Abstract
The resilience, ecological function and quality of both agricultural and natural systems were evaluated in the mountainous region of the Atlantic Rain Forest of Rio de Janeiro through Rapid Assessment Methods. For this goal new indicators were proposed, such as eco-volume, eco-height, bio-volume, volume efficiency, and resilience index. The following agricultural and natural systems have been compared according: (i) vegetables (leaf, fruit and mixed); (ii) citrus; (iii) ecological system; (iv) cattle, (v) silvo-pastoral system, (vi) forest fragment and (vii) forest in regeneration stage (1, 2 and 3 years old). An alternative measure (index) of resilience was proposed by considering the actual bio-volume as a function of the potential eco-volume. The objectives and hypotheses were fulfilled; it is shown that there does exist a high positive correlation between resilience index, biomass, energy efficiency and biodiversity. Cattle and vegetable systems have lowest resilience, whilst ecological and silvo-pastoral systems have greatest resilience. This new approach offers a rapid, though valuable assessment tool for ecological studies, agricultural development and landscape planning, particularly in tropical countries.

Keywords
bio-volume, eco-volume, Atlantic Rain Forest, rapid assessment methods, resilience index, farming systems, natural systems.