Annotation

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Photosynthesis potential of lentil sowing depending on technological methods of cultivation

Growth and development of any agricultural crop is stipulated by the external environmental factors which cannot be controlled and influenced under conditions of the open field. Therefore, creating optimum terms for the crop during ontogenesis helps to overcome the unfavorable factors. Cultivation of the varieties, adapted to certain soil and climatic conditions, is an important issue. To pass a certain sequence of growth and development phases which are genetically determined the crop has to accumulate an appropriate amount of active temperatures. Increase or decrease of their amount raises or diminishes the duration of inter-phase and vegetation periods of the crop.

The primary objectives of the research on technologies of lentil cultivation are to find out the ways for efficient use of the available natural (non-controlled) and artificial (controlled) factors to increase the yielding capacity for those varieties which have been created in the recent years and the potential of which has been studied insufficiently. To solve these problems is possible in case of doing special research. Studies on the improvement of technology elements of lentil cultivation were conducted by carrying out four-factor field experiment in the agricultural cooperative Radianska zemlia Belozersky district, Kherson region. During the field experiments the following factors and their variants were studied: factor A – basic soil tillage: moldboard one to the depth of 20-22 cm; moldboard tillage to the depth of 28-30 cm; Factor B – nutrition background: without fertilizers; $N_{45}P_{45}$; $N_{90}P_{90}$; Factor C – plant density (million/ha): 2.0; 2.5; 3.0; Factor D – moisture conditions: without irrigation, under irrigation.

As a result of the calculations made it was determined that the maximal photosynthesis potential of lentil sowing was at irrigation in the inter-phase periods «shoots-flowering» - 0.876 and «flowering-ripening» is 1.245 million $м^2$/ha for days applying moldboard soil tillage to the depth of 28-30 cm, application of mineral fertilizers in the dose of $N_{90}P_{90}$ and plant density of 3.0 million plants/ha. For implementation of the noticed technological complex most indexes were also got under non-irrigation conditions: there is «shoots-flowering» in the inter-phase period – 0.541 and «flowering-ripening» is 0.724 million $м^2$/ha for days.

Key words: *lentil, soil tillage, fertilizers, moisture, plant density, photosynthesis potential.*