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Socioeconomic and Livelihood Impact of Invasive Species on Marginal Homesteads: The Case of *Aceria guerreronis* on Coconuts in India

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Abstract

Alien species are non-native organisms that occur outside their natural adapted habitat and dispersal potential. They are seen as a threat not only to biodiversity and ecosystem, but also to socioeconomic development, livelihood and human well-being. Among the plantation crops, the coconut palm (*Cocos nucifera* L.) is of prime importance in the marginal homesteads of tropical India. In India, the bioinvasion of coconut palms by an alien invasive mite species *Aceria guerreronis*, popularly known as ‘Coconut mite’ was first noticed just before the start of the new millennium accounting for enormous economic loss. India is the third largest coconut producer with plantation area of 1.9 million hectares and estimated production of 12.8 billion nuts per annum. Coconut sector in India accounts for about 22.36 % of the world production while contributes approximately US \$1600 million to the total GDP of India, besides providing livelihood securities to more than 10 million people in the country. Every part of the coconut palm is used and has found use in more than 700 products here. During the period 2001–02, mite attack has affected nearly 223.45 lakh coconut palms in 98,400 hectares in prime coconut producing state ‘Kerala’ in India. The percentage reduction in nut weight due to mite infestation from 1998–2003 was assessed to be 2.12 %. Under sized nuts is often discarded by the traders inflicting heavy losses to the growers. Additionally, mite damage resulted in loss of 20–30 % in terms of copra yield and increased labour due to difficulty in de-husking of affected nuts. This paper hence seeks to study socioeconomic and livelihood impact of the coconut mite and also estimates the economic loss in monetary terms from documentary evidence. The present study estimates the control costs incurred by Indian government and various agencies to manage coconut mite in India from 1998–2008 at US \$ 77.88 million. A gap analysis using sustainable livelihood index (SLI) framework of unpublished primary data collected during the peak year of infestation (yr. 2002) among coconut growing households [N=120] in two villages of Kerala showed a difference of 56.26 % between the potential and achieved livelihood impact.

Keywords: *Aceria guerreronis*, Bioinvasion, Coconut, India, invasive species, Livelihood impact, Socioeconomic impact