NCL working on organic pesticide

By Mayuri Phadnis, Pune Mirror | Sep 23, 2014, 02.30 AM IST

A demonstration of the biopesticide in progress

Experts using fungal spores; formulation should be ready in two years.

While chemical pesticides have arguably made farming more productive, their ill-effects on human health have demanded the need for other, more sustainable options. Going a step further, scientists from CSIR-National Chemical Laboratory (NCL) are already developing a biopesticide with the use of fungal spores.

The technology, after its proof of concept test (where scientists try the concept) and demonstrating proof of concept (where farmers are shown the efficacy), has reached the formulation stage. Now, scientists, along with corporate houses, will try these biopesticides at Agriculture University, Rahuri, over the next few days. The formulation is expected to be complete in the next two years.

Tests were conducted mostly on Helicoverpa — an insect pest known to infest pigeonpea (tur), chickpea, tomatoes etc.

Helicoverpa is a major cause for over 50 percent loss of pigeon pea production, which has an annual yield of 29,00,000 tonne in India. Helicoverpa also developed resistance to insecticides such as Pyrethroid, a problem the biopesticide might be able to overcome. Also, being organic, it is safe for humans.

"Providing safe, economical and reliable biocontrol of Helicoverpa is not only a contribution to sustainable agriculture, but a question of survival for many poor farmers," said Dr Mukund Deshpande, principal investigator of this project who, along with students, has been working on it for the last 14 years." Another scientist, Dr J M Khire, is also part of the project now.

In case of other pesticides, the pest dies mostly after ingesting it. With this method, the pest is affected whenever it comes in contact with the spores. There are also possibilities of secondary infection when the pest crawls on to leaves where spores have fallen.

To get an accurate fungal strain, scientists tried almost 70 organisms, finally settling on Metarhizium Isolate, since its spores are dry, making it easy to spray. It also grows fast, can be easily mass produced in the laboratory and is fatal for pests. The fungal spores penetrate the protective cover (cuticle) to infect and kill the worm. However, they were found to be safe on human beings as well as birds.

According to scientists, the success of biopesticides depends a lot on farmers. There is an appropriate time for it to be sprayed, which depends on the size and number of the larvae. If the farmer waits too long, the pest damages the crop; if he is too early, it is less economical. The ideal time for spraying would be in the morning.

"Anything that relies on natural processes and products is safe and sustainable for agriculture. If farmers don't have to rely on artificial pesticides, it is definitely a step forward," said Kavita Kuruganti, convener of Alliance for Sustainable and Holistic Agriculture (ASHA).

Jaisingh Thorve, who practises organic farming in Alandi, is eagerly waiting for the biopesticide. "Right now, I am depending on traditional means such as neem to fight pests. It is effective, but the problem of helicoverpa worms persists. I definitely want to try the product," he said.

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