Abstract

The State of Veracruz in Mexico is one of the main cattle producers, and uses several veterinary products for disease and parasite control. For parasite control, ivermectin is one of the most frequently used substances. Nevertheless, even though previous research conducted in other countries has found that this product has negative effects on beneficial coprophagous fauna, no studies have described its effects on coprophagous insects at a local scale in Veracruz, Mexico. This study evaluated Euoniticellus intermedius survival, fecundity, fertility and preimaginal development under laboratory conditions when ivermectin was added to cattle dung at three different concentrations. The design included two controls (spiked dung), and the following product concentrations: 0.01, 1.0 and 100ppm, which were homogenized with wet cattle dung. 20 female-male E. intermedius couples between five and 15 days old were used and kept at 27°C, 70% RH, and 12h light for 10 days. The survival of all specimens, the fertility of 20 females and the gonadal maturity of 17 males were verified. The larval development in 162 pieces of brood-mass was examined, and a total of 974 larvae developed and reached adulthood. The highest ivermectin concentration was toxic at 1.0ppm dose, the survival of adults was reduced to almost the half, and at 100ppm, total mortality was observed. The effects on specimen reproductive systems showed that the ovary was not affected, that the testicle size increased, and that the fecundity and weight of brood-masses were reduced. Pre-imaginal development increased 0.5 times at 0.01ppm concentration, and the width of the cephalic capsule in third instar larvae diminished. The prolonging of development time may cause a phase lag in the field activity cycle, this lag may reduce the number of E. intermedius individuals and the efficiency of the environmental services that they provide.

Keywords

Dung beetles, toxicity, brood-mass, pre-imaginal development.