INNOVATIVE TECHNOLOGICA
METHODICAL RESEARCH JOURNAL
ISSN: 2776-0987 Volume 2, Issue 5, May, 2021

RESERVES FOR REDUCING FUEL AND ENERGY COSTS FOR CULTIVATION OF COTTON IN THE CONDITIONS OF THE REPUBLIC OF UZBEKISTAN

Khudoyberdiev T. S.
Doctor of Technical Sciences, Professor,
Andijan Institute of Agriculture and Agricultural Technologies

Tursunov B. N.
Associate Professor, Andijan Institute of Agriculture and Agricultural Technologies

M. Sh.Kholdarov
Trainee Researcher, Andijan Institute of Agriculture and Agricultural Technologies

Norkulov Kh. M.
Andijan Institute of Agriculture and Agricultural Technologies

Ganiev O.O.
Masters, Andijan Institute of Agriculture and Agricultural Technologies

Annotation
The analysis of the structure of the use of fuel and energy resources in the cultivation and harvesting of agricultural crops is carried out. The issues of a possible reduction in fuel consumption for pre-sowing tillage for cotton when using various sets of machines are considered. Comparative indicators of these machines (labor costs, energy and productivity) are given. Table-2.

Keywords. Tillage, disc harrows, chisel cultivator, seed filling, labor, energy, fuel consumption, productivity, seedbed leveler. soil preparation for sowing.

Analysis of the structure of the use of fuel and energy resources in agriculture of the Republic of Uzbekistan showed that about 25 ... 30% of the total amount of fuel spent on cultivation and harvesting of this crop is spent on pre-sowing soil cultivation. [2] It is possible to reduce fuel consumption by introducing less energy-intensive technological complexes of machines into production while minimizing field work.

With the existing technology of cotton cultivation, pre-sowing soil cultivation is carried out in farms of the Republic with disc harrows, chisel cultivators, self-made levelers (small), tooth harrows and other tools, depending on the condition of the soil and the presence of perennial weeds. At the same time, it is not always possible to obtain the necessary optimal conditions for the growth and development of plants, since the necessary tillage of the soil to the depth of planting seeds is not ensured, the conditions for absorbing moisture and preserving it from evaporation are violated; in addition, it is not always possible to obtain the necessary soil structure and often the surface of the field

INNOVATIVE TECHNOLOGICA
METHODICAL RESEARCH JOURNAL
ISSN: 2776-0987 Volume 2, Issue 5, May, 2021

becomes more ridged.[3] In order to achieve the required high-quality soil condition, it is necessary to resort to multiple passes of pre-sowing units, as a result of which the deformation of the arable and sub-arable horizons, soil spraying and an increase in the process of its water erosion, as well as excessive fuel consumption for this operation, significantly increase. Therefore, there is a need to improve the existing technology of pre-sowing soil cultivation, which must meet the following requirements.

The first requirement is to replace the traditional deep pre-sowing soil cultivation with a surface one, only to the depth of planting seeds, which will ensure compliance with the agrotechnical conditions - laying 95% of all seeds at the same depth. In this case, with the available energy capacity of general-purpose tractors, it is possible to use wide-cutting tools for pre-sowing soil cultivation, which meet the specific characteristics of plant growth and development.[4]

The second requirement is partial or complete replacement of some energy-intensive mechanical treatments with the introduction of herbicides for weed control. [5] This requirement for pre-sowing soil treatment is due to the latest developments in the industry that produces herbicides for chemical weed control, as well as best practices in their use.

An important condition for the effective action of herbicides on weeds is a high-quality fine crumbly cutting of the soil. On the leveled surface of the field, herbicides are evenly distributed in the upper soil layer and actively destroy weeds and affect their seedlings.[6] With poor cutting, most of the drug remains on clods of soil and evaporates quickly, which reduces its effectiveness. When using the method of chemical weed control, it is also necessary to comply with the conditions for the immediate incorporation of herbicides into the soil. For this purpose, the introduction and incorporation of herbicides should be carried out with a combined unit, which ensures a more complete death of weeds with a lower consumption of pesticides.[7] At the same time, the effect will be obtained from reducing fuel and labor costs for performing not only this operation, but also for crops throughout the entire growing season of cotton.

The third requirement is to combine several technological operations into one process. The introduction of combined aggregates will allow not only to reduce the number of MTA passes across the field, waste time on idle passes, and races to increase productivity, but also significantly reduce labor and energy costs.[8]

Combining operations is also expedient from an agronomic point of view, as favorable conditions are created for the growth and development of plants by accelerating the progress of field work, creating better water and thermal regimes, reducing soil compaction and resolving its structure. [8,9]Combined machines most fully correspond to the modern trend in tractor construction, which consists in creating energy-intensive tractors, which are not always loaded with operating machines alone.[9]

Based on the above requirements, we carried out experimental work on the use of a wide-grip cultivator with spring working bodies KShP-8 in cotton growing. cutting the soil without the formation of large lumps. This achieves the optimum tillage depth for planting seeds. It was also found that when using the KShP-8 cultivator, the surface of the field is better leveled, more weeds are destroyed for two to four days, the emergence of seedlings is accelerated. [10] In addition, fuel consumption per hectare of

INNOVATIVE TECHNOLOGICA
METHODICAL RESEARCH JOURNAL
ISSN: 2776-0987 Volume 2, Issue 5, May, 2021

work performed is reduced by an average of 3 ... 5 kg in comparison with pre-sowing soil cultivation carried out with disk and chisel implements (Table 1).

Table 1. The main performance indicators of units for pre-sowing soil cultivation with the BT-150 tractor

№	Indicator	BDT-3,0	ChKU-4	KShP-8 coverage 6 m
1	Productivity for 1 hour of operational time, ha	1,60	1,49	3,00
2	Labor costs, person hour / ha	0,62	0,67	0,33
3	Fuelconsumption, kg / ha	10,60	13,26	7,95
4	Costs thousand sum operational given	36,2	40,3	10,5
		40,1	54,0	18,9

In the conditions of the Republic of Uzbekistan, pre-sowing leveling of fields is carried out mainly shortly by basic self-made planners - levelers (small), which simultaneously destroy large soil blocks and lumps. Typically, planners perform two or more passes. [12] As a result, after this operation, the soil is strongly compacted and its structure is significantly destroyed. This leads not only to an increase in operating costs and fuel for the implementation of this work, but also negatively affects the yield of cotton.

VP-8 can be distinguished from the number of serial seedbed levelers, which provide high-quality leveling of the soil without excessive compaction. This seedbed leveler is included in the zonal system of machines for the complex mechanization of crop production in the Central Asian region. It has great maneuverability and is good at breaking up soil clods. [13] The use of VP-8 implements for pre-sowing soil preparation for cotton will reduce fuel consumption by 5.05 kg per hectare. Labor costs - by 1.78 person hour / ha compared to small (table 2.)

table 2 The main performance indicators of units for pre sowingsoilleveling

№	Indicator	BT-150 + VP-8 capture width 8 m	T-4A + small capture width 4 m (two passes)
1	Conductivity for 1 hour of operational time, ha	3,53	0,97
2	Labor costs, person hour / ha	0,28	2,06
3	Fuelconsumption, kg / ha	4,55	10,60
4	Costs, thousandsoums / ha:	11,2	20,0
	Operational	17,9	25,0

As a result of the above experimental work, a set of tools for pre-sowing soil cultivation for cotton was determined and an optimal sequence of operations for preparing the soil for sowing and high-quality sowing was found. This allows, when working in economic conditions, to reduce labor costs by 3.85

ISSN: 2776-0987 Volume 2, Issue 5, May, 2021

man-hour / ha or by 63.5% compared to traditional technologies for soil preparation and sowing of cotton. [14]

At the same time, fuel consumption will decrease by 17.1 kg / ha and operating costs by 118.85 thousand. sum / ha.

The economic effect from the introduction of the developed technology for pre-sowing soil cultivation and sowing of cotton amounted to 11502.0 thousand cm per year.

References

1. Карпенко А.Н,ХаланскийВ.М.Сельскохозяйственные машины М-1989 г.
2. ТС Худойбердиев. //Трактор ва автомобиллар шасси назарияси//. Датапубликации 2017/3/8. Том 2. Страницы 324.https://scholar.google.com/ citations?user=wmBxyxcAAAAJ&hl=ru#d=gs_md_cita-d&u=%2Fcitations%3Fview_op%3Dview_citation%26hl%3Dru%26user%3DwmBxyxcAAAAJ%26citation_for_view%3DwmBxyxcAAAAJ%3A0KyAp5RtaNEC%26tzom%3D-300
3. Xudoyberdiev, T. S., Boltaboev, B. R., Razzakov, B. A., Kholdarov, M. S. (2020). “To the fertilizer knife determination of resistance.” //Asian Journal of Multidimensional Research (AJMR)//, 9(8), 65-71.https://www.indianjournals.com/ ijor.aspx?target=ijor:ajmr&volume=9&issue=8&article=011
4. Khudoyberdiev, T. S., Boltaboev, B. R., Kholdarov, M. S. “Improved Design of Universal-combined Cultivator-fertilizer”. //International Journal on Orange Technologies//, 2(10), 83-85. https://www.neliti.com/publications/333419/improved-design-of-universal-combined-cultivator-fertilizer
5. ТС Худойбердиев, ШН Нурматов, БР Болтабоев, МШЎ Холдаров, АМ Абдуманнопов.“НОВАЯ КОНСТРУКЦИЯ УНИВЕРСАЛЬНОГО КОМБИНИРОВАННОГО КУЛЬТИВАТОРА УДОБРИТЕЛЯ’’ //LifeSciencesandAgriculture//,1 (5). Дата публикации 2021. https://cyberleninka.ru/article/n/novaya- konstruktsiya-universalnogo-kombinirovannogo-kultivatora-udobritelya
6. ТС Худойбердиев, БР Болтабоев, БН Турсунов, РР Юлдошев. “ВЫБОР СХЕМЫ ОДНОВРЕМЕННОГО ПОСЕВА СЕМЯН ХЛОПЧАТНИКА И СОИ”. //LifeSciencesandAgriculture//. Номер 2-3. Дата публикации 2020.https:// cyberleninka.ru/article/n/vybor-shemy-odnovremennogo-poseva-semyan-hlopchatnika-i-soi
7. ТС Худойбердиев, БР Болтабоев, БН Турсунов, О Абдуллаев. “РАЗРАБОТКА КОНСТРУКЦИИ КОМБИНИРОВАННОЙ КУКУРУЗНОЙ СЕЯЛКИ РАБОТАЮЩЕЙ ПО ТЕХНОЛОГИИ МИНИМАЛЬНОЙ ОБРАБОТКИ ПОЧВЫ” //LifeSciencesandAgriculture// Номер 2-3. Дата публикации 2020.https://cyberleninka.ru/article/n/razrabotka-konstruktsii-kombinirovannoy-kukuruznoy-seyalki-rabotayuschey-po-tehnologii-minimalnoy-obrabotki-pochvy

ISSN: 2776-0987 Volume 2, Issue 5, May, 2021

8. TS Xudoyberdiev, ANXudoyorov, BR Boltaboev, AM Abdumannopov. “RESEARCH FORMING IRRIGATED FURGLES ON BETWEEN FRUIT TREES” //Irrigation and Melioration// 3 (17), 7. Датапубликации 2019. https://uzjournals.edu.uz/tiiame/vol3/iss17/7/
9. ТСХудойбердиев, БНТурсунов, БРБолтабоев. “ҒИЛДИРАКЛАРКОНТАКТЮЗАСИДАГИРЕАКЦИЯКУЧЛАРНИНГБУРИЛИШГАҚАРШИЛИГИНИАНИҚЛАШ” //LifeSciencesandAgriculture// Номер 2-2. Дата публикации 2019.https://cyberleninka.ru/article/n/ildiraklar-kontakt-yuzasidagi-reaktsiya-kuchlarning-burilishga-arshiligini-ani-lash
10. ТС Худойбердиев, БР Болтабоев, БН Турсунов. “УРАВНЕНИЕ БАЛАНСА СИЛ ПРИ ПОВОРОТЕ ДВУХ И ТРЁХОСНЫХ ПРИЦЕПОВ АВТОМОБИЛЕЙ”//LifeSciencesandAgriculture// Номер 2-3. Дата публикации 2020. https://cyberleninka.ru/article/n/uravnenie-balansa-sil-pri-povorote-dvuh-i-tryohosnyh-pritsepov-avtomobiley
11. X Tolibjon, B Bohodir, M Rahimjon, R Bohodir “Doing up the scattered seeds of wheat soil of the furrow collected at formation” //European science review// Number 9-10. 2016.https://cyberleninka.ru/article/n/doing-up-the-scattered-seeds-of-wheat-soil-of-the-furrow-collected-at-formation
12. X Tolibjon, M Rahimjon. “Providing with uniform soil covering of the scattered seeds of wheat” //European science review// Number 5-6. 2016https://cyberleninka.ru/article/n/providing-with-uniform-soil-covering-of-the-scattered-seeds-of-wheat
13. Холдаров, М. Ш. (2020). “УНИВЕРСАЛЬНО-КОМБИНИРОВАННЫЙКУЛЬТИВАТОРУЛУЧШЕННАЯКОНСТРУКЦИЯУДОБРЕНИЯ”. //INTERNATIONAL JOURNAL OF DISCOURSE ON INNOVATION, INTEGRATION AND EDUCATION//, 1(5), 44-48. 2020.http:// summusjournals.com /index.php/ijdiie/article/view/355
14. XT Soliyevich, IA Kimsanovich, MR Xakimjonovich “Substantiation technological and design data сошника for crops of seeds of winter wheat in cotton row-spacing” //European science review//.Number 1-2. 2017. https://cyberleninka.ru/article/n/substantiation-technological-and-design-data-soshnika-for-crops-of-seeds-of-winter-wheat-in-cotton-row-spacing