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Efficacy of different insecticides for controlling leaf folder in transplanted rice

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Abstract

The study was conducted to evaluate the efficacy of different insecticides for controlling leaf folder in transplanted rice during kharif 2014-2015. Five different insecticides i.e. Cartap 4G @ 22.50 kgha^{-1}; Lemda Cyhalothrin 25EC @ 825 mlha^{-1}; Triazophos @ 1500 mlha^{-1}; Bifenthrin 10EC @ 625mlha^{-1} and Flubendiamide 48SC @ 100 mlha^{-1} were used compared to control. The result showed that all the insecticides were involved for controlling leaf folder however maximum yield was recorded by Cartap (3400 kgha^{-1}) followed by flubendiamide (3370 kgha^{-1}); triazophos (3320 kgha^{-1}); bifenthrin (3310 kgha^{-1}) and lembda cyhalothrin (3280 kgha^{-1}) compared to control during 2014. Maximum yield was recorded by Cartap (3670 kgha^{-1}) followed by flubendiamide (3670 kgha^{-1}); bifenthrin (3570 kgha^{-1}); triazophos (3560 kgha^{-1}) and lambda cyhalothrin (3450 kgha^{-1}). However the lowest yield was recorded by control (3260 kgha^{-1}) during 2015. Maximum benefit cost ratio was recorded by bifenthrin (6.20, 14.78) followed by triazophos (5.15, 11.07) during both the years.

Keywords: Efficacy; insecticides; control; leaf folder; rice; Sialkot; Punjab-Pakistan.

Introduction

Rice is an important cash crop ranked 2nd among the staple food grain crops in Pakistan and major source of foreign exchange earnings. Pakistan grows high quality rice to fulfill domestic demand and exports. Rice accounts 2.7% of value addition in agriculture and 0.6% of Gross Domestic Product (GDP). Total cropped area of rice was estimated at 2311 thousand hectares with annual production of 5541 thousand tones (Anonymous, 2013).

Rice leaf folder *Cnaphalocrocis medinalis* having family pyralidae with Order Lepidoptera is widely distributed and found foliage feeder in rice crop. Continuous and heavy usage of complex insecticides created resistance against this pest (Shanmugam et al., 2006 and Kaushik, 2010). In Pakistan this pest has been multiplied caused sever infestation during 2010-2015. The young larvae feed on leaves by scratching it and fold it longitudinally with self secreted sticky substance. The scratched leaves become membranous, turn whitish and finally drying up. Single larvae can damage number of leaves that retarded photosynthesis; plant growth resulting huge loss of grains. However crop success depends upon the effectiveness of chemical control measures. Upto 25% attack on leaf was recorded that reducing rice yield up to 30%; however upto 50% infestation was recorded in some local places (Salim et al., 1991). Pesticides are important in modern farming in ordered to feed world's growing population but quality is of equally important as quantity (Iqbal et al., 2009). In running scenario it should be the duty of every researcher to

work out and recommend less toxic compounds of insecticides. However natural botanical extracts are needed for developing country to control the insects by blocking spiracle system (Iqbal et al., 2011). Botanical and microbial insecticides are highly effective, safe and environment friendly. 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 prevent attack from non-adapted organisms and play an important role in the ecology and physiology of the phytophagous insects (Sukumar, 1993). The plant parts having Meliacea family contain variety of compounds showed insecticidal, anti-feedant, growth regulating and development modifying properties (Schumutterer, 1990; Nathan and Kalaivani, 2005). Therefore the study had been planned to evaluate the efficacy of different insecticides used for controlling leaf folder attack in transplanted rice crop**.**

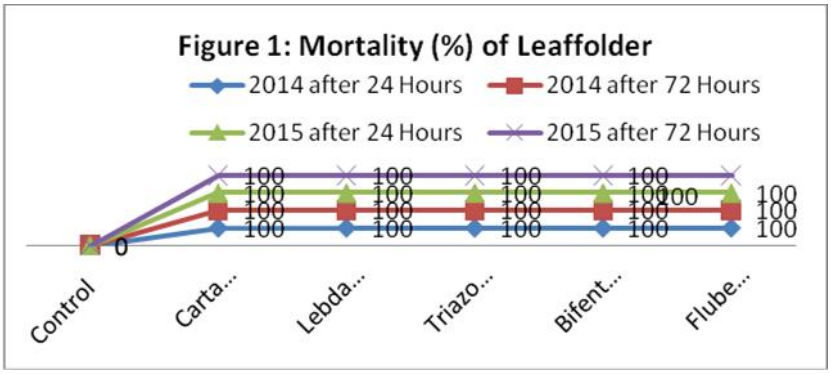
Materials and Methods

The present study was conducted to evaluate the efficacy of some insecticides for controlling leaf folder in transplanted rice during kharif 2014-2015 in the farmer's field of District Sialkot. Five different insecticides i.e. Cartap 4G @ 22.50 kgha^{-1}; Lemda Cyhalothrin 25EC @ 825 mlha^{-1}; Triazophos @ 1500 mlha^{-1}; Bifenthrin 10EC @ 625mlha^{-1} and Flubendiamide 48SC @ 100 mlha^{-1} are used compared to untreated infested plot. The damaged leaves were counted and percentage (%) infestation was calculated by the formula (Shah et al., 2008). The larval population was recorded before and after application of insecticides and percent leaf damage. The benefit cost ratio was recorded by the formula given by Kahloon et al., 2012.

Results and Discussion

Mortality (%)

From figure 1 the result of the experiment showed that hundred percent mortality was recorded by using all insecticides however it was concluded that all the insecticides were involved for controlling leaf folder during both the seasons after 24 and 72 hours. Favorable environmental factors helped in flare up of leaf folder population however at 35 ^{o}C temperature attack of insect was decreased drastically (Farooq et al., 2014). These results were contradictory to Wakil et al., (2001) who reported that all the pesticides were not equally effective to control leaf folder.



Yield (kgha^{-1})

From figure 2, maximum yield was recorded by using Cartap (3400 kgha^{-1}) followed by flubendiamide (3370 kgha^{-1}); triazophos (3320 kgha^{-1}); bifenthrin (3310 kgha^{-1}) and lembda cyhalothrin (3280 kgha^{-1}) compared to untreated control plot during 2014. Figure 3 showed that maximum yield was recorded by Cartap (3670 kgha^{-1}) followed by flubendiamide (3670 kgha^{-1}); bifenthrin (3570 kgha^{-1}); triazophos (3560 kgha^{-1}) and lambda cyhalothrin (3450 kgha^{-1}). However the lowest yield was recorded by untreated plot (3260 kgha^{-1}) during 2015.

Cost Benefit Ratio

From figure 2 and 3 showed that maximum benefit cost ratio was recorded by bifenthrin (6.20, 14.78) followed by triazophos (5.15, 11.07) during both the years. In this study maximum cost benefit ratio depends upon the actual or purchase price of the concerned pesticides. However the pesticides having maximum price producing low cost benefit ratio.

Figure 2 showing cost benefit ratio of rice crop during kharif 2014.

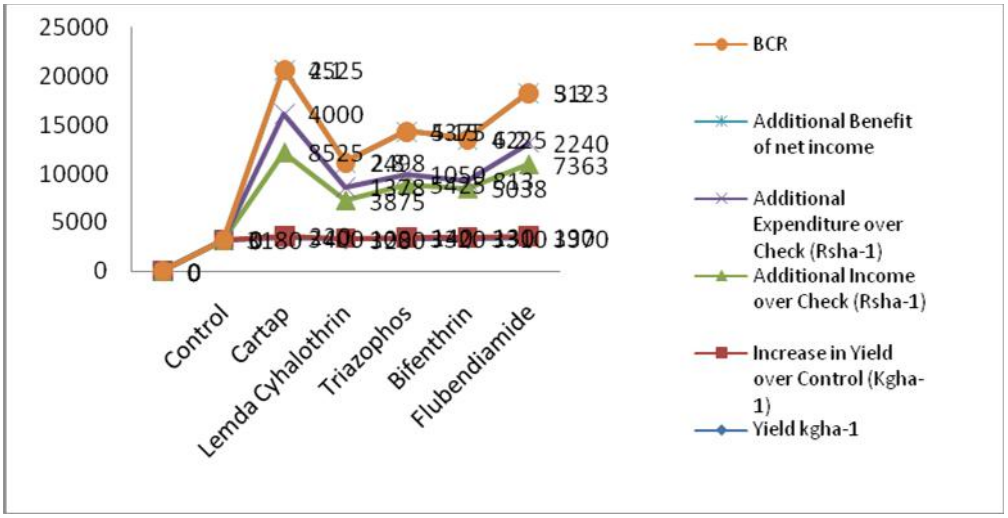
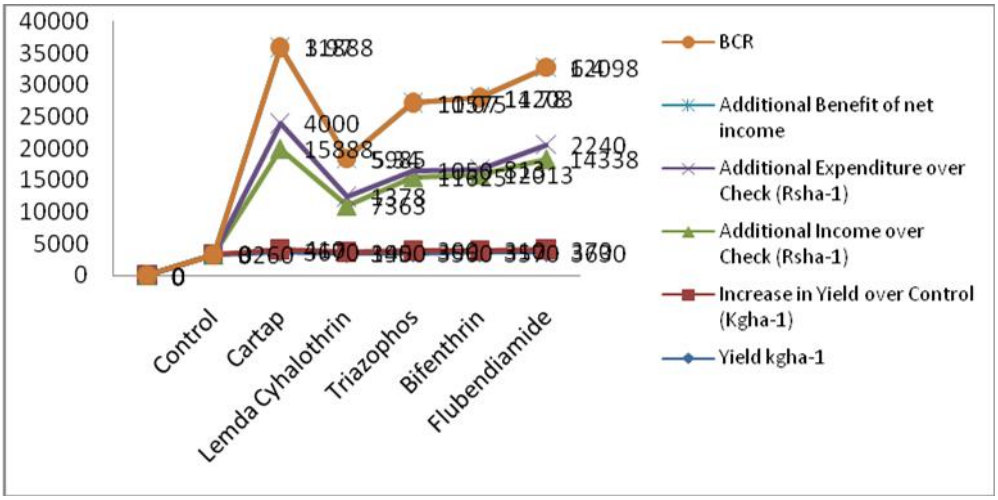


Figure 3 showing cost benefit ratio of rice crop during kharif 2015.



Conclusion

At the end it was concluded that all the insecticides were involved for controlling leaf folder in transplanted rice however bifenthrin showed maximum cost benefit ratio. Excessive and indiscriminate usage of pesticides caused unlimited hazards for human beings along with naturally grown population that could be avoided by providing timely awareness to the farmers through electronic media, seminars and extension services.

References

Anonymous. 2013. Economic Survey of Pakistan. Govt. of the Pakistan, Finance Division, Economic Advisors Wing, Islamabad-Pakistan pp-21.

Farooq, M., F. Ahmad., M. Latif., M. Ahmad., R. N. Bhutta., A. R. Sajjid., G. M. Shad., M. F. Iqbal., M. Hussain., and A. H. Abid. 2014. Share of farmers using different insecticides against leaf folder attack in transplanted rice. Int. J. Adv. Res. Biol. Sci., 1(5):05-07.

Iqbal, M. F., Maqbool, U., Perveez, I., Farooq, M., and Asi, M. R. 2009. Monitoring of insecticide residues in brinjal collected from market of Noshera Virkan, Pakistan. J. Anim. Plant Sci. 19(2):90-93.

Iqbal, M. F, Kahloon, M. H., Nawaz M. R. and Javaid, M. I. 2011. Effectiveness of some botanical extracts on wheat aphids. J. Anim. Pl. Sci. 21(1):14-115.

Kaloon, M. H., M. F. Iqbal., M. Farooq, L. Ali, M. Fiaz and I. Ahmad. 2012. A comparison of conservation technologies and traditional techniques for sowing of wheat. J. Anim. Plant Sci. 22(3):827-830.

Kaushik, C. 2010. Extent of damage by leaf folder, *Cnaphalocrocis medinalis* (Guenee) in paddy cultivars at Raiganj, Uttar Dinajpur, West Bengal. Current Biotica 4: 365–367.

Nathan, S. S., and Kalaivani, K. 2005. Efficacy of nucleopolyhedrovirus (NPV) and azadirachtin on *Spodoptera litura* Fabricius (Lepidoptera: Noctuidae). Biological Control (34): 93-98.

Shah, S., Ali, M., Rehman, H. U., Rehman, A., Abbasi, F. M., Khalil, I. H. and Ali. A. 2008. Characterization of wild rice species in response to leaf folder (*C. madenalis*). Sarh. J. Agri. 24(1):69-74.

Shanmugam, T. R., Sendhil, R, Thirumalvalavan, V. 2006. Quantification and prioritization of constraints causing yield loss in rice (*Oryza sativa*) in India. Agricultura Tropica et Subtropica. 39: 194–201.

Salim, M., Rehman, A. and Ramzan, M., 1991. Leaf folder (LF) outbreaks in Punjab, Pakistan. IRRI. 16(1):22.

Schumutterer, H. 1990. Properties and potential of natural pesticides from the neem tree, *Azadirachta indica*, Annu. Rev. Ento., 35: 271–297.

Wakil, W., Hussain, M. Akbar, R. and Gulzar, A. 2001. Evaluation of different insecticides against rice stem borer and rice leaf folder. Pak. J.Agric. Sci. 38: 49-50.

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