

Amount of rigmets in the leaves of Bean Rovot variety

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Abstract: The article presents the amount of pigment in the leaves of the new Ravot bean variety, the amount of chlorophyll in different phases of its development, and the effect of nitrogen fertilizers on the pigments in the bars.

Key words: Bean, pigment, chlorophyll, nitrogen fertilizer, growth, branching and budding, ripening

Photosynthesis takes place in higher plants in special cellular organelles - chloroplasts that supply energy to metabolic processes, and it is characteristic only during daytime [1].

Green pigment - chlorophyll a and b is the main component of photosynthetic activity of plant leaves. The optical properties and photochemical activity of chlorophyll are determined by the chemical structure of its molecules, i.e., their absorption of solar energy and the biosynthesis of organic substances from it [3]. The amount and ratio of rigmets largely depends on external and operational factors.

Under their influence, two processes - the biosynthesis and degradation of compounds - occur [2].

According to L.A. Filatova, M.G. Kusakina, I.N. Yakusheva [4], protein protects chlorophyll from oxidation and salinity. Sulfate and chloride salinity ensures a strong connection of the rigmets-protein complex, the strength of the connection weakens as the salt concentration increases.

The table below shows the total number and ratio of rlastid rigns in the leaves of the variety Rovot bean at different stages of development.

In this case, the amount of chlorophyll "a" is more than chlorophyll "b", and it was found that their total amount varies in different periods of vegetation, depending on the biological characteristics of the plant.

The amount of rigmets was analyzed during the initial phase of vegetation development, during branching. The total amount of chlorophyll was equal to 1.48 mg/kg in the control, and increased to 2.04 mg/kg in the following variants. It was found that the amount of chlorophyll "b" was 0.42 mg/kg in the control and 0.56 mg/kg in the background variant. It was found that chlorophyll "b" increased from 0.59 mg/kg to 0.68 mg/kg in nitrogen-applied variants.

The ratio of chlorophyll "a" to chlorophyll "b" increased from 2.52 to 2.00 gash, and this ratio was 2.00 at an increase of nitrogen of 120 kg/ha gash.

The effect of nitrogen fertilizer on the amount of rigmets in the leaves of Bean Rovot variety (mg/kg wet mass)

№	Experience options	chlorophyll content, mg/kg of dry mass			
		a	b	a+b	a/b
plant branching					
1	Without fertilizer control-	1,06	0,42	1,48	2,52
2	P ₉₀ K ₆₀ -fon	1,2	0,56	1,76	2,14
3	Fon+N ₃₀	1,3	0,59	1,89	2,20
4	Fon+N ₆₀	1,3	0,63	1,93	2,06
5	Fon+N ₉₀	1,32	0,66	1,98	2,00
6	Fon+N ₁₂₀	1,36	0,68	2,04	2,00
give birth					

1	Without control- fertilizer	1,09	0,45	1,54	2,42
2	P ₉₀ K ₆₀ -fon	1,38	0,55	1,93	2,51
3	Fon+N ₃₀	3	0,63	2,05	2,25
4	Fon+N ₆₀	1,48	0,67	2,15	2,21
5	Fon+N ₉₀	1,52	0,74	2,26	2,05
6	Fon+N ₁₂₀	1,57	0,78	2,35	2,01
Flowering					
1	Without control- fertilizer	1,12	0,53	1,65	2,11
2	P ₉₀ K ₆₀ -fon	1,64	0,64	2,28	2,56
3	Fon+N ₃₀	1,65	0,67	2,32	2,46
4	Fon+N ₆₀	1,7	0,74	2,44	2,30
5	Fon+N ₉₀	1,78	0,77	2,55	2,31
6	Fon+N ₁₂₀	1,93	0,79	2,72	2,44
Beaning					
1	Without control- fertilizer	1,02	0,38	1,4	2,68
2	P ₉₀ K ₆₀ -fon	1,1	0,51	1,61	2,16
3	Fon+N ₃₀	1,12	0,53	1,65	2,11
4	Fon+N ₆₀	1,19	0,52	1,71	2,29
5	Fon+N ₉₀	1,38	0,5	1,88	2,76
6	Fon+N ₁₂₀	1,63	0,6	2,23	2,72
Making					
1	Without control- fertilizer	0,71	0,31	1,02	2,29
2	P ₉₀ K ₆₀ -fon	0,91	0,35	1,26	2,60
3	Fon+N ₃₀	1,08	0,45	1,53	2,40
4	Fon+N ₆₀	1,12	0,57	1,69	1,96
5	Fon+N ₉₀	1,12	0,64	1,76	1,75
6	Fon+N ₁₂₀	1,17	0,69	1,86	1,70

The total amount of chlorophyll "a" and "b" was found to be equal to 1.48 mg/kg in the control version, and the amount of lastid rigments increased by 2.04 mg/kg of the crop under the influence of nitrogen fertilizer.

When the amount of lastid rigaments in plant leaves was analyzed in the budding phase, it was observed that the amount of chlorophyll "a" was equal to 1.09 mg/kg in the control variant, and 1.38 mg/kg in the background variant, and 0.29 mg/kg more than the control variant. When nitrogen was applied at a rate of 30 kg/ha, the amount of chlorophyll "a" was equal to 1.42 mg/kg. With the increase of nitrogen content, the amount of chlorophyll "a" also increases, according to the options, it is 1.48; 1.52; It was found to be equal to 1.57 mg/kg. This law was also observed in the amount of chlorophyll "b" pigment. In this case, it was equal to 0.45 mg/kg in the control option, and 0.78 mg/kg of hashish was found in the option where nitrogen was applied at 120 kg/ha. The rest of the options took an intermediate place. When the ratio of chlorophyll "a" to chlorophyll "b" was analyzed, it was observed to be equal to 2.42 in control plants.

Fon+N₁₂₀ kg/ha was the most prominent, and the ratio was found to be 2.01. The total amount of chlorophyll "a" and "b" was equal to 1.54 mg/kg in the control variant, while it was equal to 1.93 mg/kg in the background variant, and this indication also increased with the increase of nitrogen concentration, ua according to the variants was 2.05; 2.15; 2.26;

It was found that 2.35 hashes were used. In the flowering phase, the amount of chlorophyll "a" in the control variant was 1.12 mg/kg, and in the plants of the background variant, this value was found to be 1.64 mg/kg. It was equal to 1.65 mg/kg in the Fon+N₃₀ option, while the highest performance in this phase was found to be 1.93 mg/kg in the option with 120 kg of nitrogen per hectare.

The amount of chlorophyll "b" was 0.53 mg/kg in the control, and it was found that with the increase of the amount of nitrogen fertilizer, this value increased to 0.79 mg/kg. When the ratio of chlorophylls was analyzed, it was revealed that it was 2.11 in the control option, and 2.44 in the option where nitrogen was applied at 120 kg/ha. The total amount of chlorophylls was in the range of 1.65 mg/kg to 2.72 mg/kg, and the highest result (2.72 mg/kg) was recorded in the variant where nitrogen was applied at 120 kg/ha.

When the amount of chlorophylls in the leaves of bean was determined during the formation of pods, the amount of chlorophyll "a" in the control variant was equal to 1.02 mg/kg, and it was observed that it was less than in the flowering phase.

In the background version, this reading was found to be 1.10 mg/kg. In the Fon+N₃₀ variant, the amount of chlorophyll "a" was equal to 1.12 mg/kg, and it was found that it decreased compared to the flowering phase. In this phase, the highest amount of chlorophyll "a" was determined in the version where nitrogen was applied at 120 kg/ha, and it was found to be 1.63 mg/kg. When the amount of chlorophyll "b" was analyzed, it was found to be equal to 0.38 mg/kg in the control variant. It was observed that the amount of nitrogen fertilizer (0.60 mg/kg) increased with the increase of 120 kg/ha.

When the ratio of chlorophyll "a" and "b" was analyzed, it was 2.68 in the control variant, 2.16 in the background variant, 2.11 in the nitrogen-applied variants; 2.29; 2.76; It turned out to be equal to 2.72. The total amount of chlorophylls increased from 1.40 mg/kg to 2.23 mg/kg. The highest amount was observed in the variant where nitrogen was applied at the rate of 120 kg/ha. In general, it was found that the amount of chlorophylls in bean leaves changes during the development phases. It was observed that the number of chlorophylls increased from the initial phases of development (branching and budding) to the flowering phase. It was found that the number of chlorophylls was slightly reduced in the late stages of development (seeding and ripening). It was found that the amount of chlorophylls in all phases increased with the increase of nitrogen concentration.

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