Tropentag, September 17-19, 2014, Prague, Czech Republic

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Crude Cotton Seed Oil as an Alternative for Coconut Mite Management in Brazil

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Abstract

The coconut mite *Aceria guerreronis* (Acari: Eriophyidae) is a major coconut pest in northeastern Brazil. Outbreaks of the coconut mite usually occur in the dry season leading to high economic losses mainly to smallholder coconut producers. Naturally-occurring predatory mites of the family Phytoseiidae contribute to the biological control of the coconut mite, but their efficiency may be greatly impaired by non-selective pesticides. We aimed at evaluating the potential of crude cotton seed oil as an alternative pesticide to control the coconut mite as well as its selectivity to the phytoseiid predatory mite *Typhlodromus ornatus*, which is found inhabiting coconut palms in this region. Toxicity and repellent bioassays were conducted under laboratory conditions to comparatively evaluate the crude cotton seed oil with four additional pesticides (based on the active ingredients abamectin, azadirachtin, espirodiclofen, and fenpyroximate) to both mites. Crude cotton seed oil toxicity to the coconut mite was over 10-fold higher than that to *T. ornatus*. Crude cotton seed oil was as efficient as other pesticides in controlling the coconut mite besides being less toxic to the predatory mite *T. ornatus*. Similarly to toxicity results, crude cotton seed oil repelled the coconut mite more strongly than the predatory mite *T. ornatus*. Field experiments comparing the relative efficiency of crude cotton seed oil with other pesticides are currently underway. In conclusion, our toxicity and repellent bioassays indicate that crude cotton seed oil could be used by coconut producers as an alternative pesticide as it efficiently controls the coconut mite besides being selective to the predatory mite *T. ornatus*.

Keywords: Alternative pesticide, conservative biological control, smallholder coconut farmers

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