USE BY ARTICHOKE PRICKLYAND INCREASING EFFECTIVENESS OF NITRIC FERTILIZERSON AUTOMORPHICAN DHYDROMORPHIC SOILS

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According to the results of many years research authors ascertained that such perspective plant for pharmaceutical industry of Uzbekistan as artichoke prickly (Cynaras colymus L.), cultivated in conditions of typical sierozem of Uzbekistan (Tashkent and Samarkand regions), when applying nitric, phosphorus and potassium fertilizers, particularly with manure, accumulates morebiological mass of harvest (over ground part of plants), and alsointensively carries out biosynthesis ofsuch biologically active substances asrutin and luteoline. It should be notedthat during the process biomass amount of artichoke prickly overground part, and also content of biologically active substances in it is more than in plantswhich were grownin meadow soil than in typical sierozem.
Thus, research revealed that applying full fertilizer with manure productivity of artichoke prickly is increased. In addition it is observed intensification of rutin and luteoline biosynthesis in artichoke prickly leaves.
Key words: nitrogen, phosphorus, potassium, rutin, luteoline, biomass, harvest.

Objective. Among mineral fertilizersthe most important influence onproductivity of artichoke prickly exertnitric fertilizers. With the use of the stable nitrogen isotope 15N it was found that on a typical grey soils cotton plant use nitrogen fertilizer not by 60- 70%, as previously thought, but 40 - 42% 1,2].

The main reason for the incomplete use of nitrogen fertilizer plants - gas and other forms of losses occurring as a result of denitrification and leaching of nitrates in groundwater, such losses reach 40-45 percent or more.

Development of methods for the effective use of nitrogen fertilizers under the artichoke is not only of scientific but also practical significance, as it provides high yields of high quality, as well as reducing environmental pollution.

The transformation of nitrogen fertilizers in irrigated typical grey soils and meadow soil (automorphic and hydromorphic soils), and the use of it by plants depending on nitrogen nutrition regime has been insufficiently studied.

Methods of research. We have conducted field and vegetation experiments. In the first series of experiments we studied the transformation of nitrogen fertilizers under identical conditions of nitrogen nutrition, in the second year - due to the timing of nitrogen application. Vegetation

experiments were carried out at an agricultural experimental station of the Tashkent State Agrarian University. Field experiments were founded on farms in the former collective farm named after A. Artykov of Zangiata district of Tashkent region in two different soils (typical grey soil and meadow), situated at a distance of 1-1.5 km from each other. Experimental area of each soil difference of 0.5 hectares. The soils - meadow and typical grey soil of old irrigation are mediumclay. The depth of the groundwater in the meadow soil 1.2-1.5 m, on a typical sierozem-12-13 m. In the mechanical part of both varieties predominate fraction of silt and fine dust. They are presented in approximately equal amounts.

Agrochemical characteristics of arable and subsurface horizons of typical grey soils, respectively, the following: nitrogen, 0.10 and 0.07%; Humus 1.0 and 0.7%; phosphorus and 0.09 0.16%; nitrates of 15 to 20 mg / kg; movable phosphorus and the exchange potassium, respectively 32 - 10.8 208 - 120 mg / kg of soil.

In the plowing and subsurface horizon of the irrigated meadow soils initial humus content was respectively 2.26 - 1.85% by weight of the soil; nitrogen - 0.125 - 0.080; P 0.160 and 0.100; potassium - 2,100 and 1,220%; nitrates 18.0 and 10.0 mg / kg soil mobile phosphorus - 33.7 and 4.0; exchangeable potassium - 200 - 120. The ratio of C: N 7,8: 1 in a typical grey soils and 11.7: 1 - in the meadow.

Filling of vegetation vessels was conducted in the autumn with soil taken from a field experiment (the horizon of 0-50 cm), in view of its genetic horizons.

The layout of the prickly artichoke plant 90 x 50 x 1, soil moisture was maintained at 70% of SSM.

Results of research. The results of research in the vegetative experiments ascertained that the content of fertilizer nitrogen compounds determined using the stable nitrogen isotope 15N is dependent on soil differences (Table 1).

Table 1

Content change of organic and inorganic nitrogen fertilizer on a typical grey soils and meadow soil (mg per vessel)

Annual norm g/ vessel				2-3 true leaves			Budding		
N	p	K	manure	Total	Organic	Inorganic	Total	Organic	Inorganic
Typical sierozem									
6	5	2	-	1398	744	654	2876	1224	1652
6	5	2	400	1634	908	726	3018	1506	1512
Meadow									
6	5	2	-	1718	1076	642	3158	1566	1592
6	5	2	400	1706	1260	446	3578	1753	1825

In the first half of the growing season (until budding mass) the amount of nitrogen immobilization of fertilizers on meadow soil (or transition of inorganic nitrogen into the organic form of microorganisms in the body) is more intense than in the typical sierozem.

Adding manure enhances this process, especially in the meadow soil, which is associated with a different content in these soils of organic residues mass, as well as the ratio of C: N.

In connection with the immobilization of nitrogen the content of available to plants inorganic compounds in its early development phase, and the budding of plants is reduced, especially in the meadow soil.

With the applying manure further is reduced inorganic nitrogen fertilizer content of the unused nitrogen fertilizer by plants (at the end of its vegetation) on the meadow soil especially when manure is more than in a typical sierozem.

Based on the literature data and the results of our research on the balance sheet and the conversion of nitrogen fertilizer in the system soil - plant can be argued that in the meadow soil with high organic substance content and a wide ratio of C: N during the initial period artichoke is more demanding of nitrogen application than on typical sierozem.

Studies have shown that with the onset of flowering and ripening phase nitrogen supply of plants in the meadow soil is higher than on a typical sierozem, due to the release of previously absorbed nitrogen by soil microorganisms (table 2).

Table 2

The content of nitrogen fertilizer compounds in various soil conditions (mg/vessel).

Annual normg/ vessel				Flowering			Maturing		
N	P	K	manure	Total	Organic	Inorganic	Total	Organic	Inorganic
Typical sierozem									
6	5	2	0	1864	972	892	1394	1301	86
6	5	2	400	2014	970	1044	1744	1391	353
Meadow									
6	5	2	0	2424	1270	1154	1796	1574	222
6	5	2	400	2486	1396	1090	1912	1458	452

This makes it necessary to study the effectiveness of timing of nitrogen fertilizer based on the biological characteristics of the transformation of nitrogen and soil conditions.

Conclusion. Studies have found that artichoke prickly grown on a typical sierozem with applying of a complete fertilizer, particularly manure, contributes to the accumulation of a large crop and increased biosynthesis of such biologically active substances such as rutin and luteoline as

well as medicinal plants weight. The number and value of artichoke in this process is more on the meadow soil than on a typical sierozem.

Thus, in relation to the control variant higher yield of artichoke is provided by making a complete fertilizer, especially with manure than on a typical sierozem.

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