

# Halting the pesticide treadmill

By BRIAN MARTIN\*

**I**N the uproar over pesticide residues in Australian meat exports, the primary question seems to be "who is to blame?"

Some meatworkers, whose jobs are at stake, blame inspection systems. Many farmers blame a minority who use — or abuse — pesticides. Many prefer to blame officials in the US for enforcing their apparently arbitrary standards.

The current crisis has its roots in controversies over pesticides going back several decades. Some understanding of this history may provide insights for preventing future problems.

Pesticides were developed in World War II for military purposes. They were soon found to be potent killers of insects. Used to kill mosquitoes and other disease "vectors", DDT and other pesticides saved millions of lives at risk from malaria.

After the war, the use of pesticides expanded dramatically, especially in agriculture and forestry. There were some reservations expressed from the beginning, but these were swept aside in the enthusiasm for chemical killers.

Then, in 1962, Rachel Carson's book *Silent Spring* was published. Her reputation and eloquence triggered widespread public concern about the effects of pesticides.

Subsequent events have borne out the warnings of Carson and other critics. First, pesticides can cause extensive ecological damage. They are concentrated in food chains. For example, birds that eat insects develop higher

levels of pesticides than the insects. This can kill them directly, or cause their eggs to have thinner and more vulnerable shells.

The predators of pests tend to be more sensitive to pesticides than the pests themselves. When the predators are reduced in numbers, the pests, which breed faster, expand in numbers. More pesticide is required to kill the pests. This kills more predators, and so forth.

This is called the pesticide treadmill. It accounts for the fact that damage from pests remains just about as high after years of ever-increasing pesticide applications.

Carson also pointed to a basic feature of life on earth: natural selection. Those pests which are more resistant to chemicals breed more and pass their resistance on to future generations. Furthermore, the ability to survive one particular pesticide often confers resistance to related pesticides.

To try to control pests by pesticides alone is to fly in the face of Darwinian evolution. Resistance to pesticides has been increasing alarmingly. Even malaria is on the increase again. Carson also pointed to the human health risks from pesticides. A number of them have since been shown to cause genetic mutations and hence are potentially carcinogenic.

There are a number of alternative ways of dealing with pests. One is to use biological controls. For example, the virus disease myxomatosis was introduced in Australia to control the rabbit, a major pest.

Another approach is the sterile male. Vast numbers of sterile male

insects are bred and then released at breeding time. If done properly, they crowd out the fertile males and lead to a major drop in the pest population.

Combining a range of methods — including selected use of certain pesticides — is commonly called integrated pest management. It is the preferred approach by many in the field.

Integrated pest management requires the minimum possible use of pesticides. The trouble is that this cuts into the profits of companies that manufacture and sell pesticides.

The companies have many supporters in government and universities. Some say that this is because of the many consultancies, research grants and jobs provided to supporters of the pesticide approach.

Vocal opponents of pesticides often are bitterly attacked by the companies and other pesticide adherents. Rachel Carson, for her efforts, was denounced by pesticide proponents for being emotional, unscientific, alarmist and wrong. These amazing attacks are documented in Frank Graham's book *Since Silent Spring*.

Others, more vulnerable than Carson, have suffered in their careers because of opposition to pesticides. There are many cases in which critics have had grants cut off, been refused publication, or been sacked from their jobs. Robert van den Bosch recounts many such cases in his provocative book *The Pesticide Conspiracy*.

In 1971, Professor Clyde Manwell, of the Zoology Department at the University of Adelaide, spoke out critically about spraying for fruit fly. This triggered a major attack on Manwell

by parliamentarians, and led to an attempt to dismiss him from his tenured post. Although none of the charges made against Manwell was substantiated, it was four years before the case against him was dropped.

Arguably, the attacks on critics of pesticides have contributed to a continued over-emphasis on pesticides and a relative neglect of alternatives. The debate has not been a balanced one. There are no powerful economic or political forces promoting integrated pest management.

In the US, the political system gave environmentalists more opportunity to push for controls on pesticides. This led to the development of limits on residues. But in other countries, such as Australia, dissenting voices were more readily overridden.

US companies have continued to sell pesticides which are banned in the US to other countries, especially Third World countries where controls are poor or nonexistent. But Australia is another one of those countries.

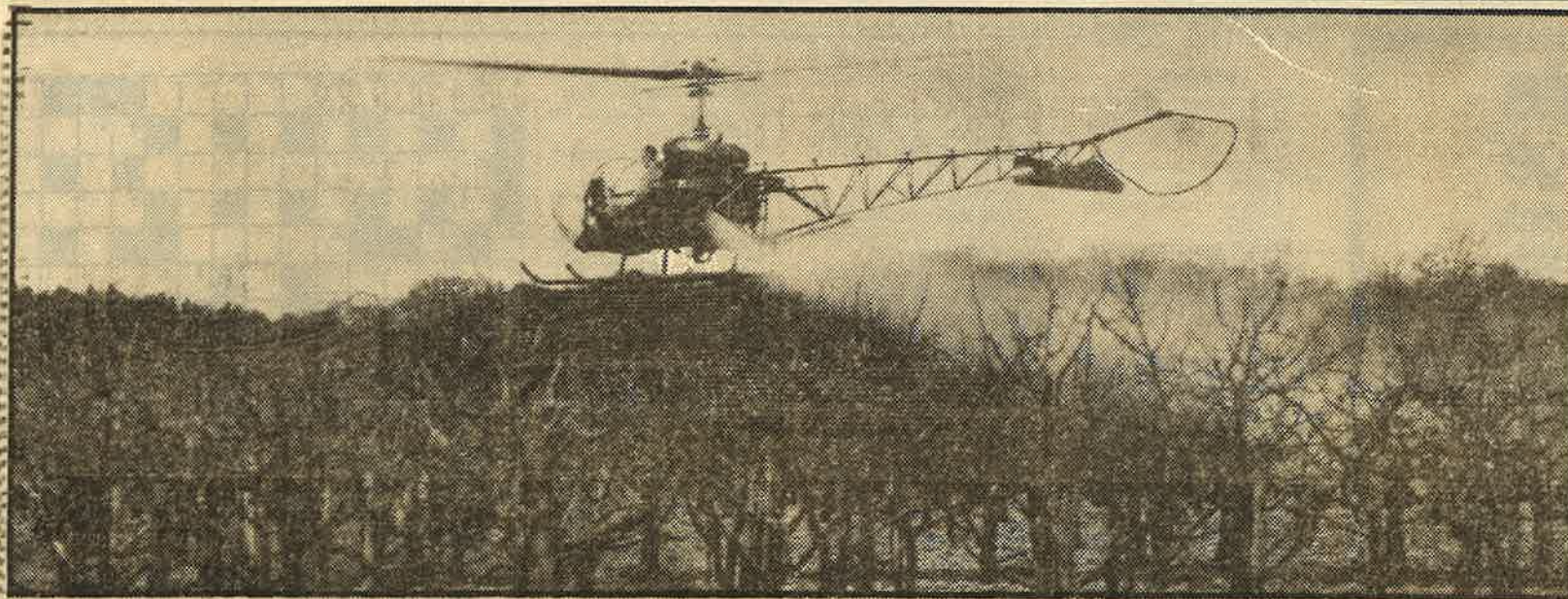
The irony is that the banned pesticides are brought back to the US in the form of food imports — including Australian meat.

If the critics of pesticides had been heeded earlier, much more progress could have been made in safer methods of pest control. Australia can ill afford the cost of ignoring dissenting voices.

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## Saturday magazine



Attacking pests from the air . . . initial reservations about pesticides were swept aside.