Volume : 3 | Issue : 6 | June 2014 • ISSN No 2277 - 8160

Research Paper | Agriculture

Role of *Brumus* Sp. (Coccinellidae : Coleoptera) in Population Control of Jassid *Amrasca Kerri* Pruthi (Cicadellidae : Hemiptera) The Pest of Cowpea in Kolhapur Region of Maharashtra, India

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ABSTRACT

Amrasca kerri Pruthi (Cicadellidae : Hemiptera) is potential cell sap sucking pest of cowpea Vigna unquiculata (L.) Walp in Kolhapur region of Maharashtra. As a biocontrol agent of A. kerri role of Brumus sp. (Coccinellidae : Coleoptera) has been tested in the field and laboratory conditions (25±1oC, 65-70% RH, 12 hr photoperiod). Brumus sp. is good biocontrol agent of A. kerri. Per day Brumus sp. consumed 4-5 jassids in the laboratory. In the field Brumus sp. was associated with pest with the proportion of increase or decrease of the pest population throughout the persistence of the crop during summer season.

KEYWORDS : Brumus sp., Amrasca kerri, biocontrol, cowpea, Kolhapur

INTRODUCTION

Jassid Amrasca kerri Pruthi (Cicadellidae : Hemiptera) is potential pest of cowpea Vigna unquiculata (L.) Walp in Kolhapur region of Maharashtra, India. The pest suck the cell sap from tender leaves, twigs and flowering and fruiting bodies of the crop. It also create sooty moulds, affect photosynthesis, growth and yield of the crop. Both nymphs and adults suck the cell sap from crop. The jassids are wedge shaped and walk diagonally. Its continuous and excessive infestation always results in eitiolation of leaves and stunting of growth. In order to formulate suitable (Biological pest control) ecofriendly pest management strategy knowledge of the natural enemies, their occurrence and natural pest population suppression is essential. In past, Agarwala & Gosh (1988), Singh & Malhotra (1979), Omkar & Bind (1993), Omkar & Prvez (2000), Sathe & Bhosale (2001), Patil & Sathe (2003), Sathe (2004), etc. worked on biological control of homopterous insects by using lady bird beetles.

MATERIALS AND METHODS

Field trials were laid during the rabbi /Summer seasons of 2013 and 2014 in Kolhapur region of Maharashtra to investigate the role of lady bird beetle Brumus sp. to suppress the population of the jassid A. kerri in cowpea V. unquiculata. Weekly observations were recorded on incidence of jassids and their biocontrol agent Brumus sp. from two leaf stage of crop growth upto harvest on ten randly tagged plants. Both samples (pest & predator) were collected and identified with the help of appropriate literature cited in the references. Under laboratory conditions (25±1°C, 65-70% RH and 12 hr photoperiod) prey consumption rate by predator have been calculated by providing jassids in densities of 5, 10, 20, 50 and 100 in glass cage of size 25 x 25 x 25 cm to individual (single) predator for 24 hour.

RESULTS

Results are recorded in table - 1 & 2 and fig. 1. The field survey studies indicated that jassid population was peaked in the standard weeks 17 to 19 in rabbi/Summer seasons during the years 2013-14. Similarly, predator (Brumus sp.) population was also increased. The Brumus sp. immediately came on the crop when the crop was of two leaved stage along with jassid population. The association of predator prey was noticed throughout the persistence of the crop, indicating that Brumus sp. is good biocontrol of A. kerri in field condition. The prey consumption studies indicated that Brumus sp. can feed on at least 4-5 jassids per day. Under laboratory conditions the predation percentage by Brumus sp. on A. kerri were 90.00, 75.00, 67.5, 21.66 and 13.00 with prey densities 5, 10, 20, 50 and 100 respectively indicating 5 to 10 prey densities were ideal as food source of the predator.

DISCUSSION

Coccinellids or lady bird beetles (Coccinellidae : Coleoptera) are the most common predators of soft bodied insects. Both larvae and adults varaceously feed on their preys (Omkar and Bind, 1993). These predators also exist on ornamental plants like rose Rosa indica, marigold Tagetes erecta, etc. to feed on sucking insects. The predaceous nature of coccinellids on aphids, mealy bugs, scale insects, white flies and leaf hoppers have been studied by (Omkar and Pervez 2000) in some agro and horticultural ecosystems. According to (Omkar and Bind, 1993) Coccinella septumpunctata and Coccinella transversalis were the most common and potential predators of aphids. Both larvae and adults of above predators were found feeding on aphid populations. Singh et al. (2005) studied the coccinellid predators of homopterous pests on mustard and rose from Barelly. An extensive survey of mustard and rose plantation was carried out by Singh et al. (2005) in different regions of Barelly to record the coccinellid predators of aphids. Accordingly, the mustard cultivation at Bilwa, Bitherichainpur and Lal Phatak as well as rose plantations at Karancharinagar, Phoolbagh and M.J.P. Rohilkhand University gardens at Barelly were sampled at fortnightly intervals from January 2004 to April 2005. Seven coccinellid predators viz., Coccinella septumpunetata, Chellomenes sexmaculata, Coccinella transversalis and Micraspis spp. were recorded. The coccinellid predators started appearing on crop in the month of February and remained on the plants upto the middle of April. In the present study Brumus appeared on the crop from last week of March and remained persistent along with jassids on the crop cowpea upto the harvest.

Faleiro and Singh (1990) studied pest predator relationship on Summer cowpea in Delhi during the years 1983 to 1984. They noted that the population count of insect pests and their biotic agents recorded during summer was low as compared to that recorded during Kharif. The jassid A. kerri was recorded during both, the Kharif and Summer seasons, but Brumus sp. was found only in Summer on the crop. In the present study, both the jassids and predatory beetles were first recorded during the early vegetative stage of crop growth.

Now a days, sucking type of pests are difficult to control with pesticides since they take their food introducing their beak deep into the plant tissue and get escaped from pesticides. Therefore, biocontrol agents like Brumus sp. can play important role in superssion of A. kerri population on cowpea as ecofriendly approach.

ACKNOWLEDGEMENT

Authors are thankful to DST, New Delhi for sanction of DST PURSE project (No. SR/59/2-23/2010/26 Dt. 10.2.2011) to Shivaji University, Kolhapur and Dept. of Zoology.

Table - 1 : Incidence of Amrasca kerri and its predator Brumus sp. on cowpea V. unquiculata in Kolhapur (2013-14)

Sr. No.	Species	Standard weeks and number of insects observed per plant												
		12	13	14	15	16	17	18	19	20	21	22	23	24
1.	A. kerri	-	3	5	17	22	37	34	35	26	14	12	13	11
2.	*Brumus* sp.	-	1	3	4	7	12	14	16	12	7	6	3	0

Table - 2 : Prey consumption rate of Brumus sp. per day

Sr. No.	Density of jassids provided	Preys consumed per day	Per cent predation
1.	5	4.5	90.00
2.	10	7.5	75.00
3.	20	13.5	67.5
4.	50	13.00	21.66
5.	100	13.00	13.00

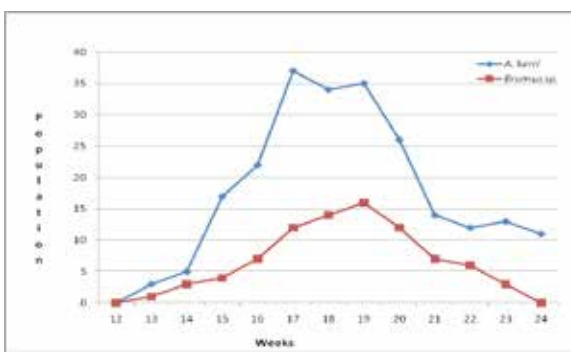


Fig. 1: Relationship of A. kerri and Brumus species on Cowpea

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