Comparison of Grain Driller in Barley Cropping in shoushtar region, Iran

A.R. Jamshidi, H. Afzali, E. Tayari

Department of Agricultural Mechanization, Shoushtar Branch, Islamic Azad University Shoushtar, Iran.
Faculty member of kerman agricultural and natural resources and research center.
Department of Agricultural Mechanization, Islamic Azad University, Shoushtar Branch, Shoushtar, Iran

ABSTRACT

The focus of this research was choosing the best grain driller for barley cropping in Shoushtar. Three conventional grain drillers (TAKA CLGHI 250(T), Barzegaer Hamadan (MK250/4(B) and Geiran Sanat (G)) were evaluated and compared for their planting quality. The means comparison shows that for planting and depth resolution at 5% probability G and B with recorded results of 1.55cm and 1.65cm were in A Class; and T with 2.65cm was in class B. In emergence percentage comparison, G with 60.84% was in a class, B with 62.84% was in AB class and T with 49.17% was in B class. In plant establishment at the end of winter, G with 8.13 was in a class and B and T with 51.17% and 38.9% were in B class In addition G in comparison with T and B performed better at barley cropping in the Shoushtar climate. result showed high planter was accuracy sowing Geiran Sanat for 15% error on row direct seeding.

Key words: barley, conventional, grain driller

Introduction

Planting is generally regarded as the most fundamental operation in global agriculture and has a great influence on the performance of the crop production system. The aim of the Planting is to create the optimum environment from seed germination to root growth and to enable mechanization as well as soil and water management. The set of implements chosen for Planting depends on local customs, soil and crop types and the cultivation system used. Barley, having an important nutritional value is a strategic agricultural product, being one of the most highly consumed foods in the world. An average of 16 to 17 percent of arable land is annually allocated to global t barley production [6]. At a level equivalent to 2 / 6 million acres is allocated to the cultivation of this product, of which 2 / 2 million acres of barley is blue. The use of advanced techniques in planting, and specifically the employment of developed mechanization of production techniques, the seed dispersal unit area can result in uniformity of seed dispersal, which in turn can alleviate many of the problems of seed production; saving seeds, planting, and competition for water and food storage in the soil [5]. The planting time has a bearing on irrigation therefore has a direct impact on product performance and germination [1]. The implementation of mechanized methods of planting new crops and agricultural production is one of the goals of infrastructure development that will increase productivity and sustainability of this sector. The results of this comparison showed percentages of fractures in the laboratory and seed planting depth, there was no significant difference in the field. Percentages of broken seeds in the field, a percentage of Snabl planter machine is broken less seeds) and in other cases a linear pneumatic Hamadan was successful [4]. The absorption of phosphate and potassium fertilizers placed below the seed at 5cm distance between the rows provides better food for the barley evident in an increased grain protein yield [3]. Barley cultivation in Iran is important, but due to lack of information farmers and agricultural experts tend to work with conventional seeds. Since water access is traditional therefore, the need to introduce appropriate barley seeds for planting is absolutely essential. Barley seeds planted at the proper depth with the provision of fertilizer to farmers could be employed as a method to reduce the consumption of seed per hectare, reduce costs and improve performance.

Materials and methods

Corresponding Author

A.R. Jamshidi, Department of Agricultural Mechanization, Shoushtar Branch, Islamic Azad University Shoushtar, Iran
E-mail: amin_jamshidi83@yahoo.com
The experiment was conducted at Shuoshtar region (49° 14′ E and 23° 2′ N), 90 Km north of Ahvaz, at an average altitude of 670 m. The experiment field (pervious planting) in a 2 year alternative rotation was barley, and barley in order be in 2009-2010 was under barley planting as well. The soil texture was silt and loam for the depth of 0 – 25 cm had possessed silt and loam texture. With the electric conductivity (EC) 2/76 and Bd 1.42. The drilling treatments that were tested were the use of three different linear grain drills; Taka, Hamedan and Geiran Sanat.

The barley variety Karon was planted (210 Kg ha) in silt/loam soil. Operations of irrigation and fertilization were done according to the method of flooding the soil.

Data from the experiment was analyzed with the software M-STAT-C in a randomized complete block design and (RBD) was the single factor analysis. The consistency and accuracy of planting depth, percentages of broken seeds, emergence percentages, emergence rate and percentages of plant establishment were studied.

1 - Planting depth: the depth of planting 20 plants to measure and determine the location of the plant after its removal from the soil (where the plant changes color) and cut off below the soil were determined with a ruler, thereby average planting depth was determined at each iteration [1].

2 - Emergence rate: rates for the number of green plants to grow accidentally over a meter from the line, were counted at 20 days after emergence, emergence rate was calculated using the following formula [2].

\[ \frac{N_1 + N_2 + N_3 + \ldots + N_n}{N_1T_1 + N_2T_2 + N_3T_3 + \ldots + N_nT_n} \times 100 \]

N1 and N2 = number of green seeds
T1 and T2 = days after emergence
V = coefficient of green speed

3 - Dates of emergence and tiller stages were recorded.
4- Mechanical damage to the seeds or seed percentage breakage was measured from the seeds collected in the pipes. The total numbers of seeds and broken seeds were counted in selected samples from with under equation; percentage of broken seeds in each seed was calculated.

\[ A = \frac{n}{N} \times 100 \]

n: number of seeds broken
N: total number of seeds

5- Weed contamination was calculated from the experimental treatments: before taking part in the trial of herbicide weed and they run through the frame with a square area at five random points [2]. Chemical pesticides to control weeds; clodynaphop Proparjyl 180 Equal rate 1 liter per hectare for grass with narrow leaves and the herbicide methyl Trybnvrtn (Granstar) at 75%, and 25 grams per hectare against grass and broadleaf were mixed together and applied at the appropriate time (tillering stage).

6- To measure the percentage of green seeds, a square 1 × 1 box of green seeds was taken, seeds counted and percentages of green seeds were calculated using the following formula.

\[ E = \frac{n_1}{n_2 \times v \times p} \times 100 \]

n1: number of green seeds
n2: number of seeds planted
v: viability of seeds
p: percentage purity

Results and discussion

Taka Mechanical with 9 / 6 % had a moderate case of breakage. A summary of results of variance analysis are presented in Table 2. Uniformity and accuracy characteristics of planting depth, percentage of plant establishment, percentage of green plants were significant at the 1% level.

The Geiran Sanat and Barzegaer Hamedan planters respectively, 1/ 55 and 1 / 68 cm planting depth in a level group and Taka planter, for average 2 / 56 cm Taking place In the other groups. Figure 1 showed high planter was accuracy sowing Geiran Sanat for 15% error on row direct seeding.

<table>
<thead>
<tr>
<th>Soil depth Cm</th>
<th>EC</th>
<th>Organic matter %</th>
<th>Bulk density (g/cm³)</th>
<th>Wilting point WP%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20</td>
<td>1.43</td>
<td>1.1</td>
<td>1.42</td>
<td>9.8</td>
</tr>
<tr>
<td>20-40</td>
<td>1.71</td>
<td>1</td>
<td>1.42</td>
<td>9.6</td>
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<tr>
<td>40-60</td>
<td>1.81</td>
<td>0.8</td>
<td>1.42</td>
<td>9.5</td>
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<tr>
<td>60-80</td>
<td>2.76</td>
<td>0.8</td>
<td>1.42</td>
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<table>
<thead>
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<th>resource</th>
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<th>Plant establishment</th>
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<td>75</td>
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<tr>
<td>treatment</td>
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<td>261**</td>
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<tr>
<td>error</td>
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<td>0.17</td>
<td>86</td>
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</table>

Indicate significance at the 5 and 1 percent, **, *
Fig. 1: Accuracy sowing planters.

References


