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ASSESSMENT OF WINTER RAPESEED VARIETIES AND ACCESSIONS BASED ON PRODUCTIVITY INDICATORS

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Abstract. This study was conducted under the conditions of the Samarkand region using winter rapeseed (Brassica napus L.) varieties and accessions evaluated in breeding nurseries. The introduced accessions were compared with the reference variety Yuntai and analysed. Traits representing productivity components were assessed, and the accessions showing the highest values were selected for the next stage of the breeding programme.

Keywords: winter rapeseed, varieties and accessions, introduction, productivity, seed yield.

Introduction

In 2022, global winter rapeseed oil production amounted to approximately 27 million tonnes. Canada, Germany, China and India were among the largest producers, together accounting for 41% of total production [1].

Table 1. Rapeseed oil production in selected countries in 2022

No.	Country	Oil production (million tonnes)
1.	Canada	3,7
2.	Germany	3,7
3.	China	3,6
4.	India	3,4
5.	France	1,8
6.	Poland	1,4
	Jami:	26,7

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	Total	26.7

Winter rapeseed is the world's second most important oilseed crop after soybean. Numerous studies have focused on increasing its productivity. To achieve this, particular attention should be paid to yield components and the positive correlations among them. In particular, Clarke and Simpson identified a positive relationship between thousand-seed weight and seed yield [5].

Many researchers regard thousand-seed weight as an important trait in rapeseed breeding and seed production. Studies have shown that plant height has the strongest direct effect on productivity, followed by the number of pods per plant [7].

According to some studies, the relationship between plant height and seed yield was positive in the first year but negative in the second year [3, 6].

In breeding programmes, plant morphological traits are assessed as indicators of productivity because plants are grown in small plots and their productivity is evaluated. Therefore, assessment based on productivity components remains important when subsequent yield evaluations are conducted [4, 8].

The results of this study showed that seven accessions exceeded the reference variety Yuntai in productivity and yield indicators. The lowest values, compared with the reference, were recorded for twelve accessions.

Table 2. Yield components of winter rapeseed accessions (2021–2022)

No.	Variety/accession	Pods per plant (no.)			Seeds per pod (no.)			Productivity (g/plant)			Yield (c/ha)		
		2021	2022	Mean	2021	2022	Mean	2021	2022	Mean	2021	2022	Mean
2	Finessa	105,6	99,7	102,7	13,3	15,7	14,5	4,0	5,7	4,9	15,5	16,8	16,2
3	Aganos	119,6	117,4	118,5	16,5	18,8	17,7	9,6	7,6	8,6	26,4	24,6	25,5
4	Abakus	93,5	96,6	95,1	13,4	11,2	12,3	3,4	4,0	3,7	13,0	14,2	13,6
5	Lider	104,0	106,8	105,4	13,0	11,7	12,4	3,8	5,3	4,6	14,5	17,0	15,8
6	Baldur	93,5	91,4	92,5	9,8	11,2	10,5	2,6	3,6	3,1	13,2	11,6	12,4

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7	Livius	109,5	106,4	108,0	13,0	15,7	14,4	4,8	6,3	5,6	19,6	21,4	20,5
8	Ilona	115,5	112,0	113,8	15,8	17,3	16,6	6,2	7,4	6,8	24,6	22,8	23,7
9	Sitro	104.0	100,7	102,4	11,2	13,0	12,1	4,0	5,0	4,5	14,7	15,7	15,2
10	DK Expectation	117,2	113,4	115,3	12,5	14,8	13,7	5,6	6,8	6,2	24,0	25,2	24,6
11	LG Areti	116,3	113,2	114,8	15,0	17,7	16,4	6,4	8,0	7,2	21,8	23,5	22,7
12	Elvis	96,3	100,3	98,3	12,2	10,0	11,1	4,0	3,0	3,5	12,1	13,8	13
13	Xornet	113,7	110,3	112,0	13,8	15,7	14,8	4,3	6,8	5,6	18,0	20,5	19,3
14	Vektra	100,5	103,4	102,0	11,0	8,6	9,8	3,3	2,7	3,0	11,2	12,2	11,7
15	Dominator	122,7	120,0	121,4	17,4	19,7	18,6	8,6	10,7	9,7	26,5	25,0	25,8
16	Ella	97,5	99,5	98,5	13,4	10,0	11,7	3,5	4,2	3,9	15,7	13,3	14,5
17	Vendi	100,5	103,8	102,2	15,4	13,0	14,2	4,5	5,8	5,2	16,7	18,8	17,8
18	Trabant	115,0	112,2	113,6	14,0	17,2	15,6	7,2	5,2	6,2	22,0	24,0	23
19	Brize	93,5	95,8	94,7	12,2	10,2	11,2	3,3	4,0	3,7	13,2	14,0	13,6
20	Inv 1266 CL	115,8	113,2	114,5	14,7	16,8	15,8	7,5	6,2	6,9	22,8	24,5	23,7

The results indicate a positive relationship between the number of pods per plant and yield: accessions with more pods per plant generally showed higher yields. The number of seeds per pod was positively associated with yield in most cases, although a negative relationship was observed in some accessions.

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