POS-B10

PD en Biodiversidad, Funcionamiento y Gestión de Ecosistemas

AN APPROACH TO BIOLOGICAL QUALITY OF PASTURE LANDS: VIABILITY OF HATCHLINGS OF EISENIA ANDREI IN AGING GRASS

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Preservation of soil health and the concept of soil quality have gained importance, especially in sustainable agricultural soil management. Grass handling in agro-eco-familiar farms involves cutting practices usually leaving the grass in the open air for variable periods of time. New soil layers formed by grass decomposition mediated by both microorganisms and, particularly, epigeic worms play a crucial role in maintenance of soil fertility. Since earthworms are sensible to changes in soil components and have been broadly used as soil health amenders and indicators we have analysed survival and individual growth performance of new-born Eisenia andrei in grass submitted to different composting periods. For this purpose, we selected 6 grass substrates with increasing composting times (1 to 13 weeks) where hatchlings were individually cultured (1 month) in darkness under controlled temperature (20oC) and humidity (80% RH) performing biomass measurements every three days. Analysis of biochemical composition of substrates displayed increasing mineralization (Inorganic Matter% = 15.421*e^(0.009*Time)) and decreasing fibre percentage (Total Fibre % = 60.114*e^(-0.018*InorganicMatter %)) with composting period of the grass. Protein content increased during initial 7 weeks and lipid and soluble carbohydrate percentage remained constant. Survival percentage decreased linearly with mineralization according to the equation: Survival % = 120.03 - 1.4085* Inorganic matter %. Growth patterns for hatchlings differed largely among substrates and we obtained average maximal live weights (MLW) of 119, 107, 64, 57 and 70 mg in pre-composted grass for 1,3,7,11,and 13 weeks respectively. These results relate MLW to organic matter content by a sigmoid equation explaining 90% of the variability MLW = 58.015 + (79.585*OrganicMatter%^30) / (80^30 + OrganicMatter%^30). Hence, increased mineralization reduces MLW with a shift point in 82% organic content: below that figure MLW decreases beneath 70 mg representing less than 60% of maximal weight registered.