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THE CONNECTION OF THE ELEMENTAL COMPOSITION OF GRAINS AND STALKS OF THE MUNG BEAN PLANT TO THE SOIL

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ANNOTATION

The connection of the elemental composition of the STEM and grains of the mosh plant grown in the Besharik district with the elemental composition of the soil was discussed in this article on the basis of the results of neuron-activation analysis. Opinions were expressed on the distribution of macro-and microelements in the soil-stem-grain system.

Keywords: mung bean grain, mung bean stalk, macro - and microelements, soil, toxins, neuron-activation analysis.

INTRODUCTION

Local climatic conditions, soil structure and geobiochemical properties, elementary composition is an important factor in the cultivation of environmentally friendly products along with a certain impact on productivity. Therefore, the study of leguminous plants, in particular, the elemental composition of mung bean grains and stalks, is one of the important tasks.

Peanuts, mung beans, beans, peas are representatives of leguminous plants and are grown as much in agriculture as an important food crop. Their grains are desired to be peeled due to the high content of macronutrients and microelements, the richness of oils, vitamins, proteins, and also the high level of satiety. At the same time, the products obtained from them in the industry are used for technical purposes. In folk medicine, too, is considered an important means of treatment. Their stalk is also used as a pet food, since it has a specific composition. There are many species of leguminous plants, which are considered with great interest to study their element and organic composition. [1-3]

As a task for 2021, the study of the elementary relationship between grains and stems of a moss plant on irrigated soils in the Soybuyi village of the Besharik district of the Ferghana region has been determined. In March, samples were taken from layers of 0-25 cm and 25-45 cm of soil. The obtained samples were dried in the open air, crushed in to a homogeneous state and sieved through a 3 mm sieve. They are brought to a constant mass at 60 ° C in a drying cabinet. Samples received in a constant mass were packed in plastic bags. After appropriate treatment of this soil, moss was sown in April (0.2 hectares of sown area). The sprouted weeds were treated with agrotechnics in accordance with the established procedure. When the midge grains ripen,

(August) harvest midge grains and stems. After the harvest was harvested, the sample was removed from the soil and packed as indicated above. The grains and stalks of moss were also dried until they reached a constant mass. Crumbles and is packed.

The elemental composition of the packed samples was studied in the Laboratory of Ecology and Biotechnology of the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan on a neutron activation analysis device.

Distribution of chemical elements in soil, seeds and grains (mung bean plant, mkg / g)

№	Elements		Layer of soil				Seed of Mung Bean	Mung Bean Grain	Mung Bean Stalk
	symbol	name	Before planting		After the harvest				
			0-25 cm	25-45cm	0-25 cm	25-45cm			
1	Mn	Manganese	490	600	612	534	9,5	12,4	47,5
2	Na	Sodium	9900	9500	12300	12760	49	51,6	368
3	K	Potassium	22000	20500	20700	21400	14500	13500	12700
4	Sm	Samarium	8,40	4,2	4,35	6,36	5,3		0,051
5	Mo	Molybdenum	3,2	3,8	3,49	2,27	30,5	17,7	0,63
6	Lu	Lyutetium	0,25	0,21	0,31	0,37	0,01	-	-
7	U	Uranium	4,5	4,7	-	-	0,1	-	-
8	Yb	Ytterbium	2	1,8	2,38	2,81	0,1	0,1	0,026
9	Au	Gold	0,013	0,01	0,0073	0,0087	0,0038	0,0018	-
10	Nd	Neodymium	24	14	22,41	32,35	0,33	-	-
11	As	Arsenic	9,3	6,7	5,3	9,12	0,9		0,17
12	W	Tungsten	<1,0	1	-	-	1,4	-	-
13	Br	Bromine	4,5	5,7	3,43	4,35	1,4	-	-
14	Ca	Calcium	58600	66500	7,71	5,36	890	970	9210
15	La	Lanthanum	36	30	33,37	29,01	1,4	0,015	0,45
16	Cl	Chlorine	56	46	7,2	5,62	5,8	376	1200
17	Se	Selenium	0,3	0,3	-	-	0,63	-	-
18	Hg	Mercury	<0,1	0,45	-	-	0,035	0,478	1,85
19	Tb	Terbium	0,61	0,5	0,92	0,79	0,33	-	-
20	Th	Thorium	10	7,9	21,43	11,86	0,2	-	0,023
21	Cr	Chromium	50	46	61,27	61,14	0,52	0,18	1,03
22	Hf	Hafnium	4,6	3,6	4,93	5,47	0,01	-	0,064
23	Ba	Barium	880	750	1095	1324	38,4	-	35,6
24	Sr	Strontium	220	270	364	293	23	15,6	115
25	Ag	Silver	0,1	0,1	-	-	0,1	-	-
26	Cs	Caesium	7,9	6,5	6,6	8,3	0,022	0,021	0,19
27	Ni	Nickel	26	24	22,6	19,1	2,5	5,9	5,73
28	Sc	Skandium	9,7	8,3	9,47	10,2	0,0058	0,035	0,12
29	Rb	Rubidium	100	94	99,5	114	7,6	13,7	15,7
30	Zn	Zinc	100	120	112	102	54	32,1	13,1
31	Co	Cobalt	11	9,6	10,2	10,1	0,22	0,037	0,19
32	Ta	Tantalum	0,82	0,67	1,51	1,11	0,02	-	0,012
33	Fe	Iron	27500	23300	27810	30100	54	49,4	592
34	Eu	Europium	1	0,93	1,18	1,02	0,04	-	0,13
35	Sb	Antimony	1	1	1,51	1,78	0,012	-	0,18
36	Mg	Magnesium	-	-	-	-	-	1840	2180
37	Ce	Cerium	-	-	60,66	63,43	-	-	0,72

The results of neuron-activation analysis of elemental composition of mung bean stem and grains of Besharik District SoyBuyi village soil are presented in Table.

The elemental composition is divided into macro and micro elements according to vital requirements. According to the chemical point of view, it is allocated to metals and metalmas, heavy metals and radioactive metals.

Of the Macroelements, sodium, potassium, calcium, magnesium, chlorine were determined. Their content in the soil, mosh stem and grain is increased in the following order:

In the soil: chlorine<sodium<potassium<calcium

In the mung bean stem: sodium<calcium<magnesium<potassium

In the mung bean grain: sodium<calcium<magnesium<potassium

Changes in the amount of microelements contained in the seed mosh were also preserved in the mung bean grain. This sequence is also observed on the mung bean stem. Mung bean seeds are close to the amount of sodium in the seeds and stem (49.4 and 51.6 mcg / g). And the amount in the stem is 7 times more (368 mcg / g).The magnesium content in the stem is higher to 200 mg/g (2180 and 1840 mg/g) than in the grain. Important microelements (manganese) for plant development, (molybdenum, chromium, barium, strontium, nickel, zinc, iron) are distributed differently in soil and plant stem and grains. Iron is one of the most abundant microelements in soil, plant stem and grain. Its average amount in the soil is ~25000 mk/g. And the amount of mung bean stem is on average ten times more than grain (592 and 49.4 mk / g). There was no significant difference between the content of seed mung bean. The amount of recorded microelements in the mosh stem and grain decreases in the following order:

In the stem:

Iron>strontium>manganese>barium>zinc>nickel>chromium>molybdenum>cobalt

In the grain: iron>zinc>molybdenum>strontium>manganese>nickel>chromium>cobalt

The amount of barium in the soil is 750-800 mg/g. Barium mosh is also significantly higher in the stem, but in its grains it clearly grows. The quantitative change in the recorded microelements is not the same as in the stem and grain.Most of the Iron mung bean stem and grain Iron mung bean is the most abundant in the stem and grain, and cobalt is a small amount. Strontium on the plant stem is more than zinc, and in the grain it can be seen the opposite.

Differences were observed between quality and quantity composition of mung bean seed grains and crop microelements. Lutetium, uranium, neodymium, tungsten, bromine, selenium, Terbium, silver seeds are noted in the composition of mung bean, but in mung bean stalk and harvest grains are clearly overgrown. Samarium, arsenic, thorium, mercury, barium, tantalum, antimony, serium is present in the mosh stem and in the grains it is clear. It can be seen that some elements accumulate in different proportions in the mung bean stem and grain. Manganese, cobalt, chlorine ~4, chromium~5, calcium~10, Iron~12, lanthanum~30 times more than the grain in the mung bean stem; zinc~25, itterbiy~4, molybdenum~15 times less than detected. And the amount of potassium, nickel and rubidium is close to each other.

The amount of toxic elements in mung bean stalks and grains is not higher than the established normative indicators. [6] Mercury, arsenic are not found in plant grains.

Besharik district fully meets sanitary normative requirements according to the elemental composition of mung bean grains and stalks grown in climatic and soil conditions. This indicates their complete environmental safety.

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