

IPM training helps Vietnamese farmers stay profitable



The Integrated Pest Management (IPM) training programme under the BRIA project, co-financed by CropLife International, have been implemented since 2015 to promote sustainable rice cultivation in Mekong River Delta, Viet Nam. Based on the contents of the training modules, a set of indicators have been identified for farmer training. The main indicators on farmers' IPM application on their field to be monitored include understanding of the action threshold levels, understanding of the mode of action to avoid pesticide resistance due to the overuse of the same active ingredients, use of personal protective equipment during spraying, and profitability. The programme

also entails training of pesticide retailers to become rice doctors and to gain their cooperation in banning illegal and counterfeit products. The programme has, so far, reached 10,701 farmers in total with 2,472 farmers trained directly and 8,229 farmers trained indirectly via 'farmer to farmer.' To scale up the impact, a live TV talk show on IPM was conducted on Hau Giang Television on 18 June 2017, the BRIA IPM Day was organised at agricultural universities/colleges attended by 384 students and 20 teachers/technicians. Moreover, IPM is being promoted at 67 IPM farmer clubs.

Results Based Monitoring from Winter-Spring Seasons 2016-2017

In order to assess the impact of the training, a sample of directly and indirectly trained farmers were interviewed with regard to their acquired IPM knowledge and the application of the recommendations provided. The samples consisted of:

Type of farmers	Dong Thap	Hau Giang	Kien Giang	Total
Farmer group members	49	55	50	154
Indirectly trained farmers	31	55	49	135
No. result	80	110	99	289

Farmers were interviewed by Plant Protection Sub-Department (PPSD) technical staff at the training classes. The questionnaire contained general farmer information, number of pesticide applications, knowledge of natural enemies, concept of action threshold, knowledge on biocontrol measures, concepts of resurgence, residues, and resistance, understanding of pesticide labels, safe use and finally the effects of IPM applications on farmers' income.

The following table shows in which way the number of pesticide applications has been reduced through the IPM training provided. Farmer group members reduced the number of sprays against the main pests by one third whereas recipients of knowledge imparted from farmer to farmer sprayed less by about a quarter. Though this was not representative, it indicated a certain impact on the knowledge of farmers. Observations of PPD also showed that an infestation of gall mites in the Mekong River Delta did not appear in the areas where IPM training has been provided. This also indicated that the reduction of pesticide applications turned out to be not only more economical but also more effective.

Pesticide Application

The average number of pesticide application for each pest in one season reflected the impacts of IPM training on practices for both directly and indirectly trained farmers.

Pest	Direct		Indirect	
	Before IPM	After IPM	Before IPM	After IPM
Weed	1.5	1.1	1.5	1.3
Golden apple snail	0.9	0.7	1.0	0.9
Rodents	0.8	0.6	0.8	0.7
Insects/Mites	3.2	1.3	3.3	2.0
Diseases	4.6	3.4	4.7	3.7
Total	9.2	6.0	10.3	7.5

With regard to the knowledge of natural enemies (NE), 89% of farmer group members know up to 3 of the most common beneficial ones while this ratio is only 47% for the indirectly trained farmers. Up to 5 beneficial enemies are known by 26% of farmer group members but only by 4% of the indirectly trained farmers. The NE mostly known by farmers are shown in the following table.

Natural Enemies Recognition

Type of Natural Enemies (NE)	Direct	Indirect
Spider	87%	80%
Lady bug	63%	50%
Wasps	62%	26%
Paederus	59%	42%
Mirid bug	33%	20%
Water bug	29%	14%

The concept of action threshold for Brown Plant Hopper (BPH) was understood by more than 80% of farmer group members as well as over two thirds of indirectly trained farmers. About a quarter of farmers apply biological control with Emamectin benzoate and Abamectin the mostly used. For preventing resurgence, farmers mostly do not apply defoliator insecticide in the first 40 days, use only pesticides when needed and apply the correct dosage. The preferred measures for preventing residues are: no pesticide sprayed 14 days before harvest, keeping the pre-harvest interval (PHI) by selecting products with a short PHI, and using registered products for rice only. For preventing resistance, most of the farmers rotate the active ingredient (AI) within the season and also between two seasons, limit the number of spraying, do not spray for a preventive purpose and follow the concept of action threshold.

It is of utmost importance that farmers can read and understand the labels of the abundant chemical products in the market. The below table shows that the IPM training provides important information to farmers in order to distinguish the different products, to understand the concepts of AI and PHI, target pests, and last but not least, important instructions for the safe use and first aid in the case of intoxication.

Understand Pesticide Label

Information on labels	Farmer Groups	Farmer to Farmer
Trade name	99%	96%
Production & expiry date	96%	90%
Pre-harvest Interval (PHI)	96%	93%
Concentration and application	95%	94%
Active Ingredient (AI)	89%	68%
Target pest	88%	88%
Colour band	82%	59%
Concentration	79%	67%
First aid notice	78%	71%
Formulation	75%	59%
Safety Pictogram	73%	61%
Cautionary notice	68%	52%



Although the training tries to motivate farmers to protect themselves before, during and after spraying, not all recommendations given are being applied by farmers. This refers mostly to the mode of spraying, when farmers are still walking into their own spray (“rainbowing”). Wearing personal protective equipment (PPE) is extremely necessary in order to protect the health of the persons who are exposed to the toxic substances. PPE regularly used by farmers is shown in the following table:

PPE used →

PPE	Mixing pesticides		Spraying pesticides	
	Farmer Groups	Farmer to Farmer	Farmer Groups	Farmer to Farmer
hat	85%	91%	98%	99%
vizor	35%	32%	48%	46%
apron	9%	8%	26%	16%
gloves	49%	39%	50%	34%
long sleeve shirt	80%	80%	97%	93%
boots	11%	6%	26%	12%
Cotton mask	84%	75%	87%	77%

As shown in the table below, IPM application has a direct effect on farmers' income. Maintaining the level of yields and prices but reducing the quantities of seeds and fertilisers and less pesticide applications lead to up to 15% lower production costs. External positive effects of IPM application include e.g. less environmental pollution and less emission of greenhouse gases.

Gross
Margin
Calculation

Descriptions	Farmer Groups			Farmer to Farmer		
	Before IPM	After IPM	Changed	Before IPM	After IPM	Changed
Land Preparation	1,269,195	1,261,848	-1%	1,216,031	1,198,185	-1%
Irrigation	731,973	717,980	-2%	701,062	690,177	-2%
Sowing	339,181	329,966	-3%	318,715	319,485	0%
Weeding	311,054	276,738	-11%	294,400	264,785	-10%
Fertilisation, spraying	1,509,830	1,183,837	-22%	1,668,545	1,358,535	-19%
Other labour	890,211	785,245	-12%	758,869	730,292	-4%
Harvest	2,157,109	2,149,928	0%	2,139,303	2,102,227	-2%
Seed	2,299,242	1,736,570	-24%	2,394,681	1,967,127	-18%
Fertiliser	3,967,642	3,391,322	-15%	4,129,542	3,611,672	-13%
Pest Control	3,092,490	2,303,113	-26%	3,239,966	2,631,332	-19%
Total Expense	16,567,928	14,136,548	-15%	16,861,113	14,873,816	-12%
Yield	6,896	6,871	0%	6,919	6,874	-1%
Paddy Price	5,013	5,126	2%	5,031	5,141	2%
Revenue	34,569,428	35,225,708	2%	34,810,808	35,334,758	2%
Gross Margin	18,001,500	21,089,160	17%	17,949,695	20,460,942	14%

The final monitoring and evaluation of the project activities will be carried out in the third quarter by CropLife in collaboration with the partner organisations and BRIA.

