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LOW FRUIT SET IN *HEVEA BRASILIENSIS* IN TRIPURA : IMPLICATIONS OF FLORAL ATTRIBUTES

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The impact of floral attributes like flowering, pollen fertility, stigma receptivity and ovule abortion on fruit set in *Hevea brasiliensis* was investigated. Incomplete protandry prompts differential anthesis of male and female flowers thereby ensuring cross pollination and/or reduced seed set. A climatic niche (inclusive of photoperiod and moisture-temperature stress) exerts influence over the emergence and anthesis of flowers which turns to be largely clone specific with RRIM 600 exhibiting endogenous rhythm. The spectrum of pollen fertility states (from 50% in SCATC 88-13 to 98% in RRIM 600) is yet another aspect that influences fruit set. Receptivity of stigma lasts for less than 24 h, where the early appearance of staminate flowers and shortened stigma receptivity stand as a bottle neck in achieving required permutation gene combinations to represent factual extent of heterozygosity. The Chinese clones (SCATC 88/13, SCATC 93/114 and Haiken 1) exhibited relatively low stigma receptivity. Histochemical studies indicated that ovule abortion occurs during 20-30 days after fertilization. An obstinate tendency to continue generations through adventive embryony was detected in abortive ovules. The non-survival of nucellar embryos indicated a weak genetic control over their induction and continuance. The defoliation pattern of clones presented a spectrum, where clones with larger number of fruits ensured early senescence of leaves. The attributes investigated deserve closer scrutiny to spell out the control mechanisms.

Key words : Fruit set, *Hevea brasiliensis*, Non-traditional region, Ovule abortion, Pollen fertility, Stigma receptivity.

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INTRODUCTION

Fruit and seed set, very vital for conventional breeding of any crop species, are dependent on a multitude of factors like timing and synchrony of flowering, pollination and fertilization. Acceptance or non-acceptance at different levels of recognition (*viz.*, stigma, style and ovary) during pollination and fertilization also would be crucial for fruit set *per se* (Owens *et al.*, 1991).

Three main problems confronted by *Hevea* breeders are seasonal nature of flowering, lack of synchrony in flowering among selected parent clones and low fruit set. During controlled pollination , the success rate varies from year to year with a coefficient of variation of 45 per cent (Clement-Demange *et al.*, 1995). *Hevea* normally takes 3-4 years to attain reproductive stage - a phase called ripeness to flower - similar to other tropical trees . In close similarity to other tropical species (Owens, 1991), the