Trial 21

Herbicide Use in Pulses

Aim: To trial a number of herbicide treatments applied to field peas, chickpeas, lentils and lupins to determine effective weed control and their effects on the crops.

The following weeds were spread prior to sowing: hogweed, marshmallow, whipthistle, white iron weed, radish, turnip, mustard, medic, faba beans, field peas, vetch, lucerne. Each treatment was replicated three times.

Results:

Field Peas		
Herbicide	cost $/ha	yield t/ha
Control		1.82
post sowing pre-emergent		
Spinnaker 200ml	22	1.81
Simazine 1.5L	8.25	1.99
Spinn. 125ml + Simazine 0.75L	17.8	1.84
Brodal 80ml	10.2	2.3
Lexone 180g	15.1	1.79
Significant difference:		**NS**
post emergent		
Tough 2L	43.3	1.02
Broadstrike 25g + wetter 0.1%	13.5	1.75
Broadstrike 25g (no wetter)	12.5	1.96
MCPA 250 0.8L	3.4	1.74
Brodal 0.1L + MCPA500 125ml	13.8	1.68
Significant difference: P<0.05, LSD = 0.66		

Lentils		
Herbicide	cost $/ha	yield t/ha
Control		1.29
post sowing pre-emergent		
Lexone 100g + Simazine 1L	13.9	0.56
Lexone 180g	15.1	1.07
Diurex 1.1kg	15.4	1.21
Simazine 1.5L	8.25	0.23
post emergent		
Broadstrike 25g (no wetter)	12.5	0.97
Brodal 150ml	19.2	1.04
Significant difference: P<0.05, LSD=0.67		

Chickpeas		
Control		1.46
post sowing pre-emergent		
Simazine 1L + Atradex 275g	7.50	1.93
Spinn. 125ml + Simazine 0.75L	17.8	2.06
Lexone 220g	18.5	1.62
post emergent		
Broadstrike 25g (no wetter)	12.5	1.60
Tough 2L	43.3	1.49
Significant difference: P<0.03, LSD=0.4		

Lupins		
Control		2.01
post sowing pre-emergent		
Simazine 1L + Atradex 275g	7.50	1.66
Simazine 0.75L + Diurex 412g	9.9	1.59
post emergent (all had Sim+Atr)		
Eclipse 7g	7.70	1.44
Eclipse 10g	11.0	1.48
Brodal 150ml	19.2	1.97
Simazine 0.5L + Brodal 70ml	14.7	1.65
Significant difference:		**NS**

Interpretation:

Field Peas - There were no differences in pea yields from the applied post sowing pre-emergent herbicides. However, Tough at 2L significantly reduced pea yields in the post emergent herbicide applications.

Lentils - Simazine alone (1.5L) or in combination with Lexone (1L + 100g respectively) significantly reduced lentil yields. The best options were post sowing pre-emergent Lexone (180g) or Diuron (Diurex at 1.1 kg) or post emergent Broadstrike (25g, no wetter) or Brodal at 150ml.

Chickpeas - the chickpea yields in the control plots were significantly reduced because of weed competition. The best options were post sowing pre-emergent Simazine and Atradex (1L + 275g respectively) or Spinnaker and Simazine (125ml + 0.75L respectively).

Lupins - there were no significant differences found in lupin yields between the different herbicides applied.

Commercial Practice:

Field Peas

- all products used in this trial post sowing and pre-emergent can have highly variable results on weed control and crop safety
- Spinnaker appears to be OK
- Simazine (with or without Spinnaker) is not recommended (also not registred)
- pre-emergent Brodal can cause crop damage especially after rain
- Lexone has caused crop damage, especially on white varieties of peas (as per label). 5 cm sowing depth of the peas is essential and peas should be treated with a broad spectrum pickle to reduce the disease impact.
- Tough should not be used
- Broadstrike is considered generally in situations with bedstraw
- Broadstrike without wetter can reduce activity on the weed depending on the weed species, and it can also reduce the phyto effect on the crop. In wet and cold conditions Broadstrike is also less active.
- MCPA250 can cause yield reduction, especially when used at lower than recommended water rates
- Brodal and MCPA is commonly used, weed size is critical

Chickpeas

- Simazine and Atrazine - not registered - potential damage at high rates (also see Trial 5), in some cases damage is seen as secondary disease problems
- Spinnaker and Simazine - not registered - expect physical damage and yield loss in dry finish, tends to prune roots in some conditions
- Lexone has a registration pending for 1996. Sowing depth of 5 cm is essential in order to separate the seed from the herbicides. Trifluralin will still be required on bad hogweed paddocks.
- Broadstrike - not registered - suppression and yellowing is often seen in chickpeas. Need a good finish to the season for the chickpeas to recover. Poor weed control under wet and cold conditions (especially on mustard and radish)
- Tough - registered - quite safe but Tough has a limited weed spectrum. Needs to be used early on small weeds, product has little translocation and tends to dessicate the weed.

Lupins

- Simazine and Atrazine registered in WA only (in Victoria Simazine is registered for lupins). Some damage can occur on light soils with a pH higher than 6.5
- Simazine and Diuron - not registered, appears to be safe
- Eclipse - registered - best to use late (crop at 8 leaf to flower bud), late application in warmer conditions reduces weed control variability
- Brodal - registered - use on small weeds for most consistent control - can cause blotching of the lupins
- Simazine and Brodal - not registered - will control capeweed post emergent (avoid wetters and oils)

Lentils

<u>Pre Emergent</u>

- Trifluralin - not totally safe, especially on heavy clay soils, wheel tracking can occur
  - maximum rate on heavy clay soil is 750 ml/ha, applied 7 days before sowing
  - do not sow into Trifluralin band
- Metribuzin - industry standard - Lexone has a registration pending for 1996. Sowing depth of 5 cm is essential to separate seed from the herbicide. Damage can occur when seed is sown shallow and heavy rains occur soon after application. Late rains can stimulate late whip thistle germinations.
- Simazine and Atrazine - potential for damage on heavy clay soils and light sandy soils
  - 1992 VIDA work indicated severe damage (as in these trials)
  - more work needs to be done, especially in mixes with Diuron, Metribuzin)
- Brodal - inconsistent results, crop damage severe if heavy rains soon after application

- Spinnaker - expect damage
- Diuron - looks OK but needs a lot more work

Post Emergent

- Broadstrike - early yellowing as seen in Peas and Chickpeas
  - bedstraw and crucifer weed control
  - poor weed control in cold and wet conditions
- Brodal - damage usually acceptable but expect blotching of leaves and stems
  - controls small crucifer weeds only. With MCPA damage is too great
- Bladex - SA work shows little damage
  - expensive treatment with generally poor weed control
- Metribuzin - SA work shows little damage
  - more work needed
- MCPA, 2,4 D Ester and mixes - generally severe crop damage
- Spinnaker and Tough - severe crop damage