Albania is very rich in biological and landscape diversity, which is attributable to the country’s geographic position as well as geological, hydrological, climatic, and soil and relief factors. Plant genetic resources (PGR) play a key role in contributing to the sustainable development of agriculture, helping to increase agricultural productivity and food production. Genetic diversity allows crops to evolve and adapt and it is a major resource for plant breeders to use and meet the challenges in maintaining food security and environmental stability. Wild and new plant species provide an invaluable source of genes that can be used for the improvement of cultivated species. Geographic information systems (GIS) as useful tools for eco-geographical analysis, provides important information about the diversity of plant species in the country. Albanian genebank (AGRAB) maintains more than 4100 accessions, including more than 140 species of cultivated and wild plants. Because the Albanian territory has highly heterogeneous environmental conditions, the aim of this study was to assess the geographic distribution and genetic diversity of plant genetic resources observed in Tirana Region.

MATERIAL AND METHODS

Geographic distribution: The study for assessment of geographic distribution and genetic diversity of PGR is realized using the data of PGR present in AGRAB database. It was conducted in four principal areas of Tirana Region (Tirana North, South, East and Tirana West areas). Each taxon (plant species or presence point) was created using the GIS analysis as presence points (Hijmans et al., 2001; Gixhari et al., 2012; 2014). The geographic areas, separated into small grid square cells of 5 x 5 km, were used to assess the geographic distribution, diversity indices, and richness. Photography of each area is the data source for the GIS analysis. The measurement of diversity and geographic distribution of plant species was realized analysing the number of observations per species and the area of occupancy, where the total area occupied by a specific species, was selected as an indicator of abundance or rarity of a species (Magurran, 1988). Maps containing geographic distribution of plant species observed per each area were created using CAPFITOGENE (P. Quijano, 2011) and DIVA tools (Hijmans et al., 2012).

Diversity indices: Species richness (S), Simpson index (1-D), Shannon index (H), Evenness (e/Hs), Brillouin index (B), Equitability (J), and Fisher’s alpha (Fo) were used to assess the abundance and number of species observed in each of the four areas (Hijmans et al., 2001; Gixhari et al., 2012). The geographic areas were firstly presence points (from AGB database). There was also high similarity (41.74%) and positively correlated (r = 0.23) between Tirana North and East areas.

RESULTS AND DISCUSSION

Vertical distribution of observed species. Comparison of data showed decreasing of number of species and samples observed as the elevation from the sea side is increased. Regression analysis revealed that number of species per each 100 m elevation was decreased according to the equation: y = -2.5357x + 20.714 (R² = 0.6483), and number of species per samples observed was decreased according to the equation: y = 7.7143x − 59.143 (R² = 0.5022) (Figure 3). Higher percentage of fruit tree species (79%) was found in the belt between 300-399 m above sea level and high number of species for medicinal plants was found in the area belt situated between 400 m and 600 m above the sea.