ORD CATCHMENT REFERENCE GROUP

NRM Facts

Best management Practices for Soluble Pesticide Use in the ORIA

Introduction

This project builds on previous work to assist development and adoption of Best Management Practices to reduce the movement off site of agricultural pesticides in the ORIA. Past work developed guidelines across a broad range of chemicals; this work assisted in reducing significantly traces of insoluble chemicals found off farm. However, there has not been the same success with soluble chemicals currently in use.

In order to gain a better understanding of the characteristics of soluble chemicals in irrigation water, Ord Land and Water (OLW) devised a trial watering strategy. It was proposed to test differences in Atrazine concentrations, as an indicator soluble pesticide, over several watering time lags. Atrazine is a triazine herbicide which is reactive in the water column.

Method

Study sites were located 'on-farm' in the ORIA, Kununurra Western Australia. Each irrigation blocks was split into three sub-blocks (Figure 1) in order to apply three different irrigation phases (Table 1).This experimental design eliminates variation in weed control and Atrazine runoff due to land preparation, farm layout and chemical application techniques.

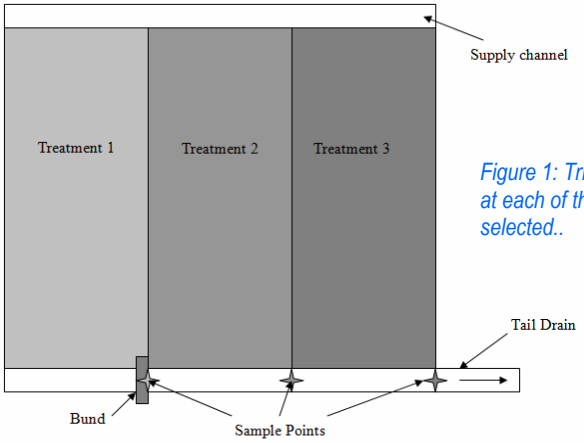


Figure 1: Trial layout at each of the sites selected..

Table 1: Treatments applied at each site..

Watering schedule from Atrazine application	
Treatment 1	Wet up furrows immediately with no water to runoff farm. Irrigate fully 72 hours later.
Treatment 2	Irrigate 48 hours
Treatment 3	Irrigate 96 hours

Plate 1: ISCO water sampler.

Water samples were collected of each treatment for three irrigations after Atrazine application. An ISCO 6712 portable sampler was used to take automatic samples every hour, of 960 ml volumes, over a ten hour period.

Broad Leaf and Grasses were counted at each block between 21-28 days after first irrigation wet up.

Plate 2: Completing a weed count.

FURTHER INFORMATION

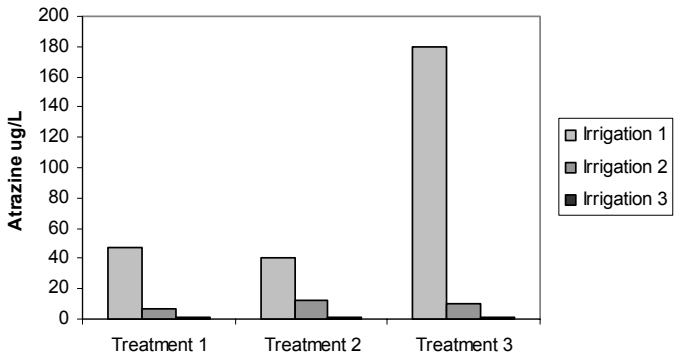
Dick Pasfield
Ord Land and Water
PO Box 1804 Kununurra WA 6743
0891 692 222
dick@olw.com.au

Australian Government

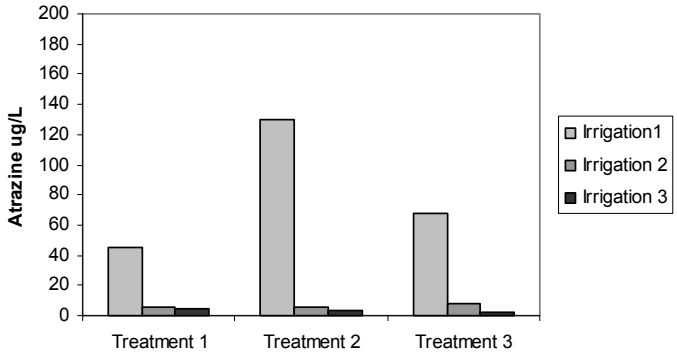
Government of Western Australia

RANGELANDS NRM Co-ordinating Group

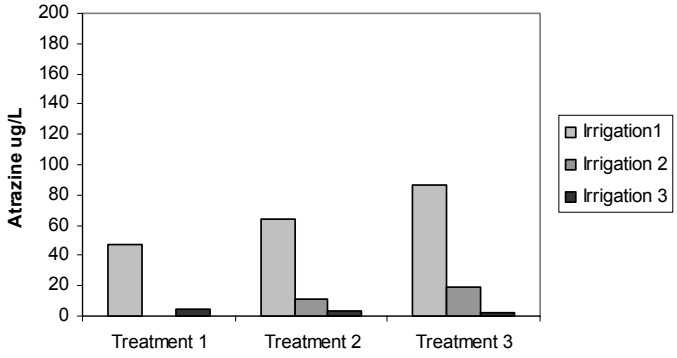
Site 1



Site 2



Site 3



Results

Atrazine in tail water can vary significantly with different watering techniques. Across all three treatments the concentration of Atrazine decreases with successive irrigations

The greatest impact on Atrazine concentration in tailwater from changed irrigation management can be achieved in the first irrigation event. The variation in Atrazine concentrations diminishes with successive irrigations and so the opportunity to impact on Atrazine concentration in tailwater also diminishes

Wetting up of furrows of a block immediately after spraying fixes more Atrazine to the soil, where there is water flow, and reduces the concentration in runoff with further irrigations.

Waiting 48hours to irrigate after Atrazine application greatly reduces its concentration in tailwater from the maximum value recorded, whether that be in the third or first treatment.

The effectiveness of Atrazine as a broadleaf weed control does not seem to be impacted by delaying watering as all three sites demonstrated greater broadleaf weed control on those sites where the watering was delayed the greatest. In addition at two of the three sites the greatest concentration in Atrazine was lost in the 1st irrigation after the longest delay in watering (3rd treatment).