Department of Agriculture and Food

Agricultural MEMO

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AUGUST 2006 ISSN NO: 0726-9374 Volume: 33 Issue 4

The 2006 Weekly Times Countdown Downunder Milk Quality Awards

These Awards recognise the lowest 5% of farms across Australia based on annual average bulk milk cell count (BMCC).

The Awards are based on BMCC data supplied to the Australian Dairy Herd Improvement Scheme by all dairy companies across Australia. To be eligible, farms must have data for a minimum of 9 months in 2005. Monthly averages are used to calculate the annual BMCC for each farm.

All farms are then ranked nationally and the winners are the 5% of farms with the lowest BMCC in Australia.

Many mastitis control stories are about solving or avoiding problems, but these Awards enable us to celebrate success for over 500 farmers. It is a great collaboration between all the dairy companies, Countdown, the Australian Dairy Herd Improvement Scheme and The Weekly Times.

The winning farms receive a metal plaque for their gates and those in the top 100 also receive a certificate of recognition.

Countdown Downunder congratulates *Western Australian* farmers with bulk milk cell counts in the lowest 5% across Australia.

Graham Armstrong
Graham, Jane and Norina Manning
Peter Bates
Bill McFerran
Shane and Jenny Birch
Ian and Ruth McGregor
Joe and Lila Brooks
Richard and Erica Moody
Graham Carter
Rodney Oates
Rob and Katrina Cooling
Frank Parravicini
Darrell Fitzpatrick
Michael Partridge
Reg Green
Terry, David and Shelly Reilly
Harold and Bevan Harrison
Michael Roberts
Paul Ieraci
Warwick and Lindsay Rose
Geoff and Lorraine Jenkins
Ian and Jenny Trigwell
Len and Ben Letchford
WA College of Agriculture Harvey

More information from Countdown Downunder at
http://www.countdown.org.au/Award/cell_count_award_2006.htm

In this issue...

Livestock Production Assurance Audits

Anita Drage, Bunbury

The most recent edition of the National Vendor Declaration (NVD) incorporates the on-farm food safety program called Livestock Producer Assurance (LPA), which asks producers to be able to 'back up' their NVDs by keeping records of food safety-related on-farm management practices.

Random audits have been introduced to further strengthen the integrity of the NVD & LPA program.

Who is audited under LPA?

By becoming fully accredited within LPA, producers agree to be included in a random audit pool. Two thousand producers each year will be randomly selected from the pool for an audit.

What does the audit involve?

The audit involves an on-site visit to review your LPA record keeping systems and provide an assessment of how the five food safety elements of LPA are being met:

- Element 1 - Property risk assessment
- Element 2 – Safe and responsible animal treatments
- Element 3 – Stock foods, fodder crops, grain and pasture treatments
- Element 4 – Preparation for dispatch of livestock
- Element 5 – Livestock transaction and movements.

How is the audit conducted?

Producers who are randomly selected will be contacted by the auditor to organise a mutually convenient time to perform the audit. Prior to the start of the audit, you will have the audit process explained by the auditor.

Specific questions about how records are maintained and general food safety-related management practices will also be asked. The auditor may also wish to accompany you on an inspection of the property facilities relating to food safety, including chemical storage areas.

Any areas identified as contaminated with persistent chemicals may also be visited to review the management systems implemented at these locations.

Cost of the audit?

No direct charge applies for the random audit as the cost is already incorporated into the purchaser price of the NVDs. In the unlikely event that the record keeping and management systems do not meet LPA requirements and the potential for a serious food safety breach existed, you may be charged for the cost of the subsequent audits.

How long does the audit take?

The average audit duration will be about 1.5 to 2.5 hours. However this may vary due to the effectiveness of the record keeping system, size of operation, your understanding of LPA and proximity of various facilities.

WA audits to date

There are two nominated MLA Auditors in WA who are required to complete 300 producer audits each year. As a producer in WA, your turn will come. Are you ready?

More information from me on 9780 6217.

DairyCatch

A Partnership for Sustainable and Profitable Dairy Farming in Western Australia

Lorelle Fry, Benger

DairyCatch was an industry-led initiative that worked with farmers to develop and implement best management practice for environmentally sustainable dairying. The Geographe Catchment Council coordinated the project in partnership with Western Dairy and the Department of Agriculture and Food Western Australia (DAFWA). The **Project Reference Group** involved dairy farmers, the Dairy Processors Association, the Local Government Association, Harvey Water, WA Farmers, the Water Corporation, the Department of Environment and Dairy Australia.

The preparation of environmental best management practice guidelines (BMPs) was a key output of the DairyCatch program. These guidelines could not have been produced without the generous financial support of Dairy Australia, the Natural Heritage Trust, the National Landcare Program, Western Dairy and the Department of Agriculture and Food Western Australia.

For the broader Dairy Industry, these guidelines are the credentials needed to demonstrate it has procedures and practices in place as a responsible environmental manager and community member. The industry viewed the development of BMPs as a critical step towards self-regulation in the face of increasing public awareness that may lead to greater environmental licensing.

The BMP development process started with an objective assessment of the environmental risks posed by current dairy farming systems. The results were used to identify areas of environmental sensitivity and those farm practices that posed the greatest environmental threat.

The guidelines were written by DAFWA and have been subjected to a rigorous and robust review by members of the Project Team, the Reference Group and other public and private specialists. They will be published on the DAFWA website, to ensure their currency and cost-effective distribution, and will be constantly updated. They will be accessible for downloading after 1st October 2006.

More information from Lorelle on 9726 9226.

Spring grazing management

John Lucey, Manjimup

Despite the driest start to the season on record for many farmers, the late July rains finally saw germination throughout the south west. With the very late break, good grazing management leading into spring is even more critical this year to maximise pasture density and growth.

Spring is probably the most difficult period during which to manage pasture, as pasture growth rates can often exceed animal requirements in a very short time. Spring is also the major period of tillering in ryegrass and, added to this, reproductive tillers need to be managed to prevent pasture quality from declining.

Taking the time to monitor the leaf growth stage and grazing residual of your pasture over the next few months is critical and will be time well spent. As the days lengthen and temperatures increase, pasture growth rates will increase rapidly and you need to use pasture indicators to determine when to shorten your rotation to maintain the optimal grazing intensity for both pasture and animal performance.

A grazing rotation interval coinciding with regrowth of 2 to 3 leaves per tiller is optimal for ryegrass persistence, productivity, utilisation and quality. This ensures that plants have sufficient time to recover from the previous grazing and replenish their nutrient supplies by 2 leaves, but grazing before leaf death occurs and quality declines at 3 leaves.

Check the paddock that cows have grazed every day when shifting fences to identify when they start to leave good quality feed behind. Aim for a post-grazing pasture residual of 5 cm as this optimises pasture utilisation, feed quality and animal performance. Any lower than 5 cm and you are forcing animals to eat poor quality feed, compromising their production and reducing pasture regrowth and tiller survival. Likewise, pasture residuals greater than 5 cm indicates cows are too well fed, wasting good quality pasture and reducing ryegrass tillering and subsequent grazing quality.

Post-grazing pasture residuals greater than the 5 cm is the signal that pasture growth rates exceed your herd's demands. Start dropping paddocks out of the grazing rotation for silage or hay, to shorten the rotation to maintain grazing pressure on the remaining pasture.

Since regrowth is fastest in spring, particular attention should be paid to the duration of grazing - this should be no more than 2 days in any one area at this time. Any longer than this and cows are able to graze the new regrowth leaves, reducing plant nutrient reserves which reduces subsequent regrowth and tiller survival. In larger paddocks, a back fence can be used effectively to ensure that back grazing does not occur.

More information from me on 9777 0124.

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Residues on farm

Anita Drage, Bunbury

In Australia, residue monitoring is an important part of an overall strategy to minimise unwanted chemicals in food. It serves to identify potential residue problems and indicates where corrective action is required.

Both Commonwealth and State Governments carry out monitoring programs for residues in agricultural food commodities. The primary monitoring program is the Australian National Residue Survey (NRS) program.

The overall purpose of the NRS program is to underpin the export and domestic marketing initiatives of participating industries and to safeguard the health of consumers. The program provides confidence in the overall residue status of Australian agricultural produce for human consumption.

The following is a list of known residue sources of heavy metals and organochlorines. If they exist on your property, you should ensure that livestock have absolutely no access to them.

Residue Source	Contaminant	Original use
Dump sites	Lead, organochlorines, mercury	Paint tins, batteries,
Farm sheds	Lead, mercury, dieldrin	Batteries, termite treatment
Wooden yards	Dieldrin and DDT	Termite treatments
Old dips and shower sites	Dieldrin, arsenic	Parasite treatments
Power poles	Dieldrin	Termite treatment
Old wooden buildings	Dieldrin and DDT	Termite treatments
Silos	Mercury, dieldrin	Pest treatments
Chemical storage area	All residual chemicals	Old leaking tins, drums
Old orchards	Dieldrin, DDT	Butt spray for pests
Fertiliser sites	Cadmium	Crop and soil applications

Organochlorines such as Dieldrin and DDT have been banned for over 20 years but their legacy still remains. As they are highly residual, areas where they may have been used should be fenced off.
In this day of quality assurance, you as the producer are responsible for your product. Know what it is eating and accessing at all times.
More information from me on 9780 6217.

Is the Timerite?

Bill Russell, Bunbury

You can reduce the number of over-summering Red-legged Earth Mite eggs by spraying at the right time in spring.

TIMERITE® is a free package that provides a date in spring for a single spray to stop females producing over-summering eggs.

You can obtain the spray date for your property from the AWI helpline on 1800 070 099 or the TIMERITE® website at www.timerite.com.au. You will need a named place on or within 10 km of your property that can be looked up on a map.

When you have your TIMERITE® date, spray as close as possible to that date. If it is not possible to spray within a couple of days, use a systemic, residual chemical applied within a two week period leading up to and including the optimal TIMERITE® spray date. Spraying after the optimal date may not achieve good control the following autumn.

Livestock Production Assurance

Anita Drage, Bunbury

Livestock Production Assurance is a simple, on-farm food safety program asking if you can 'back up' the claims made on your NVD Waybill.

LPA Level 1 has five requirements. For each of the elements of LPA Level 1, there is a 'food safety outcome'. The food safety outcomes are aimed at making sure meat from your livestock is fit for human consumption.

To maintain LPA accreditation, you must comply with all elements and therefore the food safety outcomes.

These outcomes relate to what you declare and sign off on when completing the NVD Waybill Edition 1.

The five elements of LPA Level 1 are:

1. Property risk assessment

Requirement: Livestock are not exposed to areas on your property that are contaminated with organochlorines or other persistent chemicals.

Outcome: On farm systems have been implemented to minimise the risk of livestock being exposed to sites that are unacceptably contaminated with organochlorines or other persistent chemicals (Dieldrin, DDT, Heptachlor, Arsenic, Lead, Cadmium etc)

2. Safe and responsible animal treatments

Requirement: Livestock intended for human consumption do not contain unacceptable chemical residues or physical hazards.

Outcome: On farm systems have been implemented to ensure animal treatments are stored and administered in a safe and responsible manner to minimise the risk of chemical residues and physical hazards in livestock intended for human consumption.

3. Stock foods, fodder crops, grain and pasture treatments

Requirement: Livestock are not exposed to feeds containing unacceptable contamination, specifically any food containing animal products and/or unacceptable chemical residues.

Outcome: On farm systems have been implemented to manage the exposure of livestock to foods containing unacceptable chemical contamination to minimise the risk of chemical residues in livestock and to eliminate the risk of animal products being fed to ruminant livestock intended for human consumption.

4. Preparation for dispatch of livestock

Requirement: Livestock to be transported are fit for the journey, they are not unduly stressed and contamination is minimised during on-farm assembly and transport to the destination.

Outcome: On farm systems have been implemented to ensure that the selected livestock are fit for transport and that the risk of stress and contamination of livestock during assembly and transport is minimised.

5. Livestock transactions and movements

Requirement: Any purchaser of your livestock can assess the chemical residue or food safety status of the animals; any animals or products purchased by you can be assessed for chemical residue status; the movement of livestock can be traced if required.

Outcome: A system has been implemented to enable traceability of the current status of all livestock with respect to treatment or exposure to relevant food safety hazards for all livestock movements between livestock production enterprises including to slaughter and live export.

Practical on-farm activities for achieving each element are provided in the LPA Manual supplied with the producers' NVD from the Meat and Livestock Australia – contact 1800 683 111 or the web site- www.mla.com.au for a copy.

More information from me on 9780 6217.

Non-botrytis bunch rots in WA vineyards

Andrew Taylor, Manjimup Horticultural Research Institute

While *Botrytis cinerea* is often recognised as the cause of the bunch rot problems experienced in WA vineyards, do other organisms also play a role?

A Regional and Innovation Technology Adoption (RITA) grant from GWRDC has recently been awarded to DAFWA to determine if other organisms are involved.

Direct effects of bunch rots include reduced yield, lower wine quality and, in severe cases, entire harvests of fruit being rejected.

Another cost is the need for fungicide applications, often with varied success. Some bunch rot-causing fungi are not controlled by fungicides designed for *Botrytis cinerea*. Clarification of the fungi involved in bunch rots in WA vineyards will have important implications for selecting the most appropriate fungicide.

Non-botrytis bunch rots have recently gained greater interest in Australia and overseas. Work in NSW has found that bunch rots there are primarily caused by *Colletotrichum acutatum* (ripe rot) and *Greeneria uvicola* (bitter rot) and not from *Botrytis cinerea*.

The main part of the RITA project will involve a survey to determine whether non-botrytis bunch rots occur in WA and, if so, how prevalent they are. The survey will include several areas of the state because climatic conditions play an important part in the development of bunch rots.

We are asking for growers who have experienced problems with bunch rots, especially if spraying for *Botrytis* has had little success, to contact the Department of Agriculture and Food on 9777 0000 or email ataylor@agric.wa.gov.au. We are also keen to hear from vignerons who have had either ripe rot and/or bitter rot recorded from diagnostic laboratories.

More information from me on 9777 0126.

South West avocado crop hit hard by frost

Alec McCarthy, Bunbury

If you thought it was cold on the morning of the 17th June, you were correct. Bureau of Meteorology data recorded minimum temperatures of -5 ºC at Bridgetown (-8.6 ºC at ground level), -2.5 ºC at Donnybrook, 2.5 ºC at Pemberton (but a ground temperature of -3 ºC). Thermal satellite imagery showed that the low temperatures were widespread throughout the south west, even touching some regions north of Perth (Gingin was -3.6 ºC).

The low temperature was bad, but the real problem was the length of period it was below zero. Some growers reported their frost sensors triggering irrigation systems well before midnight. As a result, trees had to endure sub-zero temperatures in many areas for in excess of 8 hours. The result of this was severe frost damage to the avocado tree and, in particular, the highly sensitive fruit stalks. There were several milder frosts leading up to the 17th of June and there have been a few since. Thankfully, for the most, there have been reports of only mild damage as a result of these milder frosts.

While there was a concentration of damage in the lower south west in a strip from Donnybrook down to Pemberton, the frost was wide spread, with some isolated reports of damage as far north as west Gingin. Initial damage predictions suggested that up to 40 per cent of the predicted crop from the lower south west corner may have been damaged. At the time of writing, some fruit had started to fall as a result of the damage, but other less affected fruit is showing resilience and, to date, is looking like holding on. Time will tell though, if this fruit can continue to develop fully. There is a good chance that some of this fruit will remain fairly small. Still, small fruit is better than no fruit, but we will need to monitor fruit quality.

What to do if your trees suffered frost damage?

For now, unfortunately, there is very little that can be done. All you can do is to let the trees start to recover naturally. Once they have started to re-shoot in spring, you can begin to remove dead wood. If your trees have been opened up a lot with much exposed framework branches and early spring is looking to be hot, consider sun protection. This can be achieved by applying a 50:50 mix of water and water based white paint to the upper side of the main framework branches. The other issue is that your trees may be using less water than normal due to leaf damage or loss. The avocado tree is susceptible to root rots, therefore you need to carefully monitor soil moisture to ensure you are not over watering.

The future for frost control?

There are a range of measures to reduce the severity of a frost event but many only offer protection against medium severity frosts, frost of say -2 ºC lasting for only a couple of hours. As the potential frost events get worse, the control measures generally get more elaborate and more expensive to set up and operate. Some measures need to be planned for at orchard design, others can be added later.

Some measures to help reduce the severity of frost damage:

- Orchard site selection – choosing a frost free site with good air drainage
- Orchard design – align your rows to run up and down slopes rather than across slopes to allow effective air drainage
- Maximise tree health – a healthy, leafy tree will generate some internal heat and also reduce the depth of frost burn into the tree
- Weed control – a strip of bare, moist earth under and around the trees will absorb and release heat more than a weedy or dry site
- Frost covers for young trees – side ***and*** top cover is required to protect from frost, trunk guards can help prevent total tree death by protecting the main trunk
- Frost reducing chemicals – sprays of copper, Seasol®, Envy®, Wilt not® and similar all have claimed abilities to reduce the severity of frost damage
- Under tree irrigation – irrigation pulses to try and keep the temperature above zero for as long as possible, essentially relies on the heat of the water
- Air drain wind machines – suck the cold air at ground level and forces it up into the stratification layer
- Wind machines – pull warmer air from the inversion layer down and distribute it about the trees to raise the temperature around the trees
- Orchard heaters – artificially heat up the air about the trees within the orchard
- Over head irrigation – relies on the fact that heat is released when water turns to ice, must have ice continually forming for true effect.

Should I try and frost proof my avocado orchard?

Was this severe frost event a 'one in twenty year' event, or is this a sign of things to come? Essentially, you need to carefully look at the potential income losses from a frost event, the likely occurrence of such events and the cost of frost prevention measures. Some measures to reduce frost severity are reasonably low cost, while others have quite significant up front and operating costs. Some frost reducing measures will only be effective against mild frosts. If you are planning to try and protect against severe frosts you will need to investigate the anticipated effect of the control measure to determine if it is likely to be effective to the level you want. It may be that you have to use a more elaborate and expensive measure, or you may be able to combine two or more methods to achieve the desired level of control. The cost to totally remove the risk of frost damage, if measures exist that can provide this, may just be too high to be economical. In the end, you may have to put up with an 'acceptable' level of risk.

More information from me on 9780 6273.

Powdery Mildew and Botrytis in vineyards – get in early

Andrew Taylor, Manjimup Horticultural Research Institute

Weather conditions at the finish of last season meant that grapes were left on vine in many regions. These conditions were also ideal for both Powdery Mildew and botrytis. To protect the coming season's crop, it is important to be on top of diseases early. Of particular concern is the development of these two diseases and, to a lesser extent, Downy Mildew. If the weather is favourable early this season, the large amount of inoculum (spores) present in the vineyard is a big threat to the coming crop.

Trevor Wicks from the South Australian Research and Development Institute recently travelled to WA to give talks on these diseases. At least five chemical groups are registered for use on Powdery Mildew so there are good combinations for resistance management.

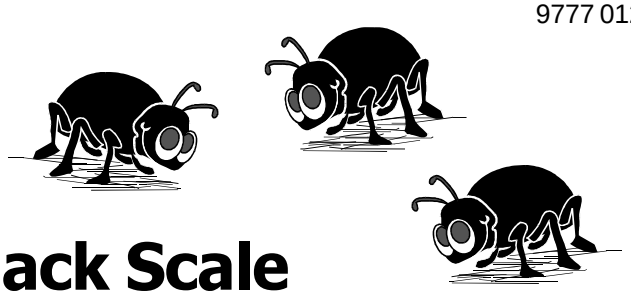
Sprays for Powdery Mildew should begin when shoots are 10-15 cm. Sulphur at the beginning of the season controls both Powdery Mildew and rust and bud mites. Flowering is a critical period for Powdery Mildew control because buds can be infected and cause infection for next year, often seen as flag shoots. At flowering, DMI products (Group C fungicides) provide good control. Trevor mentioned that, for good Powdery Mildew control, you should follow the three T's: Timing, Treatment and Technique.

Botrytis is a lot more difficult to control than Powdery Mildew. It is more likely to develop resistance to chemicals, can remain latent in grape berries through the season and its occurrence near vintage is weather dependent and therefore unpredictable. Like Powdery Mildew, several chemical groups are registered for botrytis control - resistance management strategies should be followed. Critical control times for botrytis occur during flowering because botrytis can infect the scar created where the flower cap has fallen off. The longer the flowering period, the more likelihood that latent infection occurs. Young berries remain resistant to botrytis infection but, as the berry develops, this resistance lowers. If weather conditions are favourable around veraison to harvest, botrytis can explode. If there is also a large level of leaf botrytis early in the season, it may pay to spray for this to prevent the spores entering the flowers.

Botrytis management relies on an integrated approach that includes cultural, chemical and biological methods. Reliance on just one of these methods will reduce your chances of effective crop protection.

All spray programs for diseases should follow the AVCARE guidelines which are available in the "Dog Book", on the internet or in the DAFWA viticulture spray guide.

More information from me on 9777 0126.



Weevils and Black Scale

Stewart Learmonth, Manjimup and Dr Sonya Broughton, South Perth and Dr Mark Gibberd, Margaret River Education Campus.

The Du Pont insecticide Avatar (indoxacarb) will be available as a fully registered product for control of Garden Weevil in **wine- and table- grapes** from this season. As a result of trial work over the last two seasons, Du Pont is applying for registration of Avatar for control of Garden Weevil, Apple Weevil and Fullers' Rose Weevil in **pomefruit and stonefruit crops (except cherries)**. For this season, the insecticide is only available for use on these crops under minor use permit (PER 8721, due to be extended from December 2006).

The project on ***Garden Weevil management in grapevines***, part funded by the Grape and Wine Research and Development Corporation and run in collaboration between DAFWA and Curtin University of Technology, continues into its second year. While results from last season are still being analysed, the main findings were that a new exclusion treatment, based on a grease from South Africa (Barrier Glue) and the refined clay product Surround, showed very good and reasonable levels of control of Garden Weevil. More work on both products is planned for this season. Detailed studies on Garden Weevil across an organic block of Chardonnay will continue and a new experiment comparing different ground cover options has commenced.

A three year research project on two key pests of **olives**, Black Scale and Apple Weevil, will commence this season. The project is part funded by the Rural Industries Research and Development Corporation. Olive growers of WA and the Horticultural Spray Oil Company SACOA are providing logistical and financial support. The aims of the project are to examine aspects of the biology of both pests and use this information to develop improved and sustainable management practices for Black Scale and Apple Weevil.

More information from Stewart on 9777 0167.

Mealybugs still making a meal of some vineyards

Stewart Learmonth, Manjimup Horticultural Research Institute

Long-tailed Mealybug is still an issue for winegrape vineyards in the south west. This insect, a native of eastern Australia, was present in high densities in vineyards in the Margaret River and Manjimup/Pemberton areas last season. Monitoring in vineyards where some use of chlorpyrifos before bud burst was undertaken showed that this treatment protected the vines during the season, but that the number of insects present at the end of the season may be sufficient for problems to occur again this season.

The sustainable practice of releasing imported mass produced natural enemies from Queensland, such as Green Lacewing and *Cryptolaemus* beetles, appeared to give good control – in one case where over wintering numbers of mealybug were very high.

One piece of good news from last season's research was confirmation that a newly developed artificial pheromone for Long-tailed Mealybug is active in attracting male mealybugs. The pheromone was developed at the University of California, Riverside and, because of timing issues, was sent to Australia for the initial trial. While a useful tool for monitoring mealybug, the availability of a synthetic pheromone opens up the more interesting possibility of management of the pest through mating disruption. We hope to continue work on the pheromone in collaboration with US scientists.

For a copy of a recent talk on last season's activities on LTMB in WA, including a copy of a paper on research on the closely related Vine Mealybug in Californian vineyards, contact me in Manjimup on 9777 0167 or e-mail slearmonth@agric.wa.gov.au.

Reducing costs in exporting vegetables

Shane Trainer, Manjimup, and Dennis Philips and Aileen Reid, South Perth

Increased competitiveness in export markets is driving the development of more efficient techniques in vegetable production. Research over the last two seasons in Manjimup and Perth has shown that cauliflower, broccoli, lettuce and sweet corn can be successfully exported in large, non-returnable bulk bins by sea freight.

Shipping produce in bulk rather than traditional packaging methods in cardboard cartons offers cost savings in packing and export freight, better product out-turn through an unbroken cold chain from the farm to the end user and efficiencies gained in being able to by-pass intermediaries in the traditional export supply chain.

Research work has included pre cooling and storage trials with commercial quantities of produce in a 'land based' refrigerated sea container, as well as exporting small test shipments. Land based sea container trials have enabled the tailoring of bulk shipping methods to each individual commodity to produce similar or better marketability post transport. Small sea freight shipments to Malaysia have also out-turned produce at a quality similar to or better than traditional methods, with cost savings for growers and exporters. Over the course of the project, shipping methods have been developed and refined to efficiently pre cool produce in bulk bins of quantities ranging from 250 kg to more than 500 kg.

Trial work has now concluded and we gratefully acknowledge Horticulture Australia Limited and The Sea Freight Council for financial support.

More information from Shane Trainer on 9777 0132, Dennis Phillips on 9368 3319 or Aileen Reid on 9368 3393.

What's next for Six-spotted Mite?

Stewart Learmonth, Manjimup Horticultural Research Institute

Six-spotted Mite [SSM], recorded for the first time in Western Australia as a pest in vineyards this season, finished the season in a flourish. Information on the life cycle of this pest in other countries is mainly from non-deciduous hosts such as avocados and citrus. On grapevines in the south west the mite was happily breeding up to leaf senescence. Presumably the mites will over winter on vineyard floor plants.

We will monitor the situation in the two vineyards found to be heavily infested last season. In one of these, we released a predatory mite collected from an apple orchard and known to be able to feed on SSM, at least in the laboratory. We want to find out if the predator has survived the winter and whether it can exert some natural control over the mite.

All vignerons are encouraged to become familiar with the symptoms of feeding damage of SSM to confirm whether they have the pest. There are some significant differences in the level of damage the mite causes and the way it is controlled compared to Two-spotted Mite [TSM]. SSM is most closely related to TSM, but TSM, though present across vineyard regions in WA, is considered a minor pest.

The other major hosts for SSM are avocado and citrus orchards. Growers of these trees are also encouraged to be familiar with the symptoms of SSM to confirm whether they have the pest.

We are drafting a request to APVMA, the registration group, for emergency use permits for some chemicals for control of SSM should that be required this season.

Farmnote No. 146 on this new Western Australian mite pest is now available on the DAFWA web site and in hard copy from offices.

More information from me on 9777 0167.

A new spin on spray drift

Chris Sharpe and Peter Rutherford, South Perth

The old spin on spray drift is that an important part of best practice in the use of agricultural chemicals is being aware of the factors that contribute to spray drift so that it can be eliminated or minimised.

- Prepare a 'Sprayplan' that identifies and regularly reviews sensitive areas, crops and buildings on and near your property - your Spray Drift Awareness Zone.
- Ensure the spray operator is trained and has a copy of your 'Sprayplan'.
- Plant and maintain buffer vegetation near sensitive areas.
- Notify your neighbours, and others in the locality as appropriate, of the details of your application of agricultural chemicals.
- The suitability and accuracy of your application equipment, wind speed and direction and the presence of inversion layers.

The new spin on spray drift relates to two reviews underway –

- legislation that covers the current controls on the way pesticides are used and
- proposed new requirements for information in relation to spray drift risk assessment for new and, later, already registered agricultural chemicals.

Changes to Legislation

The review includes the following elements:

- Training of commercial users and advisers in the safe use of agricultural chemicals
- Reference to the 'Code of Practice for the Application of Agricultural and Veterinary Chemicals in Western Australia' (a copy is on the Department of Agriculture and Food website)
- Notification of neighbours when certain agricultural chemical spraying operations are to be undertaken
- Recording of spraying activities
- Restriction of the use of agricultural chemicals in particular areas
- Recognition of the Australian Pesticides and Veterinary Medicines Authority (APVMA) categorisation of certain chemicals as Restricted Chemical Products.

APVMA Spray Drift Requirements

APVMA is developing a proposal for new registration and label requirements in relation to spray drift risk assessment and general methods to control that risk. Specific label restrictions may be imposed on products of higher risk. For most chemicals, it is likely that the APVMA will rely on industry best practice. For further information, see the APVMA website: www.apvma.gov.au. Comment on the draft document can be made to APVMA up to 6 October 2006.

Attitudes to spray application have been changing over time and this needs to continue with:

- No room for mistakes, negligence or inattention to detail
- Acknowledgement that attitudes and judgement are important
- Good communication
- No hurrying by bending the rules due to business pressures or pursuit of maximum efficacy
- Awareness that mistakes are costly to you and the industry.

Details of the outcomes of these reviews will be publicised as they become available.

More information from Chris on 9368 3815.

Apricot champions

Kesi Kesavan, Manjimup Horticultural Research Institute

The 'New Futures' project has identified apricots as a potential industry for the south west. A workshop to discuss and assess this potential was held in Manjimup in May with local and interstate participants.

An 'Apricot Industry Development Champions Group' has been formed and has started discussion on the issues identified at the workshop. The group, with support from DAFWA, will work on developing an apricot industry in WA. Three key areas to be developed by the group are:

- Trial of new varieties and rootstocks
- Funding for research and development projects in apricots and for a business plan
- Marketing – where, when and how.

Problems encountered in growing apricots in the past were disease, lack of varieties suited to the region and irregular cropping. Papers delivered at the workshop and further discussion indicated the availability of a range of new varieties and disease management strategies. However, apricot is a fussy crop, more difficult to grow than other stonefruit and has a short season. Varieties and production techniques specific to individual locations need to be identified and developed. The need for suitable varieties, root stocks and high health material, along with experience from growing apricots in Donnybrook, Manjimup and Mt Barker, were discussed.

Economic analysis based on an apricot trial at Mt Barker indicates an internal rate of return of 22% and a gross margin of $31,000/ha/year at year 6. Fresh apricots are a 'niche', high value product. An opportunity exists for increasing domestic consumption of apricots and

for exports to high price market sectors in the UK, Western Europe and the Middle East.

DAFWA has approved funding for visiting specialists - an apricot breeder from France and a post harvest specialist from California - to advise the group on apricot varieties, rootstocks and culture and post harvest technology. These visits are planned for January 2007.

More information from me on 9777 0120.

Animal welfare in Western Australia – who does what?

Michael Paton, South Perth

Animal welfare has become an important issue for individual producers and livestock industries across Australia. It is useful to know who you can talk to about different issues and who is responsible for specific activities relating to animal welfare.

In Western Australia, roles and responsibilities in promoting and protecting animal welfare are primarily shared between the following three organisations;

- Department of Local Government and Regional Development (DLGRD)
- RSPCA
- Department of Agriculture and Food (DAFWA)

The **DLGRD** administers the *Animal Welfare Act 2002* which provides for the RSPCA, DAFWA, the Department of Conservation and Land Management (CALM) and local governments to investigate reports of animal welfare problems and initiate prosecutions under the Act, if necessary. Police officers are also General Inspectors under the Act.

The **RSPCA** has the primary role of investigating reports of alleged cruelty. Significant breaches of the Act that involve livestock are reported to the RSPCA for investigation and possible prosecution. DAFWA has historically assisted the RSPCA with investigations involving livestock and to provide technical advice to help alleviate welfare problems.

Along with the DLGRD, **DAFWA** has a key role in the development of national Codes of Practice for livestock (soon to become Australian Animal Welfare Standards and Guidelines). DAFWA also takes the lead role in ensuring livestock owners and other industry stakeholders are aware of livestock welfare issues and their obligations under the Act, as well as working closely with industry to improve welfare standards.

Summary of roles in livestock welfare in WA	DLGRD	DAFWA	RSPCA
Animal welfare legislation	***	*	*
Livestock welfare policy	***	***	*
Prosecution	***	*	***
Investigation	***	**	***
Appoints General Inspectors under the Act	yes	no	no
Livestock welfare extension	**	***	**
Australian Livestock Standards and Guidelines (codes)	**	***	*

*** Primary responsibility.
** Active participation coordinated with other agencies.
* Provides input to other agencies.

More information from me on 9368 3627.

Irrigation update

Peta Richards, Waroona

With predictions of lower rainfall in the coming years, how are you going to meet your crop demand over the summer months? Even with the rain received in the last few weeks, most areas are still well under normal totals.

As a result, has your on-farm storage been reduced? Has the level of salts in the river you draw from increased? How are these going to affect your crop production?

If you have a permanent crop, you don't really have the option of reducing the area you irrigate to ensure that a proportion of the area receives its full requirement.

So where can you gain efficiencies in your system to maximise your water?

When was the last time you did some maintenance on your system?

Do you have any lost or blocked sprinklers or ruptured lines leaking water?

These are fairly obvious signs of inefficiencies, provided you are out in the paddock to see them. The less obvious areas are variations in pressure and flow, which affect the distribution pattern of the sprinklers. With poor uniformity, your system is operating at lower performance levels. Some areas will be over-watered, others will be under-watered. Obviously, this is not making effective use of limited available water.

With reduced rain predicted for the coming years, it is important to identify NOW where you can make efficiency gains with your irrigation system.

More information from me on 9733 7703.

WaterWise on the Farm

James Dee, Bunbury

The WaterWise on the Farm project was run as a pilot project for two years and then as a fully funded project for the last two years. Funding for the last two years came from the National Landcare program, the South West Catchments Council, Department of Premier and Cabinet, the Department of Agriculture and Food and farmer contributions (training fees).

Over the lifetime of the project we have 19 training courses (76 workshops) with 175 farmers and growers trained to date. The table (below) gives a breakdown of the training completed by industry.

Over the last two years we have been able to offer a $2,000 Irrigation Improvement Grant to farmers and growers who have prepared an Irrigation and Drainage Management Plan (IDMP) for their farms. This funding is predominantly from the National Landcare Program with some funds from the South West Catchments Council. We have processed $130,000 worth of grants so far. There is still an opportunity for farmers and growers who have completed the training, have an IDMP or want assistance to produce an IDMP, to apply for the Irrigation Improvement Grants.

This year we are planning to run another four training courses in the South West. If you are interested in improving your irrigation management and accessing the Irrigation Improvement Grants, please contact the following people.

James Dee Bunbury 9780 6285
jdee@agric.wa.gov.au
Helen Ramsey Waroona
9733 7714
hramsey@agric.wa.gov.au
Peta Richards Waroona
9733 7703
prichards@agric.wa.gov.au

Industry	Number of Groups	Participants
Avocados	2	20
Citrus	4	45
Dairy	4	22
Fruit	2	18
Mixed grazing	1	6
Olives	2	19
Vegetables	6	45
Total	**19**	**175**

Worm control in beef cattle

Emma Giumelli, Bunbury

Understanding the Ostertagia story

The main roundworm of cattle is *Ostertagia ostertagi,* more commonly known as the Small Brown Stomach Worm.

The eggs of the mature female worms are passed in the dung of the animal, hatch in the dung and eventually become infective larvae. These infective larvae can survive for long periods within the dung pat and can also move long distances away from the dung pat. The larvae are then ingested by the animal and they begin the parasitic stage of their lifecycle. Once inside the animal, they burrow into the glands of the wall of the abomasum (fourth stomach) and develop to become immature adult worms.

Ostertagia can cause two types of disease (ostertagiosis) in cattle;

Type 1 (commonly seen)

- Primarily occurs in young cattle (weaners/yearlings) and bulls in winter after rapid infection from heavily contaminated pasture.
- Results in scouring and poor body condition.

Type 2 (rarely seen)

- Occurs in adult cattle, particularly in bulls, during late summer and autumn.
- Damage to the gut results in severe scouring, weight loss and sometimes death.
- Outbreaks of type 2 disease caused by ostertagia are now rare in Western Australia.

Diagram 1: Outside the Animal

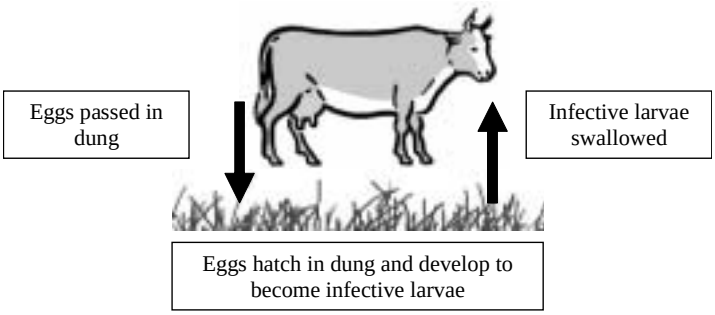
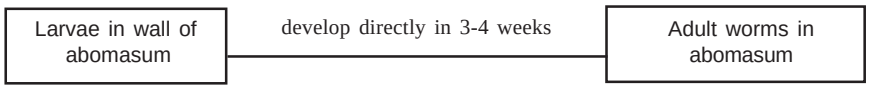


Diagram 2: Inside the Animal



Worm control in beef cattle *(continued from page 10)*

Integrated Parasite Management

The Small Brown Stomach Worm is the most harmful parasite of cattle in the south west. The annual cost of a strategic drench for ostertagia for a 100 cow, autumn calving herd is approximately $400. This cost could be significantly reduced if cattle were only drenched when their worm egg burden was significant enough to be causing production losses. Adopting an integrated parasite management program (IPM) can help to manage worm problems by using a combination of 'non chemical' and 'chemical' control options.

Immunity and Nutrition

Well fed young animals develop immunity faster and are thus better able to expel parasites and withstand the effects of any that remain. By 20 – 24 months of age, most cattle have developed useful immunity. Adult cattle rarely require drenching, although some animals can get "wormy", particularly bulls, first calving heifers and animals under some form of stress.

Pasture and grazing management

Dung heaps are capable of sheltering worm larvae for several months, even during very dry conditions. Paddocks that are continually grazed by young cattle in autumn and winter can carry a heavy infestation. It is preferable to graze young cattle, at the start of winter, on the least contaminated pastures available. Low worm risk paddocks include newly sown pasture paddocks and paddocks grazed by sheep for the last six months. Medium risk worm paddocks are those grazed by mature dry cattle. High risk worm paddocks are any pastures grazed by young cattle.

Worm egg counts

Worm egg counts (WEC) are a simple tool to measure the number of worm eggs present in one gram of dung. The WEC from samples collected from a number of individual cows gives an indication of the average worm burden of the whole of herd. Substantial money can be saved by not drenching herds of animals with low egg counts. In addition, drenching unnecessarily can lead to the development of a worm population that is drench resistant.

Samples can be collected directly from the rectum of the animals in a race or in the paddock. To collect dung samples in the paddock, hold animals in the corner of the paddock for about 10 minutes and then allow them to drift away quietly. Fresh, clean dung samples can then be collected from the ground, avoiding soil. Ten samples from different animals are required for the test. Take 2-3 small grabs from each dung pat rather than one large sample. Collect enough from each dung pat to fill half a small freezer bag or a small laboratory sample jar. Your local vet will either be able to conduct the worm egg count or refer you someone who can. The number of eggs per gram will indicate if the animals need drenching. Older animals can withstand higher burdens and will not generally need drenching. WEC may not be a reliable indicator of actual worm burdens in older animals.

In older cattle that appear wormy, consider a diagnostic drench which involves drenching small number of cattle in a mob and monitoring the response to treatment.

What about drench resistance?

Unlike sheep, no confirmed cases of drench resistance in cattle have been reported in Western Australia. Worldwide reviews of drench resistance in cattle indicates that, whilst there is resistance to MLs (Macrocyclic lactone class of drenches which includes Ivomec® Genesis®, Virbamec®, Paramax® etc) in some countries it unlikely to become a problem in Western Australia.

Drenching program

Three main drenches can be used:

- MLs (including Ivomec®, Avomec®, Cydectin® etc). These are effective against all adult and larval stages with some long acting effect against larvae newly picked up from pasture. They will also kill sucking lice and ticks.
- Bezimidazoles (white drenches such as Fevbendazole®, Fencare®, Panacur®). These are effective against all adult worms and about 90-95% effective against all larval *Ostertagia*.
- Levamisole (clear drenches such as Nilverm®, Citarin®, Cyverm®). These are less effective against adult worms than other types and have a poor effect on larval *Ostertagia*.

Calves*:* beef calves on their mothers rarely suffer from worm parasitism before weaning and routine drenching is not usually warranted.

Weaners/yearlings*:* drench with an ML or a white drench in summer when weaning. Consider a follow up treatment one month later if a white drench has been given and worm disease has been severe problem on the property in past years. Consider a worm egg count to see if the worm egg burden is heavy enough to warrant drenching.

Two year olds/first calvers*:* these can sometimes suffer from worm disease and a routine summer treatment may be warranted.

Adult cows*:* worm disease is rarely a problem and no routine treatment is recommended. Individuals can be treated if worm disease occurs.

Bulls*:* bulls tend to suffer from parasitic disease more than cows and a routine summer drench is advisable. As the breeding program depends on the bull, a drench before joining maybe a good precaution.

More information from me on 9780 6181.

New publications

Sheep worms - testing drench resistance and effectiveness: Farmnote 103
Drench resistance is a major limiting factor to profitable and sustainable sheep and wool production.
Vaccinating lambs: Farmnote 82/2005
Covers how vaccination works, immunity, commonly used vaccines for enterotoxaemia, tetanus and clostridial wound infections, cheesy gland, scabby mouth, arthritis and Ovine Johne's Disease.
Teasing ewes for early breeding: Farmnote 125
The Merino ewe does not have a well-defined breeding season. Between 80 and 90 per cent of Merino ewes will 'cycle' (come into oestrus) every 15 to 18 days between January and July. For the rest of the year, many ewes do not display heat and do not ovulate unless they are brought into contact with rams.
Importing horses: effective from January 2006
Horses must be free of weed seeds and meet certain health standards before entry to Western Australia. Covers post entry treatments and tests, pre-entry requirements and information on liver fluke.
Guidelines for producing European eco-label, or nil residue wool: Factsheet note 131
The European Ecolabel for Textiles enables consumers to recognise garments that are made from clean, low-residue wools and have been processed using clean production methods.
Avocados - grading and packing standard guidelines: Farm Note 134
Provides a guide for commercial growers to follow when developing their packing quality standards.
Hydroponic production of tomatoes: Farmnote 136
Cherry tomatoes are the main type of hydroponic tomatoes grown in greenhouses in Western Australia.
Propagation equipment for horticulture: Farmnote 137
Outlines the factors to be considered when establishing a propagation facility
Variegated thistle: Farmnote 128
Variegated thistle is an important weed of the high and medium rainfall districts of the south west of Western Australia.
Main diseases of fruit trees in the home garden: Garden Note 129
This GardenNote describes the most common fruit tree diseases, encountered by home gardeners.
Most of these publications can be downloaded from the Department's web site at www.agric.wa.gov.au by entering the type of publication [Bulletin, FarmNote etc] and its number in the Search box. Only limited quantities are printed and held in district offices.

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