

PERFORMANCE OF SOME FORAGE RAPE CULTIVARS IN BURSA PROVINCE OF TURKEY

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SUMMARY

The main aim of this study was to find out the growing possibilities and to determine forage and protein yields of six forage rape cultivars during winter and early spring seasons in Bursa region.

The cultivars showed outstanding spring vigor and yielded good herbage during two experimental years. The cv.'s Bishop and Semu-81 were consistently superior than the others in hay yield. Also, the highest crude protein yield was produced by cv. Bishop.

This study clearly showed that forage rapes can be grown successfully as a catch crop for pasture or silage purposes during winter and early spring in Bursa province.

ÖZET

Bu araştırma, Bursa ilinde kış ve erken ilkbahar döneminde, altı yem kolzasının yetiştirme olanakları ile kuru ot ve protein verimlerini saptamak amacıyla yapılmıştır.

İki yıl sürdürülen araştırmalarda, çeşitler iyi bir ilkbahar gelişmesi göstermiş ve yüksek bir ot verimi vermişlerdir. Ot verimi yönünden Bishop ve Semu-81 çeşitleri diğer çeşitlere göre daha üstün bulunmuştur. Çeşitler içerisinde en yüksek protein verimi yine Bishop çeşidinden elde edilmiştir.

Bu çalışma, Bursa ili kış ve erken ilkbahar mevsimlerinde, yem kolzalarının ara ürün olarak otlatma ya da silaj yapımı amacıyla başarılı bir şekilde yetiştirilebileceğini göstermiştir.

INTRODUCTION

Rape seed is one of the most important oil crop in the world. It is a major oil crop in some parts of the temperate regions (Bunting 1986). Uses of rapes as a

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forage or soiling crop, are very limited, though it has quick growing ability and produces nutritious and palatable forage for all kinds of livestock. It is considered as a good fattening crop particularly for lambs and cattle in some areas (Ostgard 1973, Anonymous 1983, Kimber 1984).

Recently, forage rapes and some *Brassica* hybrids have received more attention for their green herbage during winter or early spring season (Joseffson, 1972). In coastal areas and transition zones of Turkey including Bursa province winters are mild and rainy, being favorable for this crop production. Wheat/sunflower cropping system is widely practiced in dryland parts of Bursa province. In this system, sunflower fields lie fallow during winter and early spring. The main objective of this study during this certain period, was to find out the growing possibilities and to determine forage and crude protein characteristics of some German forage rape cultivars in this Province.

MATERIAL and METHOD

The climate at study area was characterized by hot and dry summers, mild or cool and rainy winters. Average annual precipitation was 700 mm and approximately 40 percent of which fell during active growing period. The soil texture was loamy. No irrigation water was applied during the period of study.

The names and origins of forage rape cultivars used in this study were Anja, Medin, Semu-80 and Semu-81 from Semundo Saatzücht, and Bishop and Raps 37/79-55 from L.C. Nungasser K.G. Seed companies (W. Germany). In falls of 1983 and 1984, cultivars were seeded on experimental plots at the Faculty of Agriculture, Bursa, in a completely randomized block design with three replications. Plot size was 25 m² and rows were spaced 40 cm apart. Seeding rate was 10 kg/ha for each cultivar. Before seeding, all plots were fertilized with 20 kg/ha N and 50 kg/ha P₂O₅. Hand-hoing was done for weed control when it was necessary.

In the early spring, each plot was examined and graded for spring vigor from 1, the poorest through 5, the best. At the first flowering stage, 8 m² area in each plot was harvested and its green herbage was weighed. Approximately 2 kg of green herbage of each plot was fractionated into stem + inflorescence and leaf portions. All fractions were dried at 70°C for 48 hours, and weighed again to obtain their percentages and total yields. Nitrogen analysis were done on ground samples in two replications using the micro-Kjeldahl method.

The data were analysed as described by Turan (1987).

RESULTS and DISCUSSIONS

Two-year data from this study are given in Table 1. The cultivars, Semu-81 and, particularly Bishop showed outstanding spring vigor in both years. Although the analysis of variance for green herbage yield indicated a significant cultivar x year interaction. Bishop and Semu-81 were consistently more superior than other cultivars tested. Each produced more than 40 mT/ha green herbage. With the exception of cv. Anja, leaf percentages of all rape cultivars were quite similar. Dry matter yield of cv. Bishop was clearly higher than those of other cultivars. It produced

more than 20 mT drymatter per hectare. The cv. s Semu-81 and Medin took the second and third lines, respectively. But no significant difference between them was noted in Duncan's multiple range tests. Leaf percentages of the cultivars on dry-matter basis were very close. However, the cv's Semu-81, Raps. 43/79/55 and Bishop were slightly superior in this respect.

According to analysis, plant fractions differed in crude protein contents. The leaf portion of rapes contained 23.0 percent crude protein, but it decreased to 8.1 percent in stems. No clear difference between cultivars in crude protein contents was noted. However, cv. Bishop showed the highest crude protein yield and cv. Anja the lowest approximately 80 percent of this protein yield came from leaves in all cultivars (Table 1).

Table: 1

Spring vigor, forage yield and crude protein characteristics of six forage rape cultivars grown under Bursa ecological conditions for two years

Cultivars	Spring Vigor*	Green Herbage		Dry Matter		Crude Protein	
		Yield (T/ha)	Leaf (%)	Yield (T/ha)	Leaf (%)	Yield (T/ha)	Contribution of Leaf (%)
Anja	3.0	31.16	33.2	13.57	57.4	2.01	77.6
Bishop	4.4	43.65	40.8	20.82	61.1	3.65	82.7
Medin	3.2	39.22	37.0	16.98	54.9	2.62	79.0
Raps							
43/79/55	2.8	31.93	37.5	13.70	62.3	2.50	81.6
Semu-80	2.9	33.74	39.6	13.50	58.5	2.50	80.0
Semu-81	3.9	42.26	38.8	17.97	64.2	2.99	81.6
Average	3.4	36.99	37.8	16.09	59.7	2.71	80.4

*: 1 the poorest, 5 the best.

This present study clearly showed that if forage rape is seeded in fall it should be cut for forage in Mid-March. This cutting time is normally 2-4 weeks earlier than sunflower seeding in the region. It seems that it is quite possible to produce 30-45 mT green herbage or 10-20 mT drymatter per hectare in this practice. This forage yield was clearly higher than yields of annual forage legumes such as common vetch (*Vicia sativa* L.), hairy vetch (*V. villosa* Roth) or field pea (*Pisum sativum* ssp. *arvense* L. Poir) grown in the same period under experimental conditions (Çakmakçı and Açıkgöz, 1987). In addition, rape forage is favorably comparable with their forages in crude protein content. But it was found that crude protein yield of rapes was clearly higher than annual forage legumes tested.

In summary, forage rapes can be grown successfully as a catch crop on fallows for pasture or silage crop during winter and early spring in Bursa province. However, effect of rapes on the yield and quality of a subsequent crop has not been studied yet. Therefore, some research works related to this subject must be conducted under field conditions.

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