

High water rates best for trifluralin on annual ryegrass

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KEY POINTS

- Using increased water rates for application of trifluralin results in increased spray coverage and improved control of annual ryegrass.
- High water rates for trifluralin application are particularly important where stubble is tall and stubble biomass is dense.

The efficacy of trifluralin in stubble retention systems can be improved by increasing the water rate to improve penetration of herbicide through the stubble.

Growers are heavily reliant on trifluralin for pre-emergent annual ryegrass control, particularly in minimum-tillage cropping systems. However, increased stubble density reduces the efficacy of pre-seeding herbicides because a proportion of the herbicide binds to the stubble rather than reaching the soil surface where it can successfully kill germinating weeds. The degree to which this occurs is influenced by the height and density of the stubble.

The effect of water rate in different stubble loads was examined in a trial on the property of Chris Symes in Cunderdin, WA, on a site where annual ryegrass density was generally low.

In 2010, wheat was sown (using knife-points and press wheels) at varying row spacings (Table 1). Weeds were controlled and the wheat was harvested at varying heights. The different row spacings and harvest heights produced different stubble loads (Table 2). In 2011, Triflur Xcel® was sprayed (before sowing wheat) at water rates of 50 to 100 L/ha, using Turbo TwinJet® nozzles (i.e. nozzles with two jets at 60 degrees apart) with coarse droplet size.

Total stubble biomass was greatest in the narrow-row plots and lowest in the bare plots (Table 2). Spreaders were used at harvest, so the bare plots (not sown to wheat) still contained some stubble lying on the ground.



ROB DE GRUCHY SPRAYING TRIFLUR XCEL® AT 2.5 L/HA, USING 100 L/HA OF WATER. PHOTO COURTESY OF GLEN RIETHMULLER (DAFWA).

In 2011, Syngenta water-sensitive cards indicated there was 24.6% coverage when Triflur Xcel® was sprayed with 100 L/ha of water, 17.0% coverage with 75 L/ha of water and 9.5% coverage with 50 L/ha of water (Figure 1).

Short stubble had greater spray coverage than medium or tall stubble (18.5%, 16.1% and 16.5% coverage respectively) and bare plots had greater spray coverage than wide or narrow row spacing (18.2%, 16.1% and 16.8% coverage).

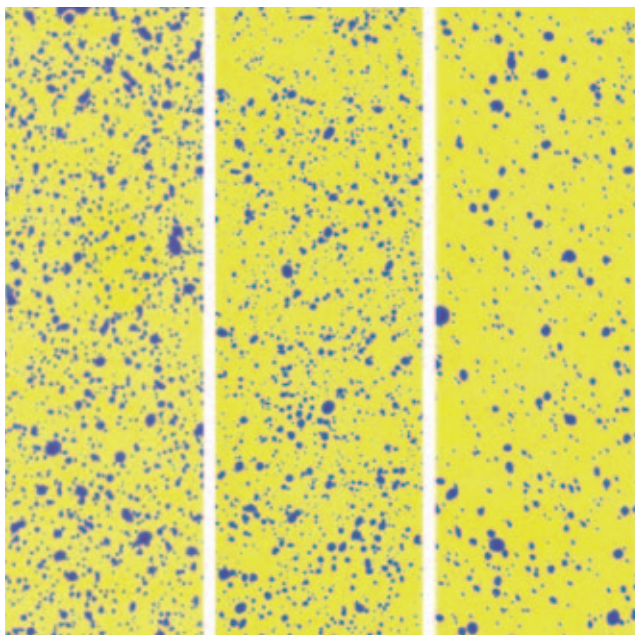
TABLE 1. AGRONOMIC DETAILS OF THE TRIAL

Date	Event
5 May 2010	Spray.Seed® at 2 L/ha
5 May 2010	Sow Wyalkatchem wheat at 40 kg/ha (Agras at 100 kg/ha). Row spacing: 25 cm (narrow row spacing), 50 cm (wide row spacing) or not sown (plot left bare).
25 Jun 2010	Monza® at 25 g/ha
19 Aug 2010	Tigrex® at 0.75 L/ha
19 Nov 2010	Harvest wheat to a height of 7.5–8 cm (short stubble), 20 cm (medium stubble) and 30–31 cm (tall stubble). Spreaders were used to deposit all harvested stubble back onto the ground.
9 Jun 2011	Spray.Seed® at 2 L/ha
9 Jun 2011	Triflur Xcel® at 2.5 L/ha. Sprayed using: 50 L/ha of water (TTJ110025, 3.1 bar, 24 km/h) 75 L/ha of water (TTJ11003, 4.9 bar, 24 km/h) 100 L/ha of water (TTJ11004, 4.8 bar, 24 km/h)
9 Jun 2011	Sow Wyalkatchem wheat at 75 kg/ha (Agras at 110 kg/ha). All plots at 22 cm row spacing.

CATHERINE BORGER (RIGHT) COLLECTING SYNGENTA WATER SENSITIVE CARDS FROM A PLOT WITH NARROW ROW SPACING AND VARYING STUBBLE HEIGHT, WHICH HAS BEEN SPRAYED WITH TRIFLUR XCEL® AT 2.5 L/HA. PHOTO COURTESY OF GLEN RIETHMULLER (DAFWA).



FIGURE 1. (BELOW) SYNGENTA WATER-SENSITIVE CARDS, PLACED IN PLOTS CONTAINING TALL STUBBLE AT A NARROW ROW SPACING, SPRAYED WITH TRIFLUR XCEL® AT 2.5 L/HA USING 100 L/HA OF WATER (LEFT), 75 L/HA OF WATER (MIDDLE) OR 50 L/HA OF WATER (RIGHT).



It is beneficial to apply trifluralin with high water rates where stubble biomass is high and stubble is tall and where annual ryegrass is very dense.

Annual ryegrass density was reduced by spraying Triflur Xcel® at a higher water rate, with 4.6 plants/m² in the plots sprayed with 100 L/ha of water, 5.7 plants/m² in the plots sprayed with 75 L/ha of water and 6.9 plants/m² in the plots sprayed with 50 L/ha of water.

Annual ryegrass density was greatest in plots

with the greatest stubble biomass, or the tallest stubble. For example, there was an average of 8.5 plants/m² in the plots with narrow row spacing, 6.6 plants/m² in wide-row plots and 2.8 plants/m² in the bare plots. Likewise, there was an average of 9.7 plants/m² in the tall stubble plots, 6.5 plants/m² in medium stubble plots and 2.2 plants/m² in the short stubble plots.

It may not be possible to apply trifluralin with high water rates over the entire farm, due to time constraints, but it is beneficial to apply trifluralin with high water rates where stubble biomass is high and stubble is tall and where annual ryegrass is very dense.

However, if mixing trifluralin with non-selective herbicides, consider the water rate that should be used for the non-selective product as well as for the trifluralin. Spray.Seed® can be applied with 100 L/ha of water but glyphosate herbicides need a lower water rate.

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TABLE 2. THE TOTAL WEIGHT OF STUBBLE (T/HA) AT THE END OF 2010, IN PLOTS SOWN AT A NARROW OR WIDE ROW SPACING OR LEFT BARE, AND HARVESTED AT VARYING HEIGHTS.

STUBBLE HEIGHT	ROW SPACING		
	Narrow (25 cm)	Wide (50 cm)	Bare (no wheat)
Short stubble (7.5-8 cm)	4.61	4.25	4.17
Medium stubble (20 cm)	4.19	3.41	1.78
Tall stubble (30-31 cm)	5.54	4.17	2.45