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Impact of High Voltage Lines on Agricultural Land: Protection and Sustainability

Marupov Azizkhan Abboskhonovich
PhD, Fergana Polytechnic Institute
ORCID: 0000-0002-5120-4359
e-mail: marupov.azizxon@gmail.com

Annotation: This article examines the impact of high-voltage power lines on agricultural land, with a focus on conservation areas and agricultural sustainability. Potential hazards are addressed, such as electromagnetic effects on plants and animals, as well as possible damage to equipment and difficulties when cultivating fields near power lines. The article also examines measures taken to ensure the safety and sustainability of agricultural land, including the establishment of conservation zones and balancing the need for electricity with the need to maintain land productivity. The authors discuss the importance of finding a balanced approach to this issue to benefit both the agricultural sector and energy sustainability.
Key words: high voltage lines, agricultural land, conservation area, electromagnetic impact, agricultural sustainability, power lines and plants, energy infrastructure, electromagnetic hazards, agriculture and energy, power lines and land productivity..

Introduction.
Electricity plays a key role in the modern world, ensuring the efficient functioning of various industries. High-voltage power lines are an integral part of this infrastructure. However, when it comes to farmland, safety and environmental impact become an integral part of the discussion.

Protection of Zones and Impact of Power Lines.
One aspect that requires attention is the establishment of security zones around high-voltage lines. Protecting land in the vicinity of these lines is an important aspect of agricultural resource management. It is clear that high voltage lines can have an impact on agricultural land, especially if they pass through land intended for agriculture.

Hazards and Measures to Take.
There are a number of potential hazards associated with the proximity of high-voltage lines to agricultural land. The electromagnetic field created by the lines can affect plant growth and animal health. In addition, equipment damage and difficulties in cultivating fields are possible [1-5].
The effect of high-voltage power lines on soil electrochemical equilibrium is an important aspect of the study. Let's consider several factors the impact of these types of lines on agricultural land such as:
Soil electrochemical effects of high-voltage power lines, high-voltage power lines stretched over agricultural land can affect the electrochemical characteristics of the soil environment. Electric fields created by power lines can interact with ions in the soil, affecting their mobility and distribution. Electrochemical stimulation can cause changes in soil pH, affect the availability of nutrients to plants, and influence microorganisms in the soil ecosystem.
Research shows that electric fields can cause changes in the electrochemical activity of soil particles and water. This can affect ion exchange processes, causing a redistribution of elements in the soil. Such changes, in turn, can affect plant growth, nutrient uptake and overall productivity.
However, further research is required to fully understand soil electrochemical effects, taking into account the diversity of soil types, climatic conditions and power line characteristics. This is necessary to develop effective management strategies that ensure sustainable proximity of high-voltage power lines and agricultural lands.
Bioelectric effects of high-voltage power lines on plants, bioelectric effects caused by the impact of high-voltage power lines on plants, are becoming the subject of increasingly careful study in the field of agriculture and ecology. The electric fields created by the lines interact with plant cells, causing a variety of reaction0s [6-10].

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One of the key aspects is the change in membrane potentials of plant cells under the influence of electric fields. This can affect the transport of ions across cell membranes, which in turn affects the flow of nutrients and water into the plant. In addition, bioelectrical changes can stimulate biochemical processes such as the synthesis of enzymes and proteins.

Some studies also indicate possible changes in plant physiology, such as growth, photosynthesis and flower formation, under the influence of electromagnetic fields. However, it is important to conduct more in-depth studies to determine the precise mechanisms of these effects and their impact on plant productivity in the context of agricultural plantations.

Understanding the bioelectrical effects on plants under high-voltage conditions holds the potential to develop management strategies that can balance society's energy needs with the need to maintain plant health and agricultural sustainability [11-14].

In conclusion, “Soil Structure and Electromagnetic Field in the Context of High-Voltage Power Lines,” The electromagnetic field generated by high-voltage power lines has an impact on soil structure that can have far-reaching effects on agricultural lands. Soil structure plays a key role in maintaining fertility, permeability and biodiversity. Under the influence of an electromagnetic field, soil particles can undergo movements and changes, making important adjustments to the functioning of the soil system.

One of the main aspects of the influence of an electromagnetic field on soil structure is its ability to cause electromigration of particles. Electrical forces can influence the aggregation of soil particles and their interaction with water. This, in turn, can lead to changes in soil moisture and water-holding capacity.

Additionally, electromagnetic effects can affect soil microflora and microbiological processes. Soil biological activity, including microbial activity, may be sensitive to changes in electric fields.

In-depth research is needed to clarify the specific mechanisms of the influence of the electromagnetic field on soil structure and biological processes. This will allow the development of effective management strategies aimed at maintaining the health of the soil environment in the vicinity of high-voltage power lines.

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