

Plant Cane Pre-Emergent Grass Herbicide Demonstration Trial

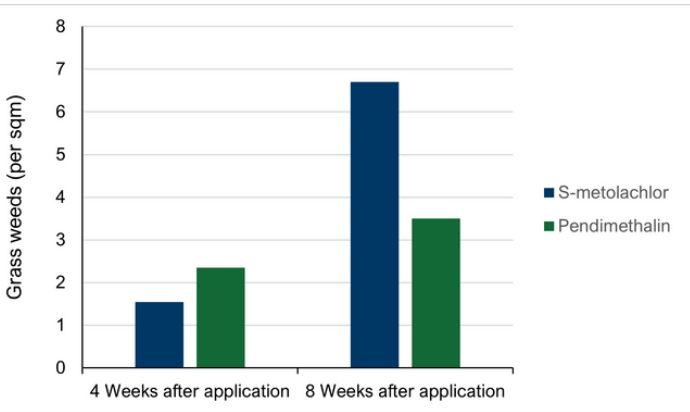
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Trial Overview:

In the Burdekin, Project Bluewater has been undertaking a replicated demonstration strip trial to compare the efficacy and runoff capacity of two pre-emergent grass herbicides. Pendimethalin and S-metolachlor were applied at spike to 3 leaf stage plant cane on a fully irrigated clay loam block in the Burdekin. Both herbicides were applied broadcast with a flat-boom, S-metolachlor at a rate of 1.8L/ha and Pendimethalin at a rate of 3.3 L /ha. Both treatments also had Atrazine @ 1.5kg/ha applied for control of broadleaf weeds, in a total water volume of 275L/ha. The herbicides were incorporated by furrow irrigation 3 days post application. Weed counts were conducted 4 weeks and 8 weeks after application using randomly placed quadrats within treatments. In addition, specialised water samplers were installed in each treatment to measure the amount of residual herbicide lost in each runoff event. A total of 8 runoff events (irrigation and rainfall) were collected and analysed.

Results:

Weed counts revealed that at 4 weeks after application, both S-metolachlor and Pendimethalin provided acceptable levels of grass weed control. However, by 8 weeks after application Pendimethalin was more effective at controlling grasses. This is a result of the breakdown of the product and also due to overall losses of the product to runoff and deep drainage.

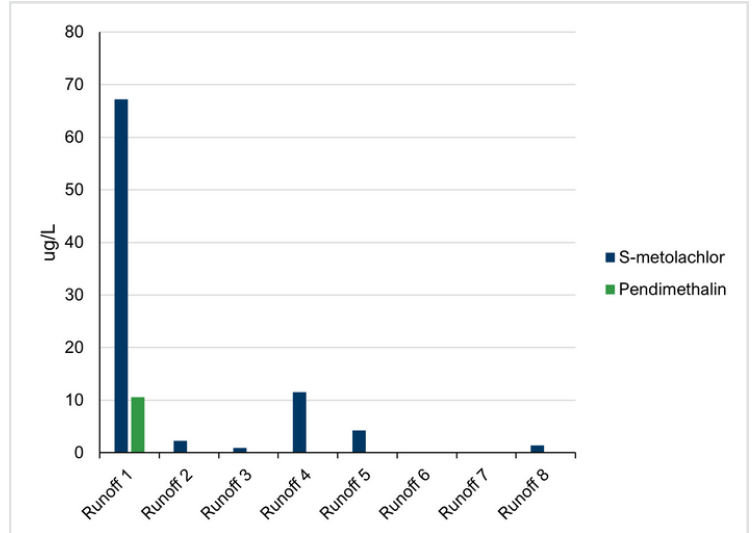


There was significant difference between treatments in herbicide runoff losses across multiple irrigation events (FIG).

Both herbicides showed the greatest losses in the first irrigation after treatment, with subsequently reduced losses with each sufficient runoff event. However, the S-metolachlor losses were significantly higher than that of Pendimethalin, which is to be expected based on the chemical properties outlined in Table 1.

Paddock Overview

Region:	Burdekin - Jarvisfield
Soil Type:	Clay Loam
pH:	7
OC%:	0.73
CEC (meq/100g):	19.9
Irrigation:	Full flood irrigation



	Half-life in soil	Solubility	Soil binding	Runoff potential
Pendimethalin	100-182 days	Low	Very High	Very Low
S-Metolachlor	23-52 days	Moderate	Moderate	Moderate

Table 1 – Overview of the chemical properties of Pendimethalin and S-metolachlor. S-metolachlor has a shorter half-life, higher solubility and lower soil binding potential, these properties mean that it is more prone to runoff and deep drainage losses when compared to Pendimethalin. *

Summary:

While both herbicides are effective at 4 weeks, S-Metolachlor shows significant runoff potential, resulting in larger numbers of weeds by 8 weeks post application. Pendimethalin has a lower solubility in water and a far greater binding potential to organic matter, resulting in less runoff and better weed control. The runoff results also highlight the importance of managing the first few irrigations post herbicide application to ensure off-site impacts are minimised where practical.

It is important to note that if you choose to apply a residual herbicide, there are many other factors to consider. In addition to the information presented in the table above, the soil type, method of incorporation, timing of application, soil consolidation, droplet size, water rate, chemical rate, weed pressures and spray water quality are all things you need to consider to ensure you get the most out of your herbicide applications and reduce offsite losses.

* GRDC. (2022). Pre-Emergent Herbicides Fact Sheet. Grains Research & Development Corporation. http://grdc.com.au/_data/assets/pdf_file/032/575069/GRDC_PreEmergentFS_2022_Final-approved-version.pdf



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