Spraying cotton crop with insecticide—Ord River

I.U.C.N. POLICY ON THE USE OF PESTICIDES

Reproduced below is a statement of the views of the I.U.C.N. Commission's Ecology Committee on ecological effects of chemical control. The comments in italics under each of the points raised by the I.U.C.N. indicate the pesticide situation in Western Australia.

The International Union for Conservation of Nature and Natural Resources (I.U.C.N.) is fully aware of the problems of agriculture and public health in a world with a rapidly growing population. It is accepted that no-one should oppose any well-considered attempt to increase the production of the necessary food, or to achieve the elimination of vectors of disease.

It is equally obvious that the use of pesticides is one of the means by which food production can be increased, and the I.U.C.N. wishes to be clear on the point that it is not opposed to the principle of using pesticides when it is the appropriate means according to present knowledge.

The I.U.C.N. emphasises the necessity of taking into account the following matters when pesticide applications are planned:—

(a) Before control is attempted it should be firmly established that the organism to be attacked is indeed doing damage of economic significance. The I.U.C.N. distinguishes different categories of social need for pest control. They are:—

(1) The abatement of a nuisance;

(2) the reduction of an agricultural or forest pest; and

(3) the elimination of a vector of human disease.

The degree of upset of ecological processes which may be temporarily permissible would vary with the particular objective and the social values and mores of the particular place.

[*In Western Australia, as elsewhere, there have been two generations of pest control:*

(1) The use of old-type chemicals such as lead arsenate; and

(2) the more recent use of complex organic compounds such as chlorinated-hydrocarbons and organophosphates.

Looking to the future, indications are that a type of integrated biological and chemical pest control will be the third generation of pest abatement techniques.

The projected aims of researchers to "manage" pests will result in the use of viruses, bacteria, chemo sterilants; of sterile males, sex attractants, and more resistant varieties of crops.

At present in Western Australia, growers generally seem to be ignorant of the difference between animals that are and are not causing damage of economic significance. There is also a tendency on the part of pesticide users to over-spray—"just in case". Orchardists, for example, spray as an insurance against attacks of light-brown apple moth which is an outbreak species and not an annual problem in every district; while potato growers over-spray (using D.D.T. and other persistent insecticides) against potato tuber moth.

These problems in pest control clearly indicate that there is a need for more grower education in Western Australia.]

(b) Ecological effects must always be considered in any assessment. Very stable, persistent pesticides have been used for many years but the situation has been greatly aggravated by their increased use and the greater use of aircraft, high pressure spraying, etc. Therefore, ecological effects have extended far beyond the target areas.

[*There has been a tendency in Australia to overlook the wider effects of certain pesticides. This has not always been the fault of the user because insufficient information is available on the repercussions of particular chemicals on the environment.*]

(c) There is a trend toward unnecessary clean farming and the establishment of monoculture on large areas. These factors, together with the unnecessary demand — largely established by advertisers — for completely unblemished fruit and vegetables, often lead to the extravagant use of pesticides. This has repercussions both within crop ecosystems and outside them, yet the economic gains, particularly in the long term, are open to question.

[*Researchers believe that there is no need for completely unblemished crops provided that: (1) there is no harm to the consumer, and (2) it tastes as it should. Most people would agree that slightly blemished fruit would be more acceptable than fruit contaminated with a persistent pesticide, or a reduction of environmental diversity caused by over-spraying.*

On the domestic side, there has been a trend toward "unnecessarily clean" lawns in Western Australia through the use of fertilizers containing pesticides. It has been reported that the pesticide (chlordane) kills bird life. In circumstances where lawns are attacked by pests such as lawn beetles, control can be justified, but the use of such products as a preventive measure is open on question and indicates a lack of appreciation of ecological side-effects.

Research has shown that monoculture on large areas (e.g., wheat farming in Western Australia) increases pest control problems and that the more diverse the farming the more damped are the oscillations of pest insects.]

(d) It is accepted that with present knowledge, chemical control is often the only feasible method. Pesticides have the very great advantage of giving results immediately and these can be very spectacular. However, the responsibility of the agricultural adviser must go further than the immediate result. In the long term, pesticides may increase problems rather than reduce them. With this in mind careful consideration must be given to the other solutions of the problem, such as cultural methods and the development of resistant varieties of crops and animals. Biological control, though not so spectacular and not as effective immediately, may eventually be a more economical way of improving the production of food in certain situations. In other cases, biological and chemical control may be combined in integrated control programmes which avoid loss of predators while reducing numbers of the pest.

[*In Western Australia, integrated biological control programmes are still in the developmental stage and it would be unrealistic (and impossible) to prevent farmers from using chemical control methods. There is a definite need, however, for agricultural advisers, manufacturers and researchers to educate growers in the safe use of pesticides, rates and times of application, and possible side effects.*

Research by C.S.I.R.O. scientists in W.A. is being conducted into the use of a virus to control the potato tuber moth and, although complete data are unavailable, present indications are encouraging. In the Eastern States, C.S.I.R.O. scientists are also conducting tests with virus chemo-sterilants and sex attractants.]

(e) When control by a chemical is undertaken, the pesticide should be applied at the minimum rate which will ensure effective control. There is a common tendency to use insecticides at excessive rates because it is hoped much better results will be obtained. This practice obviously increases considerably the danger to beneficial insects and other wildlife.

[*Application of excessive rates of pesticides has been shown to be no more effective in controlling pests than the rates recommended by manufacturers or agricultural advisers. Also, the excessive use of certain types of chemicals often has the adverse effect of harming beneficial insects and other wildlife, such as predators of the target species.*]

(f) The pesticide should be applied only at such places where control is necessary. Special dangers result from aerial spraying; not only does drift occur, especially when it is windy, but also volatilisation can be much greater.

[*It is evident in Western Australia that aerial spraying of small farm areas has affected adjacent areas through wind drift. In more recent times, however, farmers have become more aware of the dangers of aerial spraying and are more careful to protect wildlife and insects such as bees.*]

(g) The pesticide should be applied at such a time that maximum effect on the pest can be expected with a minimum of danger to non-target species. For example, to protect bees, crops should not be sprayed when flowers are open.

[*It is obviously most desirable for pesticides to be applied at the correct time and although this has only recently been realised, users are becoming increasingly aware of this fact.*]

(h) Whenever possible, the most specific pesticide should be used; for example, in some systems, organophosphorus insecticides kill aphid pests without harming their predators.

Fruit fly spraying on South West orchard

[*As already indicated there has been a tendency by apple growers to spray for light-brown apple moth even in years when outbreaks do not occur and the moth is not damaging. In some instances certain pesticides have destroyed non-target species (e.g., predators) and growers have found themselves on a pesticide treadmill.*

There is a need for more specific pesticides to be developed; many pesticides in common usage today kill a wide range of insects on the crop. These broad spectrum, mostly persistent pesticides also alter populations of soil animals which have a very important role as modifiers of the rate at which dead plant material is broken down into plant nutrients.]

(i) Some uses of a pesticide can be far more hazardous to wildlife than others, for example, the use of certain organochlorine insecticides as cereal seed dressings is far more hazardous to birds and mammals than is the use of the same material as plant dips.

Recently, there have been new developments which should be considered and programmes should be constantly reviewed.

The use of virus, of bacteria and bacterial toxins and of fungus diseases of insects, chemical and other sterilants and specific sex attractants is very promising. Some spectacular results have been achieved by the use of insect predators and parasites of pest insects, and in some cases this has led to solving rather difficult problems of integrated pest control. Also, we wish to emphasise again the use of cultural controls of insects, and the development of pest resistant varieties of plants as this shows great promise. The great advantages of these are obvious but development is still at an early stage. It should be underlined that these methods possibly used in combination with very low concentrations of synthetic insecticides, or in an integrated biological and chemical control, open a way for control of pests with slight disturbance of ecosystems within the agricultural area and without it having repercussions on both biological control and the ecosystems of the area thus treated. This will also safeguard non-target species. Such conservative use will also help guard the public health.

Disposal of pesticides should be in such a way that rivers and parks, and other natural environments are not contaminated.

Continuous research should be conducted to gather the needed knowledge to permit more and more enlightened pest control. All segments of society, including the manufacturer of pesticides, should support such research. Concerted efforts to educate salesmen, contractors, retailers and, above all, users, about the proper use of pesticides, must be made.

These principles should be continuously reviewed and changed as necessary.

[*Clearly, manufacturers, agricultural advisers, scientists, farmers and other users are not sufficiently aware of the possible repercussions of using a particular chemical. It is easy to criticise manufacturers for their failure to determine the full effects of their product before marketing, but the problem is not that simple. What is needed is intensified research into insect control, and more general education of the public. This education could be a part of the school curriculum and should go hand in hand with environmental education.*]

ANTI-LITTER CAMPAIGN

A six-week anti-litter campaign was launched in April by the Premier Mr. Tonkin on behalf of the Keep Australia Beautiful Council.

The cost of the campaign ($16,000) was met by the mass media and industry in Western Australia.

In conjunction with the K.A.B.C. campaign the police mounted an intensive blitz on motorists who threw litter from cars.

Mr. Eddy Tamlin, Executive Director of the Keep Australia Beautiful Council (W.A.), pointed out that the Road Traffic Regulations provided a $20 fine for throwing any item from a vehicle and that under the Health Act offenders could be fined $40 plus costs. Mr. Tamlin added that a section in the Local Government Act provided a penalty of $200 for littering public places.

Regulations under the Fauna Conservation Act provide a penalty of $200 for depositing litter on Fauna Reserves.