

## WATER USE EFFICIENCY OF RICE AND SOYBEAN UNDER DRIP IRRIGATION WITH MULCH IN THE SOUTH-EAST OF KAZAKHSTAN

OSPANBAYEV, ZH. O.<sup>1</sup> – KURMANBAYEVA, M. S.<sup>2\*</sup> – ABDUKADIROVA, ZH. A.<sup>3</sup> – DOSZHANOVA, A. S.<sup>4</sup> – NAZARBEOVA, S. T.<sup>2</sup> – INELOVA, Z. A.<sup>2</sup> – ABLAIKHANOVA, N. T.<sup>2</sup> – KENENBAYEV, S. B.<sup>1</sup> – MUSINA, A. S.<sup>3</sup>

<sup>1</sup>*Kazakh Scientific Research Institute of Agriculture and Plant Growing  
Almaty, Kazakhstan*

<sup>2</sup>*Al-Farabi Kazakh National University, Almaty, Kazakhstan*

<sup>3</sup>*Kazakh State Women's Teacher Training University, Almaty, Kazakhstan*

<sup>4</sup>*Kazakh National Agrarian University, Almaty, Kazakhstan*

*\*Corresponding author  
e-mail: kurmanbayevakz@gmail.com*

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**Abstract.** Water saving was and remains an acute problem in places with water scarcity and inaccessibility. In order to solve this problem, drip irrigation started to be used in many countries, and for the first time, in Kazakhstan, there were used cultures that consume water sufficiently in large quantities such as rice and soybean. Ways of irrigation have significant effect on elements of structure of a rice and soybean crop. Drip irrigation with a two-row tape way of crops forms essentially distinct structure of a rice crop in comparison with usual technology of cultivation of rice and soybean. Rice (*Oryza sativa* L.) and soybean (*Glycine Max* L. Merr.) crops were grown in 2013-2016 to determine effect of drip irrigation in the different variants water levels on growth and productivity under conditions of the south-east of Kazakhstan. In result of three years of researches on studying of rice and soybean drip irrigation efficiency were made the following conclusions: Drip irrigation (Di) with application of the mulching film promotes emergence of early and amicable shoots of rice and soybean, intensive growth and development of plants, productivity increase. Drip irrigation with use of the mulching film at 8-10 times reduces a contamination of crops of rice that allows to exclude application of manual use, mechanical and chemical processing of crops. Use of the mulching film under rice drip irrigation promotes creation of the favorable nitric mode of the soil with big accumulation of ammoniac and nitrate nitrogen and mobilization of motile phosphorus. The best way of rice crops under drip irrigation is 2-row tape crops with distance between tapes of 70 cm and a row-spacing in a tape of 30 cm. At the same time the drip tape keeps within row-spacings in a tape. Comparison of the productivity of soybean varieties showed that productivity in variants with mulch far exceeded variants without mulching.

**Keywords:** *Oryza sativa* L., *Glycine Max* L. Merr., water-saving technologies, productivity