Productive Saltland Pastures to Combat Wind Erosion in the Eastern Moore River Catchment

2009 - 2010 Project Review

MOORA - MILING PASTURE IMPROVEMENT GROUP

CARING FOR OUR COUNTRY

nacc

The Moora-Miling Pasture Improvement Group (MMPIG) consist of dedicated forward thinking farmers who wish to improve their farming systems to ensure sustainable farming into the future.

The Moore Catchment Council (MCC) are a non-profit community group that cover the Moore River catchment, and exist to educate and facilitate natural resource management (NRM) to the public.

Caring for our Country (CFOC) is the Federal Government's Natural Resource Management program and aims to achieve an environment that is healthy, better protected, well-managed, resilient and provides essential ecosystem services in a changing climate

The Northern Agricultural Catchment Council (NACC) is a non-profit organisation that encompasses the Northern Agricultural Region (NAR), and provides leadership, advice and on-ground support for natural resource management issues and projects.

Background

The Moore River Catchment has 11% or 175,632 ha of land which has been identified as having consistantly low production (NACC Regional NRM Strategy), as well as 60% of the catchment being identified as having a moderate to high risk of wind erosion (Moore River Catchment Appraisal DAFWA 2003).

A substantial reason for this is from the clearing of vegetation for agriculture which has caused rising water tables and secondary salinity. This has resulted in land in the eastern Moore Catchment not being able to sustain the traditional crops or pasture that it once did, and therefore is increasingly becoming abandoned and bare, leaving it susceptible to the threat of wind erosion.

Saltbush systems have been successfully proven to provide a solution to the these problems, and provide a productive and sustainable alternative to traditional pasture systems in saline affected areas.

Notes - all photos taken by R. Walmsley

Thank you to the following people who helped make the project successful - all the project participants, MMPIG committee and members, MCC staff, NACC, Mike Grasby, Shelley Spriggs, Ian Pulbrook, Mike Clarke, Dean Revell, John Borger, Ed Barrett-Lennard, Hayley Norman, Linda Vernon, Marissa Verma, and finally Tony White who helped coordinate and drive the project.

Thanks
Rachel Walmsley - Project manager at Moore Catchment Council

Table of Contents

Page No.	
4	Project outline
5	Focus area
6	Super Saltbush
7	Planning
8 - 9	Participants and Site locations
10 - 17	Project Activities and Timeline
18	Case Studies:- Frank Tierney
19	- Don McKinley
20	- Brendon Pratt
21	- Brian Stacy
22 - 24	Evaluations
25	Findings and Conclusion

NB This booklet has an accompanying DVD of the project. If you would like a copy then please contact the office

Project outline

Aim: To use strategically placed saltbush pasture systems to re-vegetate salt and water logging affected areas in the Eastern Moore River catchment.

This will help reduce wind erosion and mitigate other detrimental environmental issues, as well as increasing on-farm stock fodder, thus improving the environmental and economic sustainability of the region.

Project A03287G

Time frame

August 2009 - February 2011

Budget

CFOC funds: $96,500
In-kind funds: $326,620

CFOC target outputs

Target	*	18 farmers to be directly involved with planting 144,000 saltbush seedlings on 180ha
Actual	*	20 farmers to be directly involved with planting 176,100 saltbush seedlings on 272.4ha
Target	*	50 farmers with increased NRM knowledge through field days and workshop
Actual	*	135 farmers with increased NRM knowledge through field days and workshop
Target	*	100 farmers and community engaged through final report, DVD & audio CD
Actual	*	100 farmers and community engaged through final report, DVD & audio CD
Target	*	Involve local Yued group with NRM
Actual	*	Yued group informed of project and invited to inspect sites

Focus area

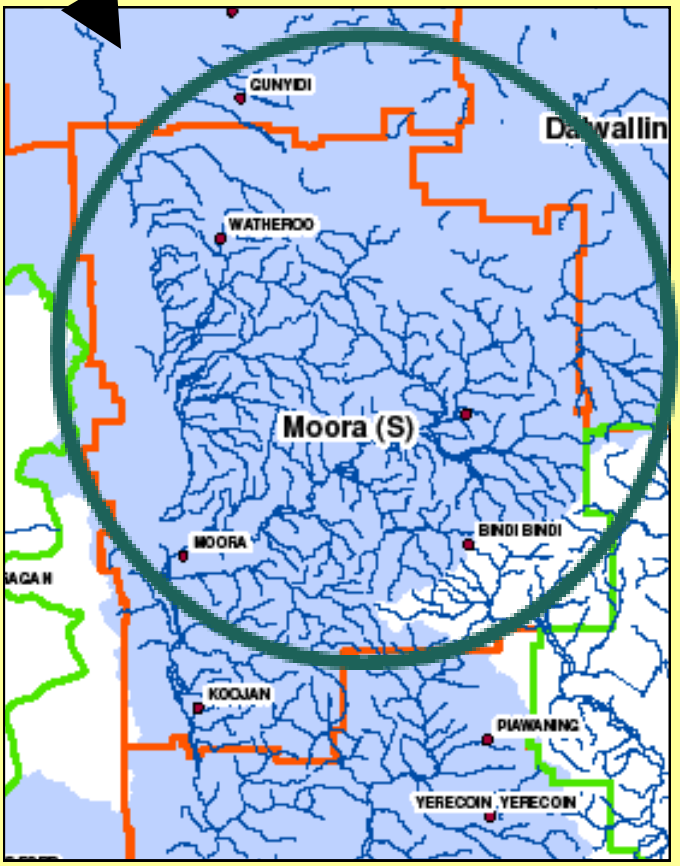
The Moore River catchment is situated above Perth in the southern part of the Northern Agricultural Region. It covers 1.38 million hectares and encompasses eight shires.

80% of this land is farmed. Crops include wheat, lupins and barley, and the livestock enterprises are sheep and cattle.

This project focuses on the upper catchment of the Moore River where the MMPIG is located. Many of the farms in this area have wide low lying valleys and salt affected parts which have developed into poor unproductive paddocks.

The group knows the benefits that saltbush can offer both environmentally and financially.

The effects of planting saltbush here also have positive knock-ons further downstream including slowing water in flood events and improved water quality.



Super Saltbush

Saltbush systems have been successfully proven to provide a productive and sustainable alternative to traditional pasture systems in salt affected areas. They are deep rooted woody perennials, act as an excellent wind break and stock shelter, and establish well in minimal rainfall.

They provide a sustainable on-farm food source for stock during the autumn feed gap and also as a deferment paddock whilst other pasture recovers after grazing. They have additional production related benefits including providing an excellent source of vitamin E, reduced susceptibility to worms, increased carcass weight at slaughter, and improved meat flavour and texture.

Species used

River saltbush - *Atriplex amnicola*

- Moderate to high salinity tolerance, and high waterlogging and drought tolerance. Once established can survive several weeks of winter waterlogging.
- Highly palatable and recovers well from hard grazing. Native to WA.

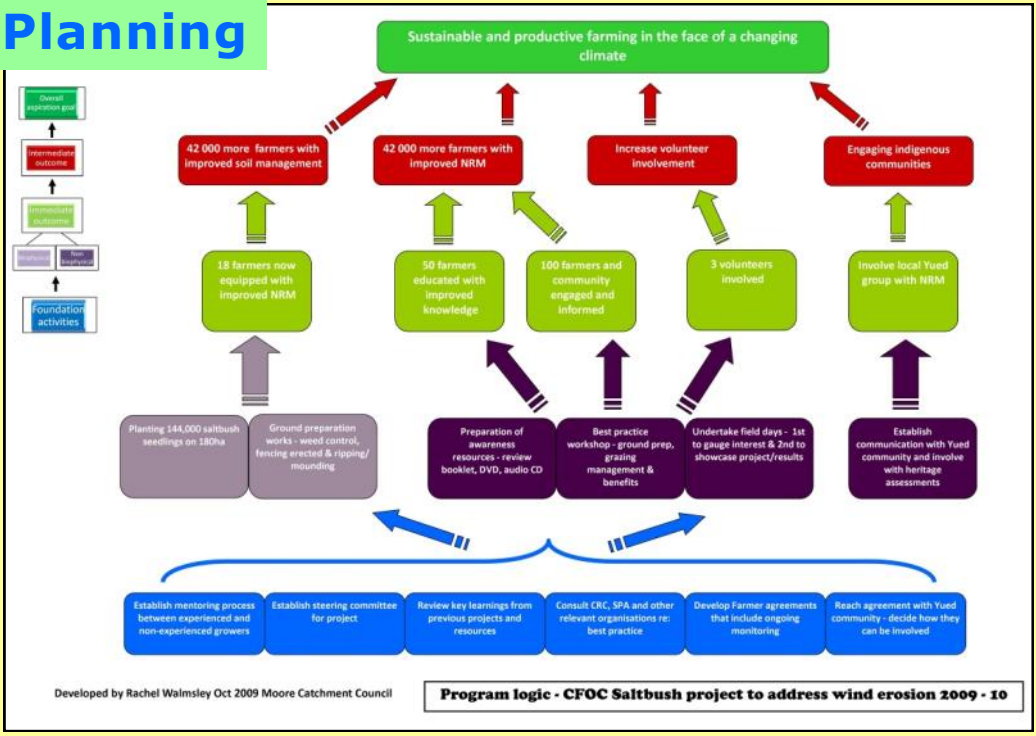
Oldman Saltbush - *Atriplex nummularia*

- Moderate salinity and high drought tolerant. Less waterlogging tolerant than river saltbush.
- Highly palatable. Once established, extremely tolerant of heavy annual grazing for short periods. Native to S. Australia.

Rhagodia preissii* & Thorny Saltbush - *Rhagodia eremaea

- Low to moderate tolerance to saline lands. Not as adapted to waterlogged land as the other species.
- The Rhagodia species used are very much on trial in this project. The nursery have been developing the species of the Rhagodia to increase its palatability to stock. Native to WA & S. Australia.

Planning



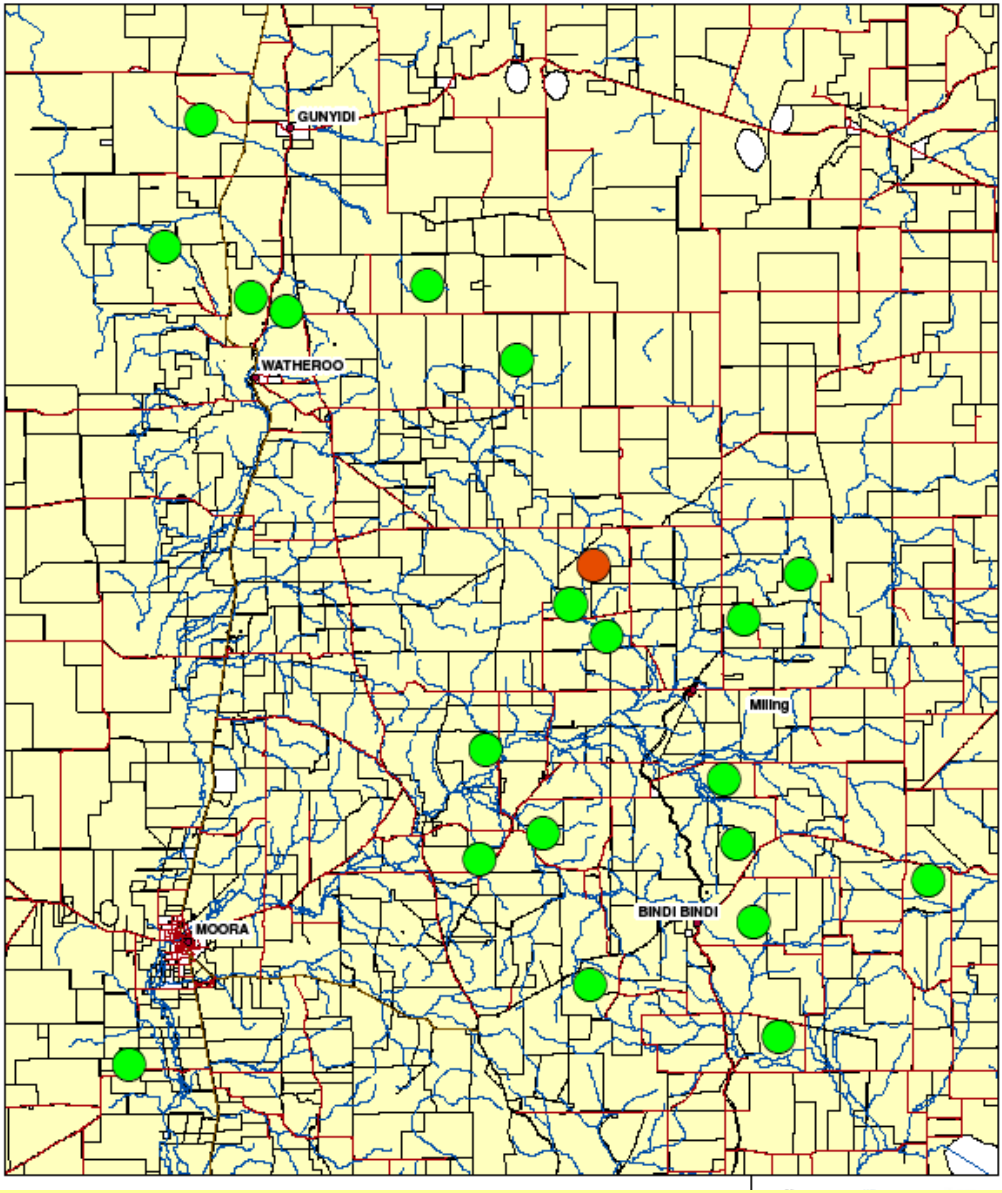
Part of the milestones for this CFOC project was to develop a Program Logic and a MERI plan (Monitoring, Evaluation, Reporting, Improvement). This was to help steer the project and to help evaluate the project upon completion.

MCC and MMPIG representatives developed these documents in conjunction with Mike Grasby from the AG NRM office.
These documents were reviewed periodically at MMPIG committee meetings and at MCC meetings to ensure the project was running to plan.
Questionnaires were developed and interviews conducted to help evaluate the workshop and the project overall.

MMPIG committee meeting

Participants and site locations

Landholder	Location	Number of saltbush	No. of hectares
Craig McLean	Watheroo	10,000	21
Quentin Bricknell	Watheroo	10,000	14
Les & Ann Crane	Gabalong	10,000	15
Brian Stacy	Watheroo	10,000	16
Richard Humphry	Roundhill	8,000	10
Frank & Marge King	Bindi Bindi	2,000	2
Rob & Maria Wood	Bindi Bindi	10,000	15
Brad Millsteed	Watheroo	5,000	13
Phil Martin	Gunyidi	13,000	15
Noel Elliot	Watheroo	10,000	10
Frank Tierney	Walebing	14,000	30
Jeremy Lefroy	Roundhill	4,100	5
Brendon Pratt	Miling	3,000	4.4
Stan & Ann Lewis	Bindi Bindi	1,600	2
Neil & Leanne Pearse	Miling	10,000	15
Ken Seymour	Miling	15,000	35
Bruce & Cindy Topham	Miling	10,000	10
Ian Lehmann	Bindi Bindi	5,400	5
Tony White	Miling	15,000	20
Don McKinley	Moora	10,000	15
	Miling	Pulled out	
Total		**176,100**	**272.4**


GUNYIDI
WATHEROO
Milling
BINDI BINDI
MOORA
Sites for saltbush pasture planted
Sites of landholders who dropped out
Moore River
Roads
N
0 4 8 12 16
Kilometers

Project activities

MMPIG SPRING FIELD DAY, MILING 16TH SEPTEMBER 2009

SPRING FIELD DAY
MILING
WED 16TH SEPTEMBER

Agenda will include:

- Wheat variety trial
- COGGO Chickpea demonstration
- Enrich fodder shrub trial
- Saltbush
- Animal health
- Discussion & info sessions - what's your problem?

Meet - At the Miling Sports Pavilion
Time - 1pm until evening - BBQ after 5.30pm

RSVP & ENQUIRES TO TONY WHITE
0427 541 122

Enrich site

Ian speaking

Over 45 local farmers came along to the field day which included a trip to a CSIRO Enrich fodder shrub trial at Tony White's farm, followed by a look at Ken Seymour's saltbush pasture planted in 2008 through the NLP saltbush project. Dean Revell (CSIRO) spoke about the Enrich project and Ian Pulbrook (Greenoil Nursery) talked about planting techniques. At Ken's site, Ken explained what happened within the 2008 project and John Borger (DAFWA) gave useful info on saltland weed management especially Slender ice plant. The day helped gain interest in the new CFOC project.

Ken

Ken Seymour's site

SITE ASSESSMENTS

All sites were subject to a site assessment to ensure the right saltbush species went in the most suited locations.

Ian Pulbrook spent two days looking at all the sites that he was planting and talking with the farmers about their preferred planting configurations.

Management agreements and plans were drawn up for all sites. The plans outlined pre and post planting activities to be carried out to ensure the best establishment possible for the seedlings. These were all signed and returned.

Ken breaks out the cold beers at the end of a long two days !

SUCCESSFUL SALTLAND PASTURE WORKSHOP, MILING 12TH MARCH 2010

Ed speaking

Over 30 people - farmers, community and technical, came to the 'Good guide to successful saltland pastures' workshop held in Miling. Speakers included Ed Barrett-Lennard (DAFWA), Hayley Norman (CSIRO), Mike Clarke (DAFWA) and Ian Pulbrook (Greenoil Nursery).

First was Ed Barrett-Lennard DAFWA who gave an animated talk on secondary salinity (using a bowl of water and a salt shaker!), why some plants can't cope and the various farming methods available.

A number of field visits followed, with the first stop at Tony White's 2008 saltbush plantings (part of the NLP project 'Creating Productive Saltbush Pastures on Unproductive Land') which demonstrated how mounding the saline and waterlogged land can help with plant establishment thus boosting production value.

Tony's site

Bruce's farm

This was followed by a visit to Bruce Topham's property which showed how, with time, saltland pasture can transform previously saline and unproductive land back to something more useful and aesthetically pleasing.

Hayley speaking

Mike speaking

The field visits concluded at the successful Enrich fodder shrub trial with Hayley Norman CSIRO and Ian Pulbrook, Greenoil Nursery explaining the key aims of the project and showing the species which have performed the best.

After lunch, Mike Clarke DAFWA talked about the stabilising groundwater trends for this area, followed by Hayley closing the proceedings with a thought provoking presentation on the animal health issues and benefits of saltbush pasture, especially Old man saltbush which has Vitamin E benefits as well as unknowns.

PLANTING TIME

mounding

Fifteen of the twenty sites were planted by Ian Pulbrook and his team.

He used his autosteer tractor with ripper/mounder to prepare the sites. The resulting mounds were the ideal medium to plant the seedlings in because of the removal of weed competition and the ability of the mound to leach excess salt thus allowing the seedling to access fresher water.

seedlings

planting

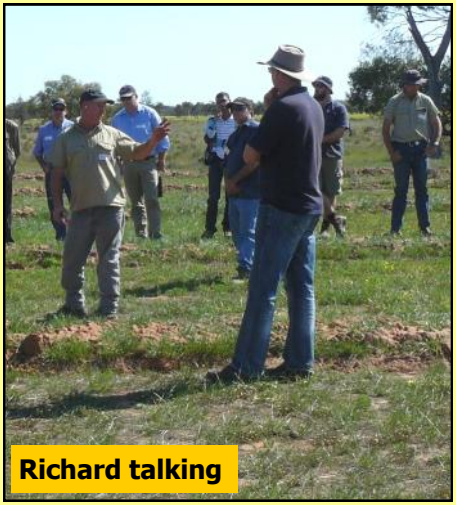
Ian's team then used Pottiputki hand tree planters to plant over 150,000 seedlings.

The remaining 30,000 seedlings were planted in-house by project participants who have their own equipment and have experience of planting saltbush.

The season was average for rainfall with approx 220mm over 58 days between May & September.

planting team

MMPIG SPRING FIELD DAY, MILING 22ND SEPTEMBER 2010



Richard talking

Over 60 people came along to the MMPIG 2010 Spring field day which included a trip to Richard Humphry's new saltbush pasture on Creslow road. Tony White gave an overview of the CFOC project and how it has helped farmers in the region. Richard explained that he wanted to plant this marginal saline land to make it more productive for stock feed. He has planted over 80 ha of saltbush on his farm during the past 10 years.

huge crowd

Ian Pulbrook explained his planting techniques to the crowd and also how to successfully manage the pasture long term. Ensuring the pasture is grazed hard annually will maintain palatability of the saltbush. Ian also mentioned recent CSIRO fodder shrub trial data results which reveal a whole array of useful fodder shrubs which can be incorporated into farming systems to help ensure there is also feed available. Calculations also show that having 10% fodder shrubs per farm makes economic sense.

The crowd asked several questions including best weed control and grazing methods.

SITE INSPECTIONS

Site inspections four months after planting were carried out to how well the saltbush had established. No two sites were the same but establishment had been overwhelmingly successful at the majority of the locations. Seedling counts revealed most site had a >80% strike.

Photo points were set up for annual monitoring and interviews were conducted with each participant to document and gauge their opinion of their new pasture, the mounding and the project overall.

Quentin Brickell

Richard Humphry

Tony White

Lloyd Elliot

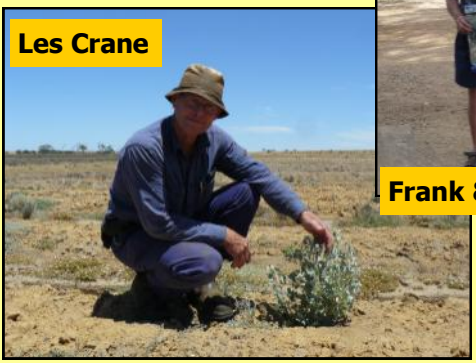
Phil Martin

Rob & Maria Wood

Craig McLean

Bruce Topham

Frank & Marge King


Les Crane

Neil Pearse

Ken Seymour

Ian Lehmann

Derek Stewart

Brad Millsteed

Stan Lewis

Case studies

FRANK TIERNEY INDARRIE FARM, WALEBING

Farms: mixed - sheep & crop

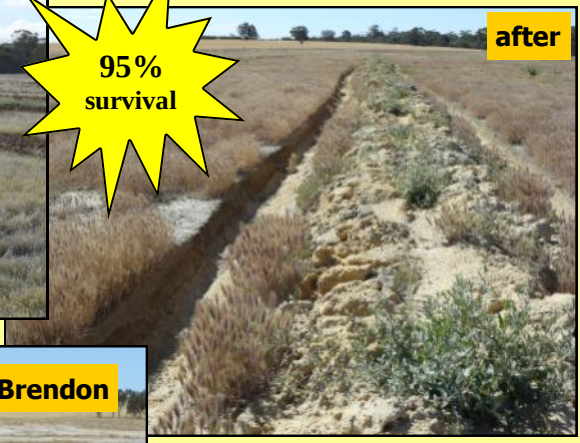
Site: sandy/gravel, bare drainage line - salinity affected, barley grass country

Previously planted saltbush: small amount

No. of saltbush planted: 14,000

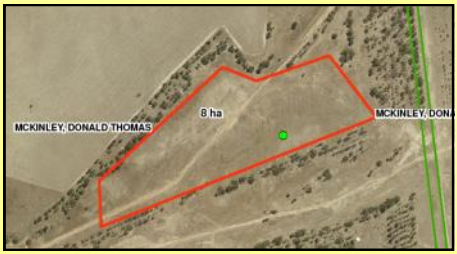
Main reason for planting: Fodder crop for stock, have a go at growing

95% survival



Brendon, Frank & Cecil Tierney

Brendon says ' I'm very impressed on the way it's established.'



DON MCKINLEY
MOORE PARK FARM, MOORA

Farms: 10-12,000 sheep, 1300ha crop - wheat, oats & barley

Site: sandy, prone to water logging, slightly saline, barley grass country

Previously planted saltbush: small amount

No. of saltbush planted: 10,000

Main reason for planting: Fodder crop for stock, good incentive. Got into project after someone dropped out.

80% survival

Don says *'I'm really impressed, it's grown dramatically in the last few weeks.'*

BRENDON PRATT WOODBINE FARM, MILING

Farms: 1400 sheep, 1000ha crop

Site: bare, former cropping land adjacent to river

Previously planted saltbush: large amount

No. of saltbush planted: 3,000

Main reason for planting: Fodder shrub, re-vegetation, past experience of growing saltbush

90% survival

Brendon says ' we've had a pretty good establishment considering the season has been a bit up and down.'

BRIAN STACY
YO ESPRO FARM, WATHEROO

Farms: 1600 sheep, 2500ha crop - wheat, lupins & canola

Site: bare unproductive patch prone to waterlogging, clay loam

Previously planted saltbush: no

No. of saltbush planted: 10,000

Main reason for planting: Re-vegetation of bare area, fodder shrub, parents planting another farm

85% survival

Brian says ' I probably wouldn't have planted saltbush this year if the project hadn't have been there.'

Evaluations

WORKSHOP 12/03/10
30 ATTENDEES
22 RESPONDENTS

Part of the CFOC reporting requirements is to evaluate the knowledge and skills gained by the project and the extension activities. Questionnaires were given out at the workshop and to the project participants at the end.

	YES	NO	MAYBE
The aim of the workshop was to improve your overall knowledge of saltland pasture management - has this happened ?	21		1
Have you grown saltbush before ?	17	5	
If not, do you intend to plant saltbush in the next couple of years ?	3	2	
Has what you have learnt from this workshop increased your *knowledge* of **saltbush establishment**? If so, how?	16	1	5

Good to see examples of mounding in marginal salt areas
Need more detail on establishment. Will plant in direction of water and at lower density now
Drainage, spacing, grazing
Indicator species, and salt levels ok if good drainage present
Every bit of knowledge gained is of benefit
Farmers present have learnt
Added benefits of vitamin E & unknowns
From Ed to sow on country that will carry some ryegrass
Yet to try growing saltbush
Increased knowledge base
Salinity vs water levels
The thought of using N in establishment, & gypsum & lime
Stand density vs higher density in worst sites, emphasis on inter row productivity in good sites
Just plant !

Has what you have learnt from this workshop increased your *knowledge* of grazing **saltland pasture** ? If so, how?	21		1

More saltbush growing with the recommended plants
Importance of grazing management & mix of species
Most evidence = crash graze, must be after feed of some sorts
To be more flexible
Crash graze
Salt tolerant & water logging tolerant
Importance of grazing to reinvigorate plants. Use it or lose it !
Importance of supp feeding. Fresh water supply
Trials like this will help
Future research of perennials in the system
Amount of saltbush needed per sheep
Best timing and what it needs with it
Informed us of profitability
Supplements required
Crash grazing, vitamin E quality
Emphasis on crash grazing, then recovery

Has this workshop changed your *attitude* towards **saltbush** in general? If so how:

11 | 10 |

Sheep grazing part of it
Just confirmed that it's a good opportunity
It has a place in every farm with salt
Always believed in planting trees & shrubs of use
Always had a good attitude & am well aware of its benefits
I have always believed in the value of saltbush
Have always been very positive – today has confirmed this !
Grow more
Still great believer of 'other' feed sources & their benefits
To see paddock of green feed in mid March is impressive for a stock producer
Have a portion of your farm planted can add to farm profit
Vitamin E value significance to sheep
Saltbush always thought provoking
Thinking about establishing understorey and plot layout
Loved the idea of saltbush before and after

Are you a member of the Moora-Miling Pasture Improvement Group or the Moore Catchment Council ?

13 | 8 |

Are you a: (circle) **farmer** 15 **professional** 5 **other** 1

Any other comments regarding the workshop ?

Excellent workshop. Put together with all your great speakers , and time and effort put in by MCC
Excellent presentation
Very informative day – thank you
Lovely scones! Great to see different sites, interesting and knowledgeable speakers – thanks
Timing good, not overloaded with info. Very relative
Bluebush even more profitable than saltbush
Excellent day *3
Thanks
Congrats on a well run workshop
NACC board member
Very informative. The presentation of speakers impressive and Mr Topham's practical experience an inspiration
Well presented – well done
Very worthwhile workshop
Good format. Interesting, interactive

The general consensus reveals that the workshop 'did what it was supposed to do'. It attracted mostly farmers - some who hadn't planted saltbush before, and it increased most people's overall knowledge of saltbush pasture systems. The health benefits were noted as a key learning point.

Most people also enjoyed and appreciated the mix of class room and field trips, as well as the chance to ask questions and network.

PROJECT PARTICIPANTS QUESTIONNAIRE
20 PARTICIPANTS - 20 RESPONDENTS

	YES	NO	MAYBE
1 The aim of the project was to '*use strategically placed saltbush pasture systems to revegetate areas in the Moore catchment to help reduce wind erosion and other detrimental environmental issues, as well as increasing on-farm stock fodder.*' Do you think the project has been successful in achieving its aim?	20		

2 Had you grown saltbush before this project?

6	yes - small amounts
13	yes - lots
1	no

3 What made you join this project? *Tick all that apply*

20	Incentive on offer - 25c/seedling planted or 10c/seedling plant yourself
1	Not tried saltbush before - wanted to have a go
12	Having someone to plant them - Ian mounding and planting
11	Success of previous saltbush project - NLP 2008 project
11	Being part of a coordinated project

Other _____

4 Would you have planted saltbush pastures this year if there had been no project?	5	13	2
5 Were you a member of the Moora-Miling Pasture Improvement Group and/or the Moore Catchment Council before this project?	18	2	

7 Did you attend:

10	MMPIG spring field day 2009 - visit to Ken Seymour's established saltbush and fodder trial
12	Successful saltland pasture workshop in Miling Mar 2010
12	MMPIG spring field day 2010 - visit to Richard Humphry's new saltbush pasture

8 If so, did these events increase your enthusiasm, knowledge and skills to plant more saltbush in the future?	17		

9 Any other comments (good and bad) regarding the project ?

- Interesting to have different varieties of saltbush in the planting
- Need more research into better varieties and their productivity
- Great project *3
- Great project and well organised. Led to the huge success
- Very supportive of this project. Without the incentives, there would be much less saltland revegetation & improvement being carried out by landholders
- Excellent project - hope the continuance

- Well organised
- Best thing we've done to see our saline land blooming. Also drought proofed our farm for summer feed
- I believe we need to rip/mound/plant before the end of July because of risk of drought
- Excellent project. MCC very well organised and helpful. Looking forward to more funding to continue planting and rehabilitating more saline land.

Findings

Project Participants

* The CFOC output target was to have 18 farmers to be directly involved with planting 144,000 saltbush seedlings on 180ha. This was expanded to 20 farmers planting 176,100 saltbush seedlings on 272.4ha.

* 18 were members of the MMPIG and the MCC before the project.

* All the 20 participants believed the project achieved what it was set out to do.

* The overriding reason for being involved with the project was the incentive and planting service offered. Without this, over half the participants said they wouldn't have planted saltbush this year.

* 15 out of the 20 participants had the project contractor plant for them at a rate of 25c per seedling. The remaining participants paid a rate of 10c per seedling and planted themselves using their techniques - mostly planting into rip lines.

* The uptake of the incentive was fairly rapid with all saltbush being allocated by September 2009. One participant dropped out in early 2010, but this spot was quickly filled with two MMPIG farmers wishing to plant saltbush.

* 1 out of the 20 hadn't planted saltbush before and 6 had only planted small amounts.

* Reputation and results of the previous NLP MMPIG/MCC saltbush project also encouraged the participants to sign up. Over half liked being part of a coordinated project.

* The extension activities were well attended by the project participants. 17 of the 20 attended at least one of the three events. All agreed that the events increased their enthusiasm, knowledge and skills to plant more salt-bush in the future.

* 15 out of the 20 have planned to plant saltbush next year.

Quality control

* The project relied heavily on Greenoil Nursery, Mingenew and the expertise of nursery man/planting contractor, Ian Pulbrook. He was integral from the start to ensure this project was successful - especially using his knowledge and planting techniques. The mounding was a successful element of the NLP saltbush project, and again proved vital in ensure maximum establishment rates.

* Greenoil supplied over 93% of the seedlings with the remaining coming from participants requested nursery - Westgrow, Meckering. The seedling quality was acceptable from Greenoil although adverse cold conditions affected quality to a degree. The average establishment success rate of over 80% for all sites show the seedlings were of a acceptable quality.

* The relationship that Greenoil has developed with MCC/MMPIG allowed value for money. The increased number of seedlings able to be planted occurred because of shrewd budgeting.

Tony White (president of MMPIG) & Ian Pulbrook (Greenoil Nursery)

Extension activities

* The CFOC target of 50 farmers with increased NRM knowledge through field days and workshop was exceeded to 135 farmers attending the field days and workshop.

* Feedback from the field days was good. The attendance from the 2009 to 2010 MMPIG spring field day rose from 45 to 60 people. Interest in the MMPIG in general and their ongoing mission to reclaim unproductive saline land has prompted this rise. MMPIG membership in this time has also increased from 35 to 51 businesses.

* Enquires to MCC from new members about saltland pastures and incentives available has occurred. The NACC CFOC wind erosion fodder shrub seedling incentive has been recommended although the unavailability of a planting subsidy has deterred some from committing.

* Feedback from the saltland pastures workshop in March 2010 was extremely positive. It attracted over 30 people - mostly farmers - some who hadn't planted saltbush before. The format of class room presentations from key speakers Ed Barrett-Lennard (DAFWA), Mike Clarke (DAFWA) and Hayley Norman (CSIRO), and field visits - including having a couple of farmers show everyone their saltbush pastures and talk about their experiences, was paramount in holding everyone's interest for the day.

* Involvement with the local Yued group and heritage surveys has been limited. The project has been reviewed by the Yued Working Party and requests for members to visit some of the sites has been initiated. This should take place early 2011.

Promotion

* The project has been actively promoted throughout its life via media releases and through the MCC and MMPIG quarterly newsletters.

* This booklet and a project DVD (visual & audio) have been produced and distributed amongst the community and industry groups. They will be used as a resource to encourage further involvement for unproductive land rejuvenation by the farming community.

Conclusion

This saltbush project has been a great success due to the strong partnership between the Moore Catchment Council, Moora-Miling Pasture Improvement Group and Greenoil nursery.

It has allowed the relationship between NRM and agriculture to be intertwined to help reach the same goal - a sustainable farming practice that has positive effects on the Moore River's natural environment, and also contributing to the farmers financially for the longevity of productive agriculture in this region.

If you would like another copy of this report or project DVD, or to find out more information about the project or the Moore Catchment Council, then please contact:

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