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THE EFFECT OF SOWING RATES ON THE VARIETIES OF GREEN AND DRY MASS COLLECTIONS OF CAREPT MUSTARD (BRASSICA JUNCEAE CZERN)

Abstract: It was found that Carept mustard (*Brassica juncea* Czern.) Influenced Sowing norms for wet and dry mass accumulation of “Nika”, “Gorlinka” and “Yunona” varieties. At the beginning of the flowering period, the total green mass of one plant is 104.91-179.70 g in “Nika” cultivar, 81.70-147.70 g in “Gorlinka” cultivar, 98.11-146.97 g in “Yunona” variety. The total dry mass of a plant is 13.41-23.07 g in the Nika variety, 10.25-19.86 g in the Gorlinka variety and was found to be 11.16-18.32 g in the Yunona variety.

Key words: Mustard, varieties, seeds, sowing rate, wet mass, dry mass, root, stem, leaf, flower set.

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Introduction

Carept mustard (*Brassica juncea* Czern.) Seeds contain 24 percent protein, 34-47 percent oil (iodine number 92-119), 0.44-1 percent essential oil, 24 percent NEM, 5.3 percent ash and 8 percent tissue. In the flowering phase is a nutritious green fodder for livestock. Green mass yield is 230-270 c / ha.

Wet mass and silage increase the milk yield of livestock, not inferior to grass hay in terms of protein content (14.9% protein and 9.8% digestible protein).

The importance of wet and dry mass accumulation is high in the cultivation of high and quality crops from mustard. Resistant to short-term cold and drought. It is long day plant. The growth period depends on the geographical region. In the

northern region, the growth period is shortened. In general, the growth period lasts 70-115 days.

The roots release difficult-to-dissolve nutrients from the deeper layers to the upper layers and convert them into a form that other plants can assimilate. Mustard is grown for biological cleaning of the soil, because mustard is a disinfectant against fungi and other pathogens [1, 6, 7].

The degree to which the problem has been studied.

It is known that one of the most important tasks in agriculture is the reduction of soil fertility, the prevention of depletion of macro-and micronutrients required for plants. One of the most effective ways to maintain soil fertility in the current acute shortage of

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organic fertilizers is to introduce into the soil the green mass yield obtained from them by growing siderate crops as green fertilizer. The use of mustard plant as a "green fertilizer" is of great importance in increasing soil fertility. A high green mass yield can be obtained from a mustard plant in a short time. Mustard plant has a significant effect on changes in the amount of nutrients in the soil. When most varieties of mustard are grown for seed yield, the optimal sowing rate is 7-8 kg / ha (at the rate of 1.3-1.5 million germinated seeds) [4].

In the conditions of the Republic of Udmurt in 2017, in the experimental field of the Udmurt Agricultural Research Institute, 2.0, 2.5, 3.0, 3.5 and 4.0 million pieces of mustard variety "Raduga" per hectare (12-24 kg /) due to lack of heat when planted in rates, the vegetation period of the plant increased significantly and the period from germination to full flowering was 48 days. The highest yield of green mass was obtained from 3.0, 3.5 and 4.0 million seeds per hectare (11.14; 11.60 t / ha) [4].

Research conditions and methods

Our research was conducted in 2020-2021 in the conditions of typical sierozem soils of Tashkent region, and the effect of sowing norms on the accumulation of wet and dry mass of Carept mustard (*Brassica juncea* Czern.) was studied. In our research, the norms of sowing mustard to 1.0, 1.5, 2.0 million pieces / hectare were tested.

The experiment included 9 options, an area of each plot is 60 m², of which 30 m² were taken into account. Four repetitions were conducted and the total area of the experiment was 0.216 hectares.

The research was conducted in the field and in the laboratory, in which the placement of field experiments, calculations and observations were carried out on the basis of "Methods of field experiments", plant analysis "Methods of state variety testing of agricultural crops" [2, 3, 5].

In the experiment, the varieties of Carept mustard (*Brassica juncea* Czern.) "Nika", "Gorlinka" and "Yunona" in the first ten days of March at the rate of 1.0, 1.5, 2.0 million seeds per hectare are planted at depth 2-3 cm.

Result and discussion

In our research, it was found that spring mustard influenced planting norms of Nika, Gorlinka and Yunona varieties on wet and dry mass accumulation. At the beginning of the flowering period of the plant (8.05.2021) the total green mass of one plant in the variety "Nika" was 104.91-179.70 g, in "Gorlinka", it was found to be 81.70-147.70 g, and 98.11-146.97 g in the Yunona variety (Table 1).

The highest concentration of green mass of the plant was observed in the variants of 1.0 million seeds per hectare. 54 g, the wet mass of the flower set was 3.61 g, the total wet mass of one plant was 179.70 g.

In the variant where 1.5 million seeds are sown per hectare, the wet mass of the plant root is 11.21 g, the wet mass of the stem is 68.78 g, the wet mass of the leaf is 56.25 g, the wet mass of the flower set is 2.54 g. The total wet mass of one plant was found to be 138.78 g. In the variant of mustard plant planted at the rate of 2.0 million pieces per hectare, the wet mass of the plant root is 7.34 g, the wet mass of the stem is 51.74 g, the wet mass of the leaf is 44.02 g, the wet mass of the flower set is 1.81 g., the total wet mass of one plant was found to be 104.91 g. It can be seen that the increase in the sowing rate in the mustard plant resulted in a decrease in the total wet mass of one plant. However, the total wet mass yield per hectare was higher in the variants with increased planting rate.

At the beginning of the flowering phase in the Gorlinka cultivar, the wet mass accumulation of the plant was slightly lower than in the Nika variety, with 1.0 million seeds per hectare. The wet mass of the leaf was 60.70 g, the wet mass of the flower set was 2.93 g, and the total wet mass of one plant was 147.70 g. In the variant where 1.5 million seeds are sown per hectare, the wet mass of the plant root is 9.74 g, the wet mass of the stem is 62.55 g, the wet mass of the leaf is 40.17 g, the wet mass of the flower set is 2.61 g. the total wet mass of one plant was found to be 115.07 g. In the variant with 2.0 million seeds per hectare of Gorlinka variety, the wet mass of the root is 6.06 g, the wet mass of the stem is 46.61 g, the wet mass of the leaf is 27.09 g, the wet mass of the flower set. 1.94 g, the total wet mass of one plant was found to be 81.70 g.

In the variant where 1.0 million seeds are sown per hectare in the Yunona variety, the wet mass of the plant root is 9.97 g, the wet mass of the stem is 79.69 g, the wet mass of the leaf is 54.67 g, the wet mass of the flower set is 2,64 g., The total wet mass of one plant was 146.97 g. In the variant where 1.5 million seeds are sown per hectare, the wet mass of the plant root is 6.02 g, the wet mass of the stem is 65.13 g, the wet mass of the leaf is 41.87 g, the wet mass of the flower set is 2.55 g. The total wet mass of one plant was found to be 115.57 g. In the variant where 2.0 million seeds are sown per hectare, the wet mass of the root of the plant is 4.61 g, the wet mass of the stem is 59.75 g, the wet mass of the leaf is 31.81 g, the wet mass of the flower set is 1.94 g. The total wet mass of one plant was found to be 98.11 g.

According to the data on dry mass accumulation of mustard, the total dry mass of one plant is 13.41-23.07 g in Nika variety, 10.25-19.86 g in Gorlinka and 11.16-18.32 g in Yunona (Table 1).

The highest dry mass accumulation of mustard in the Nika variety was observed with 1.0 million seeds per hectare, 4.41 g dry root mass, 8.30 g dry stem mass, 10.07 g dry leaf mass, the dry mass of the flower set was 0.59 g, and the total dry mass of one plant was 23.07 g. In the variant where 1.5 million seeds are sown per hectare, the dry mass of the plant

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root is 3.63 g, the dry mass of the stem is 7.11 g, the dry mass of the leaf is 7.74 g, the dry mass of the flower set is 0.42 g. The total dry mass of one plant was found to be 18.90 g. In the variant where 2.0 million seeds were sown per hectare, the dry mass of the root of the plant was 2.23 g, the dry mass of the stem was 5.65 g, the dry mass of the leaf was 5.20 g, the dry mass of the flower set was 0.33 g., The total dry mass of one plant was found to be 13.41 g. It can be seen that the increase in the sowing rate in the mustard plant has also led to a decrease in the total dry mass of a single plant. However, the total dry mass yield per hectare was higher in the variants with increased planting rate.

At the beginning of the flowering phase of Gorlinka variety, 1.0 million seeds were sown per hectare, the dry mass of the plant root was 3.48 g, the dry mass of the stem was 7.94 g, the dry mass of the leaves was 7.93 g, dry mass of flower set was 0.51 g, the total dry mass of one plant was 19.86 g. In the variant where 1.5 million seeds were sown per hectare, the dry mass of the plant root was 2.68 g, the dry mass of the stem was 6.81 g, the dry mass of the leaf was 5.78 g, the dry mass of the flower set is 0.44

g. The total dry mass of a single plant was found to be 15.71 g. In the variant with 2.0 million seeds were sown per hectare of Gorlinka variety, the dry mass of the plant root was 1.54 g, the dry mass of the stem was 5.07 g, the dry mass of the leaf was 3.31 g, the dry mass of the flower set was 0.33 g, the total dry mass of one plant was found to be 10.25 g.

In the Yunona variety, where 1.0 million seeds were sown per hectare, the dry mass of the plant root was 2.73 g, the dry mass of the stem was 7.94 g, the dry mass of the leaves was 7.20 g, and the dry mass of the flower set was 0.45 g, the total dry mass of one plant was 18.32 g. In the variant where 1.5 million seeds are sown per hectare, the dry mass of the plant root was 1.89 g, the dry mass of the stem was 6.74 g, the dry mass of the leaf was 5.40 g, the dry mass of the flower set was 0.41 g. The total dry mass of one plant was found to be 14.44 g. In the Yunona variety, where 2.0 million seeds were sown per hectare the dry mass of the root of the plant was 1.45 g, the dry mass of the stem was 5.54 g, the dry mass of the leaf was 3.84 g, the dry mass of the flower set was 0.33 g, the total dry mass of one plant was found to be 11.16 g.

Table 1. Accumulation of wet and dry mass in the flowering phase of varieties of Carept mustard (Brassica juncea Czern.) (8.05.2021)

№	Mustard varieties	Sowing rate, mln.pcs / ha	Green mass					Dry mass				
			root	stem	leaf	flower set	Total in one plant	root	stem	leaf	flower set	Total in one plant
1	Nika	1,0	13,82	83,73	78,54	3,61	179,70	4,41	8,30	10,07	0,59	23,07
2		1,5	11,21	68,78	56,25	2,54	138,78	3,63	7,11	7,74	0,42	18,90
3		2,0	7,34	51,74	44,02	1,81	104,91	2,23	5,65	5,20	0,33	13,41
4	Gorlinka	1,0	10,55	73,52	60,70	2,93	147,70	3,48	7,94	7,93	0,51	19,86
5		1,5	9,74	62,55	40,17	2,61	115,07	2,68	6,81	5,78	0,44	15,71
6		2,0	6,06	46,61	27,09	1,94	81,70	1,54	5,07	3,31	0,33	10,25
7	Yunona	1,0	9,97	79,69	54,67	2,64	146,97	2,73	7,94	7,20	0,45	18,32
8		1,5	6,02	65,13	41,87	2,55	115,57	1,89	6,74	5,40	0,41	14,44
9		2,0	4,61	59,75	31,81	1,94	98,11	1,45	5,54	3,84	0,33	11,16

Conclusion

It was found that Carept mustard (*Brassica juncea* Czern.) influenced planting norms for wet and dry mass accumulation of Nika, Gorlinka and Yunona varieties. An increase in the sowing rate in the mustard plant resulted in a decrease in the total wet mass of a single plant. However, the total wet mass yield per hectare was higher due to the increase

in the sowing rate. At the beginning of the flowering period, the total green mass of one plant was 104.91-179.70 g in “Nika” variety, 81.70-147.70 g in “Gorlinka” variety, 98.11-146.97 g in “Yunona” variety, the total dry mass of a plant was found to be 13.41-23.07 g in the Nika variety, 10.25-19.86 g in the Gorlinka variety and 11.16-18.32 g in the Yunona variety.

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