

DEPARTMENT OF AGRICULTURE AND FISHERIES, SOUTH AUSTRALIA

Agronomy Branch Report

ANNUAL PASTURE LEGUME CULTIVAR DEMONSTRATIONS

1977 SEASON

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SEED PRODUCTION ADVISER

Report No. 82

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1. INTRODUCTION

- (i) The objective is to measure the impact of annual legumes in the farming system.

To obtain results that could or should produce economic evidence for sowing medic and/or subterranean clover, especially in relation to cereal crops in the year following.

- (ii) To make the sites available for more detailed trial work by other interested persons.

e.g. There is a need for more information to be obtained on suitable herbicides to inhibit weed competition at an economic cost for pasture situations, as distinct from seed crops.

- (iii) To study annual seed reserves through rotation.

i.e. attempt to determine by sampling techniques a satisfactory level of seed reserves for pasture regeneration purposes.

The programme is a co-operative effort between the Department of Agriculture and Fisheries, (involving District Agronomists), South Australian Seed Producers Association, Seed Industry Association and farmers.

2. BASIC SITE PLANS

Annual Legume Promotion Sites - 1977

YEAR I (on stubble)Example - 24 hoe combine - actual figures to nearest metre (M) shown in brackets.

		(293M) 300M		fenceline
↑ (69M)	CONTROL (stubble)		0.5 ha	
	BEST LEGUME (6 kg/ha)		0.5 ha	
	NORMAL LEGUME (1 kg/ha)		0.5 ha	
70M ↓		Insecticide	0.25 ha	
	BEST LEGUME	No Insecticide	0.25 ha	
			<u>2.0 ha Total area</u>	

YEAR II (in crop)

		fenceline	
		Apply nitrogen	0.25 ha
	CONTROL	No nitrogen	0.25 ha
		Apply nitrogen	0.25 ha
	BEST LEGUME	No nitrogen	0.25 ha
	NORMAL LEGUME		0.5 ha
			<u>1.5 ha Total area</u>

Distance to travel with combines to cover 0.5 ha, (17 cm between hoes)

24 hoe	1 172 metres	sows 4.27 metres wide
20 hoe	1 412 metres	sows 3.54 metres wide

BASIC SITE PLANS

The Basic Site Plans are used as an example of how the areas are set up, and have some variation depending on local situation demands.

e.g. In some situations an additional treatment is added by having another CONTROL PLOT where no seed is sown, but superphosphate is applied.

In Year II the area will be sown with a cereal, and crop yield differences measured over the differing treatments.

In some situations, e.g. seasonal failures, sites may need to be resown to a legume in Year II, instead of the cereal cropping phase.

Comparisons could also be made in some situations with split plots, comparing the result of legume reseeded with natural regeneration.

SOWING AND MANAGEMENT TECHNIQUES

The basic set up is as per plan, with no gaps between individual plot areas.

Seed, was provided by the South Australian Seed Producers Association.

Superphosphate, CONTROL has NO fertilizer, all other plots received an agreed reasonable minimum rate.

Seeding rates, in most situations was not less than 6 kg per ha. For subterranean clover a 50% loading was applied on the 6 kg rate.

Sowing technique, farmers machinery was used. In most situations if there is an agreement between Co-ordinator, District Agronomist and Co-operator on choice of cultivar and/or mixture of cultivars and sowing rate, a NORMAL LEGUME PLOT is dispensed with.

Insects, where spraying for insect control is to be carried out half of the INSECT PLOT is unsprayed as a comparison treatment, (usually outside part for ease of operation).

Fencing, it is not intended to fence off site areas so as to obtain as near as possible a normal and unbiased farm situation approach.

The Co-operator is asked as far as practical to manage the area to avoid both under and over grazing.

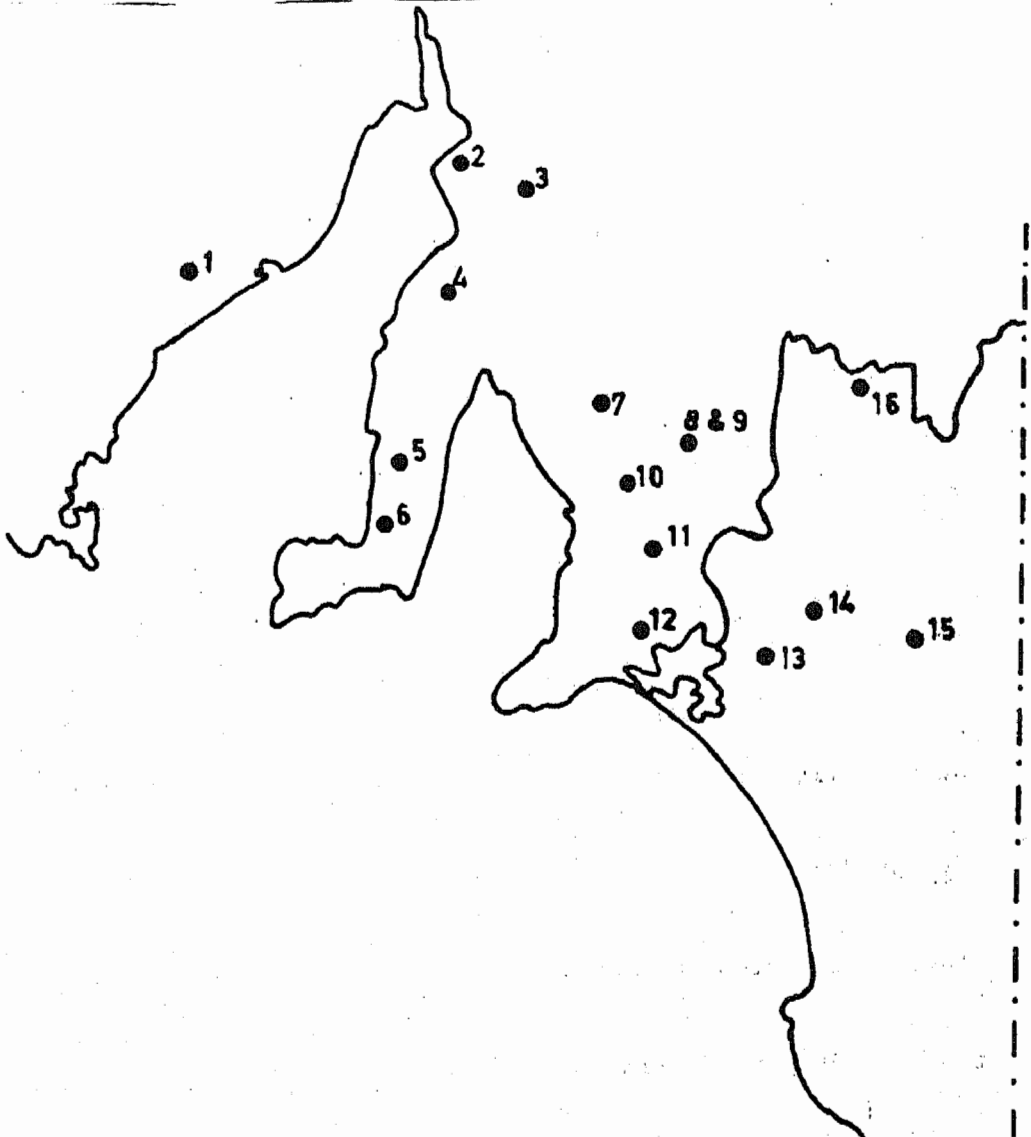
General, selected sites will be signposted, aided by Seed Industry Association Funds. Additional information and plans are available if required.

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and Fisheries,
Grenfell Centre,
ADELAIDE, S.A. 5000

Phone: (08) 227-3058

LEGUME PROMOTION SITES - 1977

Site	Property	Rose Clover	Medic	Sub. Clover	Average Rainfall (mm)
1 Rudall	H.P.K. Dunn		M		360
2 Nelshaby	P.E. Franks		M		337
3 Gladstone	R. Sargent		M	S	410
4 Port Broughton	G.J. Dennis		M		350
5 Maitland	A. Brown		M		510
6 Minlaton	D.P. Flower		M		375
7 Bagot Well	J.A. O'Brien & Son			S	430
8 Palmer	V.E. Wegener	R	M	S	400
9 Palmer	A.J. Krause		M		338
10 Lyndoch	P. Mattner			S	570
11 Callington	C.E. Wegener		M	S	380
12 Milang	B.C. Landseer		M	S	375
13 Coomandook	M.R. & R.G. Ballard	R	M	S	415
14 Wynarka	G.C. Blacket		M		350
15 Lameroo	F.R. Maynard		M		363
16 Woolpunda	K. Boyd		M		250



ANNUAL LEGUME PROMOTION - 1977

SITE: Tuckey - Hd. Rudall, SN 24

PROPERTY: H.P.K. Dunn - Phone: Tuckey 44030

DATE SOWN: 1/6/77

SOIL TYPE: Loamy mallee

ANNUAL RAINFALL: 360 mm

PADDOCK HISTORY:
 1976 Wheat, super at 145 kg/ha
 1975 Pasture, nil fert. & nil seed
 1974 Wheat, super at 112 kg/ha
 1973 Pasture, super at 60 kg/ha

PADDOCK PREPARATION: Stubble very heavily grazed, almost no surface residue.

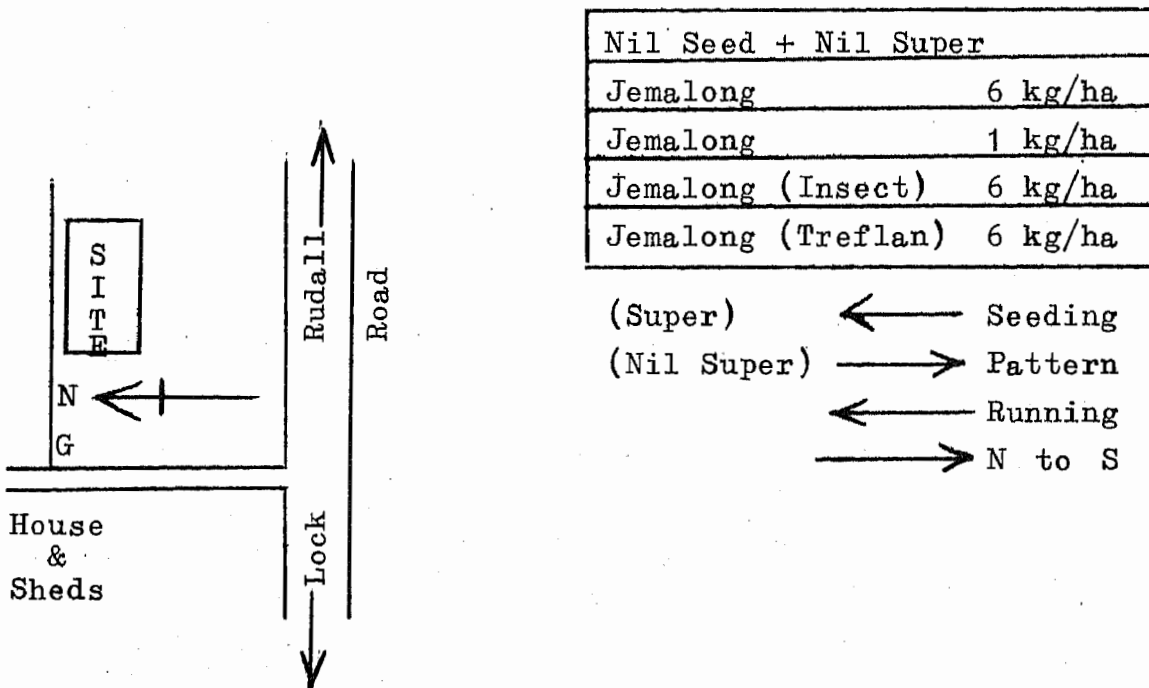
SOWING MACHINE & METHOD: Trash seeder, 28 row, seed dropped on top from small seeds box - seed covered by soil thrown by discs of the trash seeder.

FERTILIZER: Super at 120 kg/ha

SEEDING CONDITIONS: Soil moisture limited but all other conditions ideal.

GENERAL COMMENT: Due to a mechanical problem one half of the super drive was not operational. Rather than correcting the fault part way through seeding, it was left as was and recorded.

CULTIVARS AND SEEDING RATE:



ANNUAL LEGUME PROMOTION - 1977

SITE: Nelshaby - HD. Napperby, SN 375

PROPERTY: P.E. Franks, Port Pirie, S.A. 5540
Phone: (086) 344283

DATE SOWN: 31/5/77

SOIL TYPE: Sandy loam

ANNUAL RAINFALL: 337 mm

PADDOCK HISTORY: Occasional cropping, unimproved pasture.

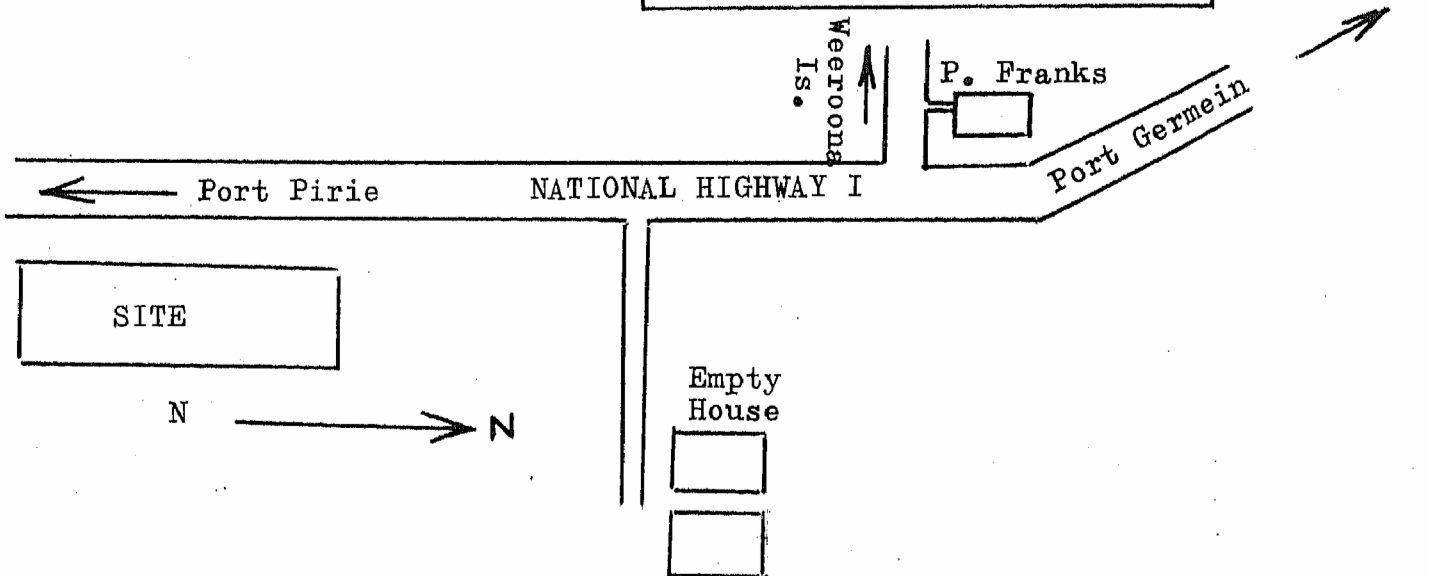
PADDOCK PREPARATION: Nil, Sown directly into grazed area.

SOWING MACHINE AND METHOD: Disc drill, seed mixed with fertilizer.
Sowing depth 20 mm. Plots 4 combine widths
of 5 m, length 200 m.

FERTILIZER: Super at 100 kg/ha

CULTIVARS AND SEEDING RATE:

Jemalong	2 kg/ha
Jemalong	5 kg/ha
Jemalong	10 kg/ha
Harbinger	5 kg/ha
Nil Seed + Nil Super	



ANNUAL LEGUME PROMOTION - 1977

SITE: Gladstone - Hd. Booyoolie, SN 26

PROPERTY: J.R. Sargent, Gladstone, 5473
Phone: (086) 62 2083

DATE SOWN: 30/6/77

SOIL TYPE: Hard setting clayey red brown earth.

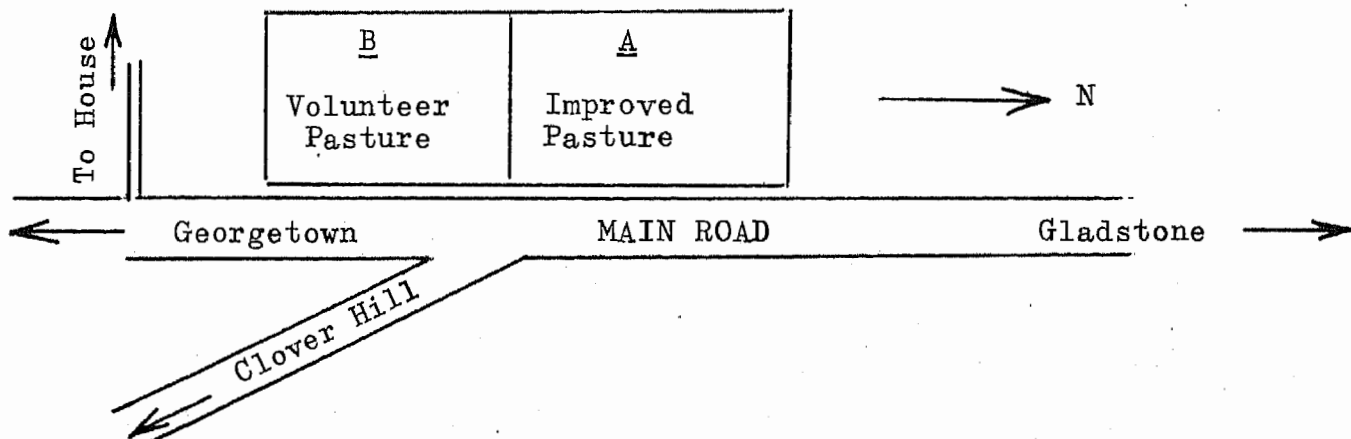
ANNUAL RAINFALL: 410 mm

PADDOCK HISTORY: A Wheat, pasture, pasture, wheat, pasture, pasture.
B Wheat, fallow, volunteer pasture, wheat, fallow, volunteer pasture.

PROPOSED ROTATION: A Crop, pasture, crop, pasture.
B Crop, pasture, crop, pasture.

CULTIVARS & SEEDING RATE: Mixed Geraldton, Woogenellup and Jemalong - 13 kg/ha.
Improved pasture site only.

PROPOSED MEASUREMENTS: Each area 5 hectares.
Crop yields and wool production.
Observations of changes in soil structure.



ANNUAL LEGUME PROMOTION - 1977SITE: Pt. Broughton - HD Wokurna SN 39PROPERTY: G.J. Dennis - phone Port Broughton (086) 352212DATE SOWN: 27.4.77SOIL TYPE: sandy malleeANNUAL RAINFALL: 350 mm

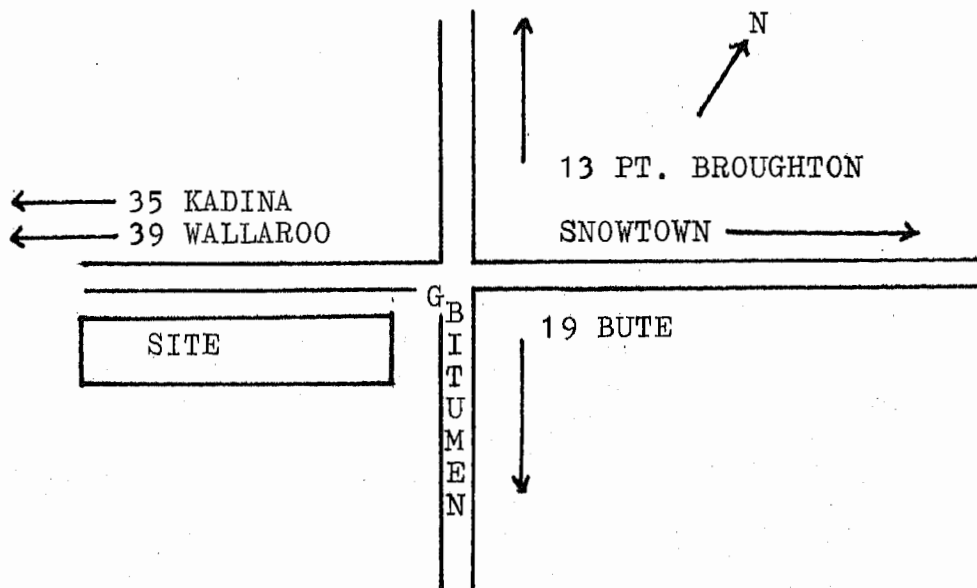
PADDOCK HISTORY: 1976 Wheat, super at 134 kg/ha
 1975 Pasture, medic sown at 0.5 kg/ha with
 super at 67 kg/ha
 1974 Wheat, super at 134 kg/ha

PADDOCK PREPARATION: Nil workings, sheep on stubble onlySOWING MACHINE & METHOD: International 24 row disc drill
seed mixed with fertilizer.FERTILIZER: Super at 100 kg/ha

CULTIVARS & SEEDING RATE: 2/3 Harbinger & 1/3 Jemalong at 10 kg/ha
 2/3 Harbinger & 1/3 Jemalong at 5 kg/ha

SEEDING CONDITIONS: Dry sown

CONTROL (NIL SEED + NIL SUPER)
MIXTURE 2/3 HARBINGER & 1/3 JEMALONG - 10 kg/ha
MIXTURE 2/3 HARBINGER & 1/3 JEMALONG - 5 kg/ha
NIL SEED + SUPERPHOSPHATE



ANNUAL LEGUME PROMOTION - 1977

SITE: Maitland - Hd. Maitland, SN 227

PROPERTY: A. Brown, Box 221, Maitland.
Phone: Maitland 2504.

DATE SOWN: 7/6/77

SOIL TYPE: Self mulching red brown-black.

ANNUAL RAINFALL: 510 mm

PADDOCK HISTORY: 1976 Barley, super at 78 kg/ha
1975 Barley, super at 78 kg/ha
1974 Pasture, nil fertilizer & nil seed

PADDOCK PREPARATION: Scarifier
Harrowed and burnt (heaps)
Scarifier

SOWING MACHINE & METHOD: Connor-Shea Wideline Seeder
64 row, seed sown through normal seed box.

FERTILIZER: Super at 112 kg/ha (applied after seeding with combine).

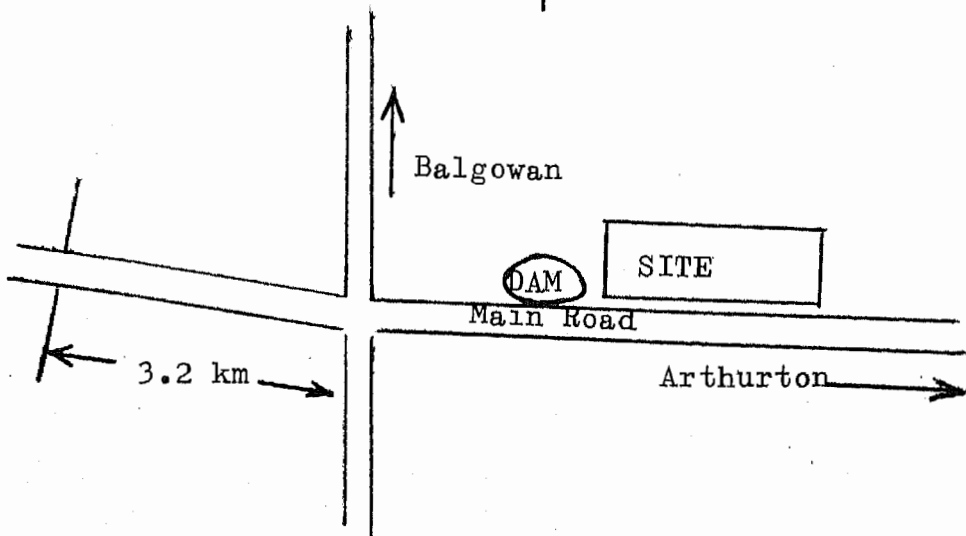
SEEDING CONDITIONS: Ideal

CULTIVARS AND SEEDING RATE:

N

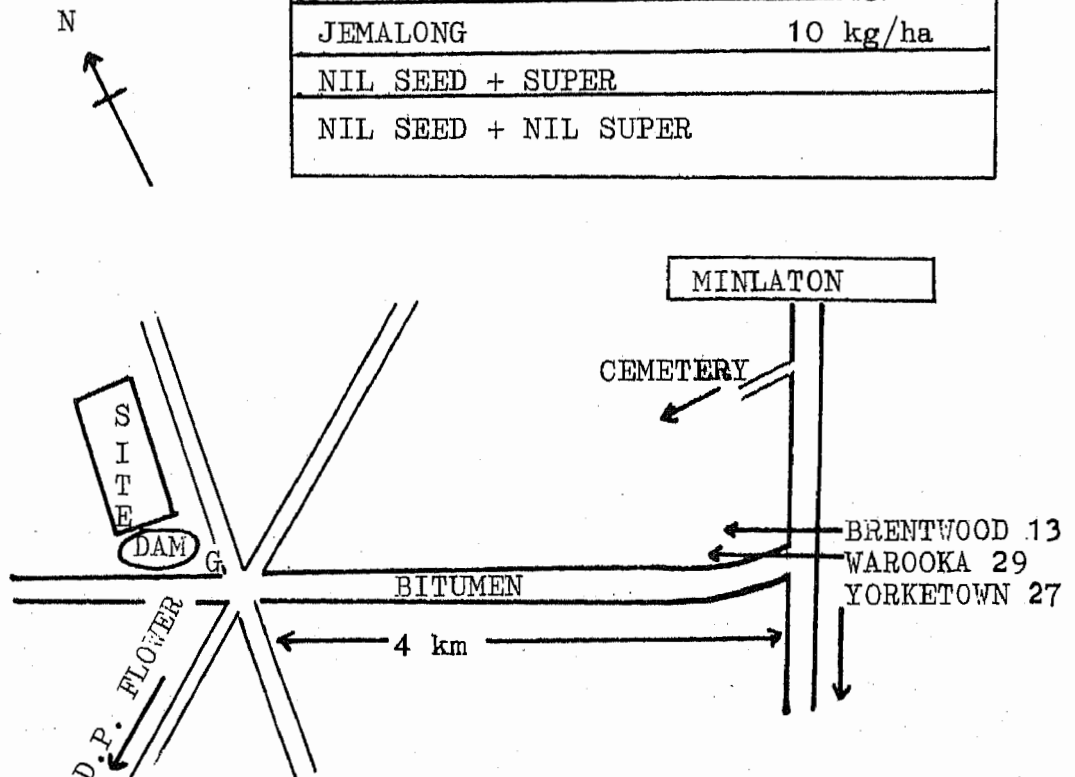
NIL SEED + NIL FERTILIZER	
SNAIL	22 kg/ha
MIXTURE 2/3 BORUNG + 1/3 JEMALONG	12 kg/ha
MIXTURE 2/3 BORUNG + 1/3 JEMALONG	10 kg/ha
NIL SEED + FERT.	
MIXTURE 2/3 BORUNG + 1/3 JEMALONG	3 kg/ha

↑
Approximately 2/3 Plot had Treflan (R) applied



ANNUAL LEGUME PROMOTION - 1977SITE: Minlaton - HD Minlacowie SN 48SPROPERTY: D.P. Flower - phone Brentwood 261DATE SOWN: 7.5.77SOIL TYPE: grey malleeANNUAL RAINFALL: 375 mmPADDOCK HISTORY: 1976 wheat, super at 202 kg/ha
1975 Pasture, (nil fertilizer & nil seed)
1974 Barley, super at 202 kg/haPADDOCK PREPARATION: nil workings, fire harrowed onlySOWING MACHINE & METHOD: International 62-24 row combine fitted with lucerne points. Seed sown through small seedsbox (International grass seeder - no hoses used), harrowed after seeding.FERTILIZER: Super at 100 kg/haCULTIVARS & SEEDING RATE: Jemalong - 10 kg/ha
Jemalong - 5 kg/haSEEDING CONDITIONS: Dry sown

JEMALONG (INSECT)	10 kg/ha
SOURSOB CONTROL AREA	
JEMALONG	5 kg/ha
JEMALONG	10 kg/ha
NIL SEED + SUPER	
NIL SEED + NIL SUPER	



ANNUAL LEGUME PROMOTION - 1977

SITE: Bagot Well - Hd. Kapunda, SN 270

PROPERTY: J.A. O'Brien & Son
Phone: (085) 662068 (N.J. O'Brien)

DATE SOWN: 4/7/77

SOIL TYPE: Sandy Red Brown earth

ANNUAL RAINFALL: 430 mm

Paddock HISTORY: 1976 Wheat, cut for sheaved hay, super at 125 kg/ha.
1975 Peas, super at 125 kg/ha
1974 Pasture, nil fert. & nil seed.

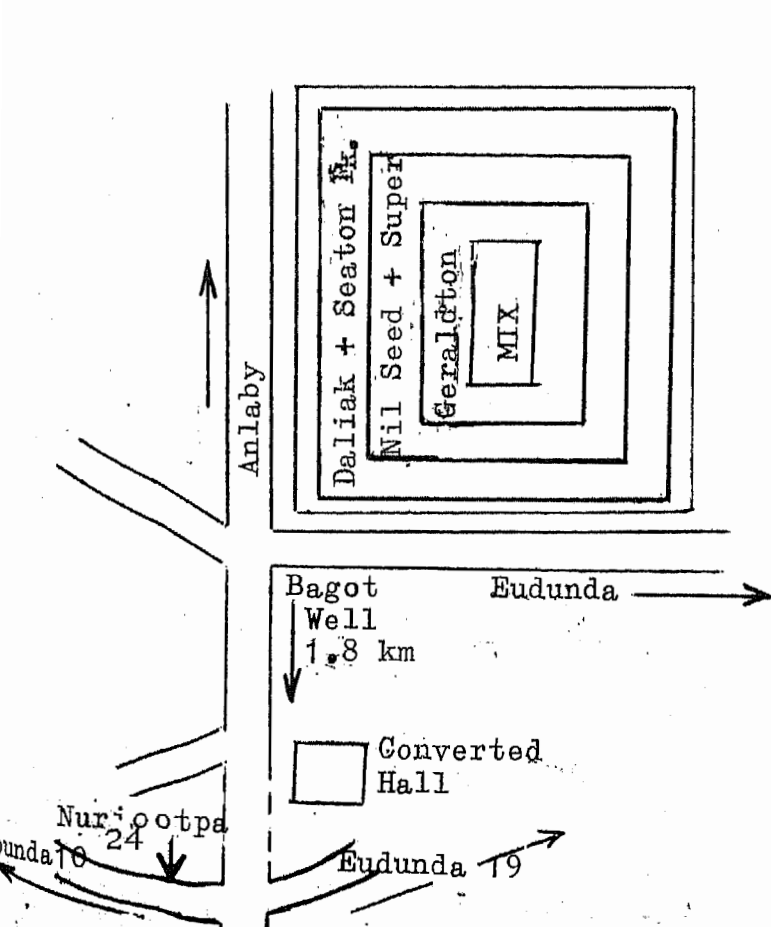
Paddock PREPARATION: Cultivator (2x)
Combine (2x)
Harrowed

SOWING MACHINE & METHOD: 20 row combine & trailing harrows, seed sown through small seed box.

FERTILIZER: Super at 146 kg/ha

CULTIVARS & SEEDING RATE: Gevaldton } 6 kg/ha
Daliak & Seaton Park } Oats sown at 62 kg/ha on all plots.

SEEDING CONDITIONS: Moist at seeding.

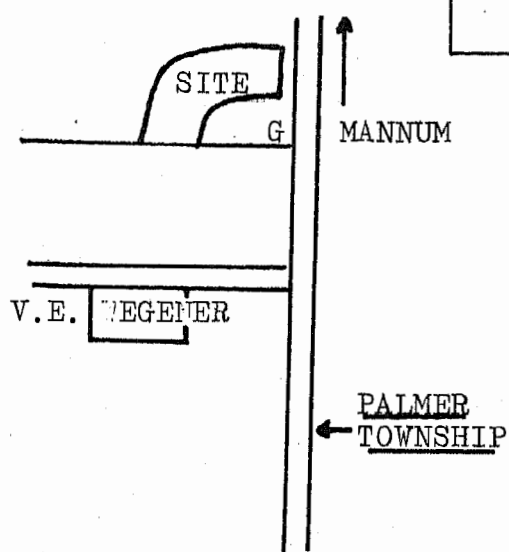


Plots are sown along S.W. boundary of SN 270.
Mixture nearest fence
Plots 2 combine widths
Mixture in middle to complete 20 ha paddock
Similar plot site SN 272 into cereal crop, legume sown down 1974.

ANNUAL LEGUME PROMOTION - 1977SITE: Palmer - HD Tungkillo SNPROPERTY: V.E. Wegener - phone Palmer 265DATE SOWN: 14.6.77SOIL TYPE: transitional loamy malleeANNUAL RAINFALL: 400 mmPADDOCK HISTORY: 1976 wheat, super at 123 kg/ha
1975 Pasture, (nil fertilizer & nil seed)
1974 wheat, super at 123 kg/haPADDOCK PREPARATION: stubble raked and burnt
scarifier with light harrows
combine
heavy harrowsSOWING MACHINE & METHOD: Shearer combine, 18 row, seed mixed
with fertilizer, dropped on top,
harrowed after seeding.FERTILIZER: super at 88 kg/haSEEDING CONDITIONS: dry on top, moist underneathCULTIVARS & SEEDING RATE:

CROP AGRONOMY TRIAL

JEMALONG	10 kg/ha
JEMALONG & HARBINGER	10 kg/ha
GERALDTON	15 kg/ha
KONDININ	8 kg/ha
NIL SEED + NIL SUPER	
JEMALONG (INSECT)	10 kg/ha



ANNUAL LEGUME PROMOTION - 1977SITE: Palmer - HD Finnis SN 370PROPERTY: A.J. Krause - phone Palmer 223DATE SOWN: 16.5.77SOIL TYPE: sandy loamANNUAL RAINFALL: 338 mm

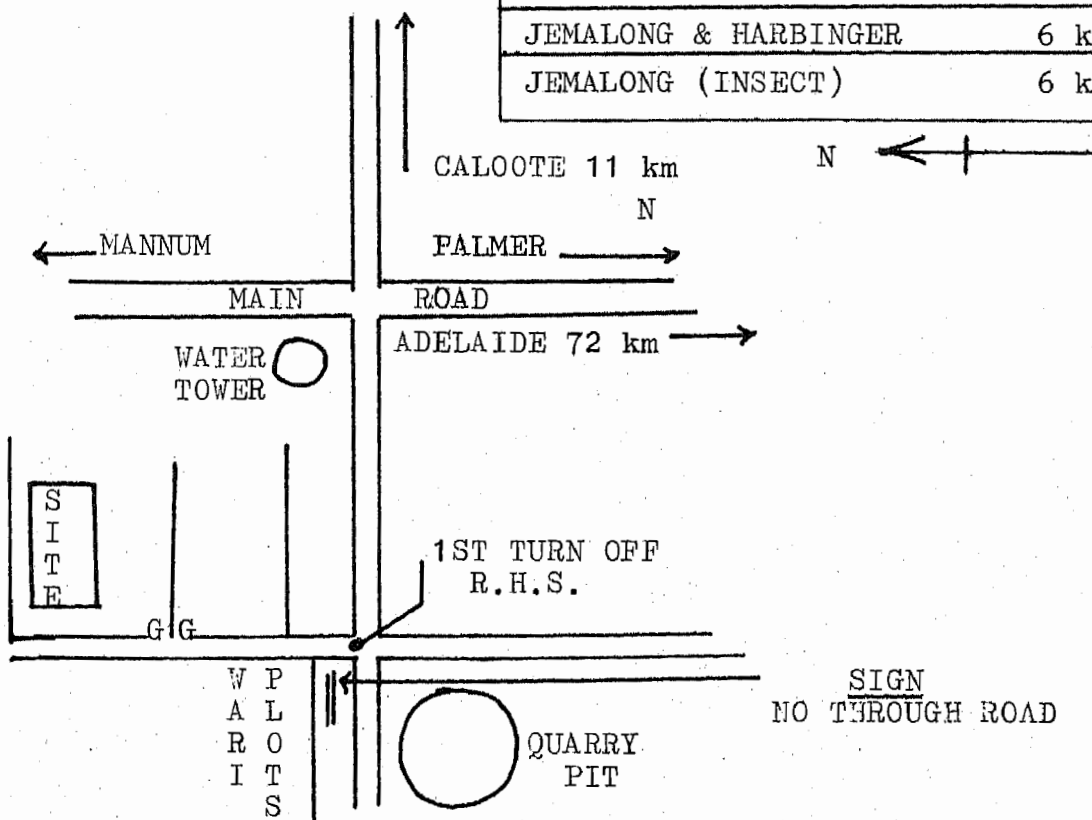
PADDOCK HISTORY: 1976, Wheat, super at 125 kg/ha + 1 kg/ha Jemalong
 1975, Fallow
 1974, Pasture, nil fertilizer & nil seed

PADDOCK PREPARATION: Scarifier

SOWING MACHINE & METHOD: Shearer single disc drill, 20 row,
 seed sown through small seed box
 mounted on front of drill, dropped
 on top.

FERTILIZER: Super at 84 kg/haSEEDING CONDITIONS: DryCULTIVARS & SEEDING RATE:

NIL SEED + NIL SUPER	
JEMALONG	6 kg/ha
JEMALONG	1 kg/ha
JEMALONG & HARBINGER	6 kg/ha
JEMALONG (INSECT)	6 kg/ha



ANNUAL LEGUME PROMOTION - 1977

SITE: Lyndoch - Hd. Barossa, SN 3129

PROPERTY: P.C. Mattner - Phone: (085) 244010

DATE SOWN: 22/6/77

SOIL TYPE: Sandy

ANNUAL RAINFALL: 570 mm

PADDOCK HISTORY: Vineyard until 1976

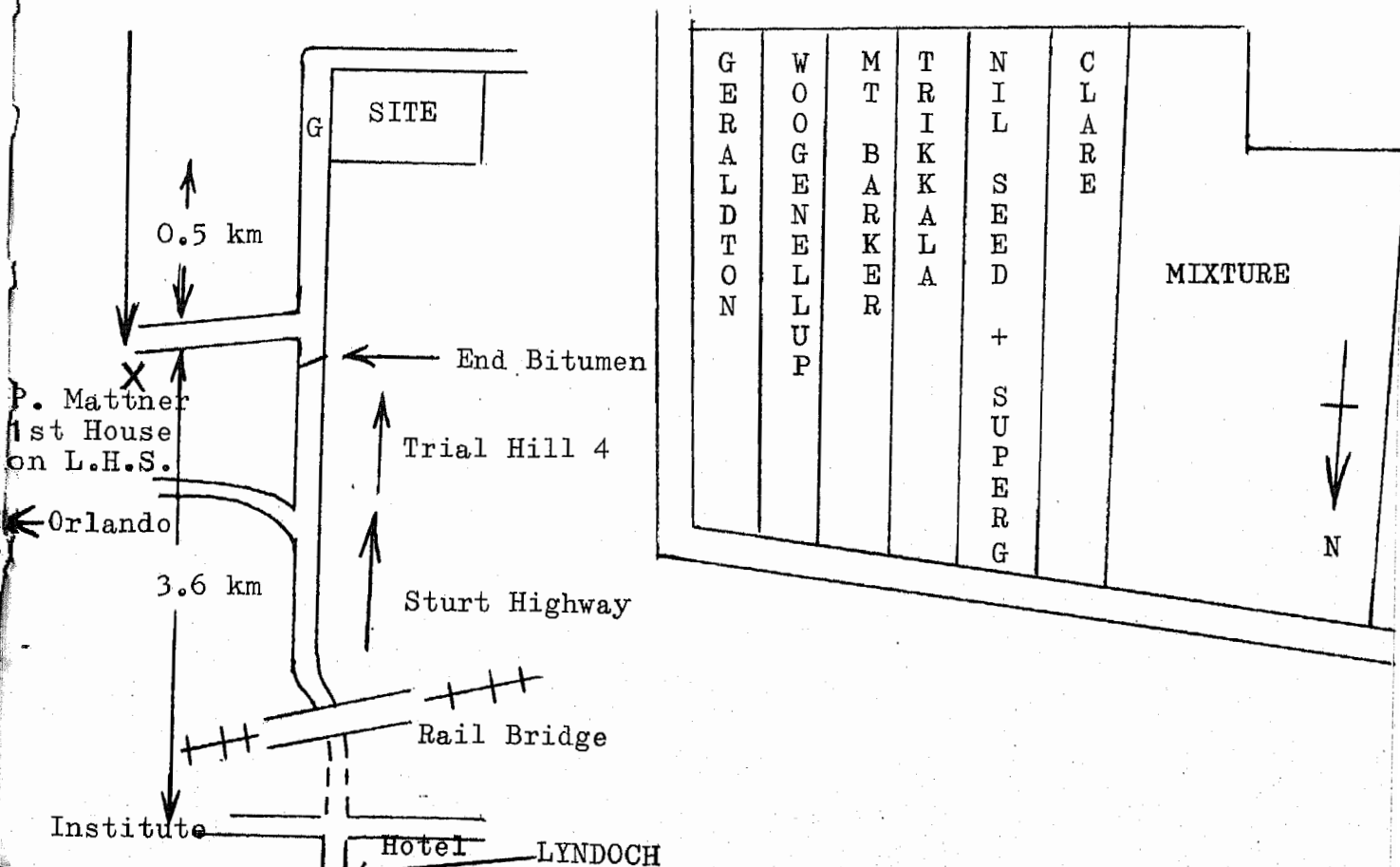
PADDOCK PREPARATION: Cultivated (3x)
Harrows used

SOWING MACHINE & METHOD: 12 row combine, seed mixed with
fertilizer (plots 6 combine widths)

FERTILIZER: Super at 240 kg/ha
Super at 120 kg/ha
nil legume seed plot

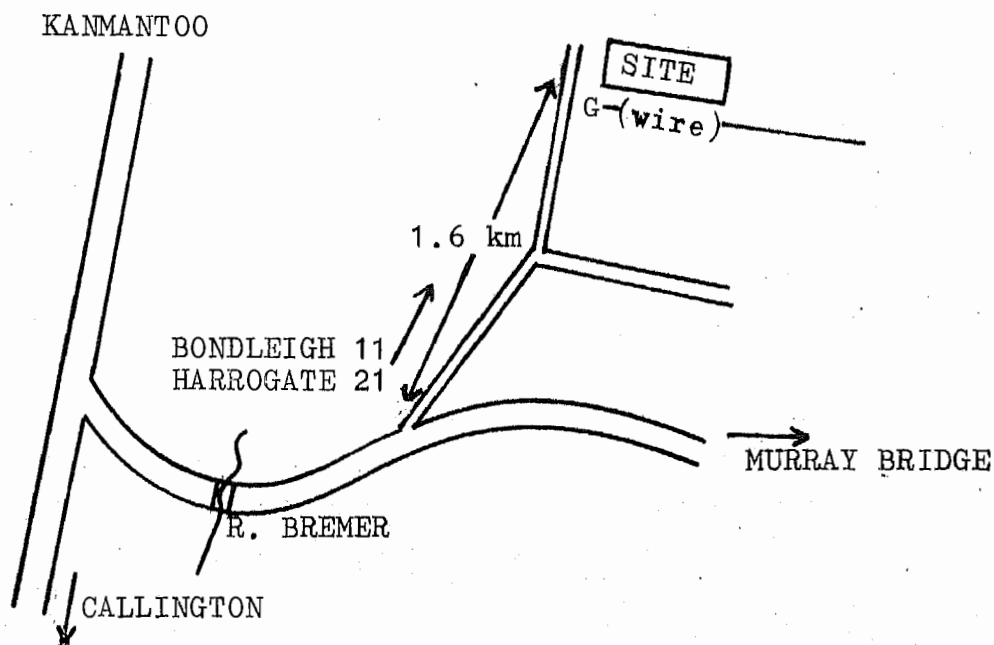
CULTIVARS & SEEDING RATE: Geraldton }
Woogenellup } 8 kg/ha
Mount Barker } Oats sown at 45 kg/ha
Trikkala }
Clare } on all plots.

SEEDING CONDITIONS: Ideal



ANNUAL LEGUME PROMOTION - 1977SITE: Callington - HD Monarto SN 42 & 43 of 2001PROPERTY: C.E. Wegener - Callington 5254 - phone (085) 358017DATE SOWN: 26.5.77SOIL TYPE: transitional loamy malleeANNUAL RAINFALL: 380 mmPADDOCK HISTORY: 1976 Wheat, super at 123 kg/ha
1975 Pasture, (nil fertilizer & nil seed)
1974 Barley, super at 90 kg/haPADDOCK PREPARATION: fire harrowed
scarifier (shallow)
harrows (heavy)SOWING MACHINE & METHOD: MF 80 28 row combine, seed sown through
normal seed box - trailing harrowsFERTILIZER: super at 54 kg/haCULTIVARS & SEEDING RATE: Jemalong - 10 kg/ha
Geraldton - 15 kg/haSEEDING CONDITIONS: moisture satisfact. dust raised on surface

NIL SEED + NIL SUPER	
GERALDTON	15 kg/ha
JEMALONG	10 kg/ha
JEMALONG (INSECT)	10 kg/ha



ANNUAL LEGUME PROMOTION - 1977SITE: Milang - HD Alexandrina SN 153PROPERTY: B.C. Landseer - phone Milang 120DATE SOWN: 12.5.77SOIL TYPE: Sandy loamANNUAL RAINFALL: 375 mm

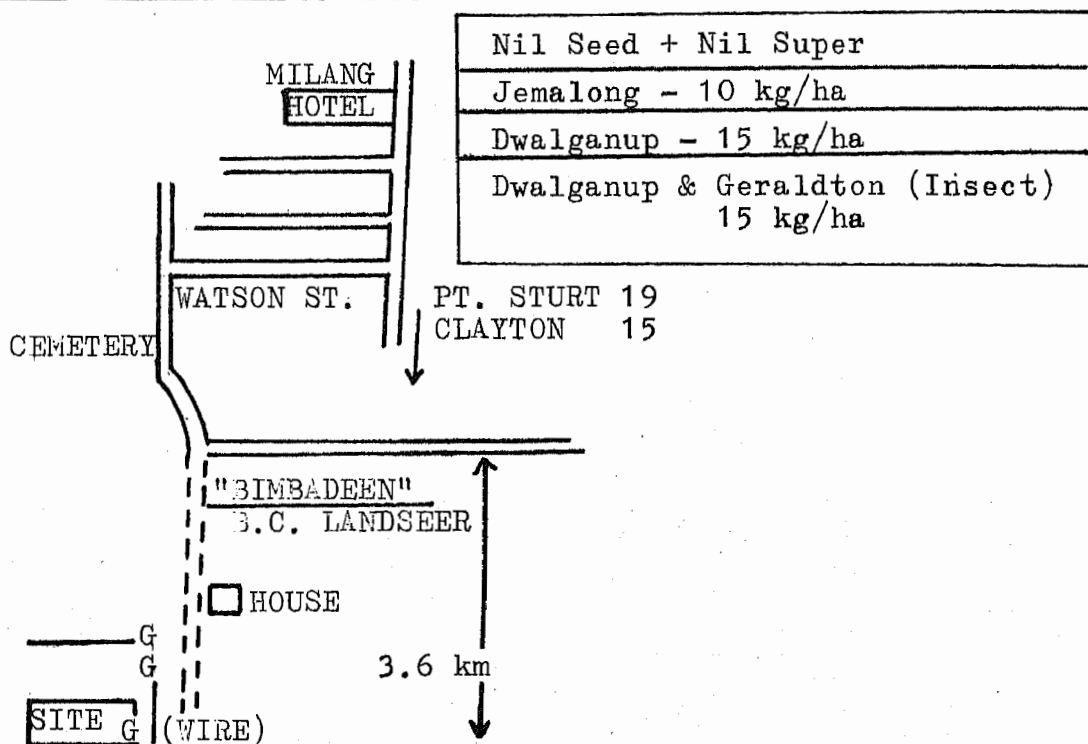
PADDOCK HISTORY: 1976 Barley, super at 210 kg/ha
 1975 Pasture, (nil fertilizer & nil seed)
 1974 Oats, super at 110 kg/ha
 1973 Pasture,

PADDOCK PREPARATION: stubble disced in
 harrowed
 cultivator
 harrowed

SOWING MACHINE & METHOD: Sunshine disc drill, 20 row, seed
 sown through normal seed box -
 trailing harrows and rubber tyred
 roller.

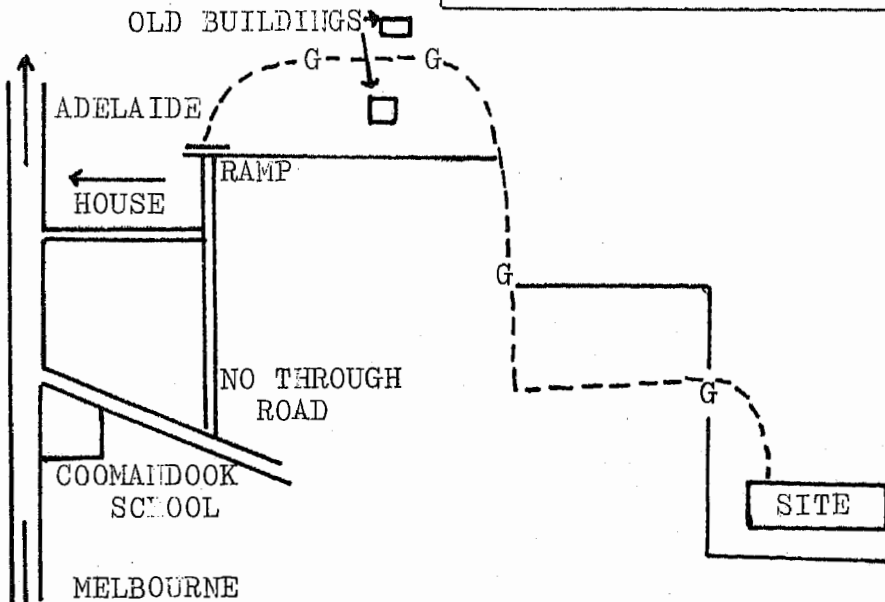
FERTILIZER: Super at 134 kg/ha

CULTIVARS & SEEDING RATE: Jemalong 10 kg/ha
 Dwalganup 15 kg/ha
 Dwalganup & Geraldton 15 kg/ha
 (Insecticide)

SEEDING CONDITIONS: IdealCULTIVARS & SEEDING RATE:

ANNUAL LEGUME PROMOTION - 1977SITE: Coomandook - HD Roby SN 9APROPERTY: M.F. & R.G. Ballard - phone Coomandook 73 3012DATE SOWN: 28.5.77SOIL TYPE: sand over clay (some none wetting)ANNUAL RAINFALL: 415 mmPADDOCK HISTORY: 1976 Barley, super at 100 kg/ha
1975 Pasture, (nil fertilizer & nil seed)
1974 Barley, super at 100 kg/haPADDOCK PREPARATION: Nil, medium quantity of stubble, also medium density of green stinkwort.SOWING MACHINE & METHOD: MF 78 disc drill, 24 row, sown through small seedsbox, dropped on surface, no harrows.FERTILIZER: Super at 110 kg/haSEEDING CONDITIONS: IdealCULTIVARS & SEEDING RATE:

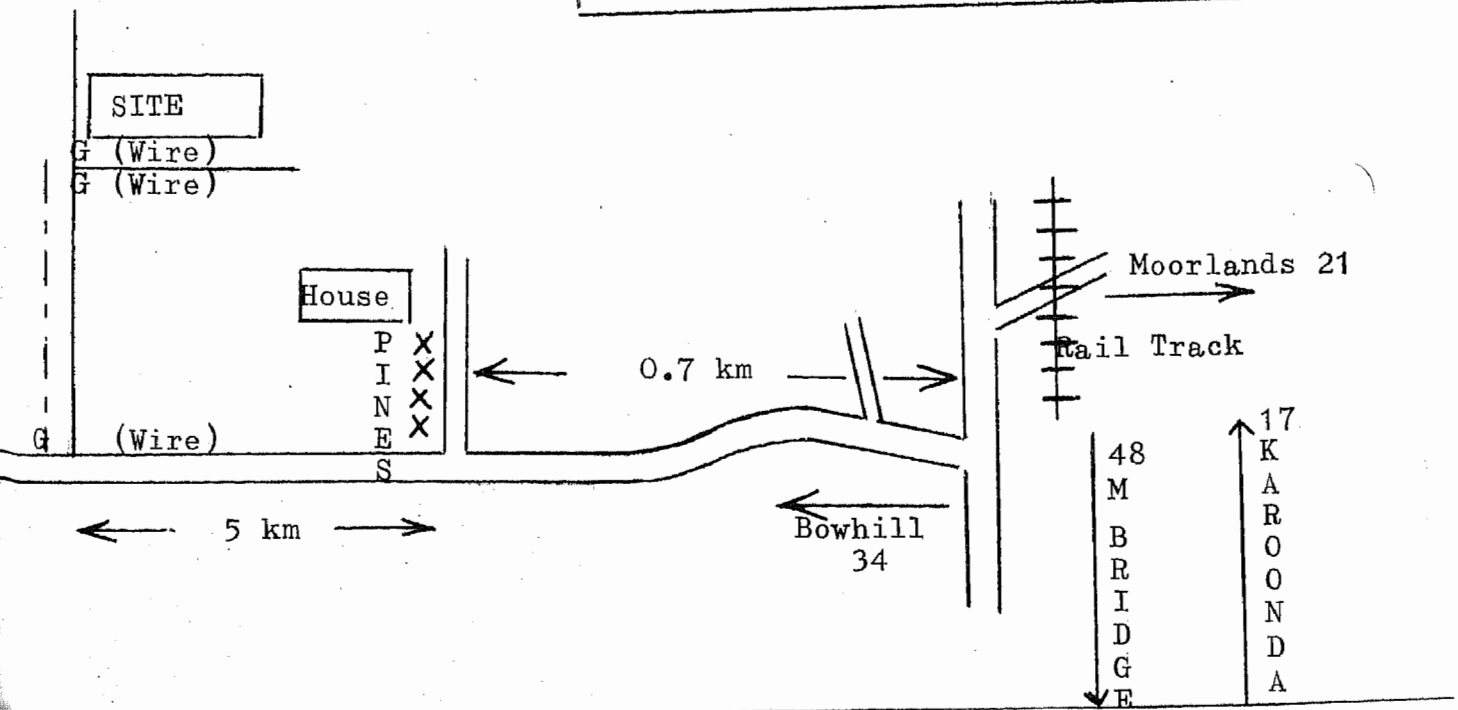
TORNAFIELD	9 kg/ha
HARBINGER	10 kg/ha
KONDININ	10 kg/ha
DWALGANUP & GERALDTON	15 kg/ha
NIL SEED + SUPER	
TORNAFIELD	2 kg/ha
HARBINGER	2 kg/ha
NIL SEED + NIL SUPER	
TORNAFIELD (INSECT)	10 kg/ha



ANNUAL LEGUME PROMOTION - 1977

SITE: Wynarka - Hd. Hooper, SN 26
PROPERTY: G.C. Blacket - Phone: Wynarka 3-U
DATE SOWN: 5/5/77
SOIL TYPE: Sandy loam
ANNUAL RAINFALL: 350 mm
PADDOCK HISTORY: 1976 Barley, super at 134 kg/ha
 1975 Pasture, nil fertilizer & nil seed
 1974 Pasture, nil fertilizer & nil seed
PADDOCK PREPARATION: Nil
SOWING MACHINE & METHOD: Shearer D. Series Trash Seeder,
 20 row-seed mixed with fertilizer
FERTILIZER: Super at 90 kg/ha
SEEDING CONDITIONS: Dry sown
CULTIVARS & SEEDING RATE:

NIL SUPER + NIL SEED (NOT CULTIVATED)	
SUPER + NIL SEED	
JEMALONG	2 kg/ha
JEMALONG	8 kg/ha
HANNAFORD	2 kg/ha
HANNAFORD	8 kg/ha
JEMALONG	8 kg/ha
JEMALONG (Insect)	8 kg/ha



ANNUAL LEGUME PROMOTION - 1977

SITE: Lameroo - Hd. Bews, SN 150.

PROPERTY: F.R. Maynard - Phone: Lameroo 67-K

DATE SOWN: 5/5/77

SOIL TYPE: Mallee loam

ANNUAL RAINFALL: 363 mm

PADDOCK HISTORY: 1976 Barley, super at 67 kg/ha
1975 Pasture, nil fert. & nil seed
1974 Wheat, super at 90 kg/ha

PADDOCK PREPARATION: Nil workings, stubble short & sparse

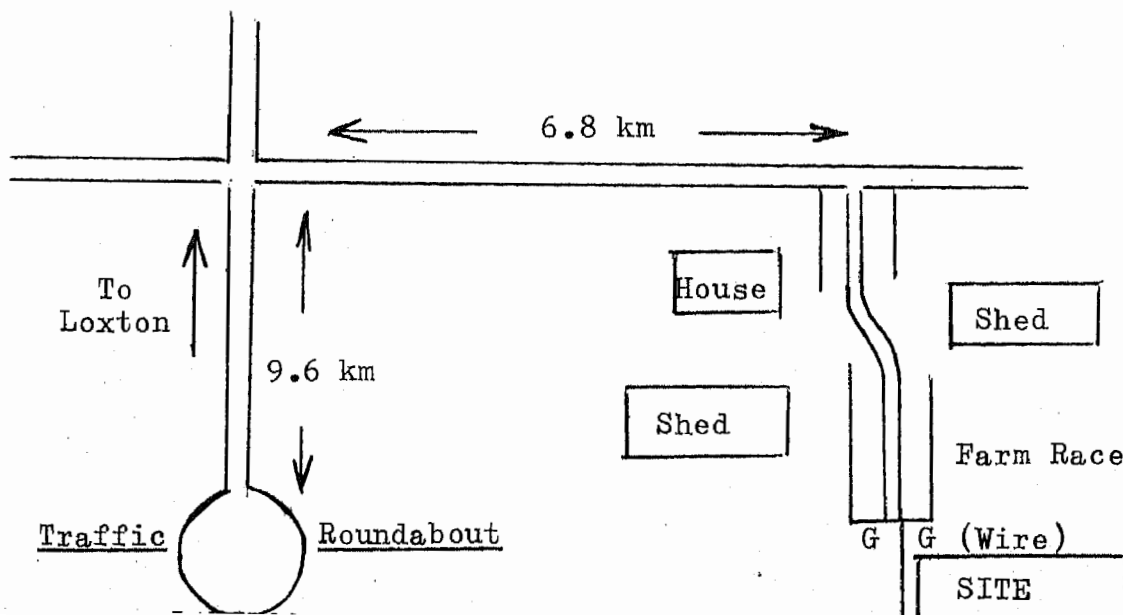
SOWING MACHINE & METHOD: Shearer Wide Seeder, 40 row-seed mixed with fertilizer, sown at 2.5 cm

FERTILIZER: Super at 100 kg/ha

SEEDING CONDITIONS: Dry sown

CULTIVARS & SEEDING RATE:

NIL SEED + SUPER (CULTIVATED)	
JEMALONG	2 kg/ha
JEMALONG	10 kg/ha
BORUNG	10 kg/ha
BORUNG	2 kg/ha
JEMALONG (Insect)	10 kg/ha
NIL SEED + NIL SUPER (NOT CULTIVATED)	



ANNUAL LEGUME PROMOTION - 1977

SITE: Woolpunda - Hd. Moorook, SN 323

PROPERTY: K. Boyd - Phone: Kingston 830272

DATE SOWN: 6/6/77

SOIL TYPE: Red Mallee Sandy Loam

ANNUAL RAINFALL: 250 mm

PADDOCK HISTORY:
1976 Barley
1975 Pasture
1974 Pasture

PADDOCK PREPARATION: Nil

SOWING MACHINE & METHOD: International A6-1, 20 row combine,
seed mixed with fertilizer (Plots 6 combine widths)

FERTILIZER: Super at 60 kg/ha

CULTIVARS & SEEDING RATE: Harbinger - 5 kg/ha
Cyprus - 5 kg/ha
Jemalong - 5 kg/ha

SEEDING CONDITIONS: Fairly dry (14 mm rain over previous 2 weeks)

NIL SEED + NIL SUPER	
HARBINGER	5 kg/ha
CYPRUS	5 kg/ha
JEMALONG	5 kg/ha
HARBINGER (Insect)	5 kg/ha

