



RESEARCH PAPER

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The impact of different planting methods on yield and yield component of wheat cultivar Chamran under different conditions of irrigation in the Northern Khuzestan Climate

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Abstract

This paper aims at investigating the impacts of different planting methods on the yield and yield component in different irrigation conditions on wheat (cultivar of Chamran) in Khuzestan for one year in Shavoor agricultural farm located in 70 km north of Ahvaz which lies in E longitude 48°:28" and N latitude 31°:50" as split plots in a randomized complete blocks design with three replications. The main factor is planting method in two levels of linear and sprinkling, and the subsidiary factor comprises irrigation treatments and dry farming. Variance analysis results revealed that in both factors there is a significant effect in all characteristics except for 1000-grain weight which is dependent upon genotype, while the interaction of the two factors was significant only on the characteristics of panicle number per square meter and seed number in each panicle. By examining the comparison of grain yield means and other agricultural traits, the highest significant numeric value belongs to linear planting, except for the panicle number per square meter that had completely reverse trends in both treatments. Ultimately it is concluded that besides economic considerations through decreasing the amount of seeds needed and the easier control of weeds, linear planting helps to increase grain yield by accurately adjusting the distance and depth with regard to the proper positioning of seeds through increasing the claw number and other relevant characteristics of performance.

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Introduction

Wheat production and area under cultivation is the main agricultural crop and increase its daily production is taken into consideration (Boyer, 1996). Globally, nearly 52 percent of the world's arable land is devoted to growing crops that are cultivated in the amount of 60% (Afzali Nia *et al.*; 1999). Research has shown that increased mechanization and use of chemicals in agriculture, efficient (relative) energy gradually decreases. However, with the increasing population, limited water resources and soil, and the Mechanization of general and specific means to increase production per unit area is considered a necessity (Taky, 1996). Results of different methods of sowing wheat yield and economic comparisons of the results obtained by these methods However, there was no significant difference between treatments in terms of yield, but the treatment basin irrigation and planting crops with the highest yield was linear (Afzali nia, 1995). Economic comparison between treatments showed that the above treatment is not only higher performance but also has a lower cost (Afzali nia, 1995).

The study was carried out on a linear function of the common work area Zarghan Iran; the results showed that treatment differences in terms of factor distribution of seeds, plant density, and yield levels were not significant. CIA activities in the field of linear and linear capacity to work efficiently with a wide field of culture. In general, the overall performance index for linear work showed that the linear Hamedan Machine Barzegar the best linear and linear CIA activities, culture and Nrdastvn Wide (Denmark) followed by the row. While linear Nrdastvn work is dedicated to the best economic performance (Afzali nia, 1995). A study was carried out on two machines and a plant that contains a linear two rows of traditional hand work with machines to mechanize the 3 seed density planting depth, uniformity of plant spacing, plant height and yield results that were in line density of 75 kilograms per hectare of seed for planting mechanization has had acceptable performance (Danaei and Lotfali, 2000). Chickpea cultivation was examined, the

designation of various factors such as Uniformity results on grain yield of rice under two commonly used row (Tknvhak Vsnabl) in Fars province in terms of factors such as accuracy, depth of planting, Provide appropriate longitudinal spacing between lines planted seeds, seed dispersal and effects Were evaluated and compared, showed that the two rows of planting depth Although no significant differences in laboratory and field seed fractures of the lateral distribution of seeds in the seed farm precedent fractures were significantly different, In general, most of the performance is better compared Tknvhak the row (Aabd Mishani and jafari shabestary, 1997). The results of the four methods of wheat sowing seed showed three the method uses the Linear Combination Cultivator Seed working with improved uniformity in horizontal distribution, but the distribution of seed depth than this linear approach is working. In the mixed culture method, linear methods do not differ from the horizontal distribution and dispersal of seeds from all treatments was more depth this way. The clod mean weight diameter, four times the disk through soil preparation, Combination Cultivator difference method was used (Anafche *et al.*, 2009). Using Combination Cultivator of soil compaction in spite of the heavy tractor, less than four passes using the disc. There was no difference between treatments in terms of yield. Combination Cultivator 76% of the total time and fuel consumption using a linear 53% higher than what it was four times less disk password (Anafche *et al.*, 2009).

Much of the land under wheat cultivation in arid and semiarid regions has been in these areas due to lack of water resources and the water environment severely reduced yield. In areas with little rainfall and its distribution varies from year to year. And therefore it is very difficult to determine the extent and distribution. The oscillation frequency of subsequent performance in the show (Saremi, 1993). The use of water-saving irrigation regimes can be low as a field of water management in enhancing water use efficiency, increasing the area Under cultivation and also helps in determining the optimal crop pattern

(Hoshyar and Miri, 2009). The study on the effect of cutting off the water and the Water on environmental performance and the coefficient of variation is less important (Hoshyar and Miri, 2009).

The biological yield and harvest index, seed weight changes explain the most important components in low-water conditions are (Khdabnde, 2005). Comparison of wheat varieties under irrigation showed that the interaction between irrigation and figures is significant for seed weight and seed weight in dry conditions than in 9/22 percent decline (Javadi *et al*; 2003). The results of a sensitivity test to determine the physiological stages of wheat The lack of water in the soil, weather conditions, local or eliminate the effects of irrigation on the yield of one or more steps in the stem elongation stage (leg water) for irrigation do not a significant reduction in plant height and yield will be significantly reduced as the number of grains per spike. Also remove the grain in water (dehydration) were highly significant reduction in seed weight (Imam, 2007).

These tests evaluate the effect of planting methods on yield; with the linear Remove the affected period to raise the efficiency of irrigation water and prevent salt accumulation in agricultural land due to the high salinity of the water was running.

Becker *et al*; (2005) in sandy soils to Sandy clay loam, observed that the methods and atmospheric Nesting density, soil permeability and the Soil structure, improved grain yield 18 Percent of the crop was more flat. Armstrong *et al*; (2001) in an experiment in saline soils and Low quality water with fertilizers (nitrogen, Zn, Cu) and different methods of soil improvement observed Had the highest yield with a stack of And increase the influence of the planting The use of fertilizer is higher. Karfvrt and Major (1994), Effects of irrigation depth and the three Management of irrigation, deficit irrigation in all growth stages and combining the two stages of vegetative andreproductive growth Yield and water use efficiency of wheat and barley were investigated. The results showed that the shortening of irrigation,

the Wheat straw was increased. Mac Jynly (2002), a review Concluded that the effect of irrigation on wheat irrigation Short frequencies, especially in the later stages of growth, percent Reduces grain protein. Bvdr (2003) Concluded that the studies on wheat production High-protein, grain yields are reduced. This Step inquiry to determine the optimum water efficiency in production comparing the different methods of wheat sowing and determining the right time to irrigate again based on the percentage Available water is drained soil.

Materials and methods

In experiment crops in Khuzestan 89-1388 longitude " 28: ° 48 Longitude " 50: ° 31 to 33 m above sea level, loamy soil with 2/7pH = and one year on the farm Shavvr agriculture as a split-plot design (split-plot) in a randomized complete block design with three replications in a plot size of 10 × 5/8 meter distance of 5 meters away from the main plot was 10 m iterations were performed. Some meteorological parameters are given in Table 1. Cultivation methods in two main business lines (Hamadan) with 250 kg seed Ha and 400 kg seed ha subplot with sprinkler irrigation in both irrigation and dry land plants were sensitive to 5 rounds in 5 Steps In this experiment, the ground water and soil moisture to reach the optimal level (18-16% on dry weight basis), and the cattle of the earth traditional way of plowing with moldboard plow to a depth of 30-25 cm in All treatments were performed and 100 kg phosphorus and 50 kg N ha of urea ammonium phosphate source, the earth was the soil test results. All agricultural operations (excluding treatments) such as fertilizer application and spraying, etc. All plots were similar. Chamran wheat seeds were used. During the growing season, especially in the early stages of growth, weeds to be sprayed with pesticides threads of a liter of 25 g ha Granstar done. Parameters such as yield and grain weight, number of tillers and plant height were measured. Finally, The data obtained by analysis of variance and comparisons SAS software out with Duncan's multiple range tests at the 5% level were calculated.

Results and discussions

Yield

According to the analysis of variance for grain yield as expected between different levels of irrigation and dry land farming areas as well as sprays seeds obtained by linear and significant difference in the level of one percent, but there were no significant differences in the interaction between the two factors (Table 2). Comparison with the observed maximum yield by the linear planted and irrigated conditions, respectively, with an average of 2/5244 and 7/3546 kg per hectare have been achieved. The most logical explanation of the use of linear and can be used for

irrigation as well as increasing the economic performance of the product can be used to offset the costs of the treatment can only be used whilst most of the agricultural land used and the prevention of the consumption time, place and the energy of So that the increased use of irrigation lines and 75/32 and 03/51 is the percentage yield (Table 3). Based on the positive results of the seeding line in comparison with the other hand to increase the yield of (Afzali nia, 1995).) And also that the dramatic increases in the economic performance of irrigation with others (Imam, 2007) are quite consistent.

Table 1. Summary of analysis of variance of some traits.

(s.o.v)	(df)	Plant height	number of tillers	Grain weight	Grain yield
Repeat	2	0/250n.s	0/250n.s	3/250n.s	26733n.s
Planting	1	126/750*	24/083**	1/333n.s	8851136/333**
Error (a)	2	1/750	0/583	3/583	77076/333
Irrigation	1	546/750**	2/083**	320/333n.s	27078056/333**
Irrigation × planting method	1	2/083n.s	0/083n.s	5/333n.s	99736/333n.s
Error (b)	4	10/166	0/083	2/083	20571/333
Coefficient of Variation (%)		4/81	12/83	4/18	3/27

n's = not significant * = significant difference at 5% level ** = difference is significant at 1%.

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This attribute in any of planting and irrigation levels were not significant. The influence of genotype and seed weight can be stated that the essential conditions that uptake is affected more beds are genotype dependent (Table 2). Among the best methods of planting the seed weight and mean planting line 833/34 mg and the maximum amount as would be expected under irrigated cultivation with an average of 666/39 mg was. These results indicate that the negative effect of water stress on seed weight of 10 g, respectively (Table 3). A result in a significant reduction in seed weight in terms of irrigation with other studies (Imam, 2007) is consistent.

Number of tillers: Numbers of tillers were quite influenced by different methods of planting and irrigation in a way that both traits were significant at the one percent level and if it were no significant differences in the interaction between the two factors

(Table 2). Comparison shows that planting had a significant effect on number of tillers per plant so that a sowing of the sprinkler line and the 667/3 and 833/0 of the plant. Since the area around the plant has a direct connection with the tiller. Thus increasing the number of conditions can result in increased plant operate with linear space and is identical in all plants. The method of irrigation and dry farming, the highest and lowest number of tillers per plant with an average of 666/2 and 833/1 of the plant was naturally the availability of water and soluble food that rise to the displacement of material photosynthesis and Asmylatha in the plant will contribute to increase the number of tillers per plant.

Plant height

Plant height as a function of the indirect component of this research is the analysis of variance shows among the different methods of planting and irrigation, respectively, with an average of five and

one percent a significant difference was not significant, but the interaction between the two factors (Table 1). With increasing density and height in order to be more competitive on the light reactions of photosynthesis will increase. As this research is to manually due to higher-density planting shrubs Because they control the dispersal of seeds and plant height greater than the distance growing linearly ordered set, and were planted. The increase in the use

of food in most parts of the territory biologically and reduced allocation of these materials is the main source of economic plants. Irrigation increased plant height were also provided With the right conditions so that the irrigation plant height is about 5/13 inches has increased. Results with other studies (Javadi *et al*; 2004), based on increased plant height corresponded to the increased density.

Table 2. Comparison of mean traits.

	factor	Plant height	number of tillers	Grain weight	Grain yield
Planting	Linear Work	63 a	3/667 a	34/833 a	5244/3 a
	Hand Sprayer	69/5 a	0/833 b	34/167 a	3526/7 b
Irrigation	Irrigation	73 a	2/666 a	39/666 a	5887/67 a
	Rain fed	59/5 b	1/833 b	29/333 b	2883/33 b

There are other similar letters in each column by Duncan's test is significant at the 5% level.

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