Determination of Optimum Seed Sowing Time for Six Different Sorghum Cultivars in Purpose of Silage Production in Mediterrenean Coastline

Mehmet ÖTEN
Batı Akdeniz Agricultural Research Instıtute, Antalya

Sadık ÇAKMAKCI
Akdeniz University Faculty of Agriculture, Field Crops Department, Antalya
cakmakci @akdeniz.edu.tr

Abstract: Six different sorghum cultivars **(**Gözde 80, Rox, Leoti, Early Sumac, Nes ve N 4692xRox**),** registered by Mediterreanean Agricultural Research Institute, were sown in different periods in order to determine the optimum sowing time. The experiment was conducted in a split plot design with three replications. Count of 50% blooming days, count of full blooming days, forage yield, dry matter production, and leaf-stem-bunch ratio were determined.
The Rox cultivar comes to number one since the enhance of green foliage have been demanded. The dry matter production having been evaluated as the most important property in terms of slage quality and production. Nest comes to fore at the first and second and at fourth Rox, at fifth period Gözde 80, respectively. The first week of May was determined to be optimum time compared to other seed sowing period in view of the climatic conditions data of year, on which the experiments were conducted and the pronounced performance of cultivars within other different seed-sowing time

Keywords: Sorghum, sowing time, silage.

Introduction

Mediterranean region of Turkey has suitable climate and soil conditions for production of many forage crops. In our country, for silage production purpose, maize and sorghum are take first place. The increasing importance of sorghum as an important livestock feed in the Turkey. Sorghum is more resistant to drough, high temperatures, diseases and pests than maize (Mcginth, 1972; Anonymous 1990; Aslangiray *et al.* , 1991; Tüsüz *et al.* 1984). Various studies showed the effect of different sowing times on the quality of silage of sorghum (Çakmakçı *et al.* 1999).

The aim of this study was to determine the effects of different sowing times on silage quality of various sorghum cultivars.

Material and Methods

In this study, six different sorghum (*Sorghum bicolor* (L.) Moench.) cultivars (Gözde 80, Rox, Leoti, Early Sumac, Nes and N 4692xRox)**,** registered by Mediterreanean Agricultural Research Institute, were used as plant material. The research was conducted at the research field situated in Batı Akdeniz Agricultural Research Institute Field Crop Department in Antalya-Turkey. In this study, 5 different sowing time (1st sowing time (1-10 April), 2nd sowing time (20-30 April), 3rd sowing time (1-10 May), 4th (20-30 May) and 5th sowing time (20-30 May)) were tested to determine to optimum sowing time for sorghum cultivars.

Trails are as follows: count of 50% blooming days, count of full blooming days, forage yield**,** dry matter yield and leaf-stem-bunch.

The experiment was laid out with three replications in a randomized complete block design (RCBD). The main factor consisted of 6 diffirent cultivars. The second factor consisted 5 different sowing time. Data were analysed

with MSTAT-C software package programme (Freed *et al.* 1989). The means were seperated using Duncan Multiple Range Test at 0.05 levels.

Results

In this study, different sowing times (1st, 2nd, 3rd, 4th and 5th) in combination with various sorghum cultivars (Gözde 80, Rox, Leoti, Early Sumac, Nes and N 4692xRox), were tested. The responses of different sowing times varied with various cultivars.

The effects of different sowing times on count of 50 % blooming days, count of full blooming days, green forage yield and dry matter yield are shown Table 1, 2,3 and 4. Looking into, 50 % blooming days and statistical analyses are evaluated, it can be seen that cultivars and sowing times reciprocal interaction between cultivar and sowing time are significanty effective.

The count of 50 % blooming days changed between 49.00 and 72.17 days. While the highest record was determined from 1st sowing time, the lowest record was determined from 5th sowing time.

Cultivars	Sowing time				
	1st	2nd	3rd	4th	5th
Leoti	72.17 a	64.33 e	61.17 g	55.83 k	53.00 n
Nes	65.83 d	59.33 h	55.17 kl	58.50 ı	52.00 o
Gözde 80	65.67 d	61.00 g	55.67 k	53.67m mmm	49.33 q
N4692xRox	69.50 b	62.00 f	58.17 ı	58.83hı	51.83 o
Rox	69.83 b	61.67 fg	56.50 j	58.83hı	50.83 p
E.sumac	67.50 c	59.50 h	54.83 l	53.83m	49.00 q
Ortalama	68.41	61.30	56.91	56.58	50.99

LSD:0.66

Table 1. Count of 50 % blooming days responses to different sowing time with various sorghum cultivars

In the study conducted on count of full blooming days, the count of full blooming days ranged from 52.83 to 77.17 depending on sowing time (Table 2). The highest count of full blooming days was recorded by 1st sowing time in Leotti cultivar. On the other side, the lowest count of full blooming days was recorded by 5st sowing time in E. Sumac cultivar.

Cultivars	Sowing time				
	1st	2nd	3rd	4th	5th
Leoti	77.17 a	67.83 f	65.33 ghı	61.17 o	56.83 r
Nes	72.67 cd	64.83 ı	60.17 p	62.00 mn	56.17 rs
Gözde 80	72.00 de	65.83 gh	61.50 no	58.33 q	56.00 s
N4692xRox	73.33 c	65.17 hı	62.50 lm	63.33 jk	55.17 t
Rox	74.33 b	66.00 g	61.33 no	62.83 kl	54.50 t
E.sumac	71.33 e	63.83 j	58.67 q	58.50 q	52.83 u
Ortalama	73.47	65.58	61.58	61.02	55.23

LSD: 0.74

Table 2. Count of full blooming days responses to different sowing time with various sorghum cultivars

Resuts obtained from the present study indicated that sowing time and cultivars had significantly effect on green forage yield (Table 3). Green forage yields were found 9428.5 by 1st sowing time and 9688.7 by 5th sowing time.

Cultivars	Sowing time				
	1st	2nd	3rd	4th	5th
Leoti	9111 hıjk	8356 ıjk	9556 ghı	986 7efg	7789 jk
Nes	9156 hıjk	12040 abc	11690 bcd	12070 hı	9644 fghı
Gözde 80	9289 ghıj	7689 k	10360 def	11290 abc	11820 bcd
N4692xRox	9200 hıjk	10800 cdefg	10800 gh	8444 bcd	5089 l
Rox	10840 cdefg	11200 bcdef	13380 a	12130 ıjk	11160 bcdef
E.sumac	8978 hıjk	9689 fghı	11420 bcd	12530abc	12600 ab
Ortalama	9428.5	9962.3	11201.0	11055.2	9683.7

LSD: 1350

Table 3. Green forage yield (kg/da) responses to different sowing time with various sorghum cultivars

The effects of different sowing times on dry matter yield of various sorghum cultivars is shown Table 4. Results reveal that the effects of sowing time and cultivars are statistically significant. Upon examination of data in Table 4, the highest dry matter yield were determined by E. Sumac cultivar with 3725 kg/da in 4th and 5th sowing time.

Cultivars	Sowing time				
	1st	2nd	3rd	4th	5th
Leoti	2260 ıj	2383 hıj	3068 cdef	2369 hıj	2369 hıj
Nes	3033cdefg	3655 abc	3698 ab	2715 fghı	2715 fghıj
Gözde 80	2934 defgh	2416 ghıj	3140 bcd	3937 a	3937 a
N4692xRox	2838 defghı	3219 bcdef	3260 bcd	1391 k	1391 k
Rox	3019 defg	3176 bcdef	3958 a	2762 fghı	2762 fghı
E.sumac	2758 fghı	2818 efghı	3461 abc	3725 ab	3725 ab
Ortalama	2807.0	2944.5	3430.8	2816.5	2816.5

LSD: 531.6

Table 4. Dry matter yield (kg/da) responses to different sowing time with various sorghum cultivars

Conclusion

It was found that different sowing times effected on sorghum silage quality. The results show that the selection of sowing time depends on cultivars.

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