# A Policy on Pesticides and their Application in Developing Countries

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Pesticides have been used for millennia in order to reduce crop losses from pests. A rapid increase in synthetic pesticide use occurred during the second half of the 20th century, bringing enormous benefits with improved food security and disease vector control. However, a number of drawbacks became apparent, notably that some chemical pesticides:

- Can cause human poisoning (with both acute and long-term effects),
- May cause damage to the environment
- Are costly to farmers, growers or governments, especially in developing countries,
- Are often applied inefficiently
- Can create an unsustainable 'pesticide treadmill' with development of pesticide resistance and pesticide-induced resurgence of previously minor-level pests.

However, farmers in both developed and developing countries will continue to use pesticides, so measures have to be taken to ensure that their use is optimised and hazards are minimised. Farms in tropical countries are often especially prone to pest attacks, with devastating looses in yields. In these situations judicious use of pesticides can more than double their yields; for example: by using insecticides on cotton or fungicides on cocoa. Unfortunately, many, including policy makers, regard any activity associated with pesticides as the role of pesticide companies (and preferably to be avoided). In turn the pesticide companies (which often provide farmers with most information on their products) are unlikely to develop or promote techniques that reduce pesticide use (and sales). As a result, this subject has become a "no man's land" when it comes to support and implementation, a lack of information and technological development for improving the selection and use of pesticides in a way that will lead to real reductions in their use.

Some of the measures are counter-intuitive and are unlikely to be revealed in participatory research without appropriate training of trainers. Other issues, such as human toxicity, are best tackled by regulation. Thus there is still a need to compliment farmer-centred participatory approaches with "Rational Pesticide Use" (RPU) - a sub-set of Integrated Crop Management (ICM) that combines:

- Accurate diagnosis of pest problems to optimise interventions when needed
- Selection of less hazardous pesticides,
- Improved application to optimise dose transfer to the biological target, reducing costs, residues and exposure to operators and the environment.

Agrochemical companies have become aware that product stewardship provides better long-term profitability than high-pressure salesmanship of pesticides, but RPU provides an appropriate framework for collaboration between all the stake-holders in crop protection to implement effective, sustainable ICM programmes.

Scientists in the UK have been World leaders in pesticide application over the last 6 decades, setting standards (such as the nozzle classification system) and introducing effective practical new techniques (*e.g.* Controlled Droplet Application). Most recently, this has included the development of environmentally benign alternatives to chemicals, such as biopesticides; for example, a mycoinsecticide for locust control has illustrated the critical importance of inter-disciplinary research to attain successful implementation in the field.

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