

The Impact of Urban Encroachment on Agricultural Land in Quesna Center Villages Using GIS

ABSTRACT

The urban encroachment on agricultural land is one of the most important phenomena which attract attention and have received a great interest from scientific research in recent times because of its negative effects on agricultural land on the level of Egypt in general, and on the study area in particular in light of population growth and the high rates of demand for housing—something that increased pressure on agricultural land. The relationship between population growth and agricultural land proved to have more negative repercussions; a relation which imposes itself because of its impact in the long-term and its close relationship to the traditional and contemporary ways of living in Egypt over history as represented in the increase in population and decrease in agricultural land, which, consequently, results in declining per capita of agricultural land since the gap between the growing population and agricultural land widens. Thus, this problem is one of the most serious problems faced by Egypt because of its negative effects on the future of agriculture and the population in Egypt in general, where lost agricultural land is considered to be of the finest agricultural lands as it is more fertile than the reclaimed land. These fertile lands are specifically represented in order to preserve them and their agricultural production. Since this problem is one of the most important impediments to the horizontal and vertical agricultural development, the thesis was interested in studying this serious problem in order to contribute to the presentation and clarification of the causes and the negative effects resulting from it, and to reach some of the proposed solutions to deal with that problem.

The study consists of four chapters preceded by an introduction and preface, and is followed by a conclusion. The introduction includes the reasons for choosing the topic, the aims of the study, the methods and approaches of research, literature review, the difficulties faced in study, the plan of the study, and the bibliography. The preface includes the applications of GIS and remote sensing.

Chapter one deals with the general geographic features of the study area. It studies both geographical and natural influential features of the subject of the study as represented in the geographical and astronomical site for the region, the infrastructure, the manifestations of the surface, the climate and the human features. This chapter also deals with the study of urbanization and the development and distribution of population and associates this with rates of infringements on the agricultural land. It also investigates the network of waterways (canals, banks), the network of roads and transport in the study area, government policies as projected in the legislations and laws and the impact of each of them in increasing rates of encroachment on agricultural land.

The second chapter discusses the evolution of urban growth in the study area through the study of historical origination of rural urban as well as the study of the historical development of the urban growth through the study of historical evolution of the horizontal urban growth where a study was made on the stages of urban growth (development of the urban area of the villages of the region from 1990 to 2014); a study was also carried out on the directions of urban growth of the study area where the villages in the area were divided into four patterns of growth as represented in (unilateral, bilateral, trilateral, and all directions (circular) growth). The evolution of the buildings for the years 1996, 2006 has been studied along with urban density in 2006 and the study of vertical urban growth, which dealt with the study of the heights of buildings that ranged

between the first floor, second and third floors, third and fourth floors, and other floors above the fourth floor. This chapter also studied the distribution of urban sites and spacing and dispersion coefficient between urban sites.

Chapter three deals with the phenomenon of encroachment of urban agricultural land and the causes and effects resulting from it. This has been manifested in the diminishing area of agricultural land and declining per capita as the problem of decreasing the proportion of workers in agricultural activities appeared, leading to higher wages for workers in agricultural activities. The change in cropping composition in the center has been found to be one of the most important problems where some crops' ratio decreased and almost disappeared from the center, such as the cotton crop. The emergence of the slums also proved to be a challenging problem since it poses a great pressure on agricultural land. Urban docking and high land prices also appeared in addition to irrigation and drainage problems and pollution; whether air, noise or water pollution.

Chapter four deals with a future vision for the development and a study of development goals and indicators as represented in forecasting the future of the agricultural land in the center's villages and the mechanisms to deal with it through the study of prediction of population and their residential needs, the study of the existing problems in the villages, the study of the priorities of intervention and the development of urban villages, and the study of some applied models to the villages of the center.

The study ends with the findings and recommendations that provide a future vision of the mechanisms by which to deal with this problem focusing on the study area.