This study took place between September and October 2006 at the Estación Experimental Alfredo Volio Mata (EEA VM) located in Cartago at 1542 msnm, with annual average precipitation of 2050 mm, average temperature of 19.5 ºC and relative humidity of 84%. Both distribution and mass for earthworm population by area were determined in a pasture under intensive rotation and pasturing with milk cows. The studied areas were 28 pastures with Andisol soil (Typic Distrandepts) established with Cynodon nlemfuensis, from which four samples of 0.25 m² by 10 cm depth were obtained. The number of earthworms in each sample was counted. The remaining material was analyzed for organic matter by incineration and titration. Significant correlations between the variables and differences between the pasturing areas were evaluated statistically. In average, 170.7 earthworms/m² and a biomass of 58.01 g/m² (0.414 g/worm) were present. The amount of earthworms and biomass by area was 100<X¿200 worms/m² and 25<X¿50 g/m² respectively (1 to 2 million worms/ha and 250 to 500 kg biomass/ha). Average organic matter was 7.54±0.75%, determined by chemical digestion, and 8.52±0.73% by incineration, showing a 0.98% difference (P<0.01). Correlation between earthworm biomass by area was of 0.27 with the incinerated organic matter and of 0.08 with titrable organic matter. The correlation between soil organic matter and earthworm population indicated little cause-effect relation between these variables.

Keywords
Soil, organic matter, agricultural systems, pastures, biomass.