



EFFECT OF SOWING RATE ON AGRONOMIC CHARACTERISTICS AND SEED YIELD OF CORIANDER (*CORIANDRUM SATIVUM* L.) IN SOUTHEAST BULGARIA

author: Svetlana MANHART, ORCID: 0000-0001-9369-7967

Agricultural University of Plovdiv, Faculty of Agronomy, Department of Crop Science, Plovdiv, Bulgaria

Abstract: Coriander is one of the most important essential oil crops cultivated worldwide. A field trial was carried out during the period 2023–2025 in Southeast Bulgaria to evaluate the effect of different sowing rates (200, 250, 300, and 350 germinating seeds per m² (g.s./m²)) on the components of productivity and seed yield of the coriander cultivar Yantar. The experiment was arranged in a randomized complete block design with four replications and a plot size of 15 m², following winter wheat as a preceding crop. The growing of plants was performed in compliance with the standard technology. The following parameters were determined: plant height (cm), number of umbels per plant, umbel diameter (cm), number of umbellets per umbel, number of seeds per umbel, seed weight per plant (g), 1000-seed weight (g), and seed yield (kg/ha). The results indicated that the sowing rate of 300 g.s./m² resulted in the highest values for most productivity traits, including number of umbels per plant, umbel diameter, number of umbellets per umbel, number of seeds per umbel, seed weight per plant, and 1000-seed weight. The tallest plants were reported at the sowing rate of 350 g.s./m². The sowing rate of 300 g.s./m² was found to be the most effective for the Yantar coriander cultivar under the agroecological conditions of Southeast Bulgaria.

• Introduction

Coriander productivity depends on genotype, environmental conditions, and agronomic practices, with sowing rate being one of the main factors affecting yield formation. Previous studies in different countries have shown that optimal plant density and row spacing significantly influence seed yield and yield components. In Bulgaria, suitable sowing rates have been established for the cultivar Mesten drebnoploden, but there is no information available for the cultivar Yantar.

Aim: To determine the optimal sowing rate for coriander cultivar Yantar under the agroecological conditions of Southeast Bulgaria.

• Material and method

- Location: Southeast Bulgaria, near Veselinovo village
- Period: 2023–2025
- Cultivar: Yantar
- Experimental design: RCBD, 4 replications
- Plot size: 15 m²
- Previous crop: winter wheat
- Sowing rates tested:
 - 200 g.s./m²
 - 250 g.s./m²
 - 300 g.s./m²
 - 350 g.s./m²
- Measured traits:
 - plant height
 - umbels per plant
 - seeds per umbel
 - 1000-seed weight
 - seed yield



• Results and discussions

Sowing rate (g.s./m ²)	Years of study			Average for the period
	2023	2024	2025	
200	1785 ^d	1650 ^c	1820 ^c	1752
250	1870 ^c	1732 ^b	1998 ^b	1866
300	2280 ^a	1895 ^a	2400 ^a	2192
350	1890 ^b	1745 ^b	2010 ^b	1882
Average for the year	1956	1756	2057	

Seed yield varied significantly depending on the sowing rate and the climatic conditions during the years of study. The highest average seed yield (2192 kg/ha) was obtained at the sowing rate of 300 g.s./m², while the lowest yield (1752 kg/ha) was recorded at 200 g.s./m². The experimental year 2025 provided the most favorable conditions for coriander productivity.

Sowing rate g.s./m ²	Elements of productivity						
	Height of plants (cm)	Nr. of umbels per Plant	Diameter of umbels (cm)	Nr. of umbellets per umbel	Nr. of seeds per umbel	Seed weight per plant (g)	1000 seeds weight (g)
200	55.4 ^d	10.5 ^c	3.97 ^d	4.7 ^c	9.7 ^b	0.61 ^b	4.67 ^d
250	57.0 ^c	11.3 ^b	4.10 ^c	5.0 ^b	11.0 ^b	0.65 ^b	4.76 ^c
300	58.6 ^b	12.6 ^a	4.85 ^a	5.4 ^a	12.8 ^a	0.80 ^a	5.88 ^a
350	62.5 ^a	11.4 ^b	4.23 ^b	5.1 ^b	10.9 ^b	0.68 ^b	4.81 ^b
LSD 5%	1.55	1.16	1.11	0.03	1.41	0.11	0.04

Sowing rate significantly affected the main productivity traits of coriander. The sowing rate of 300 g.s./m² resulted in the highest values for number of umbels per plant, umbel diameter, number of seeds per umbel, seed weight per plant, and 1000-seed weight. The tallest plants were observed at the highest sowing rate of 350 g.s./m².

• Conclusions

During the period of study (2023-2025), the highest seed yield (2192 kg/ha) was obtained at a sowing rate of 300 g.s./m², and the lowest one—1752 kg/ha—was obtained with a sowing rate of 200 g.s./m².

The highest plants were reported at a sowing rate of 350 g.s./m². The maximum number of umbels per plant, diameter of umbels, number of umbellets per umbel, number of seeds per umbel, weight of seeds per plant, and 1000-seed weight were recorded at a sowing rate of 300 g.s./m² when compared with other tested variants.

Under the south-east Bulgarian conditions, it is recommended to cultivate the coriander variety “Yantar” at a sowing rate of 300 g.s./m².

Weather conditions: Weather conditions during the study period differed considerably between years, mainly in precipitation amount and distribution. The year 2025 provided the most favorable moisture conditions and resulted in the highest coriander productivity.

Acknowledgement: The author gratefully acknowledges the support of the Agricultural University of Plovdiv.