

Atrazine best management practice

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The grains industry, like all parts of agriculture is being inspected by the community for its environmental credentials. Monitoring studies have shown that the majority of water flows from agricultural catchments contain some pesticides or herbicides. While levels are often low, the perception of losses of soil and chemicals from farms may threaten our ability to apply current technology toward best practice, both economically and environmentally. In most cases farm managers follow good practice, and it may be that we need to demonstrate these credentials better than we do now. In some cases, we need better practices that improve efficiency and reduce our environmental footprint. These GRDC projects (DNR 9, DNR00002) focused on understanding the movement of agricultural chemicals in the landscape, identifying high risk situations and providing management options for improved practice.

This study applied a range of techniques to study chemical movement from paddock to catchment. An understanding of hydrology and soil chemistry (pesticides and nutrients) was gained by setting up a monitoring network on farms and waterways, supported by farmers sampling. This built a level of joint ownership, as well as made the sampling network more efficient and covered a wider area.

Rainfall simulation studies were used to build on our understanding of processes under controlled conditions, as well as demonstrate to land managers what happens during rainfall events. These two approaches gave us real world data linked to more detailed process studies.

One task was to integrate this information so that it could be applied to more environments and manage-

ment options. This was achieved through using existing water balance models and adding our new understanding of chemical behaviour and movement in the landscape. A model, Howleaky, allows us to estimate the risks of off farm movement of any combination of climate, soil, chemical and management practice.

The real challenge in environmental issues is building awareness in target groups without being alarmist or confronting. We presented positive options once issues are exposed and understanding has been gained.

- Pesticides in Catchments (PIC) was developed as a simple, paper based process to explain why chemicals move off-farm, and how risks can be minimised. Farmers work through a set of visual cues such as how prone is the catchment to runoff (wet) when a chemical is applied, and how close is the paddock to a waterway. Qualitative results are presented as a set of "fire hazard" scales (red to green). If a series of high hazards are identified, it becomes clear that there may be room for improvement.
- A Best Management Practice (BMP) manual supports suggested improvements, discussing agronomy and economics issues. This approach has proven effective in engaging farmers who are dependent on residual herbicides in their production systems. The above processes address management at the paddock and farm scale.
- To obtain a copy of the manual please call DNR&W in Toowoomba (07) 4688 1200

In summary, the range of approaches developed that focus on improving water quality provides a pragmatic solution to awareness building, technically defensible prioritised actions, and a basis for evaluating changes in management at the catchment scale. The approaches developed accommodate a wide range of technical capability, and allow land and catchment managers to meet on common ground and use available local and scientific information.

This project is the precursor to the current CFI-DAFF project that is building community awareness to on-farm chemical applications and discusses the best management options. The program is also developing an education package for universities and agricultural college. ▲



A range of approaches and scales were used to study movement of agricultural chemicals in cropping catchments; 1. rainfall simulator for detailed process studies, 2. monitoring runoff from paddock or contour bays, 3. sampling runoff from sub catchments and 4. collecting samples from creeks and rivers.