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Evaluation of the Effect of Planting Date and Density on Germination and Vigor of Soybean Seed

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Abstract

Environmental conditions such as high temperature during seed set and seed filling stage can reduce yield and seed quality. It is supposed that different planting dates have different influence on soybean seed quality and yield. In order to evaluate the effect of different planting dates and densities on soybean seed quality, an experiment was conducted as a split factorial based on completely randomised block design in three replications at two locations including: the seed and plant certification and registration institute of Karaj and the agricultural and natural resources center of Moghan, in 2013. The evaluated factors were planting date (5^{th} of May, 5^{th} of June and 5^{th} of July), plant density (300, 400 and 500 thousand plants per ha) and soybean varieties (Williams and L17). The results of standard germination test showed that, the highest normal seedling percentage (92.1 %) in Moghan area was obtained on fifth of June and in Karaj area it (96.2 %) was gained on fifth of July. In addition, it was observed that cv. L17 in Moghan and cv. Williams in Karaj had the highest normal seedlings percentage. The results of accelerated aging test indicated that the normal seedlings percentage in Karaj was more than in the Moghan area and it showed that the seed quality of produced seeds in Karaj was better than produced seeds in Moghan. There was no significant difference between areas in 300 and 400 thousand plants per ha, but a significant difference was observed in normal seedlings percentage after accelerated aging test between Karaj (77.6 %) and Moghan (58 %) in density of 500 thousand plants per ha. The highest seedling vigor index (11.75) was obtained at 400 thousand plants per ha sown on fifth of July in Karaj area and the lowest rate of (5.41) was observed using 300 thousand plants per ha sown on fifth of June in Karaj area.

Keywords: Rainfall, reproductive growth, seed filling, seed quality, temperature

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