BIOPHYSICAL FACTOR OF INCREASE OF AGRICULTURAL YIELD CAPACITY

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Over the last years there is given the great attention to the development of methods and means of an increase of yield capacity, allowing to reduce the use of mineral fertilizers, pesticides and also distinguishing itself by small powerintensity. Such an alternative way at the contemporary stage, together with an improvement of the structure of crop areas, with creation of highly-productive varieties, is the wide integration into agronomical practice of scientific-substantiational techniques of control of physiological processes, taking place in plants, with the help of action of physical factors onto plants (seeds, tubers, bulbs, sprouts, grown-up plants at different phases of growth). The special interest shows itself to the processing of sowing material by electromagnetical waves (EMW) of low frequency with different parameters. In plants, grown of irradiated seeds, tubers, bulbs and seedlings, there is risen a physiologo-biochemical activity of many processes, there is increased content of pigments, a number and activity of photosystem centres and an absorptional capacity of leaves, and the intensity of photosynthesis increases, on the average, by(10 ÷15)%.

All this together leads to the increase of photosynthetical productivity of plants, of quantity and quality of crop.

Seeds of different agricultural plants before sowing were processed by EMW of different low frequencies (10 ÷100Hz). Results of numerous laboratory and field experiments had shown, that processed – by – EMW seeds of different varieties of grain-crops (barley, wheat, triticalle), of technical cultures (cotton plants), of gourds (melon, water-melon) and other cultures sprouted by (1÷2) days earlier, and the volume of root system of plants, sprouted of processed seeds, was

by 1,5 times larger than in control ones. They are more stable to diseases and pests and endure easier drought and temperature decrease. The rapid growth of sprouts after the moment of sowing provides an active formation of photo-synthetical apparatus and more powerful leaf surface, that influences favourably on to an efficiency of use of solar energy by plants. It was established that a quality of grains (of wheat, barley, triticalle), gathered from plants, grown of processed by optimal parameters of EMW, was not worse.

Besides, for different plants there are own optimal irradiation frequencies. It is specially necessary to note the portability of the apparatus on radiation of EMW, that leads to considerable reduction of energetical expenditure onto additional growth of yield capacity of plants.