final report

Project code: L.PDS.1709

Prepared by: Hall, E. and Lundstrom, G.
Tamar Natural Resource Management Inc.

Date published: 19th June, 2020

PUBLISHED BY
Meat and Livestock Australia Limited
Locked Bag 1961
NORTH SYDNEY NSW 2059

Tamar Pasture Improvement Demonstration Project

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

Abstract

A Tamar Valley Producer Group in northern Tasmania, identified a strong demand from farmers for more information regarding new pasture species/cultivars and associated grazing management practices. Funded by Meat and Livestock Australia (MLA), the Tamar Pasture Improvement Demonstration Project targeted the group of farmers in the 70 percent sub-optimal pasture category. Over the life of the project a core and observer group of farmers were able to witness first-hand three producer demonstration sites (PDS) for pasture management and grazing practices, listen to quality speakers at field days who presented the dollar benefits of having well managed soils, quality pasture and well-bred animals. This project gave producers the opportunity to interact with our core group of producers who run profitable farm enterprises in the Tamar Valley and surrounds.

Project monitoring demonstrated that producers increased their knowledge and understanding of what is needed to improve red meat production and that some implementation and adoption occurred or is planned.

Executive summary

Producers involved in this Producer Demonstration Site Project are located in an area covered by three Local Government Areas (LGA's) in northern Tasmania. Three producer demonstration sites (PDS) were selected based on what they were able to show via pasture renovation, pasture species trialled and their pasture management and utilisation. The PDS farms were situated, one in each of the Tamar Valley's LGA's (Fig. 1). "Springmere" situated in West Tamar municipality, "Greenhythe" situated in George Town municipality and "Elverton" at Blessington in the City of Launceston municipality. The producers are members of the Tamar Valley Producer Group and are focused on sustainable production and increasing farm profitability. On their behalf, Tamar Natural Resource Management Inc. (Tamar NRM) applied for and received funding from Meat and Livestock Australia (MLA) for this three-year pasture demonstration site (PDS) project with an aim to demonstrate that the profitability of red meat production could be increased by at least 10 per cent, through establishing better pastures, improved pasture utilization and livestock management. Two of the three sites, "Springmere" and "Elverton", were chosen to demonstrate best practise pasture establishment and pasture management. The third site "Greenhythe", situated at Hillwood on the East Tamar was selected to build on a 2016 Tasmanian Institute of Agriculture (TIA) pasture trial, looking at the adaptation of four pasture blends planted under that trial.

The Tamar Pasture Improvement Demonstration Project held 4 field days, received feedback from 50 producers and through field day evaluations, entrance/exit surveys, case studies and narratives, a clear picture of producer information needs was identified and project delivery adapted accordingly. Implementation and adoption of better practices was captured in landholder surveys, case studies and narratives. The greater understanding of the issues and topics was converted into legacy materials and shared at field days with the data base of over 80 producers.

Over the life of the project, 132 people attended field days where the core and observer group of producers witnessed first-hand, the pasture demonstration paddocks and heard of the results being achieved.

The legacy materials from this project included two project update documents, a plant deficiency guide and a document outlining key messages which are now being reformatted into a series of "Pasture Snippets" and distributed to participating producers.

As part of the pastures improvement project, entrance and exit surveys were conducted two and a half years apart. The 16 questions included a mix of skills-based questions and more subjective questions about respondents' current pastures practices and intentions to adopt new management practices.

Of the original 29 respondents 23 producers participated in both surveys, where a modest level of improvement can be seen in areas of species identification and knowing the difference between weed and pasture species.

In response to a question about identification of their own pasture species, 14 of 23 landholders judged/perceived their ability to identify species has improved their identification skills between survey periods. Most said they could identify at 75% of their pasture species.

There still remains however, uncertainty from producers, about doing DSE calculations with only one third of the producers being able to correctly calculate the feed requirements (DSE) of 300kg steer growing at 1.0 kg/day in the scenario presented in the survey. The exit survey however, showed an improvement, with an extra 6 producers calculating correctly during the exit survey.

A major change in responses related to the cost of adopting new practices with less producers, based on exit survey results, willing to consider adopting new practices if it cost more to implement than what they were spending now.

In the exit survey, the overall results indicate an improvement in knowledge and an indication that the pasture improvement field days, speakers and information provided, did contribute to a better understanding on pastures and pasture management.

There is interest in changing practices to improve pastures and increase red meat profitability, but financial barriers was often cited by producers a the reason for lack of adoption. However, the project monitoring did record that producers understood the message. Fifteen out of nineteen evaluations of producers at Blessington Field Day in March 2018 cited pasture renovation with the right species and optimum grazing practices as two areas for improvement and adoption.

The 3 case studies and 3 narratives contribute to the overall understanding of how participant producers valued the PDS project. One producer was just starting out converting a 160 ha property back to pasture from forestry. Producer comment: "I was aware of Eric Hall being the agronomist to the pastures improvement project, so contacted Tamar NRM for his contact details. I am quite pleased to have found him and engaged him to give advice." "Eric initially helped with soil tests and interpretation and advised on pasture species to sow". (Tamar PDS Case Study 2019).

Another producer with 100 ha under pasture gained a better understand of soil health and fertiliser budgeting and improved their understanding of pasture weeds since attending the field days. Brown top, sweet vernal and soft brome are ones they are now very aware of after finding them to be not palatable for the sheep. (Tamar PDS Narrative 2019).

The project was successful in that it demonstrated to producers the value of getting key elements of the system right, including:

- Maintaining optimum pH and soil nutrient levels, including macro nutrients and micro nutrients;
- Using the best available combination of species/cultivars to produce a well-balanced grass/legume pasture;
- Using a combination of species/cultivars adapted to the landscape and environment;
- Planning ahead, to maximise the utilisation of extra feed grown with improved fertility and pasture cultivars;
- Using pasture measurements to manage grazing – matching DSE to feed available;
- Monitoring live weight gain of animals as a means of assessing a paddocks performance; and
- Conserving the spring excess in the form of hay or silage.

Drawn from the project's monitoring and evaluation over three years, it was concluded that producers are engaged and responsive to the PDS delivery model. Lack of extension was commonly identified as a barrier to implementation and confidence to do so. Financial capacity to undertake practice change

such as pasture renovation when needed was identified as an issue particularly toward the end of the project.

The project benefitted producers, who now better understand cost benefit analyses and how to farm for greater profitability in the red meat industry.

Table of contents

1 Background

The gross value of agricultural production in the Launceston and North East region was $668 million, which was 42 per cent of the total gross value of agricultural production in Tasmania ($1.6 billion). The most important commodities in the region, based on the gross value of agricultural production, were milk ($168 million), cattle and calves ($157 million) (ABARES 2018). The Tamar Valley makes up about half of this land area.

There has been a long-standing concern across the red meat producing regions of Tasmania, including the Local Government Areas (LGA's) covered by this project, regarding the productivity and quality of pastures. A 2011 survey by the Tasmanian Institute of Agriculture (TIA) showed that improved perennial grasses contributed only 33 percent of the overall cover of plant species in the pastures surveyed, while perennial and annual legumes combined for a cover percentage of only 12 percent. Weedy perennial and annual grasses were major contributors combining for 37 percent cover of pastures surveyed. (Smith R. 2012). This survey highlighted the potential to greatly improve the composition, quality and productivity of pastures in the Tamar Valley, with resulting benefits to the red meat producers in the region.

It is estimated that only 30 percent of farmers in the Tamar Valley have been adopting appropriate practices to improve pasture production, exacerbated by the limited extension, demonstration or adoption of new pasture renovation or renewal work in the region. There is also a poor understanding of the financial benefits increased pasture production and utilisation can have on a grazing businesses bottom line. Where progressive farm enterprises have given regard to the minimum annual rainfall requirements of different pasture species in Tasmania (Knox. J. 2006), changed their pasture species mix to new pasture species, bred to be better adapted, more persistent and productive they have been rewarded with increase productivity. Some have done this in response to changed environmental conditions such as the seasonal variability in rainfall patterns that is documented to have occurred in northern Tasmania (ACE CRC 2010, p.5.).

Based on and estimated 50,000 ha of quality grazing land in the Tamar Valley and this project's aim of increasing profitability in the region by 10 percent an increase of 1 DSE/ha is possible, equating to an added return of $2,000,000 to the region. The conservative calculation is based on the most common land use by area is grazing modified pasture, which occupies 4,500 square kilometres (450,000 ha) of the Launceston and North East region (ABARES, 2016). The results from this project indicate that a much higher increase in regional profitability is possible.

The three properties selected to host producer demonstration sites are rated in the top 30 percent of farmers in the Tamar Valley.

1.1 Producer demonstration sites

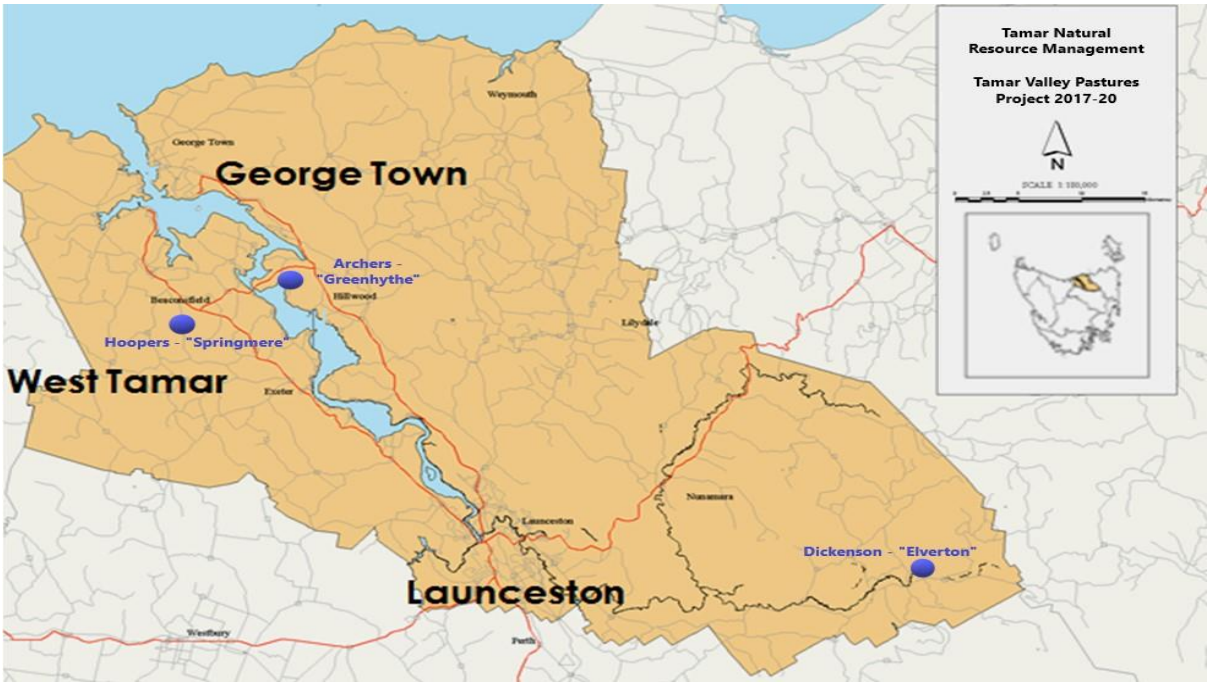

Fig. 1. Map of the Tamar NRM region, showing the location of the Producer Demonstration sites

1.1.1 "Springmere" property summary

- 460 ha
- 70 cattle
- 2500 ewes

1.1.2 "Greenhythe" property summary

- Part of the Landfall Angus cattle enterprise of 400 ha carrying 1,200 cattle

1.1.3 "Elverton" property summary

- 2,700 ha (1200ha grazing)
- 3000 self-replacing Coopworth ewe flock
- 1200, maiden Coopworth ewes
- 46, rams Dorset and Coopworth
- 860 cows and calves
- 310 heifers
- 25 yearlings
- 20 bulls
- Current carrying capacity = 20, DSE
- Average marking percent Cows= 92percent
- Average marking percent Ewes = 142percent

2 Project objectives

- To present regionally relevant information on sustainable pasture management and animal nutrition/production to encourage farm practice change.
- To present via demonstration that new pasture species/cultivars and associated grazing management practices will increase the profitability of the red meat supply chain by at least 10 percent.
- To present options of better adapted, persistent and productive pastures able to better cope with changing environmental conditions.

The project took into account the different demonstration site characteristics of soil, aspect, rainfall, pasture species used, prevailing environmental conditions and animal variables.

Pasture composition, pasture production, stocking rates, animal live weight gain, rainfall, irrigation inputs, pasture feed values, silage/hay feed values, faecal egg counts, soil fertility and fertiliser inputs were all documented over the life of the project.

The measurable outputs were as follows:

- Presentations at field days of regionally relevant information on sustainable pasture management and animal nutrition/production aimed to encourage farm practice change.
- Assessment of the composition and persistence of the various pastures and pasture blends being evaluated.
- Comparison of the dry matter production of new pasture species/cultivars versus a regionally relevant old pasture.
- Comparison of the red meat production on the new pasture species/cultivars versus a regionally relevant old pasture
- Showed that the establishment of quality pastures and associated grazing management practices can increase the profitability of the red meat supply chain by at least 10 percent.
- Assessment of the adaptation of four pasture blends to find better adapted, persistent and productive pastures able to better cope with changing environmental conditions in the region.

The project design took account of SAMRC Priority 1 for Tasmania (Increase the profitability of the red meat supply chain by at least 10 percent). The project design is to also take account of SAMRC Priority 2 for Tasmania (Provide farmers with options to adapt to variable climate conditions which provide 3-4 percent return on asset over extended period). Pasture trials which present alternative pasture species that have stronger persistence through drier periods, rather than the varieties traditionally used will be favoured.

Fig. 2. 2018 pastures field day at Blessington

3 Methodology

A suitably qualified agronomist was engaged to work with the skills based technical steering group and Tamar NRM on project design, minimising variables and taking account of the demonstration plots characteristics of soil, aspect and rainfall, etc. The technical working group met on nine occasions between September 2017 and June 2020. The agronomist worked with the pasture demonstration farms to ensure data consistency, with regular farm visits undertaken.

The project established demonstration plots at 3 sites for pasture species, demonstrating pasture renovation based on grasses, legumes and herbs known to be local high performers, and any new varieties considered promising. Any tasks too technical (e.g. periodic sward assessment), where landholder monitoring sampling was not possible, was undertaken by the agronomist. Animal variables such as parasite control was also recorded

Communication and Extension, MER Plans and works plans were developed to aid project delivery.

3.1 Demonstration site backgrounds

The three PDS properties were selected to host producer demonstration sites are rated in the top 30 percent of farmers in the Tamar Valley and selected for what they offer.

Two of the three sites, “Springmere” and “Elverton”, were chosen to demonstrate best practise pasture establishment, pasture management, pasture production monitoring and animal live weight monitoring.

The third site "Greenhythe", situated at Hillwood on the East Tamar was selected to build on a 2016 Tasmanian Institute of Agriculture (TIA) pasture trial, looking at the adaptation of four pasture blends planted under that trial.

3.1.1 "Springmere" paddock demonstration backgrounds

The demonstration paddocks at "Springmere" were sown in late summer 2018 using cultivars/species to match the landscape (Table 1). The paddocks established extremely well and were grazed 10 weeks after sowing. The control paddock was sown in 2013 and was seen as a typical run down pasture for the area.

Table 1. "Springmere" paddock summaries.

Paddock	Area (ha)	Soil type	Establishment year	Sown cultivars/species
Nana's meadow	7.4	fine sandy clay loam	Late summer 2018	• Reward Endo5 tetraploid perennial ryegrass @ 14 kg/ha • Megatas cocksfoot @ 2 kg/ha • Rubitas Red Clover @3 kg/ha • Tonic Plantain @ 1 kg/ha
South Spring Hill	10.5	fine sandy clay loam	Late summer 2018	• Avalon AR1 diploid perennial ryegrass @10 kg/ha • Megatas cocksfoot @ 3 kg/ha • Rubitas Red Clover @ 2 kg/ha • Nomad white clover @ 1 kg/ha • Tonic Plantain @ 1 kg/ha
S2	9.46	fine sandy clay loam	Late summer 2018	• Avalon AR1 diploid perennial ryegrass @6 kg/ha • Finesse Tall fescue @ 10 kg/ha • Palestine strawberry clover @ 2 kg/ha • Hytas Alsike clover @ 3 kg/ha
Bee tree (control)*	12	fine sandy clay loam	2013	• Perennial ryegrass • Cocksfoot • Sub clover • *Trifolium dubium* • Browntop • *Vulpia* sp. • Barley grass

				• Sorrel • Plantain • *Hyperceris* sp.

*species present, sown cultivars/species unknown.

3.1.2 "Greenhythe" demonstration site background

The "Greenhythe" demonstration looking at the persistence of four pasture blends was sown in early summer 2016 (Table 2). Although establishment was good, some of the plants were lost over summer due to the late sowing.

Table 2. "Greenhythe" demonstration summaries.

Pasture blend	Area (ha)	Soil type	Establishment year	Sown cultivars/species
Blend 1	0.25	fine sandy clay loam	Early summer 2016	• Quantum Tall fescue @ 14 kg/ha • Rubitas Red Clover @3 kg/ha
Blend 2	0.25	fine sandy clay loam	Early summer 2016	• Megatas cocksfoot @ 2 kg/ha • Rubitas Red Clover @3 kg/ha
Blend 3	0.25	fine sandy clay loam	Early summer 2016	• Reward Endo5 tetraploid perennial ryegrass @ 14 kg/ha • New Zealand white @3 kg/ha
Blend 4	0.25	fine sandy clay loam	Early summer 2016	• Tonic Plantain @ 2 kg/ha • Rubitas Red Clover @3 kg/ha

3.1.3 "Elverton" demonstration site paddock backgrounds

The demonstration paddocks at "Elverton" vary in age, with 90 acre – 1 sown in 2011, Musselboro – 1 sown in 2015 and 90 acre – 2 and Musselboro – 2 sown in 2017 (Table 3). All the demonstration paddocks had established well. The control paddock was sown in 1997 and was considered to be a good example of a run-down pasture in the region

Table 3. "Elverton" paddock summaries.

Paddock	Area (ha)	Soil type	Establishment year	Sown cultivars/species

90 acre - 1	23	sandy clay loam	Autumn 2011	• Banquet II tetraploid perennial ryegrass • Extreme diploid perennial ryegrass • Leura sub clover • Bounty white clover
90 acre - 2	24.6	sandy clay loam	Autumn 2017	• Impact II diploid perennial ryegrass @ 10 kg/ha • Munch tetraploid perennial ryegrass • Rubitas stoloniferous red clover @3 kg/ha • Sustain white clover @2 kg/ha • Antas sub clover @ 3 kg/ha • Puna chicory @ 1 kg/ha
Mussleboro - 1	23	sandy clay loam	Autumn 2015	• Impact II diploid perennial ryegrass @10 kg/ha • Bealey tetraploid perennial ryegrass @ 5 kg/ha • Astred stoloniferous red clover @ 2 kg/ha • Quest white clover @ 1 kg/ha • Puna chicory @ 1 kg/ha • Palestine strawberry clover @1 kg/ha
Musselboro - 2	24.6	sandy clay loam	Autumn 2017	• Impact II diploid perennial ryegrass @ 10 kg/ha • Munch tetraploid perennial ryegrass @4 kg/ha • Rubitas stoloniferous red clover @3 kg/ha • Sustain white clover @2 kg/ha • Rosabrook sub clover @ 3 kg/ha • Puna chicory @ 1 kg/ha
Red road (control)*	21	sandy clay loam	Autumn 1997	• Perennial ryegrass • Cocksfoot • Tall fescue

- White clover
- Sub clover
- *Trifolium glomerata*
- Yorkshire fog
- Browntop
- *Vulpia* sp.
- Sorrel*Hyperceris* sp.

*species present, sown cultivars/species unknown

3.2 Pasture composition assessments

Pasture percentage species compositions for each paddock were determined each autumn and spring using basal frequency to measure frequency of occurrence of each species. A square quadrat of steel mesh, with 100 cells, each cell 10 cm x 10 cm was used (Fig. 3). The frame was placed on the ground, randomly in five positions across each paddock to be assessed, at each assessment time. The number of cells containing a portion of a live plant crown for each species were counted and recorded. The frequency measurements for each species were then transformed into a species percentage of the combined total of cells containing a live plants.

Fig. 3. Pasture frequency frame

3.3 Pasture dry matter assessments

Pasture dry matter (kgDM/ha) was measured by the participating site hosts at the "Springmere" and "Elverton" sites. This was done using an electronic pasture plate meter (Fig. 4). Measurements were taken along representative transects across each paddock at each grazing to determine the feed on offer at grazing. 100 plate meter readings were taken and averaged across each paddock. This process was repeated after the stock were removed to measure the residual pasture after grazing. Two pasture exclosure cages (Fig. 5) were placed randomly in each paddock at each grazing for an estimate of pasture growth during grazing.

Fig. 4. Electronic pasture plate meter used to measure kgDM/ha at "Elverton"

Fig. 5. Pasture exclosure cage at "Elverton"

3.4 Animal live weight measurements

Animals were weighed on and off the pastures at each grazing by the site hosts to determine live weight gain. Where stock numbers were high a representative sub sample of stock was weighed and their weights extrapolated to the whole mob. A range of animal classes were used at "Elverton", including Wagyu heifers (Fig 6), cattle, lambs and ewes. At "Springmere" lambs and ewes were the main classes of stock used.

Fig. 6. Wagyu heifers used in the demonstration at "Elverton"

4 Results

4.1 Soil tests

4.1.1 "Springmere" soil tests

Soil tests were taken on all paddocks in September 2017 (Table 4). The results confirmed the need for regular soil monitoring. Soil tests were taken on Nana's meadow to test the effectiveness of the fertiliser application in 2018. A second test was also taken from the Control paddock in 2019.

The pH (1:5 water) levels, in all paddocks were in the low range, varying between 5.25 and 5.89. Potassium (K) levels were low to very low. Ranging from 59.2 to 157 ppm. Nana's and S2 were particularly low and K levels needed to be raised to maintain the legume content in the pasture. The phosphorous (P) levels range from very low to satisfactory. Ranging from 12.6 to 73.1 ppm. Overall paddock S2 had a very low level of fertility. Addressing the low fertility is ongoing. The application of potassium to Nanac's paddock resulted in a significant improvement in the legume contribution to the sward.

Table 4. Soil test results "Springmere"

Paddock/year	Mehlich Phosphorous ppm	Potassium ppm	pH (1: 5 H_2O)
Nana's meadow			
22/09/2017	73.1	59.2	5.89
22/10/2019	59.3	127.9	6.62

South spring hill			
22/09/2017	30.1	137	5.89
S2			
22/09/2017	12.6	72.8	5.25
Bee tree (control)			
22/09/2017	56.6	109	6.06
22/10/2019	32.3	104.6	6.06

4.1.2 "Greenhythe" soil tests

The soil test taken prior to sowing in 2016 from the Greenhythe demonstration site indicate that the fertility is low to moderate (Table 5)

Table 5. Greenhythe soil test results

Year	Olsen Phosphorous ppm	Potassium ppm	pH (1: 5 H_2O)
19/04/2016	19	110	5.76

4.1.3 "Elverton" soil tests

Soil tests were taken on all paddocks in February 2018 (Table 6). The results confirmed the need for regular soil monitoring.

The pH levels, particularly in Musselboro 1 & 2 had dropped significantly since they were last tested, with Musselboro 1 dropping from 5.8 down to 5.2. The pH levels were low for all paddocks. This was rectified with the first applications of lime spread in April 2018.

Potassium levels were low in Musselboro-1 and 2. The phosphorous level was low in the control paddock.

Table 6. Soil test results from "Elverton"

Paddock/year	Mehlich Phosphorous ppm	Potassium ppm	pH (1: 5 H_2O)
90 acre--1			
26/1/18	22.2	183.4	5.78
90 acre--2			
26/1/18	27.8	175	5.66
Musselboro--1			
26/1/18	25.9	152	5.27

Musselboro--2			
26/1/18	43.2	144.9	5.16
Red road (control)			
26/1/18	13.1	261.9	5.63

4.2 Rainfall

The annual rainfall is presented for each of the sites for the three years of the project, alongside the long term annual average rainfall for each site. "Elverton" rainfall data was collected on site. The rainfall data for "Springmere" and "Greenhythe" was sourced from the Bureau of Meteorology (BOM) web site using the closest BOM weather stations. Beaconsfield weather station, situated 2km from "Springmere" and Bell Bay weather station situated 11km from "Greenhythe" were used. All sites recorded below average rainfall in 2017 and 2019. 2019 was a particularly dry year with "Springmere", "Greenhythe" and "Elverton" receiving just 63, 73 and 79 percent of their long-term average rainfall respectively (Fig 7).

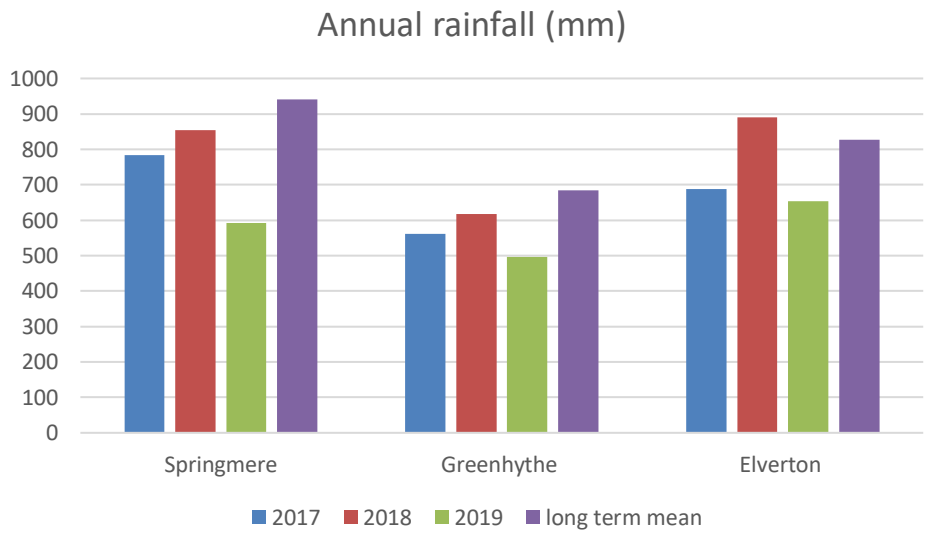

Fig. 7. Annual rainfall for "Springmere"," Greenhythe" and "Elverton" sites

4.3 "Elverton" Irrigation

Irrigation was applied to the demonstration paddocks in both summers (Table 7). A total of 120mm was applied in 2018 and 190mm applied in the dryer summer of 2019. The control paddock was not irrigated.

Table 7. Irrigation (mm) applied to the control paddock at "Elverton" (mm/ha)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	40	60	20									
2019	20	102	68									

4.4 Pasture Component:

4.4.1 "Springmere" pasture compositions

Nana's Meadow

There was a major change to the species composition of Nana's meadow over the life of the project (Fig. 8), with the legume component increasing from 17 to 35 percent. This can be attributed to the application of potash in autumn 2019, to rectify a potassium deficiency identified through soil testing. As a result of the increase in legume content the percentage contribution of the perennial ryegrass to the sward has dropped from 73 to 47percent. The cocksfoot component of the pasture has increased from less than 1 to 5 percent.

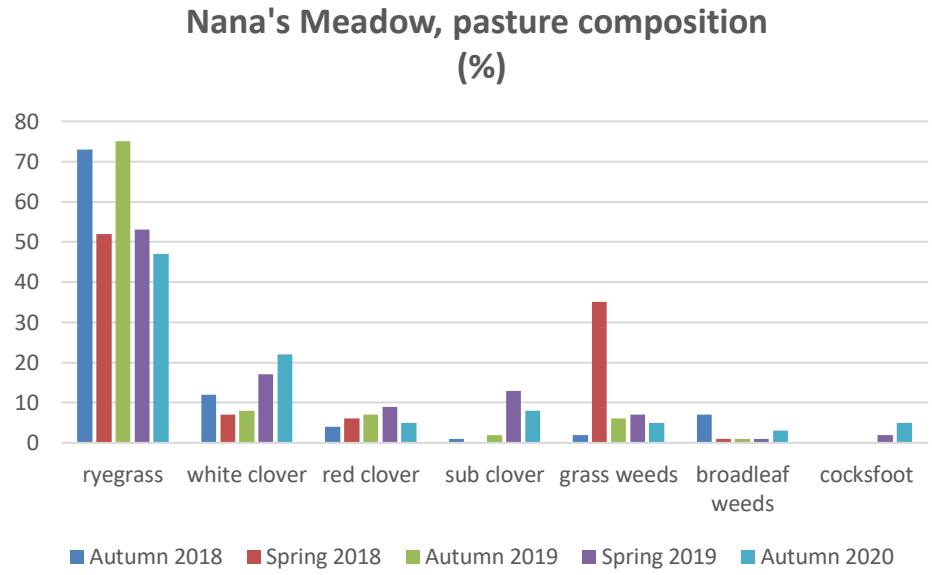

Fig. 8. Nana's meadow, Spring and Autumn pasture compositions

South Spring Hill

The pasture composition of South Spring Hill has not changed significantly (Fig. 9), with subterranean clover and perennial ryegrass being the dominate species in the sward, contributing 29 and 45 percent respectively. The cocksfoot component has increased slightly from 9 to 13 percent.

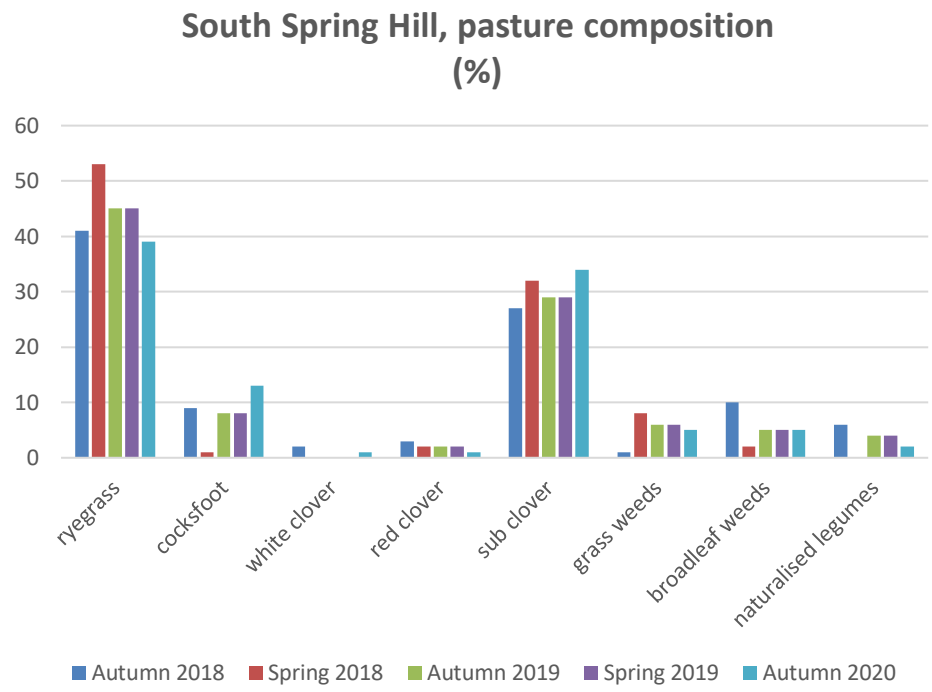

Fig. 9. South Spring Hill, Spring and Autumn pasture compositions

S2

The contribution of all the species present in year one has altered significantly (Fig. 10). The contribution of perennial ryegrass to the sward has increased from 24 to 41 percent. Tall fescue has dropped from 25 to 12 percent. The contribution of the annual legume subterranean clover to the sward has dropped from 32 to 15 percent, while the perennial, white clover has improved its contribution to the sward from less than 1 percent up to 21 percent. Naturalised legumes which made up 8 percent of the sward in autumn 2018, now make up 1 percent of the sward.

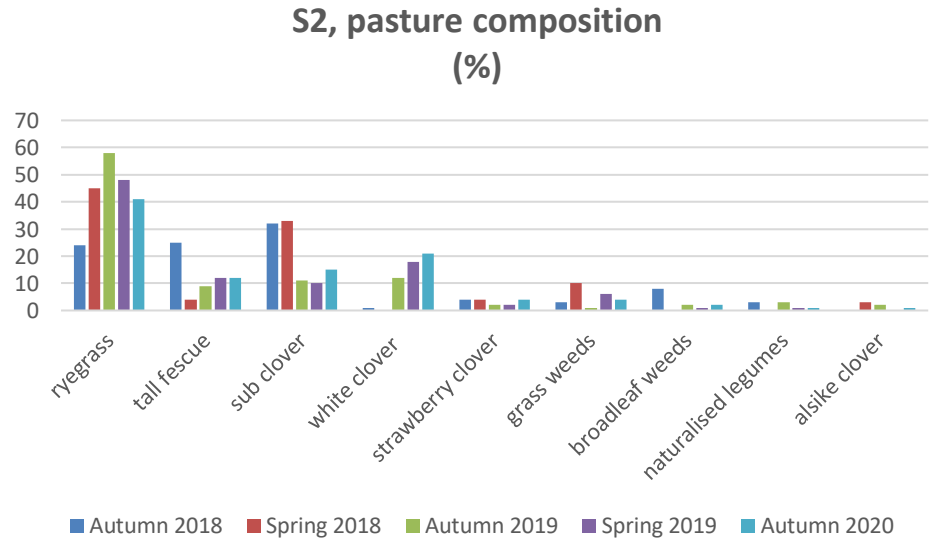

Fig. 10. S2, Spring and Autumn pasture compositions

Bee Tree (control)

Improving the fertility of the control paddock through the application of effluent in spring 2019 has resulted in the improved composition of Bee tree (Fig. 11). The perennial ryegrass component has increased from 9 to 14 percent and the sub clover component has increased from 21 to 30 percent. The other significant change has been the reduced contribution from the weedy grass species, browntop which has reduced from 33 to 26 percent contribution.

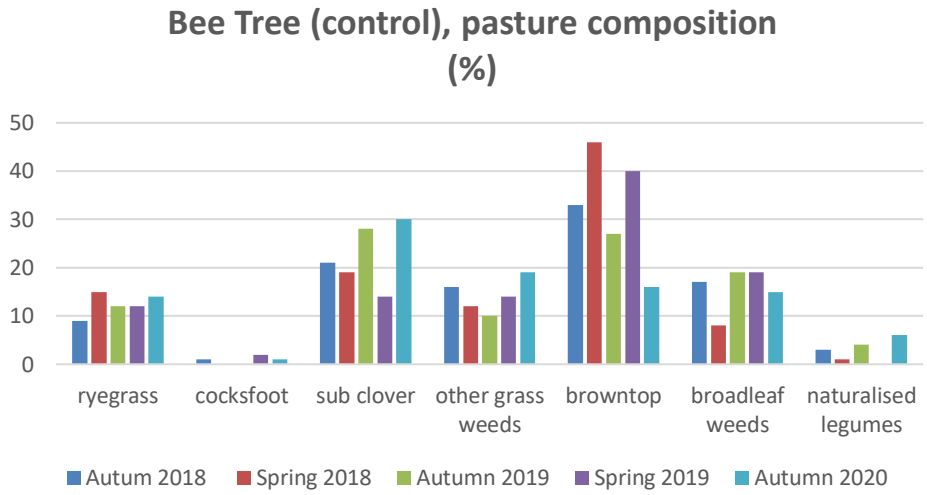

Fig. 11. Bee Tree (control), Spring and Autumn pasture compositions

4.4.2 "Greenhythe" pasture persistence

The composition of Blends 1, tall fescue and strawberry clover and 3 perennial ryegrass and white clover changed significantly over the life of the project. There was a significant loss of perennial ryegrass plants with basal frequency dropping from 61 to 25. The tall fescue component has also reduced significantly dropping from a basal frequency of 59 to 33. The resulting open sward created by the loss of perennial ryegrass and tall fescue plants resulted in an increase in grass weeds and the naturalised clovers *Trifolium glomeratum* and *Trifolium dubium*.

Of the three perennial grasses established, cocksfoot, which had the lowest basal frequency (20) at establishment, has increased to a basal frequency of 44.

Neither of the sown clover varieties, white clover and strawberry clover have persisted in Blends 1 and 3.

The Plantain component in Blend 4 has seen a reduction in plant numbers, while the red clover component has remained constant.

Megatas Cocksfoot, Tonic plantain and the Rubitas red clover have been the most persistent perennial grass, herb and perennial legume varieties.

Due to the poor performance of the perennial legume component of the blends, only the basal frequency measurements for the grass and plantain components are shown in the graph (Fig 12)

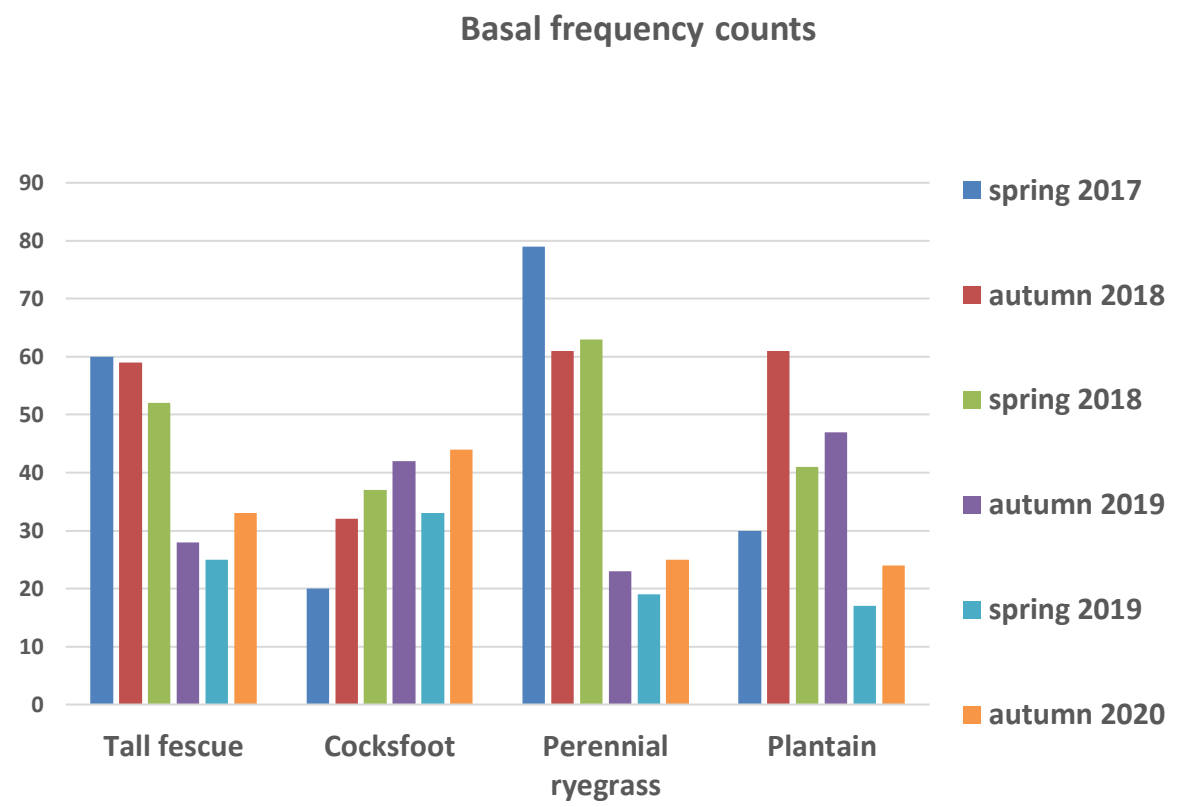

Fig. 12. Greenhythe pasture demonstration, changes in the basal frequencies of the sown grass species and plantain measured in autumn and spring over the life of the project

4.4.3 "Elverton" pasture compositions

90 acre-1

Perennial ryegrass and white clover dominance has been consistent over the life of the project. The autumn 2020 assessment showed they were contributing 50 and 44 percent of the pasture composition respectively. (Fig. 13)

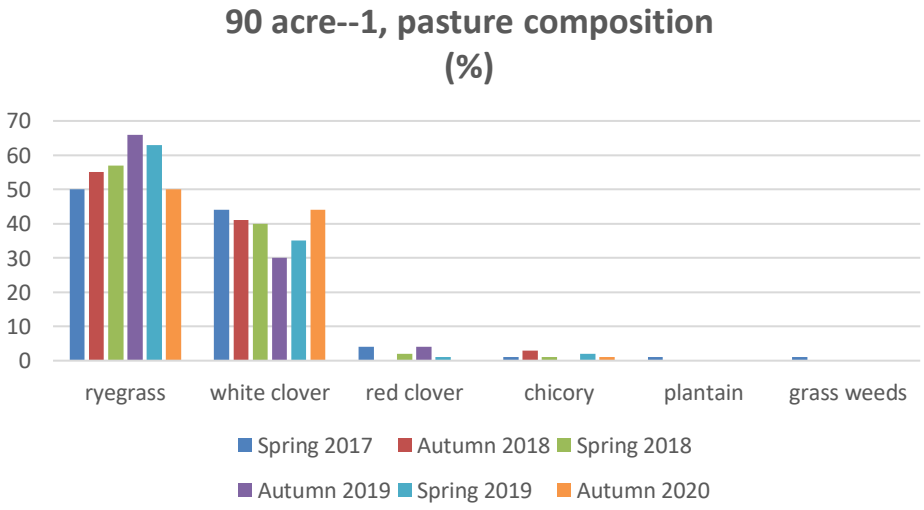

Fig. 13. 90 acre – 1, Spring and Autumn pasture compositions

90 acre-2

90 acre – 2: Sown in 2017**,** 90acre – 2 has become perennial ryegrass and white clover dominant (Fig. 14), with these species contributing 52 and 41 percent of the pasture composition respectively in Autumn 2020. These two species have out competed the weedy grass and broadleaf species, which contributed 33 percent of the pasture composition in spring 2017 and now only contribute 1 percent.

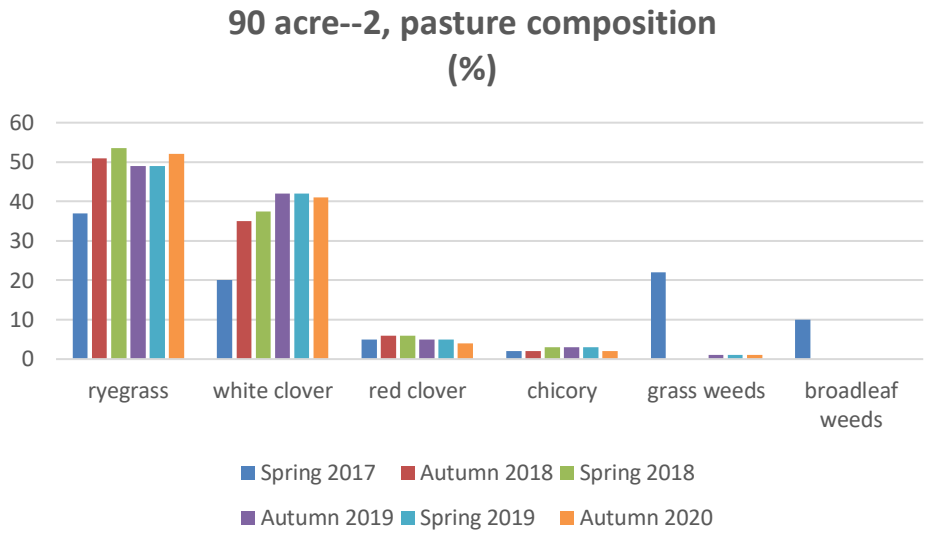

Fig. 14. 90 acre – 2, Spring and Autumn pasture compositions

Musselboro- 1

Perennial ryegrass and white clover dominance has been consistent over the life of the project (Fig. 15, at the autumn 2020 assessment, they were contributing 54 and 34 percent of the pasture composition respectively.

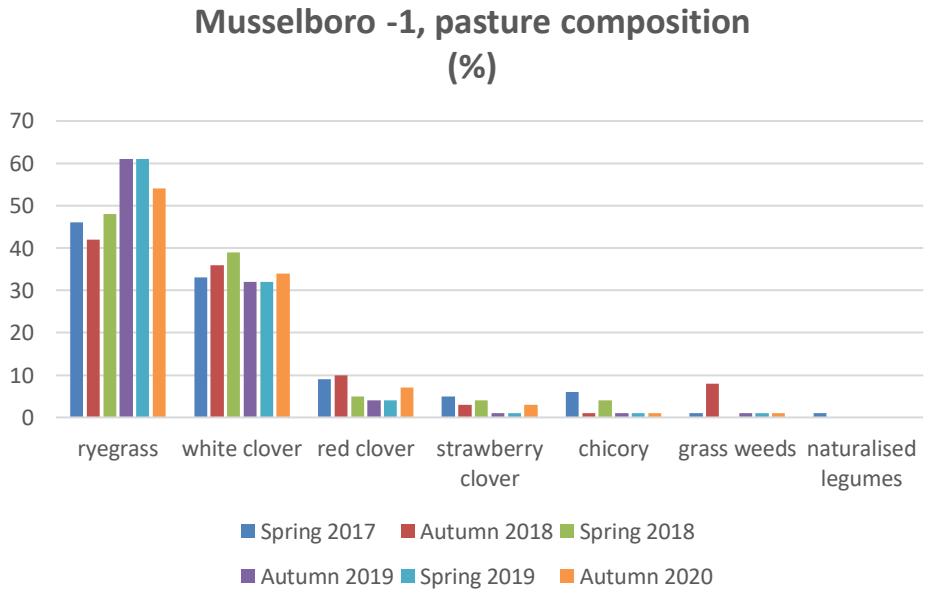

Fig. 15. Musselboro--1, Spring and Autumn pasture compositions

Musselboro--2

Sown in 2017**,** Musselboro – 2 has become perennial ryegrass and white and red clover dominant (Fig. 16), with these species contributing 60, 25 and 9 & of the pasture composition respectively at the Autumn 2020 assessment. These three species have out competed the weedy species present as 37 percent of the composition in spring 2017and now only contribute 2percent.

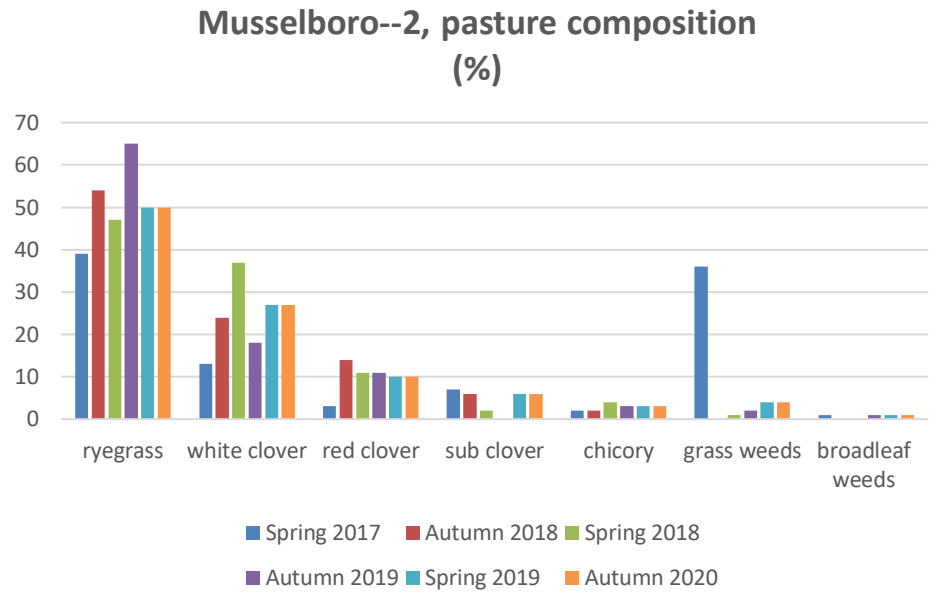

Fig. 16. Musselboro--2, Spring and Autumn pasture compositions

Red Road (control)

There were only minor changes to composition of the control paddock between spring 2017 and 2019 (Fig.17). In autumn 2020 perennial ryegrass and the annual sub clover are contributing 25 and 31 percent of the composition respectively, with weedy grass and broadleaf species contributing a combined 14 percent.

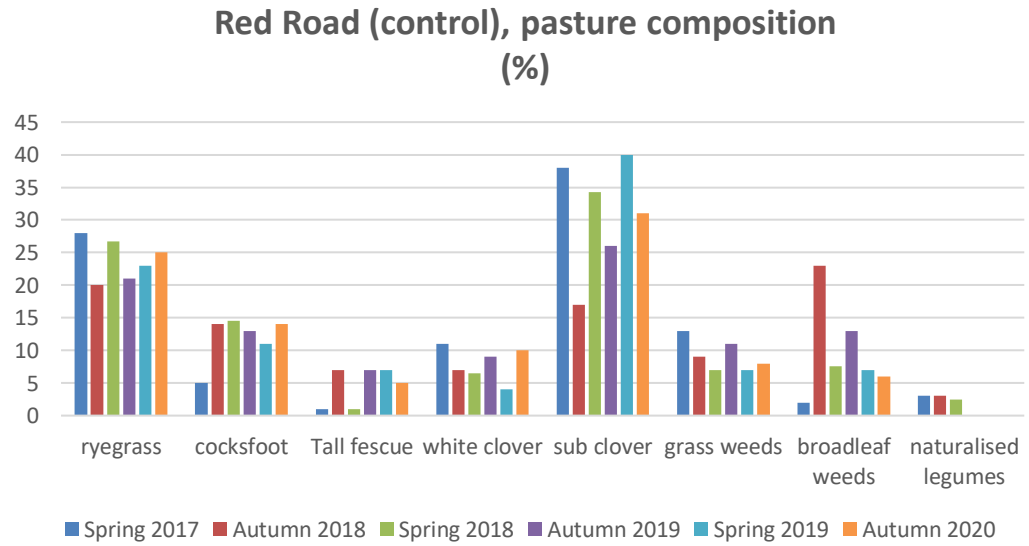

Fig. 17. Red Road (control), Spring and Autumn pasture compositions

Overall the demonstration paddocks have maintained their composition very well. The major changes in composition were seen in the two 2017 sown pastures 90 acre-2 and Musselboro-2. Coming into their third year the sown species have now replaced the annual weeds that were present in year one.

The control paddock suffered from an attack of Corbie grubs (*Oncopera intrica*) in late spring 2017 and also 2018, this has the effect of opening up the sward, allowing flat weeds to colonise the bare patches. The perennial grass component however, has survived well, with cocksfoot increasing its contribution to the overall pasture composition.

All four demonstration paddocks have an excellent blend of perennial ryegrass and white clover

4.4.4 Elverton" Feed tests

Feed tests were conducted on two of the demonstration paddocks and the control paddock in autumn 2018 (Table 8). The results confirmed the superior feed quality being produced by the improved pasture species, with the demonstration paddocks metabolisable energy value averaging 11.85 MJ/kg DM per hectare, compared to the control which had a metabolisable energy level of 10.7 MJ/kg DM per hectare.

This difference equates to an 11% improvement in feed quality from the pastures in the improved species paddocks.

Feed tests were also conducted on the silage from demonstration paddocks 2018 harvest (Table 9). This was shown to be of good quality with a metabolisable energy level of 10.1 MJ/kg DM per hectare.

Table 8. Feed tests results for samples taken 6th April 2018

	Dry matter percent	Moisture percent	Crude protein	AD Fibre	ND Fibre	Digestibility %	ME MJ/kg DM
90 acre-1	14.6	85.4	27.6	21.9	43.7	79.8	12.1
Musselboro -2	17.2	82.8	28.0	23.2	47.3	76.6	11.6
Red road	27.2	72.8	15.8	28.8	59	71.7	10.7

Table 9. Silage feed test result, from the 2018 harvest taken on 20th February 2018

Dry matter percent	Moisture percent	Crude protein	AD Fibre	ND Fibre	Digestibility %	ME MJ/kg DM
43.4	56.6	13.5	33.1	59.6	66.5	10.1

4.4.5 Elverton" Faecal egg counts

Faecal egg counts from sheep grazing in Musselboro-1 have been taken each autumn. Results from the 2019 count indicate a small increase in eggs. Grazing practises will be altered to allow for greater rest periods from sheep grazing. It is planned to use cattle to graze in between sheep grazing to break the worm cycle.

4.4.6 "Springmere" pasture dry matter production

Sown in mid-February 2018, the three demonstration paddocks established very well. The control paddock selected can best be described as a rundown pasture, typical of many pastures in the Tamar Valley.

All three demonstration paddocks have an excellent blend of perennial ryegrasses and clovers sown.

Results gave a clear picture of the benefits of renovating run-down pastures, with the renovated pastures growing an average of 80 percent more dry matter than the control over the two years (Fig. 18). The large increase in dry matter production from the three renovated paddocks highlighted the need to plan ahead when renovating as the increase in feed on offer needs to be utilised to get the maximum benefit from the outlay incurred with renovation.

Live weight gain data for this site has not been reported in this report, due to the gaps in the data set. However, early data collected showed positive signs with Nanas meadow, South Spring hill and S2 producing live weight gains of $1101, $939 and $618/ha respectively. The control paddock produced very little in the way of financial benefit over this period.

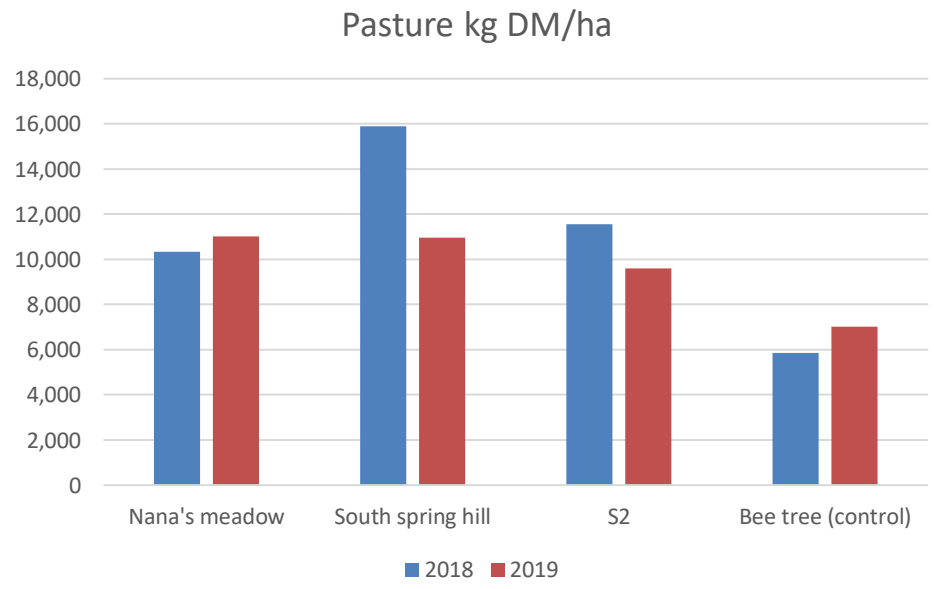

Fig. 18. Pasture production from each paddock for the growing seasons, 2018 and 2019 "Springmere"

4.4.7 "Elverton" pasture dry matter production

The pasture dry matter produced from the four demonstration paddocks was uniform over the two years, averaging 13,840 kgDM/ha in 2018 and 10,778 kgDM/ha in the dryer year, 2019 (Fig.19). This was significantly more dry matter than the control paddock which produced 5537 and 3401 kgDM/ha respectively for 2018 and 2019.

The demonstration paddocks provided an average of 103 days grazing each year, compared to an annual average of 83 days grazing from the control paddock (Table 6).

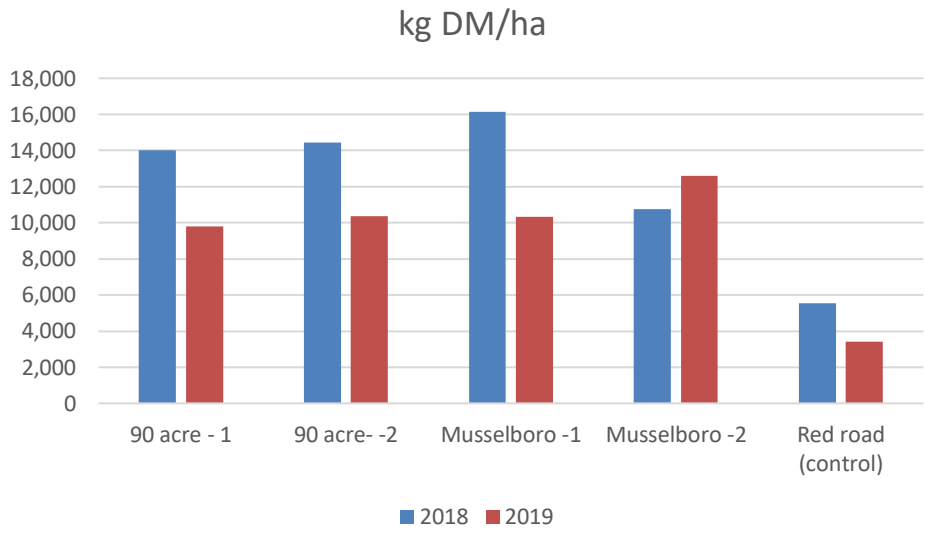

Fig. 19. The total pasture production from each paddock for the growing seasons, 2018 and 2019, including hay and silage.

Table 10. Grazing days provided by each paddock.

Year	2018	2019
Paddock		
90 acre--1	115	85
90 acre- -2	112	122
Musselboro -1	123	111
Musselboro -2	103	52
Red road (control)	96	70

4.5 Red meat Component:

4.5.1 "Springmere" red meat production

Due to gaps in the animal live weight gain data from "Springmere", comprehensive a data set has not been reported on in this report, however, results from the first four months, give a clear picture of the benefits of renovating run down pastures. Nanas meadow, South spring hill and S2 produced live weight gains valued at 1101, 939 and 618 $/ha respectively, while the control paddock failed to produce any financial benefit, in fact there was a net loss of animal condition over the period. (Fig.20).

The demonstration paddocks where slashed in spring to remove a large overburden which had accumulated as the result of the producer having difficulty keeping up with the extra feed, produced by the improved species sown. As he was not able to graze, conserve the growth as hay or silage, animal production data was not collected in spring 2018.

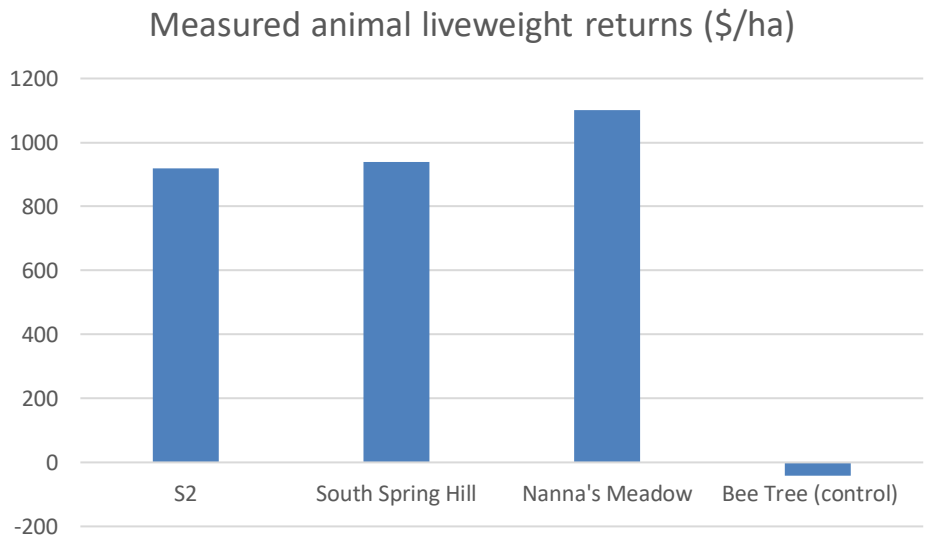

Fig. 20. "Springmere" paddock red meat returns in $/ha for the period 4th June to 28th September 2018, based on a live weight value of $3.00/kg.

4.5.2 "Elverton" red meat production

Over the two year period the demonstration paddocks produced average animal live weight gains of 905 kg/ha/year, with 90 acre-2 being the most productive over the two years, averaging 1178 kg of live weight/ha/year. Over the same period the control paddock averaged 207 kg of live weight/ha/year (Fig 21)

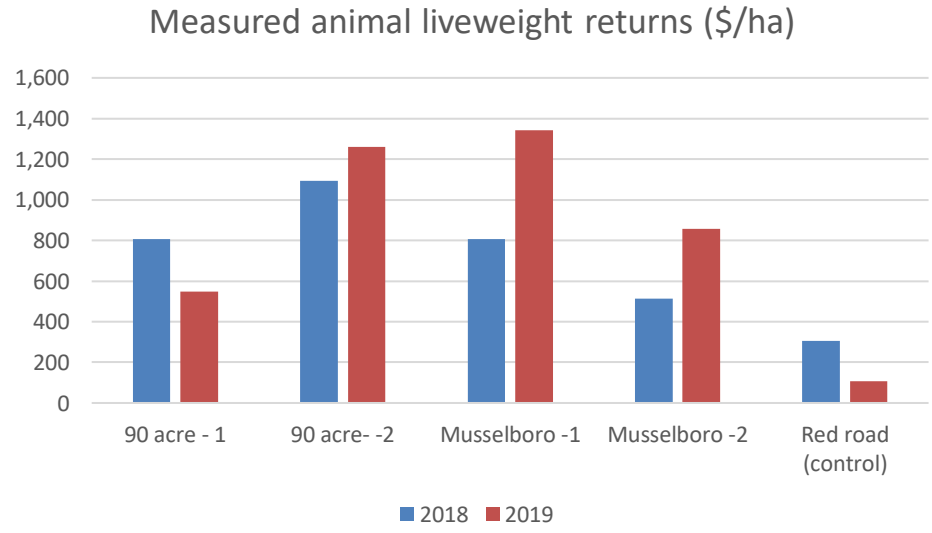

Fig. 21. "Elverton" 2018 and 2019 paddock annual red meat returns in $/ha, based on a live weight value of $3.00/kg.

4.6 Elverton - value of red meat and pasture produced

The combined annual average dollar return for both red meat and hay/silage for the four demonstration paddocks, based on a live weight value of $3.00/kg and a hay/silage value of $150/tonne, was $3231/ha/year. This is compared with $560/ha/year for the control paddock (Fig. 22).

The significant higher returns from the improved pastures in the demonstration paddocks, highlights the potential for improvement in pastures throughout the Tamar valley. The bottom line suggests that pastures similar in quality to the control paddock are not suitable for red meat production and are basically, maintenance and lambing/calving pastures, whilst pastures with a similar composition and quality to the four demonstration paddocks are high quality red meat producing pastures.

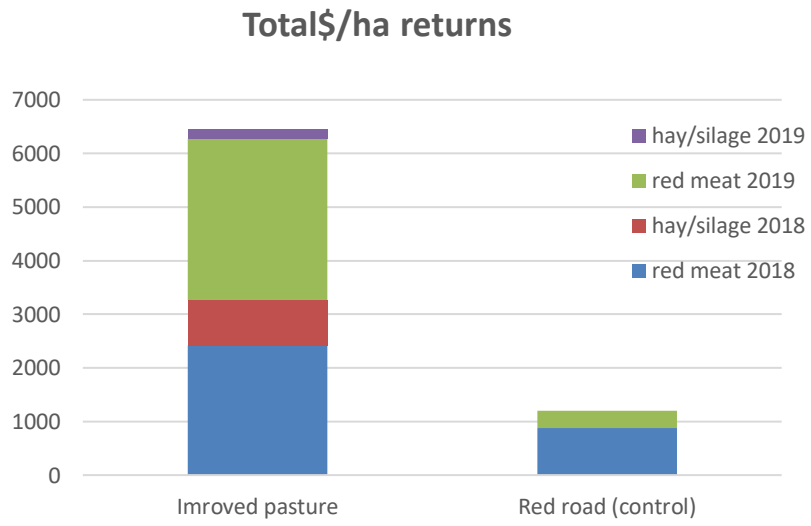

Fig. 22. The total dollar returns per hectare from red meat and hay/silage production for 2018 and 2019, based on a live weight value of $3.00/kg and a hay/silage value of $150/tonne.

The average pasture dry matter production across the four demonstration paddocks over the two-year period was 24,615 kgDM/ha, this resulted in an average dollar return of $6,459.50/ha. This equates to the pasture produced having a value of 26 cents per kg of dry matter.

Over the two year period pasture was converted into red meat at a significantly higher rate on the demonstration paddocks compared to the control paddock (Fig. 23).

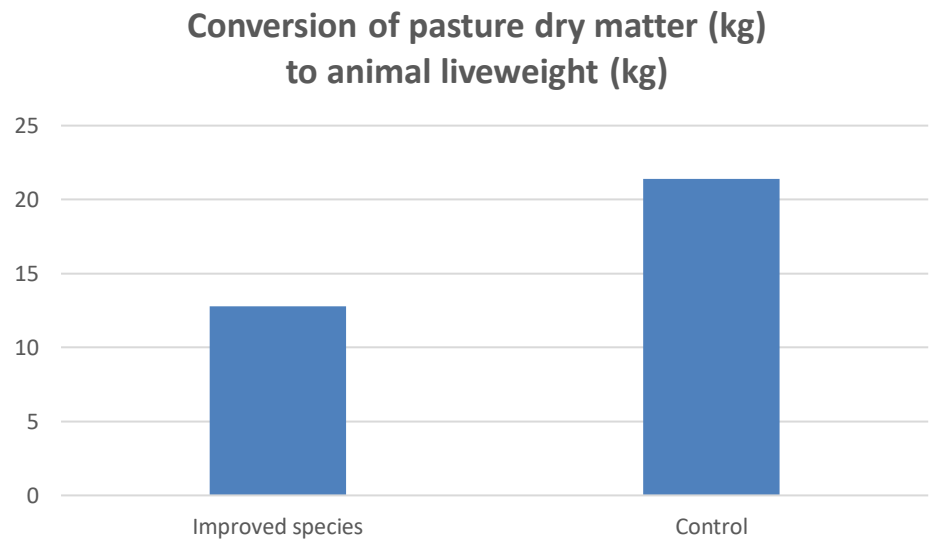

Fig. 23. Kilograms of pasture dry matter required to produce 1kg of liveweight gain, average over all grazings, all classes of stock, over two years.

4.7 Elverton cost benefit analysis

A cost benefit analysis, using establishment costs incurred for the establishment of the "Springmere demonstration paddocks (Appendix 8.1) and the animal live weight and hay/silage returns from the "Elverton", confirms there is a significant net benefit from the renovated demonstration paddocks over the control paddock. After costs for renovation have been taken into account the net benefit was $1554/ha. This net benefit increased in the second year to $2445/ha. The first year net benefit of $1554/ha, compares favourably with the cost of renovation of $836/ha. (Table 11).

The net benefit from the improved species demonstration paddocks of the control paddock averaged out at just under $2000 per year (Table 12).

Table 11. Cost benefit analysis

Non recurring costs ($/ha)	YEAR 1	YEAR 2	TOTAL/$/ha
Discing	$182.68		$182.68
Cultivation	$25.57		$25.57
Spraying	$7.30		$7.30

Seed	$175.44		$175.44
Sowing	$90.00		$90.00
Total non-recurring costs	$480.99		$480.99
Recurring costs ($/ha)			
Fertiliser	$100.00	$100.00	$200.00
Lime	$116.58	$116.58	$233.16
Fertiliser spreading	$18.77	$18.77	$37.54
Irrigation	$120.00	$190.00	$310.00
Total recurring costs $/ha)	$355.35	$425.35	$780.70
Total costs ($/ha)	$ 836.34	$425.35	$1,261.69

Quantitative benefits	**YEAR 1**	**YEAR 2**	**TOTAL**
Revenue ($/ha)			
Red meat production	$2,413.25	$3,007.50	$5,420.75

Silage/hay	$855.00	$183.50	$1,038.50
Total revenue ($/ha)	$3,268.25	$3,191.00	$ 6,459.25

Table 12. Quantitative analysis

	YEAR 1	YEAR 2	TOTAL
Benefits			
Revenue ($/ha)	$ 3,268.25	$3,191.00	$6,459.25
Costs ($/ha)			
Non-recurring ($/ha)	$480.99	$0	$480.99
Recurring ($/ha)	$355.35	$425.35	$780.70
Total costs ($/ha)	**$836.34**	**$425.35**	**$1,261.69**
Net benefit from the demonstration paddocks ($/ha)	**$ 2,431.91**	**$2,765.65**	**$5,197.56**
Revenue from Red road (control) ($/ha)	**$ 878.00**	**$ 321.00**	**$1,199.00**
Net benefit of the renovated demonstration paddocks over the control ($/ha)	**$ 1,553.91**	**$2,444.65**	**$3,998.56**

5 Discussion

Project Objective 1: *To present regionally relevant information on sustainable pasture management and animal nutrition/production to encourage farm practice change.*

The Tamar Pasture Improvement Demonstration Project held 4 field days, where 132 people attended to witness progress on the PDS pasture demonstrations. The core and observer group of producers completed field day evaluations, entrance/exit surveys, participated in 3 case studies and 3 narratives. Implementation and adoption of better practices is captured in these surveys and case studies. Legacy materials on PDS paddock performance and key messages were shared at 5 agricultural events and field days and distributed to our data base of over 80 producers. Five media releases resulted in numerous articles published in local media, social media and newsletters.

The project was overseen by a consultant agronomist and the Tamar Valley Pastures Improvement Technical Working Group who held 9 steering group meetings.

The MER monitoring and reporting shows that skills and motivation to implement practice change occurred throughout the project's 3 year life. There is interest in changing practices to improve pastures and increase red meat profitability, but financial barriers were a reason often given by producers to explain the lack of adoption. However, the project monitoring did record that producers understood the message of pasture renovation with right species pasture utilisation and optimising grazing practices.

The project utilised adaptive management well to address topics of interest, matched to project objectives and what the producers themselves identified they wanted. Some of the survey questions were too subjective and if running a similar project again, these questions would be changed.

Project Objective 2 & 3*: To present via demonstration that new pasture species/cultivars and associated grazing management practices will increase the profitability of the red meat supply chain by at least 10 percent; To present options of better adapted, persistent and productive pastures able to better cope with changing environmental conditions.*

Three PDS sites were selected based on what they were able to show Tamar producers via pasture renovation, pasture species trials and pasture management and utilisation. They performed their role admirably with ample examples of increase pasture and red meat production on show at field days. The PDS farm "Elverton" at Blessington in the greater Launceston area provided the best and most complete data set including irrigation data. This farm was used as the cost benefit analysis.

The net benefit at "Elverton" of the renovated demonstration paddocks over the control was ($/ha) Yr1 $ 1,553.91; Yr2 $2,444.65; Total $3,998.56, with the red meat production outcomes ($/ha) Yr1 $2,413.25; Yr2 $3,007.50; Total $5,420.75. These impressive figures were presented to producers at the final field day March 2020.

The significant higher returns from the improved pastures in the demonstration paddocks, highlights the potential for improvement in pastures throughout the Tamar valley. The bottom line suggests that pastures similar in quality to the control paddock are not suitable for red meat production and are basically maintenance and lambing/calving pastures, whilst pastures with a similar composition and quality to the four demonstration paddocks are high quality red meat producing pastures.

"Springmere" situated in West Tamar demonstrated very good returns from all three demonstration paddocks which have an excellent blend of perennial ryegrasses and clovers sown. Results here gave a clear picture of the benefits of renovating run down pastures, with the renovated pastures growing an average of 80 percent more dry matter than the control over a two year period (Fig. 18). The large increase in dry matter production from the three renovated paddocks at "Springmere" highlighted the need to plan ahead when renovating as the increase in feed on offer needs to be utilised to get the maximum benefit from the outlay incurred with renovation.

Live weight gain data for "Springmere" has not been included in this report, due to the gaps in the data set. However, early data collected showed positive signs with Nanas meadow, South Spring Hill and S2 producing live weight gains of 1101, 939 and 618$/ha respectively (Fig. 20). The control paddock produced very little in the way of financial benefit over this period.

The third site "Greenhythe", situated at Hillwood on the East Tamar was selected to build on a 2016 Tasmanian Institute of Agriculture (TIA) pasture trial, looking at the adaptation of four pasture blends planted under that trial. The composition changed greatly and having longer-term trial results benefitted the project greatly. At "Greenhythe", the minimum annual rainfall requirements for pasture species was well demonstrated with Megatas Cocksfoot, Tonic plantain and the Rubitas red clover recorded as the most persistent perennial grass, herb and perennial legume varieties. The perennial ryegrass failed to persist, losing a significant number of plants during a dry 2019 (Fig. 12), when the annual rainfall at "Greenhythe" dropped below 500 mm (Fig. 7). The Cocksfoot was the only species to increase in ground cover. Pasture persistence, pasture management and utilisation, animal health and drought lotting were topics discussed at field days on this farm.

The rainfall data used in PDS farm analysis came from the Bureau of Meteorology (BOM) web site using the closest BOM weather stations. Beaconsfield weather station, situated 2km from "Springmere" and Bell Bay weather station near "Greenhythe" Hillwood, with all 3 PDS sites recorded below average rainfall in 2017 and 2019.

The Tamar Pasture Improvement Demonstration Project was successful in that it demonstrated to producers the value of getting key elements of the farming system right. The industry benefitted by producers understanding the cost benefit analysis and how to farm for greater profitability in the red meat industry. Drawn from the project's monitoring and evaluation over three years, we conclude that producers are engaged and responsive to the PDS delivery model. Lack of extension was regularly identified as a barrier to implementation and for some, motivation to do so. Financial capacity to undertake practice change such as pasture renovation when needed was identified as an issue particularly toward the end of the project.

The case studies and narratives contribute to the overall understanding of how participant producers' valued the PDS project. In one instance, a PDS project core producer was converting a 160 ha property back to pasture from forestry, and got agronomist advice on the annual pastures to sow and how to deal with the forestry waste piles he had to deal with.

Evaluation of the project found that producers are engaged and responsive to what was presented. Lack of extension was regularly identified as a barrier to implementation and motivation to do so was often connected to the financial capacity to undertake practice change such as pasture renovation

when needed. This was more evident toward the end of the project, suggesting producers were less confident of business cash flow.

6 Conclusions/recommendations

The project was successful in that it demonstrated to producers the production of red meat is part of a system made up of four major components soil, plants, animals and the system manager, along with many minor components (Fig. 24) and to get the maximum returns from that system all the components need to be "in tune'. Key elements of the system include:

- Maintaining optimum pH and soil nutrient levels, including macro nutrients and micro nutrients;
- Using the best available combination of species/cultivars to produce a well-balanced grass/legume pasture;
- Using a combination of species/cultivars adapted to the landscape and environment;
- Planning ahead, to maximise the utilisation of extra feed grown with improved fertility and pasture cultivars;
- Using pasture measurements to manage grazing – matching DSE to feed available;
- Monitoring live weight gain of animals as a means of assessing a paddocks performance;
- Conserving the spring excess in the form of hay or silage; and
- A cost benefit analysis and how to farm for greater profitability in the red meat industry.
- The system manager improving their knowledge base by keeping up to date with the latest research and development results.

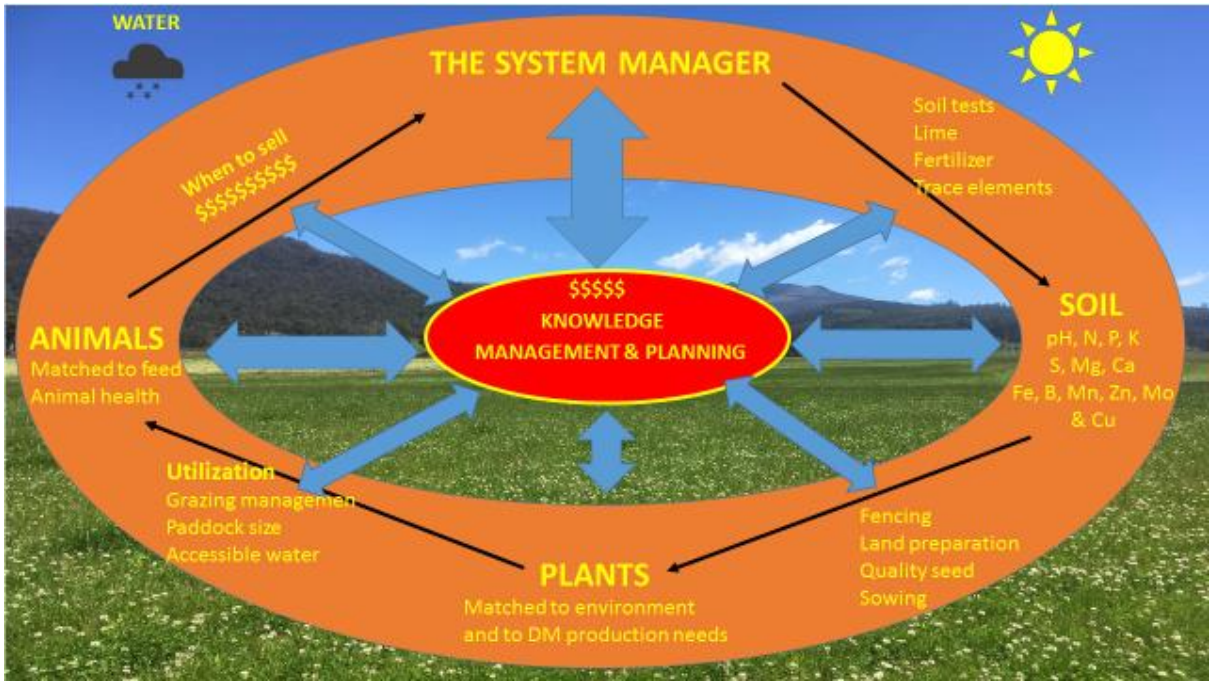

Fig. 24. The Red Meat Production System as presented to the Producer Group

Recommendations

A missing component identified during the project is the lack of extension services, where red meat producers can witness, for themselves, what innovative practices work in their area and discuss this with their peers. The Tamar PDS sought to address the knowledge gaps and any lack of motivation to implement practice change by applying a proven model of information delivery. There is a need for greater extension services and discussion groups to facilitate peer to peer knowledge transfer and extending this service to smaller acreage producers as well.

The project will have an extended life because of the legacy products and a mobilised group of farmers who now want to form a Tamar Valley Farm Business Discussion Group. Having a continuation of many of the PDS discussion topics will benefit the industry and would be beneficial to the producers in the region.

7 Bibliography

7.1.1 References

ABARES 2018 – Department of Agriculture, Water and the Environment: About my region – Launceston and North East Tasmania (website) https://www.agriculture.gov.au/abares/research-topics/aboutmyregion/tas-launceston#agricultural-sector accessed 16th June 2020

ACE CRC 2010, Climate Futures for Tasmania general climate impacts: the summary, Antarctic Climate and Ecosystems Cooperative Research Centre, Hobart, Tasmania. Avail at: http://www.dpac.tas.gov.au/__data/assets/pdf_file/0019/134209/CFT_Summary_-_General_Climate_Impacts.pdf accessed 16th June 2020

Bureau of Meteorology: Climate Data Online http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p-nccObsCode=139&p-display-type=dataFile&p-startYear=&p-c=&p-stn-num=091001 accessed 2nd June 2020

http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p-nccObsCode=139&p-display-type=dataFile&p-startYear=&p-c=&p-stn-num=091262 accessed 2nd June 2020

Knox J, Campbell S, Field B, Thompson R, Hall E, and Taylor T, 'Species for Profit' A guide for Tasmanian pastures and crops, Department of Primary Industries Water and Environment (2006).

Smith R, Corkrey R, Martin G, Field B, Ball P, 'Tasmanian pasture resource audit: Snapshot of functional group composition in 2011', Proceedings of the 16th Australian Agronomy Conference 2012, 14-18 October 2012, University of New England, Armidale, NSW, pp. 1-6. (2012)

7.1.2 Acknowledgements

- Meat and Livestock Australia
- Tamar Natural Resource Management – Greg Lundstrom (project facilitator)
- Tamar Valley Pasture Productivity Group – Ian Sauer (Technical Working Group Chair)
- Producer demonstration site hosts and data collectors – Ian Dickenson, Tom Richards, Ben Hooper and Ed Archer.
- All photographs Tamar NRM

8 Appendix

8.1 Pasture establishment costs, "Springmere

Paddock	Nanas mdw	S2	South spr hill	Totals	Price
area	7.4	9.46	10.51	27.37	
Discing contract	$1,351.85	$1,728.17	$1,919.99	$5,000.00	$182.68/ha
Cultivation (own)	$189.26	$241.94	$268.80	$700.00	$25.57/ha
Spray (own)	$54.07	$69.13	$76.80	$200.00	$7.30/ha
sub total	$1,595.18	$2,039.24	$2,265.58	$5,900.00	
prep$/ha	$215.56	$215.56	$215.56	$ 215.56	
Fert 0-7-10-9					
total applied kg	1850	2365	4505	8720	
kg/ha	250	250	429		
Price	$684.50	$875.05	$1,666.85	$3,226.40	$0.37/kg
Fert Spread	$138.95	$177.63	$197.34	$513.92	
$/ha	$111.28	$111.28	$177.37	$136.66	
Lime	18.5	23.65	48.35	90.5	tonnes
tonne/ha	2.5	2.5	4.6		
Price Spread$/ha	$116.58	$116.58	$214.52	4220.02	$46.63 /t
Seed	$1,585.58	$1,435.41	$1,711.58	$4,732.56	
$/ha	$214.27	$151.73	$162.85	$172.91	
Sowing	$666.00	$851.40	$945.90	$2,463.30	
$/ha	90	90	90	90	
Total$/ha	**$747.68**	**$685.15**	**$860.31**	**$764.38**	

8.2 Pasture production data "Springmere

Nana's meadow

Date In	Grazing Days	Mob	Head	Pre kg/ha	Post kg/ha	kg/ha eaten	kg/ha growth	total kgDM/ha
20/4/2018	33	Lambs	240	2508	1816	692	2310	3002
1/6/2018	11	Lambs	250	2007	1820	187	858	1045
26/6/2018	25	Lambs	91	1920	1578	342	476	818
28/9/2018	4	Ewes & Lms	295	2810	2200	610	280	890
2/11/2018	4	Ewes & Lms	972/1394	2670	1844	826	1239	2065
5/12/2018	11	Lambs	850	2782	2558	224	420	644
24/12/2018	3	Ewes & Lms	4200	2734	1504	1230	644	1874
							annual total	10338
12/1/2019	11	Ewes	1930	3220	1480	1740	80	1820
23/2/2019	6	Lambs	1100	2140	1820	320	60.5	380.5
24/4/2019	10	Ewe lambs	609	NA	NA	NA	NA	NA
29/5/2019	18	Lambs	56	2124	1599	525	686	1211
18/6/2019	1	Ewes	2000	1559	1518	41	497	538
25/7/2019	2	Culls	101	1824	1740	84	29.5	113.5
27/7/2109	8	Lambs	120	1740	1589	151	-15.5	135.5
5/9/2019	19	Ewes & Lms	248/391	2200	1529	671	311	982
26/9/2019	6	Ewes & Lms	248/391	1550	1367	183	415.5	598.5
4/11/2019	9	Ewes & Lms	1100/1400	2103	1408	695	295	990
12/4/2019	8	Lambs	724	1508	1361	147	2334	2656
12/24/2019	9	Ewe lms	530	1417	1230	187	1578	1590
							annual total	11015

South spring hill

Date In	grazing days	Mob	Head	Pre kg/ha	Post kg/ha	kg/ha eaten	kg/ha growth	total kgDM/ha
6/4/2018	13	Lambs	306	2138	1740	398	*	398*
16/5/2018	16	Lambs	240	3268	2506	762	154	916
1/6/2018	21	Lambs	330	2506		*	1343	1343*
5/7/2018	12	Lambs	367	2347	1734	613	826	1439
10/8/2018	12	Ewes	306	2233	1837	396	675	1071
6/9/2018	34	Ewes	140	1776	1729	47	4913	4960

15/11/2018	6	ewes and lambs	971/1001	3998	2474	1524	693	2217
27/12/2019	7	ewe lambs	1200	5320	2236	3084	419	3503
							annual total	15847
8/2/2019	12	ewe lambs	1229	6230	1820	4410	25	4435
16/3/2019	8	ewe lambs	1229	2600	1578	1022	224	1246
9/4/2019	9	lambs	500	1858	1543	315	483	798
3/5/2019	38	lambs	872	2201	1375	826	126	952
7/7/2019	5	lambs	158	1557	1669	-112	140	28
24/7/2019	2	ewes	2000	1430	1296	134	25	159
6/9/2019	13	ewes	161	1450	1179	271	254.5	525.5
11/24/2019	16	Lambs	771	2675	2019	2628	2418	3048
							annual total	11191.5

- estimated

S2

Date In	Grazing Days	Mob	Head	Pre kg/ha	Post kg/ha	kg/ha eaten	kg/ha growth	total kgDM/ha
27/4/2018	19	Lambs	467	2544	1957	587	1344	1931
12/6/2018	7	Lambs	287	2564	2254	310	537.5	847.5
22/6/2018	13	Lambs	250	2267	1958	309	1008	1317
17/7/2018	12	Lambs	367	2147	1813	334	609	943
22/8/2018	19	Ewes	366	1798	1823	-25	3817	3792
2/11/2018	50	heifers	140	3320	1960	1360	1363	2723
			21				**annual total**	11553.5
3/1/2019	21	ewe lambs		2340	1908	432	-185	247
20/2/2019	5	ewe lambs	1200	2540	1840	700	*	700
9/3/2019	7	ewe lambs	1229	3202	2110	1092	-363.5	728.5
9/4/2019	9	lambs	1229	2705	2075	630	179	809
28/5/2019	5	Lambs	500	2523	1571	952	343	1295
27/6/2019	10	Lambs	872	1823	1418	405	518	923
26/7/2019	3	ewes	158	1989	1333	656	37	693
19/8/2019	5	ewes	2000	1340		1340	*	1340
6/9/2019	10	ewes	308			0	415.5	415.5
12/10/2019	33	Lambs	159	1963	3240	2040	3006	2460

			771			**annual total**	9611

Bee tree (control)

Date In	grazing days	Mob	Head	Pre kg/ha	Post kg/ha	kg/ha eaten	kg/ha growth	total kgDM/ha
27/4/2018	17	Lambs	211	2684	1909	775	1050	1825
18/5/2018	4	Ewes	941	1876	1512	364	2536	2900
16/7/2018	5	Ewes	941	2152	1363	789	118	907
16/8/2018	54	Ewes	120	1550	1340	210	NA	210*
							annual total	5842
18/2/2019	6	Ewes	2490	1977	1209	768	462	1230
27/5/2019	4	Ewes	2100	1830	990	840	0	840
3/8/2019	5	Ewes	2100	2320	1230	1090	*	1090*
18/9/2019	14	ewes and lambs	161/256	3200	2460	740	610	1350
11/10/2019	5	ewes and lambs	1100/1400	2648	1347	1301	60	1361
7/11/2019	3	ewes and lambs	1000/1100	2299	1676	623	514	1137
							annual total	7008

*estimated

8.3 Pasture production data "Elverton"

90 acre-1

Date IN	**grazing days**	**Total number of stock used**	**Class of stock**	**Pregraze kg DM/ha IN**	**Residual kg DM/ha OUT**	**Pasture growth (cage) kg DM/ha**	**Pasture utilised kg DM/ha**
31/1/18	28	76	angus	3121	2631	5140	*
31/1/18	28	273	lambs	3121	2631	5140	2509
28/3/18	33	204	wagyu	3026	2250	4836	2586
6/6/18	13	100	angus	2379	1998	2618	620
21/9/18	13		heifers	2614	1550	5245	3696
25/10/18		shut for silage					**4600**

						annual total	14011
10/1/19	18	2882	lambs	2,754	1872	3110	1238
15/3/19	28		lambs	3,300	2376	4944	2567
8/5/19	26	320	ewes	2,530	1300	2540	1240
15/10/19	14	320	ylg cattle	3,206	2042	3388	1346
14/11/19	27	320	heifers	4,615	2418	5831	3413
						total annual	9804

90 acre-2

Date IN	**Days in**	**Total number of stock used**	**Class of stock**	**Pregraze kg DM/ha IN**	**Residual kg DM/ha OUT**	**Pasture growth (cage) kg DM/ha**	**Pasture utilised kg DM/ha**
24/1/18	19	412	cows	3139	2325	4982	2657
5/3/18	21	555	lambs	2918	2268	3238	970
27/3/18	13	187	heifers	2268	2300	2311	11
9/5/18	27	100	angus	3648	2057	4036	1979
19/6/18	15	100	angus	2288	1900	2462	562
14/9/18	17	300	heifers	3230	2446		3043
25/10/18	Shut for silage						**6680**
						annual total	15902
28/1/19	11	2117	lambs	3620	2054	2796	742
15/3/19	28	2882	lambs	3,300	2376	4944	2567
4/6/19	30		ewes	2,800	1250	3924	2674
3/10/19	12	320	yearling cattle	2,852	2138	3062	924
6/11/19	12	220	yearling cattle	3,104	2038	3281	1243
6/12/19	29	2200	lambs	3,648	1934	4131	2197
						annual total	10347

Musselboro-1

Date IN	**Days in**	**Total number of stock used**	**Class of stock**	**Pregraze kg DM/ha IN**	**Residual kg DM/ha OUT**	**Pasture growth (cage) kg DM/ha**	**Pasture utilised kg DM/ha**

4/1/18	34	1350	lambs	4102	2748	5610	2862
28/2/18		22	yearlings	3499	2761	5614	2853
28/2/18	54	831	lambs	3499	2360	5514	3154
29/5/18	20	131	angus	2466	2004	2736	732
4/10/18	15	300	heifers	2738	1856	4418	2562
25/10/18		shut for silage					6840
						annual total	16141
21/2/19	22	2882	lambs	3146	2026	3370	1344
22/4/19	13	2197	lambs	3160	1914	4574	2660
26/7/19	25	1000	ewes	2432	1050	3347*	2297
11/12/19	51	320	heifers	5988	2286	6421	4135
						annual total	10436
				*estimated			

Musselboro-2

Date IN	**Days in**	**Total number of stock used**	**Class of stock**	**Pregraze kg DM/ha IN**	**Residual kg DM/ha OUT**	**Pasture growth (cage) kg DM/ha**	**Pasture utilised kg DM/ha**
12/2/18	23	412	cows and calves	3643	2425	5536	3111
30/3/18	59	131	angus steers	3356	1951	3823	1872
19/6/18	15	131	angus steers	2116	1836	2381	545
19/10/18	6	300	heifers	2048	1847		546
				115,128 total			4680
						annual total	10754
8/2/19							
12/4/19	13	2882	lambs	3370	2460	4392	1932
4/7/19	10	2197	lambs	3290	2082	4056	1974
29/10/19	22	1000	ewes	2572	1120	3371	2251
29/10/19	7	320	yearlings	4462	3118	4682	1564
6/11/19				344 round bales = 120,400kg			4894
						annual total	12615

Red road (control)

Date IN	Days in	Total number of stock used	Class of stock	Pregraze kg DM/ha IN	Residual kg DM/ha OUT	Pasture growth (cage) kg DM/ha	Pasture utilised kg DM/ha
27/3/18	28	187	heifers	3384	2278	5461	3183
10/8/18	61	400	cows	no data	no data	no data	1257*
25/10/18	7	300	heifers	2722	1942	3039	1097
						annual total	5537
26/2/19	8	250	heifers	3146	1934	3231	1297
8/5/19	2	400	cows	2054	1200	2054	854
1/8/19	60	400	cows	no data	no data	no data	1250*
						annual total	3401

* estimated

8.4 Animal production data "Elverton"

90 acre-1

Date IN	grazing days	Total number of stock used	Class of stock	Liveweight IN total (kg)	Liveweight OUT total (kg)	Liveweight change (kg)	liveweight gain kg/ha
31/1/18	28	76	angus	41898	45152	3254	141.5
31/1/18	28	273	lambs	8190	9328	1138	49.5
28/3/18	33	204	wagyu	47328	51518	4190	182.2
6/6/18	13	100	angus	33000	35100	2100	91.3
21/9/18	13	300	heifers	102000	109000	7800	339.1
						annual total	803.6
10/1/19	18	2882	lambs	63510	65627	2117	92.0
8/5/19	26	320	ewes	ewe maintenance			0.0
15/10/19	14	320	ylg cattle	96,000	100,160	4,160	87.4
14/11/19	27	heifers	4,615	108800	120576	11776	247.4
						annual total	426.8

90 acre-2

Date IN	Days in	Total number of stock used	Class of stock	Liveweight IN total (kg)	Liveweight OUT total (kg)	Liveweight change (kg)	liveweight gain kg/ha
24/1/18	19	412		135136	146466	11330	460.6
5/3/18	21	555	lambs	23587	27195	3608	146.7
27/3/18	13	187	heifers	20304	21168	864	35.1
9/5/18	27	100	angus	33000	35100	2100	85.4
19/6/18	15	100	angus	35100	36300	1200	48.8
14/9/18	7	300	heifers	94200	102000	7800	317.1
						annual total	1093.6
28/1/19	11	2117	lambs	65627	74095	8468	344.2
15/3/19	28	2882	lambs	115280	121044	5764	234.3
4/6/19	30	1000	ewes	maintenance			0.0
3/10/19	12	320	yearling cattle	92160	96000	3840	156.1
6/11/19	12	220	yearling cattle	104640	108800	4160	169.1
6/12/19	29	2200	lambs	59400	68200	8800	357.7
						annual total	1261.5

Musselboro-1

Date IN	Days in	Total number of stock used	Class of stock	Liveweight IN total (kg)	Liveweight OUT total (kg)	Liveweight change (kg)	liveweight gain kg/ha
4/1/18	34	1350	lambs	54675	58050	3375	146.7
28/2/18		22	yearlings	9995	11044	1049	45.6
28/2/18	54	831	lambs	27286	30850	3564	155.0
29/5/18	20	131	angus	36096	39562	3466	150.7
4/10/18	15	300	heifers	109000	116100	7100	308.7
						annual total	806.7
21/2/19	22	2882	lambs	103752	115280	11528	501.2
22/4/19	13	2197	lambs	98865	103259	4394	191.0
26/7/19	25	1000	ewes	maintenance			0.0
11/12/19	51	320	heifers	126576	141536	14960	650.4
						annual total	1342.7

Musselboro-2

Date IN	Days in	Total number of stock used	Class of stock	Liveweight IN total (kg)	Liveweight OUT total (kg)	Liveweight change (kg)	liveweight gain kg/ha
12/2/18	23	412	cows and calves	146466	153162	6696	272.2
30/3/18	59	131	angus steers	33274	36096	2822	122.7
19/6/18	15	131	angus steers	39562	41396	1834	79.7
19/10/18	6	300	heifers	116100	117000	900	39.1
						annual total	513.8
8/2/19	13	2882	lambs	95106	103752	8646	375.9
12/4/19	10	2197	lambs	92274	98865	6591	286.6
4/7/19	22	1000	ewes	maintenance			0.0
29/10/19	7	320	yearlings	100160	104640	4480	194.8
						annual total	857.3

Red road (control)

Date IN	Days in	Total number of stock used	Class of stock	Liveweight IN total (kg)	Liveweight OUT total (kg)	Liveweight change (kg)	liveweight gain kg/ha
27/3/18	28	187	heifers	47311	52360	5049	240.4
10/8/18	61	400	cows	used for calving			0.0
25/10/19	7	300	heifers	117000	118800	1800	85.7
						annual total	326.1
26/2/19	8	250	heifers	116500	118750	2250	107.1
8/5/19	2	400	cows	Maintenance only			
1/8/19	60	40	cows	used for calving			
						annual total	321.3

8.5 Tamar PDS Project Activity Table

Project Activity Table	
Date	**Detail of activity**
June 2017 – April 2020	Skills based technical steering group drawn from the agricultural sector established. Project design sign off and ongoing advice to project. Held 9 meetings 2017-2020: Tamar Valley Sustainable Agriculture and Pasture Improvement Technical Group meetings held - 19/06/2017; 4/10/17; 7/2/18; 10/05/2018; 5/12/2018; 12/03/2019; 8/10/2019; 6/11/2019; 15/4/2020.
June-July 2017	MER meeting (Sydney) – Communication, Extension & MER plans prepared.
2017:	Regular measurement commenced at Elverton (Blessington) and Springmere (Beaconsfield) for all required parameters including animal liveweights, with pastures and soils monitored at Greenhythe (Hillwood). Pasture composition assessments were taken on the following dates. Greenhythe and Springmere 24th October; Elverton 12th October, Friday 30th November (pasture composition on the proposed irrigated control paddock).
June-August 2017	Complete a review of current practices and benchmarks. Desktop study of relevant reports and statistics.
September 2017	A suitably qualified agronomist engaged. Project design discussed with PDS producers. Eliminate and minimise PDS variables.
October 2017	Training to participating PDS producers on sampling and data collection.
2017-2018	Establish pastures at trial sites and commence monitoring.
2018:	Regular measurement occurring at Elverton (Blessington) and Springmere (Beaconsfield) for all required parameters including animal liveweights, with pastures and soils monitored at Greenhythe (Hillwood). Pasture composition assessments were taken on the following dates.: Autumn pasture compositions for all sites (W/E 20th April) Elverton progress inspection (16th March).
January-March 2018	Entrance Survey: All core and observer groups contacted for survey participation with 29 Surveys completed.
January 2018 ongoing	Sponsorship/Support sought for Project: (Agvita Analytical; TP Jones; RM Consulting; Macquarie-Franklin; TIA; 3 Tamar Councils)
20th March 2018	Field Day: "Elverton", Blessington - 48 landholders attended. Showcase PDS farm, Presenters covered off on pasture management and PDS project. Field Day Questionnaire and Evaluation (19 respondents to the Feedback /Questionnaire)
March 2018	PDS Project Update on website https://www.tamarnrm.com.au/media/reports/

Project Activity Table	
Date	**Detail of activity**
18th September 2018	Red meat industry and opportunities to improve the profitability and viability of the sector in Tasmania. Presentation on Tamar PDS to SAMRC Committee.
1st November, 2018	Beaconsfield Farm Field Day: Topics: Pasture utilisation – A key to success Tour of "Springmere" – Pasture species planted and sustainable management Growing better pastures – some of the factors that can make or break pasture production and persistence - Pasture measurement - MLA Producer Demonstration Project – The challenges and successes the site has posed. Jason Lynch (Senior Consultant Agronomy with Macquarie-Franklin) Mick Taylor (MLA's Feedbase Adoption Project Manager) Eric Hall (Pastures expert and Tamar PDS Consultant) Ben Hooper (Producer at "Springmere" Beaconsfield) 39 producers attended a Farm Field Day at Springmere' PDS site, 342 Holwell Road, south of Beaconsfield.
2nd November, 2018	MLA representatives visit to "Elverton" at Blessington.
2019:	Regular measurement occurring at Elverton (Blessington) and Springmere (Beaconsfield) for all required parameters including animal liveweights, with pastures and soils monitored at Greenhythe (Hillwood). Pasture composition assessments were taken on the following dates: 24-10-19 Springmere (Beaconsfield); 23-10-19 Greenhythe (Hillwood); and Elverton (Blessington). Financial Modelling updated November 2019 and shown in Milestone 7 Report. 2019: Consultant site visits to 3 PDS locations on 16-5-19 and 17-5-19. Paddock summary for 3 sites prepared by consultant in May 2019.
21st March 2019	Field Day: "Cressy Research Facility demonstration paddocks" Pasture varieties and site comparisons dryland and under irrigation - 17 Landholders/Researchers and 4 presenters. (Visit to other trial sites in Northern Tasmania)
16-18 July 2019	The MLA PDS presentation at the Grasslands Society of Southern Australia Annual Conference (RACV Goldfields Creswick Victoria)
December 2019	PDS Project Update on website https://www.tamarnrm.com.au/media/reports/
2020	Regular measurement occurring at Elverton (Blessington) and Springmere (Beaconsfield) for all required parameters including animal liveweights, with pastures and soils monitored at Greenhythe (Hillwood). Pasture composition assessments were taken on the following dates: 22-4-2020 Elverton (Blessington); 23-4-2020 Springmere (Beaconsfield) & Greenhythe (Hillwood).
12th March 2020	Field day theme (held at Beaconsfield and Hillwood) Planning for autumn/winter. The PDS Farm field day showed producers the links between good pasture production and utilization, animal health and live weight gain. The red meat component was covered off on and the benefits of containment feeding in a northern Tasmanian context was discussed. Pasture species

Project Activity Table	
Date	**Detail of activity**
	selection and critical annual rainfall requirements (CARR) for perennial pasture grasses in Tasmania was discussed. Attended by 26 landholders/researchers/presenters.
March 2020	PDS Project Update on website https://www.tamarnrm.com.au/media/reports/
June 2019	Consultant Eric Hall prepared fertilizer fact sheets, available on line: https://www.tamarnrm.com.au/media/reports/
September 2019	Key project messages refined by technical steering group
June 2017 – June 2020	Trade Stalls and presentation promotion: 18-9-18 Presentation on Tamar PDS to SAMRC Committee 23-02-19 Stall at the Exeter Show 6-3-19 Project presentation at the 22nd International Farm Management Association Congress (showcasing the Tamar Valley PDS project. 4 – 6-6-19 Regenerative Agriculture Conference at University of Tasmania. 16-18-7-19 MLA PDS presentation at the Grasslands Society of Southern Australia Annual Conference (RACV Goldfields Creswick Victoria) 6-10-19 - Lilydale Small Farm Field Day Media and Media Releases: 21-7-17 – Tamar Valley Farmers to lift profits 9-2-18 Industry Driven Pasture Project 19-10-18 Bringing Profitability to Red Meat Production 21-3-18 Sowing the Seeds (Cressy) 3-3-20 Planning for Autumn Action 20th March Win News coverage (Blessington) Naturally Yours Newsletter – Tamar NRM Quarterly articles 2017-2020 Pasture Snippets – Commenced March 2020 (ongoing)
June 2020	Case Studies and Narratives completed.
June 2020	Final Report Submitted

Tamar Valley Sustainable Agriculture and Pasture Improvement Technical Group		
Farmer/Fire/Community	Ian Sauer (Chair)	Pipers River
Farmer/TFGA Tamar Valley	Ben Hooper	Beaconsfield
Farmer/Forester	Ian Dickenson	Blessington
Farmer/Longford Red Meat Trial	Ed Archer	Hillwood
Tasmanian Institute of Agriculture (TIA)	Rowan Smith	Prospect
Farmer/Fencing Contractor	Tim Reed	Rosedale
Biosecurity	Paul Nilon	Perth
Pastures	Eric Hall	Consultant
Tamar NRM (rep and group coordinator)	Greg Lundstrom	Tamar NRM

8.6 Key Messages/Pasture "Snippets"

Key Messages
Ag-Focussed Projects 2017-2020

Key Messages development were derived from producer and stakeholder feedback, case studies, presenter PowerPoints over 2 years, from MLA, National Landcare Program (NLP2) and other partnership projects of Tamar NRM. Note that key messages have been developed to guide extension services and project topic selection. They are not intended to contain the full level of detail or context necessary for stand-alone distribution or topic understanding.

- ❑ **Pasture utilisation**

Producer Demonstration Sites for pastures over the last 3 years having good utilisation practices underscores the importance of pasture utilisation in the farming system as many farms are operating at 40% utilisation where as it could be 60-70%.

1. Adopt leaf stage based rotational grazing for grasses
2. Aim to grow the best quality pasture
3. Set the right stocking rate to optimise pasture utilisation

- ❑ **Pasture species identification**

A 2018 Tamar Valley pasture species identification survey showed that confidence in identify in pasture grasses was low. 41% of respondents said they could identify 50% or more of the 22 species listed in the survey. Many rely on agronomic advisors for identification.

- ❑ **Pasture species selection**

With the reduced annual rainfall over the past decade across the Tamar NRM region it is important to understand the Critical Annual Rainfall Requirements (CARR) of different pasture species. It has been demonstrated at the Greenhythe (Hillwood) pasture demonstration site that perennial ryegrass is not well adapted to these changed conditions and that cocksfoot is a better perennial grass option at this site.

- ❑ **Pasture management**

1. Plan ahead – it may be a 2 to 3 year process.
2. Prioritize - soil test paddocks ear marked for renovation.
3. Don't stretch your resources – better to renovate a small area successfully, than fail with a large area.
4. Correct soil fertility deficiencies and ensure land is free of weeds, particularly weedy perennial grasses prior to sowing long term pasture.
5. Use short term forage crops, as a clean-up and while increasing soil fertility e.g. Italian ryegrass (late summer/autumn sown) or Brassicas (late spring/summer sown). It may take several years.
6. Sow fresh, certified seed, with known germination, endophyte/rhizobia content.
7. Utilize the increase in feed production you will get.

Plant tissue testing is the more accurate method for diagnosing micronutrient toxicities, deficiencies, and imbalances for plants and for corroborating animal nutrition.

Ensuring nutrient and good grazing practices are in place to support persistence of existing desirable pasture species. Better than having to renovate your pasture.
A survey of landholders showed some difficulty in calculating DSE values vary for different classes of livestock at different live weights (e.g. DSE value for a 300kg steer growing at 1.0 kg/day). It is important to know livestock DSE values, so landholders can manage feed budgets.

- **Fertiliser management**

It is important that fertiliser application occurs at the right time in the production cycle – when the nutrient will be rapidly taken up by the plants.
Nutrients are constantly being removed as you go about the daily business of growing pasture for grazing animals for the production of meat, wool and dairy and when making hay or silage.
Applying macronutrients and micronutrients to pastures - There are 17 essential nutrients required for healthy plant growth, a deficiency in any one of these 17 will reduce growth, production and profit, even though the others may be abundantly available. Get the balance right.

- **Management of soils**

Waterlogging can limit agricultural productivity in many areas of Tasmania as the state enjoys relatively high rainfall which normally occurs with an excess of rainfall over evaporation in winter and spring. A range of soil orders experience parts of the year when they are saturated due to high regional water tables, low rates of water conductivity, perched water tables or seepage.
Feed lotting when paddocks are wet and utilising laneways for part of the day will reduce pugging.
Managing soil variability in Tasmania requires different management across different paddocks (Tamar NRM commenced a Healthy Soils Demonstration site at "Wenlock", Rosevale in October 2019).
Soil testing should be seen as an integral part of your regular fertiliser and pasture management program within the animal production system.

- **Animal nutrition**

Feed Conversion Ratio - Measuring of the efficiency with which the bodies of livestock convert animal feed into the desired output (meat or milk) is essential. In the cooler Tasmanian climate, it is possible for animals to lose condition.

Variations on Fodder Crops, timing and best types selected to maximise production (including grazing fodder crops).

- **Worm burden and breaking the contamination cycle on irrigated pastures.**

Irrigated permanent pastures become inexorably contaminated when grazed by finishing lambs during the summer and autumn, and ewes with lambs at foot during the late winter and spring. Strategic drenching does little to reduce contamination (compared with strategic drenching on dryland pastures). The only proven way to break the contamination cycle is to spell the paddocks spring and early summer when there is rapid larval die-off. Without additional contamination the pastures become (relatively) worm free.

- **MLA tools and resources**

MLA have a number of useful tools to be profitable and sustainable including:
https://www.mla.com.au/research-and-development/Grazing-pasture-management/
https://mbfp.mla.com.au/pasture-growth/tools/
https://www.mla.com.au/research-and-development/Environment-sustainability/Sustainable-grazing-a-producer-resource/healthy-fertile-soils/

"PASTURE SNIPPETS" *are drawn from the key messages from the 3 year MLA/Tamar NRM Pasture Improvement Project (2017-2020), National Landcare Program (NLP2) and other partnership projects of Tamar NRM. They are not intended to contain the full level of detail for all farming situations.*

Pasture Snippets

Pasture establishment at one of the PDS sites, Tamar Valley.

Pasture utilisation

Over the last 3 years our producer demonstration sites for pasture (PDS) in the Tamar Valley have practiced good utilisation of pasture. The benefits are there for all to see and underscores the importance of pasture utilisation in the farming system as many farms are operating at 40% utilisation where as it could be 60-70%.

1. *Adopt leaf stage based rotational grazing for grasses*
2. *Aim to grow the best quality pasture*
3. *Set the right stocking rate to optimise pasture utilisation*

Tamar NRM

Key Messages drawn from the 3 year MLA/Tamar NRM Pasture Improvement Project (2017-2020), National Landcare Program (NLP2) and other partnership projects of Tamar NRM. They are not intended to contain the full level of detail for all farming situations.

Pasture Snippets

Cocksfoot establishment in the Tamar Valley.

Pasture species selection

With the reduced annual rainfall over the past decade across the Tamar NRM region it is important to understand the Critical Annual Rainfall Requirements (CARR) of different pasture species. It has been demonstrated at the Greenhythe (Hillwood) pasture demonstration site that perennial ryegrass is not well adapted to these changed conditions and that cocksfoot is a better perennial grass option at this site.

Tamar NRM

Key Messages drawn for the 3 year MLA/Tamar NRM Pasture Improvement Project (2017-2020), National Landcare Program (NLP2) and other partnership projects of Tamar NRM. They are not intended to contain the full level of detail for all farming situations.