Minufiya J. Agric. Res. Vol. 34 (2009) NO. 1 : 311-324

DISTRIBUTION OF HUMIC AND FULVIC ACIDS IN ALLUVIAL AND CALCAREOUS SOILS

R. A. Khalil(1),E. A. Abou-Hussien(1),S. A. Radwan(2),A. M. Abou Shady(2)
(1)Soil Sci: Dept. Fac. of Agric. Minufiya Univ. Shibin El-Kom, Egypt.,(2)Water Resources and Desert Soils Division. Desert Research Center. Egypt, Cairo.,,

ABSTRACT:

This study was carried out to study the content and vertical distribution of organic matter, humic and fulvic acids within different layers of soil profile so six soil profiles were taken from different locations. The first three profiles were taken from Kafer El-Sheikh Governorate varied in their salinity and alkalinity. These locations were Teba 1 Village and Teba 7 Village of El-Hamoul Center and Kafer Elâ€“Marazka Village of Kaleen Center. The other three profiles were taken from different three location of El-Amiria Center varied in their content of calcium carbonate (CaCO3)The locations of the latter three profiles were located in Maryout Research Station, Hosha 13, 18 and El-Amiria (Alexandria Governorate). The first three soil profiles represented the alluvial soils and the others were represented the calcareous soils. The obtained data show that, the soil contents of humic acids were decreased with the increase of soil depth but the content of fulvic acid was increased with the increase of soil depth up to 80 cm and decreased at more depth. The content of both humic and fulvic acids in alluvial soil profiles was higher than that found in calcareous soil profiles. Also, the content of humic acids in alluvial and calcareous soils was higher than that of fulvic acids.The content of both total acidity and functional groups of humic and fulvic acids in alluvial and calcareous soils were decrease of with increaseing of the soil depth and generally the value of total acidity and function groups in fulvic acids were higher than those of humic acids.

Key words: Humic acid, Fulvic acid, Distribution, Total acidity, Functional groups, Alluvial and calcareous s

Minufiya J. Agric. Res. Vol. 34 (2009) NO. 5 : 1945-1958

SANDY SOIL PROPERTIES AND ITS PRODUCTIVITY AS AFFECTED BY IRRIGATION WATER QUALITY

E.A. Abou Hussien,Sanaa W. Barsoum,B.Y. El Koumey ,S.A.S. Fayed
Soil Sci. Dept., Fac. of Agric., Minufiya Univ.,,,

ABSTRACT:

This pot experiment was carried out to evaluate some of irrigation water sources of Menufiya Governorate and its effect on sandy soil properties and its content of nutrients and plant growth. The evaluated water sources were Nile water, agricultural drainage water and sewage water. These sources were mixed together at different 12 of mixed ratios. Also, the used sandy soil was taken from El Sadat City, Minufiya Governorate. This experiment was conducted out in winter season (2005/2006) on wheat and repeated in summer (2006) on corn as tested plants. Irrigation sandy soil with the tested water sources resulted in an increase of soil EC, soluble ions and the content of macro â€“ and micronutrients, except Nile water. The high increase of the previous properties was found in the soil irrigated with the mixtures have a high mixed ratios of sewage water, where the lowest one was found with the treatments of Nile water. At different irrigation treatments, EC and the content of soluble ions and nutrients after the second growth season were higher than those found after the first growth season. On the other hand soil pH was decreased followed irrigation with the tested water sources, where this decrease was more clear with the treatments of sewage water especially after the second growth season. The high obtained dry matter yield of wheat and corn were found in the plants irrigated by irrigation mixtures having a high mixed ratios of sewage water, where the lowest values were associated the treatments of Nile water. The plants content of the determined macro and micronutrients depending on the mixture ratios of the three water sources, where the high content of N, P, Mg, Fe, Mn, Zn and Cu was found in the plants irrigated by mixtures have a high mixed ratios of sewage water. On the other hand the high content of K and Ca was found in the plants irrigated by irrigation mixtures have a high mixed ratios of agricultural drainage water. The lowest content of all determined nutrient were found in the plants irrigated by Nile water. At different treatments of irrigation, the dry matter yield and the content of all determined nutrients of corn plants were higher than those of wheat plants.

Key words: Sandy soil, Sewage water, Agricultural drainage water, Salinity, Macro â€“ and micronutrients, Wheat

Minufiya J. Agric. Res. Vol. 35 (2010) NO. 1 : 335-355

GROWTH OF CORN PLANTS CULTIVATED IN DIFFERENTLY MANURED ARID SOILS AND IRRIGATED WITH VARIOUS WATER QUALITIES.

E.A. Abou Houssien,M. M. El-Shinnawi,M. A. Abo El-Fadel ,M. A. El-Fishey
Soil Sci. Dept., Fac. of Agric. Minufiya University, Shibin El-Kom, Egypt,,,

ABSTRACT:

This work was carried out to study the individual and combined effects of organic manures and irrigation water quality on growth of corn plants (Zea mays L (triple hybrid 310) and their contents of some macro nutrients. Surface soil samples representing alluvial, calcareous and sandy soils were used in these greenhouse experiments. The soils were manured with farmyard manure (FYM at 2 % C) and alfalfa plants as a green manure (GR), plus the control treatments. The used irrigation water sources were tap water (TW) agricultural drainage water (DW), mixed TW + DW at a ratio of 1:1, synthetic saline water at 2000 mg/l of TSS of CaCl2 + NaCl at Ca : Na ratio of 1:1 (SW1) and synthetic saline water at the same content of TSS and Ca : Na ratio of 2:1 (SW2). All pots were planted with 5 corn seeds /pot. Plant samples were taken after 45 and 65 days of planting. Dry weights of plant samples were recorded and their contents of N, P and K were determined. The dry matter yield of corn plants increased as a result of organic manures application. Those increases were clearer with FYM especially at the first growth period. Under the different treatments of manures, the dry matter yield increased with advancing the plant age. The highest dry matter yields were found for the plants grown on the alluvial soil followed by those on the calcareous soil, to leave the sandy soil last in such concern. Also, with the different manure treatments, the highest dry matter yields were found for the plants irrigated with DW, whereas the lowest values were found with the treatments of SW2. The obtained data also showed greater positive effects of manure treatments on corn plant contents (%and mg/Kg) of N, P and K at both growth stages under the different soil conditions. The highest contents of such nutrients were found in the corn plants grown on the alluvial soil manured with FYM and irrigated by DW.

Key words: Maize, Organic fertilization, Irrigation water quality, Nutrients uptake, cereal crops.

Minufiya J. Agric. Res. Vol. 37 (2012) NO. 1 : 231-245

EFFECT OF COMPOSTED PLANT RESIDUES ON NEWLY RECLAIMED SOILS PROPERTIES AND ITS PRODUCTIVITY

E. A. Abou Hussien,Y. B. El-Koumey,Fatma, S. El-Shafiey ,Heba M. A. Gohar
Soil Sci Dept. Fac. of Agric. Minufiya Univ. Egypt.,,,

ABSTRACT:

A pot experiment was carried out in the Experimental Farm. Faculty of Agriculture, Minufiya University, Shibin El-Kom to study the effect of both application rate (0, 1 and 2% OM) and composting period (0, 2, 4 and 6 months) of either of rice or potato straw on some chemical properties of two newly reclaimed soils (sandy and calcareous) of Egypt and its content of available N, P and K. Also, the effect of those treatments on wheat (Triticum aestivum L.) plant growth and its content of N, P and K was studied. The obtained data show a decrease of soil pH and its content of CaCO3 and increase in its EC (dSm-1) and the content of OM (%) and available N, P and K (mg/kg) with the increase of added rate and composting periods of rice and potato straw in both sand, and calcareous soils. The found decrease or increase effects in the soils treated by composted potato straw were greater than those associated the treatments of rice straw. The obtained dry matter yield of wheat plants and its content of N, P and K were increased with the increase of composting period and application rate of composted rice and potato straw, where these increases resulted from the treatments of composted potato straw were higher than those found with the treatments of composted rice straw in both sandy and calcareous soils.

Key words: Compost, Potato, Rice, Wheat, Soil properties, Nutrients uptake.

Minufiya J. Agric. Res. Vol. 35 (2010) NO. 1 : 267-291

THE COMBINED EFFECT OF PHOSPHATE FERTILIZATION AND IRRIGATION WATER SALINITY ON THE CALCAREOUS SOILS PRODUCTIVITY

R.A. Khalil,S.A. Radwan,E.A. Abou Hussien ,M.M.Hamad
Soil, Sci. Dept. Fac. Of Agric. Minufiya .Univ. Egypt.,,,

ABSTRACT:

This experiment was carried out on five calcareous soils varied in their content of CaCO3 (%) and other soil properties to study the effect of individual and combined applications levels of phosphate fetilization and irrigation water salinity and sodicity on some properties of these soils and its productivity . A pot experiment was carried out in split split plot design with three replicates, where the main plots pluts were the used calcareous soils, the sub plots were application rates of P fertilization and the sub sub plots were irrigation water salinity and sodicity levels .The tested P levels were 0, 50, 100 and 200% of recommended dose (RD) for barley(300Kg superphosphate / fed) which used as tested plant. Five irrigation water sources varied in their salinity and sodicity levels were used in this study . The obtained data show a clear increase of soil content of both total soluble salts and soluble ions with irrigation by the tested saline water and also with the increase of added P. The obtained dry matter yield of both straw and grains of barley plant were decreased with the increase of irrigation water salinity and sodicity . The decrease associated with the increase of water sodicity levels were higher than that resulted from the increase of water salinity levels . On the other hand , increasing of added P resulted in an increase of obtained dry matter yield . The high dry mater yield was found in the soils irrigated with tap water at P level of 200% of RD . Also , the obtained dry matter yield was greatly affected by the studied calcareous soils properties. Straw and grains of barley plants content of N, P and K was greatly affected by the studied treatments and soil properties.This content was decreased with the increase of irrigation water salinity or sodicity, where it was varied widely with P fertilization . The significant levels of relationships between the content of these nutrients and soil properties were varied from nutrient to another.

Key words: Water quality, Phosphate fertilization, Calcareous soil, Barley, Soil properties and Nutrients conte

Minufiya J. Agric. Res. Vol. 35 (2010) NO. 1 : 357-370

CHARACTERESTICS, CLASSIFICATION AND EVALUATION OF SOME SOILS IN TOSHKA, EGYPT

O. A. Gobran,M. S. Amira,E. A. Abou-Hussien ,S. A. Elwan
Soil Sci. Dept., Fac. of Agric., Minufiya Univ. Shebin El-Kom, Egypt,,,

ABSTRACT:

Ten profiles were selected from the southern part of Toshka to study the characteristics, classification and evaluation of these soils. This study is needed for proper planning of reclamation and amelioration of these soils. The elevation of the studied area is between 184 to 193 m above sea level. The soils are almost flat, nearly level to gently sloping topography. They are moderately deep to deep with well drainage status. They have mainly sandy texture with common fine to coarse gravels and/or fragments. The main structure is weak fine granular to medium subangular blocky. The consistence is soft to hard when dry and friable when moist. The main hue notation of the soils has reddish color mainly between 2.5YR to 7.5YR. The soils are non saline having alkaline reaction. Total carbonate contents (CaCO3) are mostly low having narrow ranges in profile layers. Organic matter (OM) content is low, decrease generally with depth. The cation exchange capacity (CEC) is mainly correlated with fine fractions and organic matter contents. The exchangeable cations are generally dominated by Na+ followed by Ca2+ then Mg2+ and few K+ making alkaline effect in the most of profiles layers. The morphological rating scale (RDH and RPD) indicates a slight distinctness between horizons which mainly attributed to the depositional pattern and /or regimes of soil materials more than development. The studied soils haven't any diagnostic horizons and therefore, they are classified as Entisols order up to family level. According to the land capability evaluation, the soils are categorized from II to V grades. Land suitability evaluation for growing major sixteen field, vegetable and fruit crops was achieved for the soils having grades from II to IV.

Key words: Toshka, characteristics, morphological rating scale, soil classification, land evaluation, capabilit