

**Effect of different tillage methods on grain yield and its components in wheat cv.
Alvand under East Azarbayjan conditions**

Table with 10 columns: Tillage method, Grain yield (t/ha), Straw yield (t/ha), Grain yield (t/ha), Straw yield (t/ha), Grain yield (t/ha), Straw yield (t/ha), Grain yield (t/ha), Straw yield (t/ha), Grain yield (t/ha).
The table contains 10 rows of data, with the first row being a header and the following 9 rows representing different tillage methods and their corresponding yields. The text is partially obscured by a large watermark.

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(Dickey, 1983) ()

(Hargraves *et al.*, 1982))
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(Catizone *et al.*, 1995)

/ (Platonov *et al.*, 1992)

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(A₁) +

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(A₂)

(A₄) (A₃) +

(KF3-20/4 KF2.5-15/3) () (Unger, 1997)

(Gill and Aulakh, 1990)

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N30P60

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Table 1. Soil physio- chemical properties for the experimental site (before experiment)

()	()	()	()	()	()	()	()
Depth (cm)	Ec (dS/m)	pH of saturated soil	Neutral materials (%)	O C (%)	T N (%)	Available P (mg/kg)	Available K (mg/kg)
0-15	5.57	7.9	9.5	1.09	0.10	21.4	650
15-30	2.06	8.2	8.5	1.01	0.10	14.6	600
30-50	3.35	8.0	8.8	0.87	0.09	8.4	520
50-90	3.77	8.0	5.5	0.50	0.05	5.0	360
90-130	3.14	8.2	2.5	0.15	0.02	2.6	300
>130	6.14	8.0	3.0	0.08	0.01	2.0	200

(P < 0.05)

Table 1 2. Analysis of variance for morphological characteristics, grain yield and its components in wheat cv. Alvand

S.O.V	d.f	(MS)					
		Grain /Spike	Spike/m ²	1000 GW (g)	Plant height (cm)	Spike length (cm)	Grain yield (Kg/ha)
Replication	2	15.75 ^{ns}	1870.75 ^{ns}	5.25 ^{ns}	11.083 ^{ns}	0.663 ^{ns}	104988 ^{ns}
Tillage	3	8.306 ^{ns}	14955.64*	7.33 ^{ns}	41.33*	0.23 ^{ns}	2795575.3*
Error	6	11.306	2051.64	2.58	8.417	0.292	3291217
C.V (%)	-	7.16	16.43	4.12	3.44	5.82	13.39

*: Significant at 5% probability level.

ns: Non- significant

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: ns

Table 3. Mean comparison of morphological characteristics grain yield and its components in wheat cv. Alvand

Tillage treatment	Grain /Spike	Plant Height (cm)	1000 GW (g)	Spike/m ²	Spike length (cm)	Grain yield (kg/ha)
A1	48 a	84 ab	40.66 a	280 ab	48 a	3823 bc
A2	47 a	88 a	39.66 ab	267 b	47 b	4746 ab
A3	47.67 a	86a	37 b	364 a	47.67 a	5034 a
A4	44.33 a	79.33 b	38.66	191.66 b	44.33 a	2903 c

Means, in each column, followed by similar letter(s) are not significantly different at 5% probability level-using Duncan's Multiple Range Test.

Gill and Aulakh, 1990;)

(Catizone *et al.*, 1990; Dickey, 1983

(Sanford and Utomo, 1995)

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(Simmons *et al.*, 1982)

(P < 0.05)

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(P < 0.05)

(Twavainga *et al.*, 2002)

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(Whiteley and Dexter, 1982)

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Table 4. Mean comparison of soil cone index in different depths in two cropping seasons

Tillage treatment	Depth (cm)			
	0-10	10-20	20-30	30-40
A1	1.26 ab	1.83 ab	1.95 ab	1.95 ab
A2	1.18 ab	1.65 ab	1.95 a	1.95 a
A3	1.1 b	1.44 b	1.65 a	1.65 a
A4	1.41 a	1.99 a	2.23 a	2.23 a

Means, in each column, followed by similar letter(s) are not significantly different at 5% probability level-using Duncan's Multiple Range Test.

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ABSTRACT

Salek Zamani, A., A. Onnabi Milani and M. Zabolastani. 2007. Effect of different tillage methods on grain yield and its components in wheat cv. Alvand under East Azarbayjan conditions. Iranian Journal of Crop Sciences. 9 (1): 90-98.

In order to study the effects of tillage methods on wheat grain and its components an experiment was conducted using randomized complete block design (RCBD) with four treatments including 1-Chisel plow in depth of 5-20 Cm, 2- Moldboard plow in depth of 15 -20 Cm, 3- Moldboard plow in depth of 25-30 Cm and 4-control (No tillage) with three replications, in Khosroshahr Research Field Station in two cropping seasons (2004-2006). Tillage treatments were conducted in the same field for two years. First year safflower was grown and in the second year wheat. Data of cone index, grain yield and its components were collected for evaluation and analysis. Results showed that the effect of different tillage methods were not significant for the grain weight, spike length, grain numbers per spike. However, there were significant ($P<0.05$) differences among different tillage methods for grain yield and plant height. Moldboard plow in depth of 25- 30 Cm had the highest effect on grain yield (5034 Kg/ha) and No-tillage had the lowest (2903 Kg/ha). Mold board plow in depth of 25- 30 Cm had the least cone index, soil properties, but the highest soil permeability. Among the tillage methods, moldboard plow in depth of of 25- 30 Cm compared to the other treatments had greater effect on soil cone index and grain yield.

Key words: Tillage, Wheat, Grain yield, Cone index, Soil property.

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