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PROPER AGRONOMIC PRACTICES REQUIRED TO MAXIMIZE PRODUCTIVITY OF SOME MAIZE VARIETIES IN OLD AND RECLAIMED SOILS:

IV. EFFECT OF SEEDING METHODS ON GROWTH AND YIELD OF SOME MAIZE HYBRIDS.

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ABSTRACT: Two field experiments were conducted at Kofour El-Bahaita village, Mit-Ghamr district, Dakahlia Governorate, during 2000 and 2001 summer growing seasons to study the effect of three seeding methods (conventional dry- Afeer-, new wet seeding and no-tillage) on growth and yield and its components of four maize hybrids(S.C.10, S.C.13 T.W.C.310 and T.W.C.3057). A split plot design with three replicates was used.

Results indicated that new wet seeding gave higher germinated hills percentage than that of both dry and no-tillage methods. Light intensity above ground level was higher under no-tillage method compared with that of the other two seeding methods, whereas light interception percentage (LIP) took the opposite trend.

New wet seeding method produced more ears number per plot compared to the dry seeding method, whereas it had higher shelling percentage than that of no-tillage one. Due to these findings the new wet seeding method was superior in grain yield/fad.

The obtained results revealed that the tested maize hybrids varied significantly in all characters except both number of ears/plot and ear diameter. In spite of the fact that single cross 10 recorded lowest percentage of germinated hills, it surpassed the other hybrids in plant height, stem diameter, area of ear leaf cm^2 and grain yield/fad. Three way cross 3057 gave the lowest means for most of the tested traits and grain yield/fad.

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Both S.C.10 and S.C.13 plants gave higher means in LIP and lower ones in light intensity and cob diameter compared with both the three way crosses.

The results indicated that there were positive and highly significant correlation coefficients between the germinated hills percentage and; LIP and number of ears /plot. Also, the correlation coefficient between the germinated hills percentage and light intensity was highly significant but it was negative.

INTRODUCTION

The conventional dry seeding method (afeer) is commonly used in planting maize (*Zea mays L.*) in Egypt. Nowadays under heavy clay soils some farmers in Delta region noticed that germination percentage for some maize hybrids was markedly reduced. Therefore, another method could be called the new wet seeding in which plots were irrigated 6-12 hours before seeding was followed. Also, some farmers plant maize with minimum or without tillage practices to reduce the production costs of maize. In this respect, Roshdy (1988) reported that plant height, stem diameter, 100-grain weight and ear weight were not significantly affected by various planting methods (dry-Afeer- and wet-Heraty- plantings), whereas, wet method of planting significantly increased the number of grains/ear as compared with the dry method in the second season only. He added that dry method (Afeer)of planting significantly increased the grain yield by 10% as compared with the wet method (Heraty) in the first season. On the contrary, all differences between planting methods failed to reach the significance level in the second season. Similar results were obtained by Shafshak *et al.* (1984). Statistically significant differences in grain yield of maize were observed among conventional technology and no-tillage technology treatments, where the highest average yield across years which was recorded from conventional technology (7.82 tons/ha), the lowest one was recorded from no-tillage (5.33 tons/ha) Priadka (2001).

Maize hybrids are considered to be one of the most efficient tools for raising maize yield. Generally they differ in growth, grain yield and yield components as reported by Shafshak *et al.* (1995), Aly *et al.* (1996) El-Zeir *et al.* (1998). Also, Sarhan (2002) found that single cross 10

surpassed the other hybrids in grain yield per plant and faddan. This cross had the tallest plants, largest LAI, more number of grains /row as well as higher shelling percentage, whereas S. C. 13 gave the longest ears and heaviest 100-grain weight. He added that three ways crosses 310 and 3057 achieved the tallest grains and the lowest shelling percentages. Similar results were reported by El-Murshedy and Abouldahab (2002).

The objective of the present study was to determine the growth changes, yield and its components in some maize hybrids under 3 different seeding methods..

MATERIALS AND METHODS

Two field experiments were conducted at Kafour El-Bahaita village, Mit-Ghamr district, Dakahlia Governorate, during 2000 and 2001 summer growing seasons to study the effect of three seeding methods on growth and yield of some maize hybrids.

Seeding methods were: conventional dry seeding-Afeer (M1), new wet seeding (M2) and no-tillage (M3). Maize hybrids were: S.C.10, S.C.13, T.W.C.310 and T.W.C.3057.

The two factors were arranged in a split-plot design with three replicates. Seeding methods were located to main plots, whereas, maize hybrids were devoted to sub-plots. Dry and new wet seeding methods were practiced after the normal soil preparation prevailing in the region on ridges 70 cm apart and 30 cm between hills in plots 14 m^2 (5 ridges of 4 meters length). Irrigation was insured directly after seeding in the conventional dry method (Afeer), whereas in the new wet seeding method, plots were irrigated 6-12 hours before seeding which was practiced during water of at least 10 cm in height is still in the bottom of ridges. In the no-tillage method seeding was done in unprepared plots (no-tillage after the preceding crop) in hills 30 cm apart and 70cm between rows. Planting date was June 1 and 2 in the first and second seasons, respectively. The preceding crop was Egyptian clover in both seasons. The soil of the experimental fields were clay in texture having a pH 8.4 and 8.1; 1.25 and 1.38 % organic matter contents; 35 and 46 ppm available N; 25 and 28 ppm available P and 215 and 227 ppm available K in the first and second seasons for the upper 30 cm of soil surface, in

respective order. Superphosphate (15.5% P_2O_5) at the rate of 100 kg/fad. was applied before sowing while, nitrogen as urea (46% N) was added at the rate of 120 kg N/fad. in three equal portions, just before the first, second and third irrigations. In general, hills were thinned to left one plant in it, while for the absent hills two plants were left in the next hill to compensate plant density. The prevailing other agronomic practices of the crop were followed.

Data recorded:

1. Growth characters:

After 12 days from sowing, the germinated hills per plot were recorded and calculated as %-age; whereas after 75 days from sowing the following data were determined for maize growth characteristics: plant height, ear height of the 1st ear and stem diameter in cm, number of green leaves/plant, ear leaf area (cm^2) and leaf area index (LAI).

II.Light interception percentage:

Light intensity between plants was recorded (using a Digital Luxmeter apparatus) at ground level of soil between 11.00 and 13.30 h according to Leach *et al.* (1986). Thereafter, light interception percentage (LIP) was calculated according to the formula used by Teito-Kagho and Gardnar (1988) as follows:

$$LIP = [I_a - I_g) / I_a] \times 100$$

where I_a and I_g are the light intensity above plants and at ground level, respectively.

III. Yield and yield components:

At harvest: ten guarded plants were chosen at random from the 2nd ridge in each plot and : ear length, ear dieameter and cob diameter in cm; grain length (mm), number of grains /ear, shelling %-age and 100- grain weight (g) were recorded. Also, number of ears/plot and grain yield (ardab/fad.) with 15.5 % moisture content were determined from the 3rd and 4th ridges of each plot.

IV. Correlation coefficients:

The simple correlation coefficients between both the germinated hills %-age and grain yield /fad. in one side and the other studied maize characters in the other side were estimated for the combined data of both seasons.

Statistical analysis:

Data of both seasons were subjected to the proper statistical analysis according to Snedecor and Cochran (1967). For comparison of the means, Duncan's multiple range test was used (Duncan, 1955).

RESULTS AND DISCUSSION

I. Growth characters:

Data presented in Tables 1 and 2 show effects of seeding methods and varietal differences on the germinated hills percentage as well as plant height, ear height and stem diameter in cm; number of green leaves /plant, ear leaf area in cm^2 and LAI.

a) Effect of seeding methods:

The new wet seeding method gave the highest percentage of the germinated hills in the first season and in the combined analysis. This may be due to the fact that seeds were embeded nearly to the same depth.. However, the no-tillage method recorded the lowest germinated hills percentage in the first season. This may be due to the fact that initial moisture content in the experimental soil in the first season was lower (6%) than that in the second season (15%) which resulted in heavy hill cover in the first season than that in the second one. The combined analysis revealed that both dry and no-tillage seeding methods gave the same germinated hills percentage and were lower compared with the new wet seeding one.

Plant height, ear height and leaf area index were not significantly affected by the tested seeding methods. This was the fact in both seasons and their combined analysis.

b) Varietal differences:

Single cross 10 recorded the lowest germination percentage of hills whereas, both S.C.13 and T.W.C.310 gave the highest percentage. This was the fact in the second season and the combined analysis. This may be due to the differences among hybrids in the viability of seeds and vigor of seedlings. There were significant differences among the tested hybrids in plant height, ear height and LAI. The combined analysis indicated that S.C.10 plants were the tallest and T.W.C. 3057 plants were the shortest also, both single crosses 10 produced the largest ear leaf area as well as LAI while T.W.C. 3057 gave the lowest one. This may be due to the differences among hybrids in genetic make up and their interaction with environmental conditions. Similar results were reported by Shafshak *et al.* (1995) and Sarhan (2002).

II. Light intensity and light interception percentage (LIP):

a) Effect of seeding methods:

As shown in Table 2 both light intensity (Lux) and light interception percentage (LIP) were

Table 1 : The germinated hills %- age, plant height(cm), ear height (cm), stem diameter (cm) number of green leaves/plant and ear leaf area (cm^2) of some maize hybrids as influenced by seeding methods in the two growing seasons .

Main effects and interaction	2000	2001	combined	2000	2001	combined	2000	2001	combined
	The germinated hills %-age			Plant height (cm)			Ear height (cm)		
Seeding methods:									
Dry seeding(M_1)	77.8b	79.93	78.87b	346.9	328.8	337.8	200.7	204.3	202.5
Wet seeding(M_2)	90.13a	77.97	84.05a	346.6	328.3	337.5	197.5	203.6	200.6
No-tillage (M_3)	71.11c	86.87	78.99b	346.5	318.9	332.5	194.0	197.4	195.7
F-test	**	N.S.	*	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Maize hybrids :									
S.C.10 (H_1)	77.18	73.49b	75.33b	358.6a	332.8	345.7a	199.7a	205.1a	202.4a
S.C.13 (H_2)	81.06	84.93a	83.00a	347.0b	325.4	336.2ab	197.6a	210.7a	204.1a
T.W.C 310 (H_3)	80.85	86.20a	83.52a	345.8b	329.7	337.8a	205.8a	196.2b	201.0a
T.W.C. 3057(H_4)	79.65	81.74a	80.69ab	334.5c	313.6	324.1b	186.4b	195.2b	190.8b
F-test	N.S.	**	*	**	N.S.	*	**	**	*
Interaction :									
M X H	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
	Stem diameter (cm)			No. of green leaves/plant			Ear leaf area (cm^2)		
Seeding methods:									
Dry seeding(M_1)	3.039	2.932	2.985	15.71	16.17	15.94	833.7a	643.6ab	738.7a
Wet seeding(M_2)	2.901	2.945	2.923	15.44	15.93	15.68	767.9b	653.0ab	710.5b
No-tillage (M_3)	3.165	2.990	3.077	15.88	16.20	15.89	834.4a	669.7a	752.1a
F-test	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	*	*	*
Maize hybrids :									
S.C.10 (H_1)	3.243a	3.087a	3.165a	15.80	1612b	15.96a	890.9a	656.1a	773.5a
S.C.13 (H_2)	3.135ab	3.012a	3.073ab	15.24	17.17a	16.21a	797.0b	683.9a	740.5ab
T.W.C. 310 (H_3)	2.978bc	2.983a	2.980b	15.95	15.91b	15.93a	812.4b	666.9a	739.7ab
T.W.C. 3057(H_4)	2.783c	2.741b	2.762c	15.32	15.19c	15.26b	747.7c	614.9b	681.3b
F-test	**	**	**	N.S.	**	**	**	**	*
Interaction									
M X H	N.S.	N.S.	N.S.	N.S.	**	N.S.	N.S.	**	N.S.

significantly influenced by seeding method in the first season and the combined analysis. Light intensity in lux was higher under no-tillage method compared to that of the other two seeding methods whereas, LIP took the opposite trend, since maize plants under dry and wet seeding methods were effective in intercepting more solar radiations than those of under no-tillage one. This might be due to the reduction in the germinated hills under no-tillage method causing more spaces among plants which lead to increasing light penetration through the green canopy to reach ground level.

b) Varietal differences:

Data presented in Table 2 show significant differences among maize hybrids in light intensity and LIP in both seasons and the combined analysis.

In general, it could be noted that the light intensity on ground level was lower under S.C.10 and S.C.13 that means plants of both crosses intercepted solar radiations more than those of both three way crosses 310 and 3057. This may be due to the fact that both single crosses have larger LAI than those of both three way crosses (Table 2). Similar results were reported by Sarhan (1990) who found that light interception percentage was closely related to LAI and the superiority of Giza-2 variety over population –45 one in this respect is a quite fact.

III. Yield and yield components:

Data in Tables 2 and 3 show the effects of seeding methods and maize hybrids on ear length, ear diameter, cob diameter, grain length, number of ears/plot, number of grains/ear, 100 grain weight, shelling percentage as well as grain yield /fad.

a) Effect of seeding methods:

Both number of ears/plot and shelling percentage were significantly influenced by seeding methods in both seasons and the combined analysis. The new wet seeding method produced more number of ears per plot as a result of its higher germinated hills percentage (Table 1). Also, both wet and dry seeding on one hand gave the higher values in shelling percentage compared to no-tillage method. These findings indicated the superiority of the new wet seeding method in grain yield (ardab/fad.).In this respect, Mehdi *et al* (1999) found that grain yields were not affected by three types of tillage practices (conventional tillage, minimum tillage and no-till). However, Sainju and Singh (2001) reported that maize yield

Table 2: LAI, light intensity (lux), light interception %-age, ear length(cm),ear diameter (cm)and cob diameter (cm)of some maize hybrids as influenced by seeding methods in the two growing seasons.

Main effects and interaction	2000	2001	combined	2000	2001	combined	2000	2001	combined
	Leaf area index			Light intensity (lux)			Light interception %- age		
Seeding methods:									
Dry seeding(M_1)	5.312	4.544	4.928	1512.6b	984.7	1248.7b	90.67a	93.67	92.22a
Wet seeding(M_2)	5.141	4.532	4.837	1408.5b	993.6	1201.1b	91.50a	93.60	92.55a
No-tillage (M_3)	5.422	4.624	5.023	2012.6a	996.7	1504.7a	87.91b	93.59	9075b
F-test	N.S.	N.S.	N.S.	**	N.S.	**	**	N.S.	**
Maize hybrids :									
S.C. 10 (H_1)	5.642a	4.677b	5.160a	1575.6bc	944.2c	1259.9b	90.46a	93.92a	92.19a
S.C.13 (H_2)	5.331a	5.076a	5.204a	1531.7c	916.5c	1224.1b	90.74a	94.10a	92.42a
T.W.C.310 (H_3)	5.383a	4.281c	4.832ab	1802.5a	1023.3b	1412.9a	89.11b	93.41b	91.26b
T.W.C.3057(H_4)	4.811b	4.232c	4.522b	1668.5ab	1082.7a	1375.6a	89.92ab	93.03c	91.48b
F- test	**	**	**	*	**	*	*	**	*
Interaction M X H	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
	Ear length (cm)			Ear diameter (cm)			Cob diameter(cm)		
Seeding methods:									
Dry seeding(M_1)	20.54	18.00b	19.27	5.058	4.739	4.898	2.646	2.615	2.630
Wet seeding(M_2)	19.74	18.03b	18.88	5.043	4.760	4.901	2.603	2.611	2.607
No-tilling (M_3)	20.13	19.05a	19.59	5.053	4.776	4.914	2.646	2.750	2.698
F-test	N.S.	*	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Maize hybrids :									
S.C.10 (H_1)	20.40a	19.55a	19.97a	4.941c	4.715	4.828	2.503c	2.532c	2.517c
S.C.13 (H_2)	21.27a	18.58b	19.93a	5.008bc	4.809	4.908	2.464c	2.599b	2.532c
T.W.C 310 (H_3)	20.12a	18.67b	19.40a	5.119ab	4.686	4.903	2.655b	2.633b	2.644b
T.W.C 3057 (H_4)	18.75b	16.63c	17.69b	5.137a	4.823	4.980	2.905a	2.869a	2.887a
F- test	**	**	**	**	N.S.	N.S.	**	**	**
Interaction M X H	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	*	N.S.	N.S.

Table 3 : Grain length (mm), shelling %- age, number of ears/plot, number of gains /row, 100-grain weight (g) and grain yield (ardab/fad.) of some maize hybrids as influenced by seeding methods, in the two growing seasons .

Main effects and interaction	2000	2001	combined	2000	2001	combined	2000	2001	combined
	Grain length (mm)			Number of ears/plot			Number of grains /ear		
Seeding methods:									
Dry seeding(M_1)	12.05	10.62	11.34	56.25b	59.75b	58.00b	607.3a	577.4a	592.3
Wet seeding(M_2)	12.20	10.74	11.47	65.58a	59.88b	62.73a	584.9a	574.2	579.6
No-tillage (M_3)	12.03	10.49	11.26	54.58b	64.18a	59.38ab	514.4b	600.7	557.6
F-test	N.S.	N.S.	N.S.	*	**	*	*	N.S.	N.S.
Maize hybrids :									
S.C. 10 (H_1)	12.19a	10.91a	11.55a	53.88	61.74a	57.81	578.8ab	575.7a	580.7ab
S.C.13 (H_2)	12.71a	11.04a	11.88a	59.33	62.85a	61.09	560.2ab	575.0b	567.6b
T.W.C.310 (H_3)	12.32a	10.74a	11.53a	62.33	61.96a	62.15	527.3b	568.4b	547.9b
T.W.C.3057(H_4)	11.15b	9.76b	10.46b	59.67	58.52b	59.09	609.0a	610.4a	609.7a
F-test	**	**	**	N.S.	**	N.S.	*	*	*
Interaction M X H	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
	100-grain weight (g)			Shelling %-age			Grain yield (ardab/fad.)		
Seeding methods:									
Dry seeding(M_1)	35.90	33.08	34.49	86.32ab	86.37a	86.34a	29.58ab	25.62a	27.60ab
Wet seeding(M_2)	35.11	34.02	34.57	86.66a	86.67a	86.66a	30.97a	25.78a	28.37a
No-tilling (M_3)	34.26	35.08	34.67	85.56c	85.36b	85.46b	27.36b	26.94b	26.92b
F-test	N.S.	N.S.	N.S.	*	**	**	*	**	*
Maize hybrids :									
S.C.10 (H_1)	36.51a	38.55a	37.53a	86.34b	86.63ab	86.48ab	28.42	30.77a	29.60a
S.C.13 (H_2)	36.07a	34.19b	35.11b	87.04ab	87.02a	87.03a	30.52	26.90b	28.71a
T.W.C 310 (H_3)	36.93a	34.78b	35.85b	85.96ab	86.09b	86.03b	29.84	24.55c	27.19ab
T.W.C 3057 (H_4)	30.91b	28.72c	29.82c	85.38b	84.80c	85.09c	28.43	21.64b	25.06b
F- test	**	**	**	*	**	**	N.S.	**	**
Interaction M X H	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	*	N.S.

was higher with late planting in no-till (NT) than in chisel plowing (CP) or moldbroad plowing (MP); 19.5 vs. 15-16.6 tons/ha. On the contrary, of the aforementioned results reported in this investigation are in a good agreement with those obtained by Smart and Bradford(1999) and Priadka (2001). In the same trend Vetsch and Randall (2002) mentioned that the four-year average yields of continuous maize grain ranked according to tillage as follows: conventional tillage > Rawson zone till = fall strip till > no-till.

Generally, the other yield components were not significantly influenced by seeding methods. Similar results were reported by Shafahak *et al.* (1984) and Roshdy (1988).

b)Varietal differences:

In general, the studied yield components were significantly changed from hybrid to another except both ear diameter and number of ears /plot. This was a fact in both seasons and their combined (Tables 2 and 3).

Both single crosses 10 and 13 produced longer ears, thinner cobs, heavier 100-grain weight and higher shelling percentage compared with those of three-way cross 3057. Therefore, both S.C.10 and S.C.13 outyielded T.W.C. 3057 in both seasons and their combined analysis. This may be due to the fact that the two single crosses gave taller plants, fatter stems, more number of green leaves as well as larger ear leaf area and LAI. The single cross 10 surpassed the other tested hybrids in 100-grain weight, whereas S.C. 13 surpassed the others in shelling percentage.T.W.C. 3057 surpassed the others in number of grains /ear only.

The three way cross 310 plants gave the same ear length, grain length , number of grains /ear of both the two single crosses. Therefore, the reduction in grain yield /fad. of T.W.C.310 compared to that of both single crosses did not reach the 5% level of significance. These results are in agreement with those obtained by Shafshak *et al.* (1995), Aly *et al.* (1996), El-Zeir *et al.* (1998), Sarhan (2002) and El-Murshedy and Abuldahab (2002).

IV. Correlation coefficients:

Data in Table 4 show simple correlation coefficients between both germinated hills percentage and grain yield/ fad. on one side and the other studied maize characters on the other side.

The results indicated positive and highly significant correlations

between the germinated hills %-age and ; light interception %-age and number of ears /plot. However, the correlation coefficient between the germinated hills %-age and light intensity was negative and highly significant.

Indeed, both stem diameter and area of ear leaf were negatively correlated with the germinated hills %-age but, the correlation coefficients in this respect, were not significant.

The correlation coefficients between grain yield/fad. with each of plant height, LAI, ear length, grain length, number of ears/plot, 100- grain weight and shelling percentage were positive and highly significant. Also, the correlation coefficients between grain yield/fad. with each of stem diameter, area of ear leaf and ear diameter were positive and significant. Similar results were obtained by Basha *et al.* (1995), Abd-El-Samie (2000) and Oraby and Sarhan (2002) who found positive and highly significant correlation coefficients between grain yield with each of plant height, LAI area of ear leaf, ear length, grain length, number of grains/ear, 100-grain weight and shelling percentage. However, cob diameter was negatively and significantly correlated with grain yield/fad.

Table 4. Simple correlation coefficients between the germinated hills %-age and grain yield /fad. and other studied characters.

Character	The germinated hills % -age	Grain yield (ardab/fad.)
1- Plant height.	-0.150	0.390**
2-Ear height.	0.050	0.104
3-Stem diameter.	-0.225	0.300*
4- Number of green leaves/plant.	0.064	0.035
5- Area of ear leaf.	-0.227	0.271*
6- Leaf area index.	-0.118	0.332**
7- Light intensity.	-0.325**	0.145
8- Light interception %-age.	0.337**	- 0.120
9-Ear length.	-0.107	0.569**
10- Ear diameter.	0.010	0.289*
11- Cob diameter.	0.179	-0.268*
12- Grain length.	-0.128	0.485**
13- Number of ears/plot.	0.743**	0.339**
14- Number of grains/ ear.	0.171	-0.013
15- 100-grain weight.	-0.118	0.540**
16- Shelling %-age.	0.061	0.374**

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العمليات الزراعية المناسبة لتعظيم إنتاجية بعض أصناف الذرة الشامية في الأراضي القديمة والجديدة: ٤- تأثير طرق الزراعة علي نمو ومحصول بعض هجن الذرة

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أقيمت تجربتان حقليتان بقرية كفور البهايته – مركز ميت غمر – محافظة الدقهلية خلال موسمي الزراعة ٢٠٠٠ ، ٢٠٠١، في أرض طينية ثقيلة وذلك لدراسة تأثير ثلاث طرق للزراعة (طريقة الزراعة العفير المعتادة – طريقة الزراعة المبتلة الجديدة حيث توضع البذور بعد الرى بحوالى ٦-١٢ ساعة فى وجود الماء بباطن الخط بارتفاع حوالى ١٠ سم – طريقة عدم إعداد وتجهيز الأرض) على نمو ومحصول أربعة هجن(هجين فردى ١٠ وهجين فردى ١٣ وهجين ثلاثي ٣١٠ وهجين ثلاثي ٣٠٥٧) في تصميم القطع المنشقة مرة واحدة حيث شغلت طرق الزراعة القطع الرئيسية بينما وزعت عشوائيا الهجن فى القطع المنشقة وذلك فى ثلاث مكررات وكانت أهم النتائج المتحصل عليها كما يلي:-

١- حققت طريقة الزراعة المبتلة الجديدة أعلى نسبة جور نابتة مقارنة بطريقتي الزراعة الأخريين ، .سمحت طريقة الزراعة بدون خدمة بوصول كثافة ضوئية أعلى إلي مستوى سطح الأرض بالمقارنة مع طريقتي الزراعة العفير المعتادة والمبتلة الجديدة ، بينما أخذت نسبة اعتراض الضوء الاتجاه المضاد.

٢- أعطت طريقة الزراعة المبتلة الجديدة عدد كيزان /القطعة التجريبية اكثر من الطريقه العفير ونسبة تفريط الحبوب أعلى من طريقة الزراعة بدون خدمة وعليه حققت الطريقة الجديدة تفوقا في محصول الحبوب/فدان.

٣- اختلفت الهجن تحت الدراسة في كل الصفات المسجلة عدا صفتي عدد كيزان/القطعة التجريبية وقطر الكوز على الرغم من أن الهجين الفردي ١٠ سجل اقل نسبة جور نابتة إلا أنه تفوق على الهجن الأخرى في صفات :ارتفاع النبات،قطر الساق مساحة ورقة الكوز ومحصول الحبوب/ فدان ، وسجل الهجين الثلاثي ٣٠٥٧ اقل المتوسطات لمعظم الصفات المدروسة ومحصول الحبوب /فدان. اعترضت نباتات الهجينين الفرديين ١٠، ١٣ نسبة أعلي من أشعة الشمس الساقطة ومن ثم تغلغلت اقل كثافة ضوئية إلى سطح الأرض مقارنة بالهجينين الثلاثيين ٣١٠ ،٣٠٥٧ .

٤- أوضحت النتائج أن معامل الارتباط بين نسبة الجور النابتة و كل من نسبة اعتراض الضوء وعدد كيزان/القطعة التجريبية كان موجبا ومعنويا جدا، و كذلك كان معامل الارتباط بين نسبة الجور النابتة و كثافة الضوء أسفل النباتات وفوق سطح الأرض معنويا جدا إلا أنه كان سالبا.

توصي الدراسة باتباع طريقة الزراعة المبتلة الجديدة في الأراضي الطينية ويلزم إجراء بحوث جديدة تحدد العلاقة بين هذه الطريقة والصفات الطبيعية للأراضى الثقيلة، كما توصى بزراعة الهجن عالية الإنتاج بالترتيب التالي – هجين فردي ١٠ – هجين فردي ١٣ ثم هجين ثلاثي ٣١٠ .

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