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Acar Z., Ayan I., Tongel O.

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Overview on grassland and farming systems in Samsun province

Z. Acar*, I. Ayan and O. Tongel

Ondokuz Mayis University, Samsun (Turkey)
*E-mail: zekiacar@omu.edu.tr

Abstract. Samsun province is one of the important provinces for its high agricultural potential in Turkey. Around 45% of the province total area is suitable for cultivation. Crop production makes 81% of the total agricultural income. However, the average farm size is very small at about 4 hectares. In order to sustain the existence of small enterprises, livestock and the cultivation of forage crops with a higher added value should be developed accordingly. For this purpose, there should be more forage plants in crop rotation systems. High yielding forage crops in irrigable lands and drought-resistant, ever green plants in summer period in non-irrigable sloping lands are necessary to provide the animal feed chain with high energy resources.

Keywords. Samsun – Turkey – Crop area – Forage – Grasslands – Feeding gap.

Vue d'ensemble sur les pâturages et les systèmes de production dans la province de Samsun

Résumé. *Samsun est l'une des provinces importantes pour son potentiel agricole élevé en Turquie. Environ 45% de la superficie totale province est cultivable. La production agricole fait 81% du total des revenus agricoles. Toutefois, la taille moyenne des exploitations agricoles est très faible, à environ 4 hectares. Afin de soutenir l'existence de petites entreprises, de l'élevage et la culture de plantes fourragères à plus forte valeur ajoutée devraient être développes. À cette fin, il devrait y avoir plus de plantes fourragères dans les systèmes de rotation de cultures. Ils sont nécessaires des cultures fourragères à haute rendement sur les terres irrigables et de plantes résistantes à la sécheresse, toujours vertes en période estivale sur les terrains non irrigables et vallonnés, pour fournir la chaîne alimentaire animale en ressources a valeur énergétique élevé.*

Mots-clés. *Samsun – Turquie – Superficie de culture – Fourrage – Pâturage – Écart d'alimentation.*

I – Introduction

Samsun Province is one of the important provinces for its high agricultural potential in Turkey. Each year, Samsun is always in the top ten of Turkish 81 provinces in terms of the value of agricultural production (TurkStat, 2010).

There is a high agricultural production in Çarşamba and Bafra Plains with 170,000 hectares area in total and also in the coastal plains and in the plains among the mountains. Samsun Province is in the leading position in rice, corn, and vegetable cultivation (Hekimoglu and Altindeger, 2007) and in water buffalo milk and milk production in Turkey.

II – Farming systems in Samsun

The total area of Samsun Province is 958,000 hectares and this area covers 1.22% of Turkey's total area. Samsun Province is in the first ranks in terms of the ratio of cultivated lands to total area, with around 45%. After agricultural lands, forest and non-cultivated lands are predominant. Meadow and pastures cover only 33,700 hectares (Table 1).

Table 1. Land use distribution in the province of Samsun

	Total cultivated agricultural lands and perennial plants		Meadow and pastures		Forest		Total land size and position in Turkey	
	ha	%	ha	%	ha	%	ha	%
Samsun	432,718	45.2	33,721	3.6	358,107	37.4	958,000	1.22
Turkey	24,437,000	31.0	14,617,000	18.6	21,390,000	27.3	78,355,700	100.00

Source: TurkStat (2010).

Table 2 shows that approximately 86,000 enterprises exist in Samsun; 85% of these enterprises are mixed enterprises with plant and animal production. However, the average farm size is at the level of 4 hectares and below the average in Turkey. Considering animal husbandry, the average number of cattle ranging from 2-4 is very common in small family enterprises. This situation makes it impossible for the continuation of efficient and competitive agricultural activity.

Table 2. Number of agricultural enterprises and their structures in Samsun and Turkey

	Number of agricultural enterprises	Average land size per enterprise (decare)	Number of livestock per enterprise
Samsun	86,381	40	2-4
Turkey	3,100,000	62	2-4

Source: TurkStat (2010).

Crop production occupies a large proportion in agricultural production in the province of Samsun. Across the province, 81% of agricultural income is provided from crop production. This value is at the level of 72% in Turkey (Table 3). High-quality plants such as rice, tobacco, corn and some vegetables are grown in Samsun (Table 4). Approximately 25% of total national production of spinach, leek, cauliflower and different types of cabbages takes place in Samsun. Therefore the percentage of crop production in Samsun is above the average of Turkey. However, small agricultural enterprises with small farm size are common in our province. In order to sustain existence of small enterprises, livestock and the cultivation of forage crops with a higher added value should be developed accordingly (Anon., 1999; Hekimoglu and Altındeger, 2007; Acar, 2008).

Table 3. The distribution of agricultural income in Samsun and Turkey

Type of income	Samsun (%)	Turkey (%)
Field crops	20.20	27.34
Vegetables	45.70	20.50
Fruits	15.10	24.40
Fishery products	0.76	2.02
Animal products	18.24	25.74

Source: Statistics from Samsun Provincial Directorate of Agriculture (2010).

Table 4. Important crops grown in Samsun and comparison with Turkey

Name of product	Samsun			Turkey	
	Cultivated area (ha)	Production (t)	% Turkey	Cultivated area (ha)	Production (t)
Soybean	2,505	8,606	9.94	23,472	86,540
Rice	14,463	125,182	14.60	99,000	860,000
Hazelnut	88,341	83,830	14.00	667,865	600,000
Tobacco	5,125	3,208	6.18	80,977	51,912
Corn	33,835	194,797	4.5	593,551	4,310,000
Vegetable	33,695	1,348,207	3.28	729,415	24,021,132
Wheat	103,090	252,039	1.30	8,103,400	19,674,000

Source: TurkStat (2010).

III – Grassland farming and animal husbandry in Samsun

Alpine meadow vegetation on the plateau has the majority of the pasture lands in Samsun. Meadow and pastures are in the public domain in Turkey. They have been given to the common use of villages and as a result, excessive and irregular grazing occur in the region. Therefore, pasture yields in Samsun and generally in Turkey are low (Sabanci *et al.*, 2010).

Forage crops are produced in about 51,000 hectares in Samsun and this value corresponds to 11% of total cultivated area. The main forage crops cultivated in our province are vetch, maize for silage, oats, sainfoin and alfalfa. Totally 1 million tonnes green forages are obtained from the cultivated lands (Table 5). The annual estimated green pasture yield is around 500,000 tonnes. Approximately 3.4 million tonnes of green fodder is required to feed farm animals in Samsun, whose numbers are shown in Table 6. The remaining portion (1.9 million tonnes) is provided from beneath orchard production, crop production residues and other roughage obtained from other regions.

Table 5. Forage crops and production in Samsun

	Cultivated area (ha)	Production (t) (fresh yield)
Fodder beet	15	750
Alfalfa	546	18,587
Sainfoin	1,078	19,257
Oats (hay)	2,755	38,174
Maize (silage)	14,590	468,400
Triticale (hay)	165	2,310
Vetch (hay)	31,756	456,394
Ustilago reiliana (hay)	80	1,562
Total	50,985	1,005,474

Source: Statistics from Samsun Provincial Directorate of Agriculture (2010).

Coastal plains are very fertile for the production of higher-yielding products such as vegetables, rice and corn. High yielding forage plants should find more place in rotation systems in these fertile irrigated lands. Extensive farming is performed inlands due to limited irrigation facilities, climatic conditions and landscape. In fact, these regions are more suitable for the production of

livestock and forage crops (Acar, 2008). Indeed, livestock and dairy farming in recent years have started to develop the inland areas. In order to increase sustainability and profitability of this situation, high-quality forage production should be encouraged and supported as more than 70% of input is feed in farm management (Avcioglu *et al.*, 2009).

Table 6. Number of farm animals in Samsun and comparison with Turkey

Number of animals	Samsun		Turkey
	Number	% of Turkey	
Sheep	132,854	0.57	23,089,691
Goat	12,604	0.20	6,293,233
Cattle	282,493	2.48	11,369,800
Water buffalo	11,380	13.43	84,726
Total	439,331	1.07	40,837,450

Source: TurkStat (2010).

The two periods in a year with deficit in green forages are mid summer and winter months. In fact, during summer months, animals try to meet their feed needs by grazing on pastures. However, pastures are non irrigable lands, and pasture lands is mostly dominated by cool season plants. These plants are dried up and they are not able to meet feed gap (Tosun *et al.*, 1991). Therefore, high yielding forage crops in irrigable lands and drought-resistant, ever green plants in summer period in non-irrigable sloping lands are necessary to provide the animal feed chain with high energy resources (Acar and Ayan, 2011). Cattle are kept under shelters and silage, haylage and dry hay are used to feed them in winter period. Therefore production of silage, haylage and dry hay should increase for winter feed.

IV – Conclusion

Crop production dominates the animal production in Samsun. However, it is possible to say that crop farm is not profitable and sustainable due to the small farm size of around 4 hectares. Vegetable production, horticulture, organic agriculture, animal husbandry and forage production providing a higher gain per unit area, should be supported to sustain small enterprises in Samsun.

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