UDC 631.3: 631.51

PERFORMANCE TECHNOLOGIES STRIP-TILL IN tillage

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In order to quantify the tape and traditional cultivation technologies conducted study the effectiveness of their use.

The technology, cultivation, Strip-Till.

Formulation of the problem. An integral part of growing crops is the main cultivation. A common system cultivation in Ukraine is plowed. This is one of the most power-consuming operations. Thus, when plowing medium resistivity soils under grain spiked culture to a depth of 20-22 cm spend about 14-16 kg / ha under maize and - to a depth of 25-27 cm - 18-20 kg / ha of diesel fuel. Disadvantages polytsevoho tillage (plowing), in addition to increased costs and labor costs, is reducing the density of the soil, which can lead to increased erosion. Water and wind erosion each year submitted an average of 15 t / ha of topsoil.

At the same time cultivation should be seen as a necessary measure. If not it can survive, it must fulfill the least destruction of soil structure (minimizing soil), ie the surface to a depth of loosening 8 cm (Min Till).

Recently becoming more common due to the use of herbicides continuous action short period of decay (like Roundup Classic) becomes zero tillage (No Òill - sowing in raw ground). Disadvantages polytsevoho cultivation are advantages for min Till and No Òill.

But farming system min Till and No Òill contributes to the accumulation in the upper layer of soil weed seeds, pests and diseases, the creation of its heterogeneous structure and compaction which causes to reduce crop yields by 10-20%, especially deep (more than 3 m) root penetration (corn, sunflower, etc.). In contrast, due to plowing, creating a homogeneous (uniform) layer of soil, favorable for root development and plant growth.

In this respect, the technology is promising Strip-Till, which combines the advantages of known methods of cultivation - the traditional

(Plowing) and zero. By this technology the soil is treated bands (stripes) width of about 20-25 cm and depth of 30 cm for the purpose of loosening, and creating a seed bed conditions for its rapid warming. The distance between the midpoints tapes 70/75 cm. Simultaneously,

cultivation in the film can be made dry or liquid fertilizer. This technology also sumischayetsya Pre-primary and cultivation.

View fields after cultivation (a) and maize sowing (b) shown in Fig.

and) b)

Fig. View treated and sown technology Strip-Till field.

For mechanization Strip-Till technology company Ortman (USA) offers 6-8 and 12-row units, and the company Amazone (Germany) - 8-row. Vosmyryadni ASOH-8 units for strip tillage also produces LLC "SP Krasnyansky" Agromash "" (Vinnytsia region). With the technological scheme, the presence and placement of workers cultivating units of domestic production is not significantly different from overseas.

Thus, the construction work of the section includes a frame, a front disk cutter which cuts the soil surface and crop remains and provides constant soil depth, two discs with notches at the joint stand clear of residues and shallow surface rozryhlyuyut line. Chyzelnyy drill loose soil at a given depth of 30 cm, and if necessary also ensures fertilization, a pair of rear wavy discs rozryhlenyy soil processes, and the rear roller planchastyy bring it to dribnohrudochkuvatoyi structure and piduschilnyuye to a favorable condition for sowing seeds (1.2 1.4 g / cm3). The presence of additional devices can hook tape tillage combined with simultaneous application of fertilizers, including two levels of depth. This technology allows you to perform several operations in one pass of the unit, while the current needs plowing, fertilizing and preplant tillage sowing in different units.

The main disadvantage Strip-Till technology is making the need for prior herbicide continuous action type or Roundup Hurricane. However, these additional spending to combat the weeds are small in the total costs for tillage. In addition, when the traditional tillage technology typically made herbicides against the relevant weed species.

Analysis of recent research. Due to the fact that the technology belt (band) tillage in row crops developed theoretically passed production test and implement agricultural enterprises only recently, the number of known publications limited [1, 2, 3, 5], and the results spraying and

insufficiently justified. No comprehensive comparative technical and economic evaluation of tape technologies and traditional tillage, which complicates the adoption of scientifically based decisions. In view of the above, the most appropriate to solve this problem feasibility study and comprehensive assessment of processing technologies.

The purpose of research - To prove the effectiveness of energy and resource conservation through the use of band (strip) tillage technology compared to traditional.

Results. Research conducted by study technical, operational and economic performance of machine components and integrated evaluation of different tillage technologies. Background information was provided for calculations marketing specialist companies producing agricultural machinery. Technical and operational calculations of machine components and economic evaluation of technologies of processing carried out by the program and methodology department of technical service and engineering management of the National University of Life and Environmental Sciences of Ukraine [4].

We conducted a comprehensive assessment of the relative traditional (Pre-plowing and cultivation of individual units) and terraced tillage technologies on the base of domestic and foreign technology (see. Table.).

According to data calculations saving technology tillage Strip-Till compared with traditional on the basis of domestic or foreign equipment is not significantly different and tentatively is at this level, the costs of work 76%, fuel consumption - 70% direct maintenance and reduced costs - 60-70%. It should be noted that the cost of work (labor) and fuels for domestic appliances Strip-Till technology yields somewhat foreign, but spending per unit of work in 1,7-2 times smaller. This preference to domestic producers of technology.

Technical and economic characteristics of processing technologies *.

Technology		Ingredients unit		The economic performance of the technology per hectare				
		brand tractors	Mark SG cars	ness, productivity per hour alternating time	the cost of work, hours.	fuel consumption, kg	the cost of funds USD. **	
							eksplua direct-mutation	brought
Based on a	Traditional	HTZ 17222	IN-5	1.44	0.69	19.3	798,00	1,061.76
			AP-6	4.10	0.24	6.4	238.77	308.07

				Total	0.93	25.7	1,036.77	1,369.83
	Strip-Till	HTZ 250-10	ASOH-8	4.50	0.22	7.9	328.86	439.32
	Saving technologies Strip-Till compared with traditional,%				76.3	69.3	68.3	67.9
On the basis of foreign technology	Traditional	John Deere 7820	John De-ere 975	1.53	0.65	16.0	1,028.37	1,501.92
			Farmet K 600	4.40	0.23	5.3	380.94	565.95
				Total	0.88	21.3	1,409.31	2,067.87
	Strip-Till	John De-ere 8400	Ortman 8	4.8	0.21	6.1	568.26	872.34
	Saving technologies Strip-Till compared with traditional,%				76.1	71.4	59.7	57.8
	Value indices Strip-Till technology based on domestic and foreign technology, times				1.05	1.30	0.58	0.50

* Payments made under the following conditions: soil resistivity of 50 kN / m2, soil depth 27 cm length rut field - 900 m.

** Calculations spending made at the official rate NBU unit credit equal to 21 USD.

The annual economic effect from the introduction of tape technology tillage is defined as follows:

$$E_p = (П_{вт} - П_{вс}) \cdot S \text{, USD.}$$

where: $П_{вт}$ and $П_{вс}$ - Given the cost to traditional tape technologies and tillage, UAH / ha; S - cultivated area, ha.

At the rate of 1,000 hectares area are:

$$E_p = (1369{,}83 - 439{,}92) \cdot 1000 = 930510 \text{ UAH.}$$

Thus, according to the theoretical study and practice, technology belt (band) tillage in row crops is energy and resource saving, and the introduction of cost-effective.

Units of domestic production ASOH-8 successfully in some farms of Vinnytsia and Khmelnytsky regions. Strip-Till technology was highly appreciated in farms of different regions of Ukraine, including Lat Agro (Sumy region). Rost Agro (Poltava region). Olstas Len (Chernihiv region.) And others. By the way, the economy Olstal Len on this technology grows and winter rape.

Conclusions

1. Analysis of existing literature suggests limitations justified comparative research results tillage technologies.

2. Strip-Till technology combines basic and presowing tillage, and if necessary also for fertilizing and sowing, which reduces the number of passes of units in the field, saving labor costs, fuel and lubricants and capital.

3. The results of our studies show that savings technology cultivation Strip-Till compared with traditional on the basis of domestic or foreign equipment is not significantly different and is approximately at the same level, cost of work 76%, fuel consumption - 70% of direct operating and reduced costs - 60-70%.

4. established that the cost of work (labor) and fuels for domestic appliances Strip-Till technology yields somewhat foreign, but spending per unit of work in 1,7-2 times smaller.

5. Subsequent studies appropriate to the technology for a comprehensive assessment of Strip-Till combined primary, preplant tillage, fertilization and seeding of cultivated crops.

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With a view kolychestvennoy otsenki polosnoy and tradytsyonnoy technology obrabotku soil made of the effectiveness rationale s use.

Technology, processing soil, Strip-Till.

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UDC 631.004.1

METODOLOHICHNIST OF TECHNOLOGY OPERATIONS rehabilitation AGRICULTURAL MACHINES with limited resources

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In the article the methodological approach to describing stochastic ensure the efficiency of agricultural machines.