

Project Number: 408090

Optimization of subterranean clover for dryland pastures in New Zealand

Sustainable Farming Fund 2015-2016

Ministry for Primary Industries
Manatū Ahu Matua



Progress Report for Milestone M3765



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and Associates

Lincoln University

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Introduction

During October and November 2016 six field days were held at the 'Sub 4 Spring' experimental sites:

Date	Location
12/10/2016	Ashley Dene Farm, Canterbury
26/10/2016	Tokaroa Farm, Wairarapa
27/10/2016	Poukawa Research Station, Hawkes Bay
2/11/2016	Rock Farm, Cave, South Canterbury
7/11/2016	Waiau Station, Wairoa, Hawkes Bay
15/11/2016	Omarama Station, Omarama

The field days provided the platform to introduce the 'Sub 4 Spring' research project to the local farming community and also people working in the agricultural support sectors - particularly the agrichemical industry, seed companies, and consultancy and support organisations such as Beef + Lamb NZ.

In addition, results from research projects conducted by the Dryland Pastures Research Team and collaborating organisations were also presented.

A field day was planned for North Canterbury but the November earthquakes badly affected a number of farms in the area. As an alternative Derrick Moot was to attend a meeting of the Cheviot Farm Discussion Group to discuss the results of the 'Sub 4 Spring' project. This meeting was scheduled for Thursday 24th November but was also called off due to earthquake damage on farms.

As follow up to the field days, electronic copies of the booklet were emailed to those who were unable to attend and hard copies of the sub clover guide were also posted on request. In addition the field booklets will be available for download from the ['Sub 4 Spring' website](#).

This report details evidence that **Milestone 3765** has been completed and includes a section for each field day outlining:

- ♣ when the field day was held
- ♣ location of the field day
- ♣ details about the in kind support provided
- ♣ the timeline for the field day with a programme of speakers and topics
- ♣ the number of participants, and
- ♣ photos taken on the field day

The field days are presented in chronological order.

[27/7/17: Please note that this report has been modified for website publication - copies of registers showing Field Day participants have been removed.]

Canterbury 'Sub 4 Spring' Field Day

Ashley Dene Dryland Pastoral Experiments

This field day was held on the Lincoln University's Ashley Dene Farm which is currently, and historically, the site of many dryland pasture experiments.

When

1.30 - 4.30 pm on Wednesday, 12th October 2016.

Location

Ashley Dene Farm, Springston, Canterbury.

Participants

Total estimated number of attendees: 90.

Lincoln University Staff: Derrick Moot (MC and speaker), Dick Lucas and Alistair Black (speakers), Malcolm Smith, Keith Pollock and Sonya Olykan (support staff).

Lincoln University post-graduate student presenters: Shirin Sharifiamina, Rachel Fields, and Teresa Lewis.

Beef + Lamb NZ representative: Sarah O'Connell (Extension Manager, Northern South Island).

Other attendees: local farmers and farmers who had travelled from Marlborough and the surrounding South Island countryside, Seed Force reps, Farmlands reps, and Lincoln University post-graduate students.

Support for the field day

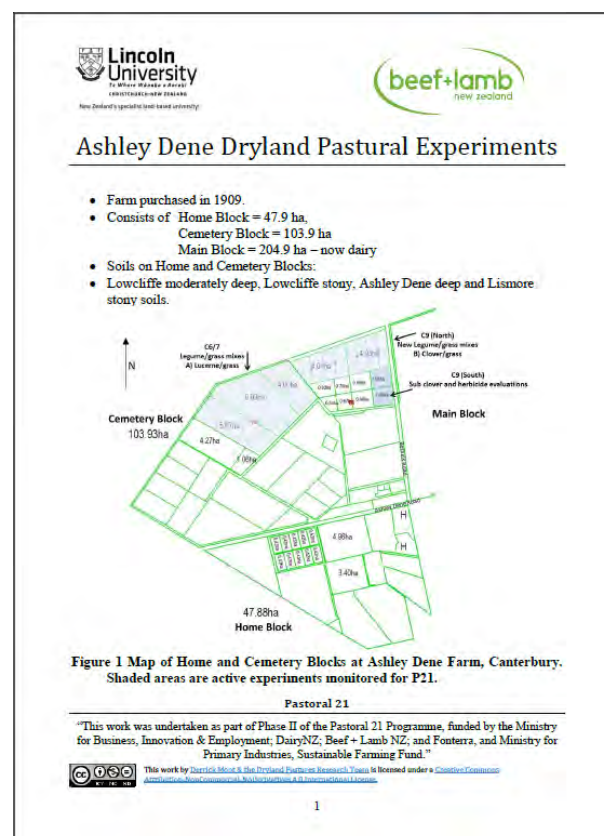
The following organisations provided support to ensure this field day was a success.

Beef + Lamb NZ

- ♣ advertising on the Beef + Lamb NZ website
- ♣ signage to the field day site
- ♣ refreshments in the woolshed
- ♣ portable sound system
- ♣ Health and Safety briefing and a first aid kit, and
- ♣ a register of field day participants.

Dryland Pastures Research team

- ♣ advertising through the DPR Facebook page
- ♣ speakers (both university staff and students, in kind support)
- ♣ field day booklets (A5, colour, 48 pages) - 90 were handed out, and
- ♣ copies of the sub clover guide - estimated that 40 of these were taken.



Front cover of the Ashley Dene Field Day booklet

Field Day programme

Time	Speaker and topic
1.30 - 1.40 pm	<i>Meet at the woolshed and then head to the first stop: Lucerne-grass mixture site started in the Ashley Dene woolshed*</i>
1.40 – 1.50 pm	Sarah O’Connell (Beef + Lamb NZ): Welcome and Health and Safety
1.50 – 2.15 pm	Derrick Moot: Introduction to Dryland Pastures Research Team, Ashley Dene Farm and MaxClover research
2.15 - 2.30 pm	Derrick Moot: MaxLucerne - Lucerne grazing management : Lucerne and lucerne grass
2.30 - 2.40 pm	Shirin Sharifiamina: Yield of four grasses under summer dry conditions
2.40 - 2.50 pm	Alistair Black: Increased flexibility of grazing lucerne in spring
2.50 - 3.00 pm	Derrick Moot: Grain supplementation for stock grazing lucerne monocultures
3.00 – 3.15 pm	Rachel Fields: Ovulation rates of ewes following removal from oestrogenic lucerne
3.15 – 3:30 pm	<i>Move to MaxAnnuals site</i>
3.30 – 3.50 pm	Alistair Black: MaxAnnuals – establishment, grazing management, live weight gain and seed set.
3.50 – 4.00 pm	Dick Lucas: Sub clover is not ‘part of the native’ – where is the sub clover and how to re-establish the seed bank
4.00-4.10 pm	<i>Move to Herbicide experimental area</i>
4.10-4.20 pm	Dick Lucas: Guide for sub clover identification
4.20 – 4.30 pm	Teresa Lewis: herbicide options for sub clover
<i>Optional refreshments in the woolshed and a chance for one-on-one discussions with the speakers</i>	

* Please note that on the day the programme was altered slightly, because the weather was initially being wet, and a couple of the speakers gave their presentations in the woolshed. Once the rain eased off (about 2 pm), the field day participants moved to the first stop and continued with the programme.

Photos



Derrick Moot discusses lucerne grazing management at Ashley Dene (Photo: Carmen Teixeira)



Field day participants take a close look at the lucerne being described by Derrick Moot (Photo: Carmen Teixeira)



Derrick Moot introduces Dick Lucas who spoke about sub clover (Photo: Carmen Teixeira)



A field day participant compares the markings on sub clover leaves to identify which cultivars they are (Photo: Carmen Teixeira)

Ashley Dene register of Field Day participants

The following list of participants was supplied by Theresa Laws (B+LNZ).

[List removed for website publication].

Please note that a number of the participants arrived late, because of the weather, and did not sign the register.

Wairarapa 'Sub 4 Spring' Field Day

Annual clovers in dryland systems

This field day was a collaboration between Lincoln University and On Farm Research. It was hosted by farm owners Dan and Reidun Nicholson and supported by Beef + Lamb NZ.

When

1.30 - 3.30 pm on Wednesday, 26th October 2016.

Location

Tokaroa Farm, Ponatahi, Wairarapa.

Participants

Total estimated number of attendees: 58.

Lincoln University: Derrick Moot (MC and speaker) and Dick Lucas (speaker).

On Farm Research: Paul Muir (speaker).

Other speakers: Dan Nicholson (farm owner), Annette Litherland (Taratahi Agricultural Training Centre), and Andrew Donaldson (local farmer).

Beef + Lamb NZ representative: Lauren Cameron (Extension Manager - Eastern North Island)

Other attendees: local farmers (including members of the Wairarapa Sub 4 Spring Discussion Group), seed and agrichemical company reps, and Taratahi Agricultural Training Centre students.

Support for the field day

The following organisations provided support to ensure this field day was a success.

Beef + Lamb NZ

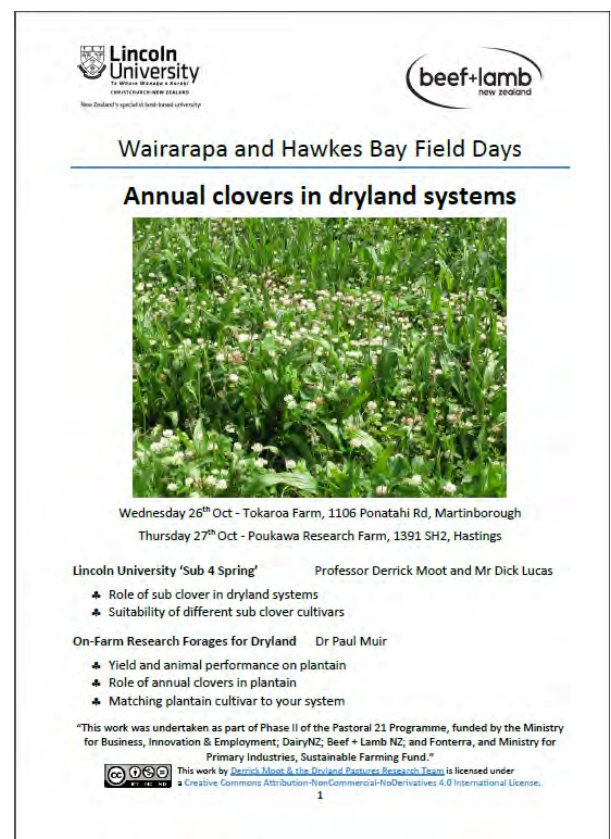
- ♣ advertising on the Beef + Lamb website
- ♣ signage to the field day site
- ♣ refreshments in the woolshed
- ♣ portable sound system
- ♣ Health and Safety briefing and a first aid kit, and
- ♣ a register of field day participants.

On Farm Research

- ♣ emailed a flier (see following page) to a number of their contact groups, and
- ♣ put up signage at the experimental site.

Dryland Pastures Research team

- ♣ emailed a flier to the 25 members of the Wairarapa Sub 4 Spring Discussion Group
- ♣ advertising through the DPR Facebook page.



Front cover of the booklet for the Wairarapa and Poukawa, Hawkes Bay, Field Days

- ♣ organised speakers
- ♣ provided signage at the experimental site
- ♣ provided field day booklets (A5, colour, 44 pages) - 55 were handed out, and
- ♣ copies of the sub clover guide: estimated that 30 of these were taken.

Field Days: Annual clovers in dryland systems

Wednesday 26th Oct Tokaroa Farm, 1106 Ponatahi Rd, Martinborough

Thursday 27th Oct Poukawa Research Farm, 1391 SH2, Hastings

Both days will run from 1.30-3.30 pm



Both Field Days will cover two projects:

Lincoln University Sub 4 Spring Professor Derrick Moot and Mr Dick Lucas
Annette Litherland (Taratahi Agriculture Training Centre)

- ♣ Role of sub clover in dryland systems
- ♣ Suitability of different sub clover cultivars

On-Farm Research Forages for Dryland Dr Paul Muir

- ♣ Yield and animal performance on plantain
- ♣ Role of annual clovers in plantain
- ♣ Matching plantain cultivar to your system



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Te Manatū Ahuwhenua, Ngāherehere









A copy of the flier that On Farm Research and the Dryland Pastures Research Team emailed to contact groups.

Field Day programme

Time	Speaker and topic
	<i>Started at the first stop: annual clover and plantain cultivar experiment</i>
1.30 - 1.40 pm	Lauren Cameron (Beef + Lamb NZ): Welcome and Health and Safety.
1.40 – 2.30 pm	Derrick Moot: Introduction to Dryland Pastures Research Team, Sub 4 Spring project, sub clover cultivar production at Tokaroa and discussion of Shirin Sharifiamina's results. Dan Nicholson: Introduction to Tokaroa Farm and changing farm management techniques as they incorporated plantain and annual clovers into the pastoral system. Paul Muir: Production of annual clover cultivars and plantain at Tokaroa Farm. Dick Lucas: Plantain/ clover mixtures and incorporating sub clover into these pastures (this was done in the adjacent paddock).
2.30 – 2.40 pm	<i>Moved to Second stop: exclosure experiment</i>
2.40-3.30 pm	Derrick Moot: Results from the exclosure demonstration plots. Andrew Donaldson: Establishing and maintaining the sub clover cultivar 'Antas'. Annette Litherland: Herbicides and sub clover cultivars for hill country – experiences at Glenside Farm, Taratahi.
<i>Optional refreshments in the woolshed and a chance for one-on-one discussions with the speakers</i>	

Photos



Derrick Moot tells the Wairarapa field day participants about the growth of sub clover at Tokaroa Farm. The sub clover plots are to Derrick's left. On his right are two plots of Balansa clover and then three plots of Persian clover. (Photo: Sonya Olykan).



Dan Nicholson (farm owner) describes changing farm management as plantain and annual clovers were incorporated into Tokaroa Farm's pastoral system (Photo: Sonya Olykan)



Field Day participants look for sub clover flowers in a plantain-annual clover pasture as Dick Lucas discusses the role of sub clover in these pastures (Photo: Sonya Olykan)



Derrick Moot tells the Wairarapa field day participants about the growth of sub clover in the exclosure plots at Tokaroa Farm (Photo: Sonya Olykan).

Wairarapa register of Field Day participants

The following register was collated and supplied by Lauren Cameron (B+LNZ). Please note that due to the poor weather at the start of the field day not all attendants filled in the register.

[List removed for website publication.]

Hawkes Bay 'Sub 4 Spring' Field Day # 1

Annual clovers in dryland systems

This field day was a collaboration between Lincoln University and On Farm Research. It was hosted by Paul Muir and staff at On Farm Research's Poukawa Research Station and supported by Beef + Lamb NZ.

When

1.30 - 3.30 pm on Thursday, 27th October 2016.

Location

Poukawa Research Station, Poukawa, Hawkes Bay.

Participants

Total estimated number of attendees: 84.

Lincoln University: Derrick Moot and Dick Lucas (speakers).

On Farm Research: Paul Muir (MC and speaker).

Beef + Lamb NZ representative: Mark Harris (Extension Manager - Eastern North Island).

Other attendees: local farmers, and seed and agrichemical company reps.

Support for the field day

The following organisations provided support to ensure this field day was a success.

Beef + Lamb NZ

- ♣ advertising on the Beef + Lamb website
- ♣ signage to the field day site
- ♣ portable sound system
- ♣ Health and Safety briefing and a first aid kit, and
- ♣ a register of field day participants.

On Farm Research

- ♣ emailed a flier to a number of their contact groups
- ♣ signage at the experimental site, and
- ♣ a marquee, refreshments and a BBQ.

Dryland Pastures Research team support

- ♣ advertising through the DPR Facebook page
- ♣ some signage at the experimental site
- ♣ 85 field day booklets (A5, colour, 44 pages) and
- ♣ 35 copies of the sub clover guide.

Field Day programme

Time	Speaker and topic
<i>First stop: sub clover cultivar experiment</i>	
1.30 - 1.40 pm	Mark Harris: Welcome and Health and Safety.
1.40 – 3:00 pm	Derrick Moot: Introduction to Dryland Pastures Research. Derrick Moot: Introduction to the ‘Sub 4 Spring’ sub clover research project. Dick Lucas: Sub clover identification and its role in pastures.
<i>Second stop: walked to adjacent annual clover and plantain demonstration plots</i>	
3:00 – 3:30 pm	Paul Muir: Production of annual clover cultivars and plantain.
3.30 – 3:40 pm	<i>Third stop: Participants drove to the Hill paddock</i>
3.40 – 4:00 pm	Paul Muir: Top flowering annual clovers. Derrick Moot: Managing resident sub clover populations.
<i>Optional refreshments and a BBQ in a marquee at the On Farm Research campus and a chance for one-on-one discussions with the speakers</i>	

Photos



Derrick Moot introduces the ‘Sub 4 Spring’ research project to participants at the Poukawa Field Day in the Hawkes Bay (Photo: Sonya Olykan)



Derrick Moot holds up a sub clover runner and explains their growth while field day participants have a closer look at the sub clover cultivars at Poukawa, Hawkes Bay (Photo: Sonya Olykan).



Derrick Moot (left) and Paul Muir (right) talk to field day participants at the hill site stop (Photos: Kay Ward).

Poukawa, Hawkes Bay, register of Field Day participants

The following register was collated and supplied by Mark Harris (B+LNZ).

[List removed for website publication.]

South Canterbury 'Sub 4 Spring' field trip

'Sub 4 Spring' sub clover cultivar experiment, Rock Farm, Cave

As part of the 2016 Grasslands Conference there was a visit to Rock Farm, hosted by Herstall and Alyson Ulrich, and Derrick Moot arranged to take the participants to the sub clover experiment.

When

6:00 – 7:00 pm on Wednesday, 2nd November 2016.

Location

Rock Farm, Cave South Canterbury.

Participants

Total estimated number of attendees: 116.

Lincoln University: Derrick Moot and Dick Lucas (speakers).

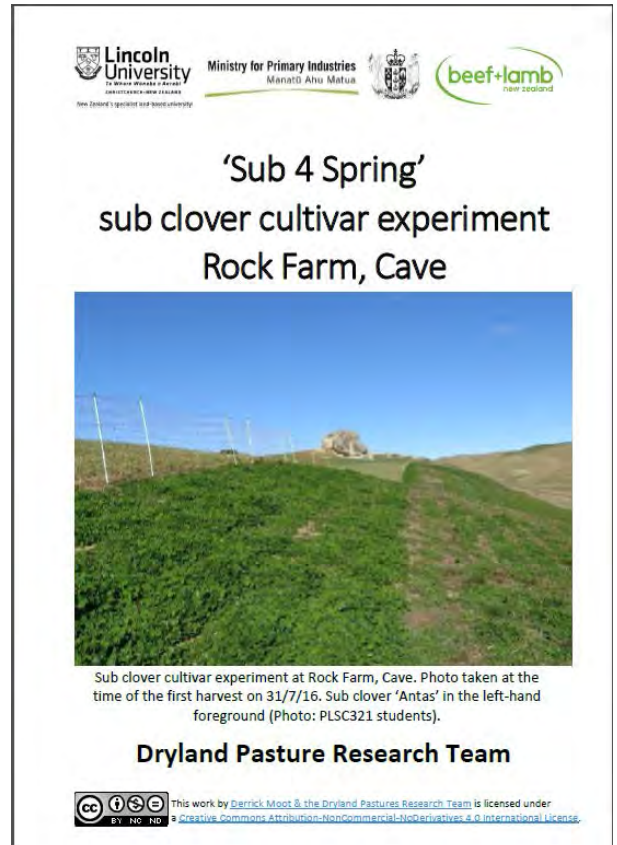
Other attendees: Grasslands Conference participants.

Support for the field day

The following organisation provided support to ensure this field day was a success.

Dryland Pastures Research team

- ♣ field day booklets (A5, colour, 8 pages) - 100 were handed out, and
- ♣ sub clover guide - 50 copies were handed out.



Front cover of the booklet for the field day at Rock Farm, Cave, South Canterbury

Field Day programme

Time	Speaker and topic
	<i>Stop: sub clover cultivar experiment</i>
	Derrick Moot and Dick Lucas: establishment and growth of sub clover cultivars at Cave.

Photos



Derrick Moot talks to the participants about sub clover growth at the Sub 4 Spring experiment at Rock Farm, Cave, South Canterbury (Photo: Hung Ta).



Derrick Moot shows the participants a sub clover runner at the Sub 4 Spring experiment at Rock Farm, Cave, South Canterbury (Photo: Hung Ta).

Hawkes Bay 'Sub 4 Spring' Field Day # 2

Wairoa Field Day

The Wairoa Field Day was held at Waiau Station, owned by Dave Read and Judy Bogaard, where a demonstration area was oversown with sub clover in 2016 and is being used in an advisory capacity for the farmer initiated Wairoa Discussion Group. Dave Read wrote a diary about his experiences for the field day booklet.

When

10.30 am – 2.30 pm on Wednesday, 9th November 2016.

Location

Waiau Station, Wairoa, Hawkes Bay.

Participants

Total estimated number of attendees: 49.

Lincoln University: Derrick Moot (speaker).

Beef + Lamb NZ representative: Mark Harris (Extension Manager - Eastern North Island)

Luisetti Seeds representative: Andrew Johnston (Luisetti Seed Agent – North Canterbury)

Other attendees: local farmers from the Wairoa Discussion Group, reps from Agri businesses and the Hawkes Bay District Council.

Support for the field day

The following organisations provided support to ensure this field day was a success.

Beef + Lamb NZ

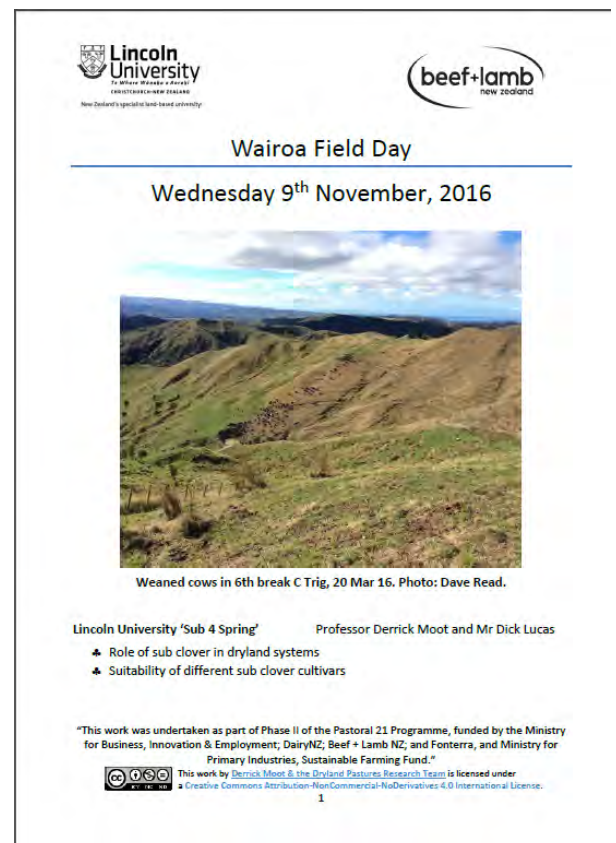
- ♣ advertising on the Beef + Lamb website
- ♣ signage to the field day site
- ♣ portable sound system
- ♣ Health and Safety briefing and a first aid kit, and
- ♣ a register of field day participants

Luisetti Seeds

- ♣ refreshments

Dryland Pastures Research team

- ♣ 50 field day booklets (A5, colour, 8 pages)
- ♣ 20 copies of the sub clover guide were distributed



Front cover of the booklet for the Wairoa Field Day, Hawkes Bay

Field Day programme

The field day started at 10.30 am and continued to 2.30 pm. During that time the following topics were discussed at three stops on Waiau Station:

Speaker and topic
<i>Stop 1: Cow paddock</i>
Derrick Moot: Growth and development of sub clover.
<i>Stop 2: Newly sown paddock</i>
Derrick Moot: Managing oversown sub clover. [This stop included lunch]
<i>Stop 3: 130ha block</i>
Derrick Moot: Managing resident sub clover

Photos



First stop is the Cow Paddock, Waiau Station, Hawkes Bay (Photo: Derrick Moot).



Sub clover flowering at Waiau Station, Hawkes Bay (Photo: Derrick Moot).



Field day participants at the Wairoa Field Day, Waiau Station, Hawkes Bay (Photo: Derrick Moot).

Wairoa, Hawkes Bay, register of Field Day participants

The following register was collated and supplied by Mark Harris (B+LNZ).

[List removed for website publication.]

Mackenzie 'Sub 4 Spring' Field Day

Legumes in the High Country

The field day was hosted by Richard and Annabelle Subtil, owners of Omarama Station, and supported by Seed Force.

When

1.00 - 5.00 pm on Tuesday, 15th November 2016.

Location

Omarama Station, Omarama, Mackenzie Basin.

Participants

Total number of attendees: 48.

Speakers

Lincoln University staff: Derrick Moot (MC & speaker), Dick Lucas, Alistair Black, Jim Moir (speakers).

Lincoln University post-graduate student presenter: Danial Martin-Hendrie.

NIWA: MS Srinivasan.

Other speakers: Richard Subtil (Omarama Station) and Will Murray (Glenmore Station).

Seed Force representative: Liam Donnelly (Technical Manager).

Other attendees:

Local farmers, seed and agrichemical company reps.

Support for the field day

The following individuals and organisations provided support to ensure this field day was a success.

Richard Subtil, Omarama Station owner

- ♣ Health and Safety briefing

Beef + Lamb NZ

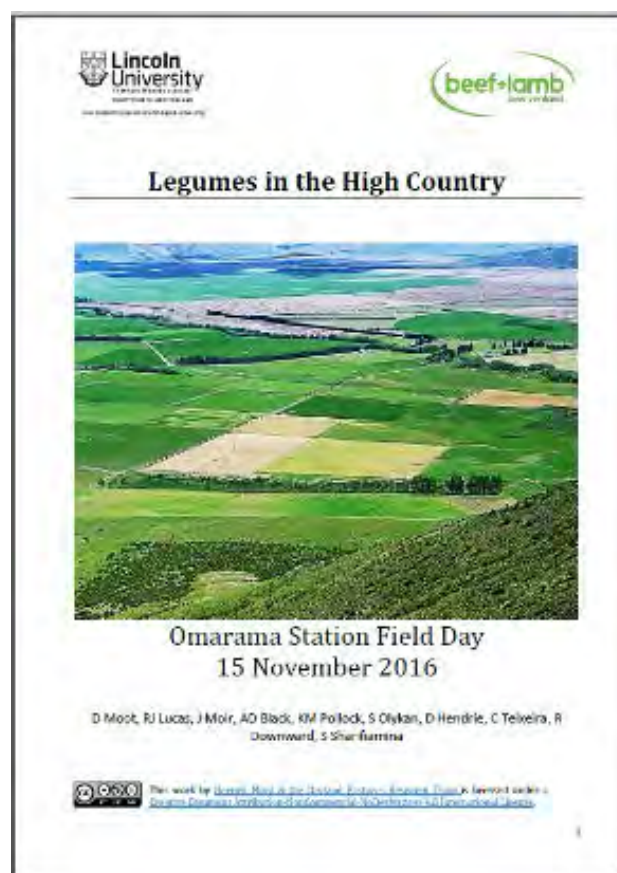
- ♣ signage to the field day site
- ♣ portable sound system

Seed Force

- ♣ advertising
- ♣ refreshments

Dryland Pastures Research team

- ♣ some signage at the experimental site
- ♣ 40 field day booklets (A5, colour, 44 pages)
- ♣ 40 copies of the sub clover guide were distributed



Front cover of the booklet for the Omarama Field Day, Mackenzie Basin

Field Day programme

The following programme for the Omarama Field Day was organised by Derrick Moot and distributed by Liam Donnelly (Seed Force):



Subs for Spring

- 12.45pm Meet at Omarama Stn cook shop (1st left off Broken Hut Rd, for tea/coffee).
- 1.00pm Richard Subtil welcome. Health and Safety brief.
Derrick Moot to outline the day's proceedings before travelling to the Lysimeter site.
- 1.10 pm MS Srinivasan, NIWA, outlining the lysimeter work at Omarama Station.
- 1.35pm Derrick to outline the principals around legumes water use and some recent results from Lincoln University research.
- 1.45 pm Jim Moir to discuss the soil limitations at the trial site and the problem of pH and aluminium
- 2.00pm Daniel Martin-Hendrie talks about his Research plots – including a walk over one set of treatments in the Lime experiment.
- 2.30 pm Hoping to have the lime application machine on site to view.
- 2.40 pm Derrick Moot to outline the trial results from Glenmore Stn.
- 2.50 pm Will Murray discussing what he is doing now with lupins on the wider property and how they are fitting as feed to his farm system.
- 3.00pm Al Black outlines grazing results from Lincoln.
- 3.10 pm Dick Lucas to look at the sub 4 spring plots – Dick talks us through the different cultivars, what they have done, and opportunities in inland environments.
- 4.00 pm Finish and go home for some - visit to the balansa clover paddock for others
- 5.00pm Back to the cook shop to finish



Photos



Derrick Moot outlines the field day itinerary, Cook Shop at Omarama Station (Photo: Carmen Teixeira).



Field Day participants listen to Jim Moir discuss the soil limitations to legume growth at Omarama Station (Photo: Carmen Teixeira).