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DYNAMICS OF ENZYME ACTIVITY IN SALTED SOILS

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ABSTRACT:

In the current era of globalization, soil condition is deteriorating year by year due to the use of soil for various purposes. Therefore, increasing the activity of enzymes in saline soils, enriching the soil with minerals is one of the main tasks. This article discusses how to increase the dynamics of enzymes in saline soils.

KEYWORDS: Irrigated grassland, green algae, mineral fertilizers, redox, enzymes.

INTRODUCTION:

The activity of the enzyme catalase on days 7 and 15 was studied in soil samples given green micro-algae and mineral fertilizers in irrigated meadow soils, where the catalase activity in primary soil when mineral fertilizers were used was 1.90 per 100 g of soil. in size, catalase activity was found to increase by 2.16 in 7 days. As this process continued, activity was observed to be 4.01 over 15 days. In an experiment using a green microwave suspension, it was found that the catalase activity increased to 3.2 ml / mg O2, and within 15 days, this figure rose to 4.95. It was observed that the catalase activity in the soil increased slightly when 50% of mineral fertilizers were added to the soil in combination with the suspension of green algae.

This means that the activity of catalase, the main representative of the enzymes involved in the oxidation and reduction process in the soil, is directly related to the composition of the substances released into the soil.

Changes in soil enzymes and fertilizers used are closely related to soil and environmental conditions. The dependence of enzyme activity on the composition of fertilizers has been reflected in a number of scientific studies (Galstyan, 1965).

Experiments in Bukhara region showed that when 1 g of soil sample was applied with complete mineral fertilizers, the prosthetic activity corresponded to the amount of 0.310 mg / amine nitrogen, while the mineral micronutrients were added to green algae. When used in combination with dogs, these values are 0.590-0.720 mg / amine nitrogen. However, if the composition of the applied fertilizers is further enriched, ie the addition of plant residues and mineral fertilizers to the suspension of green microflora, the activity of the prosthetic enzyme in irrigated soils will increase (0.910 mg) can be seen. (Table 1)

Table 1. Protease activity in irrigated grassland alluvial soils

№	Experience	Peroxidase	
Days		7 days	15 days
1.	Soil + NPK (naorat)	8.99 + 0.110	7.96 + 0.09
2.	Soil + green algae (50%)	11.95 + 0.15	10.89 + 0.12
3.	Soil + green algae + NPK (50%)	12.64 + 0.19	11.90 + 0.14

In irrigated grassland alluvial soils, plant residues are rapidly degraded, and the oxidation reactions involved in the initial decomposition phase are closely related to the activity of peroxidase (Table 2) and then (polyphenol oxidase involved in their synthesis).

Table 2. Peroxidase activity in soil samples (per 100 g of soil / mg pupurgalline)

№	Experiment options	Protease activity, in the amount of mg NH2 in 1 g of soil
1.	Soil + NPK (100%)	0.310 + 0.003
2.	Soil + green algae + NPK (50%)	0.590 + 0.007
3.	Soil + biomass + NPK (50%)	0.720 + 0.09
4.	Soil + plant residue + green algae + NPK (50%)	0.910 + 0.01

Table 3. Activity of soil polyphenol oxidase enzyme in experimental samples
(At the rate of 100 g of soil / mg purpurgallin)

№	Experience	Peroxidase	
Days		7 days	15 days
1.	Soil + NPK	3.84 + 0.08	3.84 + 0.08
2.	Soil + green algae	4.40 + 0.09	4.37 + 0.06
3.	Soil + green algae + NPK (50%)	5.25 + 0.1	5.10 + 0.08

In a number of experiments, especially when mixed with green microflora in combination with mineral fertilizers, the increase in the activity of these enzymes is shown in Table 3.

Table 4. Enzyme activity in irrigated grassland under the influence of green algae

№	Experience	Duration of experiment (days)	Enzymes, M + m		
			Catalase, O2 released in 3 minutes, ml / mg	Ureza, N, mg released from 1g of soil in 24 hours	Invertase, 1 g of soil, glucose formed in 24 hours, mg
1	Primary soil (control)	-	1.95 + 0.04	0.21 + 0.010	0.6 + 0.02
2.	Unfertilized soil	30 60 90	1.14 + 0.02 0.99 + 0.01 1.09 + 0.0	0.19 + 0.01 0.12 + 0.01 0.95 + 0.01	0.10 + 001 0.07 + 0.004 0.20 + 0.01
3.	Soil + green algae + NPK (50%)	30 60 90	0.17 + 0.01 2.09 + 0.02 3.99 + 0.02	0.26 + 0.01 0.39 + 0.02 0.45 + 0.02	0.15 + 0.0011 0.27 + 0.01 0.51 + 0.02

The enzyme peroxidase, which is involved in the formation and rapid decomposition of humus, which is a complex substance and a substance of great importance in irrigated grassland soils, plays an important role. (Galstyan, 1958). This idea is reflected in our experiments. That is, if the activity of peroxidase and polyphenol oxidase enzymes in the soil where complete mineral fertilizers are applied is equal to 3.0-7.7 mg / purpurgalline per 100 g of dry soil for 15 days, then the mineral fertilizers in the same soil together with the addition of green algae, 5.1–11.9 mg / purpurgalline was observed.

This means that the breakdown and synthesis of humus, which is an organic substance in irrigated soil, is closely related to the activity of enzymes.

Catalase, protease, preoxidase and polyphenol oxidase activity were detected in the laboratory for 15 days. After three months, an increase in the activity of microorganisms and enzymes was observed in soil samples, but in the variant without fertilizer, the activity of catalase was almost unchanged. Urease and invertase activity were significantly altered. It was found that catalase activity increased by 2-3 times in 60-90 days in combination with green microflora and mineral fertilizers in the soil (Table 4).

In the non-fertilized version of the experiments, it was observed that the catalase activity was almost unchanged for 90 days. The activity of urease and invertase enzymes was significantly altered at 90 days compared to the 30-day experiment. During the experiment, it was found that catalase activity increased 2-3 times in 60-90 days compared to 30 days, when green mineral algae along with green microflora was used in meadow soil. Increased enzyme activity, especially urease and invertase activity, play a key role in the rapid decomposition of organic matter in the soil and its transition to a form that can be assimilated by plants. In conclusion, the activity of oxidation-reduction and hydrolytic enzymes (catalase, peroxidase, polyphenol oxidase, urease, protease, invertase, dehydrogenase) in alluvial moderately saline soils of irrigated meadows depends on the effect of applied bios. quantitative and seasonal variations were determined accordingly.

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