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CORRELATION BETWEEN TEN-DAY AIR AND SOIL TEMPERATURE VALUES DURING THE SPRING SEASON IN THE AGRICULTURAL REGIONS OF SOUTHEASTERN BULGARIA

Keywords: Southeastern Bulgaria; air and soil temperatures; correlation analysis, ten-day data; soil temperature forecast

Air and soil temperatures are of paramount importance for both the growth and development of agricultural crops, as well as for organizing some basic ago-technical activities. Any change in air temperature leads to such a change in the soil surface and the layers for sowing and planting of most spring and winter crops. Average in situ ground measurements were used for each day, and ten-day average values were calculated for multi-year periods (1992-2015 and 1986-2015). Pearson coefficients and regression equations for the spring season between air temperature and sowing soil layers have been established for each agricultural region. The results show a strong positive correlation ($r > 0.90$) between air and soil temperature in all layers (5, 10, 20 cm). The established regression models will contribute to a better understanding of the timing of the initial stages of plant development, while at the same time being of good practical application in choosing the optimal sowing and planting time for spring and cereal crops. In addition, a method for indirect prediction of soil temperature in shallow layers during each ten-day period of the spring months has been proposed.

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