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Establishment of the Scheme of Mutual Location of Corpses in Police

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Abstract: The article is based on the scheme of mutual arrangement of housings for the formation of the initial irrigation ditch when preparing the soil for planting rice crops. It was determined that the arrangement of the right and left-turning bodies in a lister in a pair-symmetrical position is the most optimal scheme for plowing the area of planting crops.

Keywords: field crops, soil, body, support wheel, frame, irrigation ditch, planting, hanging device, lister, field profile, bracket.

Introduction. One of the main issues of the economic sectors of our independent republic is to fully satisfy the population's demand for food products, including food products. One of the most urgent issues facing agriculture is to increase agricultural products and, on this basis, further improve people's well-being [1,2].

One of the urgent problems in the agriculture of our republic is the reduction of expenses in the cultivation of rice products [3-8]. Therefore, it is a very important issue to justify the scheme of mutual arrangement of the housings for the formation of the primary irrigation ditch in agriculture.

Materials and methods. Soil tillage and initial irrigation ditch formation for planting polys crops are the object of research. The study of the technological work processes of the combined machine was carried out according to the literature sources, patents and the results of testing the developed machine in laboratory and field conditions [9,10].

An experimental device was built for plowing the planting area for conducting laboratory-field experiments. The structural scheme of the device is presented in Fig. 1.

The device (Fig. 1) consists of a frame 1, support wheels 2, a suspension device 3, right and left tilting bodies 5 and 8 attached to the rear beam of the frame by means of a bracket 4, guide plates 6 and 7. The device frame 1 is in the form of a welded structure and consists of longitudinal and transverse beams. By moving the bracket 4 along the beam, the coverage width of each case can be changed in the range of 45-52.5 cm. On the right side of the right-turning case and on the left side of the left-turning case, there are guide plates 6 and 7, and their handles are attached to the longitudinal beams of the frame with the help of brackets. Each guide plate has a screw-type surface like the body and is locked into the handle bearing. The handle with the cutting edge is slanted forward in the direction of movement.

The research was conducted at the Sertepa farm in the Kashkadarya region, and in experimental studies, the scheme of mutual placement of housings was studied in terms of their effect on performance.

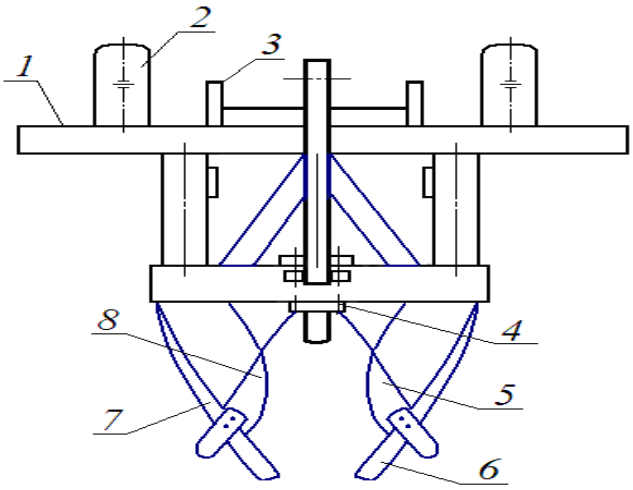


Figure 1. Construction scheme of the experimental device:

1 – frame; 2 – support wheel; 3 – suspension device; 4 – bracket;

5 – body that turns to the right; 6 and 7 – guide plates;

8 – a case that tilts to the left

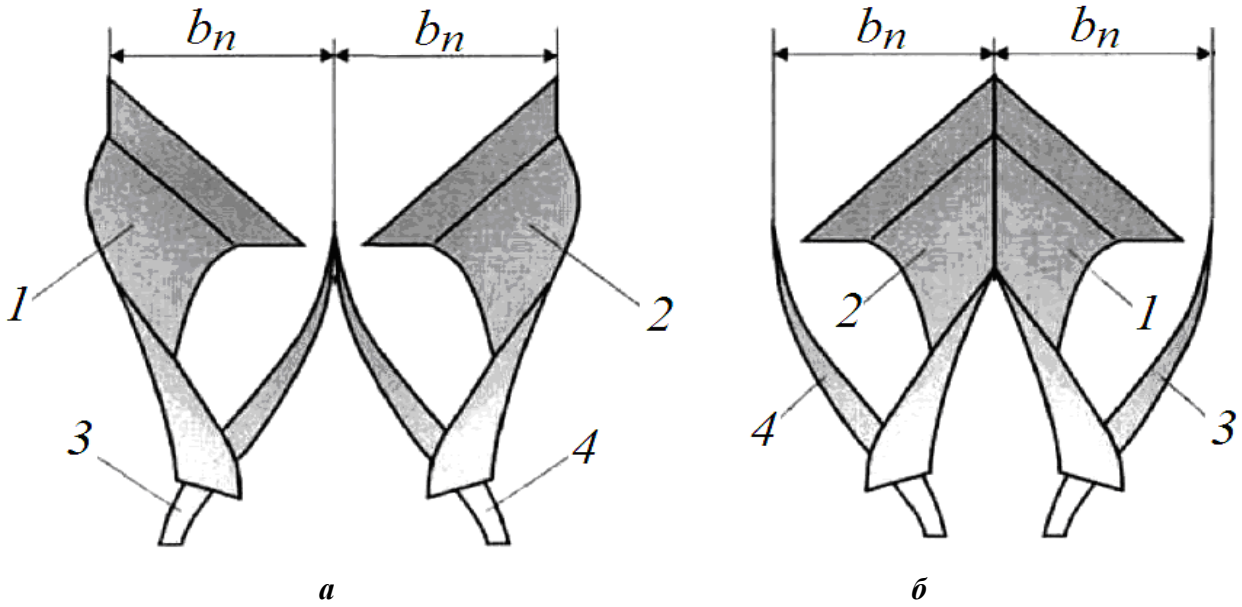
The burial completeness of plant residues in the planting area was determined by the mass of plant residues and weeds that remained unburied on the soil surface. Counting of unburied plant debris and weeds was carried out in plots with a length of 5 m and a width equal to the coverage width of the hulls. Unburied plant debris was collected and weighed on a balance with an error of ±10 g.

The depth of burial of plant residues was determined by measuring the distance from the surface of the plow to the upper limits of the placement of plant residues. Two vertical cuts were made in each pass. Measurements were made with an accuracy of ±0.5 cm and in quadruplicate.

Soil compaction quality was determined at six points (three by the device's travel, three by the return). To determine the quality of soil erosion, a soil sample of 0.25 m^2 was taken using a 0.5x0.5 m bottomless box. The obtained samples were divided into fractions larger than 100 mm, 100-50 mm and smaller than 50 mm. Separation of the obtained samples into the indicated fractions was carried out in the field itself with sieves with holes of 100 and 50 mm. First, large pieces were picked by hand, and then the soil was passed through fine sieves. All fractions were weighed on a scale with an accuracy of ±10 g, and their ratio to the total mass of the obtained soil sample was calculated as a percentage.

Results and discussion. In the implementation of the proposed technology, that is, the formation of the primary irrigation ditch is influenced by the scheme of mutual arrangement of the housings.

The principle structural scheme, where the bodies are symmetrically opposite to each other, is presented in Fig. 2,a. In this case, the forces acting on the hulls have the same amount of impact shoulders. This ensures stable straight movement of the tractor. In the process of work, the soil slabs are turned against each other. In this case, the bodies can form a small pile along the axis of symmetry. In addition, due to the fact that each case works under closed shear conditions, their tensile strength is relatively high.



а *б*

Figure 2. Scheme of mutual arrangement of bodies:

a – bodies are opposite to each other; b – bodies are pair-symmetrical in the form of a lister

The version of the housings in a pair-symmetrical position in the list view is shown in Fig. 2, b. The right and left tipping housings are activated at the same time. Due to the fact that hulls sink into the soil and move around, their drag resistance can be relatively low. In the process of technological work, the casings turn the blades in the opposite direction relative to each other. In this case, the overturned soil slabs may move slightly to the surface of the unoverturned area under the influence of inertial force during the fall. In this case, it is possible to create a small egate of the bodies along the axis of symmetry. This makes it possible to implement the intended technology. Therefore, it is advisable to use this scheme when preparing the soil for planting rice crops.

In the experiments to study the influence of the layout of the housings on the quality and energy indicators of the device, the coverage width of the housings was 52.5 cm and the speed of the device was 1.67-1.69 m/s.

Changing the scheme of mounting the casings was carried out by moving the brackets covering the casings along the cross beam.

The results of the experiment are presented in Figure 3.

As it can be seen from the results of the experiment, in both options, the technology of overturning the soil slabs within the limits of their edge is provided. The main agrotechnical indicators of both options differ little from each other. Lister-type, left- and right-tilting housings are installed on one handle, and there is a decrease in the depth and completeness of the burial of plant residues. However, the indicators correspond to agrotechnical requirements. The bodies are placed against each other, that is, in the first option, a pile of 10-12 cm height is formed in the middle of the treated area. During the work of the second option, a slight shift of the soil to the untreated surface of the field was observed, and a ditch was formed in the middle of the treated area at a depth of 9-11 cm.

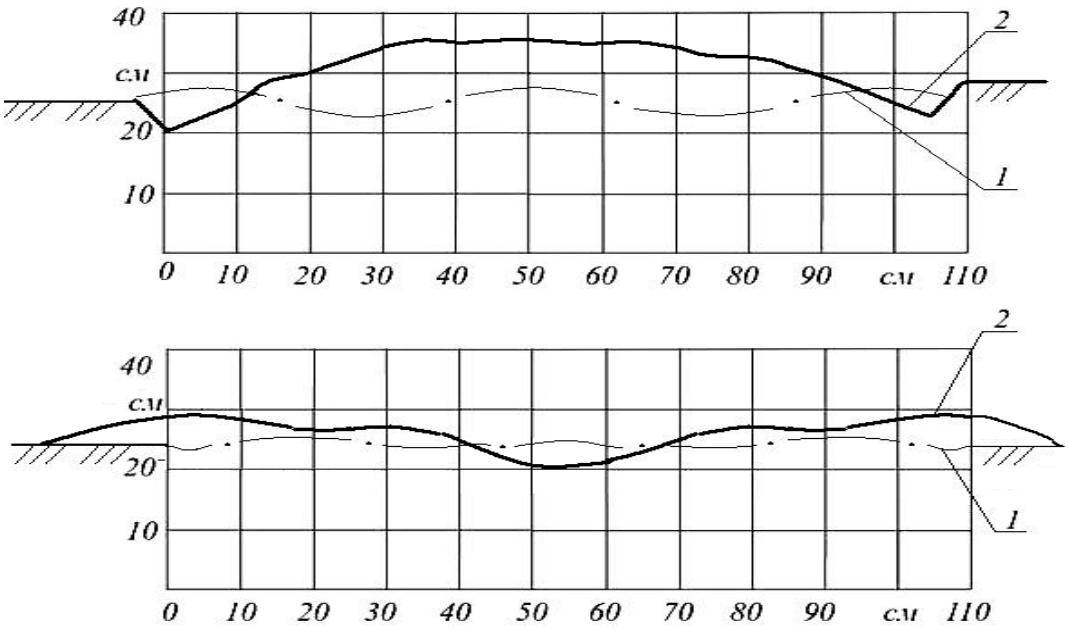


Figure 3. Cross profile of treated field:

1– cross-section profile of the field before the passage of the bodies;

2 – cross-sectional profile of the field after passing the bodies;

a – for the case where the bodies are symmetrically opposite to each other;

b – corpuses in the form of a lister for the pair-symmetric case

The formation of a ditch in the middle of the cultivated area makes it possible to implement the technology of preparing the soil for planting, that is, it facilitates the formation of an irrigation ditch in the middle of the planting area. Therefore, for the implementation of the intended technology, the second option, that is, the scheme where the cases are located in a pair-symmetrical position, was chosen.

Conclusion. The most optimal scheme is the arrangement of the right- and left-turning bodies in the form of a lister in a pair-symmetrical position for plowing the area of planting crops.

Reference

1. Малюков В.И. Механизация бахчеводства. – Волгоград, Ниж.-Волж. Кн. изд-во, 1982. – С. 6-14.
2. Zuyev V.I., Qodirxo‘jaev O., Adilov M.M., Akramov U.I. «Sabzavotchilik va polizchilik», – T.: «Iqtisod-Moliya», 2016. – 288 b.
3. Патент РУз № IAP 04004. Способ обработки почвы и посева / Маматов Ф.М., Чуянов Д.Ш., Худояров Б.М., Эргашев Г.Х., Гулбоев С.И. // Расмий ахборотнома. – 2009. – №9.
4. Патент РУз № FAP 00657. Комбинированное орудие для обработки почвы и посева / Маматов Ф.М., Мирзаев Б.С., Чуянов Д.Ш., Эргашев Г.Х., Қузиев Н.М., Шодмонов Г.Д., Темирова Д.И., Исмоилов И.И. // Расмий ахборотнома. – 2011. – № 11.
5. Chuyanov D., Shodmonov G.,Ismailov I., Ergashov G., Sadikov A. Traction resistance of the combined machine plough// CONMECHYDRO – 2021.E3S Web of Conferences 264, 04036 (2021).
6. Маматов Ф.М., Чуянов Д.Ш., Шодмонов Ғ.Д. Тупроқни полиз экинлари экиш учун тайёрлайдиган комбинациялашган агрегат // Ўзбекистон қишлоқ хўжалиги. – Тошкент, 2016. – № 12. – Б. 42.

7. Mamatov F.M., Chuyanov D.Sh., Shodmonov G'.D., Ergashov G',Kh. New technology and combined machine for preparing soil for sowing gourds // European Science review. – Vienna, 2018. – № 1-2. – pp. 234-236.
8. Chuyanov D., Abduraxmonov U., Shodmonov G. Energy-saving technology and machinery for growing melons // Novateur Publication India's International Journal of Innovations in Engineering Research and Technology - IJIERT. – Indiya,2020.– pp 368-374
9. Доспехов Б.А. Методика полевого опыта. – Москва: Колос, 1979. – 416 с.
10. Веденяпин В.В. Общая методика экспериментального исследования и обработки опытных данных. – Москва: Колос, 1973. – 184 с.