture Australia Limited, the Australian Government Department of Agriculture, Fisheries and Forestry and RIRDC, has been buzzing with the production of several publications in recent months.

Biosecurity manual for the Honey Bee Industry

This is a manual aimed at all beekeepers, to help reduce the risk of exotic and established pests affecting honey bees. The informative manual encompasses helpful practices for apiarists to reduce the risk of spreading pests and information on how to undertake pest surveillance. The manual provides advice on managing products, the importance of quality assurance and recommended practices for moving hives, honey bee products and equipment. Also included in the manual is a variety of fact sheets on the parasites, diseases, exotic pests, and viruses that could affect the honey bee industry, to help identification and particular strategies to protect against them.

The Biosecurity Manual for the Honey Bee industry is available for free download from **www.phau.com.au**.



Honeybee pesticide poisoning, 12/043

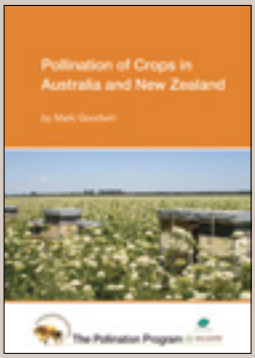
This publication is a risk management tool for Australian farmers and beekeepers to help ensure the survival of the Australian horticulture industry, which is dependent on hundreds of thousands of honeybee colonies being made available for commercial pollination. This publication enables beekeepers and farmers to identify pesticides that are toxic to bees and provides information that will help them manage the risk of honeybee poisoning. The booklet also contains a number of useful forms, contact details and other relevant information.

The publication can be downloaded for free from the RIRDC website **www.rirdc.gov.au** and can be purchased by phoning 1300 634 313.

Finding and Reporting Varroa poster, 12/058

An informative poster that will assist beekeepers to monitor hives, identify Varroa mite and report sightings. This poster was sent to all registered bee keepers, along with the Biosecurity manual for the Honey Bee Industry.

The poster can be downloaded from **www.rirdc.gov.au**.



Pollination of Crops in Australia and New Zealand, 12/059

Dr Mark Goodwin, of the New Zealand Institute for Plant & Food Research Ltd, undertook this research to provide growers, beekeepers and pollination specialists in Australia and New Zealand with the information necessary to optimize the pollination of insect-pollinated commercial crops.

Pollination is one of the most important parts of the economic production of many crops, however it is often the most poorly understood and least likely to be optimised. The manual begins by providing a description of the process of pollination, including a summary of the insect species involved and information on how to assess pollination. Honey bee biology and behaviour are described and how to manage them for pollination, along with orchard management strategies to protect honey bees.

The publication can be downloaded for free from the RIRDC website **www.rirdc.gov.au** and can be purchased by phoning 1300 634 313.

New staff

Margie Heath has joined RIRDC for a twelve month secondment from the Department of Agriculture, Fisheries and Forestry where she was working in the Meat and Livestock Policy section. Margie is a Project Manager and her programs include Chicken Meat, Honeybee and Pollination.

Rowena Martin is the Program Coordinator responsible for Dynamic Rural Communities, Investing in People (which includes the Rural Women's Award, the Horizon Scholarship and general scholarships), the Primary Industries Health and Safety Program and Global Challenges.

Lauren Oehme worked previously at Rural Funds Management where she was Marketing and Project Officer. Lauren is the Program Coordinator responsible for New and Developing Animal Industries, National Rural Issues and the New Plant and Animal Feasibility Program.

RIRDC new staff members: L to R Margie Heath, Rowena Martin and Lauren Oehme.

Centipida – an Australian medicinal plant

Research funded by the Rural Industries R&D Corporation is underway on how best to commercially grow the indigenous Australian medicinal plant, *Centipeda cunninghamii*. This plant of the daisy family was used in traditional aboriginal medicine and by the early settlers to treat wounds and skin infections and is known to have antioxidant and anti-inflammatory qualities.

Centipida cunnighamii growing at one of the trial sites in Gippsland, Victoria.

Intellectual Property rights and patents on the extraction process to ensure the most potent and effective extracts are in place, as well as an existing market in the USA and South East Asia for skin care products containing *Centipida* as the active ingredient.

The University of Western Sydney in collaboration with Bio Actives Export has investigated the chemistry of the plant extracts that underpin the antioxidant and anti-inflammatory qualities and the identification of the key active compounds, which are found mainly in the flowers but also in the leaves.

Centipida has been grown in Gippsland in Victoria for more than ten years, with dried plant material sold to Bio Actives Export for extraction, testing and development of skin care products, however the number of growers and the quantities produced are still only small.

The three year study funded by RIRDC and Bio Actives Export has been looking at how best to grow *Centipida* commercially to maximise yield. The research has focussed on fertiliser use, irrigation, identifying pests and diseases and their management, optimal harvest time to maximise yield and the quality of the extracts as well as understanding the chemical characteristics of *Centipida*.

A better understanding of the agronomy of the plant will lead to more reliable production and consistent quality of the plant material in Australia so that the industry can develop and potentially expand markets. A unique opportunity now exists for potential growers of the plant.

Centipida cunninghamii could be an option for new growers and those who would like to diversify their farming operation. A field day held at one of the Gippsland trial sites in November last year attracted much interest from local dairy farmers, olive and saffron growers.

For further information contact
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2013 – The United Nations International Year of Quinoa

It's gluten free, high in protein, calcium and fibre and good for you.

Quinoa is a grain that was domesticated around 8,000 years ago in Peru, and along with corn and potatoes was one of the staples in the diet of the ancient Inca civilisation. It is now readily available in supermarkets and health food shops.

To highlight the exceptional nutritional qualities of quinoa, its adaptability to different environments and its potential contribution in the fight against hunger and malnutrition, the United Nations has declared 2013 the International Year of Quinoa.

RIRDC is funding the University of Western Australia to assess quinoa lines from overseas for their suitability for Australian conditions.

Lead researcher Dr Jon Clements says the crop is still experimental but has enormous potential.

"Quinoa is a crop that is salt and drought-tolerant and is suited to marginal soils. It has a wide range of potential uses, such as in porridge, soups, tortillas, salads, sauces, nutritive beverages, brewed beverages, sausages as well as products serving the nutrition of children," Dr Clements said.

"We have been trialling quinoa at a number of sites in WA and selecting promising lines in terms of yield, agronomy and seed quality under several different environments. Last year we also had a site in South Australia.

"We have found that seeding depth has been a critical factor in plant establishment. We also need to learn more about controlling weeds and pests, such as red legged earthmite.

"With a current retail price of around $3,000 per tonne, there may be good margins for local producers."

In Australia there are only a few growers of quinoa, with a total production area of around 50 hectares. There is one commercial grower in Tasmania who has been growing organic quinoa since 2007. This year, the first commercial crop of 20ha was grown in the Narrogin area of WA.

More information on the United Nations International Year of Quinoa can be found at **www.fao.org**.

For more information contact John de Majnik, Senior Research Manager: **john.demajnik@rirdc.gov.au**

RIRDC is collaborating with the University of Western Australia to investigate quinoa as a new crop for Australia.

Resources for wildflower growers

Wildflower growers and those wishing to enter the wildflower growing industry will soon have a suite of grower friendly material developed by RIRDC to add to their toolkit.

These include a guide to getting started in the cut flower growing industry; grower guides for commercially growing flannel flowers, Christmas bush and waratahs to encourage best practice production of these species; manuals on grafting and irrigation and a guide for producers of Australian grown flowers with information on the range of ecolabelling options for export markets.

Alison Saunders, Senior Research Manager for the RIRDC Wildflowers Program says that it has been difficult for growers in the past to access hands-on information on how to grow Australian wildflowers to achieve the best results.

"With the release of this latest suite of extension manuals, growers can learn from some of Australia's most experienced researchers and practitioners in the field," Ms Saunders said.

Getting Started in Wildflower provides advice for potential wildflower growers to assist them to make a realistic assessment of their capacity to enter the wildflower industry and what it takes to be successful. It also has useful information on all aspects on setting up a plantation, growing, harvesting and postharvest handling of wildflowers, including flowers and foliage of Australian and South African species.

The Wildflower Irrigation Handbook will be useful for all wildflower growers and anyone involved in irrigating horticultural crops. It provides guidelines for effective irrigation of in-ground wildflowers for the cut flower market.

Some of the many wildflowers grown by the Australian wildflower industry.

On-farm Evaluation of Grafted Wildflowers for Commercial Cut Flower Production contains valuable information for the development of the wildflower industry through the use of grafted wildflowers for cut flower production. Several major Australian native perennial flower crops which are new to cultivation fail to reach their potential when grown in a commercial situation because of inherent problems with their root systems, such as susceptibility to root diseases, poor root systems, lack of vigour and an intolerance of a wide range of soil types. A whole range of grafted combinations have been tested on growers properties and the results in relation to their performance have been fully reported.

Growing Christmas Bush for Cut Flowers, Growing Waratahs for Cut Flowers and Growing Flannel Flowers for the Cut Flower Market provide practical information for growers, wholesalers, exporters and retailer on growing, harvesting and postharvest handling of these species.

Improved Market Access for Australian Wildflowers through Ecolabelling will provide wildflower growers with information to assist them to make more informed choices about ecolabels available in their export markets. This information will provide an assurance to customers that the flowers have be grown in an environmentally and socially responsible way.

The publications will be available for free download or purchase from **www.rirdc.gov.au** in April 2013.

For more information contact Alison Saunders, Senior Research Manager: **alison.saunders@rirdc.gov.au**

"These manuals have been prepared with the grower in mind, so they should answer those important questions that both brand new and even more experienced growers simply need to know."

Therapeutic antibodies from alpaca: a new market opportunity

Exciting new RIRDC funded research has explored the use of alpaca for the production of medical grade therapeutic antibody products such as snake antivenom.

Alpaca are members of the camelid family which produce a unique class of immunoglobulin molecules in their blood stream. Immunoglobulins are special defence antibodies, and can be harvested and refined for production of specialised therapeutic medical products. The unique properties include reduced potential for an allergic reaction, greater heat stability and greater capacity for inactivating certain enzymes.

There is a billion dollar global demand for therapeutic antibodies. A diverse range of medical products with well-defined markets already exists, including various anti-toxin serums for snakes, spiders and bacterial infections (tetanus, rabies, botulism, anthrax). Currently these products are produced primarily in horses, sheep and rabbits.

Alpaca are being used in a study to make therapeutic antibodies such as snake venom.

This proof of concept project explored the potential for alpaca to make therapeutic antibodies against a range of different snake venom toxins. Snake venoms were chosen because for an antibody to be effective it must neutralise the actions of the venom.

The project demonstrated that alpaca can be immunised without harm to the animal. The alpaca produced strong immune responses to low doses of a range of snake venoms. A system was developed for harvesting the alpaca blood, and separating and concentrating the serum similar to the process currently used in horses.

There is a shortage of supply of antivenom in certain regions of the world. The World Health Organisation estimates that globally there are five million snake bites each year resulting in 125,000 human deaths, and three times as many people who suffer permanent disability from snake bite.

The alpaca study has shown that alpaca can be used successfully to make therapeutic camelid-type antibody products. For an industry to develop in Australia a commercial partner would be required who would develop the antibody products and support them through the relevant government testing and approvals processes. Australia has potential for such an industry given it has an abundant number of alpaca, at an affordable price with low disease risk.

The Australian alpaca industry would benefit from having an alternative use for the alpaca (apart from fibre production), as a producer of high value niche market products.

This research was carried out by Dr Andrew Padula, a veterinarian in Bairnsdale, Victoria.

For more information contact Julie Bird, Senior Research Manager: **julie.bird@rirdc.gov.au**

"This alpaca study has shown that alpaca can be used successfully to make therapeutic antibody products such as snake venom"

Indigenous Pastoral Project update

The Rural Industries R&D Corporation is managing a new Australian Government initiative to help Indigenous pastoral businesses become commercially viable and sustainable.

The 'Northern Australia Beef Industry Strategy Indigenous Pastoral Project' was announced by Minister Ludwig in April 2012, and will develop a step-by-step framework to assist both Indigenous pastoral enterprises and those Indigenous land owners wishing to become pastoral businesses.

The framework will incorporate the many resources, extension materials, and training programs already available in the three northern jurisdictions, enabled by a commitment from all to provide materials and update them as required.

The framework builds on the relationships already forged between the northern extension staff and the Indigenous pastoral industry, and to provide them with a tool to enable them access to all available resources.

Case studies of successful Indigenous pastoral businesses will be an important aspect of the project. These case studies aim to assist in engendering community support and engagement of Indigenous youth in the Indigenous pastoral industry, as well as demonstrate some of the many pathways to success.

The framework will be piloted with Indigenous pastoralists across the top end, and evaluated to enable improvements to be made. Knowledge gaps will be identified and recommended for future collaborative action.

Stage 1 of the project will involve consultation, an audit of current extension materials and programs, development of the case studies, and the development of the framework.

McClelland Rural Services Pty Ltd has been selected as the successful tender applicant to deliver the first stage of the Indigenous Pastoral Project. Since their appointment in October 2012, McClelland Rural Services Pty Ltd has been busy across Northern Australia.

The first three months have been spent by the McClelland team collating the available information and conducting consultations across the northern jurisdictions. Consultations have now been completed in the Kimberley region of Western Australia, with further consultations planned for Queensland and the Northern Territory in the coming weeks.

Some early themes to come out of the Western Australian consultation include the final framework needing to:

- outline options for producers to access governance training;
- summarise potential government and non-government funding sources available to Indigenous pastoralists; and
- cover the available information around Indigenous leasing of land/properties in Northern Australia.

All information gathered will direct and inform the development of the final framework.

For more information contact Julie Bird, Senior Research Manager: **julie.bird@rirdc.gov.au**

RIRDC is managing a new Australian Government initiative to help Indigenous pastoral businesses become commercially viable and sustainable

National Rural Issues and regional studies

By Sam Nelson, Senior Research Manager, National Rural Issues.

Under the Rural Industries R&D Corporation's 2012–17 Corporate Plan the National Rural Issues Program has been established to deliver analysis on issues of national importance to the rural sector and broader community. The program is focussed on research to inform and improve policy debate by Government and industry on national rural issues in Australia. The program will deliver research relevant to contemporary issues which are non-industry specific and which promote a productive and sustainable rural sector.

Regional case studies will be a key strategy for the program, and RIRDC is looking to use regional case studies to deliver comprehensive knowledge about the impact of rural issues on agricultural industries and regional communities. RIRDC is seeking to actively engage Government and industry policy and decision makers in the prioritisation, scoping and delivery of research. Investment will be made in the National Rural Issues Program, mindful that the benefits from the research should flow to the broader community as well as the rural industries.

In discussing the program with stakeholders, RIRDC found that there was interest in the concept of using regional case studies to investigate and understand the implications of particular national policy issues at a regional level. It is important that case study regions are representative and can be used to inform the direction and development of policy and programs for other regions.

Discussions with stakeholders have identified a number of policy issues which may be usefully investigated through regional scale, including the effectiveness of Natural Disaster Relief and Recovery Arrangements (NDRRA) for agricultural industries, community based measures of change in response to rural adjustment, and the usefulness of regional brands associated with agriculture in supporting diversity and sustainability in regional economies.

RIRDC is currently in negotiations with research groups in relation to far-north Queensland and Northern Tasmania research projects and to examine the development of 'place based' frameworks to account for agriculture in regional development discussions. Accounting for agriculture in regional development discussions can be difficult because there may not be strong links between decision makers in towns and regional centres and the agricultural industries which are located in the region.

Agriculture and the primary industries remain important to many regions of Australia and agricultural industries contribute directly to the economies of these regions, as well as indirectly through other industries (e.g. agri-tourism) and through contributions to social and environmental outcomes in the regions. Agricultural industries are also continually in adjustment, adapting to changes in markets, cost structures, government policies and technology as well as environmental conditions, including drought and natural disasters. However, in some quarters the agricultural industries are viewed as static rather than presenting new opportunities.

To account for agriculture in regional development, questions need to be answered regarding how agriculture fits with regional economies, how the agricultural industries will evolve and develop in regions over the longer term and how to make the most of these opportunities for the benefit of regional economies and communities. Understanding the trends and issues that agricultural and related industries face in this regional 'place based' context can better inform regional and national policy by providing insights into how issues play out in a 'place'. These insights may assist to identify and address constraints to industry development, but also opportunities to facilitate regional development.

It is expected that the research into these 'place based' frameworks will provide a basis for examining the potential role of agriculture in contributing to regional development in a range of regional contexts, and can be used in other regions to engage with agricultural industries and communities in planning for development. RIRDC is continuing discussions with stakeholders including the Regional Australia Institute, the Department of Regional Australia, Local Government, the Arts and Sport as well as the Department of Agriculture, Fisheries and Forestry to ensure they assist in the adoption of research outcomes.

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Regional case studies will be used to deliver comprehensive knowledge about the impact of rural issues on agricultural industries and regional communities.

Herbicide resistant weeds spreading on public land

Once thought to be a problem restricted to Australia's farms, weeds resistant to the popular chemical herbicide glyphosate have now been found across Australia along highways, railways and around buildings.

Chloris truncata Image courtesy of 'Sunphlo'.

Research led by Associate Professor Christopher Preston at the University of Adelaide, as part of the Australian Government's National Weeds and Productivity Research Program, has identified that herbicide resistance is far wider spread than first thought.

The research found that weed management practices on public lands were routinely adding to the risk of herbicide resistance developing, due largely to ignorance of the problem and alternative herbicides.

"Non-agriculture sectors where glyphosate is used exclusively for weed management have a high risk of glyphosate-resistant weeds evolving," Dr Preston said.

"These weeds will cause serious management difficulties for those sectors and pose a risk of spread to other areas. Weed management practices other than glyphosate need to be adopted to reduce this risk.

"And there is a need for accurate information on herbicide resistance risks and alternative management practices to be provided to weed managers in non-agricultural areas."

Dr Preston's research discovered 136 glyphosate resistant populations of annual ryegrass and fleabane along roadsides from Queensland to Western Australia - this was approximately 50 per cent of all populations tested during the first-ever roadside weed survey.

The potential problem for Australia's public land managers is huge – Australia has 612,000km of roads considered at risk of developing weeds with glyphosate resistance.

Weeds are one of the major threats to Australia's primary production and to the natural environment. Weeds cost Australian agriculture more than $4 billion dollars each year, including control costs and lost production.

Under the National Weeds Program, the Australian Government provided $12.4 million to the Rural Industries R&D Corporation to support more than 50 research projects, with the program ending on 30 June 2012.

The National Weeds Program supported 11 research projects which dealt directly with herbicide resistance issues and delivered new weed control measures to reduce the need for chemical treatments.

Dr Preston, who is also chair of the Australian Glyphosate Sustainability Working Group, said alternative practices need to be used to manage the risk of glyphosate resistant weeds on Australia's public lands.

"A worrying result was the lack of formal record keeping on herbicide efficacy. There were very few examples of formal monitoring programs in place to determine the success or failure of the spray application, which could potentially delay the detection of resistance following weed control activities," he said.

"Nearly 60 per cent of interviewees were in the poor to moderate categories regarding their level of understanding of herbicide resistance and its development, but a 92 per cent positive response was recorded from survey respondents acknowledging that additional staff from their respective organisations would benefit from herbicide resistance training on weeds.

"Management risks were particularly high for water authorities, railways, aviation areas and local government. Conversely, private contractors and consultants and transport authorities (for example, Main Roads) nominated the lowest risk strategies on average."

Dr Preston said many authorities were challenged by budgets that had not kept pace with inflation over the last decade, while high turnover of staff had resulted in a loss of "corporate knowledge" in the area of weed control.

He recommended the development of training programs for both authority managers and those at the frontline of weed management, as well as an encouragement of the rotation of a wider range of herbicides and weed control methods.

"Glyphosate is an excellent herbicide that helps keep management costs down, however there are no easy replacement options currently available," Dr Preston said.

"The rapid development of glyphosate resistant weeds and species shift to glyphosate tolerant species will have a large impact on budgets and logistics."

Dr Preston said further work was required to monitor the glyphosate resistance and to develop information packages for managers of non-agricultural land, specific to their region and the types of weeds they were treating.

A fact sheet with general tips for managers of roadsides and railway lines is available at **www.glyphosateresistance.org.au**

For more information contact Dr John de Majnik, Senior Research Manager: **john.demajnik@rirdc.gov.au**

"Resistance was identified in all states surveyed. Glyphosate resistance was found in all non-agricultural areas surveyed. The majority of resistant samples were from roadsides. However, resistance was also identified along irrigation channels, railway rights-of-way and around buildings such as silos".

NEW PUBLICATIONS FROM THE RURAL INDUSTRIES R&D CORPORATION

Most of our publications are available for free.
Download from our website www.rirdc.gov.au

Staying Healthy: Behaviours and services used by farmers and fishers, 11/166

A healthy rural workforce is critical for workforce participation and productivity.

This study provides research evidence of farmer and fisher preferred occupation/industry specific protective behaviours to maintain physical and mental wellbeing.

Aligning programs and services with the needs and preferred behaviours of farmers and fishers will ensure greater uptake of programs and services, and better use of health resources.

The report is aimed at rural communities, industry organisations, health services and all levels of government.

Bee Friendly: A planting guide for European honeybees and Australian native pollinators, 12/014

The Australian honeybee industry provides essential benefits to agricultural, horticultural and urban environments through managed and incidental pollination services.

Planting bee forage for honeybee nutrition offers major benefits to the industry and society. This planting guide for bee forage describes planting choices from the backyard to the bush, right across the nation, and will assist with increasing available bee food. Individuals, gardeners, municipalities, government land management authorities and farmers can make a difference.

This guide gives ideas and choices of species to bring about improved outcomes for honeybees and the Australian pollen- and nectar- using fauna, including mammals, insects and birds.

Wildflower Irrigation Handbook, 12/015

This handbook has been developed to address the key principles of efficient irrigation with respect to the wildflower industry. It has guidelines for establishing effective irrigation of in-ground wildflowers for the cut-flower market.

It provides cut flower producers with tools and information to understand and manage their irrigation systems and require-ments. There are practical steps for installing, maintaining and managing irrigation systems that save water, protect water quality and maximise productivity.

Rural Land in Australia: A framework for the measurement and analysis of nationwide patterns of ownership change, aggregation and fragmentation, 12/038

This report presents the first ever comprehensive national study of rural land ownership in Australia. Chang-ing patterns of rural land ownership provide important evidence on the character of rural restructuring.

The report presents rural land ownership data across the six states of Australia. Data available at the time has limited the scope of this project to a period between 2004 and 2008.

This report provides important insights for investors and policy-makers keen to understand the dynamics of how changing patterns of land ownership intersect with rural economy and society. In particular, it has relevance for stakeholders in industry, public policy and research communities interested in the productive and environmental ramifications of changing patterns of land ownership.

RURAL INDUSTRIES

Research & Development Corporation

Who and what is RIRDC?

The Rural Industries Research and Development Corporation (RIRDC) is an Australian Government statutory authority. Our aim is to maximise knowledge outcomes for industry and government from R&D investment in:

- New Rural Industries
- Established Rural Industries
- National Rural Issues

Our vision is for enhanced prosperity for Australian rural industries and their communities.

We focus our R&D investments at the applied end of the innovation pipeline to ensure we maximise outcomes for the benefit of rural industries and communities.

Through our wide network and extensive advisory committee structure, RIRDC is able to identify the strategic knowledge needs of stakeholders and select and manage the best R&D investments to meet those needs.

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Rural Diversity is RIRDC's corporate newsletter. It is distributed by direct mail to over 3,000 subscribers from the research community, industry, government, as well as farmers, libraries and consultants.

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