LONG-TERM FORECAST OF MOISTURE RESERVES IN ONE-METER SOIL LAYER IN SPRING

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The paper presents a new approach to predict the productive moisture reserves in a one-meter soil layer at the time of the renewal of plant vegetation. The approach is based on cluster analysis of moisture reserves in autumn and spring, as well as on the amount of precipitation in the autumn-winter period. Analysis of the obtained values made it possible to identify 5 clusters with low stock (<80 mm), insufficient
(80–100 mm), satisfactory (101–120 mm), good (121–160 mm) and excellent (over 160 mm) reserves. It has been established that the currently used forecast method (by L. A. Razumova), developed in the middle of the last century and based on the regression relationships between the change in the soil moisture reserves for the autumn-winter-spring period and the amount of precipitation, has a high justification, which is primarily due to the imperfection of the method for assessing the quality of long-term forecasts. The newly developed method for assessing the expected moisture reserves is based on the critical values of precipitation amount and the winter severity index and depends on the cluster of autumn moisture reserves. The proposed approach allows to reduce the artificially overestimated justification, and the new method makes it possible to predict spring soil moisture not only at the end of winter, but also in earlier periods. The developed method has a higher justification than the currently used method of L. A. Razumova.

Key words: long-term forecast, reserves of productive moisture in the soil, precipitation, winter severity index.