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Determination of Yield and Yield Components Of Some Silage Corn (*Zea mays* L.) Varieties Under Diyarbakır Ecological Conditions

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Abstract

This investigation was conducted to determine yield and yield components of some silage corn varieties that are suitable for Diyarbakir ecological conditions experienced at GAP international Agricultural Research Training Center experiment area in the main growing season 2015. The experimental design was randomised in a complete block design with three replications. Varieties Burak, Samada 07, TK 6063, OSSK 644, Bolson and Hido were used as plant material in present study. The range height of the plants used in the research was 263.33 – 314.66 cm, the range of ratio of stem plant was 41.93-58.50 %, leaf plant was 18.20 – 22.17 %, cob / plant was 20.37 – 38.50 %. The range of green herbage yield was 5694.85 – 10820.85 kg, hay yield 1431.00 – 3006.33 kg, cop weight 220.00 – 317.33 gr /plant. The range of crude protein was 4.09 – 6.27 %, crude protein yield was 79.70 – 125.93 kg, silage pH 3.67 – 3.90, ADF (Acid detergent fiber) 30.40 – 35.97 %, NDF (Neutral detergent fiber) 52.90 – 60.20 %. As a result of the investigation it has been found that Burak, TK6063, Samada 07 and Bolson were the best suitable plants compaire to quality of the silage and green herbage.

Keywords: Corn, green herbage yield, main crop, silage

INTRODUCTION

In countries where the animal husbandry is at an advanced level, corn plants especially as silages, are produced more than the other animal feed. It is very common due to its digestion is very easy, it is very tasty, juicy and economically more convenient, and it has a significant place in milk and meat cattle breeding. Silage corn farming needs to be more widespread in our country in order to ensure the livestock more economical and in order to close the gap of animal feed in a short time and make livestock economical (Sonmez et el., 2001). Corn is one of the most preferred silage in the world due to the facts that it is suitable for machined farming from seeding to the harvest, it is easy to store and easy to use, its digestion level is high, it is a qualified and delicious silage food, its seeds are easy to find and it is easy to ensiled without needing any other additive (Acikgoz et el., 2002). In 2013 in the world, corn silage cultivation area was 1.104.211 ha, the amount of production was 9.776.132 million tons and the yield was 88.535 kg / ha (Anonymous, 2015).

As for Turkey, as of 2015 corn silage cultivation area was 4.015.913 and total amount of production was found out as 18.563.390 tons with the yield of 4.630 kg / da. In the Southeastern Anatolia Region, corn silage production has reached to 781.497 tons with 186.048 yield as of 2015, and it has reached to 85.823 tons of production amount with 21.325 da yield in Diyarbakir (Anonymous, 2015). Corn silage in our country begun to spread in the

last 15-20 years. Depending on the region, the corn produced from 5 to 10 ton / de silage (Yolcu & Tan, 2008).

The economic difficulties that the livestock enterprises have are increasing day by day. Production costs, especially feed costs are pretty high. Within the scope of supporting livestock, the production areas of animal feed has been increased thanks to these supports to animal feed plants, however this was not seen as sufficient. In order make livestock enterprises become profitable enterprises and to obtain animal products at the desired level from these enterprises, it is necessary to evaluate the roughage sources well. There is not sufficient production of feed crops by the regional producer whose income depends on the agriculture and livestock. Our meadow and forage areas have been used of grass down for many years without considering any amenajman rules and regulations. As the maintenance and improvement works for meadow and forage areas are not sufficient, the increases with each passing day. Since the quality of the roughage feed obtained from the production of the existing feed plants cannot reach the desired level, there is insufficiency for the roughage.

There is a study conducted in 1999 in the conditions of Van with 6 types of corn silages as the main product and II. product (Frassino, P 3394, RX -899, P -3335, TTM -815 and Arifiye): in the main product conditions, average plant height 228.50 cm, green grass yield 5704.51 kg / da, weed yield 1482.95 kg / da, single plant weight 893. 17 g, leaf ratio 26.67%, crude protein yield 79.46 kg / 5.36; II. In product terms, the plant height is 269.06 cm, green grass yield is 7403. The ratios are sever a following: 17 kg / da, weed yield 1617.92 kg / da, single plant weight 900.74 g, average leaf ratio 23.29 %, cow ratios 22.09-37.79, crude protein yield 93.31 kg / da, crude protein ratio 5.74 % (Turan & Yılmaz, 2000), in order to determine the types of silage corn that can be grown in Van conditions, it was determined that the corn variety varied in plant height 143.7-242.6 cm, green yield 2729.6-7842.3 kg / da, stem ratio 28.1-43.6 %, leaf ratio 17.3-23.5 %, cob rate 38.2-49.0 % protein ratio 5.52-8.17 % (Akdeniz et el., 2003).

A study was conducted in order to determine the morphological characteristics and feed yields of 8 corn silage (Ada 9516, PR31Y43, Sımon, Braker, Samada, BC 678, Ada 523 and Bolson) cultivars in the application area of the Faculty of Agriculture, Department of Field Crops, Ankara University; plant height 254.00-293.33 cm, green grass yield 4077.77-6537.14 kg / da, leaf rate 22.13-28.89 % in the leaves of the plants, 23.84-32.48 % of the stems in the plants, stem ratio 45.32-52.04 % in the plants, dry matter yield 1374.71-2152.67 kg / da , The crude protein ratio 7.93-9.07 and the crude protein yield 119.84-174.18 kg / da (Kucuk, 2011), 13 varieties of silage maize (Borja, Pr-1550, Mataro, DK-626, DK-C 5783, Poly, Sinatra, Progen 1490, 38, 40, 41, Szegedi, Luce) which can be grown as second crops in 2010 under Tokat-Kazova ecological conditions yield and yield characteristics of the study; the dry matter yields were 733.94-1697.70 kg / da, the crude protein ratios were 3.94 5.11, the ADF ratios were 26.49-45.01 % and the NDF ratios were between 49.79-72.97 % (Akbay, 2012).

A study was conducted in 2005 and 2006 on the experimental fields of the Department of Field Crops of the Agricultural Faculty of Ege University and Odemiş Vocational School of Higher Education: it the goal was to determine silage qualities of some corn varieties (Brasco, ÇT-1, C-955, Helen) in Aegean Region. In the study conducted it is observed that it changes between 30.22-30.74 % of silage dry matter content, pH value of silage 3.98-4.04, fleig score 100, silage smell 12.92-13.40, silage structure 3.43-3.77, silage color 1.85-1.93 and DLG score 18.22-19.06 (Kavut & Soya, 2012), another study carried out with the aim of determining the self-healing lines suitable for silage hybrid corn breeding; Dry matter yields of variety candidates ranged from 602-2175 kg / da, ADF ratios were 20.38-30.76 %, NDF ratios were 43.07-57.66 % and raw protein ratios were between 7.09-9.82 % (Oz et el., 2012).

In 2013, a study was carried out in Igdir conditions using C955, Sakarya F1, Dako 626, Cadiz, Borja, Progen 1610, Pasha, 71 May 69, 70 May 82 silage corn varieties as plant material: plant height value is 256.0-319.0 cm, stem ratio is 38.8-57.6 %, stalk ratio is 24.6-38.3 %, leaf ratio is 15.7-27.2, green grass yield is 4673.7-8753.7 kg / da, dry weight ratio is 24.1-30.0 %, dry hay yield 1249.9-2570.2 kg / da, the ratio of crude protein is 5.2-7.0 % and the yield of crude protein is 83.8-169.2 kg / da (Kabakcı, 2014), another research conducted to determine the possibilities of silage cultivation of some maize varieties under the ecological conditions of the Middle Kizilirmak basin; Plant height 228-260 cm, stem diameter 20.05-24.54 mm, leaf ratio 12.3-17.3 %, cob ration 38.2-50.1 %, handle ratio 34.2-47.8 % , Gross yield was 8461-13190 kg / da, dry matter yield was 2838-4163 kg / da, crude protein content was 4.80-7.02 % and crude protein yield was 149.8-257.5 kg / da (Kusvuran et el., 2015).

With this study conducted in the ecological conditions of Diyarbakir; it has been detected that it is significant to use coarse feed sources together with rational feeding in order to get the desired yield from animal husbandry and therefore it is important to increase the cultivation areas of corn silage which has an important place in the feeding of dairy cattle and to spread the breeding.

MATERIAL and METHOD

This study was conducted during the main product training period in 2015 in the field of trial and application of the Directorate of GAP International Agricultural Research and Training Center in Diyarbakir.

Material

The Climate Features of the Study Field

The province of Diyarbakir, which has continental climate, is hot and dry in summers and cold and rainy in winters. The average annual precipitation for many years is 490 mm (Anonymous, 2015). The long-term climate data for the same cycle as the April-August vegetation period of 2015, when the survey was conducted, are presented in Table 1.

Table 1. Data for the Climate of the Study Field*

Humidity (%)	Average Temperature (°C)		Maximum Temperature (°C)		Rainfall (mm)		Average Relative	
Months	Years (1950-2015)	2015	Years (1950-2015)	2015	Years (1950-2015)	2015	Years (1950-2015)	2015
April	13.8	12.4	20.4	19.2	68.7	48.6	56.0	69.6
May	19.2	18.8	26.5	27.1	44.3	48.2	31.0	57.6
June	26.3	26.1	33.6	34.4	8.8	7.4	27.0	34.5
July	31.1	31.7	38.4	40.0	0.5	0.0	28.0	21.8
August	30.4	30.9	38.2	39.3	0.4	0.0	32.0	25.5

*Anonymous, http://tuikapp.tuik.gov.tr/bitkiselapp/bitkisel.zul, 2016.

As it is seen in Table 1, the lowest average temperature values were observed at 12.4 °C in April and the highest at 30.9 °C in August when the study was conducted. When the average temperature values for many years are taken into consideration, it is observed that the lowest temperature is 13.4 °C in April and the highest temperature is 30.4 °C in August. The lowest maximum temperature values were recorded in April at 19.2 °C, the highest in August at 39.3 °C. For many years the average maximum temperature values have been determined to be the lowest in April at 20.4 °C and the highest in August at 38.2 °C. In addition, the lowest amount of rainfall in this period during which the survey was conducted decreased in June

with 7.4 mm, and with the highest in April with 48.6 mm. For many years the average minimum precipitation amount was 0.4 mm in August, the highest in April with 68.7 mm. The lowest relative humidity was observed in July at 21.8 % and at the highest in April at 69.6 %. For many years, the lowest average relative humidity was found to be 27.0 % in June and the highest in April, with 56.0 %.

Soil Characteristics of the Study Field

According to the results of soil analysis performed at the GAP International Agricultural Research and Training Center laboratory, soil samples taken before planting were determined to be clayey, with slightly alkaline character and no salinity problem (Table 2).

Table 2. Physical and chemical characteristics of the soil in the trial area (0-20 cm)*

Structure (%)			pH	Salt (EC) mmhos/cm	Lime ($CaCO_3$) (%)	Organic Substance (%)	Phosphor to be taken (P_2O_5) kg/da	Potassium to be taken (K_2O) kg/da
Clay	Sand	Silt						
50.24	28.70	21.06	7.92	1.499	12.36	0.85	0.56	60.23

*: The analysis was carried out at the GAP International Agricultural Research and Training Center Laboratory.

As it is seen in Table 2, it has been determined that the organic substance of the test soil is very low, the lime scale is medium lime, the soil contains very little phosphor, and the potassium is rich.

Some characteristics of the corn silage type

The morphological groups of the corn silage types used in the study, the breeding organization and some characteristics are given in Table 3.

Table 3. Some characteristics of the corn silage type

THE NAME of THE TYPE	BRIEF CHARACTERISTICS	THE REFORMENT INSTITUTION
OSSK 644	The number of days to maturity is 90-100 days (FAO 650). It is tall and has a high leaf rate. Green grass yield and silage quality is high.	Tareks A.Ş.
HİDO	The number of days to maturity is 100-110 days (FAO 700). Adaptability is high. The staygreen feature is very good.	May Tohumculuk
BOLSON	FAO 600 is in the maturation group. Adaptability is broad. It is tall, silage yield and high quality.	Polen Tohumculuk
TK 6063	The number of days to maturity is 95-110 days. FAO has 650 groups.	Tareks A.Ş.
BURAK	The number of days to maturity is 130-135 days (FAO 750). Silage yield potential is very high.	Batı Akdeniz Tar.Araş.Enst.
SAMADA 07	It is a middle-aged, maturity days are 95-105 days (FAO 700). It is tall and silage quality.	Karadeniz Tar. Araş. Enst.

The trial was set up in three replications, according to the design of random blocks. The area is 70 cm and the area of each parcel (5 m x 4 m x 0,70 m) is arranged as 14 m^2. The planting is made manually, after the last frosts in spring and when the temperature of the soil reaches 10 °C (20.04.2015) and when the soil is in the boil, 9715 seeds. According to soil analysis results, pure nitrogen (N) half (10 kg / da) and pure phosphorus (P_2O_5) were given as 20.20.0 composition fertilizer in whole (10 kg / da). Plants; when the paint reaches 10-15 cm, the first anchor is hand first, and when 40-50 cm is empty, the second anchor and throat filling operations are performed with an anchor. During throat filling, the remaining half of nitrogenous fertilizer (10 kg / da) was given as ammonium nitrate (33 % N). Irrigation after the planting until the output is irrigation, plants 15-20 cm after the watering is done by the

furrow method. During the harvesting, 1 part of the parcel was taken from the sides and 50 parts from the beginning of the parcels were harvested in the milking period after being placed as edge effect.

FINDINGS and DISCUSSION

F values and significance levels of variance analysis results of silage maize varieties are given in Table 4.

Table 4. F values and significance levels of silage maize varieties

V.K.	Green grass	Dry Grass	Size of the Plant	Crude Protein Ratio	Crude Protein Yield	Stem/Plant ratio	Leaf/Plant ratio	Corncob/Plant ratio	Weight of Corncob	pH of the silage	ADF	NDF
F_{cesit}	12.09**	11.52**	25.82**	1.90	1.06	48.74**	5.68**	27.48**	3.36*	0.65	0.07	1.14

*: significant at the level of P<0.05, **: significant at the level of P<0.01

Plant size (cm) and stem/plant ratio (%)

According to the variance analysis results, the difference between the varieties in terms of the size of the plant and stem/plant ratio was statistically significant at 1 % level (Table 4). When the highest value was obtained in Burak variety with 314.66 cm; the lowest plant height value was determined in the Hido range with 263.33 cm. The highest stem / plant ratio was obtained in the Burak variety with 58.50 % and the lowest stem / plant ratio was obtained in the TK 6063 range with 41.93 % (Table 5).

Table 5. Average values of the size of the plant and stem/plant ratio for the corn varieties and the Results of Duncan

Size of the plant (cm)			Stem/plant ratio (%)		
Varieties	Averages	Groups**	Varieties	Averages	Groups**
OSSK 644	301.66	a	OSSK 644	51.60	a
HİDO	263.33	b	HİDO	42.40	b
BOLSON	294.00	a	BOLSON	45.90	cd
TK 6063	263.66	b	TK 6063	41.93	d
BURAK	314.66	a	BURAK	58.50	a
SAMADA 07	313.33	a	SAMADA 07	48.70	bc
AVERAGE	291.77		AVERAGE	48.17	

**: The values for the same letter group are not different by Duncan 1 %

Findings in the study in terms of the size of the plant; have parallels with the findings of Kucuk (2011); also these findings have been observed to be higher than the findings of Kusvuran et al. (2015). The differences obtained in the research can be shown as originated from breeding period, ecological factors, cultural processes and genotypic differences. As a matter of fact, Uyanik (1984) stated that factors such as light, water, nutrient status and plant density affect the size of the plant alongside the genetic factors are affective to determine the size in corns. Stem/size of the plant related findings have parallels with Kucuk (2011), Akdeniz et al. (2003). Researchers report that the stem ratio negatively affects the quality of feed, which is why it can be regarded as a positive feature in terms of feed quality (Carpici, 2009).

Leaf/plant ratio (%) and corncob/plant ratio (%)

According to the results of the variance analysis, the difference between varieties in terms of leaf / plant ratio and corncob / plant ratio was statistically significant at 1 % level (Table 4). The highest leaf / plant ratio was obtained from Samada 07 with 22.70 % and the lowest leaf / plant ratio comes from OSSK 644 with 18.20 %. The highest ratio of corncob / plant was obtained from TK 6063 with 38.50 % and the lowest corncob / plant ratio from Burak with 20.37 % (Table 6).

Table 6. Average values of leaf/plant ratio and corncob/plant ratio for the corn varieties and the Results of Duncan

Leaf/plant ratio (%)			**Corncob/plant ratio (%)**		
Varieties	Averages	Groups**	Varieties	Averages	Groups**
OSSK 644	18.20	b	OSSK 644	30.10	bc
HİDO	21.00	ab	HİDO	36.47	ab
BOLSON	19.47	ab	BOLSON	34.50	abc
TK 6063	19.40	ab	TK 6063	38.50	a
BURAK	21.00	ab	BURAK	20.37	d
SAMADA 07	22.70	a	SAMADA 07	28.47	c
AVERAGE	20.30		AVERAGE	31.40	

**: The values for the same letter group are not different by Duncan 1 %

Findings obtained in terms of leaf / plant ratio in the study; Akdeniz et al. (2003) and Kabakci (2014) findings were found similar as the findings of Kucuk (2011) was observed lower. Although the nutrient value and digestibility of the leaves are low in spite of their low values, the ratio of leaves in green grass is required to be high because these ratios are high (Sade et al., 2002). Findings related to the ratio of corncob / plant ratio; happened to be found consistent with the findings of Kucuk (2011), Turan and Yilmaz (2000) and Kabakci (2014); Akdeniz et al. (2003)'s research results were found to be low. The high ratio of leaf and cob in silage is important for silage quality. It can be said that statistical differences in corncob and stem ratios of corn are changed according to locations and genotypes. İptas et al. (2002) reported that the ratio of corn in the corn plant varied according to the genotypes. Kirbas (2009) stated that obtaining silage at high quality from corn and accepting semi-concentrate feed of corn silage is largely attributed to the high ratio of corn and grain in the total crop.

Green grass yield (kg/da) and dry grass yield (kg/da)

According to the results of the variance analysis, the difference between varieties in terms of leaf / plant ratio and corncob / plant ratio was statistically significant at 1 % level (Table 4). The lowest yield of green grass (5694.85 kg / da) and dry grass yield (1431.00 kg / da) were obtained from the Hido variety, while the highest yield was obtained from grass seeds (10820.85 kg / da) and dry grass yield (3006.33 kg / da) (Table 7).

Table 7. Average values of the green grass yield and dry grass yield for the corn varieties and the Results of Duncan

Green grass yield (kg/da)			Dry grass yield (kg/da)		
Varieties	Averages	Groups**	Varieties	Averages	Groups**
OSSK 644	7109.14	bc	OSSK 644	1797.33	bc
HİDO	5694.85	c	HİDO	1431.00	c
BOLSON	6552.85	bc	BOLSON	1792.00	bc
TK 6063	7765.99	abc	TK 6063	1982.33	bc
BURAK	10820.85	a	BURAK	3006.33	a
SAMADA 07	9532.28	ab	SAMADA 07	2447.66	ab
AVERAGE	7912.66		AVERAGE	2076.11	

**: The values for the same letter group are not different by Duncan 1 %

Findings obtained in terms of green grass yield have parallels with Kusvuran et al. (2015). It is thought that factors such as organic matter abundance, number of plants in the unit, variety characteristics, and extreme temperature cause low yields in the area where the experiment is carried out. Some factors, which Soya et al. (1997) produces, such as the number of plants in the unit, the type of corn grown, the maturation period lead to a quantitative character that is affected by all of the factors. Findings related to dry grass yield have some parallels with Kabakci (2014) and Turan and Yilmaz (2000). In harvests during and after the milking period, the minimum levels of assimilate production of plants and the reduction of water content in plant tissues are decreasing in green grass yield, increasing the carbohydrate content and dry matter content (Turan & Yilmaz, 2000).

Weight of corncob (g/plant) and crude protein yield (kg/da)

According to the results of variance analysis, 5 % level was found to be significant in terms of corncob weight statistics, but crude protein yield statistic was insignificant (Table 4). When the highest weight of the corncob was obtained with 317.33 g / plant in accordance with TK 6063; the lowest weight was determined at 220.00 g / plant and Hido. The crude protein yields of the varieties, which were not significantly different between the groups, ranged from 79.70 kg / da to 125.93 kg / da (Table 8).

Table 8. Average values of weight of corncob and crude protein yield for the corn varieties and the Results of Duncan (**: The values for the same letter group are not different by Duncan 1 %)

Corncob Weight (g/plant			**Crude protein yield (kg/da)**	
Varieties	**Averages**	**Groups****	**Varieties**	**Averages**
OSSK 644	227.33	b	OSSK 644	108.75
HİDO	220.00	b	HİDO	79.70
BOLSON	243.00	ab	BOLSON	116.33
TK 6063	317.33	a	TK 6063	104.09
BURAK	232.00	b	BURAK	124.88
SAMADA 07	288.00	ab	SAMADA 07	125.95
AVERAGE	254.61		AVERAGE	109.94

Findings in terms of corncob weight in the study was found lower than Kirbaş (2009) results. It can be considered that factors such as ecological conditions, genetic structure of the crops, number of plants in the unit, low organic matter in the soil cause low corncob weight.

Findings related to crude protein yield were found to be lower than the results of the Kabakci (2014) research.

Crude protein yield is a more realistic criterion than dry hay yield in terms of yield-based preference. Because, for nutritional aspects, the maximum yield of crude protein in the unit area for a feed plant is more important than dry grass yield (Carpici, 2009).

Crude protein ratio (%), pH of silage, ADF ratio (%) and NDF ratio (%)

According to the results of the variance analysis, the difference between the crude protein ratio, pH of silage, ADF and NDF ratios was statistically insignificant (Table 4). The crude protein ratio of the varieties with no statistically significant difference ranged from 4.09 % to 6.27 %, silage pH from 3.67 to 3.90, ADF ratio from 30.40 % to 35.97 % and NDF ratio from 52.90 % to 60.20 % (Table 9).

Table 9. Average values of crude protein ratio and pH of silage and ADF and NDF ratios for the corn varieties and the Results of Duncan

Crude Protein Ratio (%)		**pH of Silage**		***1.1. ADF (%)***		***1.2. NDF (%)***	
Varieties	Averages	Varieties	Averages	Varieties	Averages	Varieties	Averages
OSSK 644	6.08	OSSK 644	3.78	OSSK 644	33.27	OSSK 644	57.83
HİDO	5.49	HİDO	3.85	HİDO	33.47	HİDO	58.17
BOLSON	6.27	BOLSON	3.90	BOLSON	30.40	BOLSON	52.90
TK 6063	5.28	TK 6063	3.69	TK 6063	35.97	TK 6063	60.20
BURAK	4.09	BURAK	3.83	BURAK	35.73	BURAK	56.70
SAMADA 07	5.10	SAMADA 07	3.67	SAMADA 07	33.03	SAMADA 07	57.03
AVERAGE	5.39	AVERAGE	3.79	AVERAGE	33.65	AVERAGE	57.14

**: The values for the same letter group are not different by Duncan 1 %

Findings related to crude protein ratio are found to be lower than Oz et al. (2012)'s findings, but has some parallels with Kusvuran et al. (2015). It was found higher than the research results of Akbay (2012). Findings obtained in terms of silage pH in the study have some parallels with the findings of Kavut and Soya (2012). Senel (1986) indicates that the pH value should be 3.8-4.2 in a quality silage. Our findings are consistent with the values specified by the investigator. Findings related to ADF and NDF ratio in the study are in parallel with Akbay (2012)'s findings; but they are higher than Oz et al. (2012)'s findings. Variations among varieties are estimated to depend on ecological conditions, the genetic makeup of varieties, organic matter in the soil and other plant nutrients.

CONCLUSION

This study was conducted in order to determine some corn silage types which can be grown as the main crop suitable for the climate conditions of Diyarbakir. The result of this study is statistical data of varieties of plant variety, stem / plant ratio, leaf / plant ratio, cow / plant ratio, green grass yield. Crude protein ratio, crude protein yield, silage pH, ADF and NDF ratios were not statistically affected. According to the findings of the study; Plant yields were 263.33-314.66 cm, stem / plant ratios were 41.93-58.50 %, leaf / plant ratios were 18.20-22.70 %, cob / plant ratios were 20.37-38.50, wet grass yields were 5694.85-10820.85 kg / Crude protein yields of 4.09-6.27 %, crude protein yields of 79.70-125.93 kg / da, silage pH values of 3.67-3.90, ADF ratios of 30.40-35.97 % and NDF ratios of 52.90 % -60.20. BOLSON type, leaf / plant type in terms of plant size, stem / plant ratio, green grass yield, BURAK type, cow / plant ratio, in terms of raw protein yield, the SAMADA 07 variety came

to the forefront. Considering the efficiency and quality elements in silage production; BURAK type, which stands out especially in terms of parameters such as age and hay yield, along with plant height, stem ratio, plant leaf ratio, crude protein yield and ADF, can be recommended as silage corn variety in Diyarbakir province climate and soil conditions. More extensive studies should be carried out in different ecological conditions and locations, both as a main crop and as a second crop, in order to better identify the yield differences and feed value of the varieties used in this study.Corn agriculture is increasing every day in the region of Diyarbakir. Demonstration work should be done by organizations engaged in silage maize production to provide information to the regional farmers on variety, harvesting and breeding techniques and thus to obtain better levels of silage maize production in the region. Demonstration work should be done by organizations engaged in silage maize production to provide information to the regional farmers on variety, harvesting and breeding techniques and thus to obtain better levels of silage maize production in the region.

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REFERENCES

Acıkgoz E., Turgut İ., Filya İ. 2002. Silage Plants Cultivation and Silage Production. *Hasad Yayıncılık Ltd. Şti.,* ISBN 975-8377-19-1, 86s

Akbay S. 2012. Tokat Determination of yield and yield characteristics of some corn silage varieties (*Zea mays* L.) which can be grown as second crop in ecological conditions, Master Thesis, *Gaziosmanpaşa Üniversitesi Fen Bilimleri Enstitüsü,* Tokat

Akdeniz H., Yilmaz İ., Andic N., Zorer S. 2003. A research on yield and feed values in some corn varieties *Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Dergisi*,14(1):47-51

Anonymous, 2015. http://faostat.fao.org

Anonymous, 2015. Annual and Long-Term Climate Data for the city Diyarbakır, Meteoroloji Bölge Müdürlüğü, Diyarbakır, 2016b.

Anonymous, 2016. http://tuikapp.tuik.gov.tr/bitkiselapp/bitkisel.zul

Carpici B. E. 2009. Assessment of plant density and different amounts of nitrogen applications in corn silage cultivation in terms of stress physiology, PhD Thesis. *Uludağ Üniversitesi Fen Bilimleri Enstitüsü*, Bursa, s.242

İptas S., Oz A., Boz A. 2002. First crop corn silage production opportunities in Tokat-Kozova conditions, *Tarım Bilimleri Dergisi* 8(4): 267-273

Kabakci S. 2014. Determination of corn silage varieties (Zea mays L.) suitable for Igdir ecological conditions, Master Thesis, *Iğdır Üniversitesi Fen Bilimleri Enstitüsü*, Iğdır

Kavut Y.T. & Soya H. 2012. A study on silage quality characteristics of some corn silage varieties (Zea mays L.) under conditions of Ege region, *Ege Üniversitesi Ziraat Fakültesi Dergisi,* 49(3) s: 223-227

Kirbas A. 2009. Effects of different seed milling and shape on silage hybrid corn yield and some yield items. Master Thesis*, Selçuk Üniversitesi Fen Bilimleri Enstitüsü* Konya, s.31-33

Kucuk B. 2011. Determination of Morphological Characteristics and Feed Yields of Some Corn Silage Varieties Master Thesis, *Ankara Üniversitesi Fen Bilimleri Enstitüsü*, Ankara, 29-38

Kusvuran A., Kaplan M., Nazli R. İ., Saruhan V., Karadag Y. 2015. Determination of some corn silage (Zea mays L.) varieties growing facilities under the ecological conditions of Orta Kızılırmak basin *Gaziosmanpaşa Üniversitesi Ziraat Fakültesi Dergisi*, 32(1): 57-67

Oz A., İptas S., Yavuz M., Kapar H. 2012. Determination of self-healing lines suitable for silage hybrid corn breeding, *Tarım Bilimleri Araştırma Dergisi,* 5(1): 42-46

Sade B., Budak M. A., Acar R., Arat E. 2002. Determination of suitable corn silage varieties in Konya's ecological conditions, *Hay. Araş. Derg*., 12 :1-2

Senel H.S. 1986. Animal Feeding, *İstanbul Üniversitesi Veteriner Fakültesi Yayınları*, İstanbul

Sonmez F., Ulker M., Ciftci V. 2001. A study on the effect of different cultivars on the yield of some corn cultivars and their effects on different characteristics, GOÜ Ziraat Fakültesi Dergisi, 18(1):113-118

Soya H., Avcıoglu R., Geren H. 1997. Feed plants, Hasad Yayıncılık Ltd. Sti., Pk: 212, S: 223, Kadiköy- İstanbul

Turan N. & Yilmaz İ. 2000. In the Van conditions, Determination of the yield and some yield components of some silage corn cultivars grown as crops, *Atatürk Üniversitesi Ziraat Fakültesi Dergisi*, Erzurum, 31 (2) : 63 – 71

Uyanik M. 1984. Botanical characteristics of the corn plant, *Karadeniz Bölge Zirai Araştırma Enstitüsü Yayınları No*: 1984-1, Samsun

Yolcu H. & Tan M. 2008. An Overview of the Agriculture of Forage Bred in Turkey, *Tarım Bilimleri Dergisi, Ankara Üniversitesi Ziraat Fakültesi* 2008 14(3) 303-312