

Getting The Best Out of Grass Herbicides

Pre Sowing of Wheat

Aim: To evaluate how incorporation method impacts on the emergence of annual ryegrass from the furrow wall for various pre sowing grass herbicide mixtures in wheat.

Research Officer: Peter Newman, Weeds Research Officer & Glenn Adam, Technical Officer

Company: Department of Agriculture, Geraldton

Farmer: Mike Bothe

Location: Coorow



Department of Agriculture
Government of Western Australia



Background: Trifluralin now forms the backbone of ryegrass control in wheat. One weakness of trifluralin is the control of ryegrass emerging from the side of the furrow wall when incorporated by knifepoint and press wheel seeding systems. Double incorporation of trifluralin by incorporating trifluralin with rolling chain harrows prior to seeding may improve the control of ryegrass in the furrow wall. The snake chain has been designed to pull a small amount of soil from the furrow wall into the bottom of the furrow. The snake chain is simply a small length of chain attached to the rear of the press wheel assembly that runs in the furrow. This increases the rate of trifluralin in the bottom of the furrow.

Trial Details

Property	Mike & Heather Bothe, Coorow
Plots / replication	11 herbicide treatments x 4 incorporation treatments x 3 reps, 12m long plots, harvested with plot harvester. Results are from 2 reps only due to seeding errors.
Soil type	Yellow Sand
Sowing details	27 th May: Calingiri wheat 80 kg/ha sown into excellent soil moisture (ie. 25mm rain on 22 nd May). Sown into lupin stubble, low level of ground cover approx. 30%
Treatments	24 th May: Glyphosate 1 L/ha applied by farmer. 27 th May: Spray.Seed® 1.2 L/ha applied 10.30am. Herbicide treatments applied in 65 L/ha water between 11am and 1 pm. Dry bulb 19 °C, Wet bulb 12 °C. Incorporation by harrows between 1.30pm and 2.30pm. 27 th May: Seeding between 4pm and 5pm.
Herbicide formulations	Trifluralin 480 g/L Duet250 (125 g/L Trifluralin + 125 g/ha Oryzalin) Stomp 330EC (= Rifle) 330 g/L Pendimethlin Diuron Flowable 500 g/L Logran 750 g/Kg Triasulfuron Logran B Power 520 g/Kg Triasulfuron + 200 g/Kg Butafenicil

	Herbicide Treatment
1	Nil (288 rye / m ²)
2	Trifluralin (480 g/L) 1.25 L/ha (= 600 gai)
3	Trifluralin 2 L/ha (= 960gai)
4	Trifluralin 3 L/ha (=1440 gai)
5	Trifluralin 2 L/ha + Diuron (500 g/L) 400 mL/ha
6	Trifluralin 2 L/ha + Diuron 800 mL/ha
7	Trifluralin 2 L/ha Pre then Diuron 400 mL/ha PSPE

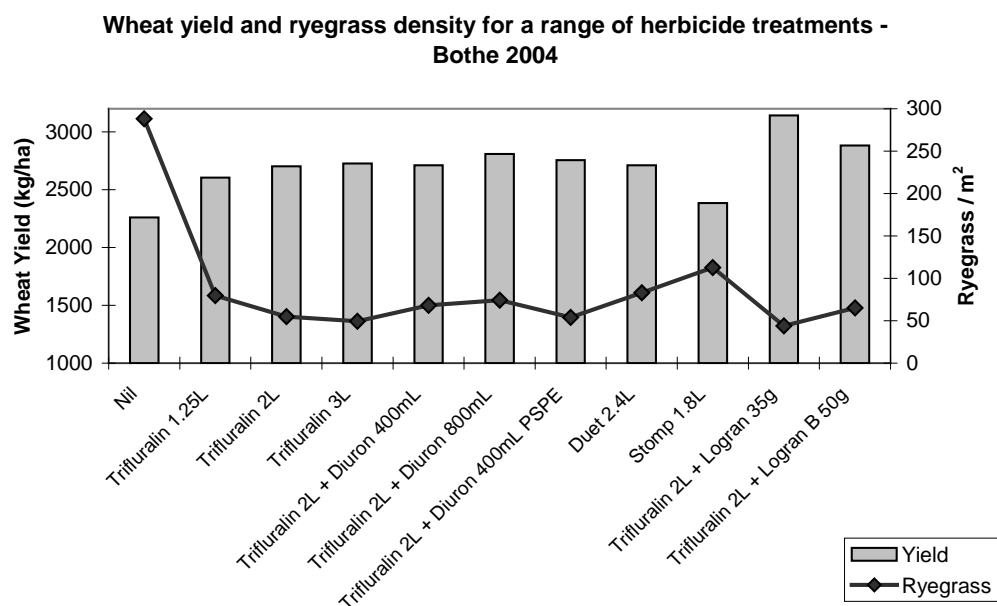
8	Duet (250 g/L) 2.4 L/ha (= 600 gai)
9	Stomp (330 g/L) 1.8 L/ha (= 594 gai)
10	Trifluralin 2 L/ha + Logran (750 g/Kg) 35g/ha
11	Trifluralin 2 L/ha + Logran B Power 50 g/ha

gai refers to g of active ingredient

Incorporation treatments

1. Single incorporation by seeding with Knife Point + Press Wheel (ie. Minus Snake, Minus Harrow).
2. Single incorporation + Snake Chain trailing in furrow (ie. Plus Snake, Minus Harrow).
3. Double incorporation (ie. rolling harrows followed by incorporation by seeding with Knife Point + Press Wheel) (ie. Minus Snake, Plus Harrows).
4. Double incorporation + Snake (ie. Plus Snake, Plus Harrow).

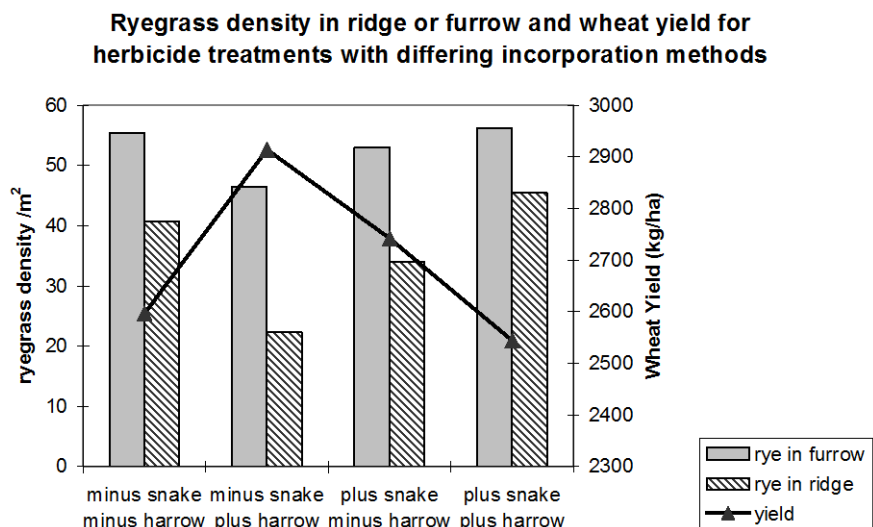
Results



There were significant ($p < 0.05$) differences in wheat yield between herbicide treatments LSD 288 kg/ha. There were significant ($p < 0.05$) differences in ryegrass density between herbicide treatments LSD 32 ryegrass/m².

There was no significant difference ($p > 0.05$) in ryegrass density in furrow between incorporation methods. There were significant ($p < 0.05$) differences in ryegrass in ridge between incorporation methods LSD 11.9 ryegrass/m². There were significant ($p < 0.05$) differences in wheat yield between incorporation methods LSD 173.5 kg/ha.

There was no effect of any treatment on wheat emergence ($p>0.05$). Average wheat seedling density was 141.3 plants/m².



Summary:

- The double incorporation of trifluralin method (ie. the incorporation of herbicide with rolling harrows prior to seeding) is designed to minimise the number of ryegrass that emerge from the edge of the furrow wall. However, there was no effect of incorporation with rolling harrows, or the snake chain, on ryegrass density in the furrow in this trial. It is possible that the depth of incorporation with the rolling harrows was too shallow to incorporate the herbicide to the required depth.
- The snake chain is unlikely to affect ryegrass emergence from the furrow wall. The snake chain takes some soil from the ridge and places it in the bottom of the furrow. The ryegrass in the furrow wall has germinated in a zone of soil that has no trifluralin. Placing trifluralin over the top of this soil will have little influence on ryegrass emergence.
- There was a significant effect of incorporation method on ryegrass germinating in the ridge between crop rows. The minus snake, plus harrow (ie. double incorporation) treatment had less ryegrass emerging from the ridge than other treatments. The lower ryegrass density for this treatment resulted in significantly higher wheat yield.
- The Trifluralin plus Logran® treatment gave the greatest wheat yield with the lowest ryegrass density. Observing the un-cultivated buffers at this trial revealed that the ryegrass at this site appears to be susceptible to Logran®. Trifluralin plus Logran® is a very robust herbicide mix for Logran® susceptible ryegrass populations.
- There was no benefit to ryegrass control of adding Diuron to Trifluralin. Diuron is generally accepted as being soft on ryegrass in sandy soils in the NAR. There was no effect on yield by adding Diuron to Trifluralin.