



## SHORT COMMUNICATION

## Efficacy of *Balanites aegyptiaca* (L.) Delli Leaf Extract Against Mealy bug (*Ferrisia virgata* Ckll.)

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### ABSTRACT

About 35% of all food crops are destroyed by pests and about 10-20% of crops after harvesting are damaged by the insects, rodents and birds. Mealy bug (*Ferrisia virgata* Ckll.), one of the commonly occurring pest is found on the fruit crops sucking the cell sap from the leaves, tender shoot and branches. Various kinds of insecticides are sprayed for controlling this pest. The pesticides are expensive as well as they cause air, water and soil pollution, consequently hazardous to the environment. The extract of *Balanites aegyptiaca* (L.) Delli may serve as a surrogate to the synthetic chemicals (insecticides) in controlling the growth and development of mealy bugs, as a result reducing the environmental pollution.

**KEYWORDS:** Pest, mealy bug, synthetic chemicals, *Balanites*, environment.

### INTRODUCTION

Throughout the world about 35% of all food or crops before harvesting and additional 10 to 20% of the crops after harvesting are destroyed by insect, rodents and birds [1]. Mealy bug i.e. *Ferrisia virgata* Ckll. is one of such common pest found in India, recorded on several hosts plants assuming the status of a pest. Generally it causes damage to Guava (*Psidium guajava*) plant. The adult female is oval, flattened, pale yellow in colour (3.02 x 1.94 mm). Body is covered with white mealy and glossy threads. Adult male is winged and smaller in size but is rather rare. Nymphs are light yellow in colors having flattened body. Normally the nymphs cause damage, which usually remains gathered together around the mother and suck the cell sap from leaves, tender shoots and branches. As compared to nymphs, the adults cause little damage to the plant of Guava. In case of severe infestation, black smooth mould develops on the pests, disturbing the photosynthesis of plants, finally affecting on the production.

Pesticides like endosulfan, malathion, chlorpyrifos, methyl demeton, dichlorvos, phorate or carbofuron, dimethoate and metasystox are useful for the management of this pest. But the application of the pesticide like Phorate causes the damage of soil microorganisms that are beneficial for the growth of crops. Synthetic chemicals are hazardous to the environment as they are responsible for air, water and soil pollution. Along with the pest these chemicals also kill the predators that are not having any adverse effect on the crop. Repeated spraying of the same insecticides might develop resistance to the concerned pest. Therefore time has arisen to move towards the biological control of the pest and diseases for avoiding the harmful effects of synthetic pesticides. Present paper deals with the use of the extract of *Balanites aegyptiaca* (L.) Delli locally known as hinganbet, for controlling the growth and development of mealy bug without having any adverse effect on the environment. Fruit contains chemicals like storidal spanin balanitism, disogenin [2].

### MATERIALS AND METHOD

*Balanites aegyptiaca* (L.) Delile was selected as the plant for the preparation of extract. It was identified by using Flora of Ahmednagar district [3]. The plant was infested with mealy bug in the botanical garden. After the allowing development of mealy bugs, the plant was subjected for the treatment. Unripe fruit extract of *Balanites aegyptiaca* (L.) Delile were used for controlling the mealy bugs. 500gm fruits were crushed and mixed in 500ml of distilled water, boiled and cooled. The mixture was filtered through double layered muslin cloth. Filtrate with different concentrations viz. 25%, 50% and 75% were sprayed on the leaves of Guava plant infested by the mealybugs with the help of Naspee hand spray pump and the mortality rate of the aphids was noted after 3<sup>rd</sup> and 7<sup>th</sup> day of interval. Control plant was sprayed with normal water. Mortality rate was calculated by using the following formula and the data was

analyzed statistically.

$$\text{Mortality rate (\%)} = \frac{\text{Total number of aphids/2mm}^2/\text{leaf} - \text{Number of aphids killed/2mm}^2/\text{leaf}}{\text{Total number of aphids/2mm}^2/\text{leaf}} \times 100$$

## RESULTS AND DISCUSSION

Extract of *Balanites aegyptiaca* (L.) Delile showed the inhibition of mealy bugs after 3rd day of spraying. No bugs were observed on the leaf after 7<sup>th</sup> day.

**Table 1 Effect of *Balanites aegyptiaca* (L.) Delile unripe fruit extract on mealy bugs**

Sr. No.	Concentration of plant extract	Percent Mortality per /leaf		
		Reading 1 <sup>st</sup>	Reading 2 <sup>nd</sup>	Reading 3 <sup>rd</sup>
1	Control	0.0 %	0.0 %	0.0 %
2	25 %	73.72 %	74.20 %	73.45 %
3	50 %	77.45 %	76.80 %	78.15 %
4	100 %	83.35 %	84.30 %	83.65 %

**Table 2 Statistical analysis of the effect of *Balanites aegyptiaca* (L.) Delile unripe fruit extract on mealy bugs**

	T	4						
	R	3						
	R-I	R-II	R-III	TOTAL	MEAN			
T1	73.72	74.2	73.45	221.37	73.79			
T2	77.45	76.8	78.15	232.4	77.46667			
T3	83.35	84.3	83.65	251.3	83.76667			
T4	0	0	0	0	0			
TOTAL	234.52	235.3	235.25	705.07	58.75583			
<b>C.F.</b>	41426.98	<b>Tot SS</b>	13963.41	<b>Trt SS</b>	13961.73	<b>Error SS</b>	1.671933	
<b>ANNOVA</b>								
S. V.	d.f.	SS	MS	Cal. F	Tab F (5%)	1%	TEST	
T	3	13961.73	4653.911	22268.41	4.06618	7.590984	**	
ERROR	8	1.671933	0.208992					
TOTAL	11	13963.41						
<b>Se. M</b>	0.263939	<b>C.D. (5%)</b>	0.800535	<b>C.D. (1%)</b>	1.111046	<b>C.V.</b>	0.778061	

It was also noticed that, when the concentration of plant extract was increased, significant mortality rate was also improved. It was also observed that increased concentration harmed the plant. Increase in concentration increased leaf senescence.

Attempts have been made to control the mealybug (*Ferrisia Virgata*) through chemical insecticides but these are proved to be uneconomical and hazardous to human being & animals due to their toxic properties. To stay away from these perilous upshots instead of using chemical insecticides more attention should be paid towards the use of bio-pesticides.

## CONCLUSION

Numbers of chemical pesticides are successfully used to control *Ferrisia virgata* (Mealy bug), but these pesticides

have bad effect on humans, animals and on agro systems. They not only kill the target pest but also destroy the predators. They spoil the food by contaminating. Hence to avoid the hazardous affect of these pesticides the extract of *Balanites aegyptiaca* (L.) Delile can be used to control the mealy bugs. Fruits of *Balanites aegyptiaca* (L.) Delile are easily available and it is easy for the farmers to prepare the extracts. Use of this extract will save the money of farmer as well as will avoid the environmental pollution.

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