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SUMMARY

Two pot experiments (25 cm) were carried out at greenhouse of Soil Fertility and Plant Nutrition Res. Sec., Soils, Water and Env. Res. Inst., Giza.

The first experiment was carried out to study the effect of different levels of anhydrous ammonia belong four rates namely 0, 60, 90 and 120kg N/fed. injection in three soils (Fayoum, Kafr-El-Sheikh, and Beni-Suef soils) under different levels of moisture i.e. 30, 60 and 90% W.H.C. On total count bacteria, total count of nitrifiers bacteria, dehydrogenase activity and nitrification of anhydrous ammonia in different soils.

Results could be summarized in the following:

- 1- The total count of bacteria markedly increased with increasing soil moisture up to 60% W.H.C. Whereas, the total count decrease with increasing moisture content up to 90% W.H.C. in different soils under investigation.
- 2- Total count of bacteria increased with increasing the rates of anhydrous ammonia.
- 3- The highest count bacteria was recorded after 14 days from incubation, whereas the lower count was recorded at 0 time of incubation.

- 4- The results showed that Beni Suef soil count the highest count bacteria. However, Fayoum soil content the lowest count bacteria.

The effect of the treatments on colony form unit of ammonia oxidizer as well as nitrite in different soils were also studied.

The most important findings are summarized as follows:

- 1- The maximum colony form unit of ammonia oxidizer and nitrite in different soils were achieved under 60% W.H.C. whereas, the minimum values were recorded at 90% W.H.C.
- 2- The colony form unit of ammonia oxidizer as well as nitrite in different soils, were increased through anhydrous ammonia injection in the soils. The highest increase was achieved when 120kg N/fed. was applied, in the different soils.
- 3- The maximum values of colony unit form of ammonia oxidizer as well as nitrite were achieved after 14 days from incubation, whereas the minimum values were obtained at 0 time of incubation.
- 4- The highest values of colony unite form of ammonia oxidizer and nitrite were obtained in Beni Suef soil. However, the lowest values were obtained in Fayoum soil.

The effect of the same aforementioned treatments on dehydrogenase activity was also studied. The main results are:

- 1- Regardless of anhydrous ammonia, and incubation periods, the effect of moisture content on dehydrogenase activity was

found to be significant in different soils. The highly amounts was recorded at 60% W.H.C. However, the lowest values were found at 90% W.H.C.

- 2- Regardless of moisture content and incubation periods treatments, dehydrogenase activity was increased by increasing anhydrous ammonia injection in different soils.
- 3- Regardless of moisture content and anhydrous ammonia treatments, the highest values of dehydrogenase activity was achieved after 14 days from incubation in different soils.
- 4- The maximum values of dehydrogenase activity were obtained in Beni Suef soil. However, the minimum values were obtained in Fayoum soil.

The second experiment was carried out to study the effect of anhydrous ammonia applied with four levels of nitrogen; namely 0, 60, 90 and 120kg N/fed., injection in three soils namely; Fayoum, Kafr-El-Sheikh and Beni Suef governorates.

On grains, straw of wheat plants and its content on nitrogen. The main results are:

- 1- Regardless of soils treatment, the grain yield of wheat plant and its content of nitrogen were increased significantly by increasing the rate of applied anhydrous ammonia up to 90kg N/fed. On the other hand, no significant difference between the rate of 90 and 120kg N/fed. in different soils. The same trend was also obtained in straw yield and its content of nitrogen.

2- The maximum yield of grain and straw on wheat plant as well as its content of nitrogen were obtained in Beni Suef soil. On the other hand, the minimum yields were achieved in Fayoum soil.