Species composition of frugivorous insects of citrus and attractant–repellent-based management of primary fruit piercer, *Eudocima materna*

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Studies were conducted to understand the preference of fruits by fruit-piercing moth (*Eudocima* sp.) and the efficacy of repellents/deterrents for the management of insect-pest-related fruit drop in citrus. The activity of *Eudocima* sp. was observed between August and December, with the most damage occurring in September (13.35%) and October (21.5%) during the color-breaking stage of Nagpur mandarin. Foliar application of petroleum spray oil at a rate of 2% or neem oil at a rate of 1% every two weeks during the color-breaking stage until harvest significantly reduced fruit drop (48.0%–70.0%) caused by the fruit-piercing moths. Simultaneously, hanging two polypropylene sachets with phorate or acephate, 10 g per tree, during the ambia (spring) season also significantly reduced fruit drop (<7%) due to the moths.

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nal nature, piercing and sucking feeding pattern, and strong migratory ability of the adult moth make it difficult for entomologists to manage this pest.

Fruits attacked by these insects become dry and spongy, and lose their commercial value. The punctures caused by adult moths also become a permanent site for secondary disease infection, causing further injury to the damaged fruits[6]. Damaged fruits are unmarketable and, if packed, pose a serious threat to healthy fruits through pathogenic contamination. The use of insecticides to control this pest has not been an option because the insect begins infesting the fruits at the ripening stage, during which insecticides cannot be sprayed due to pesticide residues. Other management strategies include hand collection of moths, smoking the orchards in the evening for 2 h, bagging the fruits, netting the trees/orchards, light traps and destruction of the larval host plants; however, all these have not been effective[7,4]. Studies to assess the effectiveness of baits containing synthetic feeding attractants for moth control in citrus