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RESULTS OF AN EXPERIMENTAL SAMPLE TEST OF AN ADVANCED PERFORATED DEEP SOFTENER

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ABSTRACT

An insight provided at the article reviews of some profound investigation on the scientific basis about how to create a hole drainage at a certain depth (60-80 cm) before plowing in saline soils, followed by moderate saline washing, easy removal of harmful salts from the soil by saving water. In addition, some striking data was revealed about how to utilize less water in the autumn saline wash, improved techniques for the removal of toxic salts from the soil to the maximum extent and the technology of its application.

KEYWORDS: *Drainage, Perforated Drainage, Conical Tip Cylinder With Complex Surface, Perforator, Sinker, Contour, Coverage Width.*

INTRODUCTION

Nowadays there are 4.2 million hectares of irrigated land in the country, of which 45% are saline areas of varying degrees. Annually, saline washing is carried out on more than 680,000 hectares in the country. In Bukhara region, 85.8% of the 274,612 hectares of irrigated land are saline to varying degrees, so 180,000 hectares are saline washed annually [1].

The formation of saline soils and their negative consequences are enormous. It is well known that reclamation measures and the implementation of these measures through mechanization are one of the most pressing issues of today.

In the Bukhara region, the total salinity of soils was 86%, but instead of decreasing from year to year, in some areas there is an increase.

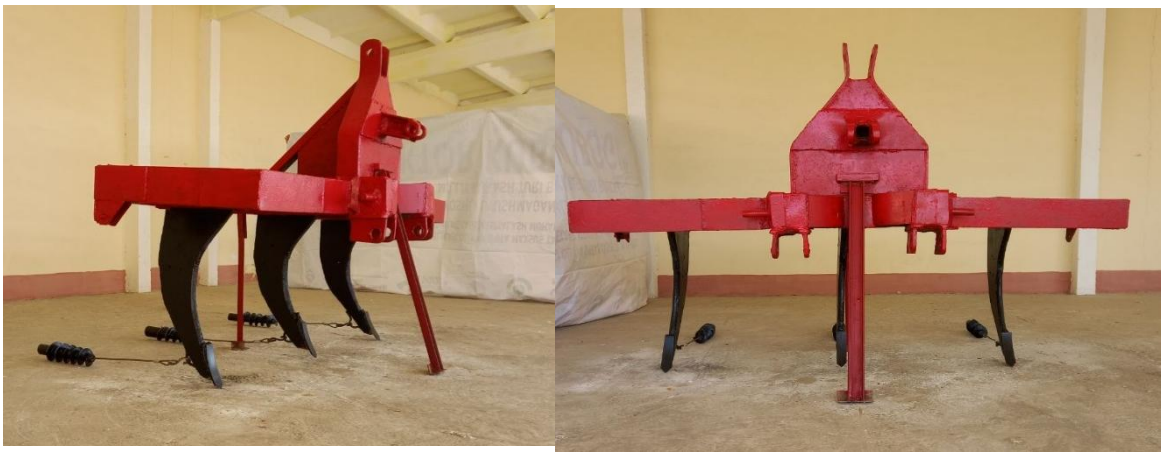

Figure 1.Advanced perforator.

During the operation of the device, its columns have the same working depth of 70-80 cm into the soil, and the working body attached to the columns forms a perforated drain with a diameter of 70-72 mm

If the agro-technical requirement for a hole drain is long-term operation without draining the drain, the requirement for the device is to create a quality hole drain as well as minimize the resistance forces acting on the traction tractor. By using this device before the autumn saline wash, it is possible to easily leak harmful salts from the soil through the perforated drains and discharge them into the drainage pipes, open collector ditches. However, it should be borne in mind that temporary ditches must be built around the mechanically heavy soils, through which the discharge into the collector ditches gives good results. In the spring activities, of course, temporary ditches prepared for saline washing are prepared by adding contours to the soil for planting, thus bringing the land use coefficient to the previous level. The technical characteristics of the perforated drainage device created with this in mind are given in Table 4.2 below.

The main working body of the advanced hole forming device is formed at an angle of 30^0-$32^0$with a borer geometric shape, rotating movement is provided by a hinge mounted on a steel rope and a conical end, creating a quality hole drainage that meets agro-technical requirements

for hole drainage which in turn ensures that the perforated drainage walls are strong and operate without cracking.

TABLE 4.2 TECHNICAL DESCRIPTION OF THE ADVANCED PERFORATOR

N	Name and unit of measurement	Value of indicators
1.	Type	Dangling
2.	Aggregate tractor class	3-4
3.	Coverage width, m	4,0
4.	Operating speed, km / h	4-5
5.	Basic time productivity, ha / h	2,4-3,2
6.	Mass, kg	1025 ± 50
7.	Processing depth, cm	70-80
8.	External dimensions, mm: width length height	 4000 1000 1450

To carry out this process, the centrifugal force generated by the rotational motion of the perforator working bodies of complex geometric shape simultaneously compresses and strengthens the walls of the perforated drain and reduces the resistance of the soil to the work-piece.

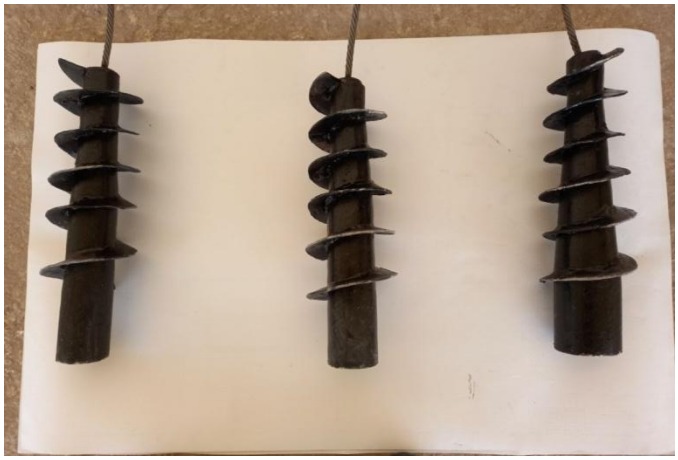

Figure 2 Holes.

The use of the improved perforated drainage device in the conditions of Bukhara region prevents salinization of arable lands, reduces the salinity of saline soils at different levels and increases productivity. The main task of the research is to increase crop yields by achieving water savings and improving land reclamation by using the proposed device to prevent salinization and re-

salinization for the regional agro-clusters, farms in sufficient quantities and using it before the autumn saline wash.

Tests of the improved prototype of the perforated pit drill TIIAME Bukhara branch of the training and experimental farm of the existing experimental farm with a hole drain opener TTChYu 3-70 compared to the device.

In the tests, a two-hole drainage device was used in conjunction with a New Holland T7060 tractor, with a speed of 4-5 km / h and a working depth of 70 cm. the area worked within the unit and the coefficients of fuel consumption, shift and operating time utilization were determined. Soil moisture, hardness, and density were studied prior to testing.

The results obtained during the experimental studies are presented in Table 4.3 below.

Moisture and hardness of the field soil tested

TABLE 4.3

N	Name of indicators Value of indicators	Value of indicators
1.	Soil moisture (cm) per layer,%; 0-20 20-40 40-70	14,8 16,1 17,8
2.	Soil stratum (cm) hardness, MPa; 0-20 20-40 40-70	1,21 1,32 1,94

The results of the tests are given in Table 4.4 below. Analysis of the test results showed that the improved borehole TTChYu 3-70 hole-forming device TDOQ 1-70 ensured the formation of quality holes in the soil, clearly, mechanism with it the formation of drainage holes formed on the field surface and at the bottom of the treated layer 70, respectively. The diameter of the hole increased to 70.8-71 cm and 72.8-73 cm. This can be explained mainly by the fact that the device, which creates a hole drainage by an improved perforator TTChYu 3-70, is completely layered in the soil relative to TDOQ 1-70.

Results of the developed advanced borehole tester tests

TABLE 4.4

T/p	Name of Indicators	Value of indicators				
		According to the initial requirement	A device that creates a perforated drain TDHQQ 1-70.		Advanced perforator TTChYu 3-70.	
1	2	3	4	5	6	7
1.	Traffic speed, km / h	4-5	4,6	5,5	4,2	5,3
2.	Processing depth, cm: M_{av} $\pm\sigma$	 12-20 -	 51,8 2,34	 51,4 2,42	 70,7 2,17	 70,1 2,26
4.	the quality of the drainage hole formed	<70	60,6	71,2	72,8	74,2

	at the bottom of the treated layer, cm					
5.	Gravity resistance: - general, kN - specific, kN / m	< 40	32,8 8,2	34,20 8,55	56,24 7,06	70,20 7,25
6.	Productivity, ha / h: - main time -in operation	-	2,24 1,43	3,00 1,92	2,32 1,67	3,08 2,22
7.	Fuel consumption, kg / ha	-	34,43	35,98	27,29	29,71

It should also be noted that the improved borehole TTChYu 3-70 device TDHQQ 1-70 compared to the applied one, the productivity during operation was 1.16-1.17 times higher, respectively, and one 27.29-29.71 kg of fuel was used to create a quality drainage hole per hectare of cultivated area.

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