4.4 Cereal Herbicide Trials

4.4.1 Ryegrass Control In Barley Using Pre-Emergent Herbicides - Inverleigh, Vic

Researchers/Authors:
Mark Slatter, Philip Jobling, Nufarm Australia Ltd.

Acknowledgements :
Thanks to SFS staff for assistance with site location and sowing of this trial.

Definitions:
No Till: Herbicide is applied up to 24 hours before sowing and sown using a knife point (approx 12mm wide/ no wings) and press wheel system. The sowing process is the only incorporation. The emphasis being on getting enough soil throw to cover the herbicide band; without placing treated soil into adjacent seed rows.
IBS: Incorporated By Sowing.

Location: SFS Inverleigh site.

Background:
Trifluralin has previously been used in a conventional manner by spraying and incorporating once or twice before the sowing process. With the advent of no-till systems, Nufarm has updated the Triflur Xcel label to provide opportunities for weed control in these situations.

Summary:
A small plot replicated field trial was established at Inverleigh in Victoria's South West to evaluate ryegrass (Lolium rigidum) control in a crop of barley (Hordeum vulgare) using Triflur Xcel (500 g/L trifluralin) mixes in a no-till, IBS system.

Table 4.29: Trial inputs

Sowing dates:	9.15am – 9.45am 7th June 2007	
Variety and rate:	Gairdner at 100 kg/ha Sown with knife point and press wheels (incorporated within 4 hours)	
Weather conditions at application:	Temperature:	11 °C
	Relative humidity:	77%
	Wind:	Gusting to 14 km/hr from S
Spray application:	LPG propelled hand boom, Agrotop Airmix nozzles @ 2.5 bar @ 100 L/ha producing a coarse spray quality	
Treatments:	1. Triflur Xcel @ 1.45L/ha	
	2. Triflur Xcel @ 2.9 L/ha	
	3. Triflur Xcel @ 1.45 L/ha + Avadex Xtra (500 g/L triallate) @ 1.6 L/ha	
	4. Triflur Xcel @ 1.45 L/ha + Bouncer (720 g/L metolachlor) @ 500 mL/ha	
	5. Untreated control	

Emergence counts of barley at 26 days after sowing displayed excellent crop safety with all treatments. There was no significant difference in emergence between any of the treatments.

Excellent levels of ryegrass control were displayed at all three assessments. The final assessment, at ryegrass flowering stage, demonstrated ryegrass control levels of between 97% and100%.

Triflur Xcel and Triflur Xcel mixes offer growers an economical and effective management tool for ryegrass control in a no-till system when used in an integrated weed management system.

Trial Design: Randomised complete block design. (4 replicates)

Target Weed: Annual ryegrass (lolium rigidum), with known Group D susceptibility, was spread prior to spray application to ensure adequate weed pressure at the site. This represented a field situation in which a no-till system has been used for several years; where weed seeds remain close to the soil surface.

The trial was terminated when ryegrass started flowering by a knockdown herbicide followed by slashing to ensure no ryegrass set seed at the site.

Trial Results:

Emergence counts of barley (Table 4.29) at 26 days after sowing displayed excellent crop safety with all treatments. There was no significant difference between the untreated and any of the products used.

▼ Table 4.30: Crop emergence results

Trial ID: NUVC-07-272-H19			Barley (Hordeum vulgare)		
			Plants/m^2		% of untreated
No.	Treatment	Rate/ha	26-DAA (03-07-07)		
1	Triflur Xcel	1.45 L	216	a	100
2	Triflur Xcel	2.9 L	219	a	101
3	Triflur Xcel + Avedex Xtra	1.45 L + 1.6 L	212	a	98
4	Triflur Xcel + Bouncer	1.45 L + 500 mL	210	a	97
5	Untreated		217	a	100
	LSD (P=0.05)		**13.64**		
	Standard Deviation		**8.85**		
	CV		**4.12**		

Excellent levels of ryegrass control were displayed at all three assessments (Table 4.30). High levels of control resulted in no significant difference between the various products. The final assessment, at ryegrass flowering stage, demonstrated ryegrass control levels of between 97% and 100%.

▼ Table 4.31: Ryegrass control results

Trial ID: NUVC-07-272-H19			Wimmera ryegrass (Lolium rigidum)								
			Plants /m^2		% control	Plants /m^2		% control	Panicles /m^2		% control
No.	Treatment	Rate/ha	40-DAA (16-07-07)			77-DAT (23-08-07)			138-DAT (23-10-07)		
1	Triflur Xcel	1.45 L	7	b	95	4	b	98	3	b	97
2	Triflur Xcel	2.9 L	3	b	98	2	b	99	0	b	100
3	Triflur Xcel + Avedex Xtra	1.45 L + 1.6 L	2	b	98	1	b	99	1	b	99
4	Triflur Xcel + Bouncer	1.45 L + 500 mL	10	b	92	1	b	99	2	b	98
5	Untreated		132	a	0	176	a	0	112	a	0
	LSD (P=0.05)		**8.9**			**23.5**			**16.5**		
	Standard Deviation		**5.8**			**15.3**			**10.7**		
	CV		**18.65**			**41.35**			**45.5**		

Conclusion:

Higher rates of Triflur Xcel can only be used in a no-till system where a knife point and press wheel system operated at a suitable sowing speed ensures that soil throw from seeding rows does not fall into adjacent seeding rows thereby avoiding crop damage.

The high levels of ryegrass control achieved in this trial demonstrate how a concentrated band of trifluralin in the top few cm of soil is highly effective when weed seeds are also in this band.

The tank mix partners used in the trial, Bouncer and Avadex Xtra, can provide cost effective control over a range of additional weeds, as well as ensuring control of any possible group D resistant ryegrass plants.