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THE EFFECT OF FORAGE CROPS ON THE TOTAL AMOUNT OF HUMUS AND NUTRIENTS IN THE SOIL

Gulzina Shimbergenova, researcher

Karakalpak Institute of Agriculture and Agrotechnologies

Introduction

The world population is expected to grow rapidly, and water scarcity is becoming more serious. In this situation, food security has become a global problem. The only solution is to produce more food and to increase the production of dairy and meat products, so this issue is especially important. Today, different levels of salinity affect 160 million hectares of cropland in the world, and every year 1.5 million hectares of land become unsuitable for agriculture. Because of drought and climate change, livestock do not have enough fodder, and the prices of meat and meat products on the world market are rising sharply.

Research results

In spring 2023, in the control variant, when irrigation was carried out at a pre-irrigation soil moisture of 70-70-60% of field capacity (FC), the total amount of humus and nutrients in the soil was as follows: in the 0-30 cm arable layer, the humus content was 0.781%, total nitrogen 0.077%, total phosphorus 0.142% and potassium 2.111%. In the 30-50 cm layer, the humus content was 0.571%, total nitrogen 0.064%, phosphorus 0.117% and potassium 1.992%. In the plot where the Davlat variety of sorghum was sown, under an irrigation regime of 65-65-60% of FC, the humus content in the 0-30 cm arable layer of the soil was 0.792%, while the total nitrogen was 0.079%, phosphorus 0.146% and potassium 2.119%. In the 30-50 cm layer, the humus content was found to be 0.569%, total nitrogen 0.065%, total phosphorus 0.119% and potassium 2.098%. In the variant with a



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pre-irrigation soil moisture regime of 75-75-65% of FC, the humus content in the 0-30 cm layer was recorded at 0.782%, total nitrogen 0.080%, phosphorus 0.141% and potassium 2.120%. In the 30-50 cm layer, the humus content was 0.579%, total nitrogen 0.066%, phosphorus 0.119% and potassium 2.062%. In the control variant where the Chimbayskaya Yubileynaya variety of Sudan grass was sown, under an irrigation regime of 70-70-60% of FC, the humus content in the 0-30 cm layer was found to be 0.795%, total nitrogen 0.081%, phosphorus 0.147% and potassium 2.157%. In the 30-50 cm layer, the humus content was 0.577%, total nitrogen 0.067%, phosphorus 0.119% and potassium 2.063%. Under an irrigation regime of 65-65-60% of FC, the humus content in the 0-30 cm arable layer was 0.801%, total nitrogen 0.079%, phosphorus 0.146% and potassium 2.117%. In the 30-50 cm layer, the humus content was 0.573%, total nitrogen 0.064%, phosphorus 0.118% and potassium 2.028%. Under an irrigation regime of 75-75-65% of FC, the humus content in the 0-30 cm layer was 0.807%, total nitrogen 0.078%, phosphorus 0.141% and potassium 2.129%. In the 30-50 cm layer, the humus content was 0.582%, total nitrogen 0.067%, phosphorus 0.117% and potassium 2.034%. In the plots sown with African millet, in the control variant under an irrigation regime of 70-70-60% of FC, the humus content in the 0-30 cm arable layer was found to be 0.823%, total nitrogen 0.085%, phosphorus 0.142% and potassium 2.146%. In the 30-50 cm layer, the humus content was 0.581%, total nitrogen 0.069%, phosphorus 0.120% and potassium 2.110%. Under an irrigation regime of 65-65-60% of FC, the humus content in the 0-30 cm layer was 0.828%, total nitrogen 0.089%, phosphorus 0.149% and potassium 2.165%. In the 30-50 cm layer, the humus content was 0.583%, total nitrogen 0.067%, phosphorus 0.123% and potassium 2.121%. Under an irrigation regime of 75-75-65% of FC, the humus content in the 0-30 cm layer was 0.831%, total nitrogen 0.084%, phosphorus 0.147% and potassium 2.152%. In the 30-50



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cm layer, the humus content was 0.579%, total nitrogen 0.067%, phosphorus 0.123% and potassium 2.118%.

In autumn 2023, in the control variant where the Davlat variety of sorghum was sown, under an irrigation regime of 70-70-60% of FC, the total humus content in the 0-30 cm arable layer was found to be 0.788%, total nitrogen 0.076%, phosphorus 0.141% and potassium 2.112%. In the 30-50 cm layer, the humus content was found to be 0.572%, total nitrogen 0.063%, phosphorus 0.118% and potassium 1.993%. Under an irrigation regime of 65-65-60% of FC, the humus content in the 0-30 cm layer was recorded at 0.791%, total nitrogen 0.078%, phosphorus 0.147% and potassium 2.118%. In the 30-50 cm layer, the humus content was 0.572%, total nitrogen 0.064%, phosphorus 0.118% and potassium 2.099%. Our most optimal variant, with an irrigation regime of 70-75-65% of FC, showed a humus content of 0.781% in the 0-30 cm layer, total nitrogen 0.079%, phosphorus 0.140% and potassium 2.121%. In the 30-50 cm layer, the humus content was found to be 0.578%, total nitrogen 0.067%, phosphorus 0.118% and potassium 2.063%. In the control variant of the Chimbayskaya Yubileynaya variety of Sudan grass, under an irrigation regime of 70-70-60% of FC, the humus content in the 0-30 cm arable layer was found to be 0.794%, total nitrogen 0.081%, phosphorus 0.148% and potassium 2.156%. In the 30-50 cm layer, the humus content was 0.578%, total nitrogen 0.066%, phosphorus 0.118% and potassium 2.064%. Under an irrigation regime of 65-65-60% of FC, the humus content in the 0-30 cm arable layer was 0.802%, total nitrogen 0.078%, phosphorus 0.147% and potassium 2.118%. In the 30-50 cm layer, the humus content was 0.574%, total nitrogen 0.065%, phosphorus 0.119% and potassium 2.029%. The most optimal variant, with an irrigation regime of 75-75-65% of FC, showed a humus content of 0.806% in the 0-30 cm arable layer, total nitrogen 0.079%, phosphorus 0.140% and potassium 2.128%. In the 30-50 cm layer, the



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humus content was 0.581%, total nitrogen 0.066%, phosphorus 0.118% and potassium 2.035%. In our control variant sown with African millet, under an irrigation regime of 70-70-60% of FC, the humus content in the 0-30 cm arable layer was 0.824%, total nitrogen 0.084%, phosphorus 0.143% and potassium 2.147%. In the 30-50 cm layer, the humus content was 0.582%, total nitrogen 0.068%, phosphorus 0.121% and potassium 2.111%. Under an irrigation regime of 65-65-60% of FC, the humus content in the 0-30 cm arable layer was found to be 0.829%, total nitrogen 0.088%, phosphorus 0.148% and potassium 2.166%. In the 30-50 cm layer, the humus content was 0.584%, total nitrogen 0.066%, phosphorus 0.123% and potassium 2.120%. Under an irrigation regime of 75-75-65% of FC, the humus content in the 0-30 cm layer was 0.830%, total nitrogen 0.083%, phosphorus 0.146% and potassium 2.153%. In the 30-50 cm layer, the humus content was 0.578%, total nitrogen 0.068%, phosphorus 0.124% and potassium 2.117%.

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