

Bring on the revolution and the tree crops

Agricultural change occurs incrementally, but every so often it takes a leap forward in what we might describe as a revolution.

The benchmark is probably the agrarian revolution of 18th century Europe; most recently we think of the Green Revolution following World War II with agricultural chemicals and improved crops.

In a keynote address to the VegFutures Conference in Toowoomba, WA farmer and board member of the Rural Industries Research and Development Corporation (RIRDC), Alex Campbell, predicted that “the next revolution of the 21st century will be toward ‘tree crops’, or the domestication and commercialisation of a host of perennial woody plants for a multitude of end uses.”

Alex homed in on four simultaneous triggers for this revolution, at least in southern Australia:

- The rapid decline of native forests, or at least access to them
- Rising global population and living standards
- Global warming and the need for carbon sequestration
- Post ‘peak oil’ production and its implication for the price of fuel and oil-based products.

“More than a decade ago the Joint Venture Agroforestry Program (JVAP)¹ reported that market potential for environmental services provided by farm forestry were at best minimal and generally non-existent,” Alex commented.

“That report added that land use policies at the time sanctioned or at least tolerated many land use activities with high negative externalities. There was little policy incentive for activities which generate positive externalities, for example improving catchment health, mitigating salinity, or absorbing CO₂.

“Of course times have changed and markets and government policies now appear to be catching up with environmental realities. We now have a government in Australia that is committed to recognition of climate

By Bruce Munday
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change, emissions trading, alternative energy sources, and a move from drought assistance toward drought preparedness or resilience.

“To my mind this opens the door to a woody revolution based on ‘tree cropping’.

“I use the term ‘tree crops’ rather than agroforestry, for several reasons:

- Scale will only be achieved if the enterprise is profitable to the farmer
- Future woody crops in lower rainfall areas are likely to be short rotation and more closely resemble an annual cropping system than long rotation plantation activity
- Mechanisation of short rotation woody crops could well use, at least in part, existing farm machinery and handling and storage infrastructure
- A ‘crop’ that is resistant to drought, flood, fire and frost and can be harvested throughout the year offers enormous economic diversification, social and environmental benefits.

“Historically the mainstream RDCs have shown little interest in farm forestry, but FFI CRC’s *Enrich* project, evaluating native woody shrub species for use as forage in integrated grazing systems, has attracted

LEFT: *Enrich* aims to develop profitable and sustainable integrated farming systems. (Photo: D Revell)

great interest and funding support from JVAP along with Meat & Livestock Australia and Australian Wool Innovation.”

For Alex, *Enrich* is the icon of the woody revolution in southern Australia, presenting a broad range of activities aimed at developing profitable and sustainable integrated farming systems in the livestock-cropping zones.

“One of these activities involves modelling new farming systems that incorporate shrubs in different areas of the cropping-livestock zone, exploring scenarios based on biological, economic and environmental issues likely to affect the whole-farm profitability of shrubs.

“The MIDAS model has been used to optimise profitability against familiar factors such as plant density, biomass, nutritive value, establishment cost, and commodity prices. What is quite exciting is the modelling for CO₂ sequestration.

“If agriculture is included in a carbon trading scheme, shrubs could potentially increase farm profit by attracting payments for long-term carbon sequestration,” Alex said. “Preliminary modelling indicates the profit maximising area of shrubs on some farms increases markedly as the price of carbon increases. If it reaches \$50 per tonne of CO₂ equivalent, the optimal shrub area may be four-fold higher than without a carbon price.

“Even without a price on carbon, incorporating perennial shrubs into mixed farming enterprises boosts profit. This means that producers can confidently start plantings now and be ahead, regardless of carbon pricing.

“Given the economic and environmental conditions farmers are operating in, it is no surprise that many are taking a very active interest in the *Enrich* project as the standard bearer of the next agricultural revolution.”

¹JVAP – a partnership of RIRDC, Land & Water Australia, and Forest & Wood Products Australia.

More information

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Enrich update

The latest addition to the *Enrich* stable is a native forage shrub evaluation trial consisting of 50 species and 4700 plants at the Condobolin New South Wales DPI Agricultural Research and Advisory Station.

The trial is exploring the potential use of native Australian shrubs for low rainfall (300-600 mm) farming systems. Condobolin was selected for the focus of the main NSW evaluation as it represents a large area of the NSW low rainfall mixed farming zone.

The trial shrubs have been selected from an intensive screening of more than 60 species for biomass production, nutritive value for livestock, and bioactive effects on rumen micro organisms and gastrointestinal parasites. They were selected from two project planting sites in South Australia and Western Australia during the past three years.

More information

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