MACHINES AND TOOLS MEKHANIZATSII

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THE EFFICACY OF TECHNOLOGY AND TECHNIQUES TO MINIMIZE SPRING PREPLANT TILLAGE SOWING IN SUGAR BEET

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The problem of spring treatiment of soil pid cisugar beet wetland soils of heavy texture. A technological operation and minimize hardware preplant soil. The results of studies of the proposed technology.

Sugar beets, minimizing, combs, spring tillage, harrow, sowing, productivity.

Problem. In the complex measures increase yield of sugar beet big role development and implementation of effective zonal agricultural practices and technical means to reduce pereuschilnennya and soil density to 1.1-1.3 g / cm3, a balance between the soil and its povitrevolohoemkistyu, providing good development of plants during the growing season.

The negative impact of increased density increases due to the intensification of cultivation of the soil under sugar beet by running multiple influences of power tools, machinery and equipment, especially on heavy soils in texture, crop area in which Ukraine up to 30% of the total area of sowing .

The technology includes sugar beet growing consistently used operations tillage, fertilization, spring pre-processing, planting and caring for crops that provide the necessary conditions for seed germination, growth and development of roots and accumulation of sugar and harvesting. Traditional Ukrainian technology intensive cultivation of sugar beet has about 50 operations, and on heavy soils and even more, the cost of fuel and lubricants in this reach 280-450 kg / ha [1, 2]. The main cultivation of the soil under sugar beet is made in two ways - by type

improved or napivparovoho. Improved method implemented in areas of unstable humidity and napivparovyy in areas of sufficient moisture. The final operation is the cultivation of plowed fields bezpolytsevyy (ploskoriznyy) deep cultivation, but on the margins, with soils that do not swim leveling the soil surface.

Spring tillage consists of top soil loosening teeth harrows and cable-leveling harrows combined with Zubov and sufficient moisture in the area and also the following additional deep tillage cultivators solid. The need for it arises in the fields of soils prone to zaplyvannya and where during primary tillage is not achieved due vyrivnenosti field surface. The final operation is spring preplant tillage cultivation, and the conditions overly loosened soil is necessary to conduct kotkuvannya.

The list of technological operations for tillage involves a number of passages units in the field, which leads to pereuschilnennya soil, especially heavy in texture. Analysis of the distribution of energy consumption for tillage in respect of forest-steppe zone of Ukraine shows that the main and pre spent 50-80% of energy consumption. In addition, a continuous fertilization and herbicide leads to significant total costs and pollution. For these indicators in terms of the energy crisis of modern technology can not be attributed to energy saving and environmentally friendly.

It should be noted that in the early spring period is almost impossible to perform the full range of necessary operations in optimal agronomic terms.

The main way to increase yield of sugar beet, while reducing the cost of material and energy resources is minimizing tillage especially in the spring.

In connection with the above, reducing the number of manufacturing operations, is important in the scientific and practical ways.

Analysis of recent research, Literature and patent sources suggests that the prospects for the development of mechanical technology and technical means to perform II in growing sugar beets to increasing yields decrease energy consumption can be seen as a way of preparing the soil ridge. However, in Ukraine for her no specialized machines and working bodies for the general approbation and manufacturing.

The purpose of research. Determining the efficiency of growing sugar beets in heavy soil texture by minimization spring preplant soil using a new process and working bodies for its implementation.

Results. Necessity of zonal tillage systems, particularly heavy in texture, is determined not only causes economic order - increase productivity, decrease production costs, but also improve agrophysical properties humus balance, preserving soil fertility, reduction of moisture and nutrients from the soil.

The main task of spring tillage is the most complete safety gained over the winter and autumn moisture and create favorable conditions for the free penetration of precipitation into the soil and preserve them. In

addition to job creation is spring cultivation vyrivnenoho, chubby, dribnohrudochkovatoho soil for seeding at the desired depth, providing conditions for rapid germination and its friendly and weeding.

To prevent excessive compaction of the texture, improve agrophysical and physical and mechanical properties developed mechanized method of growing sugar beet, which is a system of interconnected ahropryyomiv performed in sequence. The peculiarity of the proposed method as opposed to the traditional is that the increase in sugar beet productivity while reducing material and energy costs of cultivation achieved through minimizing preplant tillage and fertilizer efficiency by making their local area in the future line.

The essence of the proposed method is that the manufacturing operations of preparing soil for sowing divided into autumn and spring seasons and performed as follows [3, 4]

1. Autumn on the background napivparovoho or improved tillage after leveling the field and loosening it to a depth of 12 ... 16 cm tractor with cultivator in the unit that is equipped with special working bodies hrebeneutvoryuvachamy transmitting profiled surfaces in the form of ridges. In order to reduce the cost of fertilizers in the main application, conduct local area making them the future line. For this tukovysivni devices installed on the frame of the cultivator, carrying tins drive from musculo-drive wheels. For orientation of the unit to set markers cultivator. With the profiled surface field is left for the winter.

2. Spring tillage (Fig. 1) is cut tops of ridges to a height of 3 ... 4 cm, which is performed as part of the tractor unit 1 and 2 cultivator (*and*), Followed by sowing sowing unit (*to*) In the area of cutting layer of soil (*to*). Cultivator equipped lancet working bodies of vidvalnykamy. If necessary preplant application of herbicides provided their band introduction and incorporation rod rotor 5, for which the cultivator must install sprayer 7, 4 sprayers and pipelines.

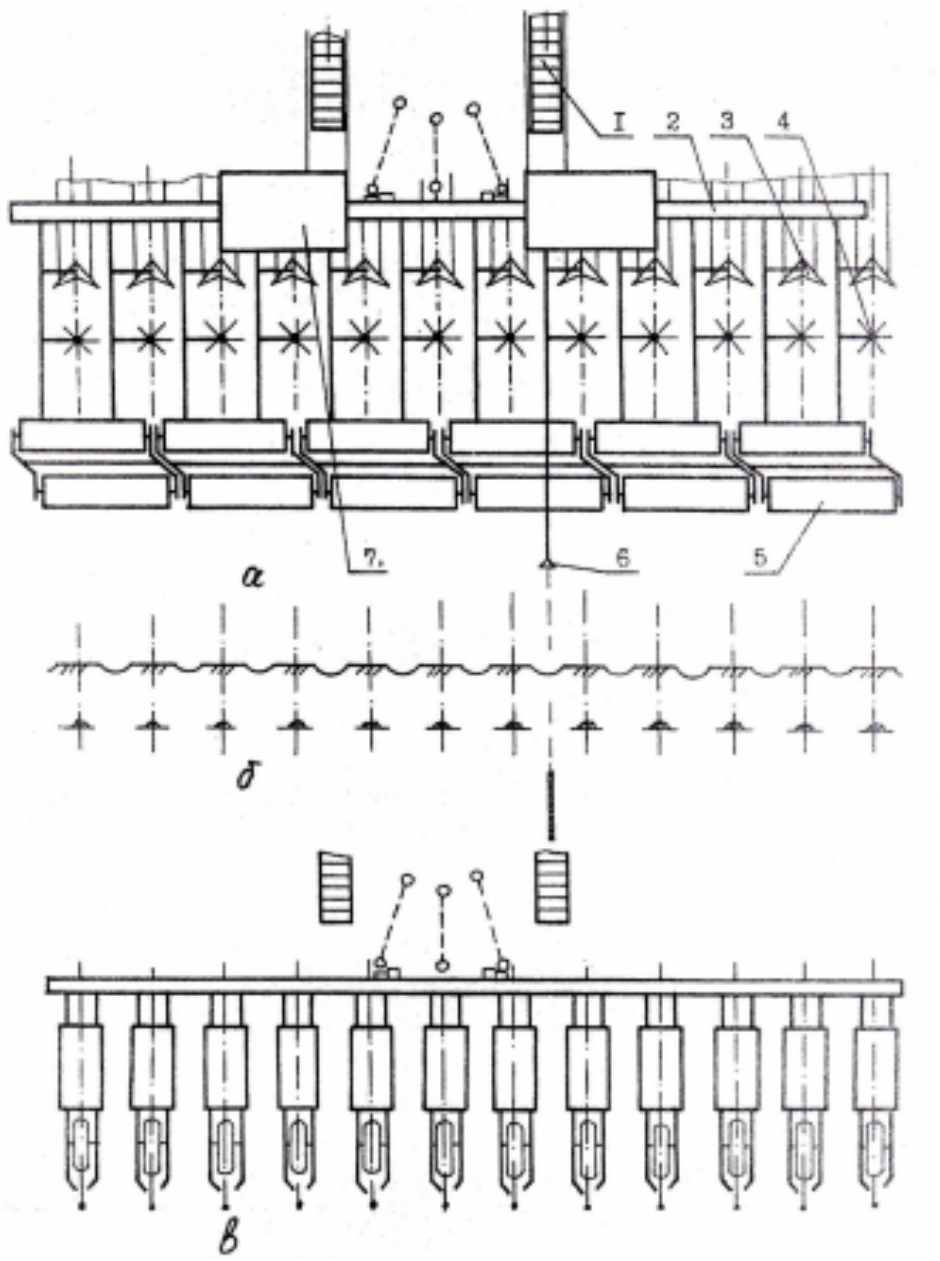

Fig. 1. Scheme of the technological operations cut tops of ridges (a), the profile of the field surface after cutting ridges (b) scheme and seed unit (s): 1 - tractor; 2 - cultivator approbation-5.4; 3 - lancet paws; 4 - spray; 5 - rods rotors; 6 - unit and storage of pesticides.

In cultivator set slidoutvoryuvach 6, which forms should conduct orientation for sowing unit (*to*). Formed in the fall crest promote intensive accumulation of moisture in the spring and accelerated maturation of the soil in the area of ridges, allowing earlier sowing dates hold sugar beets, without making any mulching or shleyfuvannya or deep soil loosening or making solid earnings and herbicides course continued during the growing season, reducing material and energy costs, a prerequisite for increasing productivity of culture.

Laboratory and field studies and proposed technology over traditional Volyn Regional conducted on HBO "Elite", which belong to Ukraine buryakosiyuchyh areas with sufficient moisture. During the research studied the physical and mechanical properties of soil; formation of soil crust; uniform distribution of seeds to a depth of earnings; weediness of crops; yield of sugar beet.

The study was conducted under the scheme univariate experiment the following options:

1. Control. Normal sugar beet growing technology adopted in this area.

2. Against the background vyrivnenoho napivparovoho tillage, loosened to a depth of 10 ... 12 cm, made locally making dry fertilizer in the area of the future of the line, followed by the formation of ridges seal slopes above them.

3. Against the background of continuous application of mineral fertilizers for soil cultivation after napivparovyy aligned and loosened field surface to a depth of 10 ... 12 cm conducted forming ridges.

4. Against the background of continuous fertilization under napivparovyy tillage with vyrivnenoyu and loosened the surface to a depth of 10-12 cm conducted forming ridges and slopes to form a seal mizhhrebenevoyi slit.

We know that the purpose and early spring preplant tillage is to create optimal conditions for seed germination, further growth and development of plants. One of the important indicators of quality performance sowing, giving the preconditions for the emergence friendly stairs are necessary to ensure her uniform depth earnings seeds. After passage seed unit we conducted accounting earnings seeds depth (Table. 1).

Evaluation of materiality difference between the average data sampling depth earnings seeds held by the criterion *"T"*, Student. Results of survey and mathematical data set:

teks 1: 2 = 3.5*; tvks 1: 4* = 6.9*; teks 2: 4* = 0.7; *teks 1: 3* = 4.4; *teks 2: 3* = 0.75; *teks 3: 4* = 1.45.

1. Depth earnings seeds for different versions of pre-treatment of seeds.

Variant	Amount of measurements	X 10-2m	*σ,* 10-2m	*V*, %	m, 10.2 m	*P*, %	χ^2
Control	72	3.43	0.72	22.4	0.08	2.6	6.5
2	72	2.81	0.78	24.8	0.08	2.76	2.4

3	72	2.9	0.78	22.1	0.09	3	4.04
4	72	2.74	0.78	18.2	0.07	2.6	4.11

Tabular value of this criterion for the number of degrees of freedom conditions V = 100 is *tteor* = 1.96 [5]. Comparison of experimental values of Student's t test with theoretical indicates that a significant difference in the depth of earnings seeds observed between control options, ie traditional preplant soil cultivation and the proposed method. This is the result of deep spring preplant tillage and tillage uneven. Further vegetation and supervised the development of sugar beet plants to research options before the due date collection held equally.

The main parameter that characterizes the performance of growing sugar beet yield. The results of experimental data on the yield given in Table. 2.

2. The yield of sugar beet depending on ways preplant tillage.

Variant	Average yield, kg / ha	σ, kg / ha	V, %	m, kg / ha	P, %
Control	424.1	21.6	5.1	10.8	2.5
2	490.9	23.5	4.78	11.7	2.4
3	468.7	19.9	4.24	9.9	2.2
4	481.1	20.6	4.3	10.3	2.2

Materiality difference between comparable alternatives tested by the criterion *"T",* Student. As a result of experimental data calculations are as follows:

teks 1: 2 = 4.2*; tvks 1: 4* = 3.8*; teks 2: 4* = 0.57;

teks 1: 3 = 3.1; *teks 2: 3* = 1.39*; teks 3: 4* = 0.91.

As a result of experimental studies found a significant difference in the resulting sugar beet yield. It was stated that the background vyrivnenoho napivparovoho tillage, loosened to a depth of 10 ... 12 cm, which made the local introduction of dry fertilizer in the area of the future of the line, followed by the formation of ridges seal slopes above them, and the yield was the highest was 490.9 kg / ha.

Conclusion. Results of sugar beet by the proposed technology indicate that minimalizatsiya spring preplant tillage, makes it possible to achieve optimal and uniform depth earnings seeds, sowing of sugar in buryakiv more ranni time, resulting in an increase vehetatsiynoho period i Increase of productivity buryakiv sugar.

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Rassmotrena problem vesenney Preparation of soil for Seva saharnoy beet in soils tyazhelыh for mechanical composition. Technological proposals surgery and tehnycheskye sredstva for mynymalyzatsyy predposevnoy processing. Results of research Pryvedenы predlozhennoy technology.

Saharan beet, mynymalyzatsyya, rowing, vesennee vozdelыvanye, harrow, sowing, proyzvodytelnost.

The problem of spring preparation of soil is considered for sowing of sugar beet on soils heavy after mechanical composition. A technological operation and hardwares is offered for minimalizacii of preseed treatment. The results of researches of the offered technology are resulted.

Sugar beet, minimalizaciya, combs, spring till, cultivator, sitting down, productivity.

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CALCULATION cylindrical surface scrapers HNOYEPRYBYRALNOYI INSTALLATION

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The equation and constructed curves orthogonal section cylindrical surface on which the particle moves manure under the action of the staff. The trajectory of particles perpendicular to the surface of generators. The curve section is designed with the condition that at a constant speed of particles on the surface pressure is also constant.

Scraper, surface, pus equation curves particle.