outbursts

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The tiny fungi playing a giant role

Virginia Tech workshop attracts researchers, scientists, and agriculturists to Bharatpur, Nepal

By Keith Pierce and Miriam Rich

In a world of life that happens below our ability to see it lives a tiny hero. Trichoderma, a fungus, helps humans in many ways. It is used to give denim a stone-washed look. It is used to increase the digestibility of barley that is mixed into chicken feed. But it is also, scientists have found, especially good at eating "bad" fungi.

In developing countries, fungal diseases that attack and destroy crops are a major problem. This makes Trichoderma a welcome tool in any farmer's toolbox.

That is why scientists, researchers, and agricultural experts from several countries (including India, Cambodia, Indonesia, Bangladesh, and Honduras) recently gathered in the rural town of Bharatpur, Nepal, to learn more about this inexpensive, environmentally friendly bio-agent.

Workshop participants get an up-close view of the Trichoderma fungus.

Thanks to efforts of the USAID-funded Integrated Pest Management - Innovation Lab, managed by Virginia Tech, thousands of farmers worldwide already use Trichoderma instead of toxic fungicides as a natural combatant for the biological control of insects, weeds, and soil-borne plant viruses.

From the classroom to the lab, and even in the field, participants learned everything from how Trichoderma helps reduce the use of harmful pesticides and prevent soil-borne diseases, to how to produce the product and train others – mainly farmers – in the development, use, and regulation of this beneficial agent.

"Trichoderma saves families whose livelihoods depend on farming. After witnessing its effectiveness in protecting crops such as peas, cotton, sugarcane, tomato, coconut, tobacco, ginger, and much more, farmers are now sold on the technology," said Gandhi Karthikeyan, professor of plant pathology at Tamil Nadu Agricultural University in India. "Extended use can ultimately save millions of people from disease, save billions of dollars in crop loss, and save the environment by minimizing pesticide use."

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Particpants take a break for a group photo.

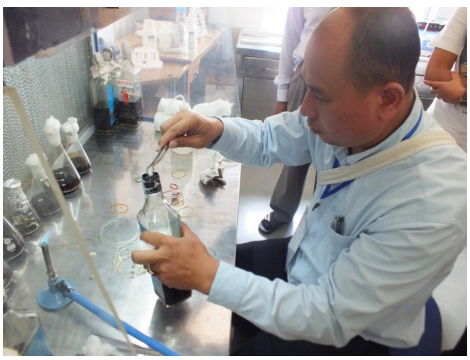
In several countries, farmers have supplemented their income by becoming small-scale Trichoderma producers, making it more accessible to farmers who might lack the means to purchase or make the product themselves.

"We are using Trichoderma in Bangladesh, India, Indonesia, and the Philippines to great effect," says Muni Muniappan, director of the Integrated Pest Management - Innovation Lab at Virginia Tech.

In Bangladesh and Indonesia, Trichoderma is mixed with compost and applied in the field to fight off soil-borne diseases of vegetable crops, oil palm, citrus, vanilla, langsat, durian, and cacao. In India and the Philippines, the fungus is sprayed on seedlings as a treatment for vegetable crops. And in Honduras, it is being tested on watermelon for the control of fusarium wilt.

Pak Ujang, a farmer in West Java, has made a successful farm-based business venture out of producing Trichoderma to share with farmer groups in his area. He now produces enough of the fungus to supply a private company that packages and markets the product across Indonesia.

"Trichoderma is responsible for the profits I earn from my farm," he says proudly.



Cambodian scientist, Meas Khemara, conducting a lab test before creating Trichoderma.

Buddhi Ratna Khadge recognized that farmers needed help but did not have the education or the means to access or produce much-needed bio-control agents. Though retired from a large agricultural company, he runs *Bio-Technovative Power* from his home in Nepal, where not only are his products home-made, but so is the equipment he uses to produce the products.

"I produce organisms like Trichoderma very cheap so that the farmer can afford it," he says.

Rabin Adhikari, left, managing director of Agricare, a leading agriculture manufacturer in Nepal, hosted the workshop at the company's facilities in Bharatpur. Buddhi Ratna Khadge, right, CEO of Bio-Techonvative Power, provided hands-on training.

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- **Video - VT and USAID lead Trichoderma workshop in Nepal: http://tinyurl.com/NepalWorkshop**
- **Trichoderma workshop online: http://tinyurl.com/IPM- Trichoderma**
- **Virginia Tech controlling soil-borne pathogens using Trichoderma - Integrated Pest Management Innovation Lab's work in Bangladesh, India, and Indonesia: http://tinyurl.com/Tricho-use**

Gandhi Karthikeyan and Sevugapperumal Nakkeeran, both professors of plant pathology at Tamil Nadu Agricultural University in India, traveled to Nepal to conduct the training on behalf of the Innovation Lab.

Why Nepal?

The IPM Innovation Lab sponsored the Nepal conference as part of a continuing effort to increase the understanding of bio-control agents and build capacity in IPM host countries.

"It was truly a South-South workshop – developing country scientists conducted it for participants from other developing countries," said Muniappan.

The IPM Innovation Lab is a multiyear effort managed by Virginia Tech and supported by USAID to introduce and maintain sustainable farming systems in 17 developing countries. Working with researchers, scientists, extension agents, farmers, policymakers, and government officials, the program strives to improve the quality of life for millions of people around the world.

www.outreach.vt.edu

For information on the Integrated Pest Management program, contact:
Office of International Research, Education, and Development
526 Prices Fork Road (0378)
Blacksburg, VA 24061
540-231-6338
www.oired.vt.edu

- **Michael Bertelsen**, director
540-231-6338 ~ bertel@vt.edu
- **Rangaswamy(Muni) Muniappan**, director, IPM-IL
540-231-3516 ~ rmuni@vt.edu

Outbursts is a publication of Outreach and International Affairs
Guru Ghosh, vice president

Editorial and graphics staff
Andrea Brunais 540-231-4691
Keith Pierce 540-231-7966
Rich Mathieson 540-231-1419
Miriam Rich 540-231-4153
Lois Stephens 540-231-4084