

# Protection of Stored Grains from *Callosobruchus Chinensis* (Linn.) in Kota Region (Rajasthan)

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**Abstract :** Pulse beetle, *Callosobruchus chinensis* is serious pest of stored grains, it can damage pulses and grains in godowns in Kota region (Rajasthan). It's grub and adult both are harmful and cause infestation in pulses particularly, chickpea, beans, lentil, gram, soya bean etc. Pulses are cheapest source of protein. The study was focused on nature of damage caused by *Callosobruchus chinensis* on pulses, stored for seed purpose and its control methods. Physical as well as chemical control methods found to be effective to control *Callosobruchus chinensis*. Efficacy of permissible concentration of insecticide chlorpyrifos was monitored to control *Callosobruchus chinensis*. Other method of control was physical method that was also reported effective for the control of this beetle of pulses.

**Keywords:** *Callosobruch chinensis* (Linn), Chlorpyrifos, Kota region.

**Introduction** - *Callosobruchus chinensis* is one of the insects that destruct the stored grain and depreciate in storage. Pulse beetle is a major pest of pulses and other supplement. Pulses are stored for food and seed purpose but harm full insect pest *Callosobruchus chinensis* cause heavy infestation during storage of pulses. Pulses are difficult to storage and suffer great damage during storage due to attack by *Callosobruchus chinensis*. Both grub and adult cause damage to the grain, they bite holes in the grain to enter inside and feed on kernel damaging several grains in process. the infestation can start in the fields where the beetles deposit their eggs on the pod. Nutritive changes of the infested grain induced by *Callosobruchus chinensis* were reported. There are various method to control this pest. Chemicals can be used in minimum permissible concentration, chlorpyrifos in minimum permissible concentration found to be effective and cause residual effects. Activity caused by something that remains after a particular treatment is known as residual action. Chemical control is effective but chemicals may harm other animals and human and enter food cycle, so other methods of control like physical method and cultural method are also useful. Physical method is also effective method, both high and low temp have been used to destroy pest insects.

**Material and method:** Study was based on observations of Pulse beetle and the nature of damage caused by them, the experiment was carried out at laboratory in 2023 and 2024, from month of June to month of October in Kota region (Rajasthan).

1. Brownish grey beetle, *Callosobruchus chinensis*,

measuring about 3mm in length with characteristic ivory spot near the middle of the dorsal side, it is small, short and active, elytra do not cover the abdomen completely. Adult and grub both feed on grain by marking small hole and cause nutritive changes of the infested grain. This beetle can actively fly.

2. The experiment was carried out at laboratory. Black chickpeas were used as host for culture of *Callosobruchus chinensis*. The stock culture was maintained on black chana by releasing 10 pairs of freshly emerged beetles in a plastic jar. Two dilutions of Chlorpyrifos were prepared from stock solution. Solutions of .0008% and .0006 % concentration were prepared for treatment. In covered petri dishes, groups of 20 and 40 insect pest *Callosobruchus chinensis* were induced and these groups of insects were exposed to insecticide chlorpyrifos. All the experiments which were maintained under laboratory conditions for purpose of seed storage, were observed.



**Fig 1. Adult**  
***Callosobruchus chinensis***



**Fig 2. Infested Grain**

3. Mortality level of *Callosobruchus chinensis* was

recorded after exposure and at the same time the dissipation of chlorpyrifos residues on treated surface was estimated at different time intervals of 1, 3, 7, 15 and 30 days. Permissible limit and recommended concentration of chlorpyrifos for controlling *Callosobruchus chinensis* has been monitored. Chlorpyrifos, the stomach and contact poison with long residual life found to be effective against this store grain insect pest.

4. The exposure of infested stored grain to sun a. directly on cotton cloth b. use of polyethene bags for grains and c. use of cotton bags for grains on a cemented floor in May and June for 5 to 6 hours was reported to kill insect pest beetles, such sun exposure of grain, reduces the moisture content of the grain and if it is less than 8% RH, the grain escape insect infestation.

**Result and discussion:** The effects of insecticide and insecticide residue against *Callosobruchus chinensis* were observed. Chlorpyrifos found effective at concentration of .0008% and .0006%. After treatment at .0008% concentration 70% mortality was registered on 1st day of treatment 55% mortality on 3rd day, 45% mortality on 7th day 40% mortality on 15th day 25% mortality and on 30th day of treatment has been registered. At .0006% concentration, 50% mortality was registered on 1st day, 45%

mortality on 3rd day, 30% mortality on 7th day, 30% mortality on 15th day and 25% mortality on 30th day was reported. Treatment of sun exposure on stored grain in month of May and June, found to be effective against *Callosobruchus chinensis* (Linn.) .

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