

POLYACRYLAMIDE USAGE IN THE ORIA

BACKGROUND

Polyacrylamide (PAM) is a chemical used in irrigated agriculture to reduce erosion and enhance water infiltration into the soil profile. It is attracted to soil particles stabilising the structure to prevent transport in irrigation runoff. The few particles that do detach are quickly flocculated by PAM settling them out of the transport stream.

PAM was selected to be trialled in an experimental project undertaken by Ord Land and Water and CSIRO to test methods and develop guidelines to reduce the off farm movement of pesticide residues within farm tailwater.

In addition the project also monitored the responses of nutrients to the various methods employed.

PAM had been used in similar trials in other areas and therefore was considered a priority trial for the project.

Experiments were conducted on melon and sugar cane crops and tested the pesticides atrazine (Atradex), bupirimate (Nimrod) chlorothalonil (Bravo) and endosulfan (Thiodan).

The project sought to answer the following questions –

- Will PAM reduce off-site movement of pesticides and by what extent?
- Will PAM reduce off-site movement of phosphorus, nitrogen and soil?
- Will PAM increase the risk of pesticides infiltrating further into the soil profile during irrigation?

METHODOLOGY

PAM was applied to the experimental plots whilst irrigating by either the placement of PAM pucks in front of each running siphon or by the application of liquid PAM at the Dethridge wheels. Pesticides were applied prior to irrigation, water samples collected from the tailwater and results compared with 'control' plots (where no PAM was applied).

RESULTS

Pesticides: The addition of PAM resulted in a percentage decrease in the total load of chemicals leaving the trial plots.

CHEMICAL	REDUCTION
Endosulfan	54%
Chlorothalonil	49%
Bupirimate	38%
Atrazine	Nil

Nutrients: The addition of PAM resulted in a percentage decrease in the total load of nutrients and soil leaving the trial plots.

CHEMICAL	REDUCTION
Phosphorus	55%
Nitrogen	56%
Carbon	60%
Soil	58—86%

Pesticide infiltration: The addition of PAM resulted in no significant increase of movement of the chemical atrazine through the soil profile compared to the control. This work was limited to one experiment; more work may need to be done to confirm this.

Observation: It was noted that in the first experiment, the addition of PAM appeared to decrease the volume of water moving off the paddock by over 50% suggesting that PAM may have influenced water infiltration into the soil profile. However this was not seen in the following trial. This is an interesting observation that would be worth further investigation.

FURTHER INFORMATION

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