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CERTIFICATE

This is to certify that **Dr. Nisha Thomas**, Department of Zoology, St. John's College, Anchal has established a linkage with **M.G. Sanal Kumar**, Department of Zoology, **N.S.S. College, Pandalam, Pathanamthitta** towards collaborative research leading to joint publications in national and international journals on 29 November 2018.

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IMPACT OF PESTICIDE ACRINATHRIN ON *Bilobella braunerae* DHERVANG (COLLEMBOLA: NEANURIDAE) IN LABORATORY EXPERIMENTS

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Abstract

Laboratory toxicity tests were carried out to evaluate the effects of acrinathrin on fecundity and moulting intervals of *Bilobella braunerae* Dhervang (Collembola) grown in sub lethal concentration is 1.2612 ppm of acrinathrin pesticide. The Collembola feeding on leaves of jackfruit containing Acrinathrin pesticide exhibited trends of increased days in moulting and decreased fecundity rates up to 1.2612 ppm. An inhibition of growth and fecundity was seen above the sublethal concentration. Both moulting and fecundity rates were significantly affected by the pesticide presented as food to the collembola. The untreated control sets recorded high fecundity for *B. braunerae*, but chronic toxicity of the insecticides on adults confined to the treated food resulted into very low fecundity and high moulting rates. Even short duration exposure to acrinathrin treated food for 24 or 72 hours only was found to delay the egg-laying and decrease the fecundity of the species. It is concluded that population responses and reproductive sensitivity in non-target soil microarthropods are potential eco-toxicological parameters for detecting pesticide pollution in soil and for ecological health assessment.

Reproductive biology of *Bilobella braunerae* (Dhervang 1981)- (Collembola: Neanuridae) relative to temperature

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ABSTRACT

Neanuridae is one of the most diversified families of Collembola. The present study was conducted to obtain more information regarding life table parameters relating to reproductive biology of a tropical soil collembolan *Bilobella braunerae* observed in Southern Western Ghats. The hatching of egg, moulting, fecundity, oviposition and longevity of *B. braunerae* were evaluated at 26, 29 and 32 °C. The hatching and juvenile survival rate was not affected by temperature in the range tested from 26°C to 32°C. The preference of temperature on the oviposition and fecundity rates were studied. In laboratory. Fecundity rates in yeast fed *B. braunerae* were more at 29°C ±1°C temperature and less at 31°C±1°C. This study demonstrated that temperature can profoundly affect the development, molting, and population growth of *B. braunerae*. Mean developmental period from egg to adult decreased with increasing temperature from 28 days at 26°C±1 to 19.52 days at 32°C±1. In the adult stage, ovipositions decreased with increasing temperature temperature from 6 oviposition at 26°C±1 to 3-4 ovipositions 32°C±1, and senile periods increased at temperatures above 29°C±1. The developmental zero temperature was estimated to be 20 °C. The mean longevity decreased with increasing temperature from 168.7 days at 29°C±1 to 141.44 days at 32°C±1. The maximum and minimum mean total number of eggs produced at 29°C±1 was (73.5 eggs) and (51.6 eggs), whereas at 32°C±1 it was 24.17 and 9.33 respectively. The ideal temperature for egg laying as found to be 29°C±1

KEYWORDS: *Bilobella braunerae*, moulting, fecundity, ovipositions, temperature, yeast

INTRODUCTION

Among soil biota microarthropods are one of the very important biotic components of soil ecosystem as they do decomposition, nutrient cycling, increases soil fertility thus influences the overall soil quality. They are good