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This thesis has not been previously submitted for any degree at this or any other University.

Ethar Asaad Sayed

To
my parents

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Abstract

In this study, the floristic composition of southern Nile Delta region in Qalyubia governorate of Egypt was analyzed in terms of habitat variations and species diversity. A total of 160 stands were surveyed in six centers including 42 sites. Four main habitats were recognized: Wet lands, cultivated lands, wastelands and sand plains. Nineteen environmental factors were recognized: coarse sand, fine sand, silt, clay, $CaCO_3$, organic matter, saturation percentage, pH, electric conductivity (EC), chlorides (Cl^-), bicarbonates (HCO_3^-), sulphates (SO_4^{-2}), sodium (Na^+), potassium (K^+), calcium (Ca^{++}), magnesium (Mg^{++}) and macronutrients (N, P, K). Basic statistical treatments were established by using the computer program SPSS v. 10.0. The produced data were subjected to a cluster analysis by using the program MVSP v. 3.1 and ordination analyses i.e. Detrended Correspondence Analysis (DCA) and Canonical Correspondence Analysis (CCA) by using CANOCO v. 4.5. The total recorded plants were 164 species, belonging to 133 genera and 48 families, in percentages of 7.7%, 17.9% and 39.6% of the total numbers of species, genera and families of the Egyptian flora, respectively. 56.7% of the recorded species were belonging to eight families that include the main bulk of the alien plants of the agro-ecosystem either in Egypt or in adjacent countries. A complete checklist of the recorded species was arranged and their life-form spectra were identified. A comparison of species richness and distribution of the different populations in the studied habitats was discussed. The floristic similarity between the recognized habitats showed a significant positive correlation between the canal banks and cultivated lands. *Cynanchum acutum* subsp. *acutum*, *Cynodon dactylon*, *Phragmites australis* and *Pluchea dioscoridis* were of high ecological amplitude. The main vegetation groups in each of the four studied habitats were determined and their controlling ecological factors were identified.

Key Words:

Qalyubia; Life forms; Plant diversity; DCA; CCA; Shannon's index.

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