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Ovipositional Preference of Red Palm Weevil *Rhynochophorus ferrugineus* Olive. to Coconut Cultivars

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Introduction

Coconut, *Cocos nucifera* L. is an important plantation crop of India, on which more than 10 million families depend for their livelihood (Nampoothiri *et al.*, 1998). Red Palm Weevil (RPW) *Rhynchophorus ferrugineus* Oliv. is known to cause serious damage to the crop since mid-fifties (Nirula, 1956) and of late it has attained "Key-Pest" status and is the most dreaded pest of young coconut palms. A recent study in Tamil Nadu showed that RPW has infested 11.65 per cent of the total sample plantations, (Shekhar, 2000). As in other coconut growing states of peninsular India, in Goa too the crop plays an important role in the daily life of the people and is cultivated in 24,700 hectares with an annual production of 119 million nuts (Hore, 1999). Although, the local coconut cultivars Benaulim and Calangute are popular among the Goan farmers in the Southern and Northern districts of Goa, respectively, other varieties like, DxT, Chowghat Orange Dwarf (COD), Malayan Yellow Dwarf (MYD) and Chowghat Green Dwarf (CGD) have found their way into some gardens (Ratnambal *et al.*, 2000). In all these coconut cultivars different levels of RPW damage have been noticed in the state.

In Goa, a few farmers adopt the Integrated Pest Management (IPM) strategy as recommended by Abraham and Kurian, 1975 to combat the menace of RPW. The IPM strategy comprising of various preventive and curative methods has however, successfully been used in Kerala (Abraham *et al.*, 1989). Recently, the importance of using pheromone traps in palm weevil management programmes has also been highlighted (Falerio *et al.*, 1998). However, the overall IPM strategy to manage RPW can be further strengthened by incorporating the component of host plant resistance. The present study therefore, aims to ascertain the ovipositional preference by RPW to the coconut cultivars grown in Goa.

Materials and Methods

Adult weevils of RPW were collected from plantations in the vicinity of the ICAR Research Complex for Goa, Old Goa, by attracting them to food (coconut petiole bits) baited pheromone (Ferrugineol) traps set in the field without insecticide. Three female weevils collected by the above method were caged together with three pheromone trap captured male partners so as to enhance egg lay. The three pairs of caged weevils were offered every day one bit (1x1x 10 cm) of freshly cut coconut petiole of each of the following six cultivars *viz.* Benaulim, Calangute, DxT, COD, MYD and CGD. In all, three cages (replications) were maintained. The number of eggs laid in each cultivar were collected everyday by carefully peeling the petiole bit. These eggs were set aside cultivar wise for hatching on moist tissue paper. Abraham, 1971 reported that RPW is attracted for egg laying to cut petiole ends. Thus, the preference for egg laying in this study was evaluated by offering freshly cut petiole bits of the above mentioned cultivars to adult RPW female weevils. Previous studies (Faleiro, 2000) have shown that pheromone trap captured weevils are not only young but the females are gravid and lay nearly 75 per cent of the eggs during the first five weeks. This study repeated twice between January and June, 2000 was therefore terminated on both the occasions at the end of five weeks. Results pertaining to both the trials along with the cumulative analysis are presented and discussed below.

Results and Discussion

From *Table 1* it is evident that the result on the average egg lay per female weevil in different coconut cultivars is significantly different. In Trial-I the highest average number of eggs (47.22) were laid in CGD while the lowest egg count (20.77) was recorded from MYD. In Trial-II, the maximum average egg lay (27.21) was in Benaulim while the lowest was in DxT.

In Trial-I, MYD was least preferred (20.77) for egg laying and was statistically at par with DxT, which recorded an average of 25.77 eggs. In Trial-II, the sequence for least preference was reversed, with the lowest average egg count (9.10) being recorded in DxT, which was statistically at par with MYD (12.77).

Pooled analysis for the two trials, (*Table. 1* and *Fig. 1*) revealed that MYD was least preferred (16.78) by RPW for egg laying and was statistically at par with DxT which recorded an average lay of 17.44 eggs. Although, Calangute was at par with MYD and DxT, this variety is medially preferred for egg laying by RPW like Benaulim. The per cent hatch was almost uniform (75.00%) irrespective of the variety.

Abraham, 1971 recommended avoiding injury to the palm in order to prevent entry of the pest. This

Table 1. Average number of eggs laid in different coconut cultivars by red palm weevil

Coconut cultivars	Number of eggs laid per female		
	Trial - I	Trial - II	Cumulative
Benaulim	27.66	27.21	27.44
Calangute	30.77	15.33	23.05
DXT	25.77	9.10	17.44
MYD	20.77	12.77	16.78
COD	42.66	19.11	30.89
CGD	47.22	15.44	31.32
CD at 5%	12.20	3.94	7.45

recommendation is of significance in coconut cultivars, which are highly preferred by the pest for egg laying. In the present study, the highest cumulative egg lay was in CGD, COD and Benaulim, which recorded an average egg lay of 31.32, 30.89 and 27.44, respectively. These egg counts were statistically at par. Besides determining the level of preference for egg laying by RPW in different coconut cultivars, the most preferred varieties could be used to develop suitable food attractants (Kairomones) which could help to enhance the attractiveness of food baited pheromone traps.

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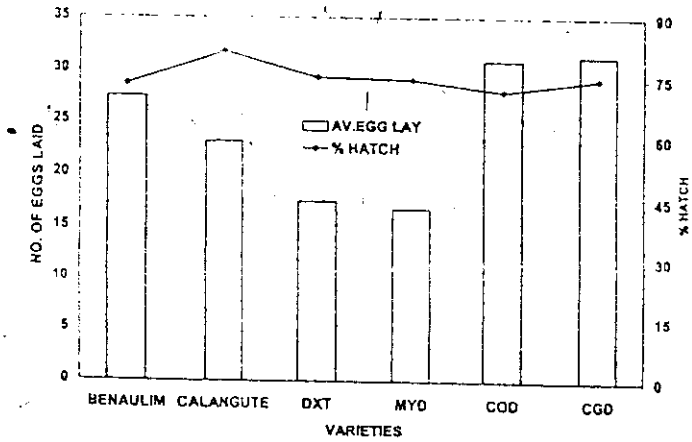

Fig. 1 Average egg lay by red palm weevil and per cent hatch in different coconut cultivars