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***Research Article***

# THE STUDY OF SIMULTANEOUS EFFECTS OF THREE TYPES OF MAIZE WITH PLANTING DATE AND DIFFERENT FERTILIZER LEVELS IN SEED YIELD

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## ABSTRACT
Maize is an important type of feed whose plant flower is used as barn consume. The plant, despite being harvested once a year, has high functional dry material. In addition to being prepared easily, it is a delicious feed with consistent quality for animals and contains higher degrees of energy than other examples. The present experiment was conducted with three kinds of hybrid single cross maize's including Ksc 704, Ksc 301 and Ksc 647 in four different rates of 1000, 2000, 3000 and 4000 kg/h. Nitrogen fertilizer and three dates of planting on May 1st, 15th and 31st were carried out among all hybrid types. The results from variance analysis of features to be evaluated showed that the items had significant variation in 1% level considering all features to be evaluated. It shows a great deal of genetic variation among the items to be studied. In addition, the selected planting dates regarding all features but maize length had significant differences on 1% level, while the significant difference was on 5% level with regard to maize lengths. The meaningfulness of the items regarding planting dates indicates that these items are sensitive to planting date helping one to benefit from that in planning better planting. Different levels of fertilizer levels in this experiment showed 1% level significant difference considering all features to be evaluated except plant height and the top seed weight features. Fertilizer levels regarding plant height feature had meaningful variation 5% level.

***Keywords:*** *Maize, Yield, Single Grass, Fertilizer, Planting Date*

## INTRODUCTION
Maize is an important type of feed whose plant flower is used as barn consume. The plant, despite being harvested once a year, has high functional dry material. In addition to being prepared easily, it is a delicious feed with consistent quality for animals and contains higher degrees of energy than other cases. Maize silage production needs fewer workers than other feed plants. Due to conducted surveys, every feed plant should contain high dry material function, high energy level (high digestion ability), less fiber and appropriate dry material rate at the time of reaping for favorable fermentation and safe preservation. All maize features except high protein rate are more than those of other feed plants.
Furthermore, as the plant contains fermentable glosids and is of high quality, it is the best with extreme production potential and considered the best and most appropriate one for preservation. It is also one of the highly energetic and easily digested feeds for milky as well as meat cows. The plant plays a crucial role in industrial livestock raising centers. The average combination and nutritional elements of maize flower silage is shown in the following table.
The selection type and planting management affects the silage function and its quality. Moreover, environmental condition has a direct effect on growth, production, and quality of feed maize. The planting time of maize influences its growing, intensity, natural plant growth, appearance time, breeding organs, granule movement and ripeness time.
Therefore, to determine appropriate planting time is of crucial importance in successful planting of the case. It occurs when the temperature of planting depth (up to 10 centimeters) reaches 8 – 10 centigrade at about 8 a.m. and the weather changes into warm.
The maize harvesting depends mainly on the hybrid and quality of soil. The delay in the planting of barn maize will cause production decline and low quality of the product. This decrease is the result of maize decline.

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The planting time of maize in the northern regions of the country, Guilan province for example, starts in last the decade of April when spring rain has stopped and the land has been covered. It is so that the planting happens in the central regions like Isfahan in mid-April.

By conducting a three year - research (1995 – 1997) in Gorgan region, Chogan and Sadat (2006) analyzed the effect of four types of planting on the function of seed, different features of four maize hybrids including twe69-sc604– sc674 -sc704. The results proved that studied hybrids had meaningful reciprocal effects with planting date regarding functional characteristics. So, postponing the planting of all hybrids led to the seed function decrease. The analysis of functional details demonstrated that maize seed weight, seed size, and the number of seeds in a row were at the least amount through postponed planting.

Nitrogen plays an important role in the formation of amino acids, vitamins and chlorophylls. If the plant receives sufficient nitrogen, the maize will grow fast and have positive effects on the protein material save of the seed. The amount of the nitrogen existent in plant organs changes according to life stage and nutritional conditions.

Nitrogen composts lead to feed function increase and its quality improvement (protein increase). By the way, the fat and cellulose rate in the plant will increase slightly. The extreme increase of nitrogen in a type of maize that is harvested in its crest flower appearance causes nitrogen save in nitrate form and consequently may lead to animal poisoning.

In an experiment conducted by Dehghan *et al.,* (2001) to determine the most suitable time to cultivate different maize types in the summer, three separate experiments were carried out among post, on-time and premature groups. The best time to cultivate in post mature group was August 16 by the use of 13400 kg/h and the dates were July 1, July 16 and August 1 in the next orders, subsequently. 704 single grasses with the function of 102000 kg/h was the best, while, 721 and 716 single grasses were in the following ranks among the group. Among on time mature group, the best time to cultivate was August 16 with the function of 11500kgs p/h and July 16, August 16 and July 1 were among the next ranks. 604 single grasses with the function of 102000 kg/h was the best, while, 647 and 46 A single grasses were in the following ranks among the group. Among premature group, the best time to cultivate was August 16 with the function of 7300kg/h and July 1, August 1 and July 1 were among the next ranks. 301 single grasses with the function of 6800 kg/h was the best, while, 303 and 305 single grasses were in the following ranks among the group.

Homayoon *et al.,* (1992) conducted a research in order to determine the most suitable time of maize planting in the spring and summer. The spring planting included three experiments among post mature and on time mature groups. While the summer planting tested two groups of premature and extremely premature groups. Each experiment consisted of three planting dates and three types so that the dates and types were considered main vs. secondary. The first planting date in spring was April 2 and the other two were done within a span of fifteen days. The first planting date in the summer was July 1 and the other two were done within a span of eight days. Among on time mature group, the best function was that of spring hybrid planting numbered sc647 with the function of 15250 kg/h done on the third time. Number sc301 with 11250 kg/ h on the second date had the best function among the summer planting group.

## MATERIALS AND METHODS

The present research was carried out in the research field of Islamic Azad University of Astara branch in the summer of 2003 cultivation year. The field had the latitude of 38'and 25 minutes, longitude of 48' and 52 minutes and was 20 meters lower than the sea level.

Experiment materials to be used included three types of hybrid single cross maizes; ksc704, ksc 301, ksc 647 at the rates of 100, 200, 300 and 400kgs/h. Nitrogen of nitrate fertilizer source (nitrogen 46% which is referred to as pure nitrogen of 46, 92, 138, and 184 degrees in the text) was used twice; half at the time of planting and the other half at the time of flower appearance.

The land preparation operation including plowing, leveling disk, tine and furrowing was carried out in all experiment parts. After providing the experiment map, the act of planting was done within rows spacing 65cm and planting space of 25cm in selected plots with 8 rows of 7 meter length.

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The plan to be used for this experiment was factorial in the form of random blocks in which planting dates, maize types, and nitrogen fertilizer rates were considered (a), (b) and (c) subsequently. Evaluated features included plant height, maize distance from the land, maize length, leaf weight, the weight of 100 seed, the number of seeds in a row, the number rows in a maize and finally the seed function. After the end of growth period and removing marginal side effects, sampling was done and the data were analyzed by the use of Spss software.

## RESULTS AND DISCUSSION

Results from the analysis of feature variances under evaluation showed that the types had significant difference regarding all features at 1% level. This difference shows high genetic variation among studied maize types. In addition, selected planting dates due to all features except maize length had meaningful difference 1% level, while they had the difference at 5% level regarding maize length. The meaningfulness of the types considering planting dates shows that the types were sensitive to planting dates so that one can benefit from that advantage for better planting plans.

**Table 1-1: The percentage of digestionable nutritional contents of maize flower silage**

| Percentage of feed contents | Contents |
|---|---|
| 27 - 6 | dry material |
| 2/3 | raw protein |
| 1/2 | digestionable protein |
| 18/3 | whole digestionable nutritional contents |
| 0/8 | fat |
| 6/7 | fiber |
| 0/1 | calcium |
| 0/07 | phosphor |

**Table 2: The analysis of feature variances under evaluation**

| | | MS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **SOV** | **df** | **Plant height** | **Life weight** | **Ear length** | **100 seed weight** | **Number of row** | **Number of seed in row** | **The number of seed per ear** | **Yeald** | **Biological yield (ton/ha)** |
| REP | 2 | 174.17 | 1.175 | 0.393 | 22.84 | 0.011 | 1.45 | 372 | 0.029 | 2.175 |
| A | 2 | 2721.39** | 5320** | 10.96* | 401.37 ** | 79.61 ** | 165.25 ** | 464121.86** | 73.171 ** | 6320 ** |
| B | 2 | 834.48 ** | 4053.48** | 225.59 ** | 234.96 ** | 57.25 ** | 685.02 ** | 449298.08** | 60.213 ** | 5053.48 * |
| AB | 4 | 3845.42** | 270.281** | 11.09 ** | 103.106** | 3.42 ** | 31.444 ** | 34692.2 ** | 3.818 ** | 370.281** |
| C | 3 | 575.83 * | 876.11 ** | 13.39 ** | 11.284 n.s | 17.83 ** | 118.97 ** | 91176.5 ** | 20.152 ** | 976.11 ** |
| AC | 6 | 234.59 n.s | 10.336 ns | 2.82 n.s | 13.248 n.s | 1.61 ** | 5.91 ** | 3815.01 ** | 1.67 ** | 20.336 * |
| BC | 6 | 234.53 n.s | 114.86 ** | 3.86 n.s | 10.193 n.s | 2.15 ** | 10.54 ** | 6990.2 ** | 1.687** | 214.86 ** |
| ABC | 12 | 218.01 n.s | 45.42 ns | 1.105 n.s | 7.214 n.s | 0.266 ** | 6.18 ** | 2673.4 ** | 0.155 * | 5.42 n.s |
| ERROR | 70 | 168.12 | 5.204 | 2.998 | 11.038 | 0.091 | 1.13 | 450.92 | 0.075 | 6.204 |
| CV% | | 6.17 | 3.74 | 7.52 | 12.84 | 1.98 | 3.19 | 4.13 | 3.31 | 4.9 |

*** And * respectively significant at the 1% and 5% level ns: non-significant*
*A: Planting date B: Genotype C: Nitrate Fertilizer*

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Different rates of fertilizers analyses in the experiment showed meaningful difference at 1% of the types regarding all evaluated features except plant height and 100 seed weight. Fertilizer rates had meaningful difference at 5% level considering plant height feature.

The reciprocal effect of planting date among the types considering all types under study, the interactive effect of planting date and fertilizer rates considering the number of seed rows, the number of seeds in a row, the number of seeds in a maize and the function of the seed, The interactive effect of maize types at fertilizer levels regarding the leaf weight, the number of seed row, and the number of seeds in a row, the number of seeds in maize and the function of the seed showed meaningful difference at 1% level. The triad interactive effect had meaningful difference at 1% level regarding the following features; the number of seed row, seeds in a row, and seeds in maize. It had also the difference at 5% level considering seed function.

The existence of meaningful difference among experiment treatments showed correct selection of them so that one can achieve his goal of raising the product of high function and quality by choosing the most appropriate treatment.

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