

Atrazine management guidelines for central Queensland

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Abstract

Atrazine is a residual herbicide commonly used in sorghum and maize crops in central Queensland (CQ). In 2004, farmers working with Central Queensland Sustainable Farming Systems (CQSFS) highlighted concerns about the frequent detection of atrazine in water quality samples in rivers and streams in CQ. In response to these concerns CQSFS developed and implemented an action learning process with CQ farmers to develop guidelines targeting effective weed control and minimise off-farm movement of atrazine. The guidelines cover the following aspects of atrazine use: *Making atrazine work better*; *Using atrazine in your farming system*; and *Keeping atrazine on the farm*. This paper summarises both the process used to develop the guidelines, and the guidelines themselves.

Keywords

atrazine management guidelines

Introduction

Atrazine is an important and cost effective weed control option in a number of crops in central Queensland (CQ) farming systems. As rural communities have expressed concerns about the impact that atrazine residues in waterways may have on human health, farmers identified the need to take a proactive approach to improve the management of this herbicide. To ensure the continued availability of atrazine it is vital that practices that minimise off-farm movement are implemented. In addition, farmers were interested in improving the efficacy of atrazine application in order to achieve better weed control and reduce costs. The project team working in Central Queensland Sustainable Farming Systems (CQSFS) developed an action learning module for producing guidelines for atrazine use. A participatory action learning approach was used with farmers as an effective means of ensuring ownership of the guidelines and adoption of the suggested practices (Sullivan *et al.*, 2005).

Methods

Two workshops were held with the six farming systems groups in CQ in August 2004 and July 2005, and a review session was held at the group meetings in December 2004.

The workshop in August 2004 was the first step in the process, and had a number of components:

1. A survey to collect data about current knowledge and practice of use in regards to atrazine.
2. Presentations from scientists and consultants to provide information about efficacious atrazine use and how atrazine moves in the environment.
3. Discussions to develop management practices that could be implemented on farm for improving weed control and / or minimise off-farm movement of atrazine.
4. A survey to collect aspirations of when these management practices would be implemented on farm – for example over the coming season or for bigger changes over the next five years.

At the group meetings in December 2004, step 2 of the process was to present an update on the progress of the guideline development, including feedback from the surveys collected in the first

workshop. The third step was to organise a field walk during the 2004/05 season to inspect a sorghum crop, discuss weed control options used and share stories of new and / or different management strategies implemented with respect to atrazine use. This did not occur because dry conditions led to a poor season with few crops planted. This field component was incorporated into the second workshop. At the second workshop, farmers were given the opportunity to provide feedback about the guidelines that had been drafted based on the management practices developed in the first workshop. We also discussed what people had done differently, how it worked and conducted a risk assessment of a paddock to evaluate the potential risk of runoff and atrazine movement. After compiling the suggestions from farmers at the second workshop, changes were made to the guidelines. They are now complete and have been distributed to all grain farmers in CQ through the GRDC 'Groundcover' publication mailout.

Results

The guidelines are a short document that covers the following aspects of atrazine use:

Making atrazine work better: recommendations to improve efficacy, including application timing, rate, volume and method; nozzle type; and the use of tank mixes and adjuvants.

Using atrazine in your farming system: factors to consider including soil type, weed spectrum, fallow weed control, crop sequence and crop rotation.

Keeping atrazine on the farm: six strategies with accompanying management practices that can be implemented to minimise off-site movement of atrazine were identified. The strategies are:

- Reduce runoff from paddocks treated with atrazine by practicing zero till farming, opportunity cropping, maintaining grassed waterways and vegetation buffers around sensitive areas, and providing water and sedimentation control areas such as silt traps.
- Reduce the amount of atrazine that is available to runoff in water by using banded application, alternative herbicides, incorporation of atrazine, planting alternative crops in areas where runoff is most likely to occur, applying lower rates of atrazine for post-emergent weed control by using tank mixes or adjuvants, improving fallow weed management to reduce reliance on atrazine, avoiding planting sorghum in wide rows in weedy paddocks, and use of precision farming to avoid overlap and allow precise application of herbicides.
- Avoid application when runoff is expected. The risk of runoff is increased when the profile is full.
- Avoid application close to sensitive risk areas such as streams and waterways.
- Develop a farm plan, identifying areas with a high risk of runoff and herbicide loss.
- Assess the risk of atrazine movement off your paddock.

Growers were surveyed at the second workshop. Of the farmers who grew sorghum in the 2004/05 season and used atrazine, 62% changed their management in some way with the aim of improving efficacy and minimising off-farm movement. Of those who had made no changes in that season, 60% planned to implement management changes over the coming five years. This represents a large proportion of farmers taking action to improve the management of atrazine. The flow on effect is that farmers will also start improving their overall management of chemicals. Growers were also asked to rate the value of the guidelines to the grains industry and a ranking of 4.4 out of 5 was given, indicating the farmers place a high value on the guidelines for the industry.

The movement of residual herbicides in runoff is an issue across the northern grains region. Similar strategies across different regions can be adopted to overcome the problem. The strategies for keeping atrazine on farm are similar to those reported for minimising herbicide transport from cropping systems on the Liverpool Plains in NSW (Sun and Cornish, 2003). The action learning process used with farmers to develop the atrazine management guidelines for central Queensland was important in ensuring the end product has practical guidelines that farmers can adapt to their own farming system.

Conclusion

The feedback from all groups about the guidelines was positive. The process used to develop the atrazine management guidelines forced farmers to think about how they use the product and identify areas where management could be improved. It highlighted their responsibility when using herbicides.

During the process a grower raised the issue that the grains industry is not united as a whole, making it difficult to address important issues. This led to discussion about a Best Management Practice for the grains industry, and that the atrazine guidelines were a good start towards an overall herbicide and pesticide management plan. The impact was wider than we anticipated; in that it has united growers with a common concern about an issue, working together to proactively address it. The process used demonstrated the need for a strategic approach to be adopted when using atrazine, and farmers commented on the value of farm planning, and identifying areas on the farm that may need special consideration in regards to atrazine use. These principals are not unique to atrazine use, and can be applied to other areas of farm management.

References

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