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DEVELOPMENT AND INTRODUCTION INTO PRODUCTION OF A DEVICE FOR GRINDING COTTON STRAW AND UNDERGROUNDING IT DURING PLOWING AFTER COTTON HARVESTING

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Abstract: This article develops a device for subsoiling cotton stalks and weeds after cotton harvesting, based on the parameters of the working parts and application technology during plowing. It was also studied that the use of this device simultaneously with plowing increases the amount of humus in the soil, fuel consumption, labor costs, time savings for crushing and decomposition, and significantly increases yields.

Keywords: device for grinding cotton stalks and weeds, plowing, cutting, working parts, frame, reducer, pulley, belt drive, arc knives.

Today, up to 25 million tons of cotton are grown annually worldwide, with 2.5% of irrigated land allocated for cotton. China ranks first in cotton production.

As we know, agriculture is the foundation of Uzbekistan. Work compensation is gradually expanding. Cotton cultivation is highly developed in Uzbekistan. The main problem of agricultural workers during the cotton harvest is the collection of cotton stalks. Currently, farms mainly collect cotton stalks in one place, wait until the stalks dry up, and then consume that crop. This process requires a lot of time and labor. Thus, our goal is the development and justification of the parameters of a device for cutting and grinding cotton stalks.

After cotton harvesting, it is advisable to widely implement a device for crushing cotton stalks and introducing them into the soil during plowing. Crushed cotton stalks are used in the soil as a natural fertilizer.

Considering that cotton is one of the main business crops in Uzbekistan. The proposed device is based on the concept of cutting and grinding cotton stalks. In this case, much attention is paid to the cutting and grinding of cotton stalks after the cotton harvest.

a) **b)**

Figure 1. a) Condition after cotton harvest b) Condition of the field after plowing.

Today in our country, cotton stalks are mainly used by our people as fuel, but harvesting cotton stalks in desert areas and transporting them to residential areas requires a lot of time and significant expenses. Therefore, our farmers mainly combine the cotton stalks with the soil without crushing them, as a result of which the cotton stalks do not rot sufficiently before the spring sowing time, which creates serious problems with sowing and tillage. After field cultivation using the proposed device, ground cotton stalks are used as organic compost for the

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soil. This invention is aimed at designing and manufacturing a device designed for cutting and grinding cotton stalks.

After cotton harvesting, during the process of crushing cotton stalks and plowing, a frame and four axes, fixed to it with the help of special pulleys, are installed on the device for introducing cotton stalks into the soil, and these axes consist of several special arched knives designed for crushing cotton stalks and weeds. This grinding device is primarily powered by transferring motion from the machine shaft to belt drives via a gearbox. After that, special knives cut the cotton stalk into several small pieces.

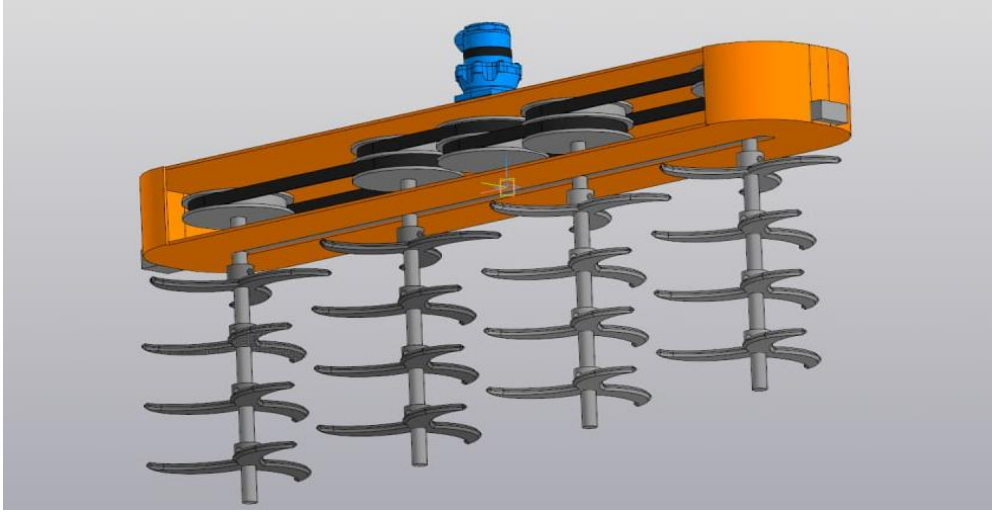

Figure 2. Device for grinding cotton stalks and weeds.

The use of this device simultaneously with plowing increases the amount of humus in the soil, saves fuel consumption, labor costs, time spent on crushing and decomposition, and significantly increases yields. Therefore, the development and implementation of this "device for crushing cotton stalks and weeds after cotton harvesting and introducing them into the soil during plowing" is of great importance.

References:

1. Mirziyoyev Sh.M. Erkin va farovon demokratik O’zbekiston davlatini birgalikda barpo etamiz. Toshkent, O’zbekiston, 2016.-56 b.
2. 2017-2021 yillarda O’zbekiston Respublikasini rivojlantnrishning beshta ustuvor yunalishi bo’yicha Harakatlar strategiyasini “Xalq bilan muloqot va inson manfaatlari yili”da amalga oshirishga oid Davlat dasturini o’rganish bo’yicha ilmiy-uslubiy risola/O’zbekiston Respublikasi oliy va o’rta maxsus ta'lim vazirligi, Toshkent Davlat iqtisodiyot universiteti.-T.: "Ma'naviyat" nashriyti, 2017.-244 b.
3. Peter W.M. John University of Texas at Austin Austin, Texas. Statistical Design and Analysis of Experiments. 511ITL. Society for Industrial and Applied Mathematics Philadelphia. Macmillan Company, New York, 1971.-355 P.
4. Catherine A. Peters. Statistics for Analysis of Experimental Data. Department of Civil and Environmental Engineering Princeton University Princeton, NJ 08544, 2001.- 25 P.
5. T.S.Xudoyberdiyev, A.I.Korsun, A.K.Igamberdiyev. Qishloq xo‘jaligi agregatlarini eksperimental tadqiq qilish. – Toshkent, Bosma 2009. – 186 b.
6. А.И.Корсун, А.К.Игамбердиев. «Обработка и анализ результатов экспериментальных исследований (укув кулланма). - Тошкент, ТошДАУ босмахонаси.-2006. - 176 с.
7. Vafoyev S.T., Musurmanov R.Q. Qurilish va melioratsiya mashinalarini ishlatish. Toshkent “Tafakkur Bo’stoni” 2015.

pISSN:2349-5707 Volume:12,Issue 09 September-2025 eISSN:2349-5715

8. Vafoyev S.T. Melioratsiya mashinalari. Toshkent “Fan texnologiya” 2013.
9. Vafoyev S.T., Dauletov N. Qurilish va melioratsiya mashinalaridan foydalanish va texnik servis. Toshkent “Tafakkur Bo’stoni” 2013.
10. Vafoyev S.T., Qurilish mashinalari. Toshkent 2014.
11. EFFICIENCY OF USING NEW TECHNOLOGY IN CLOSED HORIZONTAL DRAINAGE CLEANING EFFICIENCY OF USING NEW TECHNOLOGY IN CLOSED HORIZONTAL DRAINAGE CLEANING
S Safarov, S Turaev, U Khusenov, J Kuchkarov - Journal of new century innovations, 2023 Похожие статьи Все версии статьи (2)
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