

ABUNDANCE OF THE *MYZUS PERSICAE* (SULZER) UNDER PROTECTED ENVIRONMENT IN HIMACHAL PRADESH, INDIA

OMKAR GAVKARE^{1,2}, SURJEET KUMAR, YUVRAJ SHINDE AND S. P. BHOPALE³

¹Department of Entomology, CSK Himachal Pradesh Agricultural University, Palampur 176 062, Himachal Pradesh, India

²Department of Entomology, Dr YS Parmar University of Horticulture and Forestry, Nauni, Solan 173 230, Himachal Pradesh, India

³Department of Entomology, P.G. Institute Mahatma Phule Krishi Vidyapeeth, Rahuri 41722, India

Key words :

(Received February, 2014; accepted, 2014)

ABSTRACT

Myzus persicae (Sulzer) (Hemiptera: Aphididae) is an economically important pest with over 500 host plants in many parts of the world. At the same time, it is also an important pest of many vegetable crops, including bell pepper grown under protected environment in India. There is very scarce information available regarding this pest in India. Therefore, survey was conducted in the polyhouses at different periods during the crop season and observations were recorded on the incidence in polyhouse. Per cent incidence of *M. persicae* was recorded on different varieties of *C. annuum* in polyhouses at different locations in each of the four districts of Himachal Pradesh viz. Bilaspur, Hamirpur, Kangra and Mandi. The aphid was observed to infest the crop at seedling, flowering and fruiting stages at all the locations. Its per cent incidence, recorded at different stages of the crop, varied from 19.25 to 68.95, 42.25 to 73.25, 37.58 to 74.85 and 30.56 to 88.54 per cent in Bilaspur, Hamirpur, Kangra and Mandi districts, respectively. These results of the survey show that *M. persicae* is a very serious pest of the crop transplanted at different times under protected environment at different locations in Himachal Pradesh.

INTRODUCTION

The aphid is very serious problem on sweet pepper, *Capsicum annuum* L., an important cash crop grown under protected environment. Both nymphs and adults suck the cell sap from leaves and tender parts thereby inducing premature senescence. It also excretes honeydew on which sooty mould grows and inhibits the photosynthesis. Of late, cultivation of

vegetables and ornamental plants under protected environment has emerged as an important venture among farmers of the Himachal Pradesh as a result of government sponsored schemes with incentives in the form of subsidies for the farmers adopting protected cultivation. However, the problem of insect-pests of greenhouse crops is one of the major concerns of the farmers, researchers and policy makers for the success of this ambitious programme. *M. persicae*,

Table 1. Incidence of *M. persicae* on *C. annuum* under protected cultivation in different parts of Himachal Pradesh

District	Period of observation	Crop stage(s)	Incidence* (%)
Bilaspur	July	Flowering, fruiting	19.25 (18- 22)
	September	Seedling, flowering	68.95 (68-70)
	December	Fruiting	52.65 (48-55)
Hamirpur	July	Flowering, fruiting	42.25 (40- 45)
	September	Seedling, flowering	73.25 (70- 75)
	December	Fruiting	62.24 (58- 65)
Kangra	July	Flowering, fruiting	37.58 (35-40)
	September	Seedling, flowering	74.85 (75-80)
	December	Fruiting	42.23 (40-45)
Mandi	July	Flowering, fruiting	30.56 (28-35)
	September	Seedling, flowering	88.54 (86- 90)
	December	Fruiting	41.23 (40-42)

*Average of 20 polyhouses, Figures in parentheses indicate range

being an important vector of viral diseases can be very serious even at low population levels under these situations. The aphid being small in size and having migratory winged forms can easily spread and multiply on various crops under congenial environment available in the polyhouses. The aphid is also known to have developed resistance to many groups of insecticides in other parts of the world (Foster *et al.* 2000) and there is a possibility that certain populations of this aphid, which are being subjected to high levels of selection pressure of the insecticides, may develop resistance to some insecticides currently being recommended for its control under protected environments in the state and this may further aggravate the problem of *M. persicae*. Hence, survey was undertaken in capsicum growing districts Bilaspur, Hamirpur, Kangra and Mandi districts of Himachal Pradesh.

RESULT AND DISCUSSION

The incidence of *M. persicae* on the crop was recorded (Table 1) in most of the polyhouses in all these districts surveyed during the present study. The aphid was observed to infest the crop at seedling, flowering and fruiting stages at all the locations. Its per cent incidence, recorded at different stages of the crop, varied from 19.25 to 68.95, 42.25 to 73.25, 37.58 to 74.85 and 30.56 to 88.54 in Bilaspur, Hamirpur, Kangra and Mandi districts, respectively (Table 1). Maximum incidence of the aphid was observed to be in Mandi whereas, it was low in the polyhouses surveyed in Bilaspur. The variations in the incidence of the aphid at different locations may be explained on the basis of varied conditions in the polyhouses maintained by different farmers and cultivation of different varieties

of the crop. The incidence of the aphid was observed to be more in polyhouses which were not maintained properly.

These results of the survey show that *M. persicae* is a very serious pest of the crop transplanted at different times under protected environment at different locations in Himachal Pradesh. Earlier, it has been reported to infest potato, peach, turnips, radish, sweet pepper, cole crops, *Brassica* oilseeds and many ornamental plants (Sharma and Bhalla, 1964; Suri, 1986; Raj and Kumar, 1994) in the state. With the introduction of protected cultivation in the state, the aphid has found several of its preferred secondary hosts readily available round the year. Being minute in size, the alate forms of *M. persicae* may get an easy entry inside the greenhouses and the micro-climatic conditions of favourable temperature and RH available under protected environment are helpful for the rapid growth and multiplication of the aphid at times when its survival is difficult in the open environment. These are some of the factors which may explain the high incidence of *M. persicae* on *C. annuum* grown under protected environment in different parts of the state as recorded in the present investigations. The aphid has also been reported as a major pest of sweet pepper under greenhouse conditions in different parts of world (Perdikis *et al.* 2008; Beyon *et al.* 2011). Vashisth (2009) has also reported 40-85.71 per cent incidence of *M. persicae* on sweet pepper under protected environment in Himachal Pradesh.

REFERENCES

- Byeon, Y.W., Midori, T.M., Jeong, J.H. and Cho, Y.M. 2011. Functional responses of aphid parasitoids, *Aphidius*

- colemanni* (Hymenoptera: Braconidae) and *Aphelinus asychis* (Hymenoptera: Aphelinidae). *Biocontrol Science and Technology*. 21(1) : 57- 70
- Foster, S.P., Denholm, I. and Devonshire, A.L. 2000. The ups and downs of insecticide resistance in peach-potato aphids, *Myzus persicae* in the UK. *Crop Protection*. 19 : 873-879
- Perdikis, D., Kapaxidi, E. and Papadoulis, G. 2008. Biological Control of Insect and Mite Pests in Greenhouse Solanaceous Crops. *The European Journal of Plant Science and Biotechnology*. 10 (2) : 125-144
- Raj, D. and Kumar, S. 1994b. Population build up of *Myzus persicae* (Sulzer) on oilseed cruciferus and its correlation with abiotic factors. *Journal of Insect Science*. 7 (1) : 16-17
- Sharma ,P.L. and Bhalla, O.P. 1964. Survey study of insect pests of economic importance in Himachal Pradesh. *Indian Journal of Entomology*. 26 (3) : 318-331
- Vashisth, S. 2009. *Insect and nematode complex associated with some important polyhouse crops*. M Sc Thesis, Department of Entomology, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur, India. p 48
-