

СЕКЦІЯ 14
БІОМЕДИЧНІ ПРИСТРОЇ ТА ТЕХНОЛОГІЇ АПК

**CONSTRUCTION AND RESEARCH OF ELEMENTS AND APPARATUS OF
NON-DESTRUCTIVE CONTROL OF BIOLOGICAL SUBSTANCES**

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In agriculture, the methods of radio wave monitoring of biomaterials contribute to the creation of new electrical technologies that can change the method of production and increase its quantity and quality. The creation of new electrical technologies involves the use of low-energy electromagnetic fields (EMF) to influence biological objects in order to increase the yield of grain crops and change the timing of ripening, treatment of animals and control of insects.

Existing methods and devices for radio wave monitoring of materials are based on various physical principles and have certain fields of application.

Radio wave methods and measuring instruments associated with the interaction of electromagnetic fields with biomaterial have wide functional capabilities.

The nature of the interaction of electromagnetic fields with biomaterial is determined by its electrical and magnetic properties: dielectric constant ϵ , magnetic permeability μ and conductivity σ . Therefore, the study of the dielectric characteristics of biological objects at various levels of organization, depending on the parameters of the electromagnetic field, will allow us to establish changes in the properties of biological objects over time, taking into account the stimulating or inhibitory effects.

At the same time, the existing methods and means of measuring the dielectric parameters of materials and substances used both in Ukraine and abroad, have significant shortcomings: high complexity of measurements, the destructive nature of control, lack of accuracy and sensitivity of measurements and applicability for a limited range of substances.

In light of the aforementioned, it is relevant to create systems of radio-wave control of the dielectric constant (DC) of biological objects that are under the influence of low-energy electromagnetic fields.

The use of such systems for the determination of biotropic parameters of electromagnetic fields for various biological substances (at the cellular, tissue and organ levels) will allow the creation of new substances and technologies in agricultural production, industry and medicine.