

THE EFFECT OF CULTIVATION AND IRRIGATION WATER QUALITIES ON SOME
MORPHOLOGICAL PROPERTIES OF GYPSIFEROUS SOILS IN THIRTHAR REGION

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ABSTRACT

The present study was carried out to evaluate the effects of using cereal – fallow cropping system and irrigation water quality on some morphological properties of gypsiferous soil at Al-Saglawia ,AlAnbar governorate. According to free lance soil survey result, three locations were selected. The locations were differed in the quality of irrigation water which used. The survey was depended on the variation in the topographical features and natural vegetation. The cereal – fallow cropping system was employed at these locations during the last ten years Eight pedons (two from each site) were cultivated, one from soil locally called (Gathini)and the second one called (Hamra) ,as well as ,two pedons from uncultivated soils. All sites were cultivated with wheat. Water samples were collected at every location and analyzed to limitation its quality .The results could be summarized as fallows:- 1- All studied soils were shallow G2 (20 50 cm). 2- Soil texture was varied, the gypsiferous soil (Gathini),G2 223 FXW has moderate coarse texture, while(Hamra),G2 233 FXW ,was medium coarse texture class. Both agricultural practices and irrigation water quality have no significant effect on soil texture. 3- The agricultural practices had a clear effect on the surface horizon thickness. It increased from 20 cm in the virgin soils(uncultivated)horizon A1 to 25 cm in cultivated horizon Ap .Flooding irrigation had

negative effect on the surface horizons structure .it caused destroyed to soil aggregates because of rapid wetness which accompanying this method of irrigation. 4- The boundary between surface horizons and gypsum was abrupt ,but it showed gradual boundary specially at the two uncultivated pedons. 5- Irrigation water quality has clear effect on the morphology of surface horizon in studied soils Which were irrigated with ground water showed higher gypsum accumulation in Ap horizon because of high concentrations of calcium and sulfate ions in these water ,whose deposition with time inform gypsum therefore the plow horizon in these pedons pointed Apy ,in comparison with soils irrigated by thirthar canal water whose named Ap. 6- Horizon A1 of uncultivated soils and horizon Ap of the cultivated soils, irrigated with ground water, showed a presence of clear individual coarse gypsum crystals in the soil skeleton . Such crystal was not clear in soils irrigated with Al- Tharthar water.The gypsiferous sub surface horizons had clear white gypsum crystals filling soil pores.