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RESEARCH NOTE

# A PRELIMINARY STUDY ON IMMATURE NUTFALL OF COCONUT WITH REFERENCE TO PEST DAMAGE

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Buttons and immature nut shedding before and after fertilization is a common problem in coconut. In general, about one third of the buttons produced in an inflorescence develop into mature nuts. The number of buttons produced in a bunch often exceeds the number of nuts reaching maturity. Immature nutfall in coconut has been attributed to various factors such as natural capacity for production, physiological and environmental factors, and pest damages.

It was reported that a coconut inflorescence commencing with an average of 16 female flowers or potential nuts loses 24% during the first two months, 40% during the second two months and 2% during the third two months of their development (Abeywardene and Mathes, 1971). Fungal infection has been identified as one of the main causes of immature nutfall in coconut (Quillec *et al*, 1984). Several species of insects have also been recorded as pests of immature nuts, which cause developing nuts to shed (Fernando and Kanagaratnam, 1989). However, no attempts have been made to quantify the effect of insect pests and pathogens on immature nutfall in coconut. The present study was undertaken to categorize and quantify the pest damages which are responsible for immature nutfall in coconut.

Total of twenty healthy palms were selected and a nylon net basket was hung just below the selected inflorescence in each palm soon after the opening of the inflorescence. Fallen nuts were collected daily during the first two months and at weekly intervals thereafter over a six month period, and were then categorized according to the cause of nutfall.

Three major factors, namely microbial infections, insect pest damages and physiological reasons were identified as predominant causes for nut shedding. Microbes, especially fungal infections were identified by the light brown to dark brown patches with water soaked appearance and the presence of mycelium in the perianth region and in the inner tissues. Isolations were performed on discoloured tissues. Insect attacks were identified by their presence, feeding signs, larval tunnels, webbing and scrapping marks on the immature nuts. Immature nuts fallen due to physiological disorders were identified by their healthy appearance and characteristic uniform browning of the nuts.

Results revealed that 5 % of nuts dropped due to insect pest attacks. Insect damage was high (3%) in the first two months after fruit setting. Insects responsible were identified as mealy bugs (*Dysmicocus sp*), Scale insects (*Aspidiotus destructor*). Mites (*Dolichotetranychus sp*), larvae of the moth, *Cyclodes omma* and a weevil (*Meridolus sp*). Insect pest damages were negligible during the second two months after fruit setting. However, immature nutfall increased, in the last two months (fifth and sixth months after fruit setting) due to the increase rat and bat damages to tender nuts. Fungal infections were comparatively high during the first four months resulting in a 17% immature nutfall. In first and second two month periods 7% and 9% of nuts were observed fallen due to fungal infections. Thereafter nut shedding due to fungal infections was negligible. *Fusarium sp* was identified mainly in fallen nuts. As the fungal infections are responsible for considerable loss of immature nuts, thorough investigations are needed to evaluate the role of fungi. Results also indicated that a total of 38 % of immature nuts fall is due to physiological reasons. This was observed mainly during the first two months of fruit setting. The main reason could be the natural limited capacity of the palm.

The losses due to pest damages could be minimized by using appropriate control measures. This study suggests that a minimum of 20 % yield increase can be assured by controlling the pest and microbial attacks on immature nuts.

## REFERENCES

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