

THE INTENSITY OF RESPIRATION IN PLANTS DEPENDS ON THE ENVIRONMENT, SEASONS, TEMPERATURE, HUMIDITY DEPENDING ON THE CHANGE

¹S.U. Samatova, ²Ya.Ya. Mirzaeva

¹Senior lecturer at the Department of Sericulture and Mulberry of Tashkent State Agrarian University

²Scientific Research Institute of Plant Genetic Resources, Associate Professor of the Department of Sericulture and Mulberry, Tashkent State Agrarian University.

<https://doi.org/10.5281/zenodo.10402618>

Abstract. "During the production of aluminum by electrolysis, various types of raw materials are released, as well as solid and gaseous substances, harmful substances are observed that are released during the operation of production enterprises, which have a negative impact on the environment, and have a harmful effect on mulberry leaves. and other plants.

Keywords: gaseous substance, mulberry, leaf, aluminum plant, fluorine, chemical, biological, cocoon, chlorine.

The aluminum plant mainly releases toxic fluorine compounds into the environment (Konyukhov 1991). It is known that fluorinated compounds downwind from the aluminum plant have a harmful effect on plants 60-70 km away, affecting their germination, growth and development (Norboev, Samatova et al. 1991, Khaidarov et al. 1991).

The mulberry leaf plays the role of an accumulator that collects the toxic hydrogen fluoride from the aluminum plant (Azimjonova et al.).

In the essence of the decision of the President of the Republic of Uzbekistan dated January 12, 2018 "Measures for the further development of the sericulture industry of the Republic" PQ-3472, the task of establishing orchards from good varieties of mulberry trees is envisaged, so we aimed to conduct experiments with mulberry trees.

The process of respiration is closely related to the process of metabolism in living organisms. If breathing stops for a minute, the order of vital processes occurring in a living organism is disrupted, and as a result, the organism dies. In the process of respiration, that is, in the oxidation of organic substances, part of the energy released is spent in the form of heat and light. About 40-50% of energy is stored in ATF molecules and is used in life activities of organisms.

N.T. Based on Saussure's reasoning, he conducted quantitative analyzes and proved that in the dark, plants release as much carbon dioxide as they absorb oxygen.

Therefore, "During the production of aluminum by electrolysis method, various types of raw materials and solid and gaseous substances are released, harmful substances released during the operation of production enterprises that have a negative impact on the environment are observed to have a harmful effect on mulberry leaves and other plants.

Hydrogen fluoride gas emitted from aluminum plants pollutes the environment by 50% of fluorine in the production of phosphorite (apatite) in industry. Sodium fluoride is more toxic than hydrogen fluoride, and its inhalation is extremely dangerous for the mulberry tree and its leaf productivity, which has been observed to be more active than other plants.

We observed and determined the changes in the respiration intensity of plants, especially the mulberry tree, depending on the environment, seasons, temperature, irrigation in Sariosia district of Surkhandarya region.

The results of the experiments showed that the intensity of respiration in all analyzed plants decreases by 82% from June 10-15

Changes in respiration intensity in mulberry leaves growing under the influence of an aluminum plant.

№	The name of the plant	Control Jarkurgan district	Experience Dashnabad, Sariosia district	%
1.	Mulberry leaf	136+ 3.5	102+2.4	82%

Seasonal variation of respiration intensity in plants growing under the influence of the aluminum plant (1 gr. per wet leaf in 1 hour, on the basis of moles) The experiment was conducted in the fields of Sariosia district. In our experiments, mulberry leaves collected in field conditions were brought in bags made of black cloth. Immediately after removing the bags from the leaf, the results of the reaction were checked using experimental methods carried out under field conditions.

Changes in the intensity of respiration during the vegetation period.

control

The name of the plant	April	May	June	July	August	September
Mulberry leaf	96.5+5.4	119.7+5.2	138+3.3	132.6+2.5	126.8+4.0	113.0+5.0

Comparative

The name of the plant	April	May	June	July	August	September
Mulberry leaf	82.9+5.3	94.5+3.4	85+5.1	80.0+3.9	71.4+2.2	68.4+1.0

Experiments were carried out on the example of mulberry seedlings planted with different amounts of solutions of substances such as succinic acid, chiberylene, and auxin from the stimulator, which were taken from the aluminum plant. The result of the experiment showed that the solution of succinic acid 15-20 mg/l brings the intensity of respiration in the mulberry leaf closer to the control (comparative).

A.N. Bach (1897) created the peroxide theory of slow oxidation. According to him, oxygen taken from the air cannot directly and directly oxidize organic matter. Since oxygen in molecular form is an “inert” compound, it can oxidize organic substances only after entering the active atomic state. Anaerobic respiration occurs when plant roots or seeds are immersed in water.

Academician S.P. Kostichev called this process the process of anaerobic respiration, taking into account the formation of alcohol in plant tissues during respiration without oxygen. In plants

adapted to a container of water, the respiration process continues without interruption due to the oxygen accumulated in special tissues. But in most terrestrial higher plants, the absence of plants is observed due to the action of alcohol, which is formed when anaerobic conditions are maintained for a long time.

In 1991, I.V. Palladin developed the theory of oxidation of organic substances under anaerobic conditions. In his opinion, in living organisms Water and organic matter must contain compounds that release hydrogen. I. V. Palladin called substances that attach hydrogen to themselves “respiratory pigments.”

When we checked the respiration rate of a mulberry leaf, we saw that respiration slows down as autumn approaches. It has been noticed that the respiration rate of mulberry leaves varies depending on the season.

From the above data, it is clear that the amount of fluorine compounds on earth is increasing year by year, that is, compared to the first years of our century, it has increased several times.

Development of national economy and agriculture, satisfaction of material and spiritual needs of mankind must deal with fluorine compounds.

So, in conclusion, studying the consequences of the harmful effects of fluorine compounds on living organisms is considered one of the problems of science in the field of agriculture.

Conclusion

In conclusion, the intensity of respiration in plants is influenced by various environmental factors such as seasons, temperature, humidity, and other changes. Respiration is an essential metabolic process in plants that involves the breakdown of organic molecules, releasing energy for various cellular activities. The rate of respiration can fluctuate depending on the prevailing environmental conditions. Seasonal variations play a significant role in plant respiration. During the warmer months of spring and summer, when temperatures are generally higher, respiration rates tend to increase. This is because higher temperatures accelerate metabolic processes, including respiration. In contrast, during colder seasons like autumn and winter, respiration rates may decrease due to reduced metabolic activity in response to lower temperatures. Temperature is a crucial factor affecting respiration in plants. As temperatures rise, the metabolic rate of plant cells increases, leading to enhanced respiration. Conversely, as temperatures drop, respiration slows down. However, extreme temperatures can have detrimental effects on respiration, as very high or very low temperatures can disrupt cellular processes and hinder respiration. Humidity levels can also impact plant respiration. High humidity can limit the evaporation of water from plant tissues, which can lead to reduced transpiration rates. Consequently, this may result in decreased respiration rates since respiration and transpiration are interconnected processes. On the other hand, low humidity levels can increase the rate of transpiration, which may influence respiration accordingly.

REFERENCES

1. Norbaev N., Primochenko O. Vliyanie fitoristyx zasoleniy na sodержanie mineralnogo pitaniya selskohozyaystvennykh kultur. //Tezisy dokladov uchastnikov 1 month regional conference on migration soley na territori Sredneaziatskogo region. Tashkent, 1988. - P. 43-45.
2. Norboev N, Norboev Z, Samatova S. Deystvie raditsionnykh i second atmosfericnykh zagryazneniy na biophysiko- physiological processy plantiy.// Tezisy. Methodological and

scientific documents of the international conference of teachers of physical, social, economic and medical sciences in Central Asia. Tashkent, 1994. St. 2-5.

3. Norbaev N., Turdieva S. Important problems of agroecology in Uzbekistan. // International scientific and practical conference. Agrarian science: achievements and perspectives. Tashkent. May 1-2, 2002. -B. 98-99. 9.
4. Norbaev N., Boynazarov B. Studies of the electrokinetic potential of cells under conditions of atmospheric pollution.//Actual problems of modern physics. We sweat. 2002. - S. 34-35
5. <https://ziyouz.uz/tag/ecological-problems-website>.