Herbicide tolerances in chickpea varieties

The aim of this trial was to investigate a range of herbicides on crop tolerances in three chickpea varieties.

Summary
The best overall herbicide options for controlling the most common broadleaf weeds in the southern Mallee are Simazine alone or Simazine plus Diuron, applied post sowing pre-emergent. These herbicides can cause some crop damage and a lowering in yield in dry years (such as 1998). There were no variety differences between Lasseter, Sona and Tyson in tolerance to the herbicides.

Background
The BCG has investigated chickpea variety tolerances to the most commonly used herbicides for three years. In previous years it was found that Tyson was generally more tolerant to the most commonly used herbicides but that the differences were small. In 1998 the BCG repeated the trial.

Method
Chickpeas were sown with GLS-Zn at 80kg on May14 into a moist seed bed. Treatments were applied at the appropriate time (post sowing pre-emergent and late post emergent in early August). All treatments were replicated three times and each treatment plot was adjacent to a control plot (no herbicide).

Results
Chickpea yields were low due to the dry season and hot finish, the frost in late October also could have caused some damage. There was a significant detrimental effect on yield from all the herbicides tested, except for with the Sona variety (Table 2.1).

Table 2.1 Chickpea yields in relation to five commonly used herbicides

	Status	Cost $/ha	Yield (t/ha)		
			Lasseter	Sona	Tyson
Control			0.32	0.22	0.35
post sowing pre-emergent					
Simazine 1.5L	permit	8.70	0.24	0.19	0.19
Simazine 1.0L + Diuron 0.8L	NR	12.40	0.21	0.19	0.23
Simazine 1.0L + Lexone 120g	NR	24.25	0.27	0.22	0.28
Simazine 1.0L + Spinnaker 0.12L	R	19.50	0.23	0.19	0.19
Late post emergent					
Broadstrike 25g + 0.1% wetter	NR (with wetter)	17.25	0.17	0.18	0.16
Significant difference: herbicide treatment			**P<0.05 LSD=0.05**		

R = Registered, NR = Not Registered

The most common weeds at the site were white iron weed, mustard, hogweed and prickly lettuce. The best overall weed control was from Simazine + Spinnaker, followed by Simazine + Diuron or Simazine alone. Broadstrike had good control of mustard, but not much control of white iron weed.

Interpretation
Simazine and Spinnaker slowed crop growth and the crop flowered about 10 days later compared to the other treatments. Broadstrike with wetter caused some transient crop yellowing, which resulted in low yields. The label registration for Broadstrike states that it should be applied six weeks after emergence of the chickpeas and the use of wetter is not recommended. In this trial Broadstrike was applied nine weeks after emergence. It is expected that less crop yellowing would have been observed if Broadstrike had been applied earlier and without wetter.

Commercial Practice
For overall effective weed control in chickpeas grown in the southern Mallee on sandy clay loam soils the most effective products are Simazine alone or Simazine plus Diuron. With both products the chickpeas should be sown at a minimum depth of 8cm. Broadstrike is excellent on cruciferous weeds but in seasons with a dry finish can result in lasting crop damage. Broadstrike is best used on warm sunny days.

Simazine: provides good broadleaf weed control but control may not last the whole season. Late germinating weeds in some years escape the effect of the chemical. Previous work undertaken by the BCG has clearly demonstrated the need to sow chickpeas deep when using Simazine, especially on lighter sandy soils.

Diuron: works well especially in combination with Simazine in controlling a wide range of broadleaf weeds. Crop damage can result if more than 10mm of rain falls soon after applying the chemical.

Lexone: has good effective control of broadleaf weeds especially if used in combination with Simazine. Lexone needs to be applied on a moist soil. Lexone tends to run out of activity later in the season.

Spinnaker: excellent for broadleaf weed control but can be harsh on chickpeas, especially if the chickpeas are stressed because of chemicals used in previous years or harsh environmental conditions. Spinnaker has a long residual period and strict adherence for plant back periods is recommended.

Broadstrike: good control of brassica weeds (and amsinckia). Can cause crop damage in chickpeas especially in seasons with a dry finish. The activity on weeds is improved if Broadstrike is used on clear warm days. The Broadstrike label recommends that it should be applied six weeks after emergence (4 to 6 branch growth stage) without the use of wetters or oils.