**Materials and methods**

Collecting area

The study was carried out in the San José sector (04 ° 39 'N 73 ° 51' W), Nuevo Mundo, located in the Blanco River basin of the Municipality of Calera (Cundinamarca). The Río Blanco basin includes one of the main water currents of the Páramo de Chingaza, located to the east of Bogota. The rainfall in this basin has a monomodal regime, with average values ​​ranging between 1500 and 1700 mm. The temperature has a bimodal behavior with opposite oscillations of the precipitation, being the annual average of around 13 ° C (Betaambiental 2005). The basin of the Blanco river has a topography with long slopes on clayey and arenaceous materials (Municipal Council of La Calera 2010).

The selected ecosystems were a fragment of high Andean forest and a pasture for dairy cattle. The forest fragments of this zone are considered forests with a degree of perturbation with vegetation represented mainly by *Weinmannia* spp. (Cunoniaceae), *Drymis granadensis* L.*F*. (Winteraceae), *Clusia multiflora* Humb., Bonpl. & Kunth (Clusiaceae), *Ageratina tinifolia* (Kunth) R.M. King & H. Rob. (Asteraceae) and Melastomataceae, Brunelliaceae, Rubiaceae and Lauraceae species (Rangel-Ch and Ariza-N 2000, IDEAM 2011, personal observation). The grassland was selected as a contrasting ecosystem and considering that cattle are one of the main economic activities of the area. The grassland consisted of the species *Pennisetum clandestinum* Hochst. ExChiov. (Poaceae) and *Lolium* sp. (Poaceae). The distance between the ecosystems was approximately 500 m.

Experiments and collection of samples

An experiment was set up to simulate the greenhouse effect and to record the response of edaphic Mesostigmata mites during a year, in each ecosystem. To simulate the greenhouse effect, modified open chambers were constructed from previous studies (Marion et al., 1997; Aronson and Mcnulty 2009). Each chamber was a truncated pyramid in its upper part, made up of three trapezoidal polycarbonate plates (60 cm lower base x 40 cm upper base x 50 cm high) joined by the sides. Preliminary studies (Corridor and Cruz 2009) allowed to observe a temperature increase of around 3°C on the soil surface inside the pyramids compared to the temperature outside the pyramids. The data of temperature and environmental precipitation in the sampling months are presented in Table 1.

Nine pyramids were used in the pasture and nine pyramids in the fragment of high Andean forest, distributed at random, maintaining a minimum distance of 50 m between them and between each one of them and the margin of the pasture or the fragment. In the adjacent area of ​​each pyramid an area of ​​similar size was delimited to compare with the area of ​​the pyramid.

During a period of one year, six samplings were carried out in the first week of every two months: February, April, June, August, October and November 2010. Immediately prior to collection, the soil temperature was measured at 10 cm depth with a soil thermometer. Soil samples were taken inside and outside each pyramid in all the periods. Each soil sample corresponded to a cylinder 5 cm in diameter and 15 cm deep, taken with a drill. Each sample was placed in a plastic bag and transported in a refrigerator to the Laboratory of Ecology of Soils and Tropical Fungi, Bogotá, Colombia.

Sample processing

After transferring the soil samples to the laboratory, each was homogenized and 150g were taken for the extraction of the mites. Removal of the fauna was done by placing each sample in a modified Berlese funnel, in which it remained approximately 5 days. The collection flasks of the funnels contained a 70% alcohol solution in which the mites were stored.

The mites belonging to Mesostigmata were separated from the rest of the organisms collected with the help of a Microscope-stereoscope and transferred separately to a 70% alcohol-containing flask. Subsequently, the specimens were transferred to the Laboratory of Acarology of the "Luiz de Queiroz Higher School of Agriculture" (ESALQ) - University of Sao Paulo for assembly and identification.

Initially, a separation was performed by females, males and immature, and subsequently the females belonging to Mesostigmata were separated for identification. Mesostigmata were later separated into Gamasina and Uropodina as they were the only two Mesostigmata groups found in this study.

|  |  |  |
| --- | --- | --- |
| **point** | **point** | It is the code that identify each sample taken |
| **factors** | **ecosystem** | the ecosystem in which the sample is taken. There were two ecosystems: pasture and patch of forest |
| **area** | area where the sample was taken. It could be inside or outside the pyramid |
| **pyramid** | the number of the pryramid where the sample was taken. There were 9 pyramids in the pasture and 9 pyramids in the patch of forest |
| **month** | month in which the sample was taken. The sampling was made for one year every two months, so there are 6 sampling in: February, April, June, August, October and December |
| **abiotics variables** | **pH** | pH of the soil sample |
| **humidity** | percentage of humidity of the soil sample |
| **organic\_matter** | percentage of organic matter of the soil sample |
| **x1.18** | percentage of particles greater than 1.18 mm in diameter of the soil sample |
| **x600** | percentage of particles greater than 600 micrometer and smaller than 1.18 mm in diameter of the soil sample |
| **x300** | percentage of particles greater than 300 micrometer and smaller than 600 micrometer in diameter of the soil sample |
| **x53** | percentage of particles greater than 53 micrometer and smaller than 300 micrometer in diameter of the soil sample |
| **x53m** | percentage of particles smaller than 53 micrometer in diameter of the soil sample |
| **temperature** | temperature of the soil sample at the time of the collection |
| **Biotic variables** | **sp.Gamasina** | number of species of Gamasina mites of the soil sample |
| **sp.Uropodina** | number of species of Uropodina mites of the soil sample |
| **abundance\_mesostigmata** | number of individuals belonging to Mesostigmata mites (mites mesostigmata are conformed by Gamasina + Uropodina) of the soil sample |
| **abundance\_total** | number of inviduals of the total fauna of the soil sample (it is the sum of all individuals found in the sample) |
| **Astigmata** | number of individuals belonging to Astigmata mites |
| **Collembola** | number of individuals belonging to Collembola |
| **Oribatida** | number of individuals belonging to Oribatida mites |
| **Prostigmata** | number of individuals belonging to Prostigmata mites |
| **Insecta** | number of individuals belonging to Insecta |
| **Myriapoda** | number of individuals belonging to Myriapoda |
| **Arachnida** | number of individuals belonging to Arachnida (differents to mites) |