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“YASHIL ENERGETIKA VA UNING QISHLOQ VA SUV XO’JALIGIDAGI O’RNI” MAVZUSIDAGI XALQARO ILMIY VA ILMIY-TEXNIKAVIY ANJUMANI

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WORKS ON THE DEVELOPMENT OF THE WORKING EQUIPMENT OF THE COMBINED CRUST SOFTENING DEVICE

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Abstract*. In this article, the construction scheme of the combined crust softening device has been developed and its parameters are based on the negative consequences of the crust caused by rainfall or irrigation in the first days of planting crops on the crops and softening the crust.*

Keywords*: reel, cotton, field, organ, combination, sprout, desert, gray, saline, cultivated, mechanical, granular, aggregate, soil, precipitation, crop, crust, curdle.*

The physical and mechanical properties of the soil and external factors are the main factors for ensuring timely, high-quality and required germination of agricultural crops. At the same time, it is necessary to take into account the agro-technical requirements for the product planted in the field without losses and as expected. In particular, the cotton crop, which is planned to be planted in the spring months, is the reason for the loss of half of the crop due to sudden changes in weather and improper irrigation. Our climate is one of the seasons rich in rainfall in the spring months. Rainfall during the first seven days of cotton planting has a serious negative impact on the crop. During the first days of cotton planting, weather changes, i.e., freezing of the soil formed on the surface layer of the earth due to precipitation, resists crop germination. Freezing on the surface of the soil causes the formation of a crust over time.

Figure 1. *A crust formed after precipitation*

Cropland crust is a solid layer that forms on the surface of the soil after heavy rainfall and irrigation. Almost all soils in irrigated agricultural lands in Central Asia are prone to compaction. The main reason for this is the extremely low granularity of the soil and the soil aggregates are not very resistant to water. After rain or wet irrigation, the upper layer of the earth freezes, forms a hard crust when it dries, and the surface cracks. Crust has a negative effect on soil properties and the development of agricultural crops, as it slows down the water permeability and air exchange of the soil, and also accelerates the evaporation of moisture in the soil (up to 20-30%). In fields with a very thick crust, grass germination is delayed by 3-5 days, and the number of seedlings is reduced.[1]

The process of crust formation depends on the mechanical composition, type, cultural condition, salinity, etc. of the soil. Crust is often formed on irrigated gray and desert soils. Its

thickness and hardness depend on the mechanical composition of the soil. The crust is thick and very hard, especially on barren, brown soils with heavy sand, poor mechanical composition, and barrens. Salting and brining increase the tendency to curd formation. For example, the thickness of the clod is 0.3-0.5 cm in light sandy gray soils, 0.8-1.5 cm in light and dark gray soils, weakly saline sandy soils and barrens with fine mechanical composition. in soils it is 2.4-4.5 cm; 1 m^2 of soil can weigh up to 50-70 kg [1-3].

The resulting thicket resists germination and air intake. As a result of this, it causes problems such as the death of seedlings that have not reached the surface of the earth and replanting. As a solution to the above problems, we have developed a combined working body that softens the crust.

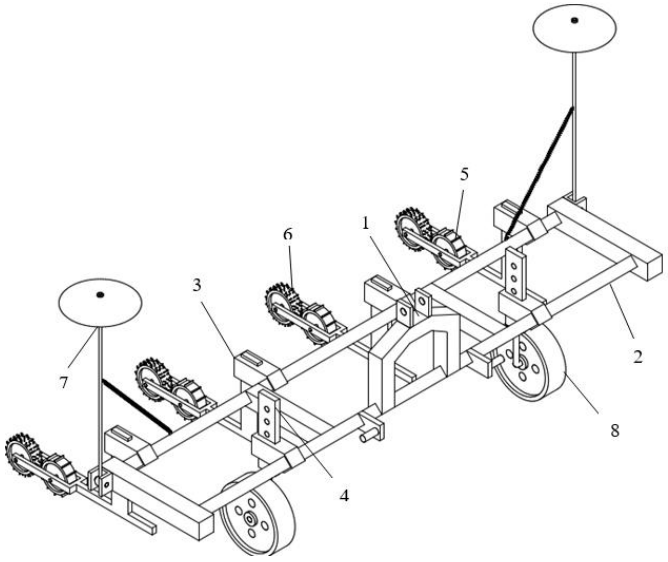


Figure 2. Combined crust softening device.

1 - suspension device, 2 - main frame, 3 - storage, 4 - column, 5 - softening coil with a rectangular cross-section, 6 - coil with a circular cross-section, 7 - track puller, 8 - support wheel.

During operation, this device is aggregated to a universal lawn tractor through a suspension device. Reel softeners with a square and round cross-section surface are fixed to the main frame of the device in a series with each other. Even and stable movement of the device is ensured by the support wheels. During the forward movement of the tractor, the device's uniform processing across the field is carried out by track pullers. When the device is given a forward movement, the reel softeners, which are fixed as a drive, soften the crusts by rotating around their axis by sticking to the soil. In the process of crust softening, firstly, the reel softener with a rectangular cross-sectional surface performs primary softening, and then the main softening is carried out by the reel softener with a circular cross-sectional surface fixed behind it process is carried out.[4-13]

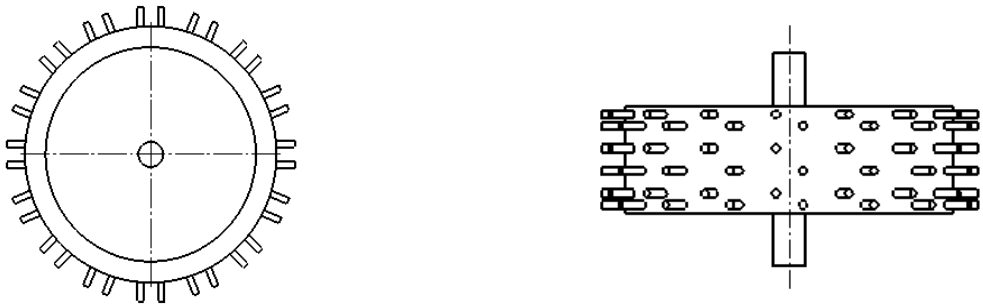
A coiled softener with a round cross-sectional surface performs the function of secondary softening of horizontally cut crust pieces formed as a result of the passage of a coiled softener with a rectangular cross-sectional surface. The combined device performs full softening work in one pass. In the proposed device, it is possible to process the cotton crust of width 60 and width 90 by pushing the column attached to the main frame.

a) b)

a) Front view of the reel softener. b) Top view of the reel softener

Figure 3. Reel softener with a rectangular cross-sectional surface.

A roller softener with a rectangular cross-section performs the function of initial softening of the formed hard crust. This softener creates horizontal cuts on the surface of the crust until the grass at once.



a) b)

a) Front view of the reel softener. b) Top view of the reel softener

Figure 4. Reel softener with a round cross-sectional surface.

Through the conducted scientific research, the diameter of softening coils of the proposed combined crust softening device was chosen as 20 cm. It was chosen that when the thickness of the width (the part in contact with the soil) of the roller softeners is 8-10 cm, the crust formed in the cotton rows will be fully softened. A combined device integrated into a universal choppy tractor was chosen to process four rows of cotton in one pass during the softening process and for this, a total of 8 softening reels with a rectangular cross-sectional surface and a round cross-sectional surface were installed on it.

Summary. As a result of studies, we found out that rain in the first days of newly planted cotton crops has a negative effect on sprouting and development. This, in turn, causes a number of problems. This is why the combined crust softening device was developed. The device performs softening by means of reel softeners, and there are a total of 8 softeners in it. This showed that the formation crust was fully softened and there was no need for replanting.

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UO‘T 681.51

ICHIMLIK SUVI BILAN TA’MINLASH JARAYONLARINI AVTOMATLASHTIRISHDA BOSIM DATCHIKLARI QO‘LLANILISH SOHALARI

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Annotatsiya. *Ushbu maqolada so‘nggi paytlarda bosim datchiklarini qo‘llanilish sohalari va ichimlik ta’minotida foydalaniladigan turlarini bir qanchasi ken yoritilib o‘tilgan. Ichimlik suvi bilan ta'minlash tizimlarini avtomatlashtirishda bosim datchiklari suv bosimini aniqlash va boshqarish uchun ishlatiladi. Ular tizim samaradorligini oshirish, suv oqimini optimallashtirish va muammolarni oldindan aniqlashga yordam beradi.*

Kalit so‘zlar: *Yer osti suvlari, kontaktsiz suv sathi datchiklari, suv bosimi sensorlari.*

Абстрактный. *В данной статье представлен всесторонний обзор последних применений датчиков давления и некоторых их типов, используемых в питьевом водоснабжении. В автоматизации систем питьевого водоснабжения датчики давления используются для определения и контроля давления воды. Они помогают повысить эффективность системы, оптимизировать расход воды и выявлять проблемы на ранних стадиях.*

Ключевые слова: *Подземные воды, бесконтактные датчики уровня воды, датчики давления воды.*