Farmers' Awareness on Safe Use of Pesticides: A Case Study on Chilli (*Capsicum annuum*) Farmers in Kaluthawalai, Batticaloa

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Abstract

A survey was carried out to investigate the awareness regarding safe use of pesticide among chilli growers in Kaluthawalai village as this village is well popular for vegetable cultivation and accounts for heavy use of pesticides in Batticaloa District. A pretested questionnaire was used to collect data from the farmers. Data were collected on the personal details of the farmers, details of farming, general awareness about pesticide application, status of safe handling of pesticides, status of purchase and store of pesticides, status of recommended personal protection equipment use, status on disposal of empty pesticide containers, and care after pesticide application. Collected data were analyzed using Statistical Package for Social Sciences (SPSS). The results revealed that almost all the farmers depended on chemical pesticides for the management of pest and diseases. About 25% of the farmers in Kaluthawalai village sprayed pesticides more than recommended dose. Approximately, 80% of the farmers were aware about the expiry date of the chemical and colour of the label which indicates the toxicity level of chemicals. However, 80% of the farmers do not have any consideration about the wind direction while applying chemicals. Around 65% of the farmers do not have any knowledge about pre harvest interval. It was observed that only 10% of respondents were using face/nose mask and none of them are using head dress, hand gloves and shoes during pesticide application. About 90% of the respondents took bath and changed clothes after spraying operation performed. However, regarding first aid, only 10% respondents had the knowledge.

Key words: Pesticide, Pre harvest interval, Toxicity

Introduction

Pesticides are substances used for destroying or repelling pests that can damage agricultural crops or can act as vectors to spread diseases. Though the praises of pesticides include better economic potential in terms of increased production of food, their debits have resulted in serious health implications to man and his environment. There is now overwhelming evidence that some of these chemicals do pose a potential risk to humans and other life forms and unwanted side effects to the environment (Forget, 1993). No segment of the population is completely protected against exposure to pesticides and the potentially serious health effects, though a disproportionate burden is shouldered by the people of developing countries and by high risk groups in each country (WHO, 1990). The high risk groups exposed to pesticides include production workers, formulators and agricultural farm workers who deal with mixing spraying and transporting. The world-wide deaths and chronic diseases due to pesticide poisoning number is about 1 million per year (Environews Forum, 1999).

The Kaluthawalai village in Batticaloa district is very popular for vegetable cultivation where the main occupation of these residents is farming and it accounts for heavy use of pesticides too. Pesticides are extensively used on vegetable crops due to higher susceptibility to pest and diseases and quite higher economic returns from these crops. Among cultivating vegetable crops, the chilli is the mostly grown crop in this village. Researches which have been conducted in other countries indicate that in last two decades chemical control of chilli pests has posed problems of residues in the fruits (Joia *et al.*, 2001).

Considering all the facts discussed above, the present study was conducted to know the extent of awareness

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on safe use of pesticides among chilli growers in Kaluthawalai village, Batticaloa.

Materials and Methods

Kaluthawalai village in Batticaloa District was selected for the survey where vegetable is highly cultivated. Fourty chilli growers were randomly selected from the particular village for this study. Primary data were collected from farmers through pretested structured questionnaires and interviewing them at their field in that village. The data collected were under the following topics such as personal details of the farmers, details of farming, general awareness about pesticide application, status of safe handling of pesticides, status of purchase and store of pesticides, status of recommended personal protection equipment use, status on disposal of empty pesticide containers, and care after pesticide application.

The survey was carried out in June of 2013. The collected questionnaires were checked for completeness and the data were analyzed using SPSS 11.0. Data were confined to estimate frequencies and descriptive statistics.

Results and Discussion

In this study, it was found that insecticides are heavily (75%) used in the chilli cultivation followed by fungicides (20%) and weedicide use was very minimal (5%) in Kaluthawalai area. 'Abamactin', 'Admire', 'Chlorpyriphos', 'Mancozeb' and 'Antracol' are the common pesticides used by chilli farmers in Kaluthawalai village.

Status of handling of pesticides

The respondent farmers were spraying the chemicals in the frequency of 15.03 during crop period. On an average once in 12.63 days spraying has been done on the chilli crop. Almost all the farmers depended on chemical pesticides for the management of pest and diseases and most of them use moderately toxic chemicals which are indicated by yellow colour labels.

Also, 25% of the farmers (Table 1) apply the pesticides in higher amount than the recommended level. They often mix one ounce of chemical in 16l of water without considering the type of pesticide and pest population. Some of them were using wrong mixtures in chemical use such as combining use of 'Abamactin' and 'Admire'. The reasons for these were that the recommended rates were not effective due to resurgence of pest to chemicals. Also, the farmers in Kaluthawalai area did not concern much about pre harvest interval. Most of the farmers (65%) apply the chemicals and leave only 7-8 days before harvesting. Hence, it is obvious; farmers' choice of pesticide was primarily based on efficacy rather than safety.

All the respondents were mixing the chemicals using a stick of locally available and all of them used the measuring cylinder for making an accurate dosage of spray fluid. About 10% of the respondents still continue to drink water or eat or smoke during spraying even after a lot of repeated advices made by Department of Agriculture.

Considerable percentage (80%) of the farmers was aware about the expiry date of the chemical and colour of the label which indicating the toxicity level of chemicals. However, about 80% of the farmers do not have any consideration about wind direction while applying chemicals. Most of the farmers were spraying the chemicals in the morning but some of them spray in the evening as they are also engaged in other working sectors.

Table 1. General practices followed by chilli farmers in Kaluthawalai, Batticaloa

Activities	% of respondents
Read pesticides label	80
Wore Face/Nose mask	10
Wore Head dress	0
Wore Hand gloves	0
Wore Shoes	0
Over used pesticides than recommended	25
Drink/eat/smoke during pesticide application	10
Concerned on Expiry date	80
Concerned on Wind direction	20

Status of purchase and store of pesticides

A good sign was observed that all the respondent farmers are purchasing pesticides from the authorized dealer only. About 75% of them keeping the pesticide in separate rooms or on near to roof which beyond the reach of children and pet animals.

Tatus of recommended personal protection equipment use

It was observed from the responses that only 10% of respondents were using face/nose mask (Table 1) and none of them are using head dress, hand gloves and shoes. It is interesting to note that no one used recommended personal protection equipment. Only the towels or cotton clothes were used as face/nose mask. Everybody expressed these equipments are not fit to this climate as results in heavy sweating. But without wearing these personal protection equipments, the farmers frequently face faint and breathing problems during the pesticide application.

Status on disposal of empty pesticide containers

It is recommended that burying is the safest method, but very few farmers (20%) had adopted this practice others threw them either on field or dumped in bush areas adjoining their field. This shows that most of the farmers were having low-level knowledge about disposal methods of pesticide. No one is reused the empty containers. The reasons expressed during discussions were quiet interesting to note that present day chemicals are available in small bottles in highly concentrated forms (50 ml, 100 ml *etc*), hence they are of no use in daily routines.

Care after pesticide application

About 90% of the respondents took bath and changed clothes after spraying operation performed. However, regarding first aid, only 10% respondents had the knowledge. No one was concerned about long-term ill effects and consequence of pesticide use on human's health and environment.

The assessment of the knowledge status of the chilli cultivating farmers towards safe use of pesticides indicated that almost all the farmers were dependent on chemical pesticides for the management of insect pest and diseases and most of them were using moderately toxic pesticides but some of them at a very high frequency and dosage without considering pre harvest interval. Most of the farmers didn't take care on

safe measurements during pesticide application. Lack of knowledge on the future effects of agrochemicals and intensive focus on yield made them to overuse chemicals and affects their health, sustainability of agriculture and the environment. Hence, systemic and well planed effective extension programmes are essential to update farmers' knowledge on proper and safe use of pesticides and its effect on their health and environment.

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