

An Experimental Study of the Number of Bales in a Straw Loader Drum

Ashurov Nurali Ashurov Nurali Abdujalilovich

"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 39, Street Kari Niyazi, Tashkent, 100000, Uzbekistan

The role and importance of the agricultural sector in ensuring the food security of the population on a global scale is increasing day by day. In particular, in our country, it is an urgent issue to use the available resources and opportunities to provide the population with guaranteed agricultural products, to further increase productivity and interest, and to introduce scientific achievements and modern approaches to the field.

At present, as a result of the implementation of deep reforms in agriculture, significant results have been achieved in increasing the cultivation of grain, increasing the productivity of grain crops, including in a short period of time, complete independence of grain has been achieved and it has turned from a grain importing country to an exporting country. Currently, the main part of the arable land used in agriculture has various levels of salinity, and large areas are not sufficiently supplied with water. Winter in Uzbekistan is cold and summer is very hot. Oily, cool days of spring alternate very sharply with dry, hot days of summer. As a result, grain crops, including barley, which are in the phase of grain collection during this period, are strongly affected by the heat and produce 20-30% less than expected almost every year.

Taking into account the above, experimental studies were carried out in order to check the results of the theoretical research conducted on the device for collecting straw in agricultural farms and to optimize the parameters and modes of the main working conditions of the device that collects straw into large trailers at once .

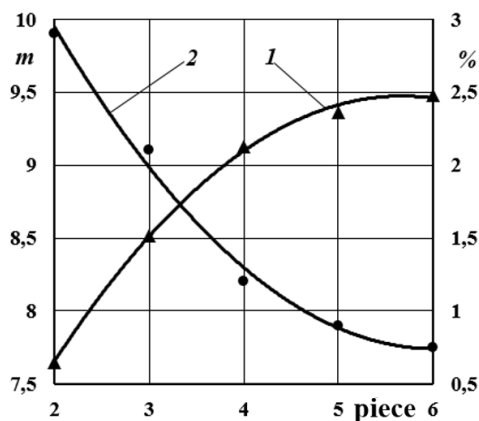
In the developed device, the quality indicators of straw loading, i.e., the distance of straw tossing to a large trailer and the effect of the number of straw loader blades on straw destruction during this tossing, were also carried out.

In the experiments, the number of blades of the drum of the straw loading device was studied by increasing from 2 to 6 pieces, from 1 piece. In these experiments, the number of revolutions of the drum of the device is 1750 r/min, its diameter is 750 mm, the width of the drum blades is 900 mm, the height of the blades is 25 cm, the turning angle of the tips of the blades is 120° , the height of the straw loader pipe is 3000 mm, its slope is set to 55° .

The experiments were carried out in five replicates and straw throwing distance and straw durability were determined as evaluation criteria.

It can be seen from the obtained experimental results (Figure 1) that when the number of blades of the drum of the straw loading device is increased from 2 to 6, the distance of throwing straw increases from 7.65 m to 9.48 m, and it is found that the loss of straw decreases from 2.9 percent to 0.75 percent.

In this case, when the number of blades of the straw loader drum was increased from 2 to 4 pieces, the straw throwing distance increased rapidly from 7.65 m to 9.13 m, and when the number of blades was increased to 5 pieces and 6 pieces, the straw throwing distance changed almost little, 9.36 m and 9. It was 48 m.



1 - straw throwing distance, m ; 2 - straw indestructibility, %

Figure 1. The effect of the number of straw loader drum blades on the quality of work

Straw mortality decreased from 2.9% to 0.6% when the number of straws increased from 2 to 5, and 0.7% when the number of straws increased to 6, and remained almost unchanged.



Figure 2. Effect of Number of Straw Loader Drum Blades on Straw Throwing Distance Study Process

Based on the results of experimental studies, it is considered desirable that the number of blades of the straw loading device should be 4 pieces. In this case, the straw throwing distance is 9.13 m, and its efficiency is 1.3 percent.

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