

The Advantage Of Combined Machine Technology That Prepares The Soil For Planting Poly Crops Under A Closed Tunnel Film

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Annotation: The article presents the technology of the combined machine that prepares the soil for high-quality cultivation of rice crops under a closed tunnel film, and the quality treatment of the soil for preparing seedlings for planting.

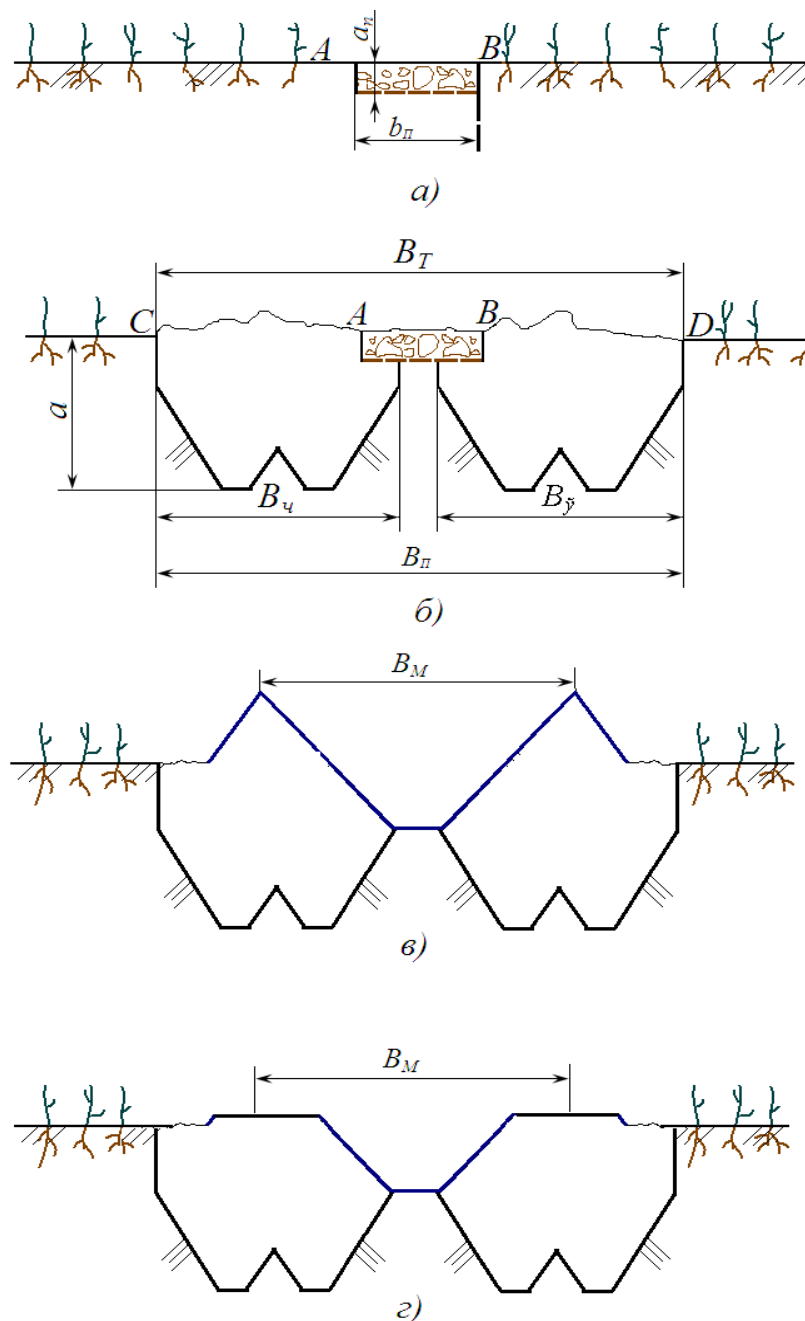
Keywords: machine, soil, poly crops, technology, furrow softener, longitudinal distance, transverse distance, bullet-shaped claw, irrigation ditch, film, tunnel.

Introduction

Poliz ekinlarini yopiq tonnelli plyonka ostida ekish uchun tuproqni ekishga tayyorlaydigan mashinalar yaratish, ular ish organlarining texnologik ish jarayonlari va parametrlarini asoslash hamda takomillashtirish bo'yicha Respublikamizda tadqiqotlar F.M.Mamatov, D.Chuyanov, H.Ravshanov, A.To'xtaqo'ziyev, S.A.Qunduzov va boshqalar tomonidan olib borilgan.

Many scientific research results were analyzed as a result of the study of the construction scheme of the tillage machine, the technological work process performed by it and the requirements for it [1-7].

Based on the analysis of the conducted scientific research works, the machines and equipment for the preparation of the soil for the planting of field crops in many developed countries and the agrotechnical requirements for the combined machine for the preparation of the soil for the planting of the field crops under the closed tunnel film, Republic of Uzbekistan Intellectual Property Agency No. FAP 00656-2010. and No. FAP 00719-2010. protected by patents obtained on digital utility models [1-3]. One of the unique features of this technology is the formation of an irrigation ditch by cultivating the soil without turning it over and preparing it for planting (Fig. 1).



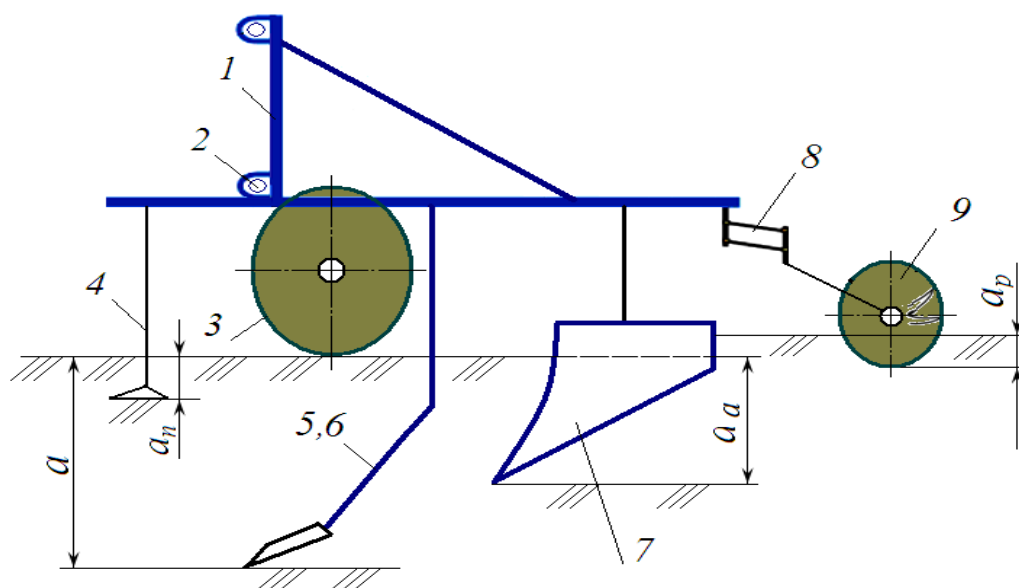
a - cross-section view of the field after the middle part of the planting zone is softened; б - the view of the cross-section of the field after deepening the planting zone without overturning; в - the view of the cross-section of the field after forming the irrigation ditch; г - cross-section view of the field after it is fully prepared for planting

Figure 1. Scheme of soil preparation technology for planting polys crops under the film

In the proposed technology, the following operations are performed in one go: the middle part of the tunnel closing zone is softened with a width equal to the width of the ditcher and a depth of 8-10 cm (Fig. 1), then the right and left sides of the surface softened layer (AC and BD) are deeply softened without turning over (Fig. б), then an irrigation ditch is formed along the middle line of the cultivated zone (Fig. в), after which the field crops are planted varnishes are prepared for planting (Fig. г).

Carrying out the above-mentioned operations at once preserves soil moisture in the zone (under the tunnel) where field crops are planted, sharply reduces the time of soil preparation for planting, and saves material and energy resources in soil preparation and planting.

In the proposed technology, the following operations are performed in one go: the middle part of the tunnel closing zone is softened with a width b_n equal to the width of the trench and a depth of 8-10 cm (Fig. 1., a), then the right and left sides of the surface softened layer the left side (AC and BD) is deeply softened without overturning (Fig. 1., b), then an irrigation ditch is formed along the middle line of the treated zone (Fig. 1., v), after which the lanes for planting polys crops are prepared for planting (Fig. 2.1, g).



2 – picture. Construction scheme of the tiller machine for planting polys crops under the film

Carrying out the above-mentioned operations in one go preserves the soil moisture of the zone where field crops are planted (under the tunnel), sharply reduces the time of preparing the soil for planting, saves material and energy resources during soil processing and preparing it for planting, i.e., passing aggregates through the field due to the reduction of the number to 3-4 times, minimal tillage of the soil is ensured.

Based on the analysis of the carried out scientific and research work, the technology of soil preparation for planting rice crops under the tonneau film and the agrotechnical requirements for the soil tillage machine, No. FAP 00656-2011 of the Intellectual Property Agency of the Republic of Uzbekistan and 190971-2019 by the Russian Federation. is protected by patents on digital utility models [1-3]. tuproqqa ishlov beradigan va uni ekishga tayyorlaydigan mashinaning konstruktiv sxemasi ishlab chiqildi (2-rasm). The machine is equipped with a frame 1, an arrow-shaped claw 4, a right and left pair of "paraplaw"-type slope softening working bodies 5 and 6 (hereinafter referred to as a furrow softener), the machine is composed of a rotary working body 9, a thinner 7 located along the axis of symmetry. The right and left pairs of cultivators deeply cultivate the planting area.

The inclined working surfaces of each pair of working bodies 5 and 6 are opposite to each other.

According to the technology of planting polys crops under a closed tunnel film, the machine should prepare a field 1.4 m wide in one pass, preparing it for planting.

During the operation of the machine, the bullet-shaped claw weeder loosens the soil and cuts the roots of weeds by working the surface of the lane equal to the coverage width. The blade of the front working body of a pair of deep conditioners penetrates the driving layer and divides the soil into small pieces. The resulting cracks spread to the soil surface at an angle of $\gamma = 40-45^\circ$. At this moment, the blade of the handle enters the soil zone deformed by the needle. The soil

separated by the chisel rises along its surface and falls first on the knife and then on the softening plate. In this case, the soil is bent and stretched in longitudinal and transverse sections, which causes it to break up rapidly. This process is completed when the soil softening plate falls from the working surface under the influence of inertia and gravity. After that, the next working body affects the soil in the same way. As a result, good compaction of the soil in the planting zone is ensured. Then the ditcher 7 opens a ditch in the middle of the planting area.

The process of preparing the soil for planting under a closed tunnel film is completed with the use of rotary working bodies 9 with the processing of the rows where the field crops are planted.

After the recommended combined machine completes the specified technological process, the cross-section of the field will look like this.

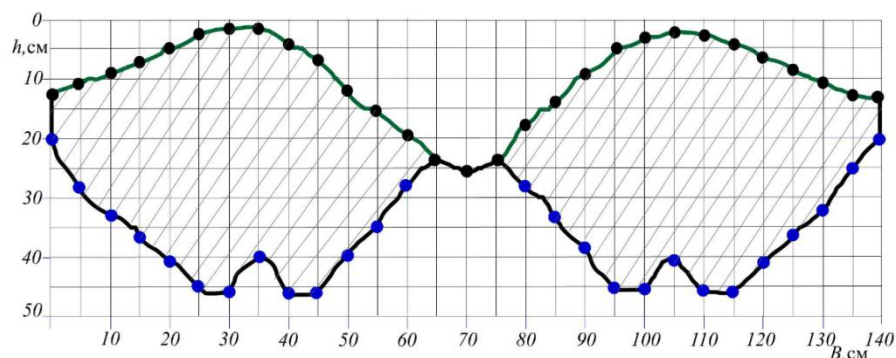


Figure 3. A view of the cross-section of the treated field

Calculations show that direct (operating) costs per hectare are reduced by 33.4% when using a combined machine that prepares the soil for planting polys crops under a closed tunnel film.

The main requirements for the machine are as follows:

- the combined machine can work the cultivated zone at a depth of 30-35 cm, the deviation of the average working depth from the specified one should not exceed ± 2 cm.
- the depth of the irrigation ditch should be 25 ± 2 cm.
- the amount of fractions smaller than 25 mm should not be less than 80 percent when processing fields with acceptable humidity (in the range of 16-18 percent).

Conclusion: The analysis of the proposed technology and the literature shows that it is possible to prepare the soil under a closed tonnage film with minimum costs in a short period of time, with minimal costs, to prepare the soil without overturning, to open a ditch and to plant the soil. can be achieved using road preparation technology and a combination machine that implements this technology. But this requires theoretical and experimental justification of the structural scheme of the combined machine and the parameters of its working bodies.

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