

## ***Shade, Shelter and Fodder:*** *Sustainable Grazing in the Wheatbelt of WA*



*An innovative use of multi-species native plantings to boost returns from currently unproductive land.*

- ✓ *Help fill the autumn feed gap* → *Reduce reliance on supplement feeding*
- ✓ *Respond to current rainfall trends* → *Utilise summer & unseasonal rainfall*



- ✓ *The GAWA model is an innovative approach to land management that integrates a mix of native perennial species into existing open paddock grazing/cropping systems.*
- ✓ *The planting design is in the form of shelter/fodder belts across open paddocks usually planted to contour and laid out to fit existing farming needs.*
- ✓ *The main establishment method is by direct seed to lower implementation costs.*
- ✓ *Sites are rested from grazing for 2 – 3 years before future **managed** grazing is commenced.*



Direct seeding 2011



*Over 4 seasons from 2011 to 2014 over 850ha of integrated native fodder system have been established*

- ✓ *35 sites have been established ranging in size from 6 ha to 60ha*
- ✓ *The sites are located in the central wheat belt of Western Australia from Wialki, Koorda, Dowerin and south to Beverley*
- ✓ *Test re-stocking on 2011/12 sites has been possible and valuable observations on species grazed conducted*



2012  
N Henning Koorda Ice plant some  
bluebush



2014  
Bluebush recruited and belts of fodder  
shrubs established



## Which species to grow?

*Species were selected from CSIRO ENRICH project trial results, DAFWA rangeland monitoring work and GAWA staff research. The species mix includes some non fodder species to provide shade, shelter and biodiversity*



Maireana platycarpa (Shy Bluebush)

Mixing seed with fertiliser, wetting granules and clay bulka

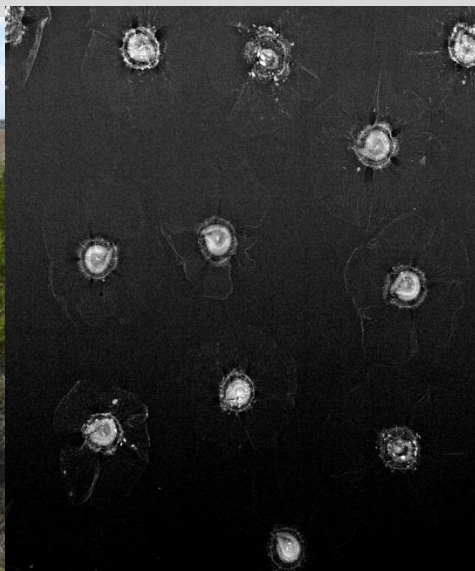


Rhagodia preisii ssp preisii

- ✓ Majority of species selected occur locally
- ✓ Where seed is unavailable or expensive cuttings have been used to establish tube-stock for hand planting

*Four years of implementation have helped us refine the use of direct seeding resulting in lower establishment costs.*

- ✓ *On farm trials enabled us to gain skills, knowledge & experience in direct seeding across a range of soil, landscape and rainfall conditions. EG: on gravelly loamy soils through to non-wetting and deep gutless sands.*
- ✓ *In partnership with Curtin University & Kings Park Perth we have reviewed seed dormancy and viability questions. EG: Chenopodium & some Atriplex species produce large quantities of seed annually but a viability between 40 to 60% is common.*
- ✓ *In 2014 GAWA in the central and eastern wheatbelt will have access to two new purpose built direct seeding machines. Based on designs by direct seed expert Dr Geoff Woodall and incorporating modifications based on 3yrs experience.*



Curtin University Honours student Tiffany Bennett collecting and cleaning *Maireana brevifolia* seed. Above: x ray image showing viable seed solid white



*The incorporation of shelter/fodder belts add value to existing farm enterprises*

- ✓ *Reduced erosion (wind & water) resulting in paddock stabilisation*
- ✓ *Increased productivity and resilience of grazing system:*
  - *Reduction of autumn & drought feed gap*
  - *Shelter belt benefits* (particularly lambs & off-shears)
  - *Harvesting out of season rainfall*
  - *Potential to include forestry values* (sandalwood, *Casuraina obesa*, Brushwood etc)
  - *Alternative use for low productivity soils, frost prone or small inaccessible areas*
- ✓ *Increased soil health* (carbon content, beneficial soil microbes, organic matter, improved nutrient cycling, improved water infiltration)



May 2012



May 2013

- ✓ *Fodder shrubs are high in crude protein (25%), vitamin E and minerals but low in energy. Swathed, hay frozen or spray topped pastures/crops between the fodder belts can provide the carbohydrates needed for a balanced diet.*
- ✓ *Stock can gain weight and increase condition score during autumn. (ENRICH study showed sheep gaining 100g/day and 0.5 of a condition score over 6 weeks).*
- ✓ *Biomass production will vary between soil types and regions but a moderate plant density of 1000 plants per ha will provide grazing at a stocking rate of at least 2.5 DSE to 10 DSE for a 6 week period*
- ✓ *Grazing system can be adapted for cattle and goats as well as sheep*
- ✓ *There are production increases of up to 10% from providing shade and shelter alone (DAFWA)*



- ✓ CSIRO Modelling suggests that by targeting less profitable cropping areas the optimal area per farm is between 10 to 20% depending on soil type and rainfall.
- ✓ If this area is established to fodder shrubs an increase of up to 30% in farm profitability is achievable primarily by savings on feed needed to be kept on farm or purchased (ENRICH).
- ✓ Another benefit is achieved by deferring grazing on annual pastures during early winter when stock are on fodder shrub areas (DAFWA).
- ✓ Once the system is established an extra 1 DSE/ha can be carried across the whole farm (ENRICH)

## **Areas to be further investigated:**

- ✓ Reductions in greenhouse gas emissions from stock grazing fodder shrubs has been measured.
- ✓ Many of the fodder species have significant anthelmintic benefits



August 2012



August 2013



## Funding and support:

### Federal Government

- ✓ Caring for Our Country
- ✓ Clean Energy Future Biodiversity Fund

### Wheatbelt Natural Resource Management

- ✓ Soil Conservation Initiative Project (Round 4)
- ✓ Participating landholders



Australian Government



**wheatbelt**  
natural resource  
management



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