



# TOMATO TOPICS



Know-how for Horticulture™

NEWS and INFORMATION  
FOR THE PROCESSING TOMATO INDUSTRY

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## 2008/09 Season

As another season commences the irrigation outlook appears to be in a worse position than this time last year. Storage levels as at 1 October in Eildon are

	2008	2007
Eildon	783.2 GL	774.8 GL

The Goulburn Irrigation System at the start of the season held approximately 96.3 GL of carry over. Hence compared to last season the Goulburn system is approximately 80 GL worse off.

Allocations on the 1<sup>st</sup> October on the Goulburn System were at 9%, compared with over 20% for the same time last year. Goulburn Murray Water have then indicated if inflows are similar to last year from this point forward allocations could increase to around the low 30% level. As a result of this current low irrigation allocation and forecast the question remains about the availability and price of temporary irrigation water.

During the past seasons the weighted average price of temporary irrigation water on [www.watermove.com.au](http://www.watermove.com.au) has been:

Season	average \$/Meg
2002/03	\$364
2003/04	\$67
2004/05	\$60
2005/06	\$57
2006/07	\$441
2007/08	\$563

As of the 25<sup>th</sup> September 2008 the temporary price for water on Watermove was \$650/ML, with a total of 692ML traded.

As detailed in the graph on the following page all commitments have now been met for the Goulburn Irrigation system, so any further inflows into Lake Eildon should translate to an increase in irrigation allocation. This is also the case for the Victorian Murray system. The Campaspe and Loddon are still in a different situation.

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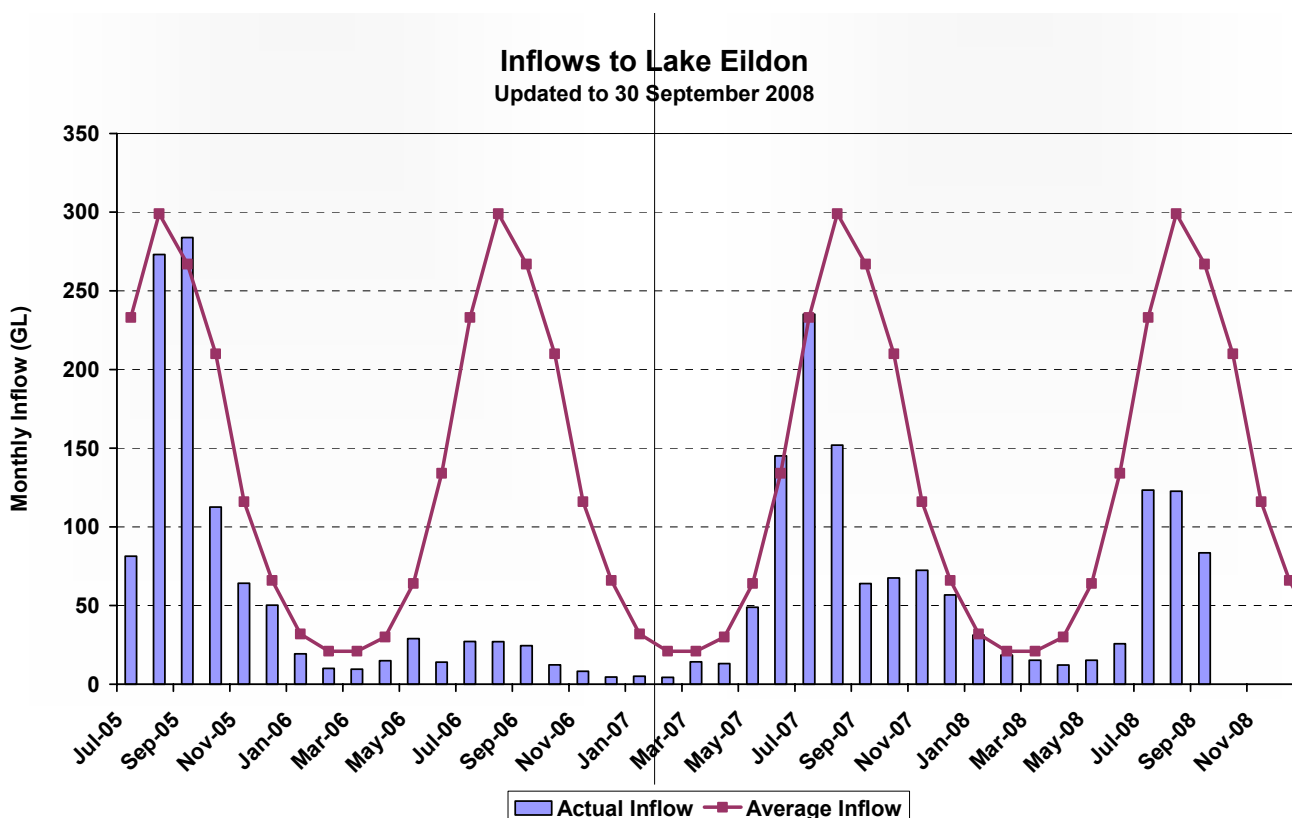
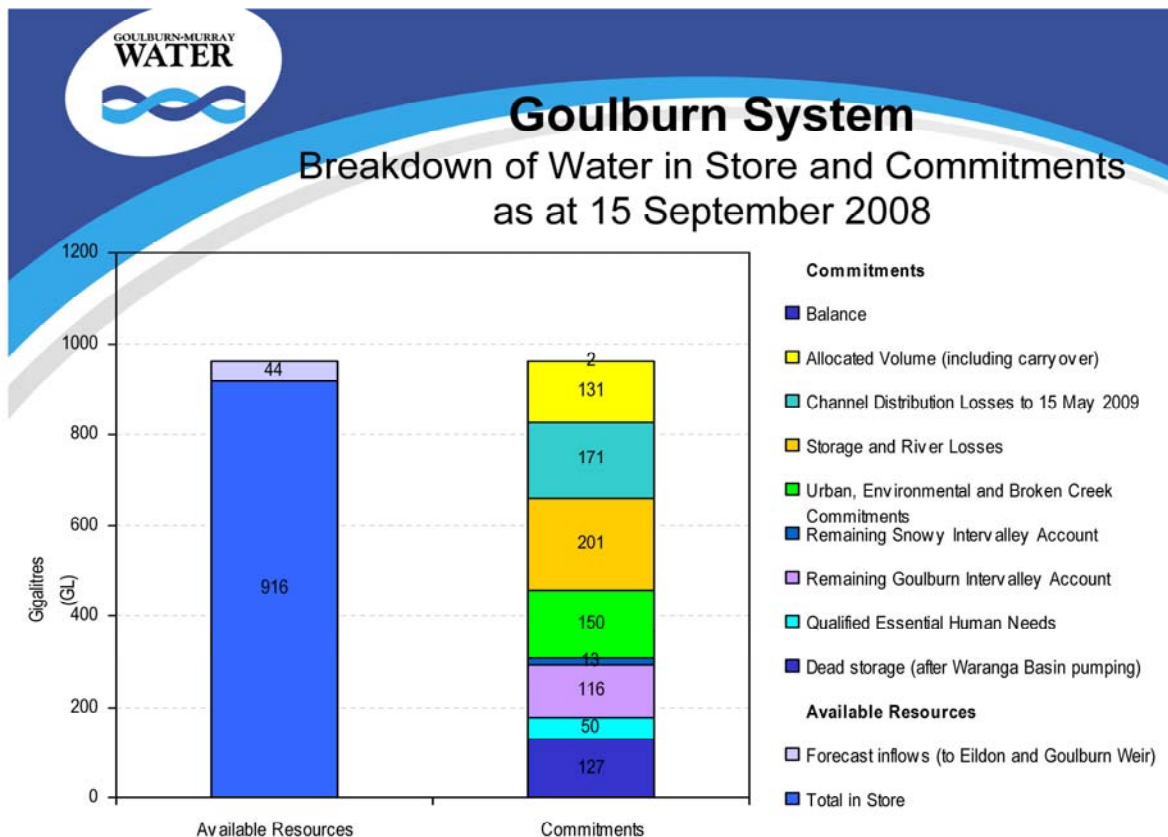
## Inside This Issue

	Page
What is Salinity & Sodidity	3
Alert: Possible Serious Locust Outbreak	4
Upcoming Events	5
2008/09 Cultivar Evaluation Trials	5
WPTC Crop Update (as at 22/9/08)	6
Australian Food Statistics	7
Plant Nutrition and Nutrient Budgeting	7
E. coli Growth May be Inhibited by Tomato-based Edible Film	7
Funding to Prepare For Climate Change	8
Professional Planning and Advice Grant	8

(Continued from page 1)

Eildon inflows to date for the past 2 seasons are

also shown below. This also demonstrates why allocations are currently at an all time low.



## What is Salinity & Sodicity

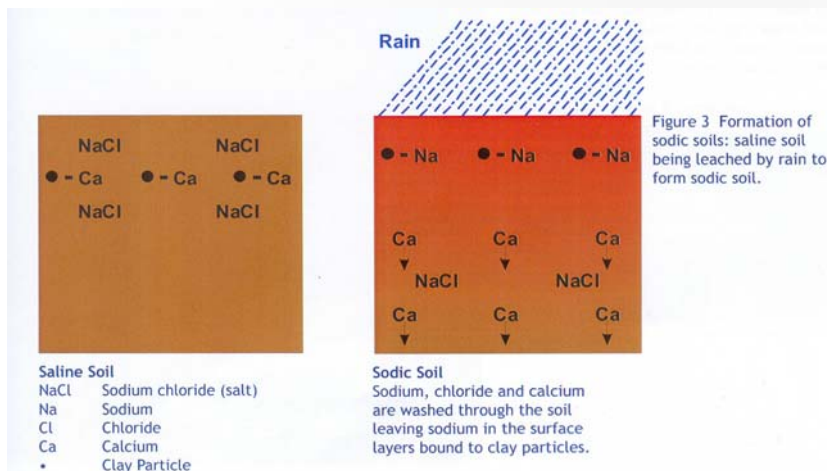
**Salinity:** A measure of the concentration of water soluble salts in the soil solution. Sodium and chloride are the most damaging salts to plant health.

**How is it measured and what should the levels be?**

Salinity is measured by looking at the Electrical conductivity (EC) of the soil or water and the levels of sodium and chloride.

What To Monitor	Desirable Range Soil	Desirable Range Plant Sap	Desirable Range Water	EC Conversion
Electrical Conductivity (EC)	<0.2dS/m	N/A	< 0.65 dS/m	1 mS/cm = 1000µS/cm
Sodium (Na)	<90 mg/kg	< 200 ppm	<74 ppm or	1000µS/cm = 1 dS/m
Chloride (Cl)	< 200 mg/kg	< 2000 ppm	3.2meq/L	1dS/m = 670ppm
			<200 ppm	

**Sodicity:** Is a condition that occurs when a significant proportion of sodium accumulates in the soil compared with other exchangeable cations. (Source: *Diagnosis & management of soil constraints: Transient salinity, sodicity & Alkalinity*, University of Adelaide, 2006)



Sodic soils are formed by;

- Saline soils being leached by rain or irrigation (see diagram below)
  - Application of irrigation water which is high in sodium
- Are naturally occurring (many duplex soils naturally have sodic subsoils)

In conditions of high sodicity, clay soils may swell and individual clay particles disperse or separate from soil aggregates when wet. This leads to problems with soil structure and water

infiltration which can result in;

- hard soils
- hard pans
- surface crusting
- water pooling on the soil surface
- poor water infiltration
- drainage issues
- reduced plant growth
- Nutrient imbalances within crops
- problems cultivation; reduced access to paddocks with machinery when wet.

### Impact of salinity & sodicity on plant nutrient uptake

- Salinity reduces the plants ability to take up water (and nutrients with it) as the osmotic (suction) pressure of the soil solution is high (see below diagram). Depending on the crop value and situation, foliar fertilisers can be used as alternative to soil applied fertilisers to ensure nutrient levels in the plant are optimal.

- Sodium competes with other cations for plant uptake and soil exchange sites
- Usually an increase in salinity / sodicity leads to a reduction in uptake of **Potassium** and sometimes **Calcium**, **Phosphorous** and **Boron**; this has been seen in plant sap (NU-test) results.
- Saline soils are often high in **Magnesium**, which makes the problem of low **Calcium** and **Potassium** uptake worse.

Plants can not distinguish between **Chloride** and **Nitrate**, which means that nitrogen uptake may be low under saline conditions. Under these conditions Calcium Nitrate (with or without B, depending on the crop) can be a much better fertiliser than urea.

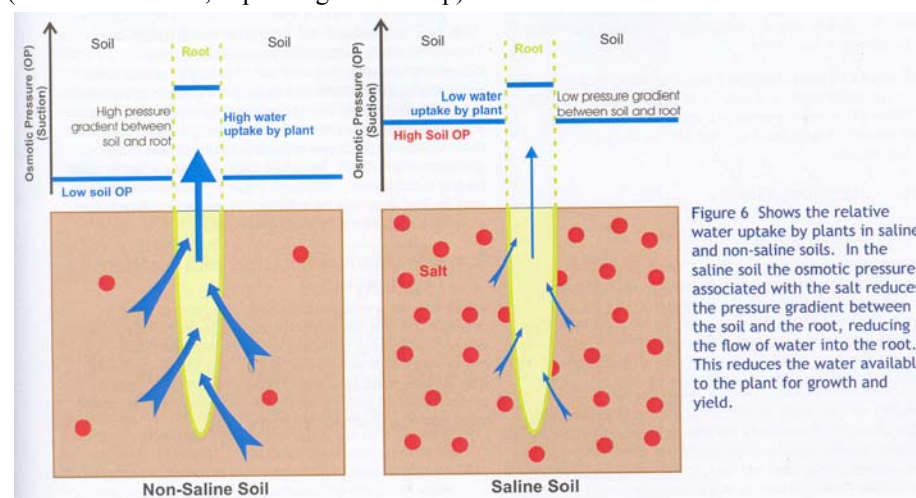


Figure 6 Shows the relative water uptake by plants in saline and non-saline soils. In the saline soil the osmotic pressure associated with the salt reduces the pressure gradient between the soil and the root, reducing the flow of water into the root. This reduces the water available to the plant for growth and yield.

Source: *Diagnosis & management of soil constraints: Transient salinity, sodicity & Alkalinity*, University of Adelaide, 2006

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**Managing sodic and saline soils**

Serve-Ag have found when working with a range of crops through agronomists on the mainland (Vic, Sa, WA, trials and commercial crops) that the following treatments work in combating saline and sodic soils, depending on site, crop and problem:

- **Increasing soil organic matter.** Including green crops, pasture, biosolids, manures and treatments such as molasses, humates or fulvic acids (or other forms of organic carbon) and increased Phosphorous availability to allow good crop development, especially root establishment

**Increasing the level of Ca in the soil solution.** Calcium reduces the amount of exchangeable Sodium in the soil (see below diagram), thus improving Potassium uptake and also improves soil structure and therefore drainage, which helps flush out Chloride (if there is somewhere for the saline water to drain to).

Sources of Calcium include;

- Gypsum is commonly used as a cheap option
- Lime can be used where soils are also acidic.
- Gypsum and Lime are not as efficient as highly soluble Calcium products, some of which are relatively new on the market including Calcium Nitrate, Calcium Thiosulphate and Calcium Carboxylate.

Microgyp or Micronised lime can be better calcium alternatives to the standard products commonly used.

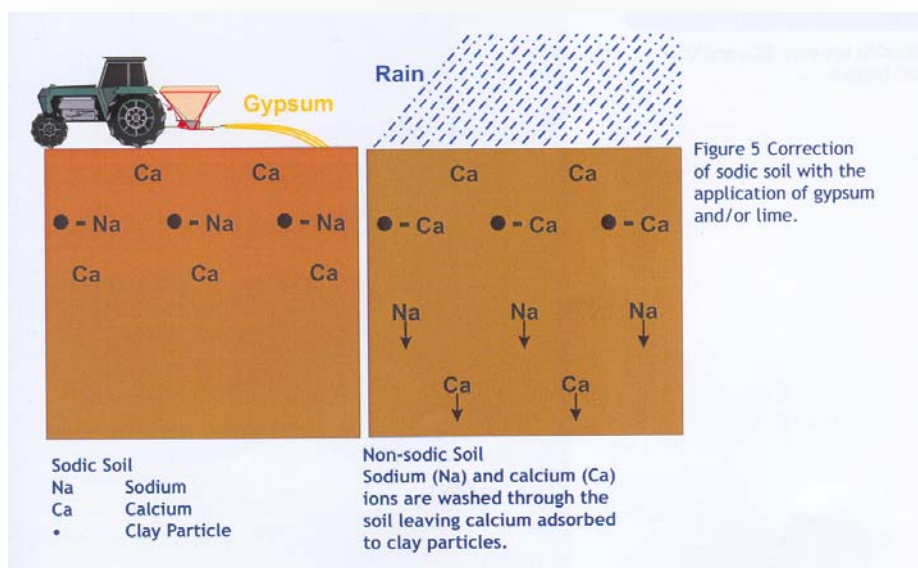


Figure 5 Correction of sodic soil with the application of gypsum and/or lime.

Source: *Diagnosis & management of soil constraints: Transient salinity, sodicity & Alkalinity*, University of Adelaide, 2006



## Alert: Possible Serious Locust Outbreak

It has been predicted that plague locust eggs will be hatching during spring in Northern Victoria along with adult locusts travelling south from New South Wales.

Egg-bearing locusts have been recorded throughout an area of approximately 1.24 million hectares (ha) in Northern Victoria, particularly in the irrigation region north of Shepparton during this year's autumn.

To combat the threat of a locust outbreak, a DPI Locust Planning Team has been formed to plan ahead and monitor any possible outbreaks. Experts will be on hand to provide

landholders with advice on how to deal with the threat of locusts including how and when to spray, what types of chemicals to use and safe techniques.

All Victorians are encouraged to be vigilant in reporting any sightings of locusts to the DPI so we can monitor locust populations and movement and the Department can provide advice on how to control them.

It is important to control locusts early in the season to minimise potential damage to crops and pastures. Locusts are easiest to control during their early stages as hoppers when they are unable to fly. Once they become adults, control measures become much more difficult and expensive.

To report locust activity contact the Locust Reporting Line on 1300 135 559.



## UPCOMING EVENTS

### Crop Inspection around Boort (All Welcome)

Meet at Lyndon and Michelle's (54 Bennetts Road, Leaghur)  
2:00 pm Friday 5<sup>th</sup> December, 2008

To be followed by a BBQ in the garden at Lyndon and Michelle's  
RSVP to Liz (0427 857 578)

by Wed 3<sup>rd</sup> December as numbers are required for catering purposes

### Sustainable Farm Families - Part 2

**For all people who participated in the first part in April 08**

Tuesday 31<sup>st</sup> March 2009 and Wednesday 1<sup>st</sup> April 2009

The program in 2009 is a 1 full day and ½ day on the second day (finish at lunch time).

## 2008/09 Cultivar Evaluation Trials

Due to the drought conditions and low tonnes processed by the industry the total Research and Development Levy collected by the APTRC has been significantly reduced. As a result the industry's research and development program for the 2008/09 season has been reduced due to the lack of available funds. The decision unfortunately was made to cease the traditional cultivar evaluation program which had been managed during previous season's by Applied Horticultural Research. It is hoped that as the total tonnes processed once again increases then the trials will recommence next season.

This season 4 machine harvest cultivar trials will be conducted "in house" with the assistance from NSW DPI, Cedenco and Liz Mann. These trials will be conducted at:

SS Farms, at Deniliquin  
NCP, at Rochester  
John & Pat Kennedy's at Corop  
Jim Geltch at Darlington Point

Varieties included in these trials were selected based

on performance during the 2007/08 season and by specific request from the processor. The varieties being evaluated this season include:

H4001  
H4401  
Early Magnum (TOP 5053)  
H3402  
H5803  
SPS 669-6  
U941  
H4107  
H3506  
ENP 113  
H7204  
TOP 5053  
H2206 (99 day )  
H3002

If you would like to inspect one of these trials please contact Liz Mann (0427 857 578) to arrange a suitable time. Results from these trials will be made available to the industry at the end of the season.

## WPTC Crop Update (as at 22/9/08)

(Report compiled by Sophie Colvine WPTC)

### Spain

The harvest is already finished in Andalusia where the last factory closed on 10 September with a crop -13% on contracts. In Extremadura, 87% of the volume contracted has already been processed but the total forecast is not expected to be reached as the yield for the medium and late crop is not as good as expected. In the North, about 40-45% of the total volume has been processed to date and factories should run almost until November.

Altogether, 1.45 million metric tonnes have been processed so far and the total crop size should be between 1.7 million tonnes and a maximum of 1.75 million tonnes.

### Italy

**North:** To date, 70% of the volume contracted has been processed and it is expected that the total will be 80-83% of the contract.

**South:** ANICAV processors had processed 72% of contracts on 8 September, now they are at more than 75%. This is 10% more than last year at the same date, and today the volume will reach the total processed last year by ANICAV members. The South will thus recover some of the losses experienced in the North. The quality is good but the brix is low.

In total, the volume processed in Italy will be between 4.5 and 4.6 million tonnes, 80-82% of the volume contracted.

### Greece

The weather conditions were almost perfect until last week when it started to rain and some heavy rain is forecast for the next week-end. About 600 000 tonnes have been processed to date and the forecast of 700 000

### France

As of 14 September, only 87 000 tonnes had been processed. The weather is now cold and the harvest slow so growers will not be able deliver the total volumes contracted.

### Turkey

The forecast volume of processed tomatoes this year is between 2.4 and 2.5 million tonnes. Total production quantity seems 50% more than last year, but factory yields are 10% lower mainly because of low brix value and the rapid ripening on the growing stage of raw tomatoes. The average price is around 70 euros/tonne ex-field.

### Tunisia

The excellent season is now nearly finished and total production should reach the record volume of 780 000 tonnes, with mainly tomato paste produced but a small developing production of canned tomatoes.

### Israel

The season in Israel has now ended. The total quantity processed is 240 000 tonnes.

### Iran

The situation of tomato crop has not changed since our last estimation on 5 September 2008, total processed tomato is 1.8

million metric tonnes with the price of 115 euros per tonne delivered to the factory.

### Ukraine

The peak of production was about 14 days late and the weather has been bad throughout the season with a lot of rain currently which prevents mechanical harvesting. There are lots of tomatoes in the fields at present but a serious share could be lost as they cannot be harvested. While the initial crop forecast was 250 000 tonnes, less than 80 000 tonnes have been processed to date and the total could be about 100 000 tonnes.

### China: (information received from Qin Yelong)

Up to September 15, China has processed 6.07 million tons of raw materials including COFCO Tunhe: 2.25 million MT, chalkis: 1.14 million MT and others a little more than 2.6 million MT.

The total acreage of China amounted to 106,666ha; the planting area in Xinjiang is 66,666ha, while Inner Mongolia is 30,000ha and Gansu 10,000ha. according to tomato condition, we have put the estimated harvest at 6.3 million MT.

It is estimated that the rest of raw materials remains at about 0.44 million MT, if weather permits, the total production could reach 6.44million MT. This is a record in history,

### Canada (information received from John Mumford)

As of 20 September, the volume delivered to processors is about 60% of contracts. It is expected that the contract tonnage will be delivered, maybe a little more.

### Poland (information received from Heinz Poland)

In Poland, the production estimate has been revised down to 160 000 tonnes because of drought in May-July in the main tomato regions and high temperatures. Yield is lower compared to previous years. The weather has changed in the middle of August: it is cooler and it rains more, but the change came a bit too late to significantly influence yield in a positive way. Brix is higher than expectation (about 6%)

A higher volume of tomatoes is possible if here are very good weather conditions in September and first week of October

### Hungary (information received from FruitVeb)

The cultivated area of processing tomatoes decreased this year by 30%, so it's only 1300 ha. The weather was good for open field tomatoes during the whole season. The total harvest is estimated to 90 000 tonnes.

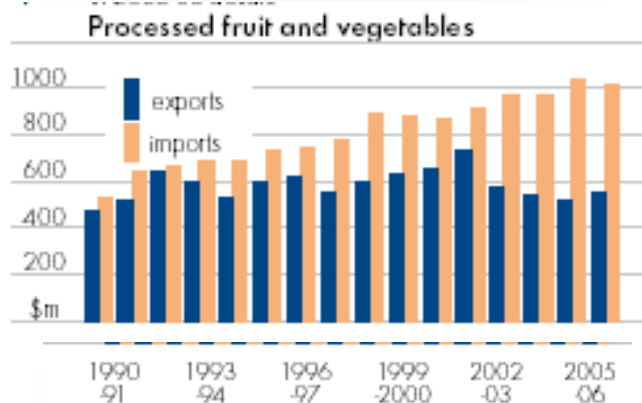
### New Zealand (information received from Cedenco)

A total of 65 000 tonnes was processed in 2008: 27 000 tonnes by Cedenco and 38 000 tonnes by Heinz.

## Australian Food Statistics

(available on line at [www.daff.gov.au/foodinfo](http://www.daff.gov.au/foodinfo))

Food imports into Australia over the past 16 years grew at a rate of 6% per annum up until the 2002 drought. During the same period exports had also been increasing at 7% per annum. Following the drought in 2002 food exports have been declining at 5% per annum. The import and export figures for processed fruit and vegetables follow a similar trend.



The processing tomato industry has experienced a greater change in import and export levels. Exports for the processing tomato industry have been declining at the rate of 9% per annum, and imports increasing at over 11%.



## Plant Nutrition and Nutrient Budgeting

Doris Blaesing has recently updated her Nutrient Budgeting Spreadsheet as part of her current research project funded by the APTRC and HAL (TM06004). This spreadsheet can assist growers in matching their fertiliser requirement with expected crop yields. It enables growers to enter their soil test results, adjust expected uptake efficiency figures to match their soil type and condition and then determine their fertiliser requirement to achieve their expected yield. The spreadsheet can then also calculate the total cost of all fertiliser applications on a per hectare basis.

The budgeting tool incorporates both pre plant fertiliser applications and also fertigation during crop growth. A number of fertilisers, both liquid and granular have already been incorporated into the spreadsheet for ease of use.

The spreadsheet is currently available for trialling. If you are interested in this please contact Liz Mann ([lizmann@aptrc.asn.au](mailto:lizmann@aptrc.asn.au)) or Doris Blaesing ([dorib@rmcg.com.au](mailto:dorib@rmcg.com.au))

## E. coli Growth May be Inhibited by Tomato-based Edible Film

The results of new research, published in the Journal of Food Science, show that carvacrol-containing tomato-based edible films inactivated the virulent pathogen *E. coli* O157:H7. The inactivation was related to the carvacrol levels in films.

Researchers from the Agriculture Research Service (ARS) of the US Department of Agriculture (USDA) and the Western Regional Research Centre, Processed Foods have found that antimicrobial assays of tomato films indicated that optimum antimicrobial effects occurred with carvacrol levels of approximately 0.75 per cent added to tomato purees before film preparation.

Recent research conducted by the Agriculture Research Service (ARS) of the US Department of Agriculture (USDA) and the Western Regional Research Centre, Processed Foods aimed to evaluate the antimicrobial activities, storage stabilities and the physical-chemical-mechanical properties of edible films made from tomatoes containing carvacrol, the main constituent of oregano oil. Due to the proposed health benefits of processed tomato product edible tomato films containing antimicrobials may have multiple benefits: Consumption of tomatoes, tomato products and isolated bioactive tomato ingredients has been reported to be associated with lowered risk of cancer, heart disease, diabetes and hypertension.

The primary ingredient was hot break tomato puree in all tomato based film forming solutions. High methoxyl pectin 1400 was also added to increase film strength along with carvacrol which was incorporated into tomato puree solutions before the film casting stage at concentrations of 0, 0.5, 0.75, 1.0 and 1.5 per cent.

The research has found that *E. coli* O157:H7 grew normally on agar plates with films lacking carvacrol incubated at 35°C for 24 or 48 hours. By contrast, no growth was observed on the plates around the film discs containing 0.75 per cent or 1 per cent carvacrol. The extent of bacterial growth inhibition increased as the per cent of carvacrol in the films was increased. The results also showed that films prepared by continuous casting are preferable for large scale use than those prepared by batch castings.

Further studies are required to fully test the effectiveness of other fruit and vegetable films against contaminated meat.

**Funding to Prepare For Climate Change**

The Australian Government has announced \$26.5 million in training measures under the Farm-Ready program to help farmers deal with climate change impacts. The scheme looks a lot like a re-badged FarmBis.

Farmers are eligible to apply for grants of up to \$1,500 each financial year to attend approved training courses. Farm groups can apply for grants of up to \$80,000 each financial year to support their members in adapting to climate change.

Over four years, FarmReady will focus on whole-farm planning, business and risk management and the implications of climate change. Courses are expected to begin in months. The Minister’s media release is at:

[http://www.maff.gov.au/media/media\\_releases/july/\\$26.5\\_million\\_for\\_training\\_to\\_prepare\\_farmers\\_for\\_climate\\_change](http://www.maff.gov.au/media/media_releases/july/$26.5_million_for_training_to_prepare_farmers_for_climate_change)

This program is still being finalised so further details are currently unavailable.

**Professional Planning and Advice Grant**

A Professional Planning and Advice Grant is currently available to farmers throughout the processing tomato growing region. The eligibility criteria is the same as that for the \$20,000 Irrigation Management Grant administered through Centrelink.

Some people have not been aware that this grant can be used to assist with practical on farm management. Providing a “Drought Management Plan” is developed which highlights additional work being required in nutrient management etc the vouchers provided with this grant can be used to cover the cost of soil and plant tissue testing.

As fertiliser prices continue to increase this is a way of attempting to reduce the amount of fertiliser which is applied during the season.

In addition the quality of some irrigation water has decreased, this may affect the plants ability to uptake competing nutrients as soil becomes more saline or sodic.

If you would like more information on this please speak to Liz Mann.

**ACKNOWLEDGMENTS:**

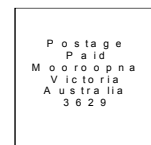
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