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SURVEY OF THE INFESTATION LEVEL OF PULSE BEETLE, *CALLOSOBRUCHUS CHINENSIS* (LINN.) IN STORED GRAINS OF COWPEA IN JAIPUR DISTRICT

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ABSTRACT

During field survey's the maximum moisture level and damaged seed of cowpea was recorded in Phagi tehsil and minimum in Chaksu tehsil of Jaipur district. Among retailer as well as bulk seller survey's the maximum moisture level and damaged seed was observed in the sample taken from the Choudhary Provisional, Jobner while, minimum in Goyal Store, Mahesh Nagar, Jaipur.

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INTRODUCTION

Cowpea, *Vigna unguiculata* (L.) commonly known as lobia, is major pulse crop belongs to family Leguminosae. It is believed to be originated from central Africa. It has been cultivated since very ancient time in the Mediterranean region by the Greeks, Romans and Spaniards. It is claimed to be 90 per cent of the total world acreage is covered by India followed by Africa, Australia as well as central and Southern parts of Europe. In case of severe infestation cent per cent damage is caused by the pest (Pruthi and Singh, 1950). In India 17 species of bruchids belonging to 11 genera have been recorded infesting different pulses (Arora, 1977). There are encouraging reports on the use of certain indigenous plant products as grain protectants (Sundria *et al.*, 2001, Bhargava and Meena, 2002, Bajiya, 2010 and Sharma, 2014) but definite information on mortality doses, efficacy of oils and extracts by treatment of packaging materials and direct feeding with the seed and their residual life is meagre, hence needs detailed investigations.

MATERIALS AND METHODS

Maintenance of insect culture

To maintain the stock culture of *C. chinensis,* the sound and healthy cowpea grains (RC– 19) were cleaned and sieved to remove the fractions of grains or insects if any. The grains were sterilized at 60+50C for 8 hours in order to eliminate both apparent and hidden infestation of insects and mites, if any. These grains were conditioned at least for a week in an incubator maintaining 27+20C and 65+5 per cent relative humidity to raise their moisture content. The adults of *C. chinensis* were obtained from Department of Seed Technology, RARI Durgapura (Jaipur), for mass rearing and reared on already conditioned grains of cowpea in plain glass jars of 2.5 litre capacity. These jars were kept at a temperature of 27+20C and 65+5 per cent relative humidity. The adults so emerged from the culture were used for further experimentation. The development of *C. chinensis* on cowpea (RC-19) was studied under laboratory conditions on different

levels of temperature (20, 25 and 30 ºC) and humidity (60, 70 and 80) in Complete Randomized Design and the treatments were replicated three times. The following observations were recorded. The survey's were carried out in five randomly selected *tehsils* of Jaipur district *viz.*, Chaksu, Amer, Phagi, Phulera and Jhotwara. In each *tehsil*, five farmers were selected randomly. The moisture content and per cent infestation were recorded.

RESULTS AND DISCUSSION

Assessment of damage intensity at farmers level

The survey was carried out in five randomly selected *tehsils* of Jaipur district *viz.*, Chaksu, Amer, Phagi, Phulera and Jhotwara. In each *tehsil*, five farmers were selected randomly. The data presented in Table 4.1 and Fig. 4.1 revealed that, the maximum moisture level (12.83%) and seed damage (80.67%) was recorded in Phagi tehsil followed by Amer (11.19 & 78.10%) and Phulera tehsil (10.62 & 71.00%).

Table 1. Survey of the infestation level of pulse beetle, *Callosobruchus chinensis* in stored grains of cowpea in Jaipur district at farmer's level

S. No.	Tehsils	Moisture level (%)	Damage seed (%)
1.	Phulera	10.62	71.00
2.	Dudu	11.19	78.10
3.	Phagi	12.83	80.67
4.	Sanganer	9.25	63.50
5.	Chaksu	10.00	67.00

Table 2. Survey of the infestation level of pulse beetle, *Callosobruchus chinensis* in stored grains of cowpea in Jaipur district at open market

S.No.	Name of retailer/ bulk seller	Moisture level (%)	Damage seed (%)
1.	Ramesh Kirana store (Jobner – Jaipur)	10.50	14.00
2.	Sharma Provisional Store Mahesh Nagar, Jaipur	9.10	7.20
3.	Single Kirana stores Triveni Nagar, Jaipur	9.60	11.20
4.	Choudhary Provisonal, Chomu	10.60	15.00
5.	Goyal Stores 80, Mahesh Nagar, Jaipur	8.70	7.00
6.	Choudhary Provisional (Jobner – Jaipur)	11.70	21.20
7.	Sharma Kirana Store, Bagru	9.80	13.00
8.	Choudhary Provisional Store, Renwal	11.00	18.60
9.	Komal Kirana Store, Jobner	9.50	10.30
10.	Mahesh Store, Renwal	10.50	15.50

The minimum moisture level (10.00%) and seed damaged (67.00%) was observed in Chaksu tehsil followed by 9.25 per cent moisture level and 63.50 per cent seed damage in Jhotwara tehsil of Jaipur district. Bajiya (2010) conducted a field survey on stored mungbean infested with *Callosobruchus* spp., in five tehsils (Chaksu, Amer, Phagi, Phulera and Jhotwara) of Jaipur district and observed infestation of the pest species in all tehsils which is in partially conformity with the present findings.

Assessment of damage intensity at open markets level

Overall 10 samples of cowpea seeds, from retailers as well as bulk sellers were procured from Jaipur markets. The observations (Table 4.2) indicated that maximum moisture level (11.70%) and seed damage (21.20%) was observed in the sample taken from the Choudhary Provisional, Jobner while, such figures was minimum (8.70 & 7.00%) in the sample of Goyal Store, Mahesh Nagar, Jaipur. The per cent moisture level in other remaining samples ranged from 11.00 to 9.10 and per cent seed damage ranged from 18.60 to 7.20.

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