

## EFFECTS OF THE APPLICATION OF A NEW MODEL OF DRUM FOR SUNFLOWER HARVESTING

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It is challenging to keep finding technical solutions for new, improved, and more efficient drums for sunflower harvesters. The main objectives of new agricultural implements are to improve the quality of work, to reduce losses in seed, to secure a smooth operation in all weather conditions, and to increase the productivity of work.

In the period 1981 - 1987, we tested several drums for sunflower harvesting which are used in Europe and are considered as best:

- a row drum, type 653, "John Deere", USA,
- a row drum PSP-1.5, Bulgaria,
- a "Klado" drum, type SNA-181, Hungary,
- a standard comb-type drum, "Zmaj", Yugoslavia.

All drums were installed on a wheat harvester "Zmaj-162". The tests were conducted with a NS sunflower hybrid NS-H26-RM. The conditions were favorable for work and testing, the conditions of the crop was satisfactory. The number of lodged plants ranged from 0.9 to 1.2%, the number of broken plants from 1.1 to 1.8%. The average yield of seed was 2.75 t/ha (2.50 to 2.90 t/ha). The moisture of seeds was from 10 to 10.5%, of heads 12.0%, of stems 10.0%. Emphasis was placed in the tests on the rate of losses in seeds and heads per hectare,

The first two implements were row types, the other two were not.

The implements were tested at three speeds:  $V_1 = 3.2 - 4.2$  km/hr,  $V_2 = 4.4 - 5.1$  km/hr, and  $V_3 = 5.6 - 8.1$  km/hr.

The tests were conducted in accordance with internationally recognized methodologies such as: DECD, DLG, etc., on the territory of Vojvodina Province. The values of the average losses obtained in the tests are presented in Table 1.

The domestic implement manufactured by IAM "Zmaj", which is used in the commercial production for more than 20 years, was used as the standard in the test.

The total losses with JD-653 and "Zmaj" were 0.84 and 3.13%, respectively. The losses with the new implements were lower than with the standard, although significant differences were observed among them.

The working capacity of the implements ranged from 1.22 to 1.38 ha/hr.

The coefficient of reliability of the implements ranged from 0.915 to 1.000.

Tab. 1. Average losses at harvest

No.	Implement type	Speed $V_1-V_3$	Losses per		ha in %	Total losses
			Loose seeds	Loose heads	Uncut heads	
1.	JD-653	$V_1$	0,53	0,30	0,11	0,94
		$V_2$	0,48	0,18	0,20	0,86
		$V_3$	0,47	0,13	0,12	0,72
		AVERAGE	0,49	0,21	0,14	0,84
2.	PSP-1,5	$V_1$	0,32	0,65	0,31	1,28
		$V_2$	0,20	0,51	0,43	1,19
		$V_3$	0,19	0,36	0,25	0,60
		AVERAGE	0,24	0,51	0,35	1,10
3.	SNA-161	$V_1$	0,32	0,48	1,40	2,20
		$V_2$	0,28	0,32	1,30	1,90
		$V_3$	0,30	0,24	0,87	1,41
		AVERAGE	0,30	0,34	1,19	1,83
4.	ZMAJ-standard	$V_1$	0,59	0,50	2,07	3,16
		$V_2$	0,62	0,44	2,04	3,10
		$V_3$	0,58	0,60	1,97	3,15
		AVERAGE	0,60	0,51	2,02	3,13