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Reference

Krupp, A. 1984. Effect of sowing date on yield of faba bean (Faba faba Minor) at Valdivia, Chile. E4872. Newsletter 89-10.

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Seeding Date Effects on Faba Bean Yields in Two Agroecological Areas of Southern Chile

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Abstract

The effects on faba bean yields of four planting dates, with and without fungicide protection to control *Botrytis vicia fabae*, were studied in two agroecological areas of southern Chile in 1990. In both locations yields of green pods, dry matter and dry grain were significantly higher from crops with early winter planting dates. The increased yields in the early sowing dates were associated with increased numbers of pods/plant and mean seed weight.

Introduction

Faba bean (*Vicia faba* var. *major*) in Chile is used almost exclusively as green beans for human consumption and less often is mixed with oats for silage. The area dedicated to the crop is around 5000 ha, concentrated in Central and South Chile (Krarup 1984). Recently, Chilean farmers have demonstrated an interest in the production of dry grains for external markets. However, information on sowing dates and other aspects of management is scarce, especially in the central-south zone where soils and climate conditions would be suitable for the development of this crop. For this reason the Food Legume Program of the Estación Experimental Quilamapu (INIA), Chile initiated preliminary trials on the effect of sowing date on yield in 1990. The results of those experiments are reported here.

Materials and Methods

Four planting dates with and without fungicide use to control *Botrytis vicia fabae*, were studied in Yungay, in the Andes foothill region (37° 09' S, 72° 02' W; 530 m a.s.l.) and at Chillan in the Central Valley region (36° 03' S, 72° 06' W; 144 m a.s.l.) under rain-fed conditions. Total rainfall was 518 and 691 mm during the crop period at

تأثير موعد الزراعة على غلة الفول في منطقتين بيئيتين زراعتين في جنوبي تشيلي

الملخص

تمت دراسة تأثير أربعة مواعيد لزراعة الفول على الغلة باستخدام وبدون استخدام مبيدات فطرية لمكافحة التبقع الشوكولاتي (*Botrytis vicia fabae*) في منطقتين بيئيتين زراعتين بجنوب تشيلي عام 1990. وفي كلا المنطقتين كانت غلة القرون الخضراء والمادة الجافة والحب الجاف أعلى معنوياً من المحاصيل التي زرعت في أوائل الشتاء. وقد ارتبطت زيادة الغلة في مواعيد الزراعة المبكرة بازدياد عدد القرون/النبات ومتوسط وزن البذور.

Chillan and Yungay, respectively. The soil type was an Andept in both locations. In Chillan the soil pH was 6.2 with 6.0% organic matter. At Yungay the soil had a pH of 5.8 with 8.0% organic matter.

A population of 25 plants/m² was established in 5-row plots, each 5 m long, with a distance of 40 cm between rows and 10 cm between plants. A split-plot design with four replications was used with planting dates as main plot and fungicide protection as subplot. Benoyml 75%, at a rate of 50 g/100 L water plus adherents, was applied in the subplot as fungicide protection approximately 60 days after sowing and subsequently every 15 days until pods filled. To avoid fungicide drift, barley was planted to separate the subplots. The faba bean cultivar used was LPH-28, a large-seeded type of unknown origin. In both locations the trials were fertilized with P₂O₅ as triple superphosphate at 90 kg/ha and the seed was inoculated with a *Rhizobium* sp. One row was sampled to measure green pod yield and dry matter determination and two rows were harvested for dry seed yield.

Results and Discussion

In both locations yields of green pods, dry matter and dry grain were significantly higher in early winter than at later sowing dates (Tables 1, 2). There were no significant effects of either the fungicide protection or the interaction of sowing dates × fungicide protection on yield. The

Table 1. Green pod, dry matter and dry grain yields of faba bean cv. LPII-28, at different sowing dates, with and without foliar fungicide protection at Chillan and Yungay, Chile in 1990.

Sowing date	Green pods [†] (t/ha)			Dry matter [†] (t/ha)			Dry grain [†] (t/ha)		
	FF	WF	Mean	FF	WF	Mean	FF	WF	Mean
Chillan									
26 June	19.5	23.3	21.4	8.3	8.3	8.3	5.2	5.2	5.2
19 July	19.4	18.9	19.2	6.1	6.0	6.1	3.4	3.8	3.6
10 August	18.4	19.0	18.7	5.3	5.4	5.4	3.5	3.3	3.4
24 August	12.7	21.1	12.4	5.0	4.9	5.0	3.3	3.0	3.2
LSD (0.05)			1.1			0.2			0.4
CV (%) Sowing date		27.8			19.0			19.6	
Fungicide		3.0			15.1			14.1	
Yungay									
26 June	12.1	11.8	12.0	3.6	3.1	3.4	2.3	2.2	2.3
19 July	10.0	9.5	9.8	3.6	3.6	3.6	1.6	1.8	1.7
10 August	7.8	6.6	7.2	2.7	2.3	2.5	1.1	1.0	1.1
24 August	6.1	4.7	5.4	1.8	1.7	1.8	0.7	0.7	0.7
LSD (0.05)			0.5			0.1			0.1
CV (%) Sowing date		26.6			13.2			18.9	
Fungicide		14.8			14.4			10.3	

FF = foliar fungicide; WF = without fungicide.

† Average of four replications. Significant only for sowing dates at $P \leq 0.01$.

Table 2. Pods per plant and 1000-seed weight of faba bean cv. LPII-28 at different sowing dates, with and without foliar fungicide protection at Chillan and Yungay, Chile in 1990.

Sowing date	Pods/plant [†]			1000 seed-weight [†] (g)		
	FF	WF	Mean	FF	WF	Mean
Chillan						
25 June	4.9	5.1	5.0	1991.4	1915.7	1953.4
15 July	4.2	4.5	4.4	1697.8	1630.7	1664.3
9 August	3.8	3.5	3.7	1665.0	1718.8	1691.9
24 August	3.5	3.3	3.4	1637.0	1543.1	1590.0
LSD (0.05)			0.8			430.0
CV (%) Sowing date		17.6			7.3	
Fungicide		7.1			7.8	
Yungay						
26 June	2.8	2.5	2.7	1746.4	1703.2	1724.8
19 July	1.8	2.1	2.0	1662.8	1582.0	1622.4
10 August	1.6	1.5	1.6	1430.9	1423.4	1427.1
24 August	1.3	1.3	1.3	1342.8	1254.7	1298.7
LSD (0.05)			0.4			325.3
CV (%) Sowing date		18.9			6.3	
Fungicide		5.2			8.6	

FF = foliar fungicide; WF = without fungicide.

† Average of four replications. Significant only for sowing dates at $P \leq 0.01$.

incidence of *Botrytis* disease was very low in both Yungay and Chillan.

The increase in yields in the early sowing dates was because of an increased number of pods/plant and higher mean seed weights (Table 2). The results of these experiments suggested that, among rain-fed crops in Central-South Chile, faba bean has a higher yield than either lentil (1.0-2.5 t/ha at Chillan and 1.0-1.8 t/ha at Yungay), or pea (2.5-4.0 t/ha at Chillan and 2.0-3.8 t/ha

at Yungay). However, improved cultivars need to be evaluated with different seeding rates in spring sowing, with irrigation and at different fertilization rates.

Reference

Krarup, A. 1984. Effect of sowing date on yield of faba bean (*Vicia faba* Major) at Valdivia, Chile. *FABIS Newsletter* 8:9-10.
