

ЭЛЕКТРОМАГНИТНОЕ ИЗЛУЧЕНИЕ И ЕГО ВОЗДЕЙСТВИЕ НА БИООБЪЕКТЫ

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ELECTROMAGNETIC RADIATION AND ITS IMPACT ON BIO-OBJECTS

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Аннотация: В этой статье представлены результаты исследования воздействия неионизирующих электромагнитных излучений от Wi-Fi роутера, электронных гаджетов и бытовой техники на биообъекты. Экспериментально исследовано воздействие электромагнитного излучения (Wi-Fi роутера) на прорастание зерен злаковых и бобовых растений.

Ключевые слова: электромагнитное излучение (ЭМИ), электромагнитное поле (ЭМП), диапазон частот, биологический эффект, семена злаков.

Abstract: This article presents the results of a study of the effects of non-ionizing electromagnetic radiation from a Wi-Fi router, mobile phones and home appliances on a living organism. The effect of electromagnetic radiation (Wi-Fi router) on the germination of grains of cereals and legumes has been experimentally investigated.

Keywords: electromagnetic radiation (EMR), electromagnetic field (EMF), frequency range, biological effect, seed of cereals.

Introduction

Different kind of radiation surrounds us, weather from natural sources Cosmic radiations coming from sun or from man made sources like EMR from cell phones and even the weakest of EMR have an impact on the living organisms.

Even our daily activities are linked with these radiations. Rhythmic changes in Earth's magnetic field and radiation's from sun have a serious effect on biospheres' process and systems. In many ways these rhythms are well synchronized with the growth and development of living organism like plants and animals. Humans are also very much susceptible and sensitive to these rhythms of solar activity.

Scientists have evaluated the health status of people who have been affected by EMR.

Numerous studies show that EMF and EMR of artificial(technical) devices and systems not used correctly can cause adverse effects, worsen public health and the condition of other components of biosphere.

The negative impact of these EMR on people constantly being exposed to EMR is that increase in incidence of diseases associated with increased blood pressure i.e Hypertension and lowered body immunity.

The mechanisms of action of EMR on living biological objects is explained as follows: in the electric field opposite electric charges are shifted in opposite directions and their polarization occurs, i.e. an electric dipole appears in the living tissue. In an alternating electric field, dipoles constantly vibrate around their own axis, contributing to the absorption of electrical energy [1].

There are many hypotheses which may explain the effect of RF EMR in the biology of reproduction. The emission of high power electromagnetic waves may contribute, among other things, to an increase in the temperature of the tissues, whereas RF EMR of a low level, lower than that required for the direct ionization of a particle, may cause biochemical effects. [2].

EMF exposure also evokes the expression of specific genes previously implicated in plant responses to wounding [3, 4] and modifies the development of plants [5]. Furthermore, these responses are systemic insofar as exposure of only a small region of a plant results in almost immediate molecular responses throughout the plant [5]. Biological responses should be considered as reporters of, and evidence for, the plant's ability to perceive and interact with EMF. These responses can take place at the subcellular level, implying molecular events or modification of enzymatic activities, or at the level of the whole plant, taking the form of growth modification.

Nowadays, there are many gadgets that make our lives easier. But each such device is a danger to plants and animals in the form of electromagnetic radiation. These artificial EMPs violate the synchronism of nature's biorhythm. Moreover, experimental studies are very important for assessing the significance and study of the effects of EMF and EMP.

Objective: to study the effect of artificial electromagnetic waves on plants.

Materials and research methods

For research we used grain farming (wheat, corn and beans). 40 healthy pieces of the same size were selected of corn kernels and 40 pieces of wheat grains. Grains of corn and wheat, each 20 pieces were under normal conditions, and the another 20 pieces was placed in conditions with artificial EMR exposure (for this we used a home Wi-Fi router) for a long time (1 month test period).

The action of microwaves was subjected to cereal grains from the moment of seedling and bean seeds from the moment they were immersed in a humid environment. During the entire growing period, we determined the characteristic indicators of plant growth and development: the number of sprouts that appeared, the height of the sprouts (Fig. 1, Fig. 2, Fig. 3, Fig. 4).

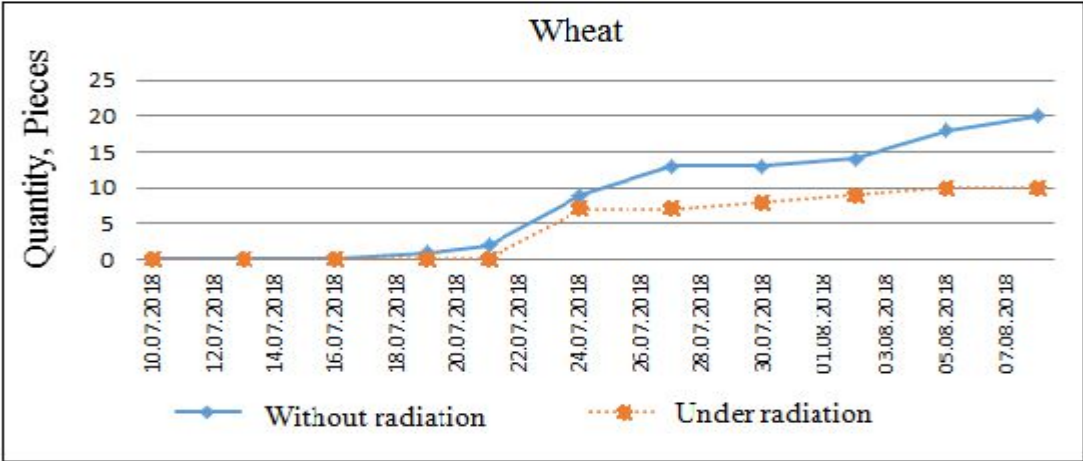


Fig. 1. The effect of microwave irradiation on wheat development

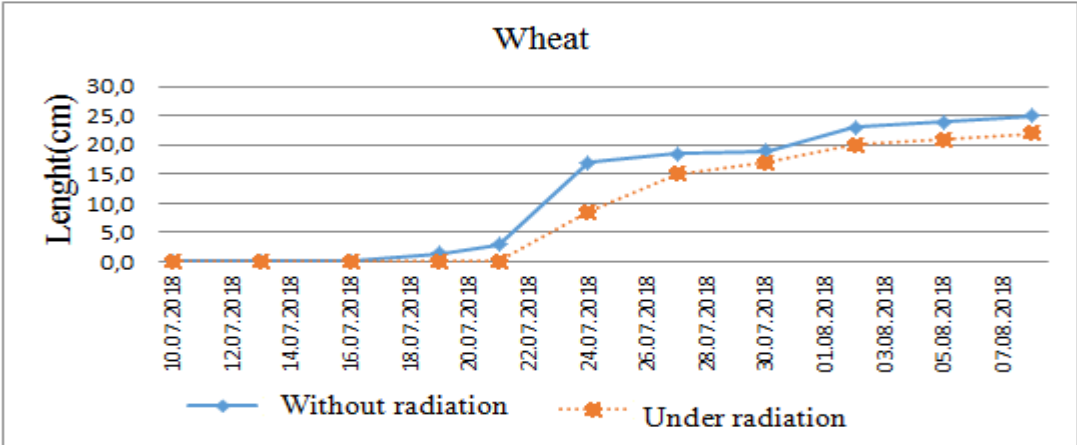


Fig 2: The effect of microwave irradiation on wheat growth

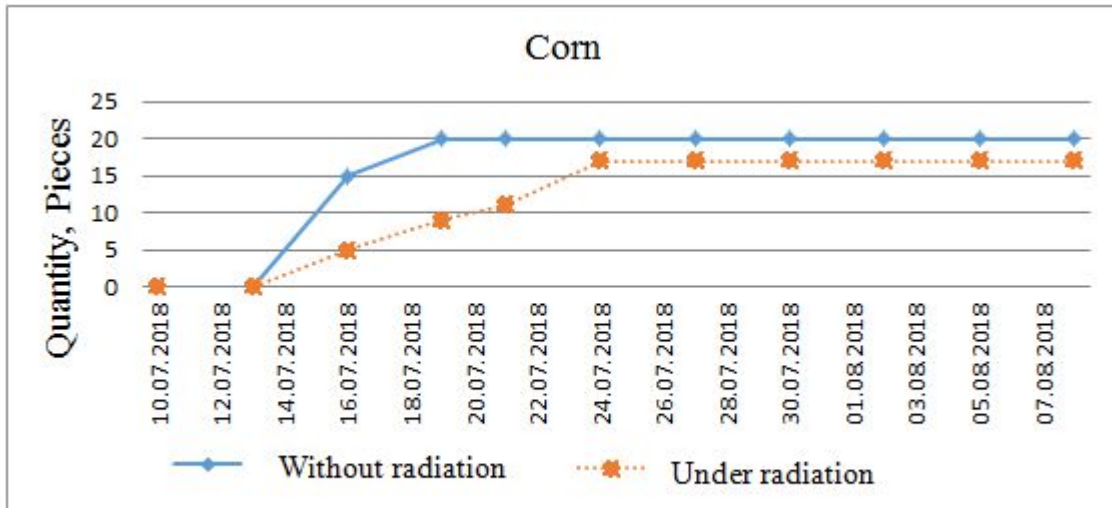


Fig. 3. The influence of microwave irradiation on the development of corn

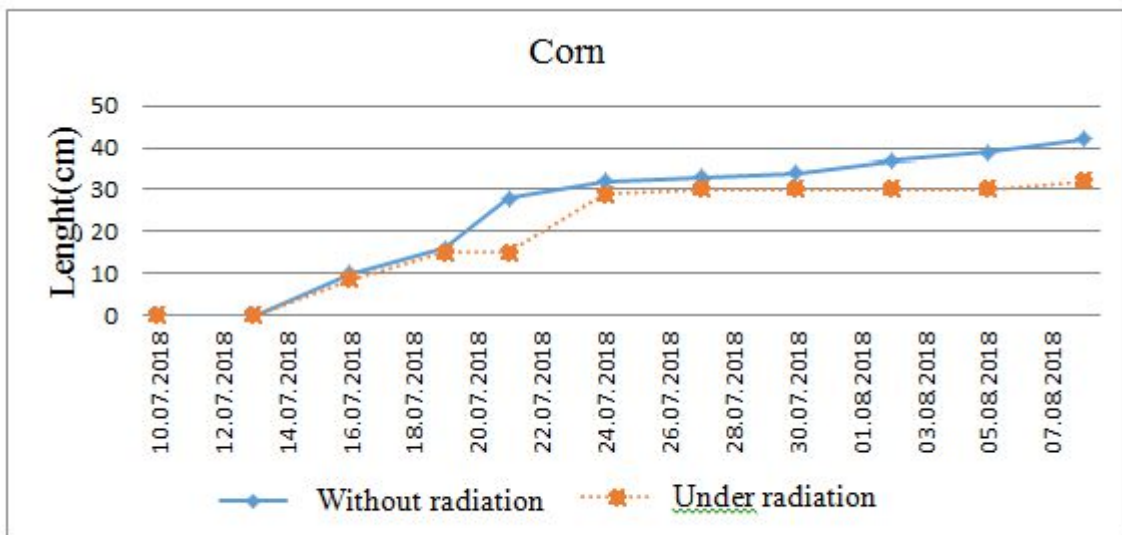


Fig. 4. The effect of microwave irradiation on corn growth

The research results showed:

Under normal conditions, wheat and corn seeds sprouted in greater numbers and the height of the sprouts exceeded the height of the sprouts of the seeds of cereals under irradiation. Experience has shown that plant growth deteriorates significantly with prolonged stays in rooms under artificial EMR. Obvious differences in the color of seed sprouts were also obtained. The color of the stem of the control plants was green (Pic.1.), and the colour or of the stem of the plants under irradiation was more yellow (Pic.2.).



Pic.1. The stem of the control corn in normal conditions



Pic.2. The stem of corn under irradiation

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