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Innovation, research and development

Department of Agriculture and Food, Western Australia

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The Department of Agriculture and Food, Western Australia proudly plays a vital role in the strategic planning, production and marketing of the State's food and fibre industries, via three main criteria.

**Innovation** in devising new marketing and export strategies, as well as promoting the benefits of value added products, is absolutely critical for the sustained future of the Western Australian agrifood and fibre industries.

**Research** into new and improved ways of maintaining the delicate balance between responsible ecological stability and practical economic viability is the ultimate key to the State's long-term agricultural future.

**Development** of vigilant new methods to combat, control and eventually eradicate all pests, diseases and noxious weeds, plus the propagation of new species, is also crucial in safeguarding the future of WA's agrifood industry.

The following are some recent examples of the department's many innovative R&D programs that are showcasing our scientific and technological breakthroughs on the world stage.
Non-browning Apples - a desirable core benefit

The new ‘Western Dawn’ apple, the latest variety to be successfully bred by the department, is set to take the multi-billion dollar international hospitality market by storm. Fruit sold under the trademark name ENCHANTED™ have an extremely white flesh, resistant to browning when exposed to air, making it highly desirable in the preparation of fresh food dishes. ENCHANTED™ is very delicate on the palate, which is expected to appeal to a wide range of consumers, including children – a vital future market.

This is another successful apple from the department – which also bred the Cripps Pink and Cripps Red varieties. Cripps Pink and Cripps Red apples of an appropriate quality may be sold using the internationally renowned trademarked brand names Pink Lady™ and Sundowner™ respectively.

Apples and Plums - a healthy choice

The many health benefits of consuming more fruit and vegetables cannot be over-emphasised. One of the main reasons is important naturally occurring compounds called flavonoids. Research has shown that an increased flavonoid intake can reduce the risk of cardiovascular disease by as much as 20 per cent.

Apples and plums are two such locally grown fruits with an already high flavonoid content. However, the department is currently investigating methods to improve on nature. Their joint venture program, with the University of Western Australia, is looking at ways to increase those flavonoid levels even further – not only in apples and plums, but also in other fruits that possess good flavonoid parental genetics for future crosses.

Non-itchy wool - a comforting thought

Although the many benefits of pure wool have been well documented over the years, total comfort, when being worn next to the skin, has not always been one of them. But in a revolutionary breakthrough, the department has developed a new, softer non-itchy wool yarn called Merino Soul. And the resulting fabrics are proving a real bonus for the fashion industry. In fact, a leading Italian designer is already using the new wool exclusively as part of this season’s European catwalk collections.

The department’s research is also continuing into methods of tracking selected wool from individual producers direct to manufacturers. If successful, this would allow WA producers to grow wool specifically for the production of Merino Soul yarn, thus providing them with exclusive niche international markets.

1 The breeding of Western Dawn® was part funded by the Australian Government and the Australian apple and pear industry through Horticulture Australia Ltd.
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**Wheat virus struck down**

If not detected early, Wheat Streak Mosaic Virus (WSMV) can result in extensive valuable crop losses. As a world first, the department, in conjunction with the Grains Research and Development Corporation, has developed a molecular bulk seed testing method for the virus – amazingly, in less than 12 months. With the cause of infection previously unknown, they have identified that WSMV can be transmitted in bulk wheat seed. As a result of the department's ingenuity, WA wheat farmers can now grow their crops free from the virus and be confident of a bumper harvest.

**Here's to future vintages**

Grape clones from all over the world are being used to explore potential new wine varieties suitable for growing in the Mediterranean-like conditions of our South-West. The department is currently working with the Western Australian Vine Improvement Association in conducting trials to identify new wines suitable for future domestic and international markets. White and red grapes from France, Spain, Italy, Russia, Germany and Hungary are currently being evaluated to monitor vine growth, fruit yield and wine quality.

As testimony to their success so far, wines made from the first crop of 2007 grapes were assessed by an independent panel of judges at the renowned Southern Forests Wine Show and deemed to display excellent potential for the future. Cheers to the department.

**May the seeds be with you**

"Space Breeding" is a new science that combines astronautics, genetics, radiation and crop breeding. It is a natural extension of mutation breeding techniques that are already used in traditional breeding programs – without genetically modifying the seed.

To explore the benefits and implications, the department is proud to have been selected as the Australian representative (and host) in a United Nations sanctioned seminar involving over 14 other leading agriculture producing countries. It is envisaged that the outcomes will develop new techniques to improve the world's grain growing potential.

Space Breeding will also promote the continued sustainability of crop production in the face of adverse universal conditions brought about by climate change. In a series of pro-active joint ventures, wheat and barley varieties, supplied by the department, have already been tested on board Chinese satellites in important space experiments.
Welcome to the department’s new IVS baby.

The world’s first In Vitro Soil [IVS] system, developed by the department, has the potential to revolutionise the international floriculture and horticultural industries. IVS is essentially a new way of tissue culturing plants and trees that allows the propagation of many species that had previously been either too difficult or impossible to produce by using traditional methods.

The new technology assists cloning or produces plants asexually to capture specific genetic benefits. These include fast growth rates, disease resistance, salt tolerance and unique colour properties. The introduction of IVS has led to an exciting new range of WA wildflowers to be developed for the vast export and cut flower markets - as well as aiding the early release of new varieties.

On the ecological side, IVS technology has assisted in the preservation of many threatened and endangered plant species. IVS also has the added invaluable benefit of being used in landscape conservation management and vegetation rejuvenation.

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