Lentil Grass Herbicide Tolerance.

Government of South Australia
Northern and Yorke Natural Resources Management Board

Aim: To evaluate a range of grass and broadleaved herbicides for their crop effect on lentils.

Background: There are now a range of herbicides that are applied pre-plant or PSPE to lentils that give residual control of both grass and broadleaved weeds. This trial looks at a range of herbicides for their effect on crop biomass and resulting yield. An added benefit of this trial was the high level of milk thistle that grew through the season and at harvest time, an opportunity existed to assess these herbicides for their efficaciousness on this problematic weed.

Table 1. Summary of assessments.

Pre-plant Herbicide	Rate /ha	PSPE Herbicide	Rate /ha	Yield T/ha	Thistle Control
Terbyne + Kerb	0.7kg + 0.5L	Terbyne + Kerb	0.3kg + 0.5L	1.47 a	1.8 a
Outlook	1.0L	Outlook	0.5L	1.45 ab	3.3 ab
Propyzamide	1.0L			1.40 abc	6.8 cd
Outlook	1.0L			1.35 abc	8.8 d
Terbyne	1kg			1.34 abc	8.8 d
Terbyne	700gms	Terbyne	300gms	1.29 bc	1.3 a
Kerb	0.5L	Kerb	0.5L	1.29 bc	5.8 bc
Metribuzin	150gms	Metribuzin	50gms	1.26 c	5.0 bc
		Metribuzin Foliar	0.18kg	0.97 d	7.3 cd
			Co-efficient of Variation	**13%**	**41%**
			LSD 5%	**0.17**	**2.5**

- Means followed by the same letter do not significantly differ.
- Thistle control was an assessment of milk thistles in each plot rated on a scale of 1-10 with 1 being very few 10 being the highest density.
- Greyed out boxes contain unregistered treatments and are for trial demonstration purposes.

Discussion:
The intention of this trial was to have herbicide interaction with lentils as the primary factor driving yield effects, not whether or not the various herbicides controlled weeds or not. That being stated, there were noticeable differences between plot of the level of milk thistle control and it would appear that this had an impact on resulting yield. There was a reasonable level of variation across the trial driven by soil type, stubble clumps and weed burden, so this should be taken into account when looking at results.

This trial showed significant differences between herbicide treatments in regards to their effect on crop growth and resulting yield. It is evident that Metribuzin, both as a split treatment and as a foliar application had an effect on crop growth. Approximately 55mm of rain fell on the site in the week following planting and the PSPE treatments. This amount of moisture was a driving force behind many PSPE herbicides working well in regards to their weed control, but it also saw some crops on lighter soils affected by the herbicides moving into the root zone.

There are a couple of inconsistencies in the trial in that the highest yielding treatment had split applications of both Terbyne and Kerb, however, the split applications of these herbicides on their own had results in a significantly reduced yield. This is hard to explain and should probably be viewed as an anomaly. Overall, Terbyne, Outlook and Kerb appeared to be quite safe in this trial to the growing lentil crop and naturally following label recommendations will ensure that risks are kept to an absolute minimum.

It is apparent that applying Terbyne PSPE (photo 1) gave the most effective level of milk thistle control with some noticeable effect from Outlook PSPE.

Photo 1. Plot on the LHS has Terbyne @ 1.0kg pre-plant, plot on left has Terbyne @ 0.7kg pre-plant followed by 0.3kg/ha PSPE. Note difference in thistle population.

Take Home Points:

- Both Terbyne and Metribuzin can cause some crop effect when applied PSPE. This is due to the concentration of chemical into the root zone and subsequent uptake of chemical by the plant.
- However, best broad leaf weed control is achieved by having some of this chemical applied at this time – to have some in the row.
- Things that determine the safety of this application include lentil variety tolerance, sowing depth, chemical type, soil moisture conditions at the time of sowing and rainfall received after application.
- Propyzamide and Outlook do not look to have any activity on Milk Thistle. They should be used in conjunction with a tank mix partner (like Terbyne or Metribuzin) to control this weed.
- Metribuzin used as a foliar application is not registered and can cause severe crop effect. It should only be considered as a salvage spray after all other means of weed control have been exhausted.