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ONIONS AUSTRALIA | 2014

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Welcome

Welcome to the first edition of the Onions Australia magazine's fourth decade.

After a hugely successful Volume 30 in 2013, the OA team is trying to step it up a notch further – wish us luck!

Once again OA has looked around the country – and overseas – to bring you the most interesting and informative news we can find to keep you updated about your industry.

Highlights in this edition include a colourful profile about our incoming Onions Australia Deputy Chair Peter Shadbolt, and his family's work in onions overseas, as well as informative pieces about on farm insurance and the latest developments in pest and disease management.

We also have included details on international markets, permit updates and the annual State round ups.

As always our door remains open and we encourage you to contact us with ideas for future publications – or any brickbats you wish to pass on.

Happy reading.

Know-how for Horticulture™

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From the Chair

It is with the support of onion growers across Australia that this great organisation has been able to work on your behalf to improve and promote our industry.

Andrew Moon.

This year, like every year, has thrown us challenges as the economic, political and environmental conditions in which we do our business change. With that though can come opportunity for our growers and our industry as a whole.

Onions Australia has been working hard to deliver opportunity for our growers to better their bottom line by way of yield and on-farm efficiencies.

Promoting research is always a priority, market trends and on farm efficiencies are where we need to lay our focus into the future.

The major challenge for our industry and our growers in future years will be sustainability, the continual price increases from our suppliers and the push back from our customers seems to be here to stay.

I am a fourth generation horticultural farmer and I would have to say times are as tough in farming as they have ever been. I also think the opportunities are great and that is why we need this great organisation to keep delivering the benefits that you all deserve as Australian onion growers.

By the time you read this editorial my time as Chair will be over, having served three years in the role. I ask you as fellow growers to get behind your industry body, become involved, have your say. I honestly believe you cannot put a value on the networking the organisation can provide. I have learned more about onion growing and marketing since being involved in OA than I could have ever learned staying at home.

I would like to take this opportunity to thank my Executive Committee for volunteering their time to progress our industry, as well as all of OA's sponsors, researchers and most of all our levy payers.

To the future committee - I wish you all the best and look forward to working closely with you to take our industry forward.

Thankyou sincerely,
Andrew Moon

From the office

What a year it has been in the onion industry – and indeed in horticulture nationally.

From the battle to get our onion industry levy finalised after five years in the pipeline, to the Horticulture Australia Limited Review, there have been many challenges – and that is just at an administrative level.

Throw in the always challenging growing season, coupled with ongoing pricing issues and Onions Australia has certainly had a fight on its hands.

However, the many challenges have only further served to strengthen our industry.

This was demonstrated at our hugely successful Onions Australia conferences in Mannum and Devonport.

Educational sessions coupled with informative presenters resulted in strong levy payer attendances.

We had record grower numbers in Mannum plus excellent attendance in Devonport. Both conferences included outstanding speakers plus extremely interesting grower walks tailored for attendees.

Some of the success for these events must be attributed to the ongoing support provided by our industry sponsors and supporters, who are always willing to finance our conferences, and that is genuinely appreciated. In an industry where the association runs on the smell of an oily rag, financial sponsorship is paramount and imperative to our ongoing success.

We have spent three years working with Andrew Moon leading our association and are now looking forward to Kees Versteeg stepping into the role, with Peter Shadbolt as his deputy.

No doubt there will continue to be challenges ahead, but rest assured that OA will be at the forefront to ensure the best outcomes for our levy payers.

And as always, we welcome your feedback, both positive and negative, whether it be in person, via phone or email.

Lechelle Earl and Kelly Hogan

From the IAC

The current year (2014) has been one of significant change for onion growers which will impact on the level and type of levies collected and how the levies are used.

Richard Jones.

A review was undertaken to examine the HAL service delivery model and the efficiency of the levy arrangements. The review, undertaken by an independent company, resulted in a series of recommendations to address governance issues and operation of HAL as well as levy collection and management of expenditure.

In all 9 recommendations were made and I will comment on two:

1. HAL should become a grower owned rural RDC. This recommendation received overwhelming support when submitted to members at the EGM in Cairns in June 2014. The transition to the new structure will be carried out by HAL in discussion with the Government.
2. The second recommendation is that IACs be removed but RDC retains the ability to seek independent advice.

This recommendation is of concern to me as chairman of the Onion IAC because IACs represent a significant intellectual resource of direct relevance to industry and the projects under review. At present there are no guidelines as to how this independent advice will be provided in the future.

Your IAC has a diverse mixture of skills covering marketing, production, varietal development, pest control etc. As a team the IAC analyses projects submitted and makes recommendations to HAL on the appropriateness of these projects. In addition the IAC will offer advice to service providers if changes are required to ensure that the outcomes of the projects will ensure cost effective benefits to the onion industry.

An issue being addressed by the review related to perceive conflicts of interest in industry IACs and to overcome this perception HAL has appointed independent officers to attend IAC meetings. At our February 2014 IAC meeting Eoin Wallis was welcomed and he made significant contribution to the deliberations of your IAC.

The members of the Onion IAC are aware of their obligations to avoid conflicts of interest with members notifying the Chairman at the commencement of meetings and at any time during the meeting where conflicts may occur.

The other major event was the endorsement in the last Federal Budget of the changes to the Onion statutory levy. This event even made the Channel 9 news in Sydney!

Congratulations to the OA committee who assiduously pursued the changes over a period of 5 years to guarantee that increased funding will be available to support the goals of the last Australian Onion Industry Strategic Investment Plan 2012-17 (SIP).

The changes to the statutory levy, subject to final endorsement of the budget by Federal Parliament, ensure the introduction of a marketing levy, increase funds for R&D and remove the National Residue Survey levy from July 2014.

The Australian Onion Industry Strategic Investment Plan 2012-17 assumed the increase in funding would apply to 2013-14 budget. The delay in approval has impacted on funding and delayed initiatives envisaged in the strategic plan. Current budget levels are compliant with HAL guidelines and with the increased funding as a result of the changed levy a number of initiatives will be implemented.

At the February 2014 IAC meeting there was a change to our practice of assessing new projects received after a general call for research proposals. Leaders of major new projects were invited to make presentations to the IAC and to answer questions prior to any decisions being made. This allowed IAC members to understand the outcomes expected of the new projects and be assured funds are being efficiently utilised.

To ensure that projects, being currently funded, are reviewed, apart from milestone reports to HAL, project leaders are invited to make presentations to the levy payer meetings held twice annually. At the Brisbane meeting in October 2014 the leaders of two projects being undertaken in Queensland have been invited to make presentations. These projects focus on onion rusts (a major biosecurity issue) and onion bacterial diseases detected in Queensland.

Finally as chairman I wish to thank IAC members for their diligence in reviewing projects and offering sound advice to ensure that the onion industry receives excellent returns on the investment of levy funds.

Levy update

Lechelle Earl, Onions Australia CEO

After five years of consultation Onions Australia welcomed the news the changes to the industry's statutory levy had been included in this year's Federal Budget papers.

However, the celebrations were short-lived, with an independent Senator moving to disallow the proposed changes to the long-fought levy.

This move came out of the blue, with no consultation from the Liberal Democrat Senator involved – leaving Onions Australia with a fight on its hands to ensure the changes gained passage through the Senate.

This was despite the fact that Onions Australia (OA) had consulted widely with growers throughout Australia, with more than two years spent on consultation, then a further six months gathering testimonials, followed by a further 12 months sitting on various Government Ministers' desks.

The need for industry to invest in itself was made clear during the preliminary stages of the levy review by then Agriculture Minister Joe Ludwig, who queried why government would invest in an industry that was not prepared to invest in itself.

It seemed a fairly simple process, as the basis for reviewing the levy was the fact that the onion industry could not increase, or even maintain its level of NRS testing or R&D at the current funding levels. Similarly, biosecurity and PHA obligations could not be met without industry contributions to them. The options available to industries were to: increase existing levies, change the levy distribution, increase the number of levy payers, or add new levy/ies.

The process for changing the onion levy was defined and transparent. It involved the peak industry body (Onions Australia), all levy payers, HAL and the Commonwealth Government.

Face-to-face meetings were held to ensure every onion grower in all production regions had first-hand opportunity to ask questions and learn more about the levy process, options and proposals.

Following this, OA was required to submit a detailed proposal that outlined the consultation phase and voting outcome to those organisations that received levy monies. OA in turn forwarded the submission to then Minister for Agriculture (Minister Joe Ludwig). On his behalf, DAFF assessed the proposal against the Levy Principles and Guidelines and provided a recommendation to the Minister. There was then an extensive consultation period, where levy payers were invited to lodge any concerns and objections. No responses were received during that period, despite widespread publicity that levy payers' objections were being sought. Once the proposal was accepted, the Government drafted appropriate legislation to implement the revised levy.

So you can imagine the shock OA felt when it learned that the levy changes were at risk of being disallowed. OA held grave fears that all activities underpinned by the levy system were in jeopardy. OA believed that such disallowance opened the door for any disgruntled levy payers to bypass the levy process to approach Federal Parliament directly and therefore put at risk the entire agriculture levy system.

While OA supports the rights of politicians to review industry, it would seem more than appropriate that happen in consultation with industry at the very least. That certainly did not happen in this instance, and OA believes that showed a lack of respect for growers.

At the time of going to print, the disallowance motion was being voted on in the Senate, so it remains a case of 'watch this space' for the end result.



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Attendees from across the fresh produce supply chain laud successful PMA Fresh Connections 2014

PMA Fresh Connections 2014, the fresh produce industry's largest conference and trade show in the Australasian region, set attendance records and was widely lauded by attendees, conference organisers from Produce Marketing Association Australia-New Zealand (PMA A-NZ) have announced.

ATTENDEES

Delegates hailed from across the fresh fruit, vegetable and floral supply chain, around the region and the globe. Held 24-26 June in Auckland, PMA Fresh Connections 2014 attracted producers, marketers, wholesalers, retailers, foodservice operators, suppliers and other sectors. For example, New Zealand retailer Foodstuffs brought more than 100 of their store owners and produce managers. Over 1100 delegates travelled to Auckland from within New Zealand, as well as Australia, Canada, Hong Kong, the Netherlands, Norway, People's Republic of China, the United States and Vietnam.

Ronan Bowles, Business Manager - Produce Imports for Foodstuffs North Island Ltd said that the event was a continuation of the great conferences held each year in Australia.

"The trade show was exceptionally well attended this year and provided excellent opportunities for us to connect with suppliers and customers", he said.

"Foodstuffs invited store owners and produce managers for a day long presentation, which was well attended and received. It also gave our members an opportunity to experience the wider produce industry by visiting the trade show and having the opportunity to attend some of the other sessions".

PMA Fresh Connections exhibitor Jerry Prendergast, Brand Development & National Key Accounts Manager at MG Marketing, said that the opportunity to meet with such a wide cross-section of the local and global industry was of particular value.

"As a company spanning both New Zealand and Australia, we felt that it was important to ensure we had a strong presence at the trade show, to represent both our company and our industry," he said.

"The attendance of produce industry people from New Zealand, Australia, and from other countries was fantastic and the program created plenty of opportunities for our team to meet with growers, customers and industry people, both casually and formally, at the trade show and in social events."

HIGHLIGHTS

Conference highlights included joint welcoming comments from the Australian Minister for Agriculture Hon. Barnaby Joyce and New Zealand Minister for Primary Industries Hon. Nathan Guy. An inspiring business success story from opening day presenter John Anderson, founder of Contiki Travel, had delegates talking for the rest of the conference. Tim Reid, host of Australia's #1 marketing podcast The Small Business Big Marketing Show, offered insight on low-cost, easy-to-implement marketing tools such as blogs and podcasts.

"If you want to change the bigger things in your business, change lots of little things. Focus on lots of little innovations instead of looking for the next 'big thing'," innovation expert Allan Ryan of the Hargraves Institute advised attendees.

"The quality of speakers was excellent," said Mr. Prendergast. "We had domestic and international procurement representatives, branch managers and account managers attending the conference sessions and trade show, and to have each area of the business be able to take something away from the event was quite special."

In addition to the conference sessions, Dr Hazel MacTavish-West of MacTavish West Pty Ltd said that the post-conference grower tour to Pukekohe was a highlight of her experience.

"The post-conference grower tour was the best-organised of its type I have ever been on," she said. "There was a very good mix of businesses; and the engineering vision and organisation of Compac Sorting Equipment was mind blowing.

"PMA Fresh Connections is the highlight in the horticultural marketing year for me," she added.

Speaker presentations will be made available over the coming weeks via the event website.

The sold-out trade show featuring over 2200 square metres of exhibits was standing room only, with the unique light-filled exhibition space offered by the Viaduct Event Centre adding to the wow-factor.

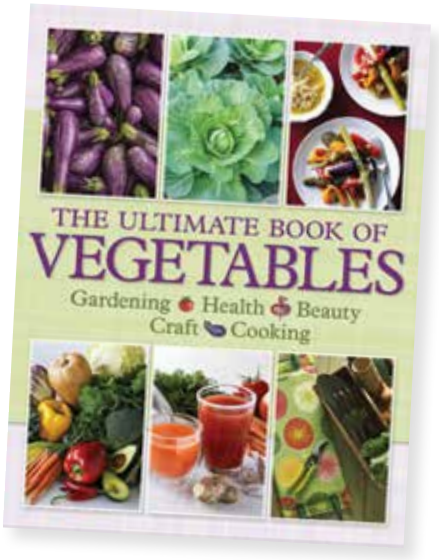
"For us PMA Fresh Connections was the best opportunity we've ever had to meet with our clients and customers in both Australia and New Zealand at the same time, because everyone was there," said John Baker, Chief Executive of Produce Marketing Australia.

The Ultimate Book of Vegetables

The Ultimate Book of Vegetables showcases more than 50 vegetables and their varieties.

Australian vegetables take centre stage in a new glossy hardcover book published by Readers Digest. The exceptional quality book features stunning photographs and delicious recipes, outlining the best of the veggie world and their varieties.

You'll discover how to use them to improve your health and wellbeing, and to make your own hair care and beauty products. For keen cooks, there are 120 great-tasting, healthy recipes to choose from and, for those yearning to 'grow your own', there's advice on creating a productive vegetable garden in even the smallest of spaces. If you love to make things for your home and garden, there are fun and stylish craft projects, too, each with a vegetable-inspired theme. Packed with beautiful photographs and fascinating information, this stunning book will surprise and inform.



The *Ultimate Book of Vegetables* is available by direct mail only from August 2014 for $49.95 plus postage.

To order this book call 1300 300 030, *or*
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Paydirt: Funding the farm

Article courtesy of OUTthere - the inflight magazine for Rex, Skytrans, Airnorth and Cobham

Ask any farmer about their input costs and they'll usually reel off the rising cost of power, fuel, diesel, fertiliser... but most forget to factor in the biggest input cost of all: financing. Sue Webster dishes the dirt on funding the farm.

Farmers should be wary of overlooking financing costs, which have recorded the greatest growth of all typical farm inputs. Between 2006 and 2011, interest costs rose 35 per cent, followed by repair/maintenance costs at 32 per cent and insurance charges at 20 per cent.

From 2002 to 2012, total RBA lending for all farming, fishing, forestry and support services rose from about $27 billion to $66 billion. In that decade there was only one financial quarter when annual lending growth went backwards, and even then only by 0.6 per cent.

Analyst Neil Clark has devised an index of macro-statistics. Working to a benchmark of the 1990 CPI, it showed CPI growth of 14 per cent from 2006–2011, while the US/AU dollar exchange rate grew 24 per cent. However, surpassing both those indicators was the 28 per cent lift in lending to agriculture.

Notwithstanding, the rush for dosh has not destabilised agriculture, yet. The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) notes that farm equity remains strong. Equity ratios for all broadacre and dairy farms hover around 80 to 90-plus per cent, with only the Northern Territory recording slightly below this.

The bureau commented: "The general observation from ABARES survey data is that institutional lenders permit relatively few farm businesses to operate with equity ratios below 70 per cent."

But will that always be the case? At least one person is worried. Commenting on growth projections for Victorian agriculture, Rob Goudswaard, CEO of Rural Finance, says: "Over the past 20 years Victoria's production did double but, in the process, the level of farm debt increased from $2 billion to $12 billion. We don't think an increase in bank debt of this order is a feasible model for achieving the next doubling."

So, what is the debt fuelling? Bigger farms, more production and more intensification have driven most of the rising trend in real expenditure over the past 20 years, suggests the ABARES data. Debt to fund land purchase accounts for the largest share of debt on broadacre and dairy farms, accounting for 44 per cent and 47 per cent, respectively, of average farm debt in 2011/12.

Between 2001/02 and 2008/09 farmland prices were hot. The ratio of average land price per hectare to total cash receipts per hectare rose from about 5:1 to 7:1 on broadacre farms – relatively similar across all agricultural zones and industries.

The result, or the cause, of this finance-fuelled buy-up was the consolidation of smaller properties into larger farming entities, either corporate or expanding family enterprises. Between 2007 and 2011, the biggest growth area in Australian farming was the nine per cent growth in entities with annual operations of $2 million to $10 million.

These farms will be at the forefront of a projected dining boom costed out in the ANZ Greener Pastures 2012 report at $0.7 trillion to $1.7 trillion. However, the price tag for that dizzying level of development is considerable: $600 billion is needed in capital investment to enable production growth and a further $400 billion for farm turnover.

"An annual capital gap of $9 billion … already exists today. Agriculture in Australia … will need to find innovative ways to attract domestic and foreign investment between now and 2050," says the Greener Pastures report.

And where will the capital come from? Contrary to man-in-the-street opinion, not much of it is drawn from overseas. In 2011/12, of the total approved foreign investment in the economy of $170 billion, investment in agriculture was $3.6 billion. The share of agriculture in total foreign investment rose from 0.1 per cent in 2006/07 to 2.1 per cent in 2011/12.

The highest investment was from Canada, with nearly a quarter of the total, followed by the United Kingdom and the United States. Data on foreign ownership of land shows that 11 per cent of Australia's agricultural land is foreign owned.

Mick Keogh, executive director of the Australian Farm Institute, warns that, with the absence of overseas equity investment, our debt level will have to grow substantially over the coming years, if the agriculture sector is to continue to grow.

"Unfortunately, the need to demonstrate short-term performance to keep attracting

FAST FACT

Crop insurance started in the 17th century when farmers in Western Europe formed private mutual crop hail insurance companies and mutual livestock insurance companies.

superannuation funds generates a very short-term focus by Australian fund managers, despite the fact that superannuation is a very long-term investment for most people in Australia," he says.

Superannuation funds and other investment platforms have traditionally snubbed agriculture investment as low yield. However, the top 25 per cent of farms have consistently been close to or more than 10 per cent ROI over the past decade, despite seasonal and commodity price volatility.

What is more likely the reason is the requirement for long-term investment vision – a big call in these times – or the need to understand the dynamics of investing in farming.

Ross Kingwell, chief economist in the Department of Agriculture and Food, Western Australia, and a professor at The University of Western Australia, notes that post GFC, farmers' access to debt finance is now more often proscribed. This will cause a downward pressure on land prices, he argues.

"Some farm businesses will expand more gradually than might otherwise have occurred and land price appreciation may also be affected by there being both fewer buyers among the farmer population and greater restrictions on lending," he says.

In turn, this could see greater reliance on other sources of capital investment, he adds. "Greater foreign investment and perhaps more corporate farming may occur. Equity rather than debt financing may feature more in agricultural development."

Some of the alternative financing structures on the horizon include a novel industry-funded model proposed by Victorian dairy farmer and Nuffield scholar Damian Murphy. He is working at establishing a government-guaranteed Future Farmers Fund using funds invested by retiring farmers.

Professor Kingwell says: "Novel business structures may address some of the risk problems that characterise Australian farming and its historical reliance on debt financing. In concert, these financing and structural changes may promote a more productive and profitable agriculture sector in Australia."

Can farming insure against the bad times?

Insurance and agriculture are uncomfortable bedfellows, and the volatility of the agriculture industry is nearly double that of any other industry. The crops that are the most commonly insured – grains and oil seeds – have the highest degree of volatility in the value of farm production, at 1.8 times the average.

Insurance offerings in Australia focus on traditional products such as crop and peril insurance, and index-based products such as derivatives and yield insurance. However, for some farmers, salting excess funds away in tax-advantaged Farm Management Deposits represents their rainy-day cover. Farmers indicated in 2012, to a National Rural Advisory Council forum, that they "generally do not consider insurance to be 'value for money' when premiums exceed 10 to 15 per cent of the amount insured".

Australia is one of the few countries to maintain a strong farming sector devoid of many insurance products. Many other agricultural nations enjoy generously subsidised insurance offerings; for example, up to 65 per cent of premiums are paid by the Italian Government. In 2010, the World Bank found that: "Australia and New Zealand are conspicuous for the absence of government financial intervention in agricultural crop and livestock insurance."

New tools, such as yield insurance, are venturing onto the market but, in 2012, ABARES commented: "While these tools may represent a low-cost solution to agricultural insurance, markets for these products have yet to mature and their long-term viability is yet to be confirmed."

Impacts reduce storage life of onions

HAL Project VN12000 - Physiology of onion bulbs destined for export markets
Dr Alistair Gracie | Tasmanian Institute of Agriculture, University of Tasmania | Private Bag 54, Hobart TAS 7001 | Tel: +61 3 6226 7468 | Email: Alistair.Gracie@utas.edu.au

Onion bulbs can be stored for relatively long periods under ambient conditions. Even with this high storage potential, seasonal production combined with the time taken to ship onions across the globe from Tasmania to counter-season export markets in Europe tests this capacity to its limits.

This study supports a research higher degree candidate to investigate some key events in the growth and development of onions and during post-harvest handling that impinge on onion quality and storage life. Outcomes from this project will provide a greater understanding of the plant chemical and physical functions that underpin the key quality traits required by the market, even after long transits. This information will aid local industry in making informed production and handling decisions in their quest to reliably supply high quality, robust bulbs with high storage potential.

This study has shown that physical impacts to bulbs during mechanical post-harvest handling can reduce the storage life of onions. Compared with pre-graded samples, onions sampled at different positions along a commercial packing and grading line showed an immediate elevated spike in metabolic activity. The further along the grading line an onion travelled the greater its peak in metabolic activity. Although this metabolic activity eventually returned to a low level during long-term storage, the impacts received during the grading process resulted in a higher rate of weight loss and a reduced storage potential, as measured by time to sprouting.

The effects of collisions on onion bulb storage life were further investigated by conducting a series of controlled impact experiments that considered magnitude and position of the impact to individual bulbs. Onions were found to be most sensitive to impacts to their base, rather than to the equator or neck region. The greater sensitivity of the onion base plate to impacts is most likely due to this regions close proximity to the tissues with actively dividing cells that will form new sprouts and roots. This work demonstrates the importance of minimising impacts to bulbs for maximising long-term storage capacity. It also highlights that special consideration should be given to the design of handling equipment that will limit impacts to the sensitive part of the onion – its base.

Although one-off impacts can reduce the storage life of onion bulbs, crop-to-crop differences in storage potential occur within the same cultivar (Creamgold) grown in the same region and season. We have been able to show that differences in storage potential among crops was linked to metabolic activity prior to commercial grading. That is, mature onions with a high metabolic activity prior to grading had a lower storage life. Why onions differ in metabolic activity prior to grading is unclear; however, we know that time of lifting has a major role to play and that there is a trade-off between a loss of yield if a crop is lifted too early, and a reduction in post-harvest quality/storage potential if they are lifted too late. To aid the determination of when to lift bulbs for on-ground curing we have developed a prototype tool that can measure its progression towards canopy collapse and therefore dormancy. With further work, this tool could be adapted for commercial prediction of when to lift a crop to maximise storage life.

Overall, this work has shown that bulbs with lower metabolic activity have a longer storage life, and that impacts elevate metabolic activity and reduce storage life. It is the first study to show that bulbs are most sensitive to impacts to the base. Furthermore, improving our understanding of when to lift bulbs based on progression towards dormancy may assist in minimising metabolic activity of harvested onions to help achieve the goal of reliable supply of high quality, robust bulbs with high storage potential.

Onion trial established at the Tasmanian Vegetable Research Facility.

Trial designed to understand the links between time of lifting based on leaf senescence processes and post-harvest onion quality and storage characteristics.

Introducing EX4593. Discover even more layers of profitability.

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A number of features of EX4593 help reduce your growing costs and risks. It is more vigorous and matures earlier than the current market standard, and it has high resistance to Basal Rot and intermediate resistance to Pink Root Rot. In addition, less pungency and a high percentage of single centres ensure good market acceptance.

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Identification and incidence of IYSV in South Australian onion crops

Onion Project VN11005 - Kevin Powis, Kelly Hill, Richard Glatz and Greg Baker
South Australian Research and Development Institute, Entomology Unit | Waite Building, GPO Box 397, Adelaide SA 5001

Iris Yellow Spot Virus (IYSV) is a virus which is vectored by onion thrips and infects onions amongst other plants. It causes necrotic yellow-tan coloured diamond-shaped lesions with green centres on onion leaves and flower stalks. Surveys to identify the extent of this disease in South Australia had not been conducted prior to this study even though it has been suspected by commercial onion growers as being present in their crops. This work was conducted as part of a national project, following the devastation of a crop by IYSV in the Riverina 2009. The virus cannot be eliminated from infected plants therefore the only management strategy is prevention, principally by onion thrips control, however, further research is needed to develop sustainable control options for the industry.

Following work in detection of IYSV overseas we have used Enzyme-Linked Immuno Sorbent Assay (ELISA) for evaluating all plant samples, which is the most cost efficient way to test for IYSV. We have developed a reverse transcription polymerase chain reaction (RT-PCR) method, which is a more sensitive method for detecting IYSV, to confirm ELISA results and to test onion thrips vectors.

In 2011-12 IYSV was found in 74% of crops surveyed. Onion samples were collected when plants were mature and post bulbing. Twenty three crops (7 seed and 16 bulb) from 20 properties were surveyed with an incidence of 39% and 21% of seed and bulb samples testing positive, respectively. The virus was found in the River Murray Mallee and Lower South East regions but not in the Upper South East of SA.

In 2012-13 surveys were conducted to determine if the virus was persisting between seasons by re-surveying positively IYSV sites from the previous season. Onion samples were taken from 12 crops (4 seed and 8 bulb) at a mature stage, with all testing positive for the second season. The incidence of IYSV was 53% and 73% for these seed and bulb samples, respectively.

We conducted a study in 2012-13 with onion samples taken at an early, mid and late crop development stage. IYSV was only detected at the late development stage. In 2013-14, we conducted a study of an Early Creamgold crop of onions at a property identified with IYSV in the two previous seasons. Samples were collected at approximately monthly intervals. Detection occurred in the first survey, seven weeks after planting with the crop at a two leaf (15-20cm) plant development stage and thrips density at 0.2 thrips per plant. Low incidence of the virus was detected through the crops development until the 4th monthly sampling. Plants were at a bulbing stage of development at an 8-9 leaf stage (65-75cm) and thrips densities at a peak of 57.3 thrips per plant, the incidence of IYSV within samples was 55%. Visual symptoms of the virus throughout the crop occurred at the fifth and final crop survey with 100% of onion samples identified with IYSV, when the crop was starting to senesce (Fig 1). This suggests that there may be a link between thrips densities and infection levels.

In crops that have been surveyed in SA, IYSV generally infects the crop late in its development following the peak thrips population. Despite this, the studied crop produced 91.5 tonnes per hectare, which is within an acceptable industry production range of 85-100 tonnes per hectare. The timing of viral infection may be important in yield outcomes and requires further investigation.

Fig 1. A commercial Early Creamgold onion crop in the Murray Mallee, SA, presenting with IYSV symptoms 24 months after planting.

During the crop surveys, onion thrips were collected from symptomatic plants for testing by RT-PCR. Only 58% of thrips samples were identified with IYSV, which demonstrated a poor correlation to the virus infection in the associated crops and indicates that only a proportion of thrips vector IYSV. This is likely due to thrips only acquiring the virus at a 1st instar stage, in combination with the fact that IYSV occurs as a localised infection. This justifies the need for a sensitive detection method like RT-PCR which provides a capacity to investigate important variables and dynamics of the thrips-plant host-virus relationship, and to assess management practices (e.g. weed control) for their effectiveness in reducing viral infection of crops and increasing yield while refining control measures.

In 2011-12 weed hosts of IYSV were identified simultaneously within and adjacent mature onion crops from all three SA growing regions assessed. Of 110 weed samples collected, six of eight species tested positive to IYSV (Table 1). In 2013-14 weed hosts of IYSV were tested pre crop-germination to assess the persistence of IYSV through the winter; thrips were also collected for testing. Of 46 weed

Table 1: A list of weed species identified hosting IYSV

Common Name	Scientific Name	Common Name	Scientific Name
Caltrope[2]	*Tribulus terrestris*	Prickly Lettuce[1]	*Lactuca serriola*
Fat Hen[1]	*Chenopodium album*	Sour-Sob[2]	*Oxalis pes-caprae*
Fleabane[1]	*Conyza bonariensis*	Spiny Sow Thistle[1]	*Sonchus asper*
Horehound[1]	*Marrubium vulgare*	Vetch[2]	*Vicia sativa*
Loosestrife[1]	*Lythrum hyssopifolium*		

[1] Weed - collected 2011-12. [2] Weed - collected 2013-14.

samples collected, three of fourteen species tested positive (Table 1). Volunteer, cull-onion and their associated thrips samples, were collected and tested from each site along with onion thrips identified on adjacent weeds. All tested negative to IYSV, indicating the difficulty in evaluating host relationships considering the co-location of these samples with previously identified IYSV-positive plants. More intensive surveys would add further insight.

Four new weed hosts of IYSV were identified: Fleabane, Horehound, Loosestrife and Sour-Sob. The others indicated in Table 1 have been previously identified as hosts by other researchers. Horehound and Loostrife could be important in the epidemiology of IYSV as being perennial, they could provide a consistent reservoir. Unfortunately we were unable to demonstrate this in this study; further work would be required. However, it is likely the perennial weeds would impact on disease incidence in adjacent crops and many annual weed hosts were also identified during and pre-cropping.

Agdia's IYSV ImmunoStrip® test kit (www.agdia.com/) was evaluated and was able to detect all isolates found in the study. This provides growers with a rapid (5-10 minutes) on-site detection of IYSV (without expensive equipment), potentially allowing them to make management decisions to control thrips and remove sources of inoculum before they can significantly impact bulb size and seed yield. Generally, one square inch of plant tissue is ground down into a liquid buffer; a test strip produces clear purple bands to identify the presence of the virus (Fig 3).

Gene sequencing of eight IYSV samples extracted from onion plants, thrips and weeds collected from NSW and SA, were registered in GenBank (www.ncbi.nlm.nih.gov/genbank/). Phylogenetic analysis identified a degree of isolate diversity within SA. It also identified a group of isolates that fit into a second distinct clade to those previously detected in Australia, which could share a common origin and potentially derive from a separate incursion. Interestingly, a thrips sample collected from NSW fell into this clade, and an isolate collected from a seed crop in the lower south east of SA was identified in the clade common to the east and west coasts of Australia. This indicates a degree of isolate movement, which we speculate may be due to viruliferous thrips harbouring on 'bulb to seed' crop onions that may be transported around the country. This highlights the need to understand IYSV epidemiology and develop sensitive testing procedures, and perhaps to develop related biosecurity protocols for inter-regional transfer of onion material.

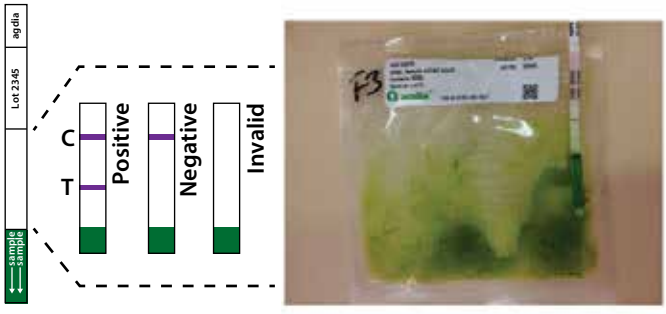

Fig 3. IYSV-positive onion plant tissue tested with Agdia IYSV Immunostrip®. The presence of two discrete purple bands (arrows) indicates a positive test.

Minor Use permits for the Onion Industry

Jodie Pedrana, Portfolio Manager - Minor Use - Chemicals. Horticulture Australia Limited
Suite 2, Level 5, 87 Wickham Terrace QLD 4000 | PO Box 12996 George Street Brisbane QLD 4003 | Mob: 0404 314 751 | Email: jodie.pedrana@horticulture.com.au

Pesticide companies submit use patterns for registration to the APVMA and the onion industry is generally provided with significant registrations because of its major crop status although there can be considerable gaps.

Minor use permits are required in the onion industry where the market size is considered too small and therefore not adequate commercial returns for the research and development investment by the pesticide companies.

This project funds the preparation and submission of minor use permits to the APVMA on behalf of the onion industry.

The minor use funds in the 2013/14 year provided for preparation of permit applications with the APVMA for the following minor use permits:

CURRENT PERMITS

Permit No.	Permit Description	Comments	Submit to APVMA	Status
PER11450	Tramat (ethofumesate) / Beetroot & onions / Various Weeds - REGISTERED	08-Jun-09	30-Jun-15	Growcom
PER13119	Diazinon / Onions / Onion thrips	06-Mar-12	31-Mar-17	AOIA
PER14602	Boscalid (Filan), Iprodione (Rovoral Aquaflo & Chlorothalonil (Bravo) / Onion seed & Onions / Neck Rot (*Botrytis alli*)	24-Jul-14	30-Sep-16	AOIA
PER13698	Phosphorous acid / Lettuce (leaf and hydroponic), Fennel and Bulb (Alliums) Vegetables / Downy Mildew	01-Oct-12	30-Sep-17	Growcom
PER14773	Bentazone-sodium (Basagran) /Onions / Broadleaf weeds	16-Apr-14	30-Jun-16	AOIA

EXPIRING PERMITS

Permits that will expire by September 2015

Permit No.	Permit Description	Comments	Status
PER11450	Tramat (ethofumesate) / Beetroot & onions / Various Weeds	Registered by Bayer for onions and beetroot	No action required

DATA GENERATION PROJECTS CURRENTLY UNDERWAY

Permit No.	Permit Description	Contractor	Status
PER13574 now PER14602	Boscalid (Filan), Iprodione (Rovoral Aquaflo & Chlorothalonil (Bravo) / Onion seed & Onions / Neck Rot (*Botrytis alli*)	CPR MT11023	APVMA data requirements - residue data for boscalid (in progress x 4) and iprodione (completed x 2, additional x 2 - in progress). CPR expects completion by Mar-14. **Completed 18/12/13**

OUTSTANDING DATA REQUIREMENTS ASSOCIATED WITH PERMITS

Permit No.	Permit Description	Trila Details
PER11851 now PER14773	Basagran (bentazone-sodium) / Onions / broadleaf weeds	APVMA data requirements - residue data from a minimum of 4 trials to support renewal of permit.
PER14602	Boscalid (Filan), Iprodione (Rovoral Aquaflo & Chlorothalonil (Bravo) / Onion seed & Onions / Neck Rot (Botrytis alli)	APVMA requires 2 residue trials in iprodione as the trials undertaken and submitted via CPR – MT11023 were only 0.25 times the proposed rate. Trials must be the maximum application rate and number of applications and sampling supports the desired WHP. Samples must be frozen and analysis completed within 6 months of collection.

PERMIT APPLICATIONS WITH APVMA FOR ASSESSMENT

Permit No.	Permit Description	Comments	Submit to APVMA	Status
PER11854	Switch (cyprodinil + fludioxonil) / Onions / White rot, Black mould, *Botrytis*	As registration delayed, asked APVMA to extend permit for 6 months.	24/6/13	REGISTERED Jan 2014
PER13574	Filan (boscalid), Rovral (iprodione) & Bravo (chlorothalonil) / Onion / Neck Rot (*Botrytis alli*)	Renewal of PER13574 APVMA # 14602	18/12/13	Permit Issued PER14602 24/7/14
PER11851	Basagran (bentazone-sodium) / Onions / broadleaf weeds	Renewal of PER11851 4 residue trials still outstanding and permit will not be renewed unless data provided.	1/04/14	Permit Issued PER14773 16/4/14
PER12397	Alpha-Cypermethrin / Onions / Onion thrips	Renewal of a vegetable permit PER12397 that was surrendered by Growcom	4/08/14	Submitted

For permits to be renewed (that do not have any outstanding data requirements), the APVMA fee is $350.

The expected time frame to renew APVMA permits is 3 months. Therefore the renewal process should commence ~3 months before the permit expires to ensure a continuation of the permit availability.

It is difficult to provide a specific costing for the generation of additional data required by APVMA as it is unique for each permit.

But approximate costs are:

- $8000 per GLP residue trial (generally APVMA requires 2-4 residue trials per crop).
- $7000 per efficacy or crop safety trial (generally APVMA requires a minimum of 2 trials per crop).
- $2000 for permit application preparation
- $350 APVMA fees

WHO WE CONTACT FOR PERMIT INFORMATION

The person(s) contacted by PMUC with any issues to do with permits are:

- Lechelle Earl (OA)
- Trevor Twigden (OA)
- Andrew Moon (OA)
- Julian Shaw (OA)
- Jason Dennis (Field Fresh)
- Dean Metcalf
- Richard Jones

NOMINATED PERMIT HOLDER

- Australian Onion Industry Association Inc.

PESTICIDE REGISTRATION AND PERMIT INFORMATION

Information on Australian registered pesticides can be found at the APVMA website: https://portal.apvma.gov.au/pubcris

Information on Australian permit pesticides can be found at the APVMA website: https://portal.apvma.gov.au/permits

STRATEGIC AGRICHEMICAL REVIEW PROCESS (SARP)

Industry meeting conducted and provided with final report - August 2009

Industry review with final report - August 2010

Industry review and update with final report - February 2013

Industry review and update with final report – September 2014.

2014 Reg Miller Award recipient

This year's Reg Miller Award winner has dedicated the past five years of his life to passionately supporting the Australian onion industry.

While Tasmanian Brian Bonde has been involved in the industry for many years, little did he realise just how important his role would be when he accepted the role of Onions Australia Chairperson in 2008.

He soon took up the cudgels and found himself in the midst of the extensive consultation process to revitalise and modify the statutory onion industry levy.

After spending countless hours consulting with growers across the country, he was thrilled when the levy vote was counted and then signed off on by all levels of government.

Little did he know that the levy would hit a hurdle at the last moment – when it was recommended for disallowance in the Senate.

And so began a whole new fight – which again took many hours, including negotiations and briefings with politicians from all sides, plus endless interviews with the media.

While much of Brian's recent years have been taken up with the levy consultation, it is important to look back at his farming history.

Brian is a fourth generation farmer having lived on the family property at North Motton in Central Coast Tasmania all his life. He farms 240 hectares traditionally having grown a range of processing and fresh market crops including potatoes, peas, beans, onions for export and poppies.

Today Brian is moving towards semi-retirement and is currently growing poppies and operating a successful cattle enterprise. A small forestry enterprise is also incorporated in the farm business. Brian has four children, none of whom are involved in the farming operation.

Brian has been actively involved in his industry having served as Chairman of the Tasmanian Farmers and Graziers Association (TFGA) Vegetable Council, as well as having held the position of Onions Australia Chairperson and, until recently, was also a member of the OA Executive Committee. He remains as a valued member of our Industry Advisory Committee.

His importance in the industry was also recognised when he was chosen to be the face on the packets of Coles Australian grown vegetables. He has a firm belief that we can do much better as an industry and has an interest in progressing this.

Brian is also an active member and past President of the Rotary Club of Ulverstone West and has interests in breeding and training horses, rodeo, football and travel. He has been committed to his community and the agriculture industry.

OA Chair Andrew Moon said Brian was a deserved recipient of the prestigious award. "Brian has devoted a huge amount of time to OA, particularly relating to the review of the levy, which has consumed thousands of hours of his time. He is a much respected figure within OA and remains committed to ongoing improvement and growth within our industry," he said.

Brian Bonde.

Brian Bonde has spent much of the past five years talking to growers and politicians in the fields about changes to the onion industry statutory levy.

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International Horticultural Congress – Brisbane 2014

Bradley Mills | Industry Services Manager | Horticulture Australia Limited | Level 5, 606 St Kilda Road, Melbourne VIC 3004 | Mob: 0408 635 465 | Email: bradley.mills@horticulture.com.au

"Outstanding", "spectacular" and "overwhelming" were some of the words used by delegates in response to the 29th International Horticultural Congress (IHC2014) that was recently held in Brisbane, Australia.

This week-long event was attended by over 3400 delegates from 106 different countries. It comprised 156 keynote presentations, 1202 oral papers, 1151 electronic poster presentations and eight very special plenary talks by eminent international speakers.

Every aspect of horticultural science was covered in the program which focussed on the theme "Horticulture – Sustaining Lives, Livelihoods and Landscapes". Tropical Horticulture was also given special attention given the fact that this was the first Congress of this nature to be held in a tropical zone. The rising importance of horticulture in Asian countries in general, and in China in particular, was also a feature of the overall program.

The week was arranged around 43 symposia, many of which are on the regular conference program of the International Society for Horticultural Science (ISHS). Up to 20 concurrent sessions were required daily simply to fit in the overall program which required the entire resources of the Brisbane Convention and Exhibition Centre (BCEC) to accommodate all of these sessions.

All fruit, vegetable and ornamental crops were well represented as were disciplines such as production and post-harvest horticulture along with plant protection and protected cultivation. Plant breeding was particularly well supported which was not expected initially. However, areas such as biosecurity, product life cycles and fruit set were not well supported perhaps indicating the weak efforts worldwide in these topics that are critical for not only horticulture but for international trade.

Some of the highlights from attendance at the congress were not just looking at the cutting edge research being done in your relevant area of interest, but taking the opportunity to see what exciting research is being done in other fields of horticulture.

Some examples included presentations on:

- Roof top gardens in cities as a means of growing a city's fruit and vegetable needs. A study on the Italian city of Bologna estimated that the useable (flat surface) area available on roof tops within the city had 3500 rooftops with an estimated 82 hectares available. With intensive horticulture production, the researchers estimated that this area could produce approximately 77% of the city's vegetable consumption needs.
- Cryopreservation of fruit varieties – this is a process where the plant parts are preserved by cooling to sub-zero temperatures (usually with liquid nitrogen) with apparently indefinite longevity of the plant materials which can, if required be regrown when brought out of storage. This is a bit like the process of storage of eggs and embryos commonly used in human IVF programs. In the banana industry they have been able to store some 900 varieties out of a current 1400 available varieties.
- Robotics and intelligent systems – use of automation on farms to integrate data capture and reduce labour utilisation. Some examples of their current/near term uses include robotic planting of vegetable seeds, robotic aircraft weed management, pest and disease surveillance and management, crop forecasting and harvesting, satellite remote sensing of nutritional status of tree crops etc. Another presentation looked at 'automation of dormant pruning of speciality crops' such as grapevines where the robot was able to identify and cut individual vines using camera guided robotic pruners attached to an autonomous tractor. Dr Peter Hirst, the US researcher at Purdue University believes the grape pruner is fairly close to being perfected with the next stage of development being improvements in cutting time.
- A presentation on Japanese innovation in hydroponic strawberry production in areas where soil was salt damaged from the 2011 earthquake caused tsunami showed automated glass houses where pest and disease management/ spraying is automated as was harvesting of individual strawberries with robotic maturity sensing and harvesting – Japanese ingenuity at its best!
- Discussions with a researcher working with bees to detect various pests. The researcher is able to train the bees in a matter of a couple of hours to detect various pests and diseases. Bees can also be tagged with minute RFID tags to track their movement. This has huge potential use in pest and disease detection, but also in biosecurity surveillance. The bees can also be trained to focus on pollen only from specific fruit tree flowers, potentially increasing pollination efficiency dramatically. This work is being done in collaboration with US researchers utilising the same capacity to train bees for detecting explosives such as land mines etc. and possibly drug detection.
- Water use of date palms growing in saline soils of UAE. Scientists were able to measure actual water use requirements of mature date palms using sap flow analysis in the centre of the trunk of the tree. This was extremely important in managing water use in areas where the available water was extremely saline.

On farm insurance

In times of great uncertainty in the onion growing industry, we understand your need to find confidence in your providers. At Richard Ray Insurance Brokers, we can give you that confidence.

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Steadfast
STRENGTH WHEN YOU NEED IT

The team at Mrs Jones Restaurant Bar Lounge in Devonport pulled out all the stops when it came to hosting Onions Australia's delegates in Tasmania earlier this year.

Led by head chef James Lockett, the a la carte restaurant designed an all-onion themed dinner that had those attending astounded by the creativity.

From old favourites such as French Onion Soup – but with

Menu

ENTREES

French Onion Soup
Toasted onion jam cheese sandwich, ox tail gow gee, mustard seed butter

Onion Tarte Tartin laced with Dukkah
Spanish onion, roasted eggplant, crispy brown onion and radish salad with crème fraiche and lemon pepper

a Mrs Jones modern twist – through to onion desserts, tastebuds were given a real treat.

The bluff restaurant went to great effort to continue the onion theme, with each table adorned with candlelit onions and superb service from the staff.

The dinner received rave reviews from OA delegates, with many declaring the menu the 'best ever' onion theme they had attended.

MAIN

White Onion Cured Crispy Skin Salmon Fillet
Spring onion potato puree and confit of balsamic shallot

Poached Grass Fed Beef Tenderloin
Onion jus, twice baked spring onion and cheese soufflé with green onion butter

DESSERT

Caramelised Onion Ice-cream
On toasted brioche with secret centre, red onion caramel, silver leaf and fairy floss

Candied Red Onion Jam Cheese Cake Brûlée
Port jelly, caramelised onion ice-cream

Farm biosecurity basics: Monitoring and surveillance of pests

Plant Health Australia | Level 1, 1 Phipps Close, Deakin ACT 2600 | Phone: (02) 6215 7700 | Fax: (02) 6260 4321 | www.planthealthaustralia.com.au

An important part of biosecurity on your farm should be the routine checking of crops and livestock for signs of pests and disease. The date and all observations should be recorded, even if you didn't find anything.

Regular monitoring of your crops or livestock gives you the best chance of identifying a new pest before it becomes established. This can be incorporated into existing integrated pest management (IPM) or property pest management plans (PPMP) as part of your routine farm management activities.

Steps you can take to improve your chances of early pest or disease detection include:

- Establish an active monitoring program and record the results, even when nothing is found.
- Become familiar with the usual plant and animal disease symptoms, insect pests and weeds found on your property. By knowing what's normally found on your property will increase your chances of discovering something unusual. Consult with neighbours on anything suspicious, as it is unlikely that the cause of the problem doesn't stop at your own property boundaries.
- Know what the high priority exotic biosecurity threats are for your industry. Information on exotic pests of onions that were identified during the development of the Industry Biosecurity Plan for the Onion Industry is available on the Plant Health Australia website at http://www.planthealthaustralia.com.au/industries/onions/. Other crop pests are listed on industry pages. For animal disease information contact your local veterinarian
- Ensure your farm personnel know how and where to report any unusual diseases, pests or weeds.

Any unusual pest or disease symptom should be reported immediately via the Emergency Animal Disease Watch Hotline on 1800 675 888 or the Exotic Plant Pest Hotline on 1800 084 881. Early detection and reporting enhances the chance of effective pest control and/or eradication, and will also prevent or minimise the long-term damage to the individual producer and their industry.

If you suspect you have found an exotic pest, the following general precautions should be taken:

- Report it.
- If possible, photograph the pest or disease symptoms.
- Mark the location of the pest in your crop or isolate affected livestock.
- Wash hands, clothes and boots that have been in contact with affected animal, plant material or soil.
- Restrict the movement of people or equipment near the affected area.
- Do not touch, move or send affected material anywhere. Contact your state/territory department of primary industries and they will assist with the correct protocols for sampling, handling and transport of samples. Incorrect handling could further spread the pest or make the samples unfit for diagnosis.
- Identify people, stock and machinery/vehicles that have recently been in the area and ready them for decontamination or treatment. Accurate records of people and equipment that has been in contact with the property will help to track the potential spread and/or origin of the pest or disease.

See the Farm Biosecurity website farmbiosecurity.com.au for more information, videos and useful templates to boost biosecurity on-far.

For copies of surveillance records visit farmbiosecurity.com.au/toolkit/records

How to effectively manage industry development

VN13002 - Development of a Risk Management Plan for the Australian onion industry
Primary Investigator: Tundra Howe. Phone: 03 6423 6008
Email: tundra.howe@tqaaustralia.com.au | Organisation: TQA Australia

Any business can be adversely affected by a number of factors.

Businesses operating within the horticultural sector are no different. Factors that affect those operating in this sector may be internal or external and may or may not be within the business' control. Factors that face businesses within the horticultural sector may include fluctuating global markets, rising production costs, pests and diseases, weather and human error. These factors can pose a significant risk to all organisations operating within the supply chain, from individual businesses through to industry organisations.

Like many other horticultural industries, the Australian onion industry is facing increased pressure to remain competitive in a global marketplace. In order to meet its objectives, the industry needs to gain a better understanding of current and emerging risks that may have an effect on its viability and effectiveness.

The primary aims of this project were:

- to ensure that the Australian onion industry has the ability to respond to change efficiently and effectively, minimising financial and reputational impacts; and
- to assist the industry better manage risk across the supply chain and within the peak industry body itself.

Importantly, this project will contribute to Onions Australia's objective "… to ensure the Australian onion industry has the capacity to effectively manage industry development".

A register of risks, a Risk Management Plan and a Crisis Management Plan have been developed. The Risk Management Plan provides a framework for the industry to identify and manage risk, while the Crisis Management Plan will provide guidance to OA on how to deal with a crisis situation should one occur.

Similar documents have also been developed for levy-payers. These documents will assist levy-payers implement effective risk and crisis management processes within their individual businesses and can be tailored to suit their needs.

From this project and through the risk identification process, a number of recommendations have been identified. The key recommendations are for the onion industry to:

- identify opportunities to lobby the Federal and /or State governments on a range of issues affecting the onion industry;
- consider research and development into the effect of climate variability and drought on growing onions; and
- establish a Crisis Management Team to oversee the risk management process and deal with crisis situations in a way that limits the damage to the industry's reputation.

Onions abroad

Onions Australia | PO Box 9420, Mt Gambier West, SA 5291 | Ph 08 8725 8862
E Lechelle@onionsaustralia.org.au

A family's visit to Uganda planted the seed for a unique joint venture.

Onions Australia's new deputy chairman, Peter Shadbolt, first visited Uganda in January 2013 on a fact-finding mission designed to build relationships between churches. The visit was a success, but it wasn't the only partnership forged. During the 10 days abroad, Peter and his family developed a close bond with their driver, Moses Kakonge, who had a three-hectare farm at Mbale.

When Moses was a child, his family had been forced to flee their village, and it wasn't until he was in his mid-twenties that he was able to reclaim their land. The problem was that he had no idea how to farm it, so Peter suggested that he try growing onions.

"When you get to know an onion grower, they get a bit passionate about them," he said.

Peter and his wife, Tracy, plant approximately 32 hectares of onions each year at their Swan Hill business Scotties Point Farm, and he knew that they would be the ideal crop for his new friend.

"Mbale is only about 100 kilometres north of the equator, and they have two seasons a year – the big wet and the smaller wet with a few months break in between," he explained. "The beauty is that you can get two crops in 12 months, and prices are also fairly good over there if you grow a good product – you can get the equivalent of anywhere between $800-$1000 AUD per tonne."

When the Shadbolts returned to Swan Hill, they sent over some short day onion seed in the mail – "It went straight through customs!" Peter said - and a small amount of money to pay for a bag of fertiliser and a fire fighting pump to irrigate the onions. Moses' first crop, transplanted in June 2013, wasn't without its challenges.

"It was planted like wheat, so there were no rows and order to speak of, and as they hand weeded, the ground was compacted which made it impossible for water to penetrate," Peter explained. "We also had problems with leaf diseases - mainly purple blotch and a small amount of mildew."

Peter and Tracy returned to Uganda last September to help harvest the onions and assess how they had grown.

"In about a quarter of an acre, we only harvested about 200 kilograms of onions; the rest were just sticks covered in mould," he said.

But it was certainly better than nothing - Moses sold the good onions for the equivalent of $750 AUD, and the sticks of onions for $300 AUD.

"It was amazing… no waste," Peter said.

The second crop was slightly better, but Peter could still see room for improvement, so in March 2014, he made a third trip with Tracy and daughter Hope, 15. They registered a company named GIDANTIU

Peter Shadbolt (right) with Moses Kakonge.

Enterprises (the acronym for 'God is doing a new thing in Uganda'), and arranged to purchase a tractor and some machinery from the capital, Kampala.

"We bought a brand new 85 horsepower Massey Ferguson tractor, a 600 litre spray rig, a chisel plough, a disc plough, and I found an old sugar cane hilling machine that we modified to make beds. All up, about a $65,000 USD investment. High risk? You betcha!" Peter said.

He began to train Moses in the art of tractor driving, ploughing and making beds.

"The two things I hadn't counted on were the fact that he had no idea of how to drive a tractor or that the land was full of tree stumps that would break a chisel plough in half," Peter said.

Their persistence paid off, and the onions thrived in their nursery beds.

"We organised some drip irrigation and showed them how to connect it all up including filters and valves. The water was from the town supply, which is expensive but simple at this stage of the project," Peter said.

The crop is weeded by hand as there is no access to chemicals such as Totril or Tribunal. Mancozeb and Copper Oxy Chloride is helping to combat fungal disease and an insecticide is also used sparingly.

"Plans are underway to try to obtain a permit to bring in some more chemicals,

although labour is cheap at $5 USD per day, and there are plenty of workers," Peter said.

GIDANTIU Enterprises has now leased four hectares of land, with plans to set aside half of the property for training other farmers in the hope of building wealth for surrounding villages. Further down the track, the company would also like to be able to provide micro loans of around $2000 AUD to enable farmers to set up small irrigation systems in order to guarantee a quality finished product.

"Moses and I are in a business together for profit, however the goal is to train other farmers in modern farming techniques, create a central packing shed and to be able to market growers' onions under one banner," Peter said.

Meanwhile, the third crop has just been harvested, and it is the best yet, with the goal of growing up to 20 tonnes per hectare looking more realistic every day.

"It's amazing to think how quickly we have progressed – we thought that it would take five years to get to this stage, and it's gone extremely fast," Peter said. "I'm just an onion grower from Swan Hill, but I thought let's have a crack and see what we can do."

Photographs by Hope Shadbolt

How to not have *Botrytis* in your seed crop

Dr Dean Metcalf, Biocontrol Australia Pty Ltd | Molesworth Tasmania 7140 | Email metcalf@tassie.net.au | Tel. 0409 054 323 | Dr Jason Dennis, Bioden Pty Ltd & Field Fresh Tasmania

Botrytis allii is a fungus that is rarely visible in the growing onion crop, but is none-the-less present and causes neck rot in stored onions and can cause them to decay en-route to export markets or on the shelf.

The decays usually begin about six weeks after lifting, and they keep occurring throughout the duration of storage. Major losses in cool temperate regions have been attributed to the disease, especially in Tasmania, and more recently in Queensland. The costs of clean-up and damage to market reputation are an additional cost.

Infested seed is a major source of infection, with the percentage of bulbs which decay directly related to the percentage of seed infection. The disease further spreads between plants in wet weather, to establish latent (invisible) infections.

It is possible to test seed for neck rot so as to select uninfested seed. There is a lot of variation in the methods different labs have used, and some of them detect *Botrytis allii* more effectively than others.

The present research project is aimed at methods for producing *Botrytis* free onion seed. The disease is cycled by planting of infected mother bulbs, which can appear to be completely healthy when they are planted in the seed crop. If stored these bulbs would decay, but if planted most of these bulbs begin to grow and most do not decay, but *Botrytis allii* in the neck region becomes active.

Under high humidity this can become visible as the grey furry symptom called "scape blight", but the absence of this symptom does not mean that the crop is free of the disease. In fact the disease can be growing inside every plant without the slightest symptom being visible, which makes it all the harder to manage.

From the field symptoms we have seen, it seems likely that some of the infected mother bulbs actually carry the disease on the outside of the bulb. The disease inoculum was probably introduced to the bulb from a nearby bulb that decayed in storage. It may be possible to disinfest these mother bulbs. The disinfestation could probably be done with many different agents, but in this study sodium hypochlorite (household bleach or NaOCl) was investigated.

Mother bulbs were immersed in 1.37% NaOCl for 10 minutes, 20 minutes or 60 minutes compared to an untreated control which was not immersed at all. After the immersion the bulbs were washed in rainwater to remove the NaOCl.

The first assessment of this experiment was to find out whether *B. allii* had been eradicated from the mother bulbs by the NaOCl treatment. Five replicates of

Sprouting mother bulb with *Botrytis allii* sporulation on the neck.

20 bulbs from each surface sterilisation treatment had neck segments removed and were incubated on moist tissue paper to determine whether *B. allii* was present within the neck. These bulbs had all been sound at the time of treatment and had survived the six months since harvest without decaying, yet the results in Table 1 show that *B. allii* was present within the neck of 52% of the untreated bulbs. Affirming our belief that the disease can be present in an onion neck and not cause decay for some reason.

In the bulbs that were treated with NaOCl the 10, 20 and 60 minute immersions reduced the level of *B. allii* detected in onion necks to 30%, 11% and 10% respectively. The ability to reduce the level of *B. allii* in mother bulbs in a seed crop is a promising opportunity for producing disease free seed because there will be less inoculum in the crop in the first place.

Seed was produced from the bulbs that were treated with NaOCl. The seed was tested for presence of *B. allii*. There are two

Table 1: The percentage of mother bulbs infested with B. allii after immersion for 0, 10, 20 or 60 min in 1.37% NaOCl, and the level of B. allii in the seed produced from those bulbs.

Duration of sodium hypochlorite treatment	Percentage of bulb necks infected	Percentage of Internal seed infection	Total Internal and external seed infection
O Minutes	52.0% a	23.2 a	29.2
10 Minutes	30.0% b	6.2 b	22.4
20 Minutes	11.0% bc	7.2 b	22.4
60 Minutes	10.0% bc	6.8 b	21.0
P Value	0.0013	0.0002	0.3060
LSD 0.05	20.06%	7.07	

Numbers followed by the same letter are not significantly different according to LSD (0.05)

sources of *B. allii*, that which is inside the seed coat and that which is on the outside of the seed coat. The *B. allii* on the inside of the seed coat would seem to be more hazardous. It was found that the untreated bulbs produced seed with 23.2% *B. allii* and this was reduced by about 70% by any of the NaOCl immersion treatments (Table 1). The reductions in external infection were lower (Table 1) suggesting that this type of infection may be more controlled by airborne spread than spread from the mother bulb.

It must be remembered that these results were obtained in a trial crop where there were un-naturally high levels of *B. allii* and *B. allii* has the chance of spreading from the untreated control bulbs to other treatments. In an entire commercial crop treated with NaOCl even more results could be expected from disinfestation treatments. Overall the treatment seems very promising for reducing *B. allii* in seed crops. Anyone wishing to use the treatment should contact the authors, as the entire method for commercial treatment is not fully described in this article.

Above: Treating onion bulbs with bleach to remove *Botrytis*.

Left: Dean Metcalf inspecting onion heads for *Botrytis*.

Assessing and managing *Iris Yellow Spot Virus* in onion production regions of Australia

Andrew Watson (NSW), Jianhua Mo (NSW), Tony Napier (NSW), Scott Munro (NSW), Alan Boulton (NSW), Greg Baker (SA), Kevin Powis (SA), Richard Glatz (SA), Brenda Coutts (WA), Dennis Persley (QLD) and Dean Metcalf (TAS)

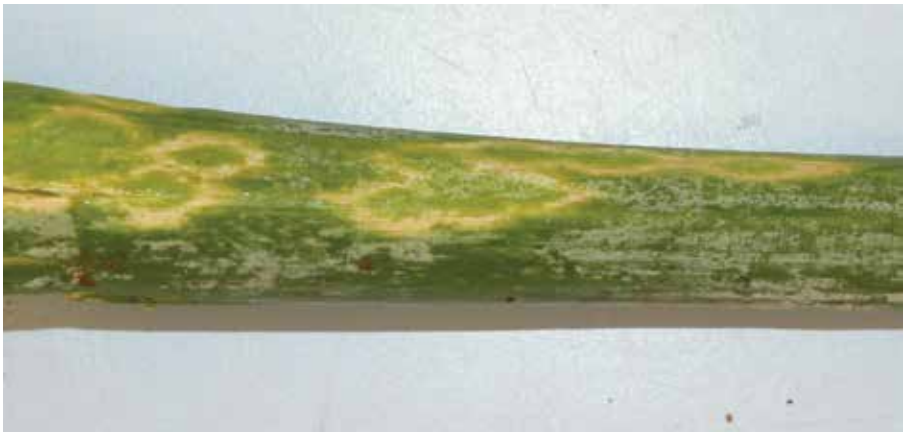
Iris Yellow Spot Virus (IYSV) is a virus affecting onions, causing most commonly an elliptical lesion on the onion leaf.

The virus is transmitted from plant to plant by onion thrips. IYSV is transmitted by adult onion thrips that have acquired the virus at the larval stage. The virus cannot be passed from one onion thrips generation to the next or from onion plants to seed. In a survey, both bulb and seed onion crops in New South Wales (NSW), South Australia (SA), bulb crops in Western Australia, seed crops in Victoria have been identified as positive for IYSV. Tasmania was found free of the virus. Even though during the survey no IYSV was found in Queensland, it was subsequently found in some crops in 2013.

The survival of IYSV which includes the survival of infected thrips from onion crop to onion crop is an important factor in understanding the disease. More work was carried out to investigate this aspect of IYSV survival. IYSV was surveyed around onion cull piles and paddocks of previous season's onion crops in the Riverina during February-July 2013 to investigate likely hosts of the virus during the crop break. IYSV was not detected in volunteer onions, weeds, and sentinel Lisianthus plants, nor was it found in most onion thrips samples collected from the plants or removed from sticky traps. The only exception was an onion thrips that was found to have the virus collected from milk thistle. The results suggest that IYSV was not prevalent in the vicinity of onion cull piles or paddocks of previous onion crops during the crop break in the region. Onion thrips were present around onion cull piles during the crop break; however, their numbers dwindled in winter. It appears that IYSV-infected onion thrips were not confined to the immediate vicinity of onion cull piles or paddocks of previous season's onion crops. Weed hosts of onion thrips and IYSV further away may play an important role in sustaining IYSV epidemics in a region.

Trials were conducted in field bulb onion crops in the Riverina during 2011-2014 to evaluate the effect of a mulch cover on thrips density, diseases, and onion yield. Inconsistent with findings from the previous project VN07000, we did observe significant beneficial effects of mulch cover. Onion beds covered with straw or rice hulls reduced onion thrips larval density by up to 58% after the mulch cover was put out. Many factors may have been responsible for the reduced larval density, one of which is that mulch cover may have enhanced native thrips predator populations through the provision of shelters and conservation of soil water. Mulch cover also significantly increased bulb size and in some trials onion yield. The yield effect can be attributed to the reduced water loss in mulch covered plots. For straw mulch to be practical, a tractor mounted adapter that shreds and spreads the straw would need to be developed.

A better understanding of IYSV and its role in onions and its interaction with thrips has now been gained. IYSV is widespread in Australia and usually exists at innocuous levels without causing noticeable damage to the crop. Eliminating the source may not be a viable option where IYSV is already endemic. However, good sanitary practices such as removing weeds along the crop border and volunteer onions, and destroying cull piles will contribute to a reduction of infection rate. Known IYSV weed hosts that are common in Australia include curled dock, fat hen, milk thistle and wild lettuce.



IYSV outbreaks are often associated with distressed crops (nutrient or water-stress). It is thus important to maintain good fertility and adequate soil moisture in the crop. Mulch cover maintains soil moisture and thus reduces chances of water stress. No onion varieties are totally immune to IYSV but 'green leaf' varieties generally have less incidence and severity of IYSV than 'blue leaf' varieties under moderate to severe stress.

Onion seed crops should be planted away from bulb crops to reduce influx of vector (thrips) populations. Crop rotation should be practiced to minimise build-up of thrips populations. Late-season crops act as sinks pulling thrips from surrounding early-season crops when they start to senesce, increasing the chance of introducing infectious thrips. To reduce the 'sink' effect, later-season crops should be planted up-wind to early-season crops

Finally, onion thrips is the only vector of IYSV in onions and should be controlled when populations are high. Insecticides remain a major tool in onion thrips management. To reduce the development of insecticide resistance, insecticides of different groups should be rotated with no more than two consecutive applications of the same insecticide.

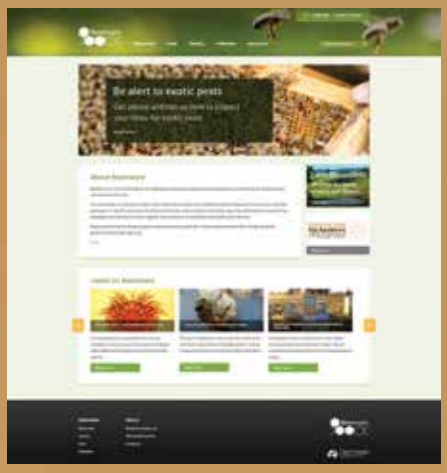
In summary, management of IYSV in onions is best accomplished using an integrated pest management (IPM) strategy including:

- Promote plant vigour and avoid stress
- If possible, select 'green leaf' varieties over 'blue leaf' varieties
- Remove weeds and volunteer onions, and destroy cull piles
- Plant seed crops away from bulb crops
- Plant late-season crops away or upwind of early season crops
- Control onion thrips when its density exceeds your pre-determined threshold and rotate chemicals of different groups.

Plant Health Australia

Onion seed production is one of the many vegetable seed crops that benefit from pollination by honey bees, which significantly boost seed yields as they forage for nectar and pollen.

BeeAware, a new website launched by Plant Health Australia, explains to farmers and beekeepers how to get the maximum benefit from this beneficial insect.



Advice on pollinating onions from BeeAware

Flies have been used for pollination of onions in breeding trials but for commercial production of onions, honey bees are usually the only option.

Honey bees will visit onion flowers to collect both nectar and pollen, but only nectar foragers will visit both male-sterile and male-fertile lines in hybrid onion seed production.

Onion nectar is not particularly attractive to honey bees. The sugar concentration of the nectar has been reported to increase if potassium fertiliser is added. However, high amounts of potassium in nectar have been suggested to be the reason why onion nectar is not particularly attractive to honey bees. Bees have a tendency to move up and down rows instead of crossing between male-fertile and male-sterile inbreds, which probably reduce pollination. They also tend to find male-fertile lines more attractive than male-sterile lines.

Because only bees foraging for nectar will visit both male-fertile and male-sterile lines, colonies introduced to onion fields should have large numbers of adult bees and should not be fitted with pollen traps or be fed with sugar syrup, as both these methods promote pollen collection at the expense of nectar foraging.

Usually bees do not find onions very attractive and they can be easily drawn away from them to other surrounding crops and weeds. For this reason, high colony stocking rates are recommended. Rates in excess of 30 hives per hectare have been suggested.

Photo: Kathy Keatley Garvey, UC Davis Department of Entomology

Onion Thrips

Tony Napier, Jianhua Mo and Andrew Watson, Yanco Agricultural Institute

Onion plants (*Allium cepa*) are the favoured host of onion thrips (*Thrips tabaci*). Onion thrips are present throughout all states of Australia and are considered the biggest insect pest problem of onions.

As well as onions, onion thrips feed and breed on many surrounding weeds including paterson's curse, fleabane, fathen, nightshade, mustards and milk thistles. Other common crop hosts include cotton, lucerne, potatoes and tomatoes.

DESCRIPTION AND OCCURRENCE

Onion thrips go through egg, larval and pupal stages of development before reaching maturity. The white kidneyshaped eggs are very small and impossible to be seen by the naked eye. The eggs are laid into onion leaves and depending on how warm it is, take about four to ten days to hatch. The juvenile thrips (nymphs) start feeding immediately after hatching. They feed for a few days before dropping to the ground to pupate. The thrips later emerge as adults and are light to dark brown in colour with thin bodies. A complete life cycle normally takes 2 to 4 weeks, depending on temperature.

Fig 1. Onion thrips feeding on inner leaves

In the sub-tropical onion growing areas of northern Australia, onion thrips are active during winter and can be seen in the early seedling stages of growth. In the temperate growing regions of southern Australia, onion thrips are never seen for the first eight weeks of growth of any crop. In the early sown crops, thrips may not be seen for up to 16 weeks. When the weather begins to warm in the southern states, there is a period of about four weeks where thrips numbers slowly increase. The gradual increase in numbers is then followed by a phase of rapid increase where numbers can increase exponentially. Thrips numbers peak over spring and it is then that they can cause the most damage. The decline of thrips numbers can be rapid and is usually associated with the drying out of onion leaves in a mature crop getting close to harvest.

DAMAGE

Thrips prefer to feed on the newly emerged leaves in the centre of onion necks. When numbers are high, they will move toward leaf tips to feed. Both adult and juvenile thrips cause damage when they feed on the onion leaves, puncturing individual leaves and sucking out the sap. This feeding causes lengthwise, silvery stippling or blotching on the onion leaves. The damage may eventually cause leaves to dry up, wither, turn brown and die. High numbers of thrips can result in smaller bulbs and lower yields. Thrips feeding during the early bulb-growth stage are the most damaging to yields with the higher the thrips population, the greater the damage. Thrips may continue to feed on onions after harvest and while in storage. Post harvest thrips damage causes scars that may lessen the quality and visual appeal of bulbs. Post harvest thrips damage is more severe with red onion because the scarring is more visible than on white and brown bulbs. Yield reduction due to reduced bulb size is the primary crop loss caused by onion thrips. High thrips numbers can shorten the bulb growth period and accelerate plant maturity and senescence. Thrips can also be a contamination pest risk for export onions.

Fig 2. IYSV symptoms on an onion leaf

As well as causing direct damage, onion thrips is also the vector of *Iris Yellow Spot Virus* (IYSV). IYSV is not seed-borne and needs a vector to spread. The virus is picked up by juvenile thrips feeding on infected plants. When the insects mature they can move to other plants infecting them with the disease as they continue to feed. The disease was first reported in Australia in 2003, although it was suggested to have been in Australia since 1998. Symptoms of IYSV may be superficial but often seen as cream, elliptical spots on the leaves. The spots also appear on onion scapes or flower stalks of onions. As both infected leaves and scapes age, they can collapse at the site of the spots. IYSV is managed primarily by controlling onion thrips in the field. *Continued...*

MANAGEMENT OPTIONS

Insecticides are the primary method of control but cultural and biological options also need to be considered. The main cultural methods to consider include sanitation, cultivar selection and irrigation type.

Good sanitation practices involve eliminating sources of infection including host weeds, volunteer onions, piles of onion tops and culls. All onion varieties can be infested with thrips but some cultivars have shown different degrees of tolerance to thrips feeding and different levels of yield loss. Overhead irrigation (and heavy rain) has been shown to reduce thrips populations by the physical action of washing thrips off the plants. Biological control relies on beneficial insects that are the natural enemy of thrips (ladybird beetles, lacewings, predatory thrips, etc) to reduce onion thrips numbers. Unfortunately, these natural enemies rarely reduce thrips populations below the economic threshold. Researchers have been evaluating different biological options that may be useful in future control strategies.

Fig 3. Adult thrips

CHEMICAL CONTROL

It is vey important to start monitoring for thrips before they become a problem. The time to commence monitoring depends on the growing region. In the sub-tropical areas of Northern Australia, monitoring for onion thrips should start immediately after the crop emerges. In the temperate growing regions of southern Australia, monitoring should start by the end of September, just before thrips start to become active after winter. Thrips numbers need to be counted on randomly selected plants (after mid morning when thrips are more active) to determine the average number per plant. The treatment threshold for controlling thrips in the field varies due to time of year, plant growth stage and grower preference.

ACTION THRESHOLDS

Most growers use a threshold somewhere between 5 and 20 thrips per plant. NSW DPI recommends an action threshold of 5 thrips/plant at the seedling stage, 10 thrips/plant before the crop bulbs and 20 thrips/plant post-bulbing.

There are a number of insecticides available for use in Australia to control onion thrips in onions. These insecticides can be grouped into their mode of action which include 1B (organophosphates), 3A (pyrethroids) and 23 (Tetronic and tetramic acid derivatives). Unfortunately insecticide resistance can be a problem with the continued use of some of these products with many field populations of thrips having confirmed cases of resistance. To reduce the chance of further resistance and prolong the life of these products a resistance management strategy needs to be implemented based on the alteration of chemicals different modes of action. The management strategy assumes that a single spray application will not kill all thrips in the field. A second application of the same product is recommended before rotating to another insecticide with a different mode of action. The second application of the same product is also recommended to target the thrips that hatch over the next 10 days.

Group 1B (organophosphates)

- Fenamiphos (400 g/L) Trading as Nemacur® (and various other names) is registered for use in all states of Australia as a pre-planting option. It is registered at 24 L/ha or 16 mL/10m of row. Fenamiphos has a withholding period of 12 weeks
- Diazinon (800 g/L). Trading as Diazol® (and various other names) is registered for use in NSW, VIC, SA, WA & Qld at 700 mL/ha (low volume) and 65 mL/100L water (high volume). A 'Minor-use' permit is available for TAS at the same rate and valid until March 2017. Diazinon has a withholding period of 14 days.
- Dimethoate (400 g/L). Trading as Rogor® (and various other names) is registered for use in all states of Australia at 800 mL/ha. Dimethoate has a withholding period of 7 days.
- Maldison (1000 g/L). Trading as Fyfanon® is registered use in SA, WA, VIC & TAS at 85 mL/100L water. Maldison has a withholding period of 3 days.
- Maldison (1150 g/L). Trading as Hy-Mal® is registered use in SA, WA, VIC & TAS at 85 mL/100L water. Maldison has a withholding period of 3 days.
- Omethoate (800 g/L). Trading as Folimat® (and various other names) is registered for use in all states of Australia at 700 mL/ha. Omethoate has a withholding period of 14 days.
- Methidathion (400 g/L). Trading as Suprathion® (and various other names) is registered for use in all states of Australia at 750 mL/ha. Methidathion has a withholding period of 7 days.

Group 3A (synthetic pyrethroids)

- Lambda-cyhalothrin (250 g/L). Trading as Karate Zeon® (and various other names) is registered for use in all states of Australia at 40 mL/ha. Lambda-cyhalothrin has a withholding period of 14 days. A maximum of 4 applications per crop is allowed. Lambda-cyhalothrin has a withholding period of 14 days.
- Alpha-cypermethrin (100 g/L). Trading as Dominex Duo® (and various other names) has a 'Minor-use' permit available for all states of Australia at a rate of 130 to 250 mL/ha. The permit is

Fig 4. Boom spray

valid until 30 November 2014. Alpha-cypermethrin has a withholding period of 14 days.

Group 23
(Tetronic and tetramic acid derivatives)

- Spirotetramat (240 g/L). Trading as Movento® is registered for use in all states of Australia at
- 200 mL/ha. Maximum of 2 applications per crop has a withholding period of 7 days.

SUGGESTED CONTROL PROGRAM

- Monitor crop and count thrips numbers on randomly selected plants.
- When thrips numbers exceed the action threshold, conduct a spray treatment using either a Group 1B or 3A insecticide.
- Conduct a second spray treatment 10 days later using the same insecticide.
- Start monitoring thrips numbers again 14 days later.
- When thrips numbers again exceed the action threshold, spray crop using the Group 23 insecticide (Movento®).
- Conduct another spray treatment 10 days later using Movento® again.
- If thrips numbers exceed the action threshold again after 14 days following this application continue using the strategy of a series of 2 spray applications (ten days apart) alternating between group 1B and 3A insecticides only. Movento® should not be used again as it should only be used twice on any crop.

The suggested spray program is a guide only. The important point is to use the same product only twice (ten days apart) and then change to another insecticide group with a different mode of action. Remember that Movento® should only be used twice on any crop. Also the product trade names in this publication are supplied on the understanding that no preference between equivalent products is intended. Growers who export also need to be aware of their market requirements and which insecticides are suitable for them.

SPRAY APPLICATION

Chemicals can be registered with a per hectare water rate (low volume), per 100 litre water rate (high volume) or both.

When using the low volume water rate (per hectare), start with a rate of 200 L/ha when the onion crop is small and increase to about 400 L/ha as the crop matures. When using the high volume water rate (per 100 litres), most labels assume about 1000 litres per hectare will be applied. While it is not necessary to spray with such a high water rate the operator should be aware that cutting the water rate down (e.g. 400 L/ha) compromises efficacy.

Spray retention on onion leaves can be difficult because of the vertical nature of the plant and the waxy leaf surface.

Spray retention can be improved by the use of a suitable spray adjuvant. The waxy leaf surface of an onion is a natural barrier to disease infection. Some adjuvants will damage the waxy surface which can increase the onion's susceptibility to disease. Therefore only use adjuvants recommended for use in onions.

Research has shown that vegetable oil adjuvants are more suitable for use in onions than mineral oils and leaf surfactants.

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Onion Stunt - best management practice

South Australian Research and Development Institute - SARDI | South Australian Government
Plant Research Centre, Gate 2B, Hartley Grove Urrbrae SA 5064 | GPO Box 397, Adelaide SA 5001 Australia
This work has been developed from the work of various HAL projects (VN05011, VN08004, VN07007, VN11000)

Onion stunt is caused by the soil borne fungus *Rhizoctonia solani*. The fungus attacks roots of young plants, causing stunting and yield loss. The same fungus also causes stunting in cereal crops.

Stunting in onions develops as circular to irregular patches of stunted plants which are most obvious 6 to 12 weeks after sowing (Fig 1). With magnification, dark brown strands of *Rhizoctonia* mycelium can be seen at the base and roots of stunted plants (Fig 2). The fungus attacks the roots of young plants, pruning roots and causing rotted root tips known as spear tipping (Fig 3), however often stunted onion seedlings have no obvious rotted roots or root lesions.

Management strategies for onion stunt are limited to cultural practices which can be separated into two main areas: reduce inoculum by management of the paddock between onion crops and improve plant growth by management of the onion crop.

This is a summary of current knowledge and research is ongoing. The document will be updated with new information when research is completed.

MANAGEMENT STRATEGIES

Reduce inoculum

- Control summer weeds
- Cultivate and deep rip – break-up fungal hyphal networks
- Replicate summer rainfall with irrigation where feasible
- In fumigated soil, follow with soil amendments to replace beneficial biota and improve suppression
- Plant non-grass cover crops: canola and pulse crops are usually less susceptible than cereals
- In cereals, oats are most tolerant, followed by triticale, wheat and then barley, which is the most susceptible

Improve plant growth

- Improve soil structure and fertility with amendments such as clay or composts to encourage plant growth
- Optimise nurse crop growth to reduce competition
- Encourage early seedling vigour – plant varieties with high viability and good seed vigour
- Avoid deep sowing
- Plant into warmer soils where possible (>20°C), avoid cool dry soil
- Ensure adequate nutrition

Fig 1. Comparative size of stunted seedlings.

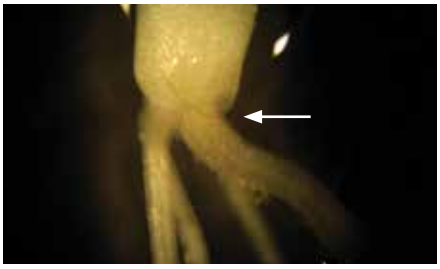

Fig 2. *Rhizoctonia hyphae.*

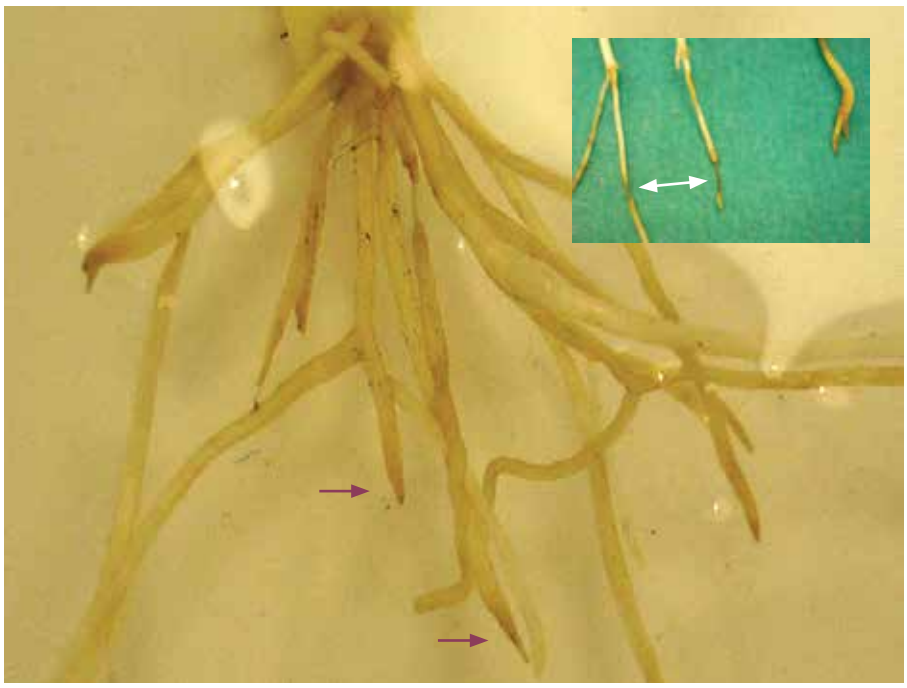

Fig 3. 'Spear tipping' of onion roots (above) and root damage (inset).

State roundups 2013/14 season

Victoria

James Ryan

NORTHERN VICTORIA

Prices were again an issue, with the forecasted price increase for the early harvested varieties in November/ December not eventuating. Crop yields were a positive and considering the severe summer heat the quality of the onions was very good. Although red onion prices have been reasonable, the low prices of browns has equated to an average overall year, which is certainly disappointing given the ground lost in the previous seasons.

SOUTHERN VICTORIA

Plantings were of a similar size to seasons past. The conditions were very wet during planting which led to some losses and therefore a slight yield penalty. What did make it through the season was of reasonable quality, which was assisted by avoiding the sunburn in the summer months, and the product also stored well. Prices were down early with a slight increase just recently in July. Everyone is looking forward to an improved season in 2014/15 in terms of price to ease some pressure.

Western Australia

Garry East

Last year saw a good growing season, however the early varieties harvested in December were slightly knocked around due to rainfall.

The later varieties harvested in February and March experienced a better year than previous seasons.

There was minimal mildew issues and the harvest saw excellent quality product.

Overall, harvest went smoothly with no interruptions from rain or other factors.

This year has seen very similar plantings to last year, while there are more reds and slightly less browns.

So far the season has been a bit dry but there were no issues with planting.

New South Wales

Lucy Gurciullo

There was a good start to the season 2013/2014 with the mild weather. Most onions were sown in the Riverina before June but some went in July and August.

Early crops grow well with a mild winter. It was a fairly dry spring so there was very little to no problems with Downy Mildew.

There were some thrip problems in late crops due to the dry summer. There was good size in early crops but late crops were reduced in size due to the extreme hot summer. Growers reported that their brown onions were storing well but had trouble with storage in their reds.

Some growers had a greater problem with pink root due to the hot weather in November. In all it was a reasonable season with crops, but prices were down in general.

The area sown for 2014/2015 is much the same as last season with about 500 hectares planted. Most are brown onions with about 20% in red.

Most growers are saying that crops are growing well. We have had a fairly dry winter so far.

Hopefully there will be better prices this coming season as we all need a better prospect for the future.

Queensland

Michael Sippel

The area planted has been as per normal, although a couple of the Darling Downs growers have decided not to grow this season and have put more emphasis into grain production.

The areas of late brown/red have increased due to supermarket demand for onions in January.

The crop in the ground is looking very good due to the very dry winter growing season. No rainfall has been received for four months and crops have been grown totally on irrigation to this point.

In conjuction with this, Downy Mildew pressure has been low.

The first of the open pollinated brown onions were due to start harvesting at the end of August, with the bulk of the brown onions to harvest in late September. The first of the red onions are about to start harvest in mid October.

Last season we saw areas of Iris Yellow Spot Virus, hence growers have been inspecting crops thoroughly for thrips.

South Australia

Greg Bragg

After another year of very depressed prices everyone was a little more optimistic or hopeful to see stronger pricing this season. While prices are marginally stronger (particularly reds) this year, it hasn't really made up for the very difficult growing season.

With a very up and down spring comprising mostly cold, with a few hot days, it was the recipe for crops to bolt. We saw widespread bolting throughout the state (one of the worst years I can recall) as a result of the weather. We were then served up with one of the hottest summers on record with 12 days above 40 degrees. This extreme weather pattern took its toll with many crops going down earlier than normal, resulting in not a lot of large bulbs about.

As to be expected storage is not quite as good as other years, but in saying that there were still a number of very nice crops about.

Given the weather extremes about and the lower yields, growers are hoping that they will see prices firm up later in the season, and we are seeing prices slowly starting to creep up a little.

As winter took hold in SA, all the shorter day onions were sown and were pushing out of the ground. Germinations looked to be good, but growth did come to a halt half way through winter. Bring on the sunshine!

State roundups 2013/14 season

Tasmania

Richard Birtill

The 2013/14 season was one of the most difficult, if not the most difficult, growing seasons in Tasmania in many growers' memories.

It all started fine as May drillings went in well, June was a dry month and some more land was prepared for a good spring start, but then July started and so did the rain, and rain, and rain. By the last week of August most had not started the spring program and what had been drilled in late June had been washed away!

The August rainfall was a record amount for most of the growing areas 250mm for the month was typical and many 350mm+. Most growers got some of their program in during early September, often in doubtful ground conditions. Then there was another two weeks of rain before last gasp drilling in October with all crops finished by mid-month.

For most October was a completely uncharted time to drill onions and we all knew that we would need a very kind spring to achieve crops that would make anything. The weather from October to the end of the year was technically average, but to most it was cool, cloudy and not the best growing weather. This didn't help the early crops that had survived the flooding and as a result there was, in many areas, the highest level of bolting seen in early crops for many years.

Early crops were slow to mature and lifting started about seven days later than normal, just before the dry and hot change, then to compliment the two months of rain in the winter there was two months of drought in the summer.

The end effect was that all the late crops did actually mature but they had not put enough leaves on, so were small in bulb size and corresponding yield. The last slap for these late crops was that from mid-March the weather turned damp with regular rains hampering harvest. Most growers finished by the end of April but there were still onions on the ground in mid-May when everyone had started drilling the next year's crop!!

Overall the area drilled was down on the original target and certainly many crops yielded less than standard, giving a total state volume probably 20-30% down on 2012/13.

This year saw a reasonably mild autumn and winter, which will be shortening the life of many crops still in store.

Let's hope for an easier season in 2014/15- it would be hard to be worse.

Tasmania export report and overseas markets

Richard Birtill

After a big drop in export volume in 2013 there continues to be a decline in the volume exported from Tasmania in 2014. Although this can be partly explained by the lower crop volume growers and packers in Tasmania are continuing to lose interest in exporting onions.

Although there have been a few ups and downs, overall the pricing and volume into the traditional export markets of mainland Europe and Japan have been fairly strong following poor local growing seasons in 2013 in both areas. Taiwan, a good market in the last two years, has been very poor. Indonesia will take volume but documentation difficulties and high shipping costs limit volume from Tasmania.

New Zealand had an almost perfect growing season and with many other crops under price pressure the area was held up, this has resulted in very large export volumes and there is still product now looking for homes which all competed with Tasmanian production.

The Australian dollar has devalued a little against the major import countries, however interestingly the Kiwi dollar is much stronger so they will need to hold prices up. In addition, although the new State Government pledged to get an international shipper back into Tasmania, and there has been a productivity commission report on the issue, there is little progress on reducing export freight costs.

With to date good growing conditions in Europe the 2015 export season is not getting off to positive prospects.

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