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ORIGINAL ARTICLE

Evaluating the effects Planting date on some Quantitative and Qualitative Characteristics of new Maize Varieties in the Region Rey

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ABSTRACT

To evaluate the effect of planting date on some quantitative and qualitative traits of new varieties of forage maize in this study is a pilot Rey split plot based on randomized complete block conducted with four replications in 2011. The main plots consisted of four planting dates include: June1, June 16, July 1andJuly 15 and sub-plots included four varieties of forage maize hybrids that were late-type NK Factor, Dracma G-4662, NK Gigantic and KSC704. Seeding predicted performance and characteristics were measured Leaf area index, Coefficient Depreciation Optical, biomass, stomatal conductance, leaf length and leaf width. The results of the analysis of variance table in relation to Leaf area index, Coefficient Depreciation Optical and flag leaf width showed that the simple effect of a Cultivar of significant level, And flag leaf length, stomatal conductance and biological yield were significant, the simple effects of planting date and cultivar and interaction between planting date and cultivar. The highest t Leaf area index value of5.6, corresponding to K.S.C 704andK.S.C 704andNK Factor varieties have been the highest Biological yield.

Keywords: *planting dates forage maize, leaf area index, Coefficient Depreciation Optical and Biological yield*

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INTRODUCTION

Corn is four carbon plants with the scientific name Zea mays L. Maize grain is very important globally yields of most crops worldwide and is considered the world after wheat and rice ranks third [1]. The development of animal husbandry and food processing industries that depend on it will be possible to feed when it is available and reliable sources of food. With regard to the requirements of the people of the country, meat, milk and other dairy products increases with increasing population day by day, Thus the balance between feed and livestock production, it is necessary to the basic measures for forage crops by climatic and economic aspects should be considered [2].

Corn silage yield with high sugar and starch is one of the best forage plants will silage for combined feed production. Usually silage corn as a forage crop for feeding livestock is widely cultivated and used [1] .

Research has shown that a large amount of dry matter digestibility of forage maize is harvested and forage digestibility can be affected by genetic [3]. One of the most fundamental aspects of management in maize crops like any other product, is sowing dates and planting dates in each region, since different, and climate, so carries in the process of growth changes occur [4]. Calvino et al reported that planting date, plant density and fertilizer are among the main factors limiting performance [5]. Factors influencing the choice of planting dates include climatic factors (rainfall, temperature, light and length of day), varieties, pests and diseases, weeds, seed bed preparation, production economics, etc. [4]. Maize growth period from sowing to harvest the crop, varietal characteristics, especially early or late, between 100 to 150 days range [6].

Total yield decreased with delay in planting. Late planting increases pollen days and crested the rise and decline in dry matter production and ultimately will reduce the yield and yield components [7]. Benson showed concluded from his research that delayed planting and reduced corn yield is low density [8]. Swanson and Wilhelm Effect of planting date and plant residues on corn yield and yield components

studied and concluded that earlier planting dates and later convenient time decreased the leaf area index, leaf area and total dry matter production and the seed and speed yield loss when planting date is delayed until the earlier of the date of the most appropriate action to be planted [9].

MATERIALS AND METHODS

This research was conducted in April 2011, in latitude 35 degrees 34 minutes north and longitude 51 degrees 21 minutes east, and the height of 1051 meters above sea level, located in the village of Saeed Abad city functions Ray. The experiment was conducted as split plot experimental design with four replications in a randomized complete block In which planting date as main plot consists of four levels: 1 June, 16th June, 31 June, and July 15 and the number of sub-plots included four types of hybrid maize fodder of late were considered 1-NK Factor ،2- Dracma G-4662 ،3-NK Gigantic and 4- K.S.C. 704. Each plot was considered an area of 8/16 square meters with dimensions 8.2 × 6, consists of four stacks of 70 cm.

Flag leaf area

By measuring the length and width of flag leaf and flag leaf area was determined by applying the relevant coefficient based on an average of five plants per square cm area.

Leaf area index (LAI)

The order was determined by measuring the total area of leaves per unit area of the surface and into the ground.

Coefficient Depreciation Light

The amount of solar radiation absorbed by vegetation can be calculated using Beer's law. One of the main components of Beer's law Coefficient Depreciation Light (K) which indicates the amount of light passing through inhibition of the plant.

Measure leaf stomatal conductance

Perometer unit leaf stomatal conductance of water vapour is measured, the main factor determining factor is the loss of water from plant leaves absorb CO2 during photosynthesis.

New biological function:

Due to the voluminous nature of many samples of corn plants that allow complete drying them in the oven ventilator would not be possible, first of all components of the plants have already sampled the fresh notes, Separately yard spread on a flat surface and after drying they are acting in the open air than plants collected and weighed and In the next stage the plants of each plot were mixed and mixed and mixed weighing of samples and ventilatory oven-dried at 70 ° C for 72 h and the dry matter than the biological functions were calculated for each treatment.

There was used for statistical analysis program Minitab, SAS and Excel.

RESULTS AND DISCUSSION

Leaf area index

The results of the analysis of variance table in relation to Leaf area index showed that the simple effect of cultivar was significant at the 1%, and other not significant interaction effects and simple look(table 1).

Leaf area index was highest with a value of 5.6, corresponding to K. S. C 704 than other cultivars showed a significant increase. NK Factor LAI than Dracma-G4662 has a significant advantage with respect to NK Gigantic showed no significant difference.

Between different levels of planting date LAI difference was not observed NK Factor, except where the amount of leaf area index in the fourth planting date to the second and third planting date, there has been significant increase between different levels of the other varieties, planting LAI means you have not changed (table 2).

Coefficient Depreciation Light

the results of the analysis of variance table in relation to Leaf area index showed that the simple effect of cultivar was significant at the 1%, and other not significant interaction effects and simple look (table 1).

Independent figures from the effects of planting date on the Coefficient Depreciation Light of the four groups are statistically distinct, so Dracma-G4662 in the first category, NK Gigantic second, NK Factor third and K. S. C 704 in the latest rankings were Duncan. Planting on the second and fourth terms of the Coefficient Depreciation Light showed no significant difference but showed significant increase compared to the first planting date. Because there are no interactions between experimental factors and Coefficient Depreciation Light changes at different levels on the same plant (Table 2).

Despite a gradual decrease in the intensity of radiation later planting dates Absorbed by the canopy and remained at the highest level.

Appears to be a factor in the efficiency of solar radiation absorbed by the corn that seems to corn because of four carbon And a longer growing season than later planting dates have been able to reduce the negative effect of light intensity on dry matter production of corn-neutral, they As the highest

performance was achieved on July 15 planting. These results are consistent with the results Tsubo and Walker [10, 11].

Biological yield

The results of the variance analysis table concerning the biological function of In addition to the effect of planting date and cultivar interaction at the 1% level, planting date and cultivar was significant at the 1% level(table 1).

Varieties K. S. C 704 and NK Factor highest biological function have been. Between the first and second planting date do not exist significant differences in terms of biological function, while the seeding third significantly increased the biological function as a means.

According to not having a significant interaction between the experimental factors and changes in biological function is enhanced at different levels in Varieties of planting date on Ascending (table 2).

Double row system (grain - forage) with delay in sowing and vegetative stages of growth are favorable conditions will increase dry matter [11].

Stomatal conductance

The results of the analysis of variance in relation to stomatal conductance showed that the meaning of the simple effects, interaction effects of planting date and cultivar was significant at the 1% level (table 1).

Varieties in terms of stomatal conductance in four groups were statistically distinct, as K. S. C 704 in the first category, Dracma-G4662 second, NK Factor NK Gigantic third and fourth are Duncan grouping (table 2).

Varieties independent third planting date as a means significantly reduced stomatal conductance, stomatal conductance, but in the fourth planting date there has been a significant increase over previous levels (table2).

The results Jahromi and Qadir [12] looks at the grain filling stage, the photosynthetic rate and stomatal conductance has direct correlation between the highest stomatal conductance and photosynthetic rate in the last planting date, respectively. In the present study, the amount of forage yield and grain yield and stomatal conductance of all varieties in the history of the last planting in the highest category.

Flag leaf length

The results of the analysis of variance in relation to flag leaf length showed the effect of planting date and cultivar was significant at 1% and 5% level of interaction between planting date and cultivars (table 1).

According to Varieties produced by the interaction of experimental factors in response to planting date varies, as in varieties K. S. C 704 between flag leaf length and sowing date, there is a perfect linear relationship with negative slope.

Flag leaf length figures Dracma-G4662 NK Factor and third planting date as means you dropped between the third and fourth planting date there was no significant difference.

NK Gigantic variety of flag leaf during the first planting date compared to other planting dates of significance has been a significant increase , while the other levels of planting date difference has been observe (table 2).

Flag leaf width

Results Table Analysis of variance showed that the simple effect of planting date and cultivar was meaningful at 1% level (table 1).

CultivarsK. S. C 704 has the highest rate of flag leaf width (2.6 cm) and Duncan alone has been classified in the first category group. Factor and Dracma-G4662 NK Gigantic placed second and third.

The highest rate was observed for flag leaf width in the first planting date compared to other planting dates of significant difference has been shown. Significant difference between other levels of planting date this has led to a significant.

Since there is no significant interaction between the experimental factors means it can be concluded that the response was not different figures on different levels of planting date. As none of the varieties planted at different levels on the flag leaf showed no significant difference (table 2).

Table 1Analysis of variance for yield, Leaf area index, Coefficient Depreciation Optical, stomatal conductance, leaf length, leaf width

S.O.V	DF	Leaf area index	Coefficient Depreciation Optical	Biological yield	Stomatal conductance	Flag leaf length	flag leaf width
Block	3	0.251 ^{ns}	0.0057**	19.34 ^{ns}	84296.3*	39.17**	0.866*
Planting date	3	0.262 ^{ns}	0.0037**	113.06**	865191.0**	448.02**	0.7469**
Error (a)	9	0.416	0.0008	9.54	20543.8	8.76	0.171
Cultivar	3	2.206**	0.0277**	34.36 **	700932.2**	135.21**	6.49**
Date of cultivated* varieties	9	0.138 ^{ns}	0.0012 ^{ns}	4.85 ^{ns}	189504.0**	20.81*	0.146 ^{ns}
Error (b)	36	0.157	0.0011	5.39	34218.4	9.91	0.22

Ns, * and ** : Not significant, significant at 5% and 1% probability levels, respectively.

Table 2results of the comparison and interaction effects of traits,Leaf area index, Coefficient Depreciation Optical, biomass, stomatal conductance, flag leaf length, flag leaf width

Experimentalfactors		Leaf area index	Coefficient Depreciation Optical	Biological yield	Stomatal conductance	Flag leaf length	flag leaf width
cultivar							
K.S.C. 704		6.5 a	0.461 d	1329.1 a	25.3 a	6.2 a	43.3 b
NK Factor		6.1 b	0.497 c	960.2 c	24.3 ab	5.7 b	45.5 a
NK Gigantic		5.8 bc	0.523 b	836.8 d	23.0 bc	4.9 c	36.9 c
Dracma G-4662		5.6 c	0.0560 a	1058.8 b	22.1 c	5.6 b	46.5 b
Plantingdate							
1June		6.0 a	0.485 b	1078.2 b	21.5 c	5.9 a	48.5 a
16 June		5.8 a	0.501 a	962.8 c	21.8 c	5.5 b	42.1 b
1 July		5.9 a	0.520 a	795.7 d	24.1 b	5.4 b	40.5 b
15 July		6.1 a	0.531 a	1348.6 a	27.3 a	5.4 b	38.1 c
Cultivaron date							
K.S.C. 704	1June	6.3 a	0.0441 d	1429.6 ab	23.6 ef	6.6 a	49.0 b
	16 June	6.5 a	0.455 d	1420.0 ab	23.5 ef	6.3 ab	44.5 cd
	1 July	6.5 a	0.452 d	963.3 de	24.6 de	6.0 ab	42.1 ef
	15 July	6.5 a	0.496 c	1503.3 ab	29.6 a	6.0 ab	37.7 hi
NK Factor	1June	6.2 ab	0.467 d	1290.8 bc	22.0 g	6.0 ab	53.1 a
	16 June	5.7 bc	0.508 bc	823.7 de	23.3 f	5.6 ac	44.8 c
	1 July	5.9 bc	0.514 bc	654.1 e	23.6 ef	5.6 ac	42.9 de
	15 July	6.4 a	0.501 c	1072.2 cd	28.4 b	5.4 bc	41.3 ef
NK Gigantic	1June	5.9 bc	0.511 bc	731.1 e	21.4 g	4.7 c	41.1 ef
	16 June	5.9 bc	0.505 bc	754.8 e	21.2 g	4.6 c	35.3 i
	1 July	5.7 bc	0.533 bc	745.8 e	24.1 de	4.7 c	36.9 hi
	15 July	5.7 bc	0.563 a	1115.6 cd	25.2 cd	4.7 c	34.5 i
Dracma G-4662	1June	5.7 bc	0.522 bc	761.1 de	19.1 h	6.2 ab	51.0 ab
	16 June	5.3 c	0.572 a	851.2 de	19.1 h	5.4 bc	44.0 cd
	1 July	5.5 c	0.581 a	819.6 de	24.0 de	5.4 bc	40.2 fg
	15 July	5.9 bc	0.564 a	170.3.3 a	25.8 c	5.7 ac	39.0 gh

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