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SUMMARY AND CONCLUTIONS

The area west of the Nile Delta had attracted the attention of many investigators because of several reasons;

1. The complicated depositional setting due to the association of the Nile delta and the coastal plain. These formations were also connected to an old deltaic plain of different origin and deposits in earlier stages.
2. The potential characteristics for agricultural development in the region.

These reasons urged investigators to study the area. In general, the following landforms were identified

- A costal plain forming a part of the Arabs Gulf.
- Old deltic and alluvial plains.
- The Table lands of the western desert, and
- The structural plains.

The stratigraphy of the region is briefly outlined as;

A- The Quaternary deposits are composed of Recent and Pleistocene deposits. These are including the recent Nile sediments, the Old deltaic deposits, the fluviomarine and beach deposits. Some aeolian deposits were also encuntred.

B- The Tertiary deposits including Pliocene and Miocene rocks usually covered by a very thin veneer of soils and sand dunes and sheets.

The climate prevailing in the region is marginal and hot. Maximum rainfall does not exceed 150mm per year and decreases rapidly to reach annual values lower than 50mm.

Maximum temperatures range between 34.8°C and 18.8°C while minimum temperatures range between 19.0°C and 5.8°C .

Ten soil profiles were selected to form two perpendicular transects crossing the northern landforms. The soils were represented by soil profiles, described and sampled. Chemical characteristics were evaluated through several properties such as salinity, exchangeable Cations and Cation exchange capacity, soil reaction, calcium carbonate content, and organic matter contents. Physical properties of the soils were studied through determination of mechanical composition.

Fertility status was evaluated potentially by determination of total N, P, K. This study gave indications of deficiency and non deficiency of the specified major elements.

From the previous determinations; salinity was found to be associated with the highly calcareous soils and the Nile delta soils, Salinity in the Nile delta is associated with poor drainage and the rise of water table while in the highly calcareous soils of the coastal plain, it is associated with insignificant leaching and the accumulation of carbonates and salts at a subsurface horizon.

Appreciable amounts of sulfate anion are also associated with the highly calcareous soils at accumulation depths.

Cation exchange capacity and exchangeable cations are highly associated with texture variations

Judging uniformity and stratification as well as origin were accomplished by applying statistical analysis. Several parameters

were defined. The results showed a poorly sorting condition of the sand fractions which indicate an alluvial or marine origin while aeolian origin seems to be insignificant. Skewness results assigned different conditions of sedimentation environments. The kurtosis proved the wide range of diameters of the sand grains of the different studied soils.

The cumulative curves defined four groups of uniformity. These are; uniform (profile 4) , almost uniform (profiles 5,8,10), almost nonuniform (profile 9) and nonuniform (profiles 1,2,3,6,7).

Heavy mineral analysis gave indications of uniformity and stratification. Because of inherent factors corresponding to separation, identification and counting, the conclusions are not inclusive. The index figures however, gave strong indications of uniformity and stratification. Identified minerals and their counts together with index figure should confirm the final conclusions. Contradicted results are accordingly resulting. However, heavy mineral distribution and statistical analysis of the grain size distribution all together could give reasonable conclusion concerning uniformity, stratification and origin of the studied profiles. Due to heavy mineral analysis, the following results are concluded:

Soil profile (1) is formed of a surface layer quite different than the two subsurface layers. This may be due Aeolian materials mixed with the surface layer. The amphibole minerals are distinguishing this layer.

Profile (2) seems to be uniform however, the difference between layers are somewhat negligible.

Profile (3) exhibits obvious stratification while Profile (4) on the other hand shows almost complete uniformity.

Soil profiles 5,6,7,8 and 9 show stratifications more or less pronounced in some of them.

Soil profile (10) shows uniformity only in two layers, the surface and the lower ones. The soil profile in general did not show uniformity.

Establishing uniformity and weathering by applying mineral rations were not successful due to; not enough grains counted, the inconsistency of mineral composition with all species, and the unsuccessful mineral types used for proving the previous characteristics.

The previous conclusions gave deep insight into the soils of the area though not enough but could be reasonable at this level of study.