

UDC 631.356.4.02

**JUSTIFICATION OF THE TECHNOLOGICAL SCHEME OF THE
POTATO LOADER KP-2**

N.S. SALOKHIDDINOV, R. M. RUSTAMOV
Namangan Institute of Engineering and Construction

Harvesting of potatoes is currently being carried out in Uzbekistan using potato diggers. The main labor costs during harvesting by potato diggers go to the selection of tubers from the field after their melting and loading the potatoes into vehicles for removal from the field [1-2].

At present, it is obviously advisable to adopt the KKV-2A "Druzhba" combine and the KST-1.4 potato digger as a basis for further improvement of potato harvesters adapted for this work in Uzbekistan, as well as their technological schemes and main working bodies.

We, together with the Ryazan Agricultural Academy, carried out a number of studies, the purpose of which was to identify possible ways to create on the basis of the KST-1.4 potato digger, the KKS-1.4 potato digger-separator to work in the difficult soil and climatic conditions of Uzbekistan.

As a result of searches and analyzes and in the joint work of the Namangan production base for the production of seeds of potatoes and vegetables and melons in NITI, a potato digger-separator KKS-1,4- "Uzbekistan" was developed.

The principle of operation of this machine does not differ from that of the company "Grimml", but in terms of design it differs significantly.

In this elevator with centrifugal separation, the direction of the flow of the separated mass changes to a counter-current one. In such an elevator, the wrap angle is much larger, and amounts to 130 ... 150.

Elastic pressure drums were used as pressure elements installed above the working branch of the elevator.

The pressure of the tubers by the elastic drum is insignificant and does not cause damage.

The separator works as follows: the seam, cut and partially destroyed by the plowshares, enters the elevator, where the soil is separated. The undisturbed lumps go to the loosening drum, which, while rotating, strikes the lumps and drags them along the surface of the elevator, thereby breaking up the lumps and improving the separation efficiency.

An attempt to modernize a serial harvester in the direction of increasing its productivity by increasing the separation surface and some changes in speed modes and designs of working bodies without fundamentally changing the technological scheme of the harvester did not give positive results. Therefore, taking into account the shortcomings of existing combines, solving the issue of creating a machine for harvesting potatoes in the conditions of Uzbekistan, we tried to create machines on the basis of existing machines, introducing appropriate new working bodies into it, made it workable in the conditions of Uzbekistan. When creating the harvester, it was found that the ball-clod suppressor can, by centrifugal separation, ensure the rise of tubers upward.

Based on the results of the research carried out by us on the experimental installation, the layout of the balloon-clod suppressor in the potato harvester was determined.

Together with GSKB Ryazan and the Ryazan Agricultural Academy of Agricultural Institute, NITI worked with us to create a loader digger KP-2.

This potato digger-loader is based on the KST-1.4 potato digger. In this machine, the separation of tubers from the soil and their lifting for loading into the vehicle body is carried out by a new device, a lifting centrifugal separating bar elevator (PCSPE).

Figure 2 shows a diagram of a potato harvester-loader, which, after digging out the potatoes and separating the tubers from the device, separates the soil under the action of centrifugal forces, and the rise of soil and other impurities loads them nearby transport.

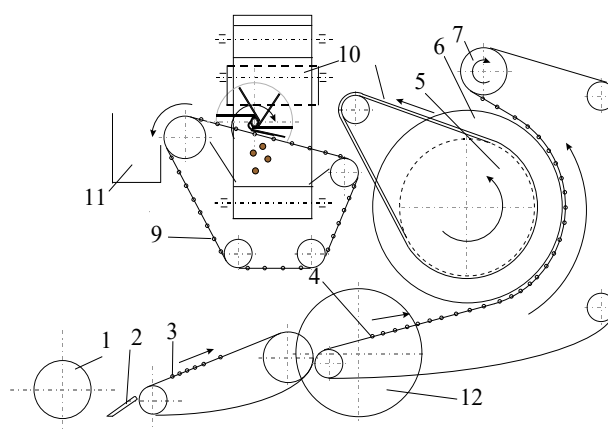


Fig. 1. Diagram of the potato harvester KP-2

- 1 – support roller; 2 – digging shares; 3 – bar elevator; 4 – lift separating elevator;
5 – guide drum with 6 flanges; 7 – drive shaft of the second elevator;
8 – feeding belt conveyor; 9 – haulm rare-bar elevator;
10 – cross-loading conveyor; 11 – defoliating grid; 12 – way wheels; 13 – bitter**

This device separates the soil under the action of centrifugal forces, and the lifting of the tubers differs from the known machines, without buckets or blades. A drum with a belt conveyor is located concentrically to the belt of the centrifugal elevator. Tubers, rising up on a centrifugal elevator, fall further on to a conveyor belt, which immerses them in the body of a vehicle. There is a gap between the belt conveyor on the drum and the centrifugal elevator, which is set within 30 ... 120 mm, depending on the soil and climatic conditions and the size of the tubers. For work, it is necessary that the tubers are lifted by a lifting and separating device. The potato digger-loader is protected by the RF patent No. 2048726.

References

1. Bichon K.F., Monder W.F. Mechanization of potato production and storage. – Moscow : Kolos, 1983. – 256 p.
2. Petrov G.D. Potato harvesters. – Moscow : Mashinostroyeniye, 1984. – 320 p.