

IPPM Case Study: *FAO's West African Regional Integrated Production and Pest Management (IPPM) Programme*

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Problem Statement

Trends in agriculture over the past decades in West Africa have seen an increasing use of highly toxic pesticides including POPs in higher-value and frequently irrigated crops. Cotton production has one of the worst impacts on the environment of any crop in the region, due to the effects on the fragile soils and excessive use of pesticides such as endosulfan. Endosulfan became a POP under the Stockholm Convention in 2011, hence this ongoing programme contributes directly to the implementation of the Convention in provision of sustainable alternatives to POPs.

There is a general lack of knowledge in the region of the negative impacts of pesticides on the production, economy and health of communities and on the environment; as well as a lack of knowledge of positive (low toxicity) alternatives.

Introduction

Simple experiments in the field, as practiced by farmers during season-long Farmer Field Schools (FFS), have given smallholders the knowledge to produce in a more environmentally friendly way, to substantially increase yields and earn a better income.

Capacity building at community level is key to the sustainable intensification of food production, which will contribute to increased food security and improved livelihoods in the region, an important step towards achieving the first Millennium Development Goal, reducing hunger and poverty.

Many West African farmers have succeeded in cutting the use of toxic pesticides, increasing yields and incomes and diversifying farming systems as a result of an international project promoting sustainable farming practices.

The *West African Regional Integrated Production and Pest Management (IPPM) Programme* is working with farmers to sustainably intensify the cotton production system, by boosting yields through improved agronomic practices including the application of compost, the planting of leguminous cover crops, and the use of improved seeds and plant management techniques. Farmers are diversifying their systems through the use of cereals and soil improving crops (legumes and forage) that can be fed to animals or sold on local markets.

How the issue was addressed

Around 130 000 farmers in Benin, Burkina Faso, Mali and Senegal have so far participated in a “discovery learning” based training programme titled Integrated Production and Protection

Management (IPPM), executed by FAO.

Working in small groups during season-long training, called Farmer Field Schools (FFS), smallholders are exploring, adapting and adopting improved agricultural practices through hands-on field experiments under their control.

The IPPM programme works with farmers to explore a variety of soil improvement practices and alternatives to chemical pesticides, such as the use of beneficial insects, tolerant varieties, natural pesticides and pest-suppressive cropping practices. Marketing and food safety issues are also part of the training programme.

Implementation of the approach: Collectively searching for alternatives

Typically, a group of around 25 farmers coordinated by a trained facilitator prepares two training plots in their village, one using local conventional farming methods, including the application of chemical pesticides, and another plot using best practices appropriate to the crop and location based on IPPM, to observe and compare results from the two plots (picture).

Over 2 000 facilitators coming from dozens of local government, private sector and civil society organizations have been trained to work with farmers to develop sustainable farming methods appropriate to their contexts.



Participant in Training-of-Trainers event from Benin discusses field observations of pest and beneficial insects from cotton test plots during the weekly AESA (Agro-Ecosystem Analyses) exercise in 2008 (photo: © FAO/WH Settle)

The IPPM project is also monitoring pesticide residue levels in water samples taken from 17 sites in six West African countries along both the Niger and Senegal rivers. The programme is working in partnership with Oregon State University (USA) to build capacities of local

laboratories to detect pesticides in water. The project has also introduced a risk assessment model, based on the best available global database of pesticide impacts (PRiME <http://ipmprime.org/cigipm/about.aspx>) that uses data on pesticide practices to estimate impacts on human health and various biological indicators, including soil, avian and aquatic life.

The IPPM project in Benin, Burkina Faso, Mali and Senegal has been funded by the Government of the Netherlands for the past 10 years. Additional funding and partnerships are provided by the Global Environment Facility (GEF), the UN Environment Programme, the European Union and Spain.

Impacts

In Mali, a survey following the training was conducted in 65 villages of cotton farmers who were trained in 2007-08 showed a 94 percent reduction in the use of chemical pesticides and a 400 percent increase in the use of organic material like compost and manure, substances that can reverse the decline in soil fertility. Farmers of these villages have almost entirely eliminated their dependence on toxic chemicals.

In Benin, focus has been on rice and cotton production systems in the northern part of the country. In 2008, a dramatic success was noted in the irrigated rice system in the extreme northern part of Benin. The town of Malanville has 400ha under production, involving 793 producers in 24 producer groups. The IPPM FFS training in Malanville led to more than doubling production and a 66 percent decrease in use of chemical fertilizer (see box). After one year, most of the entire group of 791 farmers had adapted their practices based on experience in the IPPM Field School.

“We started producing rice here in 1971 and now we produce nothing else in this area other than rice. We never received any support in training until the IPPM programme. With the IPPM programme, this is the first time that we have had this opportunity. This training has contributed so much, and after only one year, almost all the inhabitants of this area are or will be part of the programme. We told this to the Minister of Agriculture when he passed through here a few months ago. We will also bring this to the attention of the President of the Republic when he comes to see us, because the results (returns) that we have recorded through the programme are spectacular for us. Here are our practices and the results we have achieved:”

Practice	Before IPPM	After IPPM
Seeds	Not quantified	20% to 25% of what was used previously
Seedling age	45 days	15-20 days
Number of seedlings/hill	10+	1 or 2
Planting spacing	transplanted randomly	transplanted in line, 20 - 25 cm
Chemical fertilizers (NPK + Urea)	up to 400 kg /ha	150 kg / ha
Pesticides	none	none
Use of rice straw	sold in Niger markets	buried prior to transplanting
Yields	6-7 sacks of 84 KG = 2.3 t/ha	14-15 sacks of 84 kg = 5.0 t/ha

Report from the President of the General Union of Producers of the irrigated perimeter in Malanville, Benin, 2008.

In Burkina Faso, IPPM helped increase yields from between 14 and 70 percent. Almost 16 000 cotton farmers have been trained in the project, and it is anticipated that that number should double by the end of 2011.

Data from Senegal and Mali, from surveys conducted one-to-two years after training, show more than 90 percent reductions in the use of chemical pesticides among participating farmers. Increasing numbers of farmers are now moving towards various alternatives to the use of toxic chemical pesticides.

In Senegal, farmers also shifted towards the use of botanical and biological pesticides. Farmers' increased the use of organic material such as compost and rice straw.



A Farmers' Club demonstrates pesticide-free produce and locally made alternatives to toxic pesticides. The Farmers' Club is a group often formed directly from the Farmer Field School that offers a continued platform for discussion and experimentation (FFS Baguinda, Mali, 2006) - (photo: © FAO/WH Settle)

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