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Consideration of autumn-winter soil moisture in a dynamic-statistical model for winter crops yield forecasting / Lebedeva V.M., Naidina T.A. // Hydrometeorological Research and Forecasting, 2022, no. 4 (386), pp. 79-95.

The results of improving methods for the yield prediction of two winter crops (wheat and rye) taking into account the autumn-winter period moisture content are presented. The dynamic-statistical forecast method is based on the “weather-harvest” base long-term model of the plant production process. The yield forecasting is carried out taking into account two components of the yield time series (a trend and deviations from it) by assessing agrometeorological conditions based on the dynamic model of the plant production process. The correction coefficient that takes into account the autumn-winter moisture content is introduced into the winter crops dynamic model, which improves the quality of winter wheat and winter rye average yield forecasts for the subjects of the Russian Federation. The average relative forecast error for 5 years of the author’s tests from 2017 to 2021 amounted to 13 and 9% for the first and second forecast time moments, respectively.

Keywords: dynamic-statistical forecasting method, yield, winter crops, rye, wheat, photosynthesis, vegetation conditions

Tab. 3. Fig. 3. Ref. 32.