

# An obvious question about the environment is likely to become the obligatory question

Tony Clancy

'THAT'S A DIFFICULT QUESTION' is the simple and honest response grapegrowers give when asked about the environmental impact of the products they apply in their vineyards each year. The good news, however, is that work by CSIRO is now close to making the question much less difficult to answer.

Consumers in Australia's main markets have broadened their interests from the taste and purity of wine to effects of production on the environment. Even minor, isolated, incidents of environmental damage can change consumer buying habits. The need to be vigilant has been stressed by major buyers in Britain, for example, where consumer watchdogs and lobbyists are extremely effective. As consumer power has economic consequences, retailers may feel obliged to question their suppliers first about environmental consequences of production.

Most interest is in adverse effects of pesticides on wildlife and natural resources. Australia rates quite differently on each of these issues. Although traces of pesticides have shown up in limited monitoring of waterways, for example, these have been at acceptable levels. With regard to loss of habitat Australian states, particularly South Australia which banned native vegetation clearance more than 20 years ago, take community concerns seriously. On the land degradation front the report card does not give full marks, largely due to salt accumulation and erosion of exposed land. Such problems are being addressed by revegetation, minimum tillage in broadacre farming, better water management techniques in irrigated areas, and other land care measures.

Political action through policy and regulation, and personal action in the form of 'environmentally friendly' practices, has reduced if not overcome the impacts of primary industry on the environment. These things have put Australia on a better footing at the turn of the century than would have existed without any action. But this is an age of accountability and computers. People expect answers in fast and measured form. So while Australia can claim it has made progress it will be even more progressive if facts and figures can be placed alongside claims. It is also valuable to know the consequences of different choices made by primary producers when applying water, fertiliser, pes-



*Impact outside the vineyard on such things as native vegetation can be considered by computer models that are now being refined.*



*Pictured from left are Rai Kookana, Ros Miller and Ray Correll. Pesticides, fungicides, herbicides and other inputs.*

Environmental complexity makes provision of definite answers in most cases difficult but this has not deterred CSIRO's researchers. They believe that if, for example, it is possible to predict with 80% certainty whether or not a particular instance of pesticide use will cause traces to be found in nearby water supplies then this is significant information.

To meet the challenge of rating the likely impacts of various inputs with the convenience of a computerised system of analysing and modelling information, CSIRO combined the expertise of two of its divisions. These are Land and Water (involving research group leader Rai Kookana) and Mathematical and Information Services (involving environmental statistician Ray Correll and Ros Miller).

An important early development has been the Pesticide Impact Rating Index (PIRI), which Rai Kookana describes as a simple means of providing a risk factor for different pesticides and cropping systems. It incorporates the value of the asset (e.g. a water resource which may be threatened), the sources of threat (e.g. a certain pesticide load) to the asset, and the transport pathways through which the threat is released to the asset.

Compilation of information on hundreds of chemicals into the computer program has been relatively easy, Ray Correll says, because this data is readily available. Quantifying the other components, however, requires knowledge of local factors. The asset rating of a water resource on a scale of 1 to 100 can depend on size, form and use. A small dam for irrigation will not be rated as highly as a groundwater reserve from which supplies are drawn for community use.

Specific enquiries, concerning a single region and the same crop, can arrive at values more easily and help validate the application of PIRI. One such enquiry in which Rai Kookana and Ray Correll were involved concerned the impact of pesticides on the riverine environment. Data on toxicity, sorption and persistence taken from an existing database helped rate the threat of several pesticides to natural water. Other data enabled a comparison to be made between different crops in the same area, whose specific pest control requirements produced new rankings of threats to the water resource asset.

Detailed studies have yet to be undertaken in viticulture but

the framework is already set up for incorporating the data on inputs and to take account of grape production and crop protection practices.

As most grapegrowing is linked with a water resource for irrigation, water is again likely to be an important asset to value, although dryland production also has some impact on natural resources.

The high frequency of vineyard spraying and inevitable transport of spray solution into the surrounding air and onto the ground brings special consideration of the transport factor.

If assets at risk have a particularly high value, land use planners may use PIRI to compare one form of production with another. Around a city water catchment, for instance, the risks associated with viticulture can be compared with those of forestry or dairying.

Another way the PIRI program can be used is to rate inputs as they affect different things. A focus on fish in an adjacent river, for example, may change the ratings.

Greater understanding of the risks will help growers relate their practices to these risks. It may lead to a change in choice of chemicals where there are options with a lower risk to an important asset. If transport by air is a high risk pathway attention can be given to droplet size and the direction of heads on the sprayer. If soil is being eroded and particles carrying chemicals are being taken off the property with it, then vineyard floor treatments



*A large volume of chemicals is sprayed each year and not all stays on the target. Some is carried away by air and some drips off the trunk and leaves to reach the soil. The destiny and effect of chemicals that are routinely sprayed is of increasing interest.*

can be reviewed. Where organic matter levels are low, mulching can be considered as a means of building this soil component which is important for holding chemicals (especially insecticides) and harbouring micro-organisms which can break them down. Where sensitive environments surround the vineyard, buffers of thick tree plantations and grassy swales may be designed to alleviate effects of spray drift and ground run-off.

Primarily PIRI is useful for monitoring, setting research and development priorities and guiding producers towards methods which minimise off-site impacts. For an individual vineyard where accurate records of inputs are kept it can provide at least a 'semi quantitative' answer when asked about what is applied and the effects on the environment.

## Offers to Purchase Water

SA Water proposes to provide bulk water to the Clare Valley for horticultural and agricultural use and to provide a new reticulated supply to five Clare Valley townships. The proposed scheme is known as the Clare Valley Water Supply Scheme (CVWSS).

The South Australian Government has approved the proposal in principle, subject to interested parties committing to purchase a significant proportion of the scheme's peak period bulk water.

Offers to purchase CVWSS bulk water are now invited.

Information documentation and offer forms will be available from 30 November 2001.

Offers to purchase should be lodged with SA Water no later than 4.00pm on Thursday, 24 January 2002.

Enquiries and requests for documentation should be directed to:

Mr Tom McDermott  
SA Water Services Group  
SA Water Corporation  
East Terrace  
THEBARTON SA 5031  
Telephone (08) 8463 6030  
Facsimile (08) 8207 1368

Mr Nes Fernandez  
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