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Research Article

Share of farmers using different insecticides against leaf folder attack in transplanted rice

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Abstract

The study was conducted to evaluate the share of farmers who used insecticides i.e. Cartap @ 22.5 kgha⁻¹; Fepronil @ 20 kg ha⁻¹; Lambda Cyhalothrin @ 625 mlha⁻¹ and bifenthrin @ 1250 mlha⁻¹ against leaf folder attack on Basmati crop in transplanted rice at Pest Warning & Quality Control of Pesticides, Gujranwala-Rawalpindi region during Kharif 2010-2012. The data showed that maximum farmers were used Cartap insecticide (56%; 51% & 47%) followed by Lambda Cyhalothrin (21%; 25% and 30%), bifenthrin (10%; 8% and 17%), fepronil (13%; 16 & 6%) during three successive years. Although all the insecticides were used for controlling attack of leaf folder but maximum farmers were used cartap against it. Excessive and indiscriminate usage of pesticides caused unlimited hazards for human beings along with naturally growing population that could be avoided by providing awareness to the farmers.

Keywords: Ratio; Farmers; Leaf Folder; attack; Pest Warning; Gujranwala-Rawalpindi Region

Introduction

Rice is an important cash crop of the country; ranked second amongst the staple food grain crop in Pakistan and major source of foreign exchange earnings. Pakistan grows a high quality of rice to fulfill the domestic demand along with exports. Rice accounts 2.7% of the value added in agriculture and 0.6% of GDP. Rice sowing area was estimated at 2311 thousand hectares with annual production of 5541 thousand tonnes (Anonymous, 2013). Rice leaf folder *Cnaphalocrocis medinalis* (Lepidoptera: Pyralidae) is the most widely distributed and found foliage feeder in rice. An increase in *C. medinalis* population could be attributed to the large scale cultivation of high yielding varieties, excessive usage of nitrogenous fertilizers and continuous

use of insecticides that created resistance against this pest (Khan et al., 1988; Shanmugam et al., 2006 and Kaushik, 2010). This insect has attained the status of major pest during the last few years (Shah et al., 2008). In Pakistan this pest has been multiplied caused severe infestation during 2010, 2011 and 2012. Upto 25% attack on leaf was recorded reducing rice yield up to 30%, however upto 50% infestation was recorded in some local places (Salim et al., 1991). Outbreaks of serious infestations of rice leaf folder have been reported in many Asian countries including China, India, Japan, Korea, Malaysia, Sri Lanka and Vietnam (Wada et al., 1980; Heong, 1993). The young larvae feed on leaves by scratching it and fold the leaf longitudinally with self

secreted sticky substance. The scratched leaves become membranous, turn whitish and finally drying up. Single larvae can damage number of leaves, which retarded photosynthesis; plant growth resulting huge yield loss. Therefore crop success depends upon the effective chemical control measures of this pest. Pesticides are important in modern farming in order to feed world's growing population but quality is equally important as quantity. Pesticides are man-made chemicals that control insects, pests, rodents and other infestations (Iqbal et al., 2009). Thus careful use of pesticides improves our diet by decreasing the cost and quality of the product; however this can only be done through IPM (Integrated Pest Management). As all the existing commercial rice varieties are unfortunately susceptible to rice leaf folder attack, it has become imperative to find out the resistance sources in rice germplasm, in order to evolve new rice varieties resistant to rice leaf folder (Rehman et al., 2005). In Pakistan loss occurred by different pests is upto 15120 million rupees; which works out 18.60% of total loss. Hence the spraying of less toxic compounds of natural botanical extracts are needed for developing country like Pakistan (Iqbal et al., 2011). Botanical and microbial insecticides are highly effective, safe and ecologically acceptable. Plants produced a diversity of biologically active substances that affect the growth and development of other organisms and can also provide protection against the herbivores. These plant products discourage or prevent an attack from the non-adapted organisms and play an important role in the ecology and physiology of the phytophagous insects (Sukumar, 1993). The plant parts of the Meliaceae plant family contain a variety of compounds that showed insecticidal, antifeedant, growth regulating and development-modifying properties (Schumutterer, 1990; Nathan and Kalaivani, 2005). Therefore the study had been planned to evaluate the ratio of farmers using different insecticides in the area at Pest Warning & Quality Control of Pesticides, Gujranwala.

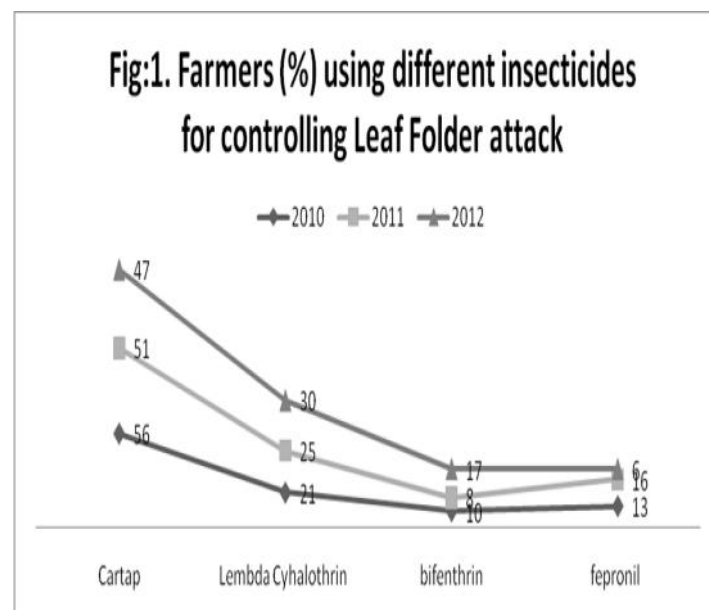
Materials and Methods

The study was conducted to evaluate the share of farmers who used insecticides i.e. Cartap @ 22.5 kgha⁻¹; Fepronil @ 20 kg ha⁻¹; Lambda Cyhalothrin @ 625 mlha⁻¹ and bifenthrin @ 1250 mlha⁻¹ used against leaf folder attack on Basmati of transplanted rice at Pest Warning & Quality Control of Pesticides, Gujranwala during Kharif 2010-2012 with Randomized Complete Block Design with three replications with net plot size of 40x60 ft² area. Recommended dose of fertilizers were applied after well puddled soil just before planking. Acetachlor was applied @ 250 mlha⁻¹ with shaker bottle

3 DAT and kept water level upto 3 inches for 20 days. Zinc Sulphate 21% was applied @ 25kg ha⁻¹ 25 days after transplantation; however nitrogen was applied in the field in the form of urea @ 185kgha⁻¹ in two splits 35 and 75 DAT. The damaged leaves were counted and % infestation was calculated by the formula (Shah et al., 2008). The pre and post count of larvae and the degree of leaf damage, the extent of suppression efficacy of pesticide formulation was determined in percentage (Chakraborty and Chandra, 2011).

Results and Discussion

Fig-1 showed that maximum farmers were used Cartap (56%; 51% & 47%) followed by Lambda Cyhalothrin (21%; 25% and 30%), bifenthrin (10%; 8% and 17%), fepronil (13%; 16 & 6%) during kharif 2010-2012. Favorable environmental factors helped in flare up of leaf folder population however at 35 °C temperature attack of insect was decreased drastically. These results are in accordance to (Karuppaiach *et al.*, 2012) who reported that survival of leaf folder was greatly affected at 35 °C. Adult emerges from pupae reared at 35 °C were unable to lay eggs. These results are in accordance to (Khan et al., 1989 & Rashid et al., 1994) who reported similar trend of rice leaf folder infestation during their studies. Wakil et al., (2001) had reported that all the pesticides were not equally effective to control leaf folder attack. Panda et al., (2004) had noted that fipronil 0.4 G performs well in field condition. Bhanu et al., (2008) and Arshad et al., 2012 had noted considerable variations of the efficacy on pesticides in field condition.



Conclusion

Maximum farmers were used cartap to overcome attack of leaf folder because it can be broadcasted easily in the field than spraying. However excessive and indiscriminate usage of pesticides caused unlimited hazards for human beings along with naturally grown population that could be avoided by providing awareness to the farmers.

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