

Irrigating potatoes and saline water

Irrigation water that is becoming saline is an increasing problem in some potato growing regions of Western Australia.

Effects on plants

Saline irrigation water can affect plants in two ways; by reducing the ability of plants to take up water through their roots and through the toxic effect of salts as they accumulate in the plants.

As the amount of water in the soil reduces between irrigation applications or rain (due to plant use, evaporation and drainage), the salts in the soil water become more concentrated. This makes it more difficult for plants to extract the remaining water, which can lead to water stress in the crop.

Sodium chloride is the major salt (50 to 70% of total salts) in irrigation water although other salts are also present.

Salt can be taken up with water through the roots or foliage. The toxic effect of salts (all types – not just sodium chloride) accumulating in the plant reduces potato crop growth.

Chloride is required by potatoes in trace amounts and sodium not at all; however the large amounts in the Australian environment result in excess sodium and chloride being a major problem.

Another undesirable side effect of saline irrigation water is that it can increase concentration of

the toxic heavy metal cadmium in the tuber. Salt water increases the solubility of cadmium in soils which leads to increased uptake by the potato. If the irrigation water salinity is more than 216 mS/m (1382 mg/L), it will substantially increase the risk of high concentrations of cadmium in the tuber. The actual amount taken up by tubers will differ between varieties.

Yield reduction

Once water salinity has reached a threshold of 110 mS/m (704 mg/L), potato yield can potentially be reduced at a rate of 10% for every further 60 mS/m (384 mg/L) increase in salt concentration in the irrigation water. Yield reduction will also depend on other factors such as irrigation method, soil type and stage of crop growth.

Salt toxicity in potatoes leads to visual symptoms such as older leaves becoming chlorotic (yellow) and veins purple. As salinity becomes more severe, leaves will roll upward, plant tissue around the margins of leaves dies and sometimes the leaves drop off the plant. By the time visual symptoms appear, yield reduction has already occurred.

Critical salinity levels

The average salinity of irrigation water for WA regions where potatoes are grown ranges from less than 90 mS/m (576 mg/L)

to 324 mS/m (2073 mg/L). Quality assurance programs usually recommend less than 216 mS/m (1382 mg/L) for potatoes, as they are not salt tolerant plants.

Higher salinity levels tend to be found in the west coastal regions (eg. Baldivis, Myalup), however saline irrigation water can also be found in the lower south-west. At Baldivis, the total dissolved salts during summer can range from 72 mS/m (460 mg/L) to 252 (1612 mg/L). During winter, salinity levels are lower as rains dilute saline water in the soil.

Western Australia has a Mediterranean climate with summers usually warm and dry and most rainfall occurring during winter.

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The two left hand side rows are effected by chlorine toxicity: note yellow lower leaves and reduced row closure

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Chips #21 Newsletter

Wide range of potato products



An amazingly wide range of potato products is now available in our supermarkets. These products were sampled from three local stores in Adelaide.



Know-how for Horticulture™

Eyes on Potatoes is produced by SageWords on behalf of the Australian Potato Industry Council.

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Eyes on Potatoes is distributed free to all participants of the Australian Potato Industry with assistance from HAL and the Potato Levy.

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Changes at

Know-how for Horticulture™

On May 17, Horticulture Australia launched a new logo, and will now be known as HAL

HAL has undergone a restructure to improve service to industry. Under the new structure it will be in a better position to apply its knowledge and expertise to benefit all industries.

In future, services will be delivered through two new teams, Industry Services and Professional Services supported by Corporate Communications, Business Management and the Company Secretary.

How the new structure will work for the potato industry

One person in Industry Services will be dedicated to assist the potato industry plan the program's strategic direction and projects. Once projects have been identified, each will be allocated to separate specialist areas within the Professional Services group (ie. Breeding / Evaluation, Agronomy, Plant Health, Domestic Marketing, Postharvest Research, Sustainable Production Practices or Export Marketing/Market Access). For example, in the Breeding / Evaluation area, potato breeding projects will be integrated with nut, strawberry, mango, citrus, pome and other industries' breeding projects. This will provide cost savings for levy payers by using experience and knowledge gained in other industries for the benefit of the potato industry.

To summarise, in the new structure, the potato industry will have one industry contact in HAL working with the Industry Advisory Committee (IAC) and then several specialist staff cooperating to assist and manage details of individual projects.

Although the Industry Services representative will be the first point of contact for the potato and vegetable industries, both levy paying groups will remain as separate industries and there will be no change in the decision-making process currently in place through the Industry Advisory Committees. The potato industry will still decide its own R&D program as before.

The Professional Services team is in the process of allocating staff to various portfolios and projects. The position of Industry Services representative for the potato and vegetable industries is being advertised. The potato industry will be notified of the relevant people through the potato publications once all the positions and roles have been filled.

Changing from the old to the new

Under the previous structure, the potato industry worked with John Oakeshott. John will continue to manage the program during the transition period and will facilitate a smooth handover to a new Industry Services representative for the potato industry.

John Oakeshott

HAL

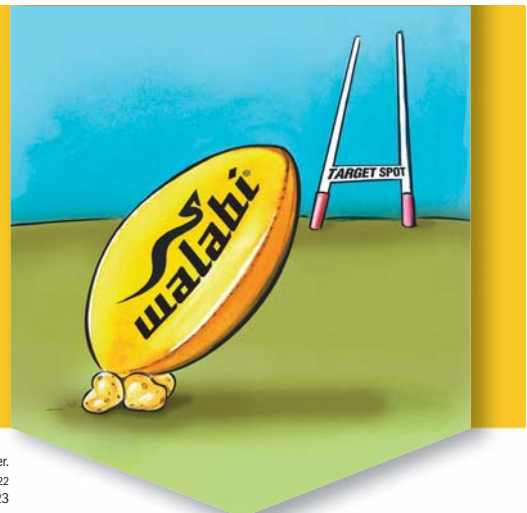
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Irrigating potatoes and saline water

(continued)

Irrigation water supplies in the coastal areas are typically drawn from bores tapping a shallow fresh water aquifer. During summer, there is increased pumping from the aquifer with minimal water recharge.

Excess irrigation can contribute to salt accumulation in the top soil layers as unused water containing salts is leached back through the soil to the aquifer. A large reduction in water in the aquifer may also allow seeping (or intrusion) of salt water from the nearby ocean into the fresh water aquifer. This can increase salinity of the water being removed from the aquifer contributing to an increase in the amount of salts in the soil.

In non-coastal areas, irrigation water is often caught in above ground dams or drawn from rivers and in some areas, it has become more saline over time.

Factors affecting damage

Several factors can influence how much damage is caused to potatoes by saline water. These factors include:

- **Soil type and drainage of the soil**

Salinity can be managed more easily in well drained sandy soils compared to poorly drained heavy soils. This is due to salts being more easily leached in sandy soils beyond the root zone of the plants.

- **Frequency and application time of irrigation**

Frequent light irrigations increase the salt concentration in the topsoil, while heavy irrigation can assist in removing salts from the root zone. Watering during hot and windy conditions can increase salt concentration due to increased evaporation.

- **Stage of growth**

Younger potato crops tend to be more sensitive to saline water than more mature crops. For example, the critical concentration after which chloride toxicity becomes a problem in potato leaves (youngest mature leaves) increases from 3% (dry weight) at early flowering to 5% at tuber expansion.

- **Method of irrigation**

Sprinkler irrigated crops may suffer from foliar burns due to saline water. Irrigation should occur during times of low evaporation to help prevent this. Sprinklers which produce fine droplets should be avoided as this can lead to a concentration of salts on the leaves as the water evaporates.

- **Climate**

Salt is concentrated more during hot dry conditions making crops more prone to damage. Heavy seasonal rainfall may help reduce the impact of salinity on potato crops.

Good irrigation management is important to reduce stress on potato plants and minimise the impact of saline water on crops. Aspects of irrigation that should be considered include:

Ensuring adequate water supplies (amount and timing) for the whole crop season. (Important for maximum yields and to reduce the impact of saline irrigation water by not stressing the crops at any stage.)

Maintaining the irrigation system so that it is providing water at its maximum efficiency. (eg. Worn nozzles can mean more fine spray resulting in greater accumulation of salt on leaf surfaces.)

Ensuring that the irrigation system delivers an even supply across the whole crop area. (eg. Poor delivery can result in some parts of the crop obtaining too little water and becoming stressed.)

Ensuring the irrigation system design is appropriate for the soil type where the potato crop is being grown. (Relates to the ability of the system to apply water when it is needed, with appropriate droplet size and in the amounts required. Particularly an issue with sandy soils in hot dry areas that require frequent irrigation.)

Acknowledgments

We would like to acknowledge the helpful comments on irrigation management provided by Rob Stevens from SARDI, and on factors affecting crop damage by Neil Lantzke and Tim Calder of the Department of Agriculture, WA.

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Salinity in water

Salinity in water can be expressed as the total amount of dissolved salts in the water (total dissolved salts or TDS). Water salinity is usually measured as the electrical conductivity (EC) of the water, with the result being expressed in milliSiemens per metre (mS/m). The results can also be expressed as deciSiemens per metre (dS/m) or microSiemens per metre (µS/m). Salinity is also sometimes expressed as milligrams per litre (mg/L) or as parts per million (ppm). For example, 100 mS/m is equivalent to 1 dS/m or 640 mg/L of TDS.



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Pinnaroo Spudfest



At the inaugural Pinnaroo Spudfest in March, one of the many events and attractions enjoyed by over 2,000 participants during the three days was the mash potato wrestling.

The 2.5 tonnes of potatoes were diced, cooked in 44-gallon drums, then stored in a coolroom before being loaded into the local cement mixer. The crowd held its breath as the mix was unloaded as nobody was sure whether the special blend of potatoes, water and other special ingredients would come out of the mixer.

Photos courtesy of The Border Times, Pinnaroo



Di Wurfel and Nicole Eisen of Pinnaroo battle it out in the mash pit.

Pinnaroo is a small country town in the South Australian Mallee near the Victorian border. Introduction of potatoes into the area has provided a much needed boost for employment and the local economy.



Harvesting at the Jennings property in Thorpdale, Victoria.

APIC Briefs

Several meetings were organised over a couple of days to save travel, so the APIC meeting was kept very brief.

Councillors were given updates from HAL and the Potato IAC.

Variety evaluation

The new variety evaluation programs are underway with arrangements nearly finalised for the processing industry. A bit more work still needs to be done before the fresh industry can finalise their arrangements.

National PCN Management Plan

The Department of Primary Industries Victoria has concluded their involvement with the National PCN Management Plan. AUSVEG has requested support to finalise the plan which was agreed to by the council.

Industry restructure

The number of potato meetings and their cost was raised as a concern. This issue has been raised in various forums and everybody agrees we need to improve the system.

An attempt was made by AUSVEG to minimise costs and time commitments by holding both the Potato and Vegetable IAC meetings with APIC, AUSVEG and several committee meetings all at one venue. Unfortunately, while addressing some needs, it did not fully address the problem.

It was proposed and supported that APIC and AUSVEG prepare a project proposal to look at industry restructure.

Potato Australia

Ron Gall from VegFed asked whether there was interest in having a greater editorial involvement from New Zealand with Potato Australia. The Chips newsletter insert is already produced by New Zealand and sent out with Potato Australia and Eyes on Potatoes. It was regarded that information from New Zealand work was of interest to Australian readers. Leigh Walters will explore the options with Ron Gall.

Milton is retiring

It was announced that Milton Rodda would be retiring from McCain before the next meeting.

Milton has been actively involved with APIC since its inception. The council, on behalf of the industry, would like to thank Milton for his contribution to the Australian potato industry and wishes him all the best for the future.

Tony Gietzel
Chairman



APIC Chairman moves on



Tony Gietzel has resigned as chairman of the Australian Potato Industry Council (APIC) and National Agronomy Manager for Arnotts to take up a new position as National Agronomy Manager at Harvest Freshcuts in his home state of Queensland.

Tony was introduced to APIC through his association with Arnotts, which is a member organisation of the Potato Processors Association of Australia. The Association is one of three member organisations of APIC, along with AUSVEG and Potato Merchants of Australia.

Geoff Moar, Deputy Chairman of APIC, will assume the chairman's role for the remainder of the term and the Potato Processors Association of Australia will elect a new representative to the Council.

On behalf of the industry I would like to thank Tony for his contribution and wish him all the best in his new job.

Some of Tony's more recent contributions to industry include his input to restructuring the method used to more fairly distribute levy monies back to their original source, and his valuable work on the Processing sector R & D Committee.

Tony's help in framing the Processor potato breeding program has also been important in setting this program on a firm footing. His efforts to seek ways forward for movement of potatoes from districts found to have a PCN presence within Victoria was also invaluable to those affected producers, with immediate benefits as well as long-term solutions being sought.

Tony Imeson
APIC Secretariat

World Potato Congress

Kunming, China

Congress

March 2004



Visit to Chinese crisp manufacturers



Opening ceremony for the World Potato Congress



Philip Beswick and daughter Danielle viewing the variety exhibit during one of the organised field trips



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AUSVEG Briefs

Chairmans' Report

The recent outbreak of PCN in Victoria highlights how difficult and risky the business of agriculture can be. For industry bodies such as AUSVEG it again focuses our attention on the issue of biosecurity and compensation for growers who find themselves caught up in these circumstances through no fault of their own.

AUSVEG continues to push for a broad based consumer levy to fund exotic pest incursion eradication. Negotiations continue through Plant Health Australia with Commonwealth and State governments to convince them of the merit of this approach.

Marketing is also a hot topic at the moment with the Australian Fruit and Vegetable Coalition submitting a detailed proposal to industry to extend the successful Western Australian Go for 2 & 5 campaign nationally. The campaign aims to increase consumption of fresh fruit and vegetables for better health. I think this is something we should support because it involves only a small contribution from levy funds for potentially a good deal in return. The potato industry can then develop more specialised and targeted campaigns if required.

The Fresh National Evaluation and Commercialisation Committee (FNECC) breeding model continues to be refined and in time the industry will ultimately benefit.

Biosecurity planning

AUSVEG and Plant Health Australia will work together to help develop a biosecurity plan, an important start to protecting our industry from introduction of exotic pests.

The planning identifies weaknesses in our systems which we can then correct. For example, for the new strains of late blight, one such weakness is the need to have the tools in our diagnostic laboratories so that new strains can be quickly identified. Otherwise, samples may have to be sent overseas for identification which takes time and can result in expensive delays before action is taken.

A workshop to progress the issue will be held in June.

National PCN Management Plan

The National PCN Management Plan draft has been completed by Department of Primary Industries, Victoria. The draft still needs work, as there is still debate over some parts of the plan.

It was agreed that AUSVEG was the most appropriate group to drive the project forward. As this was an industry wide issue, the group requested and received support from APIC for AUSVEG to pursue this in conjunction with HAL.

Environmental Management Strategy (EMS)

HAL is coordinating a whole of horticulture funding submission to the Department of Agriculture, Fisheries and Forestry (AFFA) for EMS. AUSVEG's national Enviroveg Manager, Sarah Hearn, is involved in the process.


The aim is to develop a generic model that can be used by all horticultural sectors and that will be widely recognised. Any such program must show clear benefits to growers.

Communication Plan

The National Communication Plan will expire at the end of 2005 and now is the time to start thinking about updating the plan. A workshop is proposed for September in conjunction with the next AUSVEG and APIC meetings. What has been achieved and what is needed for the future will be discussed. This will provide the basis for a draft plan which will be circulated broadly for comment.

Dom Della Vedova

Chairman

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www.ausveg.com.au

The Australian Vegetable & Potato Growers Federation (AUSVEG) has a new internet site providing information on the organisation, its services, R&D programs, news, events and weather. Worth a look!

The coalition has been formed to explore partnership opportunities to increase fruit and vegetable consumption. It has the following founding members: Agriculture, Fisheries and Forestry Australia, Australian Food and Grocery Council, Australian Retailers Association, The Cancer Council Australia, Dietitians Association Australia, HAL Limited, Central Markets Association of Australia, National Heart Foundation of Australia and the Strategic Inter-Governmental Nutrition Alliance (SIGNAL).



SIGNAL is made up of representatives from: Australian Department of Health and Ageing, all State/Territory Government Health Departments, Australian Institute of Health and Welfare (AIHW), Food Standards Australia New Zealand (FSANZ), National Health and Medical Research Council and the New Zealand Ministry of Health.

Update on PCN outbreak

A lot has happened since the Potato Cyst Nematode (PCN) outbreak near Koo Wee Rup in Victoria was reported in March Eyes on Potatoes. The Department of Primary Industries (DPI) in Victoria has confirmed that PCN has been found on five properties in the region. All but one of these detections were at very low levels, indicating that good hygiene management is in place.

Hygiene, transport and waste disposal protocols have been implemented to enable this season's potatoes to be transported to crisping factories in Victoria, New South Wales, Queensland and South Australia. Potatoes from infested properties can only be processed in Victoria and DPI inspectors closely supervise harvesting, grading, cleaning, transport and waste disposal.

Testing

There has been extensive testing for PCN throughout the Koo Wee Rup region with the aim of all farms being tested. At this stage about 90% of farms have been tested.

Compulsory testing exists for all potatoes moving interstate and voluntary testing for potatoes moving within Victoria. It is important to note that growers, the broader industry and DPI do not want PCN to spread further within the region or to outside areas.

Managing the problem

Local growers are working very hard with DPI to manage the problem. For example, the area already has well developed hygiene strategies, but growers are further developing these with the DPI's help.

Many of the short term issues have been resolved enabling growers to dig and deliver this season's crop. Since Koo Wee Rup is mainly a processing area, it has been easier to negotiate market access because the whole chain can be carefully secured and monitored with negligible risk of spreading PCN.

Working out the long term response to the outbreak will take a bit longer. This has, and will continue to involve, considerable discussion between DPI, the Koo Wee Rup growers, interstate quarantine managers and the broader industry including interstate growers.

Meanwhile, the DPI will continue to supervise movement of all potatoes out of infested paddocks to the local processor and interstate certification (Plant Health Certificates) requirements for movement of potatoes interstate to processing factories.

Further information can be obtained from Gary Darcy at DPI Knoxfield on (03) 9210 9390.

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Interstate movement of potatoes

Growers needing more information about the interstate movement of potatoes with regards to PCN can contact their local department:

New South Wales

Keith Oliver
Regulatory Operations Manager
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☎ (02) 6391 3689

Queensland

Plant Health
Department of Primary Industries and Fisheries
☎ 13 25 23 (Callers in Queensland)

South Australia

Plant Health Operations
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☎ 1300 666 010

Tasmania

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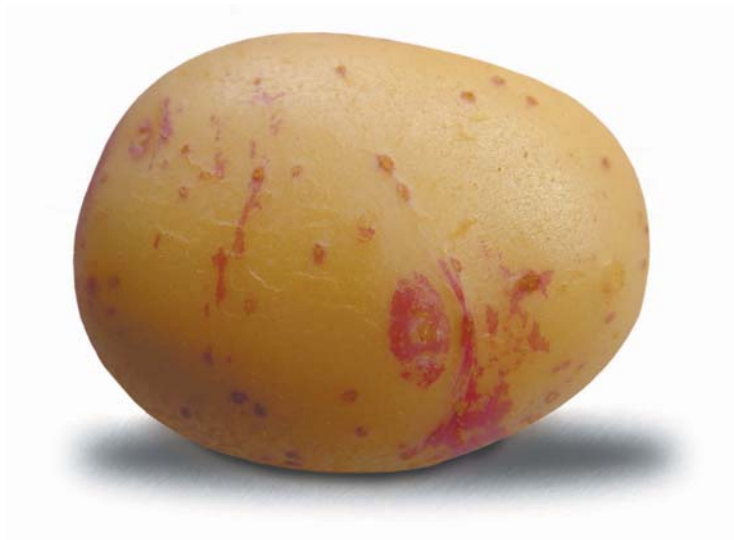
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Potato IAC Update

The IAC meeting was held in Brisbane in March.

Biosecurity plan

Australian farmers are lucky in not having some pests that overseas farmers have to deal with. We hope our quarantine procedures will keep out new pests but occasionally one will slip through. How we deal with a pest in the early introductory stages determines whether it is eradicated, contained or becomes established in Australia.

Whereas some new pests are not a concern, others can cost the industry a lot of money. In these instances, preventing the pest from becoming established can result in significant savings for farmers, processors and others in the supply chain.

Diseases, insects and weeds can spread rapidly so it is important the industry responds quickly. Sorting out what needs to be done after the pest's arrival is sometimes too late. Industry needs to have a plan in place so it can respond quickly.

We also need the means to be able to detect and identify that a new pest has entered the country. There is not much point in having a response plan if we find the pest after it has become established. This involves people in the industry looking out for anything unusual and reporting it to the relevant government authority so it can be identified and its importance assessed. Having people who can identify the pests is also important otherwise samples have to be sent overseas for identification which delays the process.

One of Plant Health Australia's roles is to work with industry to develop Biosecurity plans to tackle these issues.

Rod Turner from Plant Health Australia (PHA) talked to the committee about strategies to minimise risk. PHA has already, by working with technical specialists, identified pest and disease threats, assessed risk of entry and developed a list of high risk pests for which action may be taken. Further work from industry is needed on strategies to minimise risk and developing emergency plans. An important part of this process is identifying roles and responsibilities for industry and government in response to an incursion.

AUSVEG has agreed to help Plant Health Australia develop a potato biosecurity plan.

Late blight response

Peter Merriman, a consultant working for HAL, discussed the need to improve preparedness for the high risk threat posed by new strains of the late blight fungus. Issues needing consideration included pest categorisation, cost benefit analysis, quarantine zones, diagnosis, survey, eradication, containment, fungicides and resistant varieties.

Work was commissioned to look at how we address this need.



Rodney Turner, Plant Health Australia and John Oakeshott, HAL

Strategic Plan

A HAL requirement is that the IAC develop a Strategic Plan (previously called a Potato R&D Plan). A lot of the work has already been done by sub-committees and a facilitator will pull the remaining information together and produce a plan.

Communication update

It has been a busy period. A lot of new products are close to being finished so we look forward to seeing outcomes from a number of projects this year.

If activity is reflected in the amount of information coming through our potato publications, a lot is happening. The last Potato Australia and the December Eyes on Potatoes were the biggest ever.

I would like to thank Cathy Sage (our editor) and her editorial and state advisory group, as the publications are a great resource for the industry. I would also like to thank the state organisations who manage the distribution, the many contributors who write articles and our advertisers who help fund the publication. This is a team effort that produces excellent results.

To be able to reach all of industry through Potato Australia and Eyes on Potatoes is of enormous benefit to participants in the R&D program. It is something we need to be careful not to take for granted.

Processing sub-committee

The sub-committee has focused its efforts on developing a new R&D program for the processing industry focusing on fewer high priority issues.

Dr Bob Hannam was commissioned to work with a small research team to put together a draft business plan for consideration by the sub-committee.

Further development of the plan was supported and Dr Rowland Laurence was engaged from the Tasmanian Institute for Agricultural Research (TIAR) to work with the research team and sub-committee to finalise the plan so work can start early in the new financial year.

The sub-committee has been very appreciative of the effort that has gone into the process from various research groups. It has not been an easy task but a necessary one. The process has also highlighted the importance of seeking additional funding to the levy to support the research program.

Potato IAC Update

Fresh sub-committee

The focus for the sub-committee has concentrated on market development which is the fresh industry's highest priority issue.

Two key areas being looked at are:

- What can be achieved by improving store management of potatoes
- Providing support for the National Health Initiative

Improving store management is often about subtle changes that impact on the way consumers perceive the product. Work in other industries indicates that small changes to store management to address issues that have a negative impact on buying perceptions, can significantly increase sales.

The sub-committee is commissioning a company to identify changes that need to be made and then do a trial to test what can be achieved by way of increased sales.

The second focus for the group is supporting the National Health Initiative being coordinated by the Australian Fruit & Vegetable Coalition (see p9 in last Decembers Eyes on Potatoes). The program involves a wide range of marketing and educational activities to encourage people to adopt a healthier diet by eating more fruit and vegetables.

John Gallagher
Chairman

In Memoriam

HARRISON McCAIN 1927 - 2004

**Harrison McCain,
co-founder and
Founding Chairman of
McCain Foods Limited,
died in Canada in
March, age 76.**



He directed the growth of McCain Foods for 45 years as it grew from a small French fry processing operation in Florenceville, New Brunswick, Canada, to the world's largest producer of French fries and a \$6.4 billion a year international frozen food firm.

In 1956, the four McCain brothers—Andrew, Robert, Harrison and Wallace, founded McCain Foods Limited. Harrison and Wallace assumed active management roles in the new company while older brothers Andrew and Robert became Directors.

In addition to directorships within the McCain Group and his role as Chairman of McCain Foods Limited, during his career Mr. McCain sat on many boards of directors of Canadian companies.

He also received many honours for his achievements, for his societal leadership and philanthropic activities.



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New Field Manager at McCain's, Ballarat



David Antrobus will assume the position of Field Manager at McCain Foods Ballarat when Milton Rodda steps down in July.

David started working with McCain Great Britain in 1996 as an agronomist. In 2000, he assumed the position of Crop Services Manager there, coordinating and training McCain field staff servicing the national crop.

In July 2002, he moved to Ballarat to take the job as Agronomist, reporting to Milton Rodda. In the past two years he has been responsible for agronomy development in the early districts supplying commercial crop to the Ballarat factory, coordinating *Shepody* seed supply and working with growers on crop improvement.

"I see many opportunities ahead for the McCain grower base. The McCain company continues to grow here in Australia; particularly the local Ballarat plant which has seen handsome increases in capacity in recent years. I will be looking to form good working relations with the growers supplying the Ballarat plant, particularly when it comes to identifying mutual gains for both parties. McCain needs to remain a thriving business in order for growers to prosper and vice-versa, therein lies the challenge!"

David Antrobus

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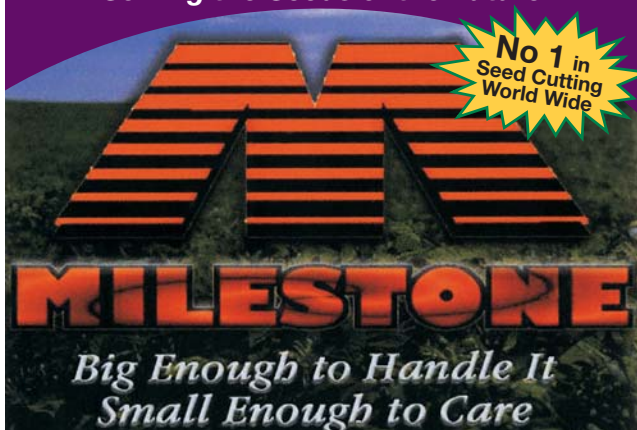
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Milton Rodda retires

Milton Rodda, key potato industry representative and Field Manager for McCain Foods at Ballarat, retires in July 2004, after 30 years of overseeing the explosion of French fry potato production at the company's Ballarat plant.

Reflecting on his long career in the industry, Milton said the growth of the processing potato industry for French fry production had been phenomenal.

"In the 30 years I've been involved with the French fry industry here, production of French fry processing potatoes Australia wide has gone from almost zero raw tonnes to 600,000, which represents more than 50% of the entire Australian potato crop," he said.

"We source two-thirds of our potatoes locally and supplement with potatoes from south east South Australia and the Riverina.

"McCain Foods processes about half the French fries produced in Australia, Simplot the other half.

"And McCain, a Canadian company, now produces 31% of the world's French fries."

Enormous changes for growers

This dramatic increase in French fry consumption by consumers has led to a huge increase in growth of different, suitable potato varieties to meet demand, he said.

"This has meant enormous challenges for growers," he said.

"Thirty years ago, the concept of growers forward selling product was unheard of. Now, almost all processing potato growers are contracted.

"Growers used to gamble on getting good prices, which saw them make huge profits in some years and none in others.

"Now they get set price for set tonnage, a move that has brought stability to the industry."

Milton said another big change had been that the industry had gone from growing traditional varieties to growing *Russet Burbank*. At first growers thought the change would be impossible and couldn't be done, but after an initial phase in, they adopted it quite quickly.

The number of growers around Ballarat had also declined markedly in the past 15 years - from 140 to 70. In the same time, there has been a 250% increase in the quantity of potatoes required for French fry production at Ballarat, Milton said.



Potato industry involvement

On retirement, Milton will leave behind his long association with the potato industry. Milton began as a member of the Victoria Potato Advisory Council advising the Minister for Agriculture in the mid eighties and was a foundation member of VicSpa, which has overseen production of all Victorian certified seed since the Department of Agriculture handed back the program to industry in January 1995.

He was also a foundation member of the Potato Processors Association of Australia (begun in May 1989), representing French fry and crisp potato processors and foundation member of the Australian Potato Industry Council (APIC) – representing potato processors, growers and merchants. He was Chairman in 2000 and 2001. He is currently Treasurer / Public Officer.

The future

Milton plans to be home based for a few years, then travel with his wife Pat, possibly around Australia first and then overseas.

Reflecting on his contribution, he said he is proud of having brought growers to the point where they can expect a good living from potatoes.

"I think we've seen some of the bigger changes we're likely to," he said.

"While it's difficult being the middle man between the company and growers, I like to think I've kept good relationships with both.

"I must have got the balance fairly right – the Company tells me I'm too soft, the growers I'm too tough. Both sides have to look after the other at the end of the day if it's to work for the Company and growers.

"I've been fortunate to have dedicated staff and good support. I believe I'll be leaving things in good hands and in good shape.

"The spud industry will always be a part of me – I might retire but never leave it entirely."



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The **GMO**snippets

The following articles are from the December 2003 and the February and April 2004 editions of **GMOs – Guiding Meaningful Opinions, The Gene Technology Newsletter of the Horticulture Industry – compiled by Agrifood Awareness Australia for HAL Limited.**

New Zealand – Scientists have developed a genetically modified potato which produces a protein that helps the body repair itself after heart or circulatory system surgery.

USA - Researchers have developed a GM potato with up to two-thirds more starch than conventional potatoes. The increased starch content increases the potatoes' density so they fry crisp without absorbing as much oil as their less-dense counterparts. The starch level was increased by inserting a gene into potatoes that improves the conversion of sucrose, or sugar, into starch. The resulting potato chips are not only healthier because they absorb less oil, they are also cheaper to cook. Researchers still have to perfect the even distribution of starch granules in the GM potatoes.

USA – Blight is a damaging **potato** disease in the world, costing farmers billions of dollars in fungicides each year. Researchers from the Universities of Wisconsin-Madison and California-Davis have produced potato plants immune to a range of blight strains.

The scientists placed a gene from a naturally blight resistant wild potato into a farmed variety. The wild variety co-evolved with blight in Mexico, where blight is believed to have originated.

The blight resistant variety could be ready for field testing within a year. A blight-free potato could reduce farmer reliance on pesticides.

Fungal resistant potato

European farmers produce 44 billion kilograms of potatoes on 1.16 million hectares with a value of €5 billion.

Late blight fungus destroys two per cent of the European potato crop each year, despite eight to fourteen chemical fungicide applications each year at a cost of €322.

Researchers are focusing on a wild relative of potato that exhibits resistance to late blight. Using gene technology the resistance gene has been transferred into potatoes, and the resulting potato plants have been unaffected by the fungus in trials.

The net grower income benefit if growers in 12 European countries have a 100 per cent uptake of the GM varieties would be €417 million. Most of the income benefits would be in France, German, the Netherlands and the United Kingdom.

For more information:

www.ncfap.org/reports/Europe/ExecutiveSummaryDecember.pdf

Knowledge Bank

This issue of knowledge bank (April 2004) will focus on the considerable developments around the Australian states in relation to introducing legislation to ban genetically modified crops, and in one case, proposed coexistence trials.

Australian Capital Territory

Two bills have been tabled in the ACT Parliament. The Labor government has tabled the *GM Crop Moratorium Bill* which basically mirrors the NSW legislation, whilst the Greens have tabled *The GMO (Environment Protection) Bill*, which in its draft form, calls for a ban on all GM crop releases, including field trials. This could potentially have a significant impact on research in the ACT, particularly CSIRO projects.

New South Wales

Legislation banning the commercial cultivation of GM food crops until 2006 has been in place in NSW since 2003. This legislation allows organisations to apply to the Agriculture Minister for exemption. An application was put forward by Bayer CropScience, Monsanto and the Australian Oilseeds Federation to run coexistence trials to assess the implementation of GM canola into the supply chain. Coexistence is important to enable different agricultural production systems and ensure consumer and producer choice. The trial would provide an opportunity for farmers to evaluate the performance and value of the technology.

On 1 April, the NSW Agriculture Minister Ian Macdonald announced that coexistence trials would not be going ahead in 2004. A 420 hectare component of the application which allows for performance comparisons between GM and non-GM varieties was approved. Details of planting plans will be finalised in the future.

South Australia

The South Australian *GM Crops Management Bill* was passed through Parliament earlier this month. It establishes two complete GM free zones - Eyre Peninsula and Kangaroo Island, and although it will allow trials elsewhere in the State, there will be no commercial releases allowed until 2006.

Tasmania

According to media reports, legislation (*Genetically Modified Organisms Control Bill 2004*) will be introduced by the Tasmanian Government this month which will replace the current five-year moratorium banning the growth of GM canola, imposed under the Plant Quarantine Act. The new laws are predicted to ban GM crop/food and animal research and trials, but allow for controlled growing of non-food crops for research, for example, GM poppies.



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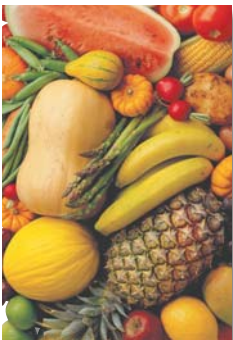
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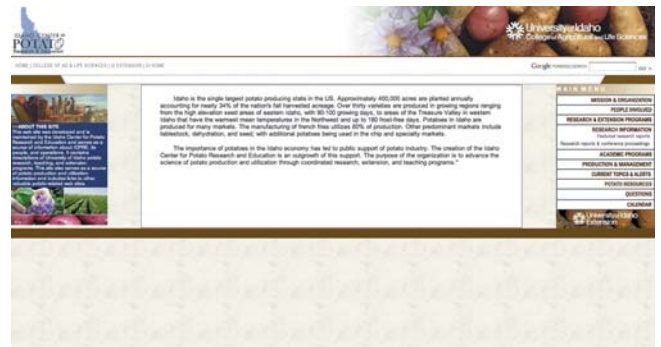
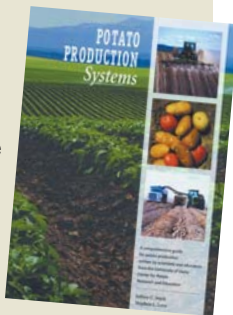
The University of Idaho has compiled a comprehensive guide for anyone interested in the production and processing of potatoes. If you are interested in learning from overseas experiences, this book is worth having a look at. A complete table of contents, sample chapter, price and ordering details can be viewed at:

info.ag.uidaho.edu/pps/

Edited by Jeffrey C. Stark and Stephen L. Love

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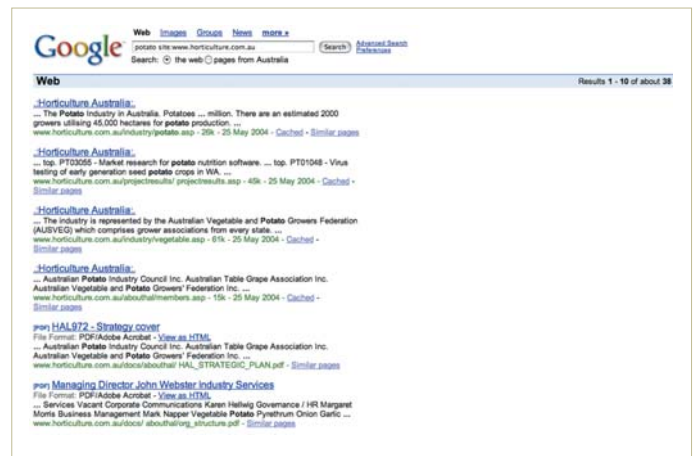
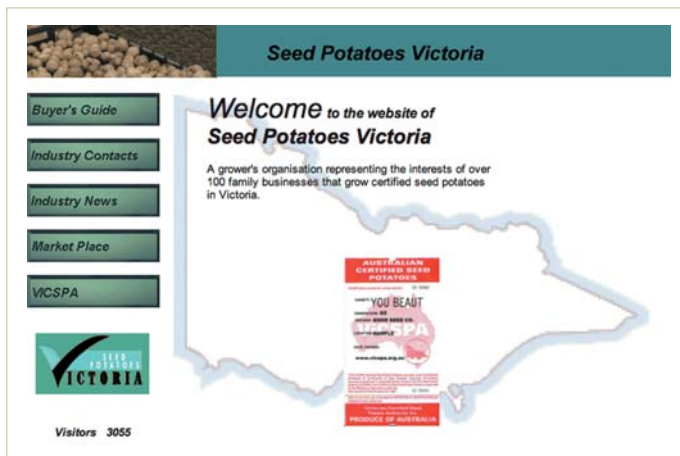
For other potato publications available from the University of Idaho, check out the internet site at: info.ag.uidaho.edu/potato/



Idaho information

Unfortunately, an important site was missed in the latest version of the Potato Internet Starter Pak that provides a gateway to a lot of information from the University of Idaho.

www.ag.uidaho.edu/potato/



Seed information online

www.spv.org.au

Seed Potatoes Victoria has a new internet site designed to help seed buyers access information on seed availability, recommended prices, current industry news and buying and selling equipment.

Internet tip

If an internet site does not have its own search engine, some specialised search engine sites such as Google and Alta Vista will allow you to search within a site.

For example, in the search field, enter:

potato site:www.horticulture.com.au (Google)

or

host:www.horticulture.com.au + potato (Alta Vista)

This will find the potato pages within the HAL site.



McCain's French fry trial



The McCain's French fry trial on Baird's property at Ballarat was harvested in late April with a field inspection by local farmers. The trial is funded by McCain Foods, McCain contract growers and HAL under the Voluntary Contribution scheme.



David Ryan (McCain Agronomist), David Antrobus (McCain Field Manager), Rod Lay, (McCain Agronomist), Kim Powell (McCain Agronomy Assistant), Ken Labbett (Farmer) and Tony Slater (Potato Breeder)



Russell takes on new role

Russell Sully will move to a new role of Key Project Manager in the 'Our Rural Landscapes & Naturally Victorian' program in the Department of Primary Industries, Victoria following an internal restructure of the organisation. Russell has worked closely with the potato industry as Manager Industry Development and is widely known by many in the industry in Victoria and interstate.

We would like to thank Russell for his efforts and wish him the best in his new role.

Correction from last edition

Article - Variety evaluation underway -
Page 20 March EOP

Please note that Department of Primary Industries, Victoria, Plant Breeder Tony Slater's contact details at Toolangi are:

☎ (03) 5957 1200

Fax: (03) 5957 1210

✉ Tony.Slater@dpi.vic.gov.au

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Developing a pests and disease crop monitoring program for Western Australian seed potato crops PT02048

Evaluation and development of new potato genotypes in South Australia PT02009

Potato varietal evaluation for Western Australia's fresh and export markets PT00010

Study Tour to the UK and Netherlands to investigate value adding opportunities for potatoes, September 2003 PT03057

The reports are available from HAL for \$22.00 in Australia or \$US30 outside Australia including postage. To obtain reports send a cheque or money order with a note quoting the project name/s and project number/s to:

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Kennebec, Bintje, Coliban, Delaware, Desiree, Nicola, Sebago, Spunta	\$0.48	\$0.44	\$0.41	\$0.39	\$0.38
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New research program for the processing industry

As previously reported in *Eyes on Potatoes*, the processing industry has identified three high priority areas requiring research – Soil borne diseases & soil health, Potato viruses X,Y & S and Tomato Spotted Wilt Virus. The IAC recognised that before a research program could be developed, a business plan to get funding was needed. A team overseen by the IAC Processing sub-committee has been formed to prepare a plan.

Before any large research program can begin, a lot of planning is needed to assess what research needs to be done to meet the desired outcomes, what can realistically be achieved, who is going to do it and how much it is going to cost. Meetings in the first half of May have been held in Adelaide and Melbourne to pull together the rest of the information required so the business plan can be finalised.

This program offers opportunities to work with research groups in other countries such as New Zealand, Canada and Britain that also face many of the problems we face. By combining our expertise we will make better progress towards meeting our objectives whilst spreading the cost of doing the work.

After the business plan has been finalised, it will be considered by the Processing sub-committee of the Industry Advisory Committee and then HAL and other funding agencies.

If the plan is supported then it is then a matter of finalising agreements between all the relevant groups and starting work – hopefully in winter or early spring.

The process of pulling together an R&D program of this size and complexity is quite a task. So is the process of identifying the sources of funding to make it all happen. The Levy program by itself cannot provide enough funds to do all the work. If the plan is successful, funding will also come from other sources from within and outside Australia.

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State ROUND-UP

Western Australia

Planting in the coastal regions for fresh market potatoes was completed by late April, with harvest expected from early September to mid October. The weather conditions for the planting were good, with fine days and little rain in March and April. Varieties that have been planted include *Nadine*, *Mondial*, *Royal Blue*, *Ruby Lou* and *Delaware*.

In the Manjimup / Pemberton region, conditions for harvest of fresh market potatoes from mid March to early May were good with little rain and warm days. Average yields for all varieties harvested were 65 t/ha with good quality and a low percentage of rejects. *Nadine* yielded about 70 t/ha, *Royal Blue* and *Ruby Lou* about 50 to 55 t/ha. Other varieties grown for this harvest period included *Kestrel* and *Delaware*.

Harvest of summer planted crisp varieties began in April in the south west regions. Generally, the yield has been average, with acceptable cooking quality, although the specific gravity in some varieties has been higher than for other varieties. Demand for crisping potatoes in export markets (Malaysia, Hong Kong and the Philippines) was strong during February and March, with processors reporting high cooking quality. There was a slight drop in demand for export crisp potatoes during April, however the market is still considered strong.

Demand for frozen French fries on the WA domestic market is very strong with all product from local factories being sold. Yield of the early varieties *Kennebec* and *Shepody* has been average at around 55t/ha with good frying quality. Harvest of *Russet Burbank* started in late April with yields around 60t/ha and excellent frying quality.

Harvest of the main certified seed crops in the south west region began in April and tuber quality is high. Demand in some of the export seed markets for Atlantic seed for crisp production is strong. Sri Lanka remains a promising market for export seed from WA for fresh market production, despite the effect of the high Australian dollar. There is continuing demand in Mauritius for WA export seed. Quarantine issues related to the outbreak in Indonesia of potato cyst nematode have hampered exports of seed to that country.

Rachel Lancaster
Research Officer
Department of Agriculture, WA

New South Wales

Drought conditions returned to most of New South Wales during autumn. Fresh prices remained low (\$10-\$13/bag) due to large sales of Victorian potatoes in the Sydney markets.

The mid-season crop harvest started in the Central West in March and finished in May. Crisping yields were average although the specific gravities were slightly down. The low fresh prices delayed digging of the Dorrigo crop until April. Crop yields were high (38-45 tonnes/hectare), although tuber quality was average with the later harvest.

Digging of mid-season seed crops started in the Crookwell district in April. Seed areas were down 10 percent on last year due to grower retirements and the dry season. Crop yields and tuber quality are excellent. *Sebago* and *Collban* were the main seed varieties grown. The strong demand for seed has seen many lines sold out before harvest. This year's recommended price for Crookwell Certified Seed is \$580/tonne plus GST. The harvest is expected to finish in July.

The late crop harvest started at Dorrigo in May. Marketable crop yields were down following the later than usual plantings in March and frosts in early May. The Riverina harvest will start in June, with average yields expected from crop areas similar to last year's.

Stephen Wade
District Horticulturist
NSW Agriculture

South Australia

Harvesting of the main processing crop in the mid and lower South East is almost complete. Weather conditions during harvest have been mild and dry. The mild summer and autumn weather has assisted production of an above average yielding crop. In general, the main *Russett Burbank* crop has suffered minimal disease and physical plant damage, although several very heavy infestations of Tomato Spotted Wilt Virus (TSWW) were reported and caused severe economic loss.

The market place is actively competing for the above contract tonnage that is available this season. The variety trial has been harvested and has produced positive results.

The Lakes area reports that the late February and early March planted crop is growing out well. There has been some minor wind damage reported but this is not uncommon in this area. The winter crop area will remain at normal levels. In general, the total production from this region is slowly declining as land use transfers to wine grape production.

The Mallee and Riverland region has had good summer growing conditions due to the mild weather. This has resulted in slightly above average yields. Several severe TSWW outbreaks were reported that caused serious economic loss.

Interest has been shown from growers in non-traditional potato areas in being involved in this industry mainly due to opportunities for water access and water licence use.

Bob Peake
Horticultural Consultant
Rural Solutions SA

Queensland

Due to the perception of there being an oversupply in the southern areas and a very wet season limiting planting opportunities there has been a reduction in early planted potatoes on the Atherton Tablelands. Overall plantings for the tablelands though are expected to be similar to last year's.

The early planted upper tableland crops are showing reduced yields due to the wet drizzly growing conditions. The later planted crops in this region are performing much better and are expected to yield well. Pest pressures on the upper tablelands have remained low.

The lower tablelands are expected to have a larger than normal main season planting, due to the shortened planting window. To date, *Helicoverpa* pressure has been high but manageable and there has been an increase in green vegetable bug and aphid activity.

Varietal plantings on the tablelands are expected to be similar to last year as is the export market.

Bundaberg plantings are underway after the region received good rains followed by dry conditions. This region may have slightly increased production in fresh and processing potatoes as some new growers have entered the industry.

While the Lockyer valley will have a slight increase in plantings this year, there are areas that have missed the rains so will have reduced production. The early planted crops that are being harvested have generally had reduced yields due to the very hot growing conditions they suffered. The main crops are looking good and growing well.

To date, insect and disease pressures have generally been low to moderate, except for an occasional white fly outbreak. This region will also have a slight increase in varietal production.

Darling Downs crops are being harvested. Apart from a very hot start, these crops have had good growing conditions and low insect and disease pressures so are yielding well. Some very early frosts have occurred but these have not had much effect on crops.

Michael Hughes
Extension Agronomist
Department of Primary Industries

Victoria

Victoria has had a good autumn for harvest, with most districts either completed or well into harvest. The only problem has been dry conditions in some districts.

The Colac/Otway region had good growing conditions resulting in healthy crops. Harvest is progressing well in ideal soil conditions.

In Koo Wee Rup Swamp, five growers tested positive to Potato Cyst Nematode. Harvest is almost complete with good chipping quality. PCN positive growers have been restricted, with their harvest causing some problems.

The health of the Ballarat seed crops this year was good. Harvest is progressing well on time in dry but ideal conditions. McCain growers began harvest at the start of April, filling storage in first week of May, which is an early finish. The main problem was hollow heart but generally quality was good. This year saw above average yields in *Russet Burbanks*.

Water for Growth trials are progressing well with 20 growers using drip tape or solid set irrigation. Trials with different rates of water and nutrition were carried out to fine tune growing *Russet Burbank* under drip tape. Growers are getting good results with the new technology.

Kinglake seed crops have had excellent yields with good seed sales. Commercial crops have been hard to move. Harvesting was dry early but favourable moist soil conditions existed in May.

Portland recorded adequate rainfall in the growing season resulting in little irrigation that helped catch up the late start, with healthy crops. Harvesting is progressing well in ideal conditions.

Thorpdale had good growing conditions after a late start. Crops were clean with few problems. Harvest is almost completed. The only concern was some mechanical damage due to dry harvest conditions - most growers irrigated ahead of harvesting.

Potato Leaf Roll Virus showed up in a few crops across Victoria. TSWV was present in most districts in very small quantities.

The inaugural committee meeting was held in April to organise the 2005 National Potato Conference in Gippsland.

Bruce Fry
Horticultural Extension Officer
Department of Primary Industries

Tasmania

Exceptionally heavy rains at the end of January (up to 18 inches in less than one week in some areas of the state's east) had a devastating effect on several crops, resulting in the complete loss of some and dramatically reduced yields from others. However most crops grown on the well drained red soils, were not badly affected and have generally performed well this season.

The increased capacity of the Simplot Ulverstone plant (245,000 up to 325,000 tonnes) along with losses due to rain have resulted in a shortage of commercial potatoes this season. Early *Shepody* crops have returned above average yields and the *Russet Burbank* harvest is progressing well for the two processing companies. Weather permitting, it is hoped that storage should be complete by the end of May. With the exception of the rain affected crops, quality of the processing crops looks good. Rhizoctonia continues to be the disease causing greatest losses in the paddock and growers are looking at in-furrow sprays to reverse this trend.

Fresh market crops have not fared as well this season and quality has generally been low due to soft rot and powdery scab (caused by the heavy rains). Prices have also been lower this season compared to last and are likely to remain so for some time.

Seed quality this year has shown a dramatic improvement on previous seasons with few crops failing certification. Common scab levels have declined substantially probably as a result of much improved irrigation practices. Levels of rhizoctonia recorded on the seed have again been low, suggesting that problems observed in the commercial crops may be soil borne or a different strain of the disease not being picked up during certification.

Crops have generally been harvested and into store earlier this season compared to previous years, which should improve seed quality and physiological age.

Iain Kirkwood
Agriculture Officer (Potatoes)
Department of Primary Industries, Water and Environment

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