

INFLUENCE OF ORGANIC FERTILIZER ON ROOT MICROFLORA OF WHEAT

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ABSTRACT: The use of small doses of organic fertilizer obtained after the methanogenesis of chicken manure farms stimulates the development of various physiological groups of microorganisms in the root zone of wheat. It should be noted that when applying small doses of organic fertilizer, there is an increased development of various physiological groups of microorganisms in the root zone of wheat compared to the application of organic-mineral fertilizer. It has been established that the main proportion of spore-forming bacteria in the rhizosphere zone of wheat is in the form of vegetative cells.

KEYWORDS: Organic fertilizer, farm chicken manure, microorganisms, wheat.

INTRODUCTION

Ensuring the food, economic and national security of the country as a whole largely depends on the state of agricultural land and their ability to reproduce soil fertility [1]. Microbiological activity in the soil is an important factor in the development of the plant root system, which in turn has a significant impact on the accumulation of microorganisms in the soil. The purpose of this work is to study the dynamics of development of wheat rhizospheric microorganisms against the background of various doses of organic (obtained after anaerobic fermentation of chicken manure from farms) and mineral fertilizers in gray earth soil under laboratory conditions.

THE MAIN FINDINGS AND RESULTS

Observation of the dynamics of development of basal microorganisms of wheat was carried out in pots with 1 kg of light gray soil (in four replications) selected from the experimental site of the Andijan state university of the Republic of Uzbekistan. Options for different doses of fertilizers:

1. Sample No. 1 - control (without fertilizing); 2. Sample No. 2 - 0.2 t/ha OF; 3. Sample No. 3 - 0.5 t/ha OF; 4. Sample No. 4 - 1 t/ha OF; 5. Sample No. 5 - 0.2 t/ha OF + 30% NPK; 6. Sample No. 6 - 0.5 t/ha OF + 30% NPK; 7. Sample No. 7 - 1 t/ha OF + 30% NPK; 8. Sample No. 8 - cattle 20 t / year. (NPK - nitrogen + phosphorus + potassium, OF - organic fertilizer; CM-cattle manure). To determine the total number of ammonifying bacteria (in wheat rhizosphere soil), MPA medium (meat peptone agar) spore ammonifiers on a medium of equal parts of MPA, and wort agar were used. To determine the number of actinomycetes, starch-ammonia agar was used. The number of microscopic fungi was studied on Czapek's medium [2, 3]. The study of the development of ammonifying bacteria in the rhizosphere soil of wheat showed that after 20 days, when small doses of organic fertilizers were applied to the soil 0.2 t/ha OF, 0.5 t/ha OF and 1 t/ha OF (sample No. 2, . No. 3, No. 4), the total number of bacteria compared to the control variant was 2.2, 2.31 and 2.1 times higher, respectively. A more intensive growth of ammonifying bacteria in the wheat rhizosphere soil (after 20 days) is observed with the combined application of organic and mineral fertilizers at a dose of 0.2 t/ha OF + 30% NPK; 0.5 t/ha OF+30%NPK; 1 t/ha OF + 30% NPK (sample No. 5, No. 6, No. 7). In these samples No. 5, No. 6, No. 7, the number of microorganisms growing on MPA compared with the control variant was 3.3; 4.4; 3.4 times higher and amounted to 7.3×10^6 ; 9.6×10^6 ; 7.9×10^6 cells/g. However, after 40 days, the vital activity of bacteria growing on MPA intensified after the introduction of organic fertilizer into the soil at a dose of 0.2 t/ha OF and 0.5 t/ha OF (sample No. 2, No. 3) and their number was $6,9 \times 10^6$ - 7.4×10^6 cells/g, respectively. Whereas, with the joint application of organic and mineral fertilizers to the soil (after 40 days) in samples No. 5, No. 6, No. 7 in the rhizosphere soil of wheat, a decrease in the total number of ammonifying bacteria was observed, both from the control and from the experimental options 0, 2 t/ha OF, 0.5 t/ha OF and 1 t/ha OF. When 1 t/ha of OF + 30% NPK was introduced into the soil after 40 days, the minimum number of ammonifying bacteria was found, their number of cells was 1.1×10^6 cells/g. The addition of small doses of organic fertilizer 0.2 t/ha OF, 0.5 t/ha OF (sample No. 2, No. 3) to the soil and the combined application of organic and mineral fertilizer stimulates the growth of both non-spore-forming forms of bacteria and the development of spore-forming vegetative cells bacteria.

It was established that when 0.2 t/ha of OF and 0.5 t/ha of OF were introduced into the soil (sample No. 2, No. 3), the ratio of the total number of cells of ammonifying bacteria and the number of their spores was at a minimum level and amounted to 2.08%; 3.08% compared to

other experience options. The second control variant was dried cattle manure at a dose of 20 t/ha (sample No. 8). Studies have shown that in this sample, after 20 days, the number of ammonifying bacteria compared to the control variant of the experiment was 4.4 times higher. However, after 40 days in the wheat rhizosphere soil, the total number of ammonifying bacteria in both sample No. 8 and sample no. 2 was 7.2×10^6 cells/g. When studying the ratio of the total number of bacteria and the number of their spores (after 40 days) in samples No. 8 and No. 2, spore-forming bacteria prevailed in sample no. 8, the percentage was 27%. It has been established that in all variants of the experiment with an increase in the number of actinomycetes in the root zone of wheat, a decrease in the number of microscopic fungi is observed.

CONCLUSION

Thus, the use of small doses of organic fertilizer obtained after methanogenesis of chicken manure farms stimulates the development of various physiological groups of microorganisms in the root zone of wheat. It should be noted that with the introduction of small doses of organic fertilizer, there is an increased development of various physiological groups of microorganisms in the root zone of wheat compared with the application of organomineral fertilizer.

REFERENCES

1. Stepanov A.I., Nikolaeva F.V., Fedorov A.Ya., Yakovleva M.T. Ensuring soil fertility is the basis for obtaining stable crop yields. // Modern trends in the development of science and technology, 2015, No. 7-2, P 122-124.
2. Egorov N.S. Guide to practical exercises in microbiology. 3rd edition. Publishing house of Moscow State University, 1995, 49 p.
3. Zvyagintsev D.G. Methods of soil microbiology and biochemistry. // MGU Publishing House, 1991, 303 p.