Journal of Scientific Agriculture 2018, 2: 104-106
doi: 10.25081/jsa.2018.v2.20181204
http://jsa.updatepublishing.com/

Regular Article

ISSN: 2184-0261

Comparative performance of three local wheat (*Triticum aestivum* L.) varieties Digla, Farris and Babil in Iraq

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Received: October 11, 2018
Accepted: December 04, 2018
Published: December 09, 2018

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ABSTRACT

Three local wheat varieties (Digla, Farris and Babil) were planted in the field of Kanan region, province of Diyala during the season 2017/2018 to evaluate their comparative performance in growth characteristics. Farris variety was superior in the field approximately in all growth traits as compared with other varieties followed by Babil and Digla, its record highest rate of spike length and weight of 1000 grains 11.70 cm and 386 g respectively also it was superior in grain yield, biological yield, average of grains weight/10 spikes, Grain yield/m2 and Grain yield ton/hectare which reached 2.54 g, 5.40 g, 2.54 g, 914.40 g and 9.14 ton respectively.

Keywords: Digla, Farris and Babil

INTRODUCTION

Wheat (*Triticum aestivum* L.) is a dominant and domesticated food crop for food consumption and straw for fodder in Iraq and the world. It is the richest source of protein and energy [1]. Since 8000 years ago the wheat was considered the basic food of the major world civilizations [2-3]. The cultivation of wheat initiated since ancient times began around 10.000 B.C by Iraqi people near the Tigris river [4-5]. Carbonized grains of wheat were found at Jarmo in eastern Iraq that back to about 6750 year [6]. Wheat is used mainly for human consumption, animal feeding, industry and biofuel [7-8]. The total cultivated areas of wheat in Iraq are 6.159 million donum and the total production is 2.180 million metric tons [9]. The global wheat expected to pass 722 million tons (mt) in 2018 compared to 690 mt in 2012 [10]. The wheat production increase is indispensable to supply enough food to the population of the world and the requirements of livestock, wheat in Iraq is usually grown under rain-fed conditions with low yielding varieties, leading to stress with serious negative problems on wheat productivity. To find out the productive of these varieties and election of the superior variety under conditions of Iraq, so the goal of this research is to Comparative between three local wheat varieties Digla, Farris and Babil in some growth and yield traits.

MATERIALS AND METHODS

The study was implemented during the season 2017/2018 in the fields of Kanan region, province of Diyala, and the lab of Directorate of Diyala Agriculture, three wheat local varieties, (Digla, Farris and Babil) were included in this study. The experiment was laid out in a Random complete block design (RCBD) with three replications, after land preparation as plowing and disking,the prior varieties were planted at a seeding rate of 140 kg ha^{-1} at 23/11/2017, A field was divided into plots and the seeds were cultivated in lines with 10 cm distance between them, Dap (diammonium phosphate) were applied at the rate of 200 kg ha^{-1} and Urea at the rate 360 kg ha^{-1} were applied in two batch. The plants were harvested at maturity by using the quadrate measuring 1m x 1m and the traits were recorded on 10 randomly selected plants in each plot such as the area of flag leaf, plant height, spike height, number of grains per spike,1000-grains weight, Grain yield, Biological yield, Harvest index %, average of grains weight/10 spikes, number of spikes/m^2, Grain yield/m^2 and Grain yield ton/hectare, the data was analyzed by one way analysis of variance (ANOVA) [11].

RESULTS AND DISCUSSION

All wheat growth traits were significantly different among wheat varieties with the exception of plant length, Number of grains/spike and Harvest index %. The maximum area of flag leaf

Table 1: The comparative between three local wheat varieties in some of the growth traits

Treatment	Area of flag leaf (cm)	Plant length (cm)	Spike length (cm)	Number of grains/spike	Weight of 1000 grains (g)
1					
Digla	16.17 c	75.06	8.70 b	43.10	364 b
2					
Farris	25.04 b	74.03	11.70 a	53.30	386 a
3					
Babil	28.66 a	76.46	10.86 a	46.00	368 b
CD (0.05)	3.50	NS	1.87	NS	4.71

Table 2: The comparative growth traits between three local wheat varieties

Treatment	Grain yield (g)	Biological yield (g)	Harvest index %	Average of grains weight/10 spikes (g)	Number of spikes/m^2	Grain yield /m^2 (g)	Grain yield ton/ hectare
1							
Digla	1.49 b	3.21 b	49.54	1.49 c	438.33 a	653.10 b	6.54 b
2							
Farris	2.54 a	5.40 a	45.74	2.54 a	360.00 b	914.40 a	9.14 a
3							
Babil	1.67 b	3.81 ab	43.46	1.67 b	375.00 b	626.23 c	6.26 c
CD (0.05)	0.80	1.62	NS	0.02	15.47	23.85	0.23

Figure 1: Spikes and grains of three local wheat varieties, 1= Digla, 2= Farris, 3= Babil

(28.66 cm) was observed in a Babil variety, whereas a variety of Farris has given highest rate of spike length and weight of 1000 grains 11.70 cm and 386 g respectively (Table 1). Also, Farris variety was superior in traits of grain yield, biological yield, average of grains weight/10 spikes, Grain yield/m^2 and Grain yield ton/hectare reached 2.54 g,5.40 g, 2.54 g, 914.40 g and 9.14 ton, whereas Digla variety has given a maximum number of spikes (438.33 spike/m^2) (Table 2 and Figure 1).

This result is in agreement with the findings of the [12], which showed that superiority of Farris cultivar with significantly higher on all selected and local varieties in the productivity rate, with a significant increase of 31.14% on the local variety Tamuz during the research period, 14-20% in the rate of grain filling and 5-22% in the number of spike grains, %26 in yield rate and its high content of protein as well as the distinct morphological characteristics from the rest of the registered and certified varieties in Iraq. Therefore this cultivar was named as soft wheat "Fares 1" because it carries the specifications of the knights through its glory in the experimental fields since 2006 as a cultivar with a high production capacity.

CONCLUSIONS

From the present study, it can be concluded that variety Farris was the best in growth characteristics from other varieties, followed by Babil and the variety Digla.

ACKNOWLEDGEMENTS

Authors wish to thank Directorate of Diyala Agriculture for awarding the opportunity to accomplish this work.

AUTHORS' CONTRIBUTIONS

The authors planned, coordinated the research, participated in setting up and carried out the field experiment, collected data, analysis and data interpretation, wrote and reviewed the article and submitted an article to the Journal of Scientific Agriculture.

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