Western Murray Land Improvement Group
Field walk June 11th 2019

Overview

Rather than let irrigation country that was no longer being watered deteriorate, the Economically Viable Options for Retired Irrigation Land (EVORIL) project aimed to identify suitable pasture species to replace the traditional pastures that would allow ex-irrigation land to remain profitable and productive.

The project had three stages:

1. Small plot trials to evaluate new and existing pasture species/varieties.
2. Larger areas sown to improved pasture species to test livestock performance, based on the results from the small plots.
3. Pasture system demonstration sites where a mix of pasture and shrubs were planted.

Species and varieties were principally selected on their ability to grow on approximately 375mm of annual rainfall. Other criteria included the ability to tolerate heavier soil types, frost, waterlogging and persistence (either producing hard seeds or drought tolerance).
As a result, there are 4 different strategies examined in the trials:

1. Annuals that will grow, flower, seed and regenerate next season.
2. Annuals that will maximise growth from rainfall but require re-sowing each season.
3. Perennials, both grasses, legumes and shrubs that will survive the summer.
4. Experimental species (natives and exotics) that are currently undergoing evaluation.

The small plot trials had a couple of purposes – one to test the suitability of the species/varieties to local conditions (soil and rainfall) via dry matter assessments, as well as persistence/regeneration between seasons.

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The third stage of the project saw the planting of a perennial shrub and annual/perennial pasture system. The perennial shrubs (Old Man Saltbush "Narromine", Old Man Saltbush "Anameka" and locally sourced OMS seed that was direct seeded) were planted at 4 sites in dual rows on 13 metre centres with a pasture mix sown between the rows. This gives a saltbush population of 550 plants/ha and allowed evaluation of the improved OMS clone "Anameka" which is claimed to be more digestible and hence more productive.

The site at Murrayview was part of the third stage of the EVORIL project.

The following mix was sown in May 2016. Seed availability was an issue and so the Pasture Genetics Haygraze LR mix was used for the legume component as it had many of the species that had been identified as suitable in it. The legumes were boosted with extra snail medic and rose clover.

Lucerne	2 kg/ha	
Annual Ryegrass	4 kg/ha	"Wimmera"
Mediterranean Fescue	1.5 kg/ha	"Fletcha"
Annual medics/clovers	6 kg/ha	Haygraze LR Mix
	0.5 kg/ha	Rose Clove
	1.0 kg/ha	Snail Medic

Haygraze LR	%
Cavalier Spineless Burr Medic	40
Caliph Barrel Medic	20
Bindaroo Button Medic	10
Silver Snail Medic	10
Cobra Balansa Clover	10
Bortolo Bladder Clover	10

Other options	Arrowleaf Clover
	Gland Clover
	Persian Clover (hard seeded)

2016 was a wet year and the pasture grew approximately 10 t DM/ha. The wet season also delayed the planting of the saltbush until early November, resulting in mixed establishment rates. The saltbush planting also limited the opportunity to graze the young pasture, both in season (and compacting the "alleys" prepared for planting) and again in autumn in order to remove some of the dry pasture residues for the 2017 regeneration.
The grazing in autumn 2017 demonstrated some grazing preference for the saltbushes. The sheep had to be removed from the Narromine and Direct Seeded paddocks before they had knocked down the dry pasture residues sufficiently. However the sheep had grazed little of the Anameka and bared out the pasture. Eventually they grazed the Anameka, and this response has not been repeated at other sites.

Pasture Quality

Pasture cuts from Murrayview 2016 taken in October, comparing the improved pasture with the barley grass dominant pasture in the adjacent paddock.

Barley Grass Dominant		
Dry matter	3.9	t/ha
Energy	8.5	MJ/kg
Protein	11.7	% CP
Digestibility	56.7	% DOMD
ADF	32.7	%
NDF	51.8	%

Improved Mix		
Dry matter	9.9	t/ha
Energy	10.3	MJ/kg
Protein	12.7	% CP
Digestibility	65.5	% DOMD
ADF	29.3	%
NDF	45.4	%

Pasture Species Performance

Results from the EVORIL sites

Species	Dry Matter	Palatability	Seed Production	Hardseededness	Persistence
Barrel Medic	✓✓✓	✓✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓✓✓
Spineless Burr Medic	✓✓✓	✓✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓✓
Bladder Clover	✓✓	✓✓✓	✓✓	✓✓✓✓✓	✓✓✓✓✓
Gland Clover	✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓
Rose Clover	✓✓	✓✓✓✓	✓✓✓✓✓	✓✓	✓✓✓✓
Snail Medic	✓✓✓	✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓
Lucerne	✓	✓✓✓✓			✓✓✓
Wimmera Ryegrass	✓✓✓✓	✓✓✓✓	✓✓✓✓		✓✓✓✓
Resolute Fescue	✓	✓✓✓	✓		✓✓
Cereals	✓✓✓✓✓	✓✓✓			✓

The more ticks the better (5 maximum)

Pasture Management Notes

Monitor for Pests

Monitor for insects, particularly Red Legged Earth Mite and Lucerne Flea. Lucerne Flea tend to appear earlier than RLEM. If control is required, only the organophosphates (Group 1B) are registered for use as lucerne flea are relatively tolerant to the synthetic pyrethroids (Group 3A). Both these insecticide groups are relatively broad spectrum, taking out both the pests and predators, so only spray if necessary. CESAR suggest a thresholds for RLEM control being 20-30 mites per 100 cm^2.

If control is required, ideally this would occur within 3 weeks of hatching as this will control the emerged insects before they have a chance to lay more eggs.

Lucerne Flea

RLEM

Other mites that might be present are Blue Oat Mite (patch on the back and not as velvety) and bryobia mites (brown and long front legs).

Others to look out for include the chewing insects like army worms (caterpillars) and weevils.

Grazing

Seed of most of the pasture species trialled are aerial seeders (unlike subclover) and so are more prone to over-grazing. Grazing will have to be managed in the September/October period (particularly in the early years of the pasture) so as to create a resilient seedbank.

Some produce large pods and could be susceptible to over-grazing over summer.

Despite the best of grazing management and seasons, some species will not be very prolific in year 2 due to their very hard seeded. This is an advantage in the longer term, as once the seedbank is established, a poor season or opportunity cropping will have only a small effect on the pasture species.

An advantage of aerial seeding is the opportunity to harvest your own seed. An option may be to create a "nursery paddock" where the pasture can be more carefully managed and used as a seed source for sowing the rest of the farm.

Saltbush Evaluation

The EVORIL site planted in 2016 at Murrayview/Cobramunga had the best establishment of Anameka, Narromine and direct seeded saltbush. Prior to grazing in January 2018, shoots were hand harvested from the 3 "varieties" and sent to Agrifood Technology (FeedTest) for analysis. This was repeated in December 2018, and samples from another site were also submitted for analysis.

Location	Variety	Season	CP%	Ash	Digestibility	DOMD	ME MJ/kg
Cobramunga	Anameka	2018	19.0	25.5	60.6	58.2	8.8
Cobramunga	Narromine	2018	19.9	23.3	60.9	58.4	8.9
Cobramunga	D Seed	2018	18.7	26.3	60.6	58.2	8.8
Cobramunga	Anameka	2019	14.6	28.4	56.4	54.6	8.1
Cobramunga	Narromine	2019	16.1	24.8	59.7	57.4	8.7
Cobramunga	D Seed	2019	15.6	22.3	58.9	56.7	8.5
Pental Island	Anameka	2019	19.5	24.1	60.8	58.3	8.8
Pental Island	Narromine	2019	18.5	21.8	59.2	57.0	8.6

While the test results are not as accurate as actual rumen testing (eg the negative effects of the high ash content), the results do allow a comparison between saltbush options.

Some observations

Anameka
Uniform plants once established
Issues with freight and the time in the boxes as the plants come from WA
Cost is considerably higher when freight is included
Variable grazing preference
Rooting issues?

Narromine
Variable plant type
Hardy plants, well packed

Direct seeded
Variable establishment
Variable plant type
Low cost of establishment