

Agrometeorological Forecasts of Harvest in Kakheti Region

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The agrometeorological forecasts allow benefiting from the weather conditions to realize relevant agrotechnical measures with optimal terms. In order to make forecasts, one needs certain data, which are initial characteristics (predictors). The basic observations of the following characteristics are accomplished: air temperature, atmospheric precipitations, soil productive moisture (at 0-20, 0-30 cm depth), average plant height, etc.

When making agrometeorological forecasts, the demand for the external factors in different phases of development of various agricultural crops must be considered. For making the forecasts for autumn wheat harvest, the sum of atmospheric precipitations (mm) in April and May, number of days with 5 mm precipitations and supply of productive moisture in the soil (at the depth of 0-20 cm) are used. Below is the equation to predict the harvest of winter wheat:

$$U=0.28x+0.02y+0.12z+0.41, \quad (1)$$

where U is the expected harvest (t/ha), x is the supply of productive moisture in the soil (at the depth of 0-20 cm) (mm), y is the sum of atmospheric precipitations (mm), z is the number of days with 5 mm precipitations.

The following equation to predict the harvest of corn is used:

$$U=4.438x-0.626y-5.052z+158.532, \quad (2)$$

where U is the expected harvest (t/ha), x is the sum of atmospheric precipitations (mm) in the VI-VII months, y is the number of days with 5 mm precipitations (in the same period) and z is the supply of productive moisture at the soil depth of 20 cm in VI-VII months (mm).

Expected harvest of potato is calculated by using the regression equation:

$$U=0.2x+2.02y+46, \quad (3)$$

where U is the expected harvest (t/ha), x is the sum of atmospheric precipitations (mm) in June and July, y is the number of days with 10 mm precipitations (in the same period).

Sunflower crop in Kakheti region where the climatic and soil conditions support its normal growth and development and gaining rich harvest (1.4-1.6 t/ha) can be extensively grown for production purposes. The period of sunflower buds development and flowering occurs in June or July what is considered in the forecasting equation of sunflower:

$$U=0.21x+2.12y+1.868z+45, \quad (4)$$

where U is the expected harvest (t/ha), x is the sum of atmospheric precipitations (mm), y is the number of days with 5 mm precipitations and z is the supply of productive moisture in soil at the depth of 0-30 cm (mm).