



The paper presents the results of experimental studies of the optical properties of peas under different growing conditions. Peas were grown both in soil and hydroponic method with and without fertilization. Fertilizers were applied on the first day of planting. The nutrient medium level in the hydroponic system was kept constant throughout the experiment by adding distilled water.



Figure 1 - Measurement of plant height during experiments

According to the method of growing peas, 3 main groups were conditionally identified:
1 - peas grown in ordinary soil (nutrient soil "Flower", universal), as well as two identical hydroponic systems that differ in the composition of the nutrient medium:
2 - peas grown in a hydroponics system with the addition of the mineral fertilizer "Force of Life";
3 - peas grown in a hydroponics system without mineral fertilizer



Figure 2 - Experimental stand

All studies were carried out using the fluorescence method. This method was implemented on the basis of a Shamrock S R-303i spectrometer (Andor Technology Ltd., UK), an ANDOR DV-420A-OE digital cooled camera (Andor Technology Ltd., UK) and a computer. A laser diode with a wavelength of 480 nm served as a fluorescence source.

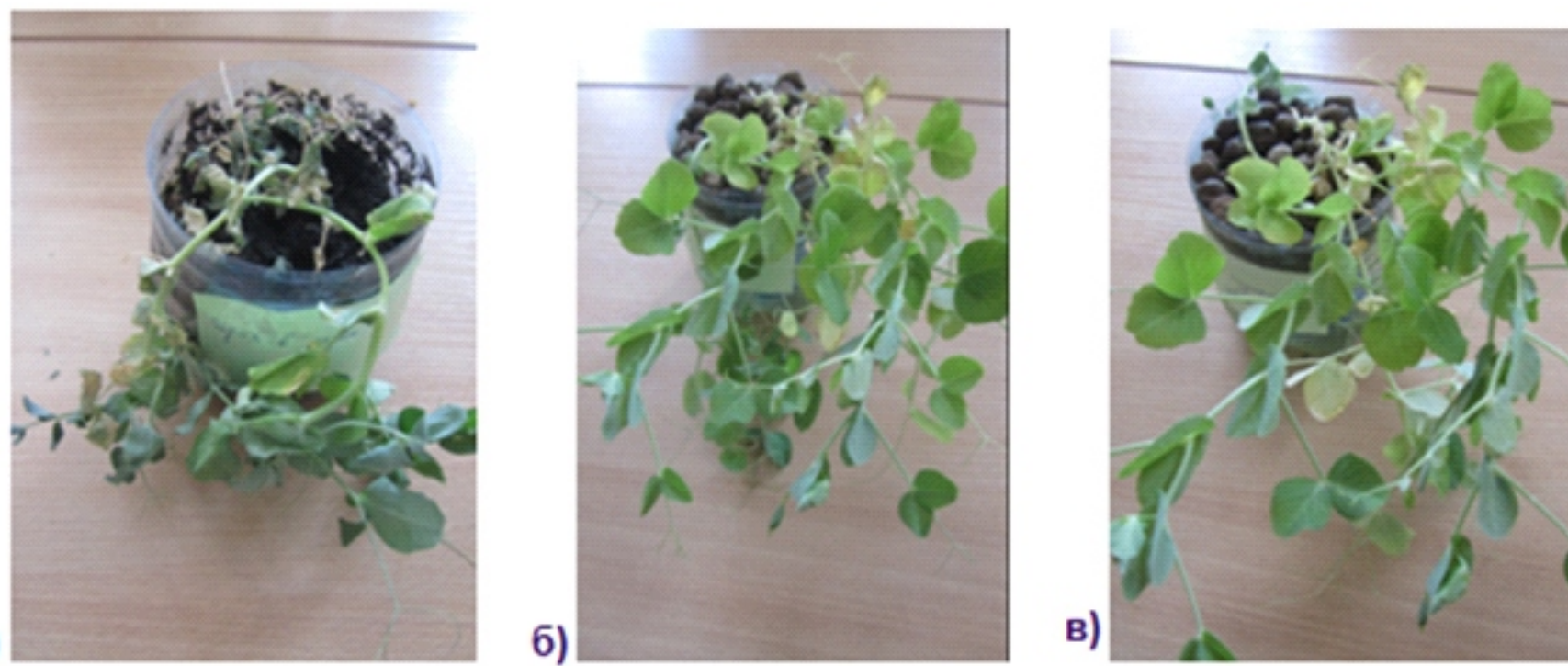


Figure 3- The studied groups of plants 44 days after planting: a) group 1; b) group 2; c) group 3

No groups	L ₁ , sm on the Day 19 measurements	L ₂ , sm on the Day 44 measurements	Δ L = L ₂ - L ₁ , sm
1	9	12	3
2	8	17	9
3	6,5	13	6,5

Fluorescent analysis and optical characteristics of plants

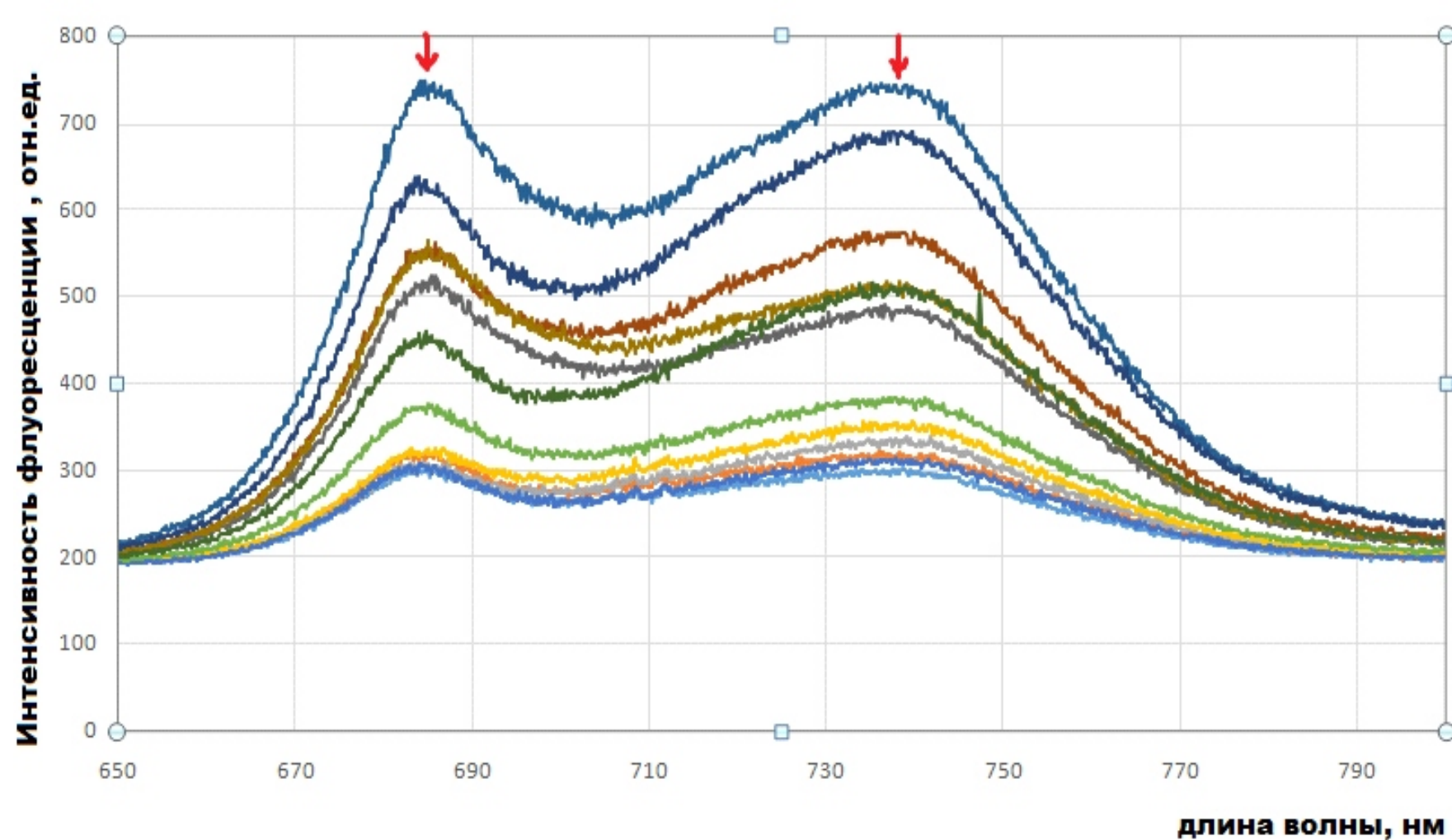


Figure 4 Fluorescence of the studied groups

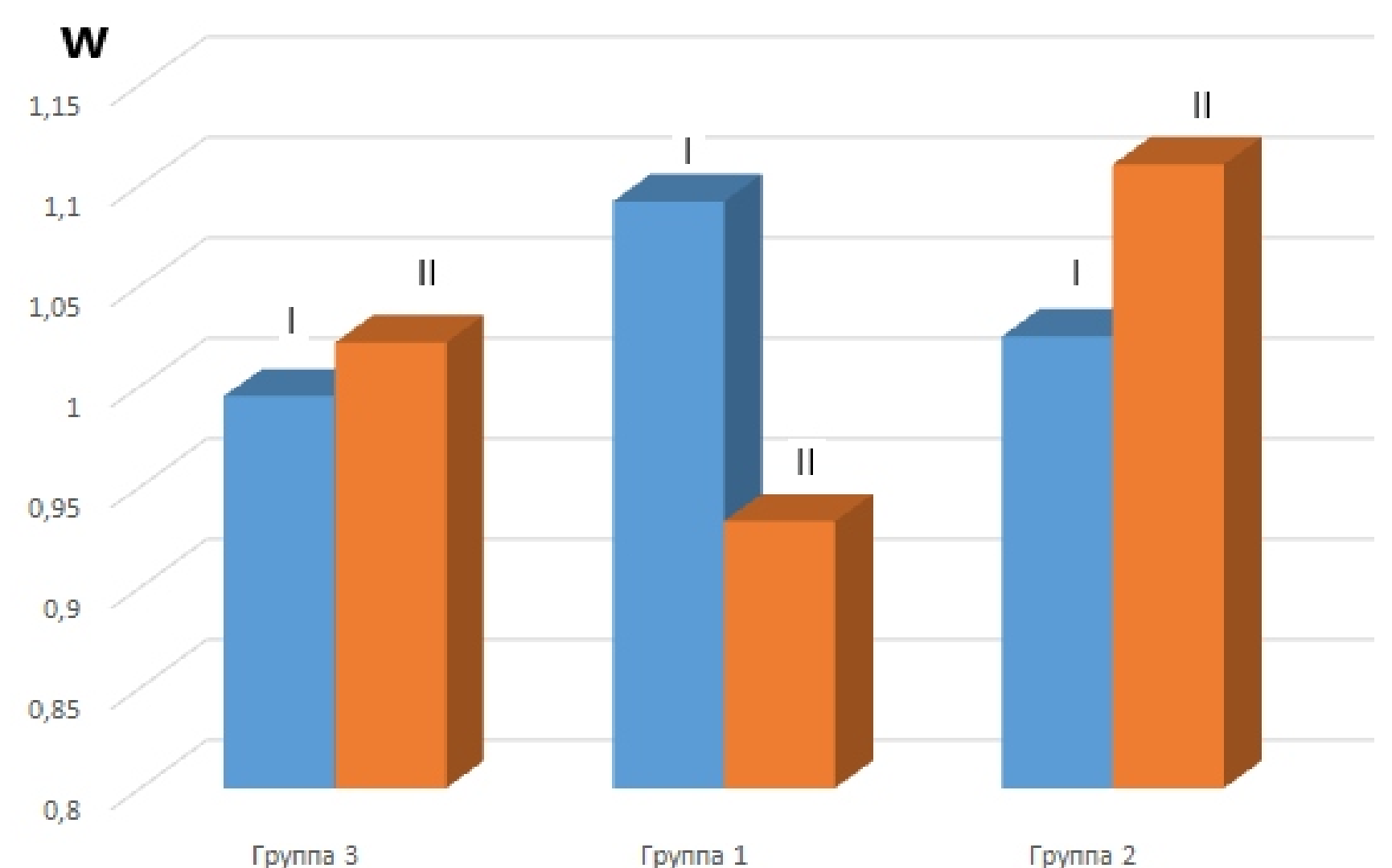


Figure 5 - Histograms of the optical coefficients of the life cycle of plants: I - 19 days and II - 44 days

As a result of the experiments, the optical properties of peas grown using soil and using a hydroponic system were studied. It has been shown that the life cycle of peas grown in soil is shorter than in a hydroponic system. The hydroponic system allows to increase the life cycle of plants, which can also be seen by increasing the value of the optical coefficient for groups of plants grown in the hydroponic system.

As a result of the experiments, the relationship between the optical coefficient and the length of plants during the life cycle was established for all the studied groups.