

CALORIMETRIC DETERMINATION OF THE ENERGY STORED IN BIOCEANOSIS

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The paper attempts to use information on the amount of energy accumulated in different parts of plants to determine the completeness of the utilization of solar energy by plants and calculation rules and terms of watering. To determine the heat of combustion of combustible materials the self-sealing calorimetric bomb was used. It allows to set the amount of energy stored per unit of weight of the various plant materials.

This value is used to determine the coefficient of efficiency of solar power, as well as water rates required for plant growth. An attempt has been made to use the calorific value of crops in the calculation of irrigation water needed to produce a specific quantity of the crop. The results of this work will create the conditions for drawing up irrigation projects where the minimum amount of irrigation water will be used. To increase the reliability of the proposed usage of the data it is proposed to measure heat accumulation of plants at different phenological phases and also to use the information on soil management. Plant samples were collected from an area of 1 m². The plants were dried at room temperature, crushed, briquetted and burned. Briquettes were prepared both from whole plants or from fruit, leaves, stems, roots separately. Based on the data we calculated the optimum amount of water needed for plant evapotranspiration. Thus, determining the calorific value of each type of crop, their optimum water consumption could be set.

Keywords: bomb calorimeter, soil, crops, ecology, energy, thermodynamic state, the temperature gradient.