

Arachnid biodiversity of the Tshivhase and Makumbani Tea Plantations, Limpopo Province

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FBIS150515118054**

Predatory mites and spiders play economically important ecological roles in agricultural ecosystems and they are increasingly being used in management for biocontrol of pest mites, thrips and nematodes. Some phytophagous mites are serious crop pests. In South Africa, mite species on commercial crops are known, however only from single localities and/or from the original descriptions of the corresponding type species. Annual surveys of mites were carried out from 1959 till the early 1990's for the National Collection of Arachnida (NCA), while sampling has been ongoing for spiders, but with much focus placed on natural ecosystems for the last few years. According to the records of the NCA, mites and spiders on tea plantations in South Africa have not yet been studied. The broader purpose of the proposed research is to use both morphology and molecular genetics to evaluate the diversity, taxonomy, biology and ecology, symptoms and impacts of this economically important group of arthropods. The study will further elucidate phytophagous mites which might be potential, or already are, but not recognized as crop pests, and identify predatory mites and spiders as potential control agents of the plant pests. Additionally, their current and potential use as key biological indicators of environmental quality (e.g. soil and plant health) and agriculture will be investigated. Tshivhase and Mukumbani tea estates are the only two tea estates in the Vhembe region of the Limpopo Province that are still in production. They are known for their geographic isolation in a humid Vhembe district, and their minimal use of pesticides, ideal for the presence and survey of mite and spiders.