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/ cm

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($\alpha = \%$)

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cm

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(O*S)

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cm (O)	cm (O)	/ km/h (S)
/	/	km/h (S)

$\alpha = \%$

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(% /) km/h

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(% / (km/h)

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Evaluation of the Effects of Rangeland Seedling Planter Parameters on Planting Attributes of *Atriplex*

B. Houshyani¹ M. K. Araqi² S. Minaei³

Abstract

Along with the increasing use of the country's rangelands, the need for their reclamation and preservation is of prime importance. Due to the vast expanse of the rangelands, using machines for this purpose is unavoidable. For proper use of machines and achievement of high productivity in rangelands, suitable studies and research work are required. Despite the existence of millions of hectares of rangelands and their economic as well as environmental importance, studies on rangeland's appropriate machine utilization in the country are few and scientific work in this area is scarce. Of all the mechanized operations practiced in agricultural production, including soil preparation, planting, plant protection, and harvesting, the most common one in rangeland work is the planting operation. Hence, scientific study of rangeland planting machinery, especially seedling planters is of prime importance. In this investigation, conducted as a factorial experiment based on a randomized complete block design, three dependent variables were measured. These include depth of furrow created by the planter, spacing precision in planting of *Atriplex* seedling, and plant establishment as indices for monitoring the quality of planting operations. Independent variables in this study include: disk coulters (with and without coulters), depth of work (20 and 30 cm), and forward speed (2.8 and 5 km/h). Statistical analysis of the data indicated that depth of work and the use of disk coulters had significant effects on the depth of the furrow created by the planter. Moreover, plant spacing precision was significantly affected by the interaction between depth of work and forward speed, while there was no significant effect on plant establishment. Removing of the coulters and using higher depth of work resulted in deeper furrows compared with the other treatments; 24.3 and 26.3 cm deep respectively. However, use of the coulters and planting at a shallower depth created furrows of 20.5 and 18.4 cm deep, respectively. In the final analysis for the factors under consideration, forward speed of 5 km/h at 20 cm depth of work were found to be a better combination and is thus recommended.

Keywords: Rangeland, Seedling planter, Evaluation, Plant spacing, Furrow depth, Plant establishment, *Atriplex*

¹ - Senior Expert in Agricultural Mechanization

² - Senior Expert in Agricultural Machinery Engineering, Research Institute of Forests and Rangelands

³ - Asst. Prof., Agricultural Machinery Engineering, College of Agriculture, Tarbiat Modarres University