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Abstract.*A Study dynamics Changed reliability of indicators and the means for pryhotovlenyya razdachy fodder. Poluchena analytycheskaya dependence for probability definitions bezotkaznoy work system in the period of technical uhudshenyya STATUS mashiny Reduction and PROFESSIONAL and psyhofyzyolohycheskoho urovnja operator.*

Keywords: funds, feed, reliability of

Annotation.*The investigation of dynamics of change of reliability indices of funds for preparation and distribution of feed. The analytical dependence for determination of probability of failure of the system during the «aging» of machine and reducing professional and psychophysical level operator.*

Key words: tool, feed, reliability

UDC 631.3.02: 001.57: 635.2.001.4

ANALYSIS ONION CULTIVATION TECHNOLOGIES AND DESIGN FEATURES OF THE EXPERIMENTAL SETUP FOR DIGGING

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Abstract. The article presents graphs technologies of onion and a description of the experimental setup for the digging of vegetable crops.

Keywords: onion, graphs technologies, experimental setup, dolotopodibnyy working body, digging

Formulation of the problem. The main task facing the agricultural sector of Ukraine is to provide the population with food, including vegetables. Among vegetables, onion cultivation area occupies about 14%. Despite the specialization of farms and ownership, labor hours for growing onions are large, with more than 60% of manual labor and 50% of energy consumption accounts for work associated with its collection

and postharvest treatment [1]. Reduction of manual labor, the cost of cultivation of onion and quality of the harvest can be achieved through the use of new machines and energy saving technologies.

Analysis of recent research. Analysis of recent research and publications shows that the creation of machines to replace manual labor during the harvesting of onion is relevant area of research [2, 3]. Background confirmed by the fact that it involved and researchers around the world [4-6].

The purpose of research. Analyze existing technology of growing onions in the south of Ukraine and develop new resource-working body for digging onions.

research results. The most labor-intensive operations technology of growing onions is to collect and post harvest revision [7, 8], as the collection is concerned with the need to extract the bulbs from the soil and subsequent separation of soil and other impurities. This determines the high complexity of collecting onions, representing 60-80% of total production of remuneration to [9, 10]. Analysis of means picking onions in the developed world shows that mechanical harvesting of vegetables paying attention. Available in wide range of trailed and self-propelled machines. Typically, these machines use two technologies for harvesting of onion:

- Single-phase technology, which consists of the following operations: trimming pen digging bulbs, cleaning of impurities loading the vehicle;

- Biphasic technology, which consists of the following operations: digging and laying in swath, mechanized selection onions softened after 10-14 days of the field for drying and ripening.

In Ukraine, the technology has spread two-phase harvesting of onion, in which after digging onions is a box for drying and ripening and subsequent mechanized or manual selection of rolls onions. Fig. 1 shows the graph options onion growing technologies.

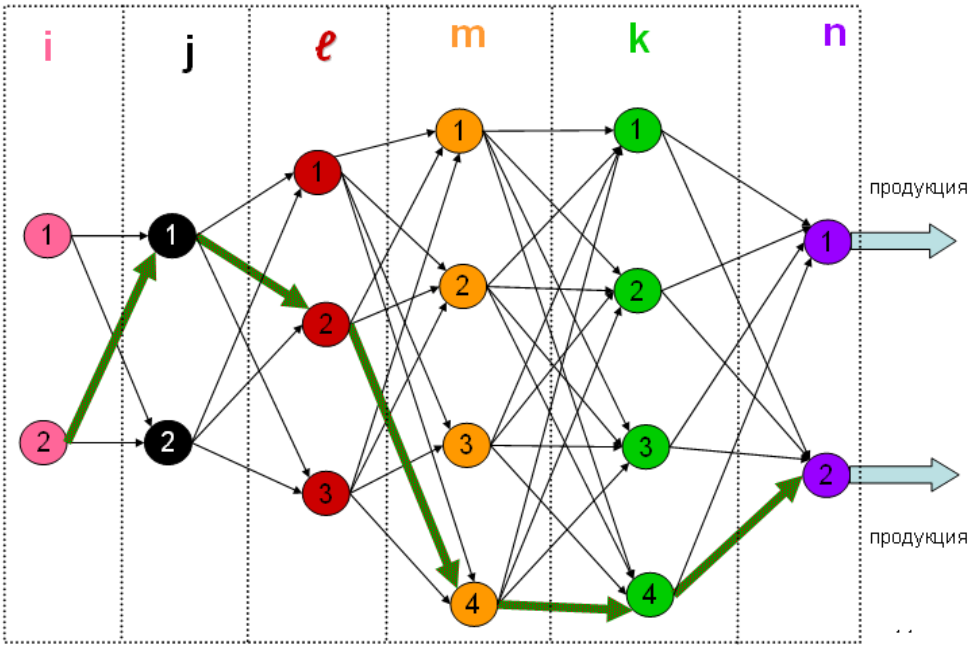

Fig. 1. Count the possible options for growing onions.

Count contains systematized basic technological methods that are appropriate to designate letters (i, j, ℓ, m, k, n,). Integrating these parameters follows:

- "And" Classification method of collection, available in two versions: 1 - single phase, 2 - dvohfaznyy;
- "J" technological way of harvesting onions: 1 - excavation, 2 - terebinnya;
- "ℓ" scheme crops versions: 1 - the tape; 2 - on the ridges; 3 - solid line;
- "M" method of providing moisture 1 - natural background; 2 - irrigation furrow; 3 - Sprinkling; 4 - drip irrigation;
- "K" pen pruning: 1 - before building; 2 - in the collection; 3 - when selecting and loading the vehicle; 4 - after picking lines for stationary treatment;
- "N" method of storage: 1 - short-term storage; 2 - long-term storage.

Yes, technology is highlighted in Fig. 1 (i2 → j1 → ℓ2 → m4 → k4 → n2) means a two-phase method of harvesting (i2) excavation (j1) scheme crops - the ridges (ℓ2), growing onions using drip irrigation (m4), trimming pen made on stationary treatment lines (k4), long-term storage is planned (n2).

Technology mechanized harvesting onions provide such technological operations as cropping pen digging, laying in swath or downloading onions in the vehicle. Therefore, there may be different options for collection technologies onions and depending on the kind of

the chosen technology presented, the count of possible technologies of onion and available agricultural machinery for its implementation:

• **AND** - Pruning pen → digging and investment in the roll → selection and loading of the vehicle;

• **II** - Pruning pen → digging and loading of the vehicle;

• **III** - Excavation and investment in the roll → selection, pruning feathers and loading the vehicle;

• **IV** - Digging, cutting pen and investment in → roll selection and loading;

• **V** - Excavation and investment in the roll → selection and loading into the vehicle → purification on stationary machines;

• **VI** - Digging, cutting pen, loading a vehicle in one pass.

One of the main directions of improving the quality of the harvest of onion is search and construction work of digging for simultaneous separation and onions from the ground and ensure the prerequisites for further mechanical harvesting.

Analysis of known passive digging working bodies used in modern machines, indicates that during the excavation with bulbs for separating working bodies of cars get soil clods comparable to the size of bulbs [9], and active working bodies to damage the bulbs have low reliability and high energy process.

Therefore, the most promising are digging working bodies that conduct division of the soil contaminants are in the process of digging out the bulbs from the soil, which will improve productivity and product quality.

As a result, the study of technology and production requirements of consumer properties commodity onion [11], we have developed and proposed dolotopodibnyy working body (Fig. 2) for its excavation, which consists of a set of bits 1 that are attached to the headquarters 2 [12].

The process of excavation is as follows: chisel cut, shear and loosen the soil with bulbs. A substantial part of the loosened soil is separated in the gaps between bits. Then bow hits the prutkovyj conveyor, which is its final separation.

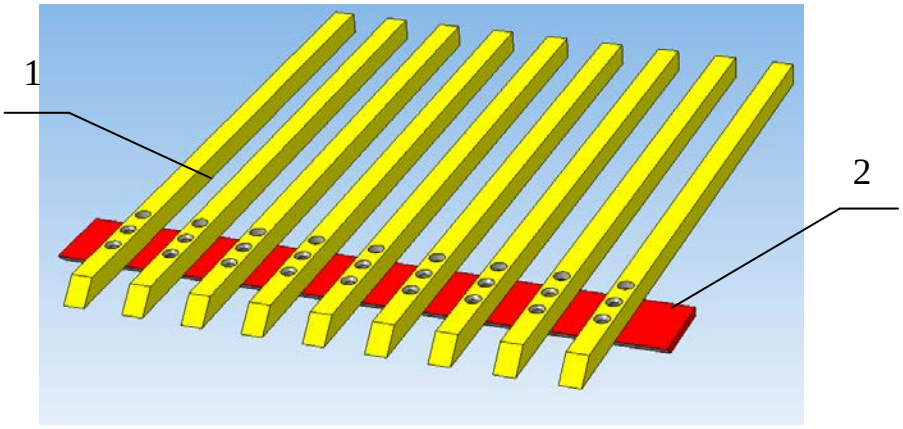

Fig. 2. Dolotopodibnyy body for digging onion: 1 - Drill; 2 - Staff.

To study the process of digging onions in the wildebeest "UkrNDIPVT named Leonid burned" developed and produced experimental setup (Fig. 3). The experimental setup is: attaching 1, 2 with a special frame set therein dolotopodibnymy working bodies 3, 4 bitters, angular gear 5 drive bitters 6 and 7 supporting wheels.

Fig. 3. Experimental setup: 1 - attached device; 2 - frame; 3 - digging working bodies (set of bits); 4 - bitters; 5 - gear; 6 - drive; 7 - support wheel.

Mounted unit provides a sample experimental set hinged on the three-point system of the tractor. Rigid welded frame construction which are welded brackets for mounting other components. Digging working bodies - narrow set of bits assigned to headquarters. The width of the narrow bits 16 mm within half a minimum diameter of marketable onion, narrow spacing alignment bits 30 mm within a minimum diameter of marketable onions. In addition, a set of narrow bits set in such a way that they can change the angle of attack (10-30 ° increments 5 °).

Bitters, is a shaft mounted in ball bearings which are welded to six plates are screwed blades bitters. Angle gearbox transmits torque from

PTO tractor to drive bitters. Bitters drive consists of a chain of transmission and two stars that are set so that the ratio remained constant gear sprockets at different speeds. By changing the position of supporting wheels on a vertical depth provided the go bits.

Structural features provide experimental setup, changing the angle of attack of the digging work (set of bits); changing the number of blades bitters; changing the number of revolutions bitters (supported sustainable kinematic mode); change the course of digging depth of work; change of axis bitters installation of blades.

Conclusions

1. The mechanization of the most labor-intensive process of onion harvesting is important. Likely technologies of onion interpreted Earl original schedule which is a network of technology options with the appropriate variety selection techniques.

2. Developed and manufactured prototype installation of the proposed digging a working body to improve quality indicators of digging onions.

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Abstract. *In Article pryvedeny hrafy technology Growing onions and repchatoho Description эksperymentalnoy installation vykarыvanyya эtoy ovoschnoy culture.*

Klyuchovые words: bow repchatыy, hrafы technology, Experimental setup dolotoobraznыy Rabochy body vykarыvanye

Annotation.*The paper presents onion technologies graphs and description of the developed experimental equipment for digging out of this vegetable.*

Key words: bulb onion, technologies graphs, experimental equipment, chisel, digging out

UDC 621.1.004

ANALYSIS OF FREQUENCY OF RESTORATIONSSERVICEABILITY OF FORESTRY MACHINES

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