CONTROL OF PESTICIDE USAGE ON TOBACCO IN ZIMBABWE

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INTRODUCTION

Zimbabwe ranks third in the world as a tobacco exporter, supplying about 18% of the world market. In 1989 and 1990 it produced 263 866 tonnes of flue-cured tobacco, of which 98% was exported to about 80 countries. Tobacco is Zimbabwe's largest individual earner of foreign currency, having contributed Z.$1 617 million (about 24%) to the country's export earnings in 1989 and 1990 (Tobacco Industry Council, 1990 and 1991).

The anti-smoking campaign, particularly in the developed world, has engendered a great deal of emotion and has made the tobacco manufacturers acutely aware of pesticides and their residues, as they can be implicated as an additional health risk to the consumer. Apart from its reputation for producing good quality and mature styles of tobacco, Zimbabwe also has a reputation for producing tobacco that is very low in pesticide residues.

PESTICIDE TESTING PROCEDURE (Figure 1)

When a new product is offered to one of the crop protection departments at the Tobacco Research Board (TRB) for testing, the manufacturers will supply data from their tests which will be studied to ensure that the product has a reasonable chance of being useful. The new product may be cheaper or safer to apply. It may be less persistent and be less likely to cause environmental problems. It may be effective against a wider range of pests or diseases than those currently recommended, or against a new pest or disease. We may be interested in a new chemical to avoid giving a monopoly to one chemical company and, by widening our range of equivalent pesticides, easing possible supply problems.

We are sometimes asked why, if we are always looking for a new and more effective chemicals, we do not relinquish the old ones. We certainly do retain some chemicals that have been recommended for a long time, but that is because they are still very effective and we have not been able to find anything that is more effective and safer to replace them. The soil fumigant EDB has been recommended for 40 years, while dimethoate, copper oxychloride and dinocap are still recommended after at least 30 years. However, over the same 40 years the TRB has withdrawn its approval for just over 20 agrochemicals.

Initially, the new product may be tested against currently recommended pesticides in the field, greenhouse or laboratory to get some idea of its effectiveness and the rates at which it is likely to be used. A new insecticide, for instance, will usually be screened in the laboratory to determine the concentration that kills 50% of the target pests (LC_{50}) and to find the dose response.

If the initial tests show promise, then the pesticide will be tested in the field for at least two years and sometimes much longer. These trials will be statistically designed, usually comparing three or more rates of the new pesticide against a recommended standard to assess effectiveness in the field and to see if there are any signs of phytotoxicity. The trials will be reaped and graded to ensure that there is no reduction in yield or quality of the cured tobacco. Samples are usually taken for analysis by the Analytical Chemistry department to determine what residues are present.

Once the product has been shown to be successful, a trial is treated at the rate likely to be recommended and, depending on the chemical, at either twice and five-times or five- and ten-times the likely rate. There will also be an untreated control. This trial will be checked for phytotoxicity, and after curing and grading, samples are taken for residue analysis. Such a trial provides additional information on the effects of accidental overdosing. Provided the residue levels are acceptable (Appendix A), the tobacco is made into unfiltered cigarettes. These are coded and paired, so that each treatment is compared with a control or itself, and then smoked by panels of smokers from the tobacco companies to determine whether the new pesticide imparts any aroma taint in the smoke or any taste taint in the inhaled smoke.