DOI: 10.25695/AGRPH.2020.04.07

CLIMATIC CONDITIONALITY OF THE TIME OF AGROBIOLOGICAL RISKS OF RADIATION FROSTS IN THE NORTH-WEST REGION OF RUSSIA

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Agricultural crops in different phases of ontogenesis impose certain requirements on temperature and humidity conditions. The significant inter-annual variability of weather conditions determines the variability in the timing of field works. In some cases, based on the timing of the crop reaching a certain stage of development, it is possible to create optimal conditions for its growth, including the timing of sowing selection. To determine the optimal timing for different management practices from the point of view of crops' dynamics and changes in the plant ontogenesis, in addition to the current meteorological data, the long-term average statistical characteristics of the radiation frost risk in each decade of the month should be also taken into account. In this study such characteristics are presented for meteorological stations which have the largest number of days with frosts. The stations are located in five regions of the North-Western region of Russia with the most developed agricultural crop production: Vologda, Kaliningrad, Leningrad, Novgorod and Pskov. To study temporal changes, the study was carried out at two time intervals: from 1966 to 1990 and from 1991 to 2015. Comparative analysis showed that despite the general tendency towards a decrease in the number of frosts in recent years, there was some redistribution of them within the decades of the studied months. The multidirectional dynamics of the onset of the average date of the last frost was revealed. Thus, at Tikhvin and Vytegra stations, the last frost was observed on average in the earlier days of May. At Tikhvin station, the average date shifted from May 29 to May 24, at Vytegra station – from May 17 to May 15. On the contrary, at Staraya Russa, Gdov and Zheleznodorozhnyi stations, the average date of the last frost shifted to later period. At Staraya Russa and Gdov stations, the shift was insignificant and amounted to 1 day, at Zheleznodorozhnyi station it was significant, the average date of the last frost shifted from May 5 to May 11.

Keywords: radiation frost, radiation cooling, frost-free period, agrobiological risks.