

Leading the Vision

Stewardship in the Plant Science Industry

CropLife
INTERNATIONAL 

Crop Protection Industry Supports FAO on IPM



“Between 26 and 40 percent of the world’s potential crop production is lost annually because of weeds, pests and diseases, and these losses could double without the use of crop protection practices.” This powerful statement comes from a [report](#) by the Food and Agricultural Organization of the United Nations (FAO) and the Organisation for Economic Co-operation and Development (OECD).

Such a compelling case for the use of crop protection practices, including pesticides, is pertinent as the global community develops a strategy to meet the UN’s goal to eradicate hunger by 2030. But understanding the need for crop protection products only gets us so far. That’s why the FAO’s guidance on the role of pesticides within an [integrated pest management \(IPM\)](#) approach is important.

To grow a healthy crop, the FAO recommends the careful consideration of “all available pest control techniques.” It tells farmers to “integrate appropriate measures that discourage the development of pest populations and that keep pesticides and other interventions to levels that are economically justified and

reduce or minimize risks to human health and the environment.” The crop protection industry agrees.



The industry also agrees with the [International Code of Conduct on Pesticide Management](#) that states all stakeholders — including farmers,

agronomists, the food industry, manufacturers of biological and chemical pesticides, environmentalists and consumer groups — “should play a proactive role in the [development and promotion of IPM](#).” The global CropLife network has embraced a proactive approach to training, communication and implementation of IPM.

Ensuring that farmers are trained on the most environmentally sound and responsible methods for protecting their crops from pests is central for the crop protection industry. In 2016, CropLife International began a partnership with the German international development organization (GIZ) and the Vietnamese government to train 15,000 Vietnamese rice farmers on IPM (see sidebar, next page). Meanwhile, a six-year project to train over 125,000 farmers in India came to an end in 2015 with impressive results (see Partnership Profile). These are just two in a long line of industry partnerships since 2005 that have successfully trained more than 3 million agricultural workers worldwide in IPM and the responsible use of crop protection products. ↓

IPM TRAINING INCLUDES:



IDENTIFYING
beneficial insects



WHEN AND HOW
to manage pests



RESPONSIBLE USE
of crop protection
products



PROPER DISPOSAL
of empty containers
or unused products

In a further commitment to the FAO's call to promote IPM, CropLife International recently launched a 12-month communications campaign called The Crop Protectors (see sidebar). The campaign features men and women that keep crops healthy by making IPM happen — from a farmer on the front line to a computer programmer developing an IPM phone app, and everyone in between. The campaign explains and promotes all aspects of IPM, including the importance of preventing pests, monitoring for pests and, if needed, the appropriate method of intervention — be it cultural, biological or chemical.

Today's global food challenge is unprecedented, with demand expected to increase between [59 percent and 98 percent by 2050](#). Given the lack of available arable land to expand, the [FAO believes 80 percent](#) of the increased demand must be realized through productivity gains. And given we know that 26-46 percent of food is currently lost to pests, diseases and weeds every year, effective IPM — where farmers can access all crop protection tools — will be essential to improve productivity and meet the challenge ahead. 💧

THE CROP PROTECTORS

It takes a lot of different people to protect our food from pests when it's growing in the field, harvested, stored and transported to market. These people have one thing in common: they are helping make integrated pest management (IPM) happen. See our [Crop Protector campaign](#) to find videos, GIFs, graphics and case studies about IPM. Meanwhile, here are some examples of how Crop Protectors contribute to each step of IPM:

Prevention

[Jude Grosser](#) is a U.S. professor in citrus breeding and genetics. His research team is combining emerging biotechnologies with conventional breeding techniques to develop disease-resistant citrus crops.



Monitoring

[Abdu Rahim](#) is a Ghanaian cocoa farmer. He has been trained as a spray service provider, helping his community by identifying pests, providing advice on their management and, when needed, properly applying crop protection products.



Intervention

[Celia Medina](#) is a plant scientist from the Philippines. She has been researching mango pests since 1997. Her current focus is finding natural predators to help farmers combat the mango leaf hopper.



IPM TRAINING FOR VIETNAM'S RICE FARMERS

In Vietnam, millions of small-scale farmers rely on rice as their main source of income, but pest outbreaks can completely wipe out yields, threaten farmer livelihoods and impact food security. Through better education, farmers are now using integrated pest management (IPM) strategies to protect their crops and improve their prosperity. Watch this short film to learn how IPM is improving lives in Vietnam.



Partnership Profile

IPM in Adoni, India

Who:

In 2009, CropLife International, CropLife Asia and CropLife India partnered with two local Indian organizations — EF-FORT (Eco Foundation for Research and Training) and BIRDS (Bharati Integrated Rural Development Society) — to provide training on Integrated Pest Management (IPM) and the responsible use and secure storage of crop protection products.

Where:

Located in southern India, the Adoni region of the state of Andhra Pradesh is home to over 500,000 people, many of whom are involved in agriculture. Communities in Adoni depend heavily on farming for their livelihoods, primarily growing cotton, rice and chilies in over 160 villages.

What:

Regional farmers were trained on a wide range of topics, including inspecting crops, identifying beneficial insects, wearing personal protection equipment, determining when and when not to spray, correct spraying techniques, maintaining sprayer equipment, triple-rinsing empty containers and securely storing crop protection products. A variety of training methods were used, such as farmer training groups, field demonstrations, house-to-house visits, school programs, village meetings and cultural shows. With successful implementation in Adoni, this model can now be implemented in other regions around the world.

Results:

The project trained 128,000 farm families over a six-year period. Outcomes included:

- 90.3% of farmers could identify beneficial insects immediately after training, rising to 97% four years later. All farmers can identify crop pests.
- 97.4% of farmers understood the main components of responsible use (e.g., proper handling and storage of crop protection products) immediately after training, increasing to 99.5% four years later.
- 93.2% of farmers were aware of the dangers of counterfeit pesticides (including how to recognize and avoid them) immediately after training, rising to 97% four years later.
- 89.7% of farmers disposed of their empty containers safely immediately after training, increasing to 99.5% four years later.

Lessons learned:

- Use of local trainers is both cost-effective and successful. Knowledge of the local culture and customs is key to successful delivery.
- Multi-faceted training approaches, including field demonstrations, village meetings, house visits and cultural shows, ensures good knowledge retention and village buy-in.
- The concept of using directly trained farmers to train their peers is successful, but needs to be monitored and appropriate materials made available.
- Using farmer leaders as motivators to encourage other farmers to attend training is effective.
- Organizing women trainee groups and household visits resulted in significant uptake of safe storage and container disposal practices.
- Retailers need to be included in programs as they are a major source of information for farmers. 💧

THROUGHOUT THE SIX-YEAR PROGRAM IN ADONI:

 **46 MASTER TRAINERS**

↓ *directly trained*

 **26,000 FARMERS**

↓ *who then trained an additional*

 **102,000 FARMERS**

↓ *for a total of*

128,000 FARMERS TRAINED

THIS INCLUDES **878** TRAINING GROUPS IN **169** VILLAGES

Perspective

Brazil Managing Insect Resistance in Biotech Crops

By Adriana Brondani



Brazil is the second largest grower of biotech crops in the world, with over 44 million hectares of biotech soybean, maize and cotton planted in 2015. In the two decades that Brazilian farmers have been growing these crops, they have enjoyed numerous environmental, productivity and economic benefits from insect-resistant and herbicide-tolerant varieties.

All farmers face concerns and challenges when trying to grow crops for a high-quality harvest, such as diseases, insect pests and preventing pest resistance to control methods. To address the latter, in July 2015, the [Council for Biotechnology Information in Brazil](#) (CiB Brazil in Portuguese) launched the Insect Resistance Management (IRM) program, *Best Practices on Bt Crops* (BOAS). This farmer education program is aimed at about 100,000 growers working with insect-resistant biotech soybean, maize and cotton. It is coordinated with the Insecticide Resistance Action Committee Brazil, which provides technical recommendations. BOAS encourages farmers to follow best practices such as:

- Planting certified seeds;
- Monitoring fields for insects;
- Controlling weed and invasive plants in fields because they attract more insects; and
- Implementing refuge areas.

CiB Brazil has been particularly focused on outreach efforts to encourage the adoption of refuge areas — a non-biotech border or strip around a field of insect-resistant biotech crops. Refuges can prevent insect resistance to the biotech crop by keeping the genetic pool mixed among insect pests. For soybean and cotton, the plant biotech industry recommends a refuge of 20 percent of total acres, and for maize, 10 percent.

Implementing BOAS

To date, BOAS has reached out to almost 10,000 soybean, maize and cotton farmers through conferences, interactive lectures, media outreach, advertisements, written materials and creative methods such as an in-person decision-making

FARMER SURVEY ON ADOPTING REFUGES FOR INSECT-RESISTANT BIOTECH CROPS

The dots on the map represent the cities of those interviewed



Source: Spark

Factors that motivate farmers:



Maintenance of biotechnology's effectiveness



Durability of the technology in the field



Reduction of Bt-resistant insects



Instruction provided by seed companies

game. Advertisements and articles have helped spread the word about best IRM practices — with catchy radio ads airing in 10 agricultural states, ads appearing in 30 newspapers and more than 40 news articles published.

CiB Brazil has also partnered with several organizations to amplify messages about the importance of IRM and refuge adoption — from collaborating with the Brazilian government to grower groups. The Brazilian Ministry of Agriculture worked with CiB Brazil to develop a website on refuge for insect-resistant biotech crops and develop technical information on best practices.

To maximize outreach to farmers, CiB Brazil has partnered with the Brazilian soybean, cotton and maize grower



BOAS interactive lecture in Brazil

associations and the National Service of Rural Education, which have regular meetings with farmers where IRM information can be shared. They also promote the industry's best practices to farmers through all of their communications channels.

Last year, AgroBio Brazil, an industry association focused on biotech regulations, launched the incentive program, Refuge Pays Off, to encourage farmer adoption of refuges. Farmers planting refuges in the city of Maracaju in the state Mato Grosso do Sul are awarded with points that can be exchanged for prizes, including electronics. CiB Brazil has partnered with AgroBio Brazil to promote the incentive program.

Impact of BOAS

Following best IRM practices is important because it enhances the longevity of insect-resistant biotech seeds, improves insect control and ensures sustainable farming. Grower groups have conducted surveys with farmers to better understand the impact of industry education efforts. Surveys have revealed that without training, farmers generally know what a refuge is, but they don't understand of how to implement one. Farmers who have participated in the BOAS program indicate they more fully understand how to implement refuges and best IRM practices.

CiB Brazil's goal by 2018 is to directly reach out to 50,000 biotech farmers in Brazil and another 100,000 through indirect means such as advertising. Leveraging partnerships with grower groups and other agricultural stakeholders will expand CiB Brazil's farmer education activities. In addition, it is working with ANDEF, the Brazilian crop protection association, and AgroBio Brazil to develop a farmer education program on weed resistance management, which will be launched in 2018. 💧

Adriana Brodani is executive director of the Council for Biotechnology Information Brazil in São Paulo.



Imagine a farm that optimizes the use of natural resources like soil and water, encourages biodiversity, reduces inputs and yet still manages to increase its yields. That's where European farming could be heading, according to [INSPIA \(European Index for Sustainable Productive Agriculture\)](#), a pilot project designed to demonstrate the value of sustainable agriculture. It is led by the European Conservation Agriculture Federation (ECAAF) with support from the European Crop Protection Association (ECPA), Spanish Association for Conservation Agriculture and French Association for Conservation Agriculture. Prof. Dr. Emilio González Sánchez, ECAAF secretary general, tells us more.

Why was INSPIA started and what are the objectives?

INSPIA is designed to demonstrate sustainable, productive agriculture through the implementation of [Best Management Practices \(BMPs\)](#) and the measurement of progress through a set of key indicators. Sustainable agriculture requires a holistic approach

— one that protects natural resources and provides more food, feed, fiber and biodiversity, while reducing greenhouse gas emissions.

The main outcome we would like to see are INSPIA's BMPs reflected in the EU's Common Agricultural Policy (CAP), which is driving most European agricultural systems. In fact, about 40 percent of the total EU budget (roughly 52 billion Euros) goes to farmers as part of the CAP. We want some of that money to reward farmers for implementing our BMPs.

We also want to guarantee INSPIA's BMPs are making a positive impact — that's why we have indicators of success. Ultimately, we want European farmers to perform better and strive for excellence.

What are the BMPs?

INSPIA has 15 BMPs for agriculture focused on protecting biodiversity and natural resources, while maintaining productivity. They are related to soil, water, crop protection and fertilizer, precision farming and pollution prevention — a



wide range of topics. Taking care of the soil via conservation agriculture (no tillage with permanent soil cover and use of crop rotation) is one of our major calls to action. Other BMPs address optimizing the use of inputs like crop protection products via integrated pest management and precision farming, implementing field margins and buffer strips, cleaning sprayers and machinery, and managing empty product containers.

Q What are the benefits of INSPIA's BMPs?

Overall, we have proven that our BMPs reduce the cost of inputs by 15 percent and save energy by 15-20 percent compared to conventional tillage systems. At the same time, yields can increase by about 5-10 percent — or up to 15 percent in dry areas. As a result, farmer income is on par or higher than conventional alternatives.

Q Why don't more farmers implement INSPIA's BMPs?

Good question! Some BMPs require a higher level of knowledge or new equipment. For example, no tillage requires new seeders with less powerful tractors. That's why we want to impact the EU's agricultural policy, which could support the purchase of new seeders. There was a program in Spain which subsidized 40 percent of new farm equipment in support of saving energy and increasing efficiency. Farmers were happy with the support and conservation agriculture adoption has increased significantly in Spain over the past 7-8 years.

Another challenge is that the average age of European farmers is quite high, so openness to change can be difficult. Younger farmers tend to be more open to new techniques.

Q What are INSPIA's indicators of success?

We have about 25 sustainability indicators that fall into three categories: 1) economic (profit and production

efficiency); 2) social (farmer welfare and well-being) and 3) environmental (biodiversity enhancement plus natural resource use and protection). Specific indicators include use levels of crop inputs like nitrogen, phosphorus, energy, water and crop protection products. We audit each farm in our network to measure all indicators because we want to prove that the BMPs create an impact at the farm level.

Note that productivity is considered a key element of sustainability in agriculture. That's why INSPIA aims to build awareness that agriculture must both protect the environment and produce sufficient high-quality food, feed and fiber.



Q Which countries and how many farms are involved in this pilot?

INSPIA is a long-term project so we wanted to partner with motivated farmers who are committed to sustainability. We are currently operating on 58 farms located mostly in France and Spain, with a few in Belgium and Denmark. At this stage of the project, we are auditing all farmers. But with more farms, it may not be possible to audit everyone so we are initiating an online platform for farmers to check their own performance.

Q How and where will INSPIA be extended in Europe?

Our wish is to extend INSPIA across Europe. We can reach many via

ECAF's network, which includes 12 EU countries plus Switzerland, Russia and Turkey. In the next two years, we would like to extend to central European countries and longer term, to eastern European countries. We are also pleased to collaborate with the ECPA, which has a network in most European countries.

Q What will be the long-term impact of INSPIA to sustainable agriculture?

This is the best question! We can reduce soil erosion by up to 95 percent with the adoption of our BMPs, which is scientifically proven. We will improve water usage and quality, soil infiltration, soil structure and crop performance, not to mention optimize use of crop protection products and fertilizers. We will also increase biodiversity in the soil and above ground, such as bird and mammal habitats. We already see significantly more biodiversity on INSPIA farms than others. For example, the number of earthworms has increased by 600 percent — a testament to healthy soil!

Finally, the impact on farmers' welfare also increases with the adoption of INSPIA's BMPs. They feel more committed to their communities and the environment. It's not only about economics, but also important that farmers feel happier and emotionally engaged. If by practicing no tillage, they spend less time driving a tractor, it means they have more time for their families and hobbies. INSPIA is inspiration for the EU and perhaps for the rest of the world, too. 💧

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