

# ***INTRODUCTION***

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During the last two decades, Egypt has witnessed a great intensification of land and water use in an effort to increase the agricultural production to meet needs of ever increasing population. In many regions, e.g. Nubaria, the farm size in agricultural companies and many of land owners is becoming larger and the farm labourers are remarkably decreasing. This situation forced the farmers to use the increasingly heavy tractors and larger machinery to carry out the tillage and farm operations with a great saving of labour and time. However, these trends are oftenly attended with certain hazards which may not be immediately obvious but in time may cause a progressive deterioration of the soil. A salient case in this point is the process of soil compaction, which may lead to a very deleterious effects on growing conditions and which is difficult to correct once it is occurred.

At the present time, soil compaction problems are increasingly due, beside the use of inappropriate machinery, to the change in farming system to a preponderance of new approaches in crop production which requires more tillage activity, particularly early in the cropping season when the vulnerability for compaction is greatest. Moreover the current trends for early planting and harvesting result, at most, in field work when the soil is wet and more susceptible to compaction. Therefore it is recognized in many cases, that the quality and /or yield of crops is frequently less than expected for the level of inputs applied (e.g. intensity of tillage, quantities of seed, fertilizers, pesticides ... etc). Most probably, soil compaction is the visual evident for such behaviour.

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In the current work, the relationships between the degree of compactness and some soil parameters and behavioural properties, were investigated. Likewise the effectiveness of some tillage practices in reducing soil compactness and its reflection on crop yield was one of main aims of this study.