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PARAMETERIZATION OF THE AQUACROP MODEL FOR SIMULATING CROP GROWTH AND DEVELOPMENT OF RAPESEED IN THE LENINGRAD REGION

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The paper discusses the parameterization of the AquaCrop model developed by the Food and Agriculture Organization of the United Nations (FAO). The AquaCrop model allows estimations of crop water productivity on a daily time scale by simulating aboveground dry biomass value as a function of cumulative daily normalized transpiration. Here, the calibration of the AquaCrop model was carried out for a rapeseed field (variety «Oredej-4») in the Divenskiy village (59°11′N, 30°00′E) using data measured by an Automated Mobile Field Agrometeorogical Equipment (AMFAE) and manual measurements collected in a special information database. The data of the nearest meteorological station (Belogorka, 59°21′N, 30°08′E) were used for establishing representative daily values of the daily transpiration (T_r) and daily reference evapotranspiration (ET_0) on the rapeseed field in the Divenskiy village. To this aim, linear regression relationships between the weather data from the Belogorka meteorological station and the data from AMFAE were established. The calibration of the water productivity was carried out both in time (for a growing season) as well as in space (heterogeneous agricultural field) considering the microclimate of the field. Statistical analysis confirmed the efficiency of the AquaCrop model for estimating growth and development of rapeseed in the Leningrad region.

Key words: dry biomass, evapotranspiration, transpiration, crop moisture availability, AquaCrop model.