Fenugreek Variety Evaluation

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The aim of this trial was to investigate the yield and bacterial blight incidence of potential fenugreek varieties for grain production in the Wimmera.

Summary
150118 and 150265 were the highest yielding fenugreek lines in this trial. At least two fenugreek varieties are being commercialised. Seed should be available in 2003.

Background
A fenugreek germplasm evaluation project has been screening varieties since 1997. Potential varieties have been selected on the basis of yield and adaptation from 200 lines evaluated in trials from 1997-2000.

Methods
This experiment was designed as a randomised complete block with four replications. Plots were 20 m long and 1.1 m wide. The site was on thick wheat stubble that had been prickle chained. Superfect fertiliser was spread at 130 kg/ha in mid-May and 1.5L/ha Roundup CT Xtra was sprayed on May 25 for a general knockdown of weeds.

Seven fenugreek lines were direct drilled using a cone seeder with 17.5 cm rows spacings on June 26. Seed was treated with P Pickle T and Trigonella inoculum (SU277). Sowing rates varied according to seed size (Table 1). Post sowing operations on June 29 included rolling with a rubber tyre roller and an application of Spinnaker at 150 ml/ha and Imidan at 250 ml/ha . Decis was applied by air at 300ml/ha on November 13.

Plots were visually rated for early vigour in mid August when plants had 4 trifoliate leaves (1 = poor vigour, 5 = excellent vigour). The incidence of bacterial blight in each plot was visually scored in early November, (0 = no disease visible, 10 = high level of infection with some plant death). All plots were harvested for yield using a Kingaroy plot harvester on January 4 2002. Table 1 describes the characteristics of the varieties.

Table 1. Description of fenugreek accessions

Variety	Origin	100 seed weight (g)	Sowing rate (kg/ha)	Flowering date (days after sowing)	Comments
150000	Unknown (AWB Seeds)	1.2	22	95	Commercial line
150118	Unknown	2.1	38	97	Little bacterial blight in 2000. Yielded well in 1999 and 2000
150147	Iran	1.2	22	93	Early maturing
150212	Jordan	2.2	40	86	Early maturing
150265	Morocco	1.7	30	98	High yields in all trials
150281	Pakistan	1.2	22	95	Had little bacterial blight in 2000
150292	Turkey	1.7	30	97	Produces a lot of bulk

Results

Table 2 summarises the results. Excellent fenugreek yields were achieved. The site average of 2.6 t/ha was much higher than long term average of 1.5 t/ha. Lines 150118 and 150265 yielded significantly higher than the commercial line (150000). Grain yields of the other lines were similar to 150000.

Significant differences occurred between varieties for early vigour and bacterial blight. Larger seeded lines 150212, 150265 and 150118 exhibited good early vigour. The smaller seeded lines 150281, 150147 and 150000 exhibited slower early growth. Disease pressure was generally low but bacterial blight was noticeable in late spring, particularly in 150212, with some hot spots in 150265 and 150292.

Table 2. Early vigour, disease scores and grain yield for potential fenugreek varieties

Fenugreek Variety	Vigour Score	Bacterial Blight Score	Harvest Yield (t/ha)	Long term yield 1997-2001	
				Yield (t/ha)	Number of comparisons
150000	3	2.8	2.38	1.4	14
150118	4	2.3	3.29	1.5	8
150147	2	4.3	2.15	1.7	8
150212	4.5	6.6	2.38	1.7	14
150265	5	4.8	2.92	1.7	14
150281	3	2.5	2.34	1.5	5
150292	3.5	4.8	2.48	1.7	13
LSD (P<0.05)	1	1	0.25		

Vigour Score: 1 = poor 5 = excellent; Disease Score: 0 = no disease 10 = severe

Interpretation

The small seeded varieties 150000, 150281 and 150147 showed poor early vigour, which is consistent with previous experience. The combination of post sowing rolling and Spinnaker application may have exacerbated the poor vigour of these lines. Larger seeded lines are usually more vigorous and may cope better with imposed stresses such as pre- emergent rolling or herbicide application.

Hot spots of bacterial blight affected individual plots. 150212 is by far the most susceptible variety and will not be released. Lines 150118 and 150281 appear to be less susceptible to this disease. The commercial variety 150000 was less affected by bacterial blight than it has been in previous years.

The best yielding lines were 150118 and 150265. Line 150265 has yielded well in each year of trials. Long term yield data including 2001 results indicate that 150147, 150212, 150265 and 150292 have all performed better than the commercial line.

Commercial Practice

The fenugreek germplasm evaluation project has identified a number of lines with superior yields to 150000. AWB Seeds, who was the commercial partner in the project is negotiating the release of some of these lines with Wimmera based seed companies. Seed should be available to growers in 2003.

Care should be taken when rolling small seeded fenugreek prior to emergence on soil prone to crusting. The benefits of a smooth soil surface may be outweighed by the risks associated with poor establishment if germinating seeds are unable to penetrate the crust formed after rolling.

Be careful when using pre-emergent or post-sowing-pre-emergent herbicides with fenugreek. Seed companies involved in releasing new varieties should consider herbicide tolerance screening for those varieties.

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