SOME ASPECTS ON THE MECHANIZED DRIED CUTTING VINE IN REPUBLIC OF MOLDOVA

UNELE ASPECTE PRIVIND TĂIEREA MECANIZATĂ ÎN USCAT A VIȚEI DE VIE ÎN REPUBLICA MOLDOVA

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Abstract. *The main problem in the Wine-growing is development of the perspective technologies based on improvement of the system of vines formation, plantation of the vineyards of a new type, adapted to the requirements of the complex mechanization. In the research, the first results in the mechanized cutting of vines. Formed according to the type "Umbrella" on the modernized espalier with free placing of rods and sprouts in the space. This form contributed to removing of the elements of the grapes above the limits of the row axe, so that the following operations are excluded: removing of the vine from the espalier, tying up of dries rods and green sprouts as well as carrying out of the mechanized cutting, obtaining the significant economic efficiency.*

Key words: sprouts, mechanized cutting, pillars

Rezumat. *Problema principală în viticultură este elaborarea tehnologiilor de perspectivă bazate pe perfecționarea sistemului de formare a butucilor, înființarea plantațiilor de tip nou, adaptate la cerințele mecanizării complexe . În lucrare sunt descrise primele rezultate la tăiatul mecanizat al butucilor, formați după tipul "Ombrela" pe spalier modernizat cu amplasarea liberă a coardelor şi lăstarilor în spațiu. Această formă a contribuit la scoaterea elementelor de rod peste limitele axei rândului cu excluderea următoarelor operații: scoaterea viței de pe spalier, legatul în uscat al coardelor şi lăstarilor în verde, precum şi în efectuarea tăierii mecanizate cu obținerea eficienței economice semnificative*.

Cuvinte cheie: lăstari, tăiere mecanizată, spalieri

INTRODUCTION

An actual viticulture problem consists of reducing to the minimum the manual operations of vine surgery. The expenses in this field are quite considerable, and constitute about 880 man hours/ha. The most difficult and expensive are the following processes: the dried and green cutting of the sprouts, collection etc. In this field, a special perspective has the reduction to minimum of the vine surgery operations quantity, the creation of the optimal conditions for wide application of the mechanization.

MATERIAL AND METHOD

To study the touched problem, there was created an experimental field with two varieties (Cabernet Sauvignon and Muscat Ottonel) with the vine planting scheme – 4,0 m x 1,0 m, management system – Ombrela, mechanized cutting method for 3-4 bars (1.1) and mechanized for 3-4 bars with adjustment, manual for 3-4 bars (5.1) and manual for 7-8 bars (6.1). (tab.1)

At the mechanization department of the institute, there was elaborated a machine (OCC) that makes possible the mechanized cutting of the high stem types and vertical growing of with a free sprout placement (fig.1).

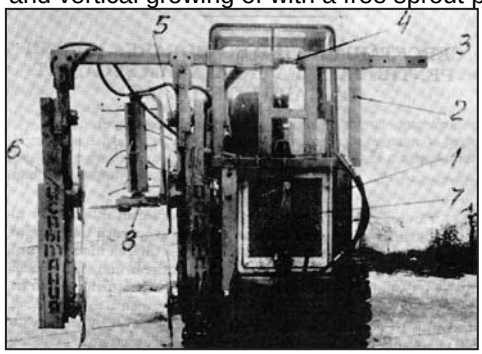

Fig.1. Preparatory cutting and vine turning machine OCC (canes cutting method): 1. frame; 2. portal; 3. horizontal bar; 4. adjustment mechanism; 5. hydraulic engine; 6. vertical cutting device; 7. hydraulic cylinder; 8. Horizontal cutting device.

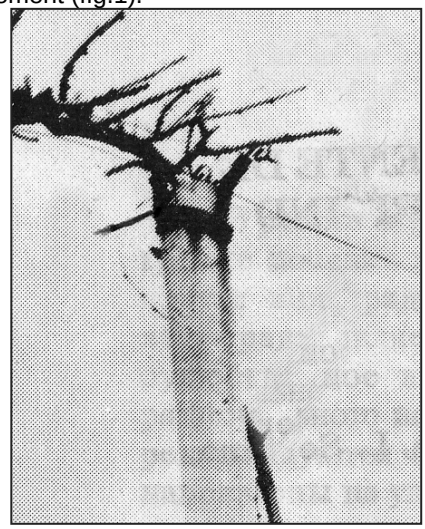

Fig.2. Mechanized cutting with no manual adjustment.

RESULTS AND DISCUSSIONS

Based on the many ears researches, there was elaborated and recommended for a wide use in production, with the purpose of excluding the above described disadvantages, a new vine administration method on high stem with the free placement of the sprouts, according to the Ombrela type *(Chisinau, 1989, L.Parfenenco and collaborators)* On the fundaments of this system was the modernization of the pillars upper part with the application of some special supports (fig.2) which gave us the possibility to place the wires in a single horizontal position at the altitude of 1,4 m from soil surface. This form contributed to the extraction of the productive elements out of the rows axes limits with the elimination of the following operations: the removal of the vine from the espalier, dried binding of the vine and green sprouts, permitting the mechanized vine cutting.

The first researches of the biological fundamentals elaboration of the dried vine cutting in the Republic of Moldova were made at the experimental farm of

the institute, for the varieties Rkatsiteli and Feteasca white, in condition of vine formation of high stem (1,0m) and vertical growing of the sprouts. The results of there researches demonstrated that the mechanized cutting vine with vertical growing, needs the elimination of the canes from the espalier. Except of this, the placement of the sprouts in a single plan will not insure the simultaneous cutting possibility on different altitude levels, the fact that imposes the necessity to perform the rejuvenation periodical cuttings, which lead to the productivity reduction during the year of their performance. In this way, for the implementations into production of the vine free placement, it was necessary to update the espalier. There were elaborated two new types of espaliers (Brevet nr.2571 from 31.10.2004) which were experimented at the State Station of Machines Testing, confirming that the espaliers correspond to the technical conditions, these are quite durable and can be proposed form production.

Table 1

The obtained results under the economical aspect

Variants	Cutting method	Average vine yield, t/ha	Sugar content, g/dm^3	Acquisition price, lei MD/t (year 2003)	Production value, thousands, lei MD/ha	Production expenses		Profitability level %
						Average, thousands lei MD/ha	Unitary lei MD/t	
Cabernet-Sauvignon variety								
1.1	Mechanized for 3-4 bars	17,7	161	2865	50,7	14,5	819,2	249,9
2.1	Mechanized for 3-4 bars with manual adjustment	15,0	173	3045	45,7	13,9	926,7	228,8
5.1	Manual for 3-4 bars	10,6	186	3240	34,3	12,5	1179	174,4
6.1	Manual for 7-8 bars	10,9	185	3225	35,2	12,6	1156	179,4
Muscat Ottonel variety								
1.1	Mechanized for 3-4 bars	20,8	151	2715	56,5	15,5	745,2	264,5
2.1	Mechanized for 3-4 bars with manual adjustment	16,2	161	2865	46,4	14,3	883	224,5
5.1	Manual for 3-4 bars	12,4	175	3075	38,1	13,1	1057	190,8
6.1	Manual for 7-8 bars	13,4	169	2985	40,0	13,4	1000	198,5

CONCLUSIONS

1. The analysis of the obtained information, demonstrates the significant influence of the dried cutting methods vine, on the vine production efficiency. The mechanized vine cutting and the mechanized cutting with manual adjustment, in comparison with the traditional manual cutting, experimented on the Cabernet Sauvignon variety, gives the majority of vine yield of correspondingly 62,3 and 41,5%.

2. The tendency is observed of the Muscat Ottonel variety – 67,7 and 30,6 %. The presented situation is explained by the fact that on the mechanized cutting is expanded the load of vine with bars.

3. From another point of view, the mechanized cutting offers the possibility to perform this operation in optimal period of time, the fact that also has a positive influence on the vine plantations' productivity and durability.

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