

Safe biological pesticides for India and South Asia

Small-scale farmers in India can now use environmentally benign pest management methods. New biological pesticides mean that smallholders can control crop pests but still meet international food safety standards. This is particularly important for vegetables and fruit for export.

Pollution from chemical pesticides is a major concern in India. Some of the old pesticides still in use are extremely toxic. Many farm labourers, especially in cotton-growing areas, are poisoned. Government policy encourages locally produced, low-cost biological pesticides. Already, nearly 500 private and state laboratories have taken a 2.5% share of the Indian pesticide market. This share is growing rapidly as more and more are registered.

'How to' manuals launch environmentally benign biopesticides in India

Production of environmentally benign biopesticides has taken off in India. Manuals that set out production processes and how to ensure quality products have helped this happen. These manuals mean that producers are armed with the knowledge of how to produce biopesticides that meet international standards. This information is vital for registering new products and complying with international quality regulations.

The first products to go commercial were nucleopolyhedrovirus biopesticides that could be used for insect pests of vegetables, cotton, legumes and fruit. For example, NPV products, as they are known, deal with the cotton pest *Helicoverpa armigera* that is highly resistant to conventional chemical pesticides.



Photo: J. Perrin



Before these biopesticides became cheaply and widely available, poor farmers lived precariously as they were particularly susceptible to heavy financial losses they could ill afford. Now, production of NPV biopesticides alone is more than 100 tons per year. And, two institutes in India are developing NPV biopesticides for major forestry pests.

In 1994 NPV biopesticides were still at the R&D stage and, even by the late 1990s, were being produced by less than 20 companies in India. But, by 2005, more than 130 private sector producers and 300 state manufacturers were taking a 2.5% share of the pesticide market. And, at the last count, more than 40 NPV products—35 *Helicoverpa armigera* and seven *Spodoptera litura*—were in the pipeline for registration. Indian companies are even exporting biopesticides to Bangladesh and some are seeking registration for their *Helicoverpa armigera* NPV products in Australia.

Although quite a lot of production is in small plants supported by the state, commercial companies, including Pest Control India, are major producers. Eight to ten major companies produce more than all public sector producers put together.

Key players buy in

The Indian government, strongly supported by its Department of Biotechnology, plays a key role in promoting biopesticides, and funding research and production. The Indian Council of Agricultural Research has 31 production facilities and the Department of Biotechnology funds another 22. A major integrated pest management project run by the National Agricultural Technology Programme from 1998 to 2005 also boosted use of biopesticides.

State governments, such as Tamil Nadu and Andhra Pradesh, stoutly endorse integrated pest management and already have 200 laboratories producing biopesticides. These states allocate half of their state plant protection budgets to promoting and procuring eco-friendly biopesticides.

The International Crops Research Institute for the Semi-Arid Tropics and its network of non-government organisations are also champions of NPV technology. They are developing biopesticides for chickpeas and other legumes, particularly for poor farmers in India, Nepal and Bangladesh.

Registration system for biopesticides welcoming to start-ups

The enlightened approach of the Central Insecticides Control Board has greatly helped the spread of biopesticides in India. The Board simplified the registration system to allow commercial pilot production in parallel with registration. This is particularly encouraging to small and medium enterprises and biotechnology start-ups that are keen to take advantage of the new technology and know-how.

Centre of excellence stimulates private sector production

India has its own centre of excellence in biopesticides, Tamil Nadu Agricultural University. The University set up the first laboratory in India to develop processes to produce biological control agents for insect pests, specifically nucleopolyhedroviruses. By piloting new products, the University's biopesticide unit stimulates uptake by the private sector.

For more information

For further technical information go to the RIU online database at www.researchintouse.com/database and type in **CPP55** or email riuinto@nrint.co.uk

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