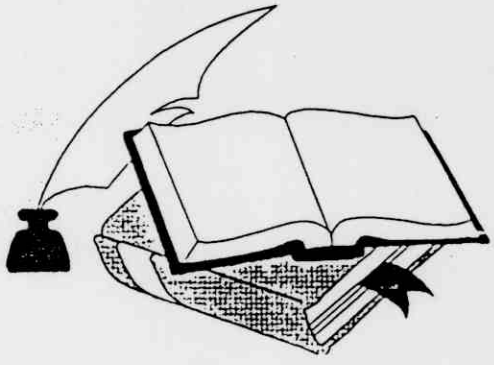
# SUMMARY



# 5. SUMMARY

The aim of this study was to clarify the effect of applying some organic manures either alone or applied with mineral fertilizers on soil nutrient status and their utilization by wheat plants . Also, some characteristics of humic and fulvic acits were studied . The obtained results could be summarized in the following :

Total organic carbon of humic acids ranges between 49.5 and 57.5% and the greatest value was observed in the humic acid isolated from poudratte manure , whereas the lowest value was observed in that one derived from chicken litter manure .

Total carbon of fulvic acid ranges between 40.9 and 48.6 , the greatest value was observed in fulvic acid derived from biogas manure while the lowest one was observed in that one derived from chicken litter manure .

The C/N ratios of humic acid originated from town refuse exceeded greatly those obtained from other manures . The C/N ratio of fulvic acid isolated from town refuse exceeded greatly those derived from chicken litter , poudratte and biogas manures .

Data indicate that values of DTPA extractable P, Fe ,Mn , Zn and Cu increases in both soils under investigation as the periods of incubation were increased and the most affective period was 120 days from incubation except for Mn where the effective period was 30 days .

The obtained results reveal that treating both the studied soils with either mineral fertilizers or organic sources (BM , CLM , TR and PM) significantly increased values of DTPA extractable P , Fe , Mn , Zn and Cu and the most effective manure in such effect was biogas manure (in case of P) especially when applied solely with the highest values ($L_3$) of mineral sources .

Data , indicate that solely application of mineral sources with different organic manures was more efficient in increasing available nutrients as compared with application of such manures after composted with mineral fertilizers . Data indicate that DTPA extractable nutrients from the clayey soil were much higher than from the sandy one .

Concerning the effect of organic manures and mineral fertilizers on dry matter yield of wheat plants as well as on concentration and uptake of micro and macronutrients by plants , the obtained data could be summarized as follows :

- application of different organic manures significantly increased the dry matter yield of wheat plants grown on both tested soils and biogas manure was superior in both tested soils while poudratte seemed to be the least effect .
- also , application of the inorganic fertilizers in absence of organic manures significantly increased the dry matter yield of wheat plants grown on the tested soils . The increase seemed more obvious by doubling level of the applied fertilizers and became maximum by raising level of application to be equivalent to four times of the initial applied level .
- enriching the organic manures with inorganic fertilizers seemed to cause more pronounced effect on the dry matter yield of plants grown on both soils .The increase was high in the clayey soil as compared with the sandy one .
- the investigated organic manures can be arranged according to their effect on N concentration in wheat plants in the descending order :

biogas manure = chicken manure > poudratte manure > town refuse .

- concerning the effect of the studied manures on concentration and uptake of P by wheat plants , the results indicate the superiority of the

biogas manure , followed by the chicken manure over the other studied organic manures .

- both values of Fe concentration and uptake by plants indicate the superiority of biogas manure as compared with the other tested manures .
- the combinations between any of the organic manures and mineral fertilizers were more effective in increasing Fe concentration as well as its uptake by wheat plants grown on both soils , the magnitude of increase seemed to be dependent not only on level of the applied mineral fertilizers but also on type of the organic manure and also type of the soil to which the fertilizers are added .
- concerning Mn concentration in the plants grown on both soils , the results show that town refuse was of the most effective in increasing Mn concentration whereas biogas manure was of the least effect .
- Mn uptake by plants as affected by organic manures could be arranged as follows : TR > CM > PM > BM .
- the combination between different organic manures and mineral fertilizers exerted a pronounced effect on both Mn concentration and uptake by the wheat plants grown on the sandy and the clayey soils .
- application of different organic manures solely or in combination with mineral fertilizers clearly increased Zn conc. and uptake by wheat plants.
- the Cu concentration in wheat plants as well as its uptake was significantly increased by the addition of different organic sources .
- the effect of the different organic manures on Cu uptake by wheat plants grown on the sandy soil is being according to the following order : BM > PM > CM > TR , while in the clayey soil the following order was obtained : BM > TR > CM > PM . Increasing the level of the mineral fertilizers that associated with organic manures resulted in increase in concentration of Cu in the plants grown on the both investigated soils .