CONSTRUCTION AND RESEARCH OF ELEMENTS AND EQUIPMENT FOR NON-DESTRUCTIVE TESTING OF BIOLOGICAL SUBSTANCES

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Розглядаються питання аналізу радіохвильових методів та неруйнівного контролю біоречовин.

In agriculture, methods of radio wave control of biomaterials contribute to the creation of new electrical technologies that can change the way products, which are produced, and increase their quantity and quality. The creation of new electrical technologies is associated with the use of low-energy electromagnetic fields (EMF) to influence biological objects in order to increase the yield of grain crops and change the ripening period, treat animals and control insects.

The existing methods and devices for radio wave testing of materials are based on various physical principles and have certain areas of application.

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

The nature of the interaction of an EMF with a biomaterial is determined by its electrical and magnetic properties such as dielectric constant ε, magnetic permeability μ and conductivity σ. Therefore, the study of the dielectric characteristics of biological objects at different levels of organization, depending on the EMF parameters, 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 for measuring the dielectric parameters of materials and substances used both in Ukraine and abroad have significant drawbacks such as high labor intensity of measurements, the destructive nature of control, insufficient accuracy and sensitivity of measurements and applicability for a limited range of substances.

In the light of the above, it is important to create systems for radio wave control of the dielectric permittivity (DP) of biological objects under the influence of low-energy EMF.

The use of such systems to determine the biotropic parameters of EMF for various biological substances (at the cellular, tissue and organ levels) will make it possible to create new substances and technologies in agricultural production, industry and medicine.