

## EFFICACY OF EDIBLE AND NON-EDIBLE OILS AGAINST PULSE BEETLE *Callosobruchus chinensis* L. IN STORED CHICKPEA

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**Abstract:** The experiment was conducted at laboratory in the Department of Entomology, College of Agriculture, IGKV, Raipur during 2009- 2010 with eight treatments and four replication. While testing the effectiveness of some edible and non-edible oils, minimum no (10.70eggs)of fecundity was recorded on 0.25 ml/100g neem oil treated seeds. In 0.25ml/100g karanj oil treated seed larval-pupal period is longer than control. Higher incubation period (8.13 days) was recorded in neem oil with lower incubation period of 5.39 days, in sunflower oil treated with 0.25 ml/ 100g seed. Adult longevity (5.79 days) was shortest on neem oil at 0.25ml/ 100g seed and longest (7.94 days) on nilgiri oil at 0.25ml/ 100g seed. Seed damage in coconut oil treated seeds at 0.25 ml/ 100g seed was found highest (20.50 and 43.79 per cent) while lowest (9.25 and 30.39 per cent) was found in karanj oil treated seeds 0.25ml/100g seeds after 45 days and 90 days, respectively. Lowest (8.06 and 23.73) weight loss was recorded on karanj oils treatedwith 0.25ml/ 100g seed and highest (16.34 and 35.14 %) was recorded on coconut oil treatedwith 0.25 ml/ 100g seed after 45 days and 90 days. Control of pulse beetle in chickpea with insecticide grain protectants can be dangerous due to its residual effect. Application of edible and non-edible oils to chickpea seeds for storage of the chickpea especially in months of infestation can be an effective alternate.

**Keywords:** Efficacy, fecundity, incubation, longevity, weight loss

### REFERENCES

- Ali, S.I., Singh, O.P. and Mishra, U.S. (1983). Effectiveness of plant oils against pulsebeetle, *Callosobruchus chinensis* Linn. *Indian J. Ent.*, 45(1): 6-9.
- Ajayi FA, Lale NES. Seed coat texture, host species and time of application affect the efficacy of essential oils applied for the control of *Callosobruchus maculatus*(F.) (Coleoptera: Bruchidae) in stored pulses. *International Journal of PestManagement* 2001; 47(3):161-166.
- Biswas, N.P. and Biswas, A.K. (2005). Effect of some non-edible oils against pulse beetle, *Callosobruchus chinensis* in stored gram. *Journal of Interacademia*. 9(3): 448-450.
- Hulse, J. H. (1991). Nature, composition and utilisation of grain legumes, In: Uses of tropical Legumes: Proceedings of a Consultant Meetings, 27-30 March 1989, ICRISAT Centre, Patancheru, A.P. 502324, India.
- ICRISAT (2007). Chickpea (Internet). International Crop Research Institute for the Semi-Arid Tropics. Available from [www.icrisat.org](http://www.icrisat.org) , Accessed 2007 Feb. 17
- Khalequzzaman, M., Keita SM, Vincent C, Schmit JP, Arnason JT, Belanger A. Efficacy of essential oil of *Ocimum basilicum*L. and *O.gratissimum*L. applied as an insecticidal fumigant and powder to control *Callosobruchus maculatus*(Fab.) (Coleoptera: Bruchidae). *Journal of Stored ProductsResearch* 2001; 37(4):339-349.
- Mahdi, S.H.A. and Goni, S.O. (2007). Efficacy of edible oils in the control of pulse beetle, *Callosobruchus chinensis* L. in stored pigeonpea. *Univ. J. Zool. Rajshahi Univ. Vol.* 26, pp. 89-92.
- Mulatu B, Gebremedhin T. Oviposition-deterrent and toxic effects of various botanicals on the Adzuki bean beetle, *Callosobruchus chinensis* L. *Insect Science and itsApplication* 2000; 20(1):33-38.
- Ogunwolu O, Idowu O. Potential of powdered *Zanthoxylumzanthoxyloides*(Rutaceae) root bark and *Azadirachtaindica* (Meliaceae) seed for control of the cowpea seedbruchid, *Callosobruchusmaculatus* (Bruchidae) in Nigeria. *Journal of African Zoology* 1994; 108(8):521-528.
- Okonkwo EU, Okoye WI. The efficacy of four seed powders and the essential oils as protectants of cowpea and maize grains against infestation by *Callosobruchusmaculatus* (Fabricius) (Coleoptera: Bruchidae) and *Sitophiluszeamais* (Motschulsky) (Coleoptera:Curculionidae) in Nigeria. *International Journal of Pest Managemen*1996; 42(3):143-146.
- Parsai, S.K., Shaw, S.S., Despande, R.R., Verma, R.S., Badaya, A.K. and Mandloy, K.C. (1990). Studies on fecundity longevity of *C. chinensis* and caused grain weight loss and efficacy Ofedible oils against *Callosobruchus chinensis* L. on mungbean. *Indian J. pulse Res.* 3(1): 61-65.
- Park C, Kim SI, Ahn YJ. Insecticidal activity of asarones identified in *Acorusgramineus* rhizome against three coleopteran stored-product insects. *Journal of StoredProducts Research* 2003; 39(3):333-342
- Raja N, Albert S, Babu A, Ignacimuthu S, Dorn S. Role of botanical protectants and larval parasitoid *Dinarmusvagabundus* (Timberlake) (Hymenoptera: Pteromalidae) against *Callosobruchusmaculatus* Fab. (Coleoptera: Bruchidae) infesting cowpea seeds. *Malaysian Applied Biology* 2000; 29(1-2):55-60.
- Shaaya E, Kostjukovski M, Eilberg J, Sukprakarn C. Plant oils as fumigants and contact insecticides for the control of stored-product insects. *Journal of Stored ProductsResearch* 1997; 33(1):7-15.

**Srinivasan, G.** (2008). Efficacy of certain plant oils as seed protectant against pulse beetle, *Callosobruchus chinensis* Linn, on pigeonpea. *Pesticide Research Journal*. 20(1): 13-15.

**Singal, S.K. and Singh, Z.** (1990). Studies of plant oils as surface protectants against pulse beetle, *Callosobruchus chinensis* (L.) in chickpea, *Cicerarietinum* (L.) in India. *Tropical Pest Management*. 36(3): 314-316.

**Tapondjou LA, Adler C, Bouda H, Fontem DA.** Efficacy of powder and essential oil from

*Chenopodiumambrosioides* leaves as post-harvest grain protectants against six-stored product beetles. *Journal of Stored Products Research*2002; 38(4):395-402.

**Talukder FA, Howse PE.** Repellent, toxic and food protectant effects of pithraj, *Aphanamixis polystachya* extracts against the pulse beetle, *Callosobruchus chinensis* in storage. *Journal of Chemical Ecology* 1994; 20(4).