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# **Development and Implementation of a New Resource-Saving Universal Machine for Vineyard Expedition**

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**ABSTRACT.** The article presents energy saving technology of vineyard cultivation, development and introduction of a new universal cultivating vineyard machine UUM-3 for semi-opening in spring, for row cultivation and between bushes, loosening, slicing irrigation grooves, fertilizing in row spacing, plowing between rows.

**KEYWORDS.** Vineyards, plowing, loosening, cultivation, cutting irrigated furrows, fertilization, shelter bushes, half-open bushes, dumping ridge, furrow furrow, bite strip, aisle.

## **I. INTRODUCTION**

Wine growing in Uzbekistan is created and is based on single-crop plantings of long operation, as a rule, on lands of restrictive fertility. The existing production technologies of grapes are high cost, demand the raised expense of power means and materials. Owing to what in the conditions of action of market economy of steel are exigent.

## **II. SIGNIFICANCE OF THE SYSTEM**

In article the presents the energy-saving technology of cultivation of vineyards, the development and introduction of a new UUM-3 soil-cultivating universal vineyard machine for half-opening in spring. The study of literature survey is presented in section III, methodology is explained in section IV, section V covers the experimental results of the study, and section VI discusses the future study and conclusion

## **III. LITERATURE SURVEY**

The areas of grape plantings are made till today by 147.8 thousand hectares, by 2020 are planned to bring to 279.9 thousand hectares on which it is planned to prepare on average in a year about 1.830 million tons of grapes [1]. Need of modernization, technical and technological updating of agricultural production, studying and application of experience of the advanced countries, including for wine growing, uses of energy saving technologies, to the operational solution of questions on ensuring implementation of the program of further modernization of technical and technological rearmament of agricultural production [2].

## **IV. METHODOLOGY**

The mechanization and technology of performing work on the care of grape plantings is one of the decisive factors in increasing the yield and productivity of labor in the industry, reducing the cost of grapes [3]. Traditional intensive technologies of cultivation of viticulture include multiple tillage with soil-cultivating tools, as a result of which the soil is not only loosened, but compacted, and structural aggregates are destroyed. The presence of a large number of structureless particles creates a real threat to the swimming of the soil and the formation of a crust, as a result of which the processes of gas exchange deteriorate and the density of addition increases. This, in turn, leads to the need for additional loosening in the process of growth and development of culture, which increases fuel



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consumption and other costs, as well as the cost of production [4,5]. Currently, viticulture does not receive promising cultivation technology and high-performance equipment. The MPV-1A, PRVM-3 and other machines and machines for tillage have a very energy-intensive, metal-intensive compacted soil in the process of working, the working bodies have poor reliability of MPV-1A, PRVM-3 have been used for more than 30 years. The farms do not want to buy them due to non-effectiveness. Tillage in the vineyards is carried out poorly with a large expenditure of energy, resources, manual labor [5].

In this regard, an integrated approach is important and the creation of sophisticated means of mechanization, energy-saving technologies of cultivation and organization of grape production, which is inextricably linked to the rationale for increasing the productivity of MTA and the use of scientifically based production standards. The lack of theoretical foundations characteristic of viticulture hinders their substantiation, development and introduction, especially of new machines. Therefore, an important problem for the design of new machines and their introduction into production is the application of applied science [6].

Distinctive features of the work on soil cultivation of vineyards are the need to fulfill the following requirements:

- processing of one aisle, or aisle and two half-rows in one pass;
  - ensuring the equilibrium displacement of soil from between the rows to the rows of bushes, or, on the other hand, from the rows towards the axis of the rows between the rows;
  - creation of an even microrelief in the rows between cultivation and chiselation;
  - Ensuring the preservation of the bushes and shoots of vines, regardless of the type of work performed.

These characteristic requirements and features of technological processes to be performed in the vineyards determined the need for the development of special vineyard tillage machines.

To work between the rows of vineyards, tillage machines must meet the following agrotechnical and technical-operational requirements:

- process the soil between rows in one pass of the unit;
- do not touch the above-ground parts of the bushes and do not damage their crustless system;
  
- the hull must provide tillage, both in bulk and flawed;
  - during operation, the plow should be steady;
  - adjustment of the width of the gaps at different rows between rows should be comfortable and reliable;
  - the height of the working bodies and the passages between the niches should be such that the blocking and loading of the soil in front of them is completely excluded;
  - the strength of the working bodies, assemblies and parts of the plow must comply with the soil conditions of the areas of application;
  - the design of the vineyard tillage machine should be so  $\rightarrow$  so that the installation and disassembly of devices, as well as access to them does not present difficulties and does not take much time.

## V. EXPERIMENTAL RESULTS

The new tillage universal vineyard machine UUM-3 is notable for its reinforced frame, timbers, racks and working bodies. With the help of a set of interchangeable working bodies of the machine, it performs the cultivation of inter-row spans and inter-cuts, continuous loosening of inter-spacing, cutting irrigated furrows, renewing the plantation with or without mineral fertilizers, semi-cover and opening of vineyards.

The main parts of the machine: the frame of a rectangular design with automatic coupling, longitudinal bars, working bodies with racks and support wheels. Depending on the operation performed on the frame, the left and right universal rippers, the central ripper, the furrow cutters, tusovysus devices with a drive, the left and right tillage discs and the device for shelter are installed on the frame.

The machine consists of a main (middle) frame and two stem. When using only the main frame of the machine, it works in between rows of 2.5 m., And when attaching attachments to it, it is possible to cultivate vineyards of 3.0 m width between rows.

When cultivating between rows and inter-cusping strips on the frame of the machine, they are mounted for a universal ripper with elongated shares and tillers, brackets with springs, a universal ripper and fairings. Universal rippers mounted pivotally. Retained in the inter-custand springs with adjustable stiffness (Fig. 1).

When installing in the variant of continuous loosening of the row spacing, the short coulters are attached to the universal and central rippers.

For cutting irrigation furrows with fertilization on the frame, two or three furrowers, two blunt apparatuses with pipelines and a drive to them are mounted.

For renovation of the plantation, a central ripper, installed at a maximum depth, and universal rippers are used to remove the plowshares.



**Fig. 1. Universal vineyard machine UUM-3 in the assembly version for the cultivation of rows and inter-creep stripes in vineyards with a row spacing of 3.0 m.**

Vine pre-laid along the row is covered for two passes of the unit with the help of buildings with semi-screw dumps. They are fixed on the rear beam of the frame according to the “plowing in the ground” scheme.

For the half-opening of the vineyards on the frame of the machine install universal rippers with plowing horses and on the brackets tillage discs with shields. When moving the plowshare machine, they cut a layer of the soil of the covering shaft, the otpashniki throw it inside the aisle, and the disks cutting the shaft, move the soil in the middle of the aisle.

## VI. CONCLUSION AND FUTURE WORK

Completed design documentation for working bodies and technical means for semi-opening of vineyards in spring, for cultivating between rows and between shrubs of vineyards 2.5 and 3 m wide, loosening, cutting irrigated furrows, fertilizing between rows 2.5 and 3 m, plowing between rows got up and in the collapse and made mock ups.

The developed technology and new technical means will increase the level of mechanization in tillage by 25-30%, which will significantly reduce the cost of labor, energy, resources in tillage in vineyards.

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