

## STUDIES ON SOME PARAMETERS OF GRAPE STRUCTURAL AND FUNCTIONAL QUALITATIVA INDEXES VERTICAL AND WORK PERFORMED

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### ABSTRACT

*The paper presents theoretical and practical observations made about the construction and operation parameters a harrow vertical, ie the number of rotors, its design and maximum depth work, the degree of crushing soil, the degree of smoothing, the degree of destruction and incorporation of weeds, respectively possibilities of equipping these devices harrows for Improving workflow.*

### 1.1 INTRODUCTION

Harrows are designed to prepare agricultural land after the show, performing weed control, crushing Bulgarians, loosening and leveling soil. Also using harrows harrowing pastures is made and natural meadows and eventual burial in fertilizer and seed coating distributed on the floor.

Toothed harrows are used to harrowing, land and breaking loose Bulgarians.

Rotary harrow



**Fig. 1 Rotary harrow**

Rotating harrow is used for seedbed preparation in order to seeding various crops. Harrow can work after the plowing and seedbed preparation can perform, without first plowing to be done Rotating harrow is composed of two distinct parts, namely: vertical rotors with knives and Rollers can be type Parker or rods Rotating harrow can be an integral part of a complex unit that executes a single pass both seedbed preparation and seeding as well. In this regard harrow is fitted to the rear of the drill jig In the process of working harrow is driven by the PTO of the tractor via a gear, such as rotors in twos moves in the opposite one another. As a result of displacement and rotation of the knives will perform soil mobilization, grinding, turning and weed control. After going roller knives that makes a process of destruction of possible Bulgarians left a slight leveling soil compaction and leaving a seedbed well prepared.

The rotation of the PTO shaft is transmitted to the rotors with knives through a shaft, gearbox and gears mounted on rotors harrow. During work harrow rotors rotate two by two

in opposite directions so that the degree of shredding is higher (90-94%) compared with the other disc.

Harrows can be equipped with triangular section knives used in heavy soils or soils knives with lighter elliptical section. Rotary harrow under construction are met and control mechanisms harrow weight distribution, ensuring easy passage of the harrow ground bumps.

## 1.2 CONSTRUCTIVE PARAMETERS OF VERTICAL TILAGE

Table 1

type harrow	Working width	Total length knives	Kw (max)	CP (max)	Rotors	Reel crumpled Ø450	Pat che r Roll Ø460	Pat che r Roll Ø500	Pat che r Roll Ø550	Packer roller for crushing Ø500	corrugated roll Ø450	corrugated roll Ø560	Cultivator rubber roller Ø500	Cultivator rubber roller Ø590	Coated Rollers Ø510
<b>Are ss</b>															
2500	250	300	95	130	10	x	x								x
3000	300	300	95	130	12	x	x	x		x	x				x
<b>Orbit</b>															
2500M	250	300	125	170	10		x	x		x					x
3000M	300	300	125	170	12	x	x	x		x	x				x
3000S	300	330	150	200	12		x		x	x	x	x	x	x	x
4000S	400	330	150	200	16				x						
4500VS	450	330	180	250	18				x						
<b>KSE HK</b>															
5000HK	500	300	125	170	20			x		x					
5000M-HK	500	300	220	300	20			x		x					
6000M-HK	600	300	220	300	24			x		x					

## 1.3 AGREGATE INDICES QUALITATIVE WORK HARROWS FOR SEEDBED PREPARATION

Seedbed preparation work must realize land leveling, weed control and soil creating a layer of chopped, ripe, damp loose and the depth of sowing. Seedbed preparation work should promote water penetration into the soil, by mobilizing topsoil and by a smaller number of works cit (1-2works).

Achieving the optimal time work correctly adjust the equipment and ensure the achievement of quality work avoiding the need to repeat the work for this purpose. Reducing the number of passes on the ground before sowing reduces the danger of soil compaction, affecting the development of the root system of plants and aerohidric regime.

#### 1.4 WORK INDICES OF AGGREGATES FOR SEEDBED PREPARATION ARE:

-epoch enforcement Seedbed preparation is done a few days before sowing, provided that the soil have optimal humidity necessary for a quality work.

-depth average soil mobility (I) Determine early work during and at the end of the work and the determination is made at several points (minimum 20), length of 100m with two line scale, one sits at level ground and the other upright on the bottom furrow and at the intersection of the two rulers working depth is read in cm. Working deep is done to determine the arithmetic mean of the measurements. Working deep depends on the plant to be sown respectively its requirements for depth Semin. Depth of soil mobilization can have overtaking in addition to maximum 1-2cm, compared to sowing depth of culture. – deviation standard (Sa) To determine the standard deviation measured values are used to working depth or depth differences between individual and average readings. Allowable standard deviation is less 0.1Am If the value exceeds the allowed limit is reviewed harrow adjustment (to be sharp knives, be level, have the same peak ground attack, parallel to the ground), then the sample is again.

Maximum accidentally –deviation the maximum allowable deviation is less than accidental 0.2Am.-coefficientul variation of depth work (Ca) The allowable amount is less than 0.1Choppers

-Grade soil (Gms) to seedbed preparation Determine using metric frame, minimum 3 points arranged in diagonal plot worked, the total mass of soil mobilized under 5cm diameter, graded soil mass. Allowable degree of fineness of the soil is 90%.

-Grade soil loosening (Gas) at seedbed preparation Determine the most points (minimum 10) arranged on 100mm length at the point where it was measured and depth of the soil layer is measured height blueberries. In computation using the difference between the two measurements, and the value must be within the permissible seedbed preparation, less than 15%.

-Grade leveling soil On the ground level is fulfilled a quality machinery, observing the direction of the rows straight and uniform incorporation of seeds. Determination of leveling the soil is in many points (minimum 10) arranged on the diagonal plot, initially measured to determine soil subsidence and elevation measured at the end, record the data in a table.

Determination of leveling the soil is obtained by the arithmetic mean of the measurements and the value must be within the allowed limit, more than 40%.

-Grade destruction of weeds (GDB) to seedbed preparation It is an indicator of quality, allowing an advance of crops growing and therefore reduce weed competition. Establishing the degree of destruction of weeds frame metric is diagonal plot in minimum 3 points, determine the number of weeds before switching unit and the number of uncut weeds left after passing unit (is a few hours after the passage unit). Determination of qualitative indices of work is done by arithmetic mean and the degree of destruction of weeds must be above 90%.

A well-prepared seedbed is considered, if the land is worked up to a maximum depth of 1-2cm seminal deeper soil and degree of fineness is greater than 95%, regardless of the type and soil moisture.



**Fig .2 Rotary harrow**

- a-Rollers equipped with vertical drags
- b-Seedbed preparation vertical plowing harrow
- c-Seedbed preparation vertical-tillage harrow
- d-carrying out the work of preparing the seedbed harrow direct vertical in corn
- e-seedbed preparation harrow equipped with the roller-type vertical in plowing parker

### **CONCLUSION**

- -at seedbed preparation in the plowing harrow direct vertical soil crumbling degree is satisfying.
- -to achieve maximum soil crushing smaller vertical harrows equipped with roller type parker, crumbled drum, Rollers rubber, etc.
- seedbed preparation harrow -for vertical-tillage, weed and coating destruction degree is satisfying.
- Choppers -Grade soil at seedbed preparation vertical-tillage harrow is satisfactory
- -depth is a maximum of 28cm
- -Grade leveling of the soil is satisfactory

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