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Efficacy of *Aegle marmelos* against *Sitophilus oryzae*

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Abstract- The present study deals with the evolution of *Aegle marmelos* against *Sitophilus oryzae*. *Sitophilus oryzae* is very destructive pest of rice-grains. Botanical insecticides are broad spectrum in pest control and many are safe apply, unique in action and can be easily processed and used a numbers of plants have been identified. The leaves of *Aegle marmelos* showed the insecticidal activity. *Aegle marmelos* contains bioactive compounds. The leaves powder at different doses significantly reduced oviposition and adult emergence of *Sitophilus oryzae*. Absolute mortality was not observed in 1 gm concentration. In 2 gms absolute mortality was recorded on 15th day of observation. On 10th days total mortality was obtained in 3 gms. In 4 gms concentration total mortality was recorded on 3rd days. Increase the doses the emergence and oviposition decreases. Hence the result suggest the ability of using these *Aegle marmelos* for stored grain pest infestation as a safe alternative to insecticides.

Key words: Bryophytes, Diversity, Diversity indices, Madhepura, Mosses, Species composition

INTRODUCTION

Stored product insect pests are serious problem in stored food. It is observed that 10-25% losses are known annually of post harvest due to insect damage.[1] *Sitophilus oryzae* are very destructive pest. Quality of food grain is also adversely affected.[2]

India is a rich source of herbal insecticides and is being used since many years. This is very true belief that natural plants are very healthier energetic pesticides.[3]

Present experiment was carried out to study the mortality of *Sitophilus oryzae* and the efficacy of *Aegle marmelos* in stored condition.

Therefore, protection of food commodities need much importance as is required for its better protection. Synthetic insecticides are harmful to human health and non-targeting animals. Various scientists have reported the biological effects of different products on insect's growth regulator and repellency besides they are less toxic to natural enemies in comparison to synthetic pesticides.

Manzoor *et al.* (2011)[4] stated that Datura showed maximum mortality of *Tribolium castaneum* and percentage mortality of *Callosobruchus chinensis.* Varma and Anandhi (2010)[5] stated the neem leaf, NSK, Chilli, nerium leaf, tulsi leaf, and tobacco was more effective or *Callosobruchus chinensis.* Varma and Anandhi (2010)[5] observed reduced oviposition and actual emergence. Sharma *et al.* (2011)[6] stated *A. marmelos* has enormous traditional rules against various diseases and many bioactive compounds.

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MATERIALS & METHODS

Dried Bael leaf powders were crusted into course powder in an electric grinder. Tests grains were taken in different glass containers of the same shape and size. Different doses of Bael leaf powder were weighed out (1 gm, 2 gms, 3 gms and 4 gms) and mixed with infected grains which were in different glass containers and shaken for 15 minutes for optimum coverage of the grain surface. Each treatment and control was performed in three replications. Containers were proved with equal degree of ventilation after covering their opening by fine cloth, the room temperature being at 30°C ± 2°C and RH 30% to 40%. Starting from the following day of exposure observation for mortality were recorded 2nd days, 10th days and 15th days. The same line of observation was adopted in the control.

Doses	Durations					
	2nd days	3rd days	4th days	5th days	10th days	15th days
1 gms	0%	10%	30%	50%	60%	70%
2 gms	10%	30%	50%	70%	80%	100%
3 gms	40%	50%	70%	80%	100%	
4 gms	90%	100%				
Control			10%		30%	

RESULTS & DISCUSSIONS

Leaves of *Aegle marmelos* was reported for showing insecticidal activity against stored grain insect pest i.e. *Sitophilus oryzae* (L.). The leaves treatment significantly reduced the grain damage as well as weight loss in grains. The effect showed no instant death any treatment. The absolute mortality was observed in 3 gms on 10th days and in 4 gms on 3rd days of observation.

The efficacy of Bael leaf powder was remarkable evident in all the treatment. The effects showed instant death occurred in higher doses i.e. 3 gms and 4 gms doses on first day of observation. The lowest doses i.e. 1 gm caused death of 5% occurred on the 2nd days of exposure and on 3rd days and 4th day 10% and 30% death were noted. On the 5th days 50% mortality was observed. The observation was noted in 5th day interval i.e. 10th days and 15th days. The mortality observed 60% and 70%. In 2 gms absolute mortality was recorded on 15th days. Instant death was occurred in 4 gm concentrations in 3rd days.

Aegle marmelos exerts toxic effect extracted and studied the effect of this oil on wheat from *Rhizopertha dominica, Sitophilus oryzae* and *T. castaneum*. Results showed that extracted leaf oil wheat samples infested with all insects expect *T. castaneum*.[7]

Kumar *et al.* (2008)[7] stated exerts toxic effect on the *C. chinensis*, *R. dominica, S. oryzae* and *T. castaneum*. The leaves oil significantly reduced the grain damage.

The findings are in accordance with Kumar *et al.* (2007)[7] essential oil of *C. martini, Caesu azillaris* and *Mentha arvensis* protected stored gram and wheat from *C. chinensis, Sitophilus oryzae* and *T. castaneum.*

In the present investigation, the insect releases oil to protect against infection. Adult mortality has been attributed to an abrasive effect on the insect cuticle that also interferes with the insect's respiratory system (Kim *et al.* 2003)[2]. The result suggests the ability of using plant product for stored pest infestation as a safe alternative to insecticides.

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