

BIOGEOCHEMICAL CHARACTERISTICS OF THE ELEMENT ZINC (Zn) IN GRAY-BROWN AND ONION (*Allium cepa* L.)

Isomiddinov Zakirjon Jaloldinovich
Doctor of Philosophy (PhD) in Biological Sciences

Mamurov Khurshidjon Abduvokhidovich
Kokan State Pedagogical Institute. Uzbekistan

Ghulomjanov Mirzadavlatbek Daniyorjan ogli
Kokan State Pedagogical Institute. Uzbekistan

Shalabaev Karatay Isqaguly
Candidate of Biological Sciences, Professor
Kazakh National Pedagogical University named after Abay. Kazakhstan

ABSTRACT

The article analyzes the biogeochemical characteristics of zinc (Zn) content of onion (*Allium cepa* L.) in the layer of irrigated gray-brown soils distributed in Fergana region, and the importance of zinc (Zn) content in the soil for the growth and development of onion plants in the cultivation of onion crops. proven.

Keywords: gray-brown, biogeochemistry, vegetable, onion, soil, plant, food, chemical element, zinc (Zn).

СУР ТУСЛИ ҚЎНҒИР ТУПРОҚЛАР ВА ПИЁЗ (*Allium cepa* L.) ДА РУХ (Zn) ЭЛЕМЕНТИНИНГ БИОГЕОКИМЁВИЙ ҲУСУСИЯТЛАРИ

Исомиддинов Зокиржон Жалолдинович
Биология фанлари бўйича фалсафа доктори (PhD).

Мамуров Хуршиджон Абдувоҳидович
Ғуломжонов Мирзадавлатбек Дониёржон ўғли
Қўқон давлат педагогика институти. Ўзбекистон

Шалабаев Қаратай Исқақулы
Биология фанлари номзоди, профессор.
Абай номидаги Қозоқ миллий педагогика университети. Қозоғистон

АННОТАЦИЯ

Мақолада Фарғона вилоятида тарқалган суғориладиган сур тусли қўнғир тупроқлари хайдов қатлами ва пиёз (*Allium cepa* L.) таркибидаги рух (Zn) элементи миқдорининг биогеохимёвий хусусиятлари таҳлил қилинган бўлиб, пиёз экинларини етиштиришда тупроқ таркибидаги рух (Zn) элементи пиёз ўсимлигини ўсиши ва ривожланишига ахамияти исботланган.

Калит сўзлар: сур тусли қўнғир, биогеохимё, сабзавот, пиёз, тупроқ, ўсимлик, озиқа, кимёвий элемент, рух (Zn).

БИОГЕОХИМИЧЕСКАЯ ХАРАКТЕРИСТИКА ЭЛЕМЕНТА ЦИНК (Zn) В СЕРО-БУРЫХ И ЛУК (*Allium cepa* L.)

РЕЗЮМЕ

В статье проанализированы биогеохимические характеристики содержания цинка (Zn) лука репчатого (*Allium cepa* L.) в слое орошаемых серо-бурых почв, распространенных в Ферганской области, и значение содержания цинка (Zn) в почве для роста и развития луковых растений при возделывании луковых культур.

Ключевые слова: серо-бурый, биогеохимия, овощ, лук, почва, растение, пища, химический элемент, цинк (Zn).

The chemical element composition, biogeochemical properties, origin, development of agricultural products and irrigated soils, their origin, development, and their most important indicators are to determine the level of their productivity and supply with nutrients.

Zinc (Zn) is one of the important cyclic chemical elements in onion (*Allium cepa* L) studied from this point of view. Quantitatively, this element ranks next to barium and rubidium in the soil and onion plant.

According to V. M. Goldshmit's classification, zinc (Zn) element is among the chalcophilic elements and has the ability to form more brics with sulfur.

Zinc (Zn) element is important in the formation of onion heads in the phenological phases of onion plant development. It also participates in the production of chlorophyll and carbohydrates.

The zinc (Zn) element, which is essential for humans, is present in the average 2.5 g of an adult male body and 1.5 g in a female body, and performs the following biological functions in the body. Participates in the production of sperm and male hormones. It is necessary for the synthesis of vitamin E, it is extremely necessary for the normalization of the prostate gland. Therefore, studying the zinc (Zn) element, which is necessary in the soil-onion composition, studying its geochemical distribution and migration, is considered one of the current issues. It is of scientific and practical importance to study the amount of chemical elements in the irrigated brown soils and onion plant and its productivity, to determine the direction of the processes in obtaining a high yield from the onion plant.

RESEARCH OBJECT AND METHODS

The new and old irrigated brown soils distributed in the Fergana valley were selected as the research object. As the main method of research, chemical element analysis of soil and onions was carried out by the neutron-activation method at the Institute of Nuclear Physics of the UzFA.

RESEARCH RESULTS

Currently, in our Republic, it is necessary to develop recommendations on increasing the productivity of soils formed in different climatic conditions, determining the content of elements, and applying agrotechnical research on their effective use. One of the most important issues is to determine the level of nutrient supply of the brownish brown soil in order to obtain a high-quality and abundant harvest from common onion (*Allium cepa* L.), which is eaten by everyone in agriculture. From this point of view, we analyzed the biogeochemical properties and characteristics of zinc (Zn) element in onion (*Allium cepa* L.) samples taken in 2019, that is, new and old irrigated brown soils.

It was observed that the productivity of irrigated brown brown soils varies with the increase of the irrigation period, the thickness of the humus layer and the amount of humus depending on the amount of agro-irrigation inputs and the amount of macro- and micronutrients. During the research, the amount of zinc (Zn) in the khaydov layer of newly and old irrigated brown soils and common onion (*Allium cepa* L.) was determined. You can see the amount of zinc (Zn) in the brown soil and onion (*Allium cepa* L.) samples from 10.19.2019 in the table below.

Zinc (Zn) element content (mg/kg) in khaydov layer of dark brown soil and ripe onion heads

Newly irrigated		Formerly irrigated	
Soil	Onion	Soil	Onion
118	12	110	22

From the data in the table above, it can be seen that the amount of zinc (Zn) element studied in the layers of old irrigated brown soils distributed in Fergana region, Uzbekistan district is 118 mg/kg, and 12 mg/kg in ripe onion (*Allium cepa* L.) was determined.

It was found that zinc (Zn) element content in the layers of freshly irrigated brown soil distributed in Baghdad district is 110 mg/kg, and 22 mg/kg in onion (*Allium cepa* L.).

Although zinc (Zn) elements are relatively close to each other in the brownish brown soils distributed in the above areas, it is necessary to take into account that zinc (Zn) and its compounds are very important for growing vegetable crops in newly irrigated brownish brown soils. Therefore, we also analyzed the amount of zinc (Zn) in onion from the yellow brown soils during the study.

It is well known that the iron element contained in onion is important for normal growth and quality yield of onion (*Allium cepa* L.) crop. Because macro- and micronutrients in the soil are the main source of nutrients for onion (*Allium cepa* L.), they can be absorbed from the soil or dissolved. Interaction of soil components with elements takes place through biological absorption. Active uptake of these nutrients by onion (*Allium cepa* L.) roots is observed as the roots develop in the plow layer of the soil [3].

In this context, we will focus on the importance of the zinc (Zn) element, which is necessary for onions grown in the conditions of irrigated brown soils.

Zinc (Zn) is of important physiological importance in the life of plants, the lack or excess of this element causes various diseases. A lack of spirit causes plants to grow tall and have small leaves. Various spots appear on the leaves of citrus plants, and it causes chlorosis in corn plants.

Summary. It can be seen from the above that in the brown soils of the old irrigated, the spirit element increased in the Khaydov layer and decreased in the lower Khaydov layers. In newly irrigated brown soils, it was observed that it decreased in the upper layers and increased in the lower layers. Determining the amount of spirit in the soil and the type of agrochemical analysis is one of the most important factors. Therefore, taking into account the amount of elements in the soil, in the cultivation of vegetable crops, determining the amount of soil minerals, nutrients, serves as one of the signs of increasing productivity.

BIBLIOGRAPHY

1. Исағалиев М.Т., Исомиддинов З.Ж. Суғориладиган сур тусли қўнғир тупроқлар морфологияси ва агрохимёвий хоссаларининг ўзгариши. NamDU. Ilmiy xabarlar –2020-8-сон 29-33 б.
2. Исомиддинов З.Ж., Исағалиев М.Т., Юлдашев Г.Ю. Биогеохимические особенности серо-бурых почв и лука. Научное обозрение. Биологические науки. Москва. №1. 2022. 22-27 с.
3. M Isagaliyev, Z. Isomiddinov. Biogeochemistry of the onion (*Allium cepa* L.) in irrigated soils. Journal of Natural Remedies <https://jnronline.com/ojs/index.php/about/article/view/288>. Vol. 21, No. 12(2), (2021) 9-17 С.
4. Yuldashev G., Isag'aliyev M. Tuproq biogeokimyosi. – T.: 2014. 352 b.
5. Sotiboldiyeva, G. T. (2018). Farg'ona viloyati kolmatajlangan tuproqlarining biogeokimyoviy xususiyatlari va ulardan foydalanish. Diss. bffd-Toshkent, 31-42.
6. Yuldashev, G., & Sotiboldiyeva, G. (2021, August). BIOGEOCHEMISTRY OF SELENIUM AND ARSENIC IN AGRICULTURAL LANDSCAPES: <https://doi.org/10.47100/conferences.v1i1.1363>. In RESEARCH SUPPORT CENTER CONFERENCES (No. 18.06).
7. Исмонов А.Ж. Фарғона водийси суғориладиган оч тусли бўз, сур тусли қўнғир тупроқлари ва уларнинг унумдорлиги. ЎзФА маърузалари. –Т., 2016, №3.
8. Қўзиёв Р.Қ. ва бошқалар. Фарғона водийси суғориладиган тупроқларининг хоссалари, экологикмелиоратив ҳолати ва маҳсулдорлиги. – Т., 2017.
9. Орлов Д.С., Садовникова Л.К., Суханова Н.И. Химия почв. – М., 2005.
10. Круглова Е.К., Алиева М.М. и др. Микроэлементы в орошаемых почвах Узбекской ССР и применение микроудобрений. – Т.: Фан, 1984.
11. Г.Юлдашев, М.Исағалиев, Хуснидахон А.Абдухакимова, З.Исомиддинов. Проблемы мониторинга элементов в орошаемых почвах. Аграрная наука-сельскому хозяйству. 2020. 429-431 с.