Final report

PDS 1910 Derwent Catchment Perennial Forage Shrub Trial

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Abstract

The Derwent Catchment Project, with funding from Meat & Livestock Australia, undertook a Producer Demonstration Site (PDS) project that investigated whether forage shrubs could be established at a commercial scale on north-facing slopes in Tasmania. The benefits were two-fold; to add grazing value to marginal areas whilst introducing deep-rooted perennials to stabilise erosion prone north-facing slopes. The trial commenced in winter of 2021 on three 5 ha north facing sites using planted tubestock of Mediterranean saltbush (*Atriplex halimus*) and involved direct drilling of 1 ha at the 3 sites. A 5-hectare control was also established at each site.

Pressure from native animals impacted two of the sites to the point that they did not establish. The successful site on a farm near Hamilton was at least 500m away from any remnant native vegetation. The direct seeding failed at all three sites. The project was rescoped to observe, monitor and report on the response of the shrubs at the established site to grazing and to share the learnings with our producer network. Detailed measurements pre and post grazing were taken from the Nareen saltbush site.

The shrubs regrew in the extreme dry of summer, in a drought, delivering green material on a north-facing slope between December and April 2024, when nothing else grew. Data indicates that post grazing shrub height increased on average by 29% and width by 48%. Growth appears encouraged by the grazing, despite the critical lack of water for the inter-row pasture. The site offers insight into a potentially valuable and durable grazing asset that could, over time, overcome the cost of establishment at ~$2,000 per hectare. The projection of increasing dry spells and drought under climate change could compound its value.

Executive summary

Background

Despite common perceptions about Tasmanian weather, there are some areas with a semi-arid climate. The region between Ouse, Hamilton and Bothwell in the Central Highlands is one of these low-rainfall areas. The major land use of the region is grazing which relies on dryland pastures and runs that are unreliable in times of drought. Cleared north-facing slopes are a particularly fragile component of grazing enterprises as they are difficult to incorporate without causing erosion.

On the mainland there has been significant work undertaken to research the benefits of forage shrubs as a value add to marginal land. The Derwent Catchment Project, with funding from Meat & Livestock Australia, was a Producer Demonstration Site (PDS) project that investigated whether forage shrubs could be established at a commercial scale on north-facing slopes to add grazing value to these marginal areas whilst introducing deep-rooted perennials to stabilise the ground.

A core group of 11 graziers expressed interest in working with The Derwent Catchment Project to trial the forage shrub demonstration sites in the Catchment and a further 44 graziers are interested in the results.

The trial commenced in winter of 2021 on three north-facing sites each comprising 15 ha. Fenced areas were split into three areas - a 5 ha site which was planted with Mediterranean saltbush (*Atriplex halimus*) tubestock; a direct drilling site of 1 ha of saltbush and a 5-ha control at each site. The purpose of the trial was to determine if establishment is possible and what is the cost-benefit of any production and environmental outcomes. Unfortunately, the direct drilling method did not yield results in this trial. Establishment of planted tubestock at two sites was impeded by browsing native animals to the point that they did not establish despite the large scale of the trials. One site was successfully established at Nareen near Hamilton.

A clear learning from the project is the suitability parameters required for shrub establishment and persistence on north-facing slopes; sites are best suited to very sandy soils away from any native bush or remnant vegetation. The successful site on a farm near Hamilton was at least 500m away from any remnant native vegetation. The project was re-scoped to observe, monitor and report on the response of the shrubs to grazing and to share the learnings with our producer network. Detailed measurements pre and post grazing were taken from the saltbush site.

Objectives

The initial objectives of the project were:

- To demonstrate and assess the potential of perennial forage shrubs to contribute to useful fodder to address the winter feed gap on marginal land (north-facing slopes).
- To conduct a costed proof of concept for the establishment of forage shrubs on north-facing slopes comparing planting seedlings to direct drilling methods across three demonstration sites.
- Facilitate a peer learning group of core producers who drive demonstration site design, establishment and monitoring.

- Conduct workshops and field days and produce a range of supporting resources to showcase the demonstration site results to encourage adoption of key practices by 44 observer producers.

The project was rescoped following the failure of two of the three sites. The rescoped objectives of this project were:

Assess the response of perennial forage shrubs and the site to grazing by:

- Establishing photo monitoring sites.
- Measuring inner row pasture ground cover (kg/DM/ha).
- Communicating observations to a peer learning group of core producers who have been interested in demonstration site design, establishment and monitoring.
- Producing a video and range of supporting resources to showcase the demonstration site observations.

Methodology

The original methodology of the project included planting 5 ha of tubestock of Mediterranean saltbush (*Atriplex halimus*), direct drilling 1 ha of Mediterranean saltbush seed along rows 3 m wide and maintaining a 5 ha control area of marginal pasture with no treatment at each of the three sites. The success of the forage shrub trial would be measured by looking at economic, environmental and social costs and benefits to allow producers to determine if the methods trialled would be of benefit to their grazing systems.

Due to the failure of the direct drilling and two of the three planted sites the project was rescoped and the methodology adjusted to measure the success of the established site at Nareen near Hamilton.

Pre and post assessments were conducted at the Nareen saltbush site. The following metrics were used:

- Pre and post grazing shrub photo monitoring at 10 locations across the site (before/after).
- Stocking rate and time in days grazing the shrubs.
- Number of producers directly and indirectly engaged (+ demographics).
- Measurements of inner row pasture ground cover (kg/DM/ha)

Results/key findings

The key findings from our observations collected between December 2023 and April/May 2024:

- The sheep ate every scrap of leaf and a lot of non-woody stem over the 27 days of grazing. They selectively grazed the green shrub biomass after the green pasture was consumed. Almost no shrub mortality was observed due to the grazing.
- The saltbush regrowth in a drought following a ‘failed spring’, was extremely impressive. Data indicates that post grazing shrub height increased by 29% and width by 48%. Growth appears encouraged by the grazing, despite the critical lack of water for the inter-row pasture.
- The cost of establishment comes to $2,068 per ha/$10,340 across the 5-hectare site. This includes costs for ripping, tube stock, manual planting and some maintenance. The survival rate of the shrubs after planting at the site was approximately 65%.

- The benefit according to our observations support incorporating the shrubs into a grazing cycle of utilisation up to three times a year as the plants respond well to grazing and plant structure benefits. They provide green forage in dry times when the inner row pasture cannot.
- The project learnings have been outlined in a case study short video and producer note sheet which will be circulated through our network (75 producers) and has been communicated more widely through social media posts and a local paper article.
- To see shrubs on north-facing slopes as a viable option, the site needs to be 500 m away from any native remnant vegetation and mechanisation is required to reduce establishment costs.

Benefits to industry

This project observed the response of perennial forage shrubs to sheep grazing. The shrubs regrew over summer, in a drought, providing leafy green forage on a north-facing slope between December and April 2024, when the inner row pasture could not. The shrubs provide deep-rooted perennial plants on erosion prone, marginal grazing land which if not managed carefully can lead to erosion issues.

Future research and recommendations

Further trials on direct drilling were recommended by the landholder as this would be the cheapest option to establish forage shrubs. The direct drilling trials undertaken in the initial project scope were done on contract by Greening Australia with a purpose build native seed drill however the sites did not successfully establish. There has been successful direct drilling undertaken in the region before with saltbush species. Undertaking further (small scale) trials would be worth investing in.

PDS key data summary table

Project Aim:
Derwent Catchment Perennial Forage Shrub Trial
Re-scope: observations of forage shrub utilisation and response of shrubs post grazing

	Comments		Unit
Number of core participants engaged in project		11	
Number of observer participants engaged in project		44	
Core group no. ha		47,260	
Observer group no. ha		189,040	
Core group no. sheep		69,500	hd sheep
Observer group no. sheep		482,500	hd sheep
Core group no. cattle			hd cattle
Observer group no. cattle			hd cattle

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1 Background

The Derwent Catchment has a semi-arid climate and suffers from episodic droughts which are likely to increase with a changing climate. The predominant land use in the region is dryland grazing which is reliant on pastures and runs. The pastures are under increasing pressure and are unreliable in times of drought. Cleared north-facing slopes have been recognised as a particularly fragile component of dryland enterprises in the Derwent Catchment, as they are difficult to incorporate into grazing systems without significant environmental impacts.

There are 14,350 ha of cleared north-facing slopes in the Derwent Catchment, so fencing infrastructure costs without an increase in productivity is not a feasible option for addressing the environmental issue posed by this fragile land area across the Catchment without substantial investment of public funds. The ENRICH project in Southern Australia's mainland states has clearly demonstrated increases in productivity in marginal areas through use of deep-rooted perennial plants. These forage shrubs provide a diversity of fodder while also improving pasture productivity (they bind soil, bring up water and soil nutrients to the pasture root zone). Forage shrubs also have a series of other productivity benefits including shelter and shade and anti-parasitic qualities.

In the Derwent Catchment there has been experimentation with the Mediterranean saltbush species *Atriplex hamilus*, which has been established on north-facing slopes and demonstrated persistence after grazing. which lead to increasing interest among local graziers in this management option for these highly marginal and environmentally sensitive sites.

2 Objectives

The initial objectives of the project were:

- To demonstrate and assess the potential of perennial forage shrubs to contribute to useful fodder to address the winter feed gap on marginal land (north-facing slopes).
    - Increasing or maintaining liveweight of lambs (pre and post grazing weight), and
    - Increasing stocking rate (DSE) without associated environmental impact on ground cover
    - Increasing inner row pasture ground cover (kg/DM/ha)
    - Increasing available forage (biomass measured in kg/DM/ha) nutritional value comparison to pasture will be included
- To conduct a costed proof of concept for the establishment of forage shrubs on north-facing slopes comparing planting seedlings to direct drilling methods across three demonstration sites.
- Facilitate a peer learning group of core producers who drive demonstration site design, establishment and monitoring.
- Conduct workshops and field days and produce a range of supporting resources to showcase the demonstration site results to encourage adoption of key practices by 44 observer producers.

As a result of only one site achieving successful shrub establishment, the objectives of the project were amended (rescoped).

The rescoped objectives of this project ***were all successfully met***; these included:

1. Assess the response of perennial forage shrubs and the site to grazing by:
    a. Establishing photo monitoring sites
    b. Measuring inner row pasture ground cover (kg/DM/ha)
2. Communicate observations to a peer learning group of core producers who have been interested in demonstration site design, establishment and monitoring.
3. Produce a video and range of supporting resources to showcase the demonstration site observations.

3 Demonstration site design

3.1 Original Methodology

The Derwent Catchment Project (DCP) were to undertake the project in following four main activities:

1. Facilitate a peer learning group of 11 core producers who work together to design, establish and monitor 3 forage shrub demonstration sites. In a workshop at the initiation of the project, this group were to select demonstration sites that were representative of areas that the group were interested in establishing forage shrubs, refine demonstration site design and grazing regime and explore expected performance metrics for grazing on equivalent marginal pasture during the Winter feed gap.

2. Coordinate the establishment, grazing and monitoring of the 3 forage shrub demonstration sites. Involving the following stages:
    - Preparation of demonstration sites for planting and direct seeding;
    - Planting and direct seeding of demonstration sites in Autumn 2019;
    - Forage shrubs establishment - 2 years post planting/seeding;
    - Pre-grazing ground cover, shrub biomass, lamb weight;
    - Graze in Winter feed gap in 2021 and 2022; and
    - Post-grazing monitoring: ground cover, shrub canopy biomass, lamb weight.
3. Dissemination of results with the observer producer group was to be undertaken.
4. Dissemination of results and proof of concept with the broader audience of dryland graziers in southern Tasmania - case study, fact sheet, social media, and video development.

Experimental design

Three trial/demonstration sites were established, each comprising 15 ha. These fenced areas were split into 3 areas of 5ha: 1 – control; 2 – direct drill site; and 3 – tube stock planting site. Soil traps were established in each section to measure soil loss each year.

Forage shrub establishment was intended to take place over 2 years, and during the third and fourth years, 150 sheep were to be split into groups of 50 and put onto the control, direct drill and planted sites on each of the three trial/demonstration sites. Sheep will be weighed in before and after. The control would only allow for a limited amount of grazing in comparison to the other treatments; therefore, sheep were to be weighed at each stage, i.e. once the control is fully utilized, current sheep weight measures would be conducted on each treatment. Grazing of the other 2 treatments would continue as long as sustainable, with sheep being weighed on removal from the treatment area.

Trial design

1: Control (no treatment = marginal pasture)

- Area = 5 ha

2: Treatment - direct drill (Atriplex hamilus seed)

- Rows 3 m wide
- Direct drilled along rows
- Area = 5 ha

3: Treatment - tube stock (Atriplex hamilus plants)

- Rows 3 m wide
- Plants 3 m apart in rows
- Area = 5 ha

3.2 Rescoped Methodology

The methodology of the rescoped project was to measure the success of the perennial forage shrubs at the Nareen saltbush site. Pre and post assessments were conducted to assess whether the project met the rescoped objectives.

The following metrics were used:

- Pre and post grazing shrub photo monitoring at 10 locations across the site (before/after).
- Stocking rate and time in days grazing the shrubs.
- Number of producers directly and indirectly engaged (+ demographics).
- Measuring inner row pasture ground cover (kg/DM/ha)

3.3 Economic analysis

The benefits were not calculated as part of an economic analysis for this rescoped project as the focus was on observations of the established shrubs response to grazing.

3.4 Extension and communication

The project's communication plan included communicating key messages to stakeholders using a range of communication channels.

The key messages included:

- Suitability of areas for shrub establishment
- Observations of pre and post grazing on saltbush recovery
- Producers notes on including the saltbush as part of a farming system

The identified stakeholders for the project included:

- Core producers: Charles Downie (Glenelg), Russell Fowler (Blackwood), Richard Ellis (Wetheron), Richard Hallett (Llanberis), Chris Downie (Greenwich Pastoral), Tom Salmon (Norton Mandeville, also leases Ashton), Jimmy Johnson (Forest Lodge), Bob Shoobridge (Fenton Forest), Andrew Brazendale (Green Valley/Berriedale), Rob Paton (Cawood /Tor Hill) and Jim Allwright (Jones River).
- Observer members: 44 producer members of the Derwent Catchment Project (DCP) who have dryland grazing as a major part of their agricultural enterprises.
- MLA members
- Red Meat Updates
- Tasmanian Farm Innovation Hub (and Tasmanian Institute of Agriculture)

The communication channels used included:

- Local media and industry publications (Country Hour, Tas Country, The Highlands Digest, Derwent Valley Gazette).
- Video of demonstration site case study observations.
- Producer technical note or fact sheet outlining the observations.
- Regular posts on DCP social media following pre and post grazing observations.

In addition to these communication channels the project was referenced within activities associated with the Derwent Pasture Network, a wider body of work delivered by The Derwent Catchment Project with funding from NRM South and the Australian Government. This three-year program

focused on sustainability in dryland grazing systems throughout the Derwent Catchment and continues through opportunistic funding and grants.

3.5 Monitoring and evaluation

Pre and post assessments were conducted at the Nareen saltbush site. The following metrics were used:

- Pre-grazing: ground cover (kg DM/ha).
- Post-grazing monitoring: ground cover (kg DM/ha).
- Pre and post grazing shrub photo monitoring at 10 locations across the site (before/after).
- Stocking rate and time in days grazing the shrubs.
- Number producers directly and indirectly engaged (+ demographics).

4 Results

4.1 Demonstration site results

4.1.1 Shrub Establishment

The Derwent Catchment Project worked with host producers to plant tube stock and directly drill Mediterranean saltbush (Atriplex halimus) at three 5-ha sites with a 5-ha control at each site. The purpose of the PDS was to determine if the establishment was possible and the cost-benefit of any production and environmental outcomes. Unfortunately, the direct drilling method did not yield results in this PDS and the establishment of planted tube stock at two sites was impeded by browsing animals despite the large scale of the trials. One site was successfully established at Nareen near Hamilton.

A clear learning from the project is the suitability parameters required for shrub establishment and persistence on north-facing slopes in Tasmania; sites are best suited to very sandy soils away from any native bush or remnant vegetation where native browsing animals have cover.

As a result of only one site being able to successfully establish the shrubs, the objectives of the project were amended to measure the success of the perennial forage shrubs at the Nareen saltbush site.

4.1.2 Pre and post grazing ground cover (Kg/DM/Ha)

The project team observed that ground cover was extremely variable across the site, ranging from 100% to 0%, after 3 years of being excluded from grazing by stock. This variation in the amount of ground cover depended primarily on soil/site characteristics. However, ground cover was typically 100% or close to it. The shrubs themselves created a permanent ground cover footprint in their woody biomass, leafy canopy and protected grass biomass at their bases which remained present despite significant selective grazing pressure. The inter-row groundcover included residual biomass or trash from the lengthy grazing exclusion during establishment, that was resilient to grazing.

Pre-grazing ground cover was thus essentially 100% across the site and inter-shrub pasture biomass varied between approximately 1500 Kg and 3500kg/DM/ha. However, there were still some areas of almost no biomass or ground cover in between some well-established shrubs. This reflected specific

soil/site characteristics and in these areas the shrubs appeared to establish and grow best, providing the strongest ground cover footprint from the shrubs themselves.

Post grazing ground cover across the site remained high because of the combination of shrub footprint, residual grass trash from grazing exclusion and grazed grass plant bases. Typically, across the site post grazing groundcover exceeded 95%. The periods of grazing exclusion and the establishment of the shrubs are all positive aspects of groundcover maintenance on a north-facing slope enhanced by shrubs. Post grazing inter-shrub biomass remained relatively high, reflecting the poor quality of a confounding mix of standing and trampled dead material accumulated over successive growing seasons, and apparent as residual from this first grazing.

Grazing also revealed some apparent increase in green (grass) biomass within the shrub rip-lines, although this was not of great consequence at the time.

4.1.3 Pre and post grazing shrub photo monitoring at 10 locations across the site (before/after)

Photo points were established to record shrub condition, and measures of shrub height and width taken on 107 individually identified shrubs in row transects associated with these photo points.

The shrubs were grazed for a period of 27 days in November 2023, during a period of extremely dry or drought conditions that continued for the duration of the monitoring reported here. Shrub monitoring was conducted immediately prior to the commencement of grazing at the end of October 2023 and subsequently at the end of April 2024, five months post grazing.

Considerable variation was observed in shrub size prior to grazing, but all shrubs supported a canopy of apparently healthy green leaves. During the graze period all shrubs were completely defoliated with all leaf and younger stem completely removed, leaving only a skeleton of woody stem. Clusters of new bud development were apparent on this woody stem at the time of sheep removal.

Impressively the shrubs completely recovered and increased their canopy during the recovery period to April 2024. It should be emphasised that this was during the seasonally driest part of the year following a failed spring and ongoing dry/drought conditions.

Comparing pre-graze shrub dimensions in October 2023 with regrowth to April 2024, the monitored shrubs expressed a mean increase in height of +29% and an increase in width of +48%. Increases ranged from +23% to +63% (taking out two outliers of 2% and 80%). Average shrub size was 558 mm x 634 mm in October and 719 mm x 936 mm at the end of April. Despite the considerable variation in initial shrub size at the site, our observations taken from selected transects at photo monitoring points indicated that small, medium and large plants each increased similarly in size during the period of recovery from grazing.

For example, the average pre-graze size of a transect of small plants (n=9) was 270 mm by 317 mm. The mean recovery post-grazing was to 343 mm by 427 mm. The percentage increase for these small plants was +27% height and +34% width.

Medium plants (n=10) averaged 586 mm by 631 mm at pre-graze, and these recovered to a mean size of 753 mm by 878 mm post-grazing. The percentage increase for these medium plants was +28% height and +39% width.

The mean pre-graze size of large plants (n=15) was 897 mm by 1251 mm. The mean recovery post-grazing was to 1117 mm by 1683 mm. The percentage increase for these large plants was +25% height and +35% width.

These observations illustrate the significant resilience of the established shrubs in growing green biomass in a time of significant adversity and indicate scope for continued improvement in shrub contribution to the site. Stocking rate and time in days grazing the shrubs

The 5-ha shrub site was contained within a 20-ha paddock which had 224 ewes and 217 lambs (650 DSE) grazing across it for 27 days.

The sheep started on the green grass, then nibbled saltbush leaves and shoots (day 2 to 7), then switched on to the shrubs relatively quickly (by day 10). By day 17 they had consumed most of the edible shrub biomass. More material was still removed up until day 27, when the sheep were taken out, leaving nothing other than stem on the saltbush shrubs. The substantive structure of the plants was undamaged.

At the time of sheep removal clusters of reshooting buds were appearing on the woody stems. There was no residual leafy biomass, only new leaf buds.

The sheep reached into the bush bases to graze up to a height of 1.2m and more, likely utilising the slope.

4.1.4 Number producers directly and indirectly engaged (+ demographics)

11 core producers and 44 observers were directly engaged in the project.

The core producers have a combined number of sheep of 69,500 across 47,260 ha of land. The observer group have a total of 482,500 sheep across 189,040 ha of land.

4.2 Economic analysis

The benefits were not calculated as part of an economic analysis for this rescoped project as the focus was on observations of the established shrubs response to grazing. The cost of establishment comes to $2,068 per ha/$10,340 across the 5-hectare site. This includes costs for ripping, tube stock, manual planting and some maintenance. The survival rate of the shrubs after planting at the site was approximately 65%.

The benefit according to our observations support incorporating the shrubs into a grazing cycle of utilisation up to three times a year as the plants respond well to grazing and plant structure benefits. They provide green forage in dry times when the inner row pasture cannot.

4.3 Extension and communication

The project's communication plan included communicating key messages to stakeholders using a range of communication channels. Key messages were shared directly with stakeholders, and a wider audience was indirectly engaged through multiple articles and publications which included the following:

- Forage shrubs print story – New Norfolk News (and to go into this month's Central Highlands Digest)

- Case study video highlighting establishment costs, site selection and suitability and management benefits from landholder perspective
- Case study technical note or fact sheet outlining observations as above
- Social media posts highlighting observations (one Facebook post and one Instagram post)
- Dissemination of the case study video and note sheet through producer group network of 75 members (to follow video completion).

4.4 Monitoring and evaluation

Pre and post assessments were conducted at the Nareen saltbush site as part of the monitoring and evaluation of the project. The results of these assessments are outlined in section 4.1 Demonstration site results. The rescoped project did not include post project surveys due to the failure of the other sites and the more observational nature of the pre and post grazing assessments. A video and case study were used to share the learnings.

5 Conclusion

5.1 Key findings

The key findings from our observations include:

- The establishment of saltbush on north facing shrubs is difficult if native grazing animals are present. Furthermore, in this trial only tubestock (not direct drilling) established successfully.
- The sheep ate every scrap of leaf and a lot of non-woody stem over 27 days. They selectively grazed the green shrub biomass after the green pasture was consumed. Almost no shrub mortality was observed due to the grazing.
- The saltbush regrowth in a drought following a 'failed spring', was extremely impressive. Data indicates that post grazing shrub height increased by 29% and width by 48%. Growth appears encouraged by the grazing, despite the critical lack of water for the inter-row pasture.
- The cost of establishment comes to $2,068 per ha/$10,340 across the 5-hectare site. This includes costs for ripping, tube stock, manual planting and some maintenance. The survival rate of the shrubs after planting at the site was approximately 65%.
- The benefit according to our observations support incorporating the shrubs into a grazing cycle of utilisation up to three times a year as the plants respond well to grazing and plant structure benefits. They provide green forage in dry times when the inner row pasture cannot.
- The project learnings have been outlined in a case study short video and producer note sheet which will be circulated through our network (75 producers) and have been communicated more widely through social media posts and a local newspaper article. The learnings were also communicated through pictures and a verbal discussion at a 'dry times BBQ' with our producers with 33 people in attendance on June 13th, 2024, at the Hamilton Resource Centre.

- To see shrubs on north-facing slopes as a viable option the site needs to be 500 m away from any native remnant vegetation and mechanisation is required to reduce costs.

5.2 Benefits to industry

This project observed the response of perennial forage shrubs to sheep grazing. The shrubs regrew over summer, in a drought, providing leafy green forage on a north-facing slope between December and April 2024, when the inner row pasture could not. The shrubs provide deep-rooted perennial plants on erosion prone, marginal grazing land which if not managed carefully can lead to erosion issues.

Further trials on direct drilling were recommended by the landholder as this would be the cheapest option to establish forage shrubs. The direct drilling trials undertaken in the initial project scope were done on contract by Greening Australia with a purpose build native seed drill however the sites did not successfully establish. There has been successful direct drilling undertaken in the region before with saltbush species. Undertaking further trials (small scale) would be worth investing in.

6 Appendices

6.1 Written Case Study

- Case Study: Forage shrubs

6.2 Project Video

- Forage Shrubs project video

6.3 Communications

Social media post, Facebook, Tuesday 28th May 2024

Derwent Catchment Project
Yesterday at 11:13 AM ·

It may come as a surprise, but there are areas of Tasmania with a semi-arid climate. The region between Ouse, Hamilton and Bothwell in the Central Highlands is one of these low-rainfall areas.

The major land use in the region is grazing which relies on dryland pastures and runs that are unreliable in times of drought. Cleared north facing slopes are a particularly fragile component of grazing enterprises as they are difficult to incorporate without causing erosion.

On the mainland there has been significant work undertaken to research the benefits of forage shrubs as a value add to marginal land. The Derwent Catchment Project, with funding from Meat & Livestock Australia, investigated whether forage shrubs could be established at a commercial scale on north-facing slopes to add grazing value to these marginal areas whilst introducing deep-rooted perennials to stablise the ground.

The trial was established in winter of 2021 across three 5 ha north facing sites in the Derwent Catchment using planted tubestock of Mediterranean saltbush (Atriplex halimus), a hardy forage shrub that had been successfully established before in the region.

The trial successfully established saltbush at one of the three sites, the browsing pressure of native wildlife (wallabies in particular) severely impacted the other sites and although there were promising starts initially, the shrubs failed. The successful site on a farm near Hamilton was at least 500m away from any remnant native vegetation which was key to establishing the forage shrubs.

Key observations from the trial site:

1. The saltbush regrowth in a drought following a 'failed spring', has been extremely impressive.
2. The sheep ate every scrap of leaf and a lot of non-woody stem over 27 days. They selectively grazed the shrubs after what little green pasture was available had been eaten.
3. The site offers a resource that warrants grazing management and a green pick opportunity that the pasture was not capable of delivering.
4. The shrubs should be incorporated into an annual grazing cycle as the plants respond well to grazing and plant structure benefits. If they are left as just a drought reserve, they will become too woody and tall.
5. The site offers insight into a potentially valuable and durable grazing asset that could maybe even overcome the cost of establishment (which was ~$2000 per hectare). The projection of increasing dry spells and drought under climate change could really compound its value.

#Derwentcatchmentproject #MLA #meatandlivestockaustralia #forageshrubs #drylandgrazing #farming #derwentvalley #atriplexhalimus #saltbush #grazing

Derwent Catchment Project
Community Service

Send message

Boost this post to reach up to 1273 more people if you spend A$42.

Boost post

Chris Atkinson and 15 others

Communications: New Norfolk News article, Friday 17th May 2024

Tough and tenacious: Putting saltbush to the test

LET'S GROW
PETER BALL

I'VE always thought that grass is pretty impressive.

It's adaptable and expert at finding ways of tolerating many stresses, holding large parts of the landscape in place, while tolerating the attention of grazers, benefiting from some of them, and turning light into food for sheep, cattle and humans.

Grass and its friends in a pasture, a few legumes and some herby hangers on, are true multitaskers but some tasks can be a struggle, even for grass. Surviving on a harsh north-facing slope while also producing green food for grazers is difficult. Doing it in a drought doubles down on that difficulty.

This leads us to think about other tough plant options, perhaps even a grazeable shrub. One of the challenges here however is that many shrubby options do not appreciate defoliation, repeatedly, intensively or even at all. Their growing buds are often vulnerable to grazing. Saltbush, however, is not your average shrub. Tough and tenacious, saltbush can tolerate hard grazing in harsh, dry environments – perfect attributes for exposed north-facing slopes.

In trials supported by the National Landcare Program and Meat and Livestock Australia, the Derwent Catchment Project has planted some Derwent slopes to test these shrubs.

LEFT: UTAS work placement student Jock Robertson measuring saltbush at Hamilton on April 30, regrown after grazing and despite the dry. FAR LEFT : The same plant as it looked before grazing in November. ABOVE: After grazing in December. Pictures: PETER BALL

Like all trial work though, there are ups and downs and results that can take time to reveal themselves. One result was quicker to materialise than one might hope.

Just like the toughest perennial grasses, saltbush is vulnerable at the start of its life journey. When young and delicate, maybe even delicious, wallabies, sheep or any other opportunistic grazers can nip the shrubs potential well and truly in the bud – removing them in fact and eliminating all the potential the shrub may offer.

The bottom line is the plants need to grow first to survive grazing, not for a week or two, but maybe a year or two.

Grass copes with grazing stress by protecting its growing points at the very base of the plant. The saltbush in contrast needs to get woody, laying down buds hidden within stem material that doesn't get eaten.

Once established they are very resilient but our trial experience was that a majority of sites failed to establish, with plants being grazed to death by vagrant sheep and game before they could get woody.

Site location away from excessive game pressure, as well as effective fencing and grazing control helped one site succeed.

Even then, success was not uniform with plant size at three years ranging from as little as 30cm in height to 1.2m, and 30cm in width to 2.5m. Enough big plants are established to encourage us, and proving that size is only one consideration, even the smallest of these shrubs survived complete defoliation, once properly established.

That's impressive, but more impressive has been our observation that the sheep rapidly decided that the shrubs are worth eating, and managed to do so to a height of 1.2m.

They navigated the slope to reach every scrap of leaf and succulent stem, despite being quite a bit less than 1.2m in height, not being bipedal and not having access to a ladder at the time. Maybe they're smarter than they appear.

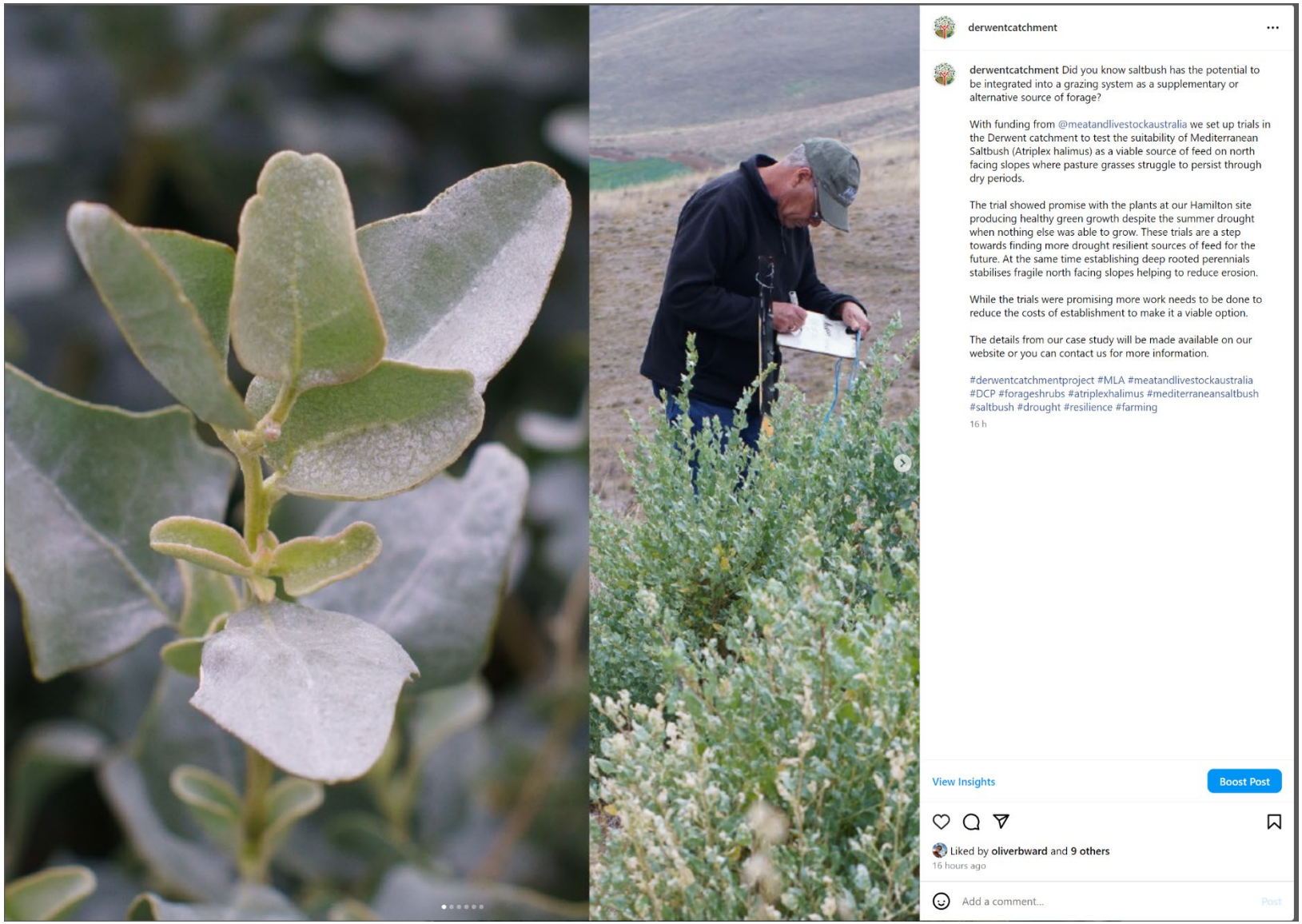
Moving past impressive to rather stunning, shrubs completely grazed last November have managed to completely regrow despite the drought conditions and are carrying canopies of green leaves ready for complete defoliation once again.

This resilience has put the dead grass on the slope to shame, but nevertheless it is the combination of grass and shrub together that provides a more balanced injection of the shrubby greens into the sheep diet.

Utilising resources clearly not available to the grassy vegetation, the saltbush is showing signs of grazing promise worth continued investigation. Perhaps it's OK to look beyond the grass (and clover) occasionally.

The Derwent Pasture Network is funded by NRM South through the Australian Government's National Landcare Program. It is operated through the Derwent Catchment Project. Contact Peter by emailing peter@derwentcatchment.org

Communications: Social media post, Instagram, Wednesday 29th May 2024



Communications: Informal presentation at Dry Times BBQ Thursday 13th June 2024