

Land Use Change and Agricultural Land Fragmentation due to Anthropogenic Activities in an Hot Spot Area: A Case Study for Thrace Region of Turkey

Bahadır Altürk (1) and Fatih Konukcu (2)

(1) Namık Kemal University, Agriculture Faculty, Biosystem Engineering, Turkey (balturk@nku.edu.tr), (2) Namık Kemal University, Agriculture Faculty, Biosystem Engineering, Turkey (fkonukcu@nku.edu.tr)

Agricultural lands that supply food, energy and ecosystem services for human life have been lost due to anthropogenic activities such as construction of roads, urban and industry areas. The significant reasons for the increase of artificial surfaces were poorly planned economic decisions by the government and internal migration due to this poorly planning. Unplanned urban sprawl also give rise to land fragmentation. Fragmentation of agricultural land affects both the agricultural production capacity and rural sustainable employment. In this study:

i) Land use changes between 1990-2014 period were assessed using remotely sensed data and ii) Spatial and temporal agricultural land fragmentation were investigated using landscape pattern indice (effective mesh size), Morphological Spatial Pattern Analysis (MSPA) and Entropy method for 25 years period. The selected "hot spot" study area is located on east Thrace region of Turkey, being the service and industrial development zone where agricultural activities, water resources and natural habitat have been damaged due to rapid urban and industrial development for about 25 years.

The results showed that agricultural lands decreased 6.44%, urban areas increased 111.68% and industry areas increased 251.19% during this 25 years period. Additionally, fragmentation analyses demonstrated that core agricultural areas sharply decreased and relative fragmentation (effective mesh size) increased from 50.68% to 56.77% during 1990 and 2014.