SOIL MIXTURES AS AN ELEMENT THAT INCREASES THE IMMUNITY OF MEADOW BLUEGRASS TO THE CAUSATIVE AGENT OF ROOT DISEASES OF FUSARIIUM ETIOLOGY

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Abstract. The article considers the possibilities of using compiled soil samples in the cultivation of meadow Bluegrass with the compilation of load indicators in the form of root diseases of fusarium etiology. The considered preference for this culture is due to the component part of the lawn mixture, where, according to its characteristics, it plays an important role in the formation of a stable landscape composition in the form of a "podpushka".

Keywords: soil mixtures, Fusarium avenaceum Fa-1, soil fertility, soils, plant survival.

The intensification of productive forces in agriculture is limited by the lack of land with fertile qualities. The improvement of the systems of the technological cycle of production and means of processing agricultural land arises under the pressure of the problem - the impossibility of covering the deficit of growing demand for agricultural products. Transformation processes in agricultural production require capital and current economic costs, which agricultural producers cannot always afford. In such conditions, there is a need to use scientifically-based technological recommendations in the production process in order to increase production volume, increase efficiency with the growth of economic indicators and compliance with environmental aspects of the environment.

Modern society uses all available natural resources in the production sector, while the availability of natural raw materials is catastrophically decreasing. Newly created components and materials do not always go through the recycling process, which aggravates the environmental burden of the natural environment. Under these conditions, scientists are searching for the use of unconventional materials and components in the creation of new directions. Such technological processes are also being introduced into the creation of fertile impurities or soils.

The processes of land degradation are an integral part of the exogenous transformations of the planet. The emerging problemativeness of this process is in the rapidity of its course. Natural geological formations are influenced not only by the natural exogenous process, but also experience the stress of the anthropogenic factor. The all-consuming human activity affects the geographical envelope of the Earth with increasing intensity. The ongoing transformative measures are not always calculated with a subsequent forecast of possible changes. So, at this stage of the geographical development of our planet, we are witnessing the negative consequences of the reconstructed changes carried out more than 40 years ago, the consequences of which we are currently witnessing - the...
problems of the Aral Sea, the manifestation of negative climate changes, the intensification of erosion processes and, as a consequence, the spread of desertification. The problem of these processes lies in the globality of what is happening, no country in the world is able to cope with this problem alone and only a consolidated solution, even if not all countries, but most, will be able to work out certain steps to stabilize this situation.

The transformation of the living environment is peculiar only to man, the planning and reconstruction of which is limited by the level of intellectual development. The production necessity of cultivating cultivated plants puts forward requirements for improving not only varietal characteristics, but also the creation of special growing conditions, where artificially created soil, or soil soil, is the main one. Obtaining a high yield at the lowest cost is the priority goal of any agricultural producer, where any variable components are the prospect of achievement.

Fertile soil is an indicator of the qualitative development of any plant. In the natural conditions of our planet, this component of nature is in limited values, since certain climatic and relief-forming conditions are necessary for its manifestation. A person covers the insufficiency of natural fertility by creating an artificially created soil mixture. Each such soil is formed from the base and related components that represent a certain value. The main criterion for using a certain component is availability, low price, availability of raw materials.

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In literary sources, soil is treated as an organic substance, which is based on a humus-containing component with added mineral impurities. Soil - any fertile soil that does not have a permanent composition. The filling depends on the material and on the method of its production (place, time, method of extraction and the process of artificial processing). There is no classification by type of soil, as well as proportions of component contents. The variation of different components and the difference in dosage makes it possible to obtain an infinite number of types of fertile soil with special characteristics, where micro- and macroelements are in a form accessible to plants [1-9,13,15].

Analysis of literature sources on the subject of the study showed that artificially created fertile soils arouse interest not only among scientists and producers of soil mixtures, but also have a response from consumers, i.e. those who directly use these types of mixtures for further production cycle, namely in obtaining the final product [10, 11, 12, 16,17,19].

The research program included the determination of the possibility of using the presented samples (soil mixtures) as elements that increase the growth characteristics and immunity of plants when infected with strains of microorganisms stressors and pathogens from the Center for Collective Use "State Collection of Phytopathogenic microorganisms and varieties-identifiers (differentiators) of pathogenic strains of microorganisms" of the Federal State Budgetary Scientific Institution "All-Russian Research Institute of Phytopathology" [1, 14, 18,20,21].

The prepared versions of the tested samples were involved in laboratory studies to identify the dependence of growth processes and plant survival in the early stages of ontogenesis. As test crops, seed material was used: Meadow Bluegrass, varieties of Brooklawn (Germany).

The tests involved samples of soil mixtures, from fillers: Nutrient soil; organic fertilizer "Uncle humus"; light chestnut soil; sapropel deposits; HUMOSTIM; humic fertilizers Gumi-90 [1,18,20,21].

The tests revealed distinctive parameters of the development of Meadow Bluegrass by background accompaniment, the processed parameters are presented in Table 1.
Table 1. Identified survival parameters in the projected conditions for the development of Meadow Bluegrass

| Option | Survival rate, % | With background load (Fusarium avenaceum Fa-1 infection) | Deviations in the background, ± |
|--------|------------------|----------------------------------------------------------|---------------------------------|
| 1      | 99               | 11                                                       | -88                             |
| 2      | 61               | 3                                                        | -58                             |
| 3 (Control) | 95               | 28                                                       | -67                             |
| 4      | 99               | 74                                                       | -25                             |
| 5      | 94               | 7                                                        | -87                             |
| 6      | 93               | 6                                                        | -87                             |

In conditions of habitat oppression due to artificial infection of Fusarium avenaceum Fa-1 meadow Bluegrass plants, the variant with the introduction of the proposed sapropel deposits showed the best result, namely, survival was 99%, whereas in the control - 28%. Variants with organic components showed low survival parameters: 1 – 11%; 2 – 3%; 5 – 7%; 6 – 6%.

Survival rates are the main ones for identifying the stress resistance of plants to life support conditions. On the proposed graphs for two projected factors, survival rates are presented (Figure 1).

Figure 1. Graph of the survival rate of a meadow Bluegrass plant depending on background accompaniment, seed sowing – 164 pcs.

In the first factor under consideration (without background load), almost in all variants there is a positive dynamics of the development of growth indicators of Meadow Bluegrass. In variant 2, survival rate decreases by 1.55 times compared to control variant 3 and by 1.63 times compared to the best indicator for variants 1 and 4, presumably due to poor aeration of the soil environment.

In the second factor (with background load), with a restraining indicator of development, artificial infection of Fusarium avenaceum Fa-1, suppression of the growth and development of Meadow Bluegrass is observed in almost all variants. Option 4 shows sustainable development in repetition.
The tested variants 1 and 2 showed low rates throughout the repetition, as well as variants 5 and 6. In these variants, the advantage is organic matter, which probably has a beneficial effect on the growth and development of pathogenic microorganisms.

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