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Main Ways to Improve the Efficiency of Agricultural Land Use in the Fergana Valley Sample

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ABSTRACT: Favourable soil conditions for growth of plants putting on optimum parameters of agro physical properties of a soil and indicators of its fertility. To that numbers of the major beyond to density and the structure of the soil, power of an arable layer, structural structure, etc. follows. The ways of the main processing have significant effect on distribution in the soil of organic matter, the brought fertilizers, availability to plants of elements of mineral food. Plowing, milling main processing create an arable layer, rather uniform in a gummunization, due to the best hashing of layers of earth. The attacks, this article shows quality of the earth at site class points what each processing of soils aspire at qualitative and effective uses of the earth to.

KEYWORDS: soil conditions, distribution to soils, chemical elements in the soil, point site class of the earth, agro physics, agro chemistry, biological processing, field cultures, Agro-landscapes, cadastral assessment, assessment of lands, land reclamation.

I. INTRODUCTION

The main ways to increase with efficient use of land, there are two main ways to improve the quality (bonality score) of the Fergana Valley land. Of which agro physical foundations of treatment are considered the main ones, as well as agrochemical and biological foundations of soil treatment. This article outlined the agro physical foundations of the treatment:

Nowadays, modern processing theory is based on a well-founded description of the agro physical properties of the soil and the requirements of crop plants in the agriculture of the Fergana Valley. Therefore, the most important agro physical basis of treatment is the requirements of crops to the density and structure of arable soil layer of rural economic lands, structural composition and degree of soil crumbling, capacity of arable layer, hardness and other properties on which plant growth and yield of rural economic lands depend.

Equilibrium and optimal soil densities are distinguished. Equilibrium density is the established density of untreated (1-2 years) soil in the natural state. Soil density, which creates favourable conditions for plant growth and activity of soil microorganisms, is called optimal. [1]

II. RELATED WORK

The study of the response of crops to the physical condition of soils of different genesis revealed the intervals of optimal soil density values for cereals and crops. Thus, the modeling of the density of addition of the dart-subol of the solid medium-loam soil showed that in the average years of moistening, its optimal parameters for cereal crops are 1.1 - 1.3 g/cm3, for propachas - 1.0 - 1.2. The equilibrium density of this soil is within the range of 1.35 - 1.50 g/cm3

Comparison of equilibrium and optimal density for crop growth makes it possible to determine the necessity of soil treatment, in this case loosening. The greater the difference between these values, the more intense and deeper the soil

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must be treated. For example, with the help of ploughing of dandruff soil, its density decreases from 1.4 - 1.5 to 0.8 - 0.9 g/cm3 and the soil becomes loose. [2]

Soil density depends on granulometric composition, humus content, water-building aggregates, soil moisture and other conditions.

Soils of Fergana region of heavy granulometric composition with high content of sludge fraction and humus are subject to significant swelling during moistening and loosening. This causes a change in both equilibrium and optimal soil density.

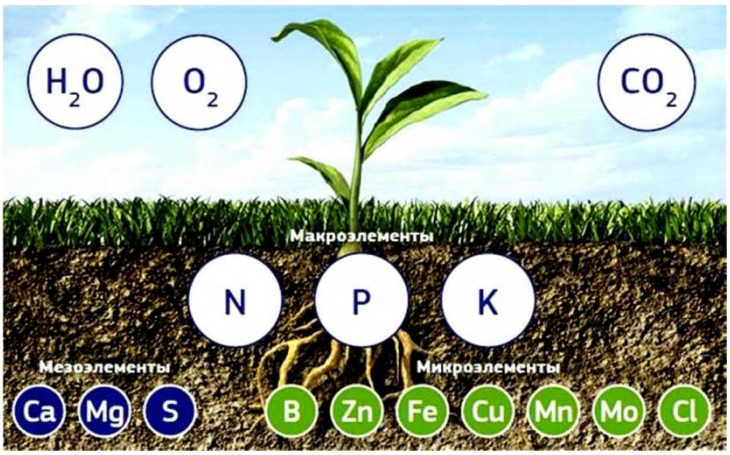
High-gummused black lands soils have an equilibrium density of 1.0 - 1.3 g/cm3, which coincides with the optimum for crops, which reduces the intensity and depth of the main treatment of these soils. The best conditions for the appearance of grain crops, reduction of moisture evaporation from the soil are formed, for example, in black-earth heavy carbon soil, when the upper (0-7 cm) layer has a loose state and density of 0.98 - 1.04 g/cm3, and the lower (7-30 cm) layer is somewhat compacted - 1.18 - 1.20 g/cm3. With this, a combination of different-depth dump and recoilless treatments with surface soil treatment is achieved. [3, 4]

III. TEXT INPAINTING

Agro physical bases of treatment are made to chemical element found in soil composition.

Picture-1.

Chemical elements in soil.



Optimization of physical conditions of soil fertility is primarily determined by soil structure, by which the ratio of volumes of solid phase, capillary and non-capillary porosity is understood. The best conditions for soil aeration, air exchange between soil and atmosphere, and therefore favorable conditions for plant growth and development are created in the dart-sub walled middle carbon soil, when the total porosity is 46 - 56%, the non-capillary - 18 - 25, the capillary - 28 - 31%, and the solid phase occupies the 44 - 54% of the soil volume.

Optimal soil conditions of black earth soils provide a structure at which total porosity is 51 - 62% and aeration porosity is 15 - 25%. The limit value leading to a decrease in the yield of cereals is the porosity of stable aeration - the 13 - 15% volume of the soil. Oxygen content in normally moistened soil is not less than 20%, and CO2 does not exceed 0.2 - 0.5%.

With the help of treatment, the structure of arable soil layer is improved: loosening at the main and pre-sowing treatments increases non-apillary porosity and, on the contrary, compacting loose soil, reduces it and reduces aeration. [5]

The creation of an optimal model of fertility of the arable layer allows to optimize soil regimes and increase crop yield. The modelling of the homogeneous and heterogeneous state of the arable layer of dern-subcoat soil of different capacities (20. 30 and 40 cm) showed that maize, potatoes and other field crops react positively to the heterogeneous structure, in which a higher degree of optimization of agro physical and agrochemical properties is achieved in the upper layer (0 - 20 cm) due to the application of fertilizers and lime.

Increase of crop of field crops at heterogeneous structure of arable layer with application of high doses of fertilizers in layer 0 - 20 cm in 15 years increased from 3.8 to 9.7 thousand fodders. Units per 1 ha compared to an uncomfortable background, and with a homogeneous structure - from 3.4 to 8.9 thousand fodders. Units per 1 ha (Table 31).

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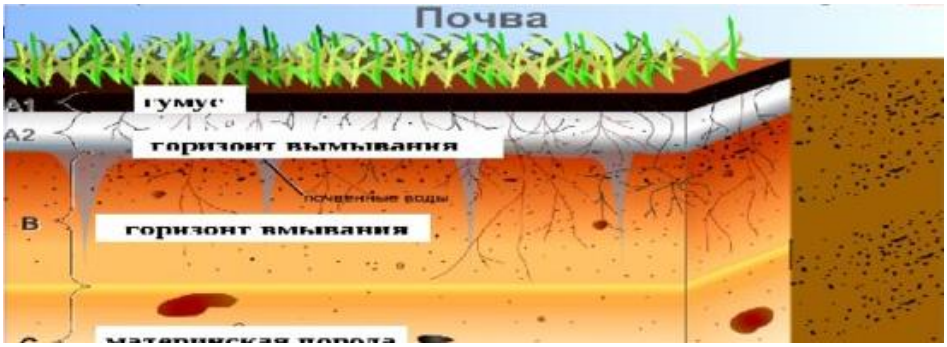
Collection of feed units at application of fertilizers in layer 0 - 40 cm decreased by 10.8%. This indicates that mixing of the arable layer with the soil of the eluvial horizon with low natural fertility does not allow to restore the soil fertility to the initial level even in a 15-year period. [5]

Structural composition and content of water-building aggregates characterize soil addition, resistance to erosion and compaction, optimize soil regimes and determine crop productivity. Optimal content of water-bearing macro-structure (aggregates with size of 0.25 - 10 mm and more) for dern-subcooled and grey forest soils is 30 - 45%, for black-earth soils - 45 - 60%. With this structure, the soil maintains for a long time the steady addition given to it by the treatment. Structural soil loses positive qualities when the amount of dust (particles smaller than 0.25 mm) increases to 30-40%. [6]

The upper (0 - 10 cm) soil layer of the arable layer is more gummusic and better structured than the lower (10 - 20 cm) layer. Here, the restoration of soil structure is faster due to the accumulation of plant and root residues introduced by fertilizers. Soil expansion during ploughing contributes to grating and natural part of arable layer. Picture-2 clearly shows the layers of agricultural land.

Picture-2.



The requirements of crops to the degree of soil crumbling are determined taking into account the grain-size composition, soil structure, zone moisturization, biological features of the culture and the manifestation of erosion. For example, for Non-Black Earth grain crops, the degree of crumbling (the fraction of lumps with a diameter of 0.25 - 30 mm) of dernocular and grey forest soils of the arable layer should be at least 80% and the clay of the surface soil layer should be up to 20%. [7]

The use of heavy tillage machines and vehicles leads to strong soil compaction (up to 1.35 - 1.55 g/cm3), deterioration of physical and mechanical properties and reduction of, for example, germination of winter wheat seeds from 81.1 to 60.7%. This necessitates deep loosening by means of recoilless, cheesecloth tools, deep-drying ploughs and other devices, which serve as an effective means of decompressing the soil of both arable and sub-arable layers and improving the air-water permeability of the soil.

A significant influence on the growth of root Systems and the penetration of roots into the soil is mechanical resistance - the hardness of the soil. Strong soil compaction during drying and increased hardness above critical values (more than 10 kg/cm 2 for cereals) reduce root growth and increase plant energy consumption to overcome resistance. By means of treatment, deep loosening, it is easier to develop roots into deep layers of soil and to absorb water, nutrients. This is especially important for the formation of half-valuable root vegetables in sugar beet, carrots, tubers of potatoes. [8]

Soil treatment in landscape farming systems should be soil-protective and energy-saving. On slope lands subject to water erosion, soil-proof treatment technologies are developed on the basis of special deep recuperative loosening, cheeselting, slipping, intermittent grooming, as well as contour ploughing with ridges, wells, etc. These techniques allow to reduce melt water flow by 2 - 2.5 times and soil washing by 2.5 - 11 times. At the same time efficiency of mineral fertilizers increases by 10 - 12%, yield of grain crops - by 0.15 - 0.2 t/ha. [8]

IV. EXPERIMENTAL RESULTS

Cadastral valuation of agricultural land involves the calculation of integrated indicators on soil fertility, technological properties and location to determine on their basis the estimated rental income and cadastral value of agricultural land. [9]

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An integral indicator of soil fertility is the bonality score (aggregate soil score), which is used to calculate gross output and costs of the valuation object. In this table we can compare the points of banality of field agricultural lands of Fergana Valley, Republic of Uzbekistan from 2017 to 2018 (Table 1). The total amount of field agricultural land with medium cylinder bonitette.

This Table 1 clearly shows that Fergana Valley has an average field agricultural land of 58 points from the middle land of the cadastral group, VI cadastral classes and a bonality score of 51-60 points. Attacks, however, this table shows that in Fergana region there are more 21-70 cylinder lands than Andijan and Namangan regional lands, which consist of a total of 630120 hectares. [2]

Table-1. Information of field agricultural lands of the Republic of Uzbekistan (2018)[11]

Table-1. Information of field agricultural lands of the Republic of Uzbekistan (2018)[11]

№	Republic valleys	Cadastrel groups										Total ha	Middle ball for 2018yy.
		Poor lands		Below an average		Middle quality land		Good lands		The best lands			
		Cadastrel classes											
		I	II	III	IV	V	VI	VII	VIII	IX	X		
		Bonality score											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100		
1	Andijan			844	22346	51597	52837	62741	36573	5857	67	232862	57,50
2	Namangan			4597	41141	48808	39359	46533	33581	19195	1729	234943	60,00
3	Fergana			5557	44499	76437	58661	74163	29300	5268	49	26934	56,00
Total				**10998**	**107986**	**176842**	**150857**	**183437**	**69231**	**30320**	**1845**	**494739**	**58**

V. CONCLUSION

This article, apart from the land bonality score, one of the most important components of the efficient use of land is a science-based farming system, which includes:

- Evidence-based crop rotations in which alternation of cultures allows to use rainfall with bigger return and fertility of the soil, effectively to fight against weed vegetation, wreckers and diseases, 3-4-5 dusty and fodder crop rotations are recommended for development. In the farm it is necessary to have 2-3 field and 1-2 fodder crop rotation. Important importance in crop rotation is given to vapours as the main source of fertility enhancement, depending on the conditions, the specific weight of vapours can be from 18 to 35%. [10]

- Soil treatment system. The obligatory agricultural technique is, continuous treatment of vapours, ash ploughing and feverish ploughing with ploughs, pre-sowing cultivation, plowing of crops, inter-row treatment of potable crops. On lands subject to wind and water erosion, it is recommended that the soil be treated with anti-erosion tools.

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