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Part 4 Field pea agronomy

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1972 EXPERIMENTAL SUMMARY

Part 4: Field Pea Agronomy

4.1. Time of planting effect

4.2. Rate of seeding effect

G.H. Walton

Plant Research Division

Field Pea Agronomy 1972

Effect of time of planting

The 1972 season started late (end of May) and with a dry September, forced the plants to an early maturity.

Delaying seeding from May until July did not have much effect on grain yields. The best yields were produced with seeding done on the 30th June. Earlier sown treatments had greater weed competition. The varieties, White Brunswick and Derrimut, were early enough to produce higher yields with July time of planting.

At Kulikup, where reproductive observations were made, delaying the planting from May until June reduced the vegetative stage in each variety. However, delaying seeding from June until July allowed the vegetative stage of each variety to increase. When seeding late-July, the varieties were probably unable to accumulate sufficient low temperatures (vernalisation) to hasten the onset of flowering.

Effect of plant density

Increasing the rate of seeding produced increasing plant densities, however the varietal differences in seed size also produced a large variation in plant density.

Variety	Plant density for maximum yield (Fig 5)		Seed rate required (Fig 6)	
	1972 results	1971 result	1972	1971
Dun	4.0		67.4	
White Brunswick	7-8	8.5-10	112-116	112-135
Derrimut	6-7	6.5-7.5	93-104	90-112
Buckley	7-12	6.5-10	88-116	67-90

Varietal comparison

At all sites the variety Derrimut has given the superior yields. Although White Brunswick flowers first, its duration of flower and pod development is longer than for Derrimut. This season, the variety Dun was too late.

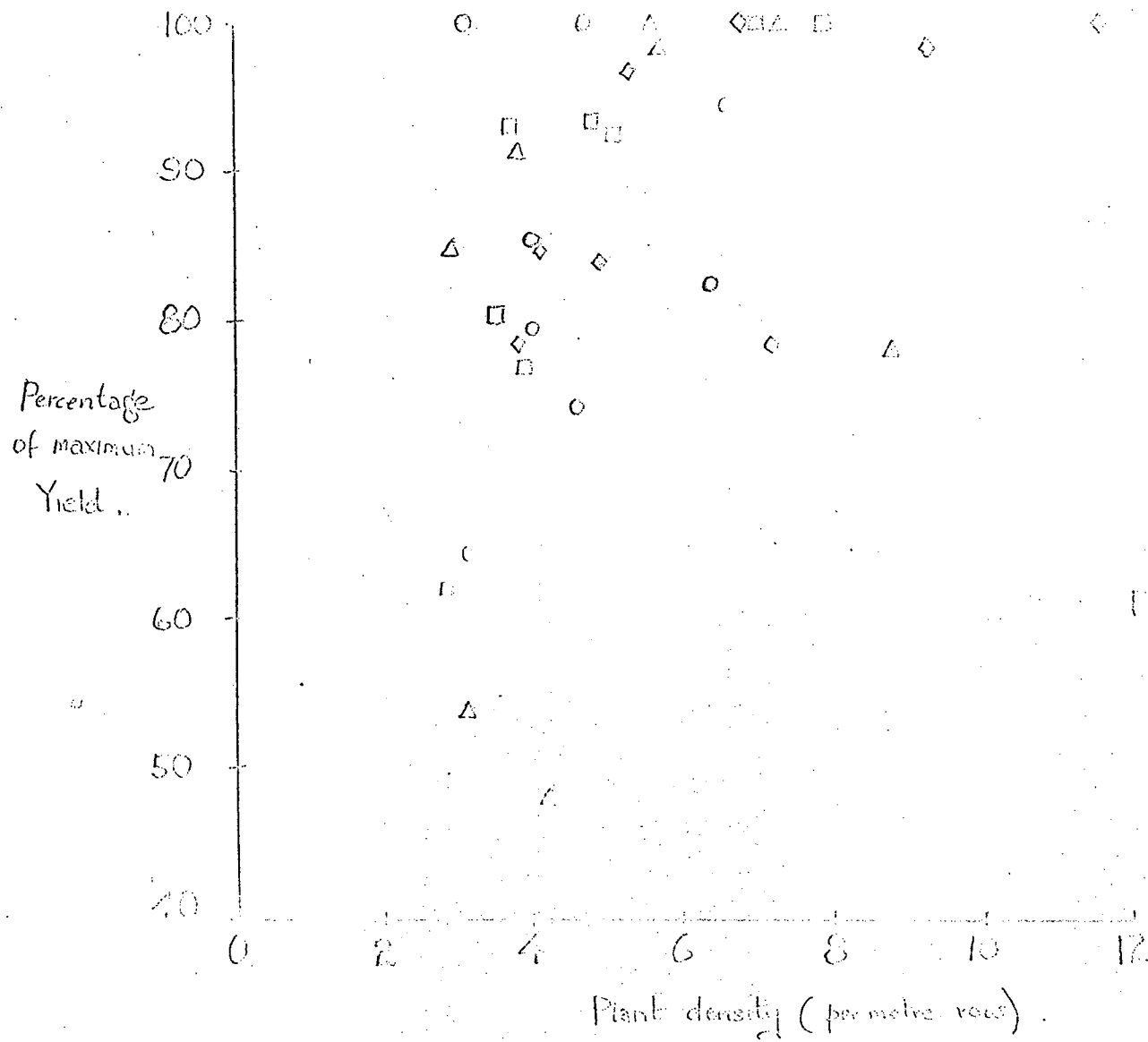


Fig 5. Field Pea's yield response to plant density.

Day 7/28 7/29 7/30 8/1
 Mark O □ △ ◇
 Date 7/28 7/29 7/30 8/1
 Mark O □ △ ◇

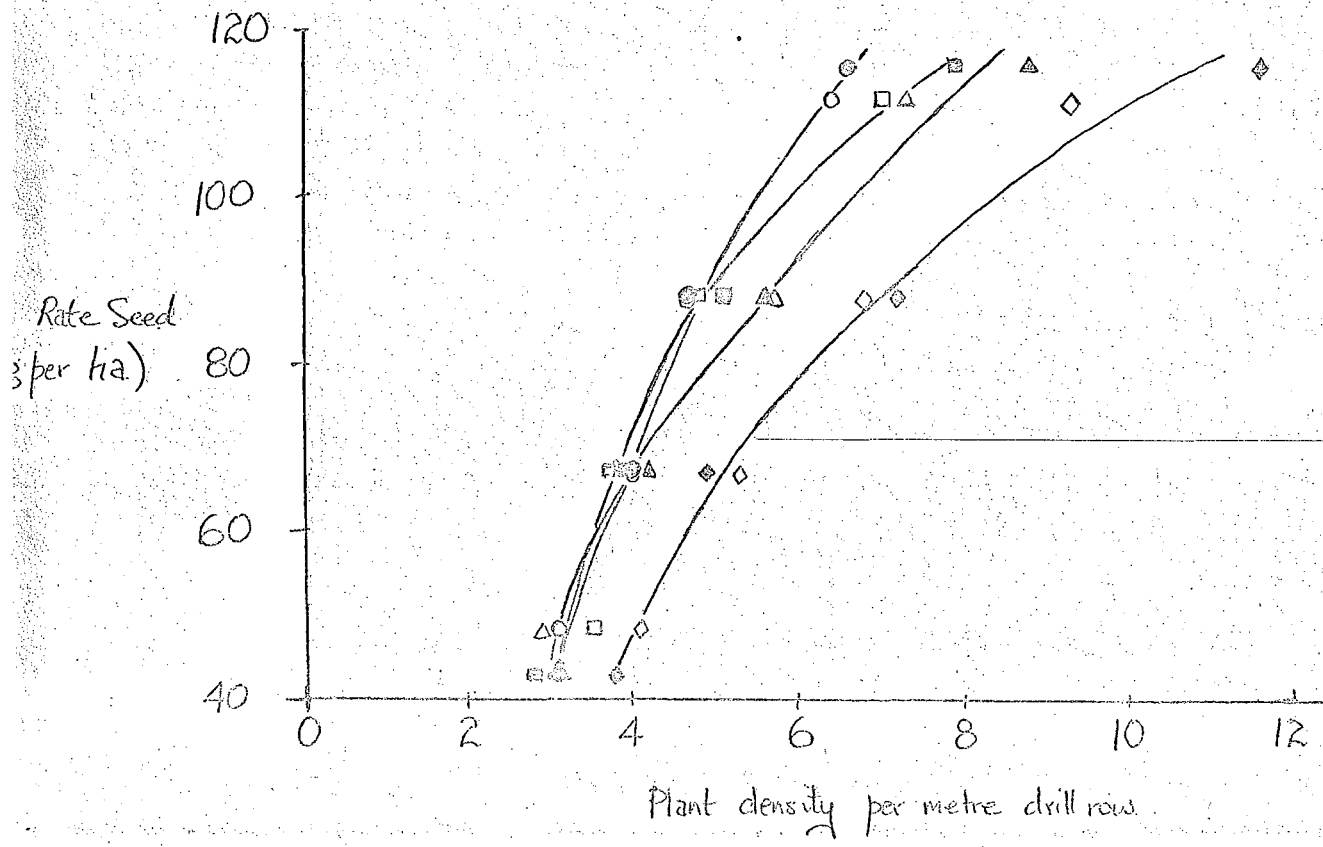


Fig 6: Relationship between Seed rate and plant density.

Dun ● 72R8 ○ 72MT32
 White Brunswick ■ " □ "
 Derrimut ▲ " △ "

No. 72 A7

TITLE: Field pea varieties x Time of planting.

LOCALITY : Paddock 9c
Avondale Research Station

1972 Rainfall : May to October; 23 cm

SOIL : Red sandy loam over quartz conglomerates at 30 cm.

VEGETATIONS : York Gum

HISTORY: Old clover land, trial sited on the 1971 Preliminary Barley trial.

Second crop 1972.

RECORD :

Fertilizer : 67 kg plain super/ha

Seeding Rate: For all varieties and treatments; 88.3 kg/ha.

Plant density per metre drill row

Time of Planting	Dun	White Brunswick	Derrimut	Buckley
16th June 1972	5.3	6.0	6.1	8.6
30th June	4.4	5.8	6.4	6.1
14th July	6.2	6.0	6.1	6.6

11th August : 1st time planting, first laterals developed.

2nd time planting, no laterals

3rd time " , at first true leaf stage.

Pythium and Fusarium root rot affecting the peas on the first time of planting. Derrimut, Buckley, Dun and White Brunswick level of susceptibility in that order.

29th September: Time of planting treatments have big differences in weed composition. First time of planting looks an excellent hay crop with the self sown barley. The proportion of barley falls to almost zero at last time of planting.

The Field peas are very droughted.

Grain yield (kg/ha)					
Time of planting	Dun	White Brunswick	Derrimut	Buckley	Mean
16th June	82.0	203.7	218.0	233.3	184.2
30th June	108.7	274.7	228.0	295.3	253.8
14th July	93.3	275.0	337.0	159.7	216.2

Remarks :

1. The differences in plant density does not appear to have influenced yield significantly.
2. The drought and cutworm damage has reduced yields to less than profitable quantities.
3. There appears to be no significant difference between time of planting affect. The first time of planting had severe weed competition.
4. Does not appear to be any significant variety x time interaction as could be expected in a normal season (i.e. with late maturing Dun).
5. Derrimut variety gave the highest yields.

No. 72 BR14

TITLE : Field Pea varieties x time of planting.

Locality : J & J.R. Staniford-Smith, Kulikup

1972 Rainfall: May to October, 34 cm.

SOIL: 0-27cm, dark brown to red loam,
27-37cm, lighter and grittier loam,
37cm+ , Red/yellow mottled clay.

VEGETATION : Whitegum, redgum, bluegum.

HISTORY : Cleared over 40 years, not supered for at least 20 years. About 1000 kg super/ha total.

RECORD:

Fertilizer : 220 kg plain super/ha

Seed Rates : For all varieties, 86 kg/ha.

At all time of plantings, the peas were sown into a moist seed bed after scarifying.

Plant density per metre drill row

Time of planting	Dun	White Brunswick	Derrimut	Buckley
30th May 1972	5.4	6.1	6.9	6.7
30th June	5.5	6.0	7.2	6.5
31 July	6.4	7.8	7.5	7.9

7th September : The Field peas are shading out the weeds. The District Office observations have given the varietal reproductive development. (see appendix)

11th December : Trial harvested; some plots in the June sown and all plots in the July sown treatment were difficult to harvest because of low bulk to assist the crop lifters.

Grain Yield (kg/ha)

Time of planting	Dun	White Brunswick	Derrimut	Buckley	Mean
30th May	1,444.7	521.3	1,451.0	782.0	1,049.7
30th June	1,338.7	873.7	1,649.0	1,233.0	1,199.6
31st July	1,212.0	803.3	1,028.7	937.0	995.2

- Remarks:
1. Possibly no significant difference between time of planting effect.
 2. May be some Variety X Time of planting interaction; later flowering Dun requiring the earlier time of planting whereas the earlier flowering varieties gave greatest yields with the June planting (even with a dry September).
 3. The Derrimut variety has the better yields.

No. 72 M4

TITLE : Field pea varieties x Time of planting

LOCALITY : Paddock 9c, Merredin Research Station

1972 Rainfall: May to October; 20.6 cm.

SOIL : Pale yellow loamy sand.

VEGETATION: Whitegum

HISTORY : Old clover land, Barley crop cut for hay in 1971.

RECORD:

Seeding rates: 87.4 kg seed/ha for all varieties. The herbicide Imadan was incorporated into the soil prior to seeding for Wimmera ryegrass control.

Fertilizer: 114 kg plain super p er hectare.

Plant density per metre drill row

Time of planting	Dun	White Brunswick	Derrimut	Buckley
15th June 1972	5.3	6.0	7.2	7.2
1st July	6.2	4.9	7.2	7.4
14th July	5.7	6.3	7.4	8.2

20.7.72: The herbicide has retarded to ryegrass weeds but not eliminated them.

4.8.72: Advised that the peas had not nodulated. 56 kg Urea/ha was topdressed across the plots.

1.9.72 June sown plots - thick with capeweed and self sown barley Peas are very yellow in colour.

Early June sown - variable nodulation of pea plants and very few weeds.

Mid June sown - Peas just starting to send out lateral branches not nodulated as yet.

21.12.72: Grain yield was calculated from quadrat samples. The June planting was discarded because of insufficient peas to make a sample.

Grain Yield (kg/ha) - calculated from quadrat samples

Time of Planting	Dun	White Brunswick	Derrimut	Buckley	Mean
1st July	63.3	47.8	34.8	71.9	54.4
14th July	16.8	48.8	43.4	49.3	39.6

Remarks : Yields insignificant because of drought, the season closed in September.

No. 72 A8

TITLE : Field Pea variety x Rate of seeding

LOCALITY : Paddock 9c, Avondale Research Station

1972 Rainfall: May to October; 23cm

SOIL : Red sandy loam over quartz conglomerates at 15-30 cms.

VEGETATION : York gum

HISTORY : Old clover land, trial sited on 1971 preliminary wheat trial.

RECORD:

Trial sown : 16th June 1972
 Fertilizer : 67 kg plain super per hectare.
 Inoculation : Gum slurry method used however the following treatments were not inoculated; White Brunswick, Derrimut and Dun at 116.6 kg/ha.

Plant density per metre drill row

Rate of seeding	Dun	White Brunswick	Derrimut	Buckley
43.3 kg/ha	3.1	2.8	3.1	3.8
67.4	4.0	3.9	4.2	4.9
88.3	4.7	5.1	5.6	7.2
116.6	6.6	7.9	8.8	11.6

Grain Yield (kg/ha)

Rate of seeding	Dun	White Brunswick	Derrimut	Buckley
43.3 kg/ha	243.7	305.7	394.0	378.7
67.4	300.7	378.3	352.7	404.7
88.3	378.3	456.0	731.3	378.3
116.6	358.0	492.7	570.7	482.3

- Remarks:
1. Significant variation in yield between replicate 1 and the other two
 2. Increasing seeding rate produced an increase in plant density.
 3. Maximum yield for Dun and Derrimut occurred with plant density between 5 and 5.5 per metre row. Maximum yield for White Brunswick and Buckley occurred with higher plant densities (8 and 11.6 plants/metre row).

No. 72 MT 32

TITLE : Field pea varieties x rate of seeding

LOCALITY : Paddock S5, Mt. Barker Research Station

1972 Rainfall : May to October; 46.6 cm

SOIL : Gravelly loamy sand

VEGETATION : Old clover land, pasture 1971
First crop 1972.

RECORD:

Trial seeded on the 15th June 1972.

Fertilizer : 207 kg super Cu-Zn-Mo-No 1 mix per hectare

Plant density per metre row

Rate of seeding	Dun	White Brunswick	Derrimut	Buckley
48.2 kg/ha	3.1	3.5	2.9	4.1
67.6	4.0	3.7	3.8	5.3
87.4	4.6	4.8	5.7	6.8
112.0	6.4	7.0	7.3	9.3

- 24th July : Plots are practically weed free
- 6th September : Excellent nodulation and growth
- 13th October : Response in plant height to increasing crop density.
- 5th December : Trial harvested with MF 31 fitted with crop lifters. Severe cutworm damage.

Grain Yield (kg/ha)

Rate of seeding	Dun	White Brunswick	Derrimut	Buckley
48.2 kg/ha	1911.7	2282.7	2367.0	2268.7
67.6	1634.3	2635.0	2578.7	2592.7
87.4	1423.0	2649.0	2747.7	2677.7
112.0	1578.0	2832.3	2790.3	2635.0

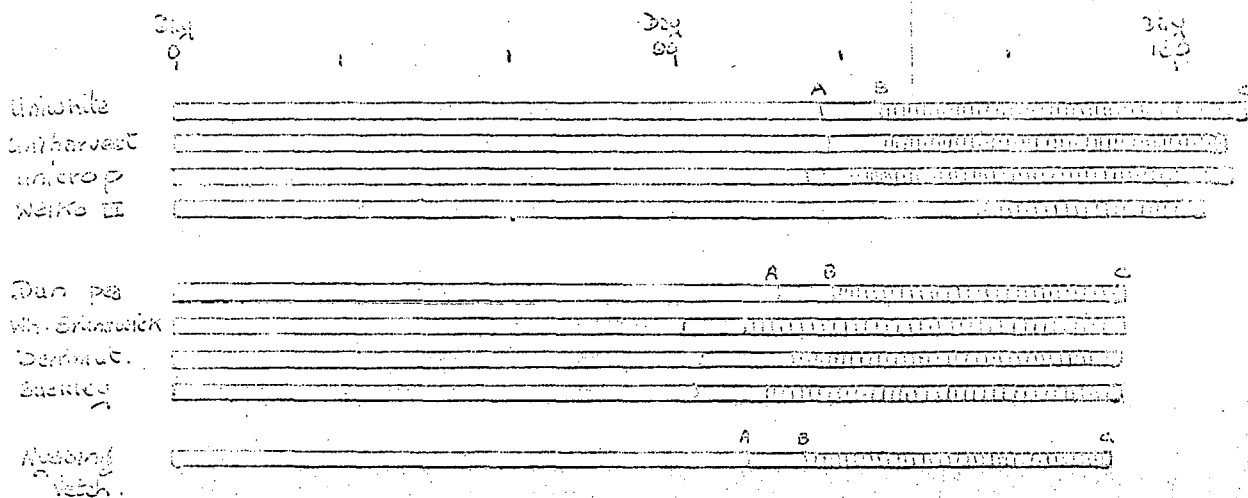
Remarks:

1. Very good yields from all cultivars, especially White Brunswick, Derrimut and Buckley.
2. Except for Dun, maximum yields obtained with approximately 7 plants per metre drill row.
3. The Dun variety at variance with the others because of late flowering prolonged the cutworm attack.

1972 MT 33 - Variety trial.

Day 0 = Date of Seeding, 10-6-72.

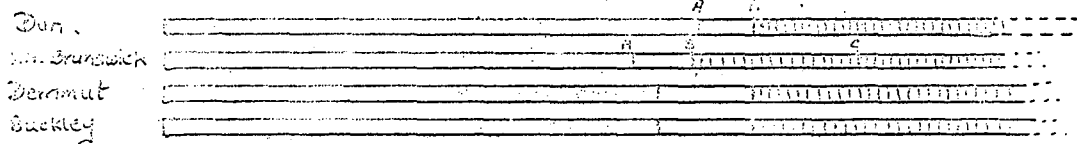
Vegetative, A = Flowering, B = First pod development, C = plant maturity.



72 BR 14 - Field pea trial.

Time of planting, 30-5-72.

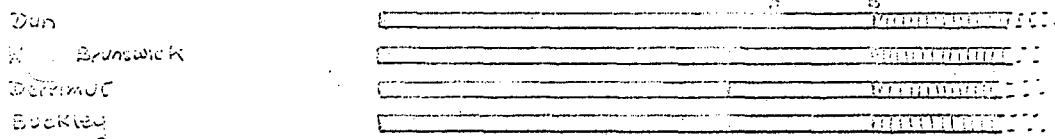
Day 0 = emergence, 7-6-72.



A = Flowering
B = First pods
C = completion of flowering

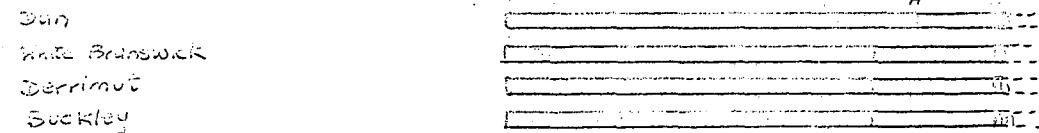
Time of planting, 30-6-72.

emergence = 17/8-72.



Time of planting, 31-7-72

emergence = 11-8-72



72 MT 32 - Field Pea trial.

Day 0 = Date of Seeding, 15-6-72.

A = Flowering, B = Maturity

