

Denmark

Subterranean Clover

Background

Subterranean clovers are annual legumes that persist due to their ability to re-seed every year. In dry regions of New Zealand, the vegetative persistence of white and red clover plants is often poor and consequently legume components in pastures are too low. Australian experiences show that sub clover will persist by its habit of self-seeding and thus provides high legume content in a sward.

Denmark is derived from seed collected from the Italian island of Sardinia, and then subsequently tested widely around Australia and New Zealand as part of the Australian National Subterranean Clover Improvement Programme.

Denmark is best adapted to areas with a growing season of at least seven and a half months and is recommended as a replacement for Karridale and Mount Barker. Depending upon location, flowering starts approximately 144 days after sowing, being slightly later than Karridale and Mt. Barker.

Denmark demonstrates a prostrate growth habit and persists well on moderate to heavy soil types. It has late season maturity which makes it well suited to medium to high rainfall zones. *Denmark* was selected for superior autumn and winter growth rates along with improved disease resistance.

Characteristics

Perenniality	Maturity	Leaf Size	Oestrogen	Hard Seed Component
Self-regenerating Annual	Late	Small-Medium	Very low	Low hard seed levels (15%)

1000 Seed Weight	Resistant To	Suggested Sowing Rate (kg/ha)
6.7 grams	✓ Clover scorch ✓ Phytophthora root rot	7-15 kg/ha bare seed

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Key Features

- ✓ Strong seedling vigour
- ✓ High spring production
- ✓ Excellent full-season dry matter production
- ✓ High, reliable seed yield and regeneration
- ✓ Resistance to clover scorch
- ✓ Resistance to root rot

Production Data

New Zealand data collected by AgResearch from Canterbury as part of the Australian Sub clover breeding programme.

Table 1. First year's performance from an April 1993 sowing of a range of sub clovers at Templeton just outside Christchurch (RF 600mm). Relative to Mt. Barker = 100.

Sown April 1993	1993 Spring growth (Nov 93)	1994 Seed Set (Jan 1994)
New Cultivars		
Denmark	200	337
Goulburn	200	288
Karridale	183	233
Old Cultivars		
Mt. Barker	100	100
Woogenellup	83	76
Tallarook	183	206
Seaton Park	133	100

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Table 2. Third and fourth year persistence and performance information on a range of sub clovers sown in April 1993 (Templeton, RF 600mm). Relative with Mt. Barker = 100

Sown April 1993	Third Year Seedling regeneration March 1995	Third Year Spring growth Oct 1995	Fourth Year Seedling regeneration March 1996	Fourth Year Winter growth Aug 1996
New Cultivars				
Denmark	130	127	156	130
Goulburn	53	107	94	96
Karridale	83	120	113	109
Old Cultivars				
Mt. Barker	100	100	100	100
Woogenellup	95	88	100	100
Tallarook	105	118	106	78
Seaton Park	50	65	44	61

Table 3. One full years annual production measurements and hard seed % information on a range of sub clovers sown in April 1993 (Templeton, RF = 600).

Sown April 1993	Third Year Production kgDM/ha May-Nov 1995	Hard Seed %
New Cultivars		
Denmark	7360	27
Goulburn	6070	17
Karridale	6800	18
Old Cultivars		
Mt. Barker	5850	19
Woogenellup	5330	18
Tallarook	6700	19
Seaton Park	4348	NA

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Key Comments from AgResearch on a Canterbury Sub clover trial:

Subterranean Clover - Templeton Site (AgResearch, Lincoln)

1. Mid to late cultivars are the best adapted to this environment (mean rainfall = 600mm).
2. The newer Australian cultivars are generally superior to the older cultivars.
3. *Denmark* consistently showed better seed set, seedling regeneration and growth.

Sowing rate effect on spring drymatter production on subclover. Sown 21/2/2000 (Halkett, Canterbury)

Treatment	Grass KgDM/ha	Subclover KgDM/ha	Total KgDM/ha	Grass %	Clover %
Denmark 2 kg/ha	3093	609	3702	83	17
Denmark 6 kg/ha	2903	1709	4611	64	36
Denmark 10 kg/ha	2526	1743	4269	59	41
LSD	870	818	1217	-	-

Trial Management:

Shut up for silage mid-late September. Grass and clover yield cut early November. The treatment mix was Geysler hybrid ryegrass at 15 kg/ha, Kara cocksfoot at 4 kg/ha and Denmark subclover as stated above.