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Full Length Research Paper

Important legume and grass forage crop species commonly found in natural mountain grasslands in Yusufeli - Artvin[1]

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ABSTRACT: Study was conducted in natural grasslands of Artvin Province, Türkiye in 2003. The aim of the study was to determine the species of *Leguminosae,* Gramineae and other families and their percentage in the grassland vegetation. Modified wheel point method was employed to study the vegetation in 20 grassland zones. Grassland quality degrees and condition classes were identified through Resource and Enviromental Data Interpretation System (REDIS) package software. As a result of the study, 95 species were determined of which 17 legume, 20 graminae and 58 other families. Species of the other families constituted the 50,4% of the botanical composition while the shares of leguminosae and gramineae species were 23,4% and 26,2% in the total. Regarding the contribution to the botanical composition 9 leguminoseae forage species (*Onobrychis hajastana, Trifolium hybridum, Medicago papillosa, Trifolium alpestre, Trifolium ambiguum, Vicia caracca, Medicago varia, Trifolium pratense and Lotus corniculatus) and 10 gramineae species (Bromus erectus, Dactylis glomerata, Bromus tomentellus, Festuca sp., Androgopogon sp., Koeleria cristata, Poa pratensis, Agropyron repens, Phleum montanum, Agropyron intermedium)* were determined. The most frequent legume and gramineae species in the studied areas were *Onobrychis hajastana* and *Agropyron intermedium* with the rates of 2,63% and 2,55% respectively. This analysis revealed that half of the studied grassland zones was in medium quality while the rest was in good class.

Keywords: legume, forage crop species, Yusufeli -Artvin, Türkiye

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Introduction

As it is worldwide case grasslands are important natural resources as being free roughage sources for animal production and a natural equilibrium factor. Pastures and meadows, composed of a wide variety of species, are rich sources of biodiversity. In the studies conducted in Türkiye, the species found in the plant cover have been classified in three groups, i.e. grass, legume and other families (Koç 1995). Over and irregular use of the climax vegetations in time resulted in that higher quality species have diminished and they have replaced with poor quality and harmful ones. In continuous irregular use of grasslands, botanical composition changes consistently and good quality species decreases and the species disliked by grazing animals, become dominant (Gökkuş 1999). In order to increase and maintain the productivity of the grasslands it is of great importance to determine the attributes and distributions of the species of grasslands regarding the management and ecological aspects. The aim of this study is to determine the plant species of natural grasslands in Yusufeli. Determination of the important legume and grass family of plants positively contributing to the quality of grasslands was also included in the objectives of the study in order to highlight the future grassland improvement and management studies.

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Material and Method

This study was carried out in the natural grasslands of Yusufeli district of Artvin province, Türkiye in 2003. Study area, located in Çoruh River basin, has an altitude of 560 m and long years of average temperature varies between 2,7-25,7 °C from minimum to maximum. Average annual precipitation is 159,2 mm. Summer time is very hot in valleys and the plain areas as cooler in plateaus with higher altitudes. Winter time is warm and relatively wet. Precipitation is usually seen in late spring and early summer time (Anonymous 2005). Vegetation studies were conducted in randomly chosen relatively homogenous 20 grassland zones with respect to topography and climate in June and July in 2003. In vegetation study, modified wheel point method, explained by Koç and Çakal (2004), was used (Figure 1). Altitude, latitude and longitude recordings were made through Global Positioning System (GPS) apparatus. Grassland quality degrees and condition classes were identified by using Resource and Environmental Data Interpretation System (REDIS) package software.

Figure 1: Modiefied wheel point apparatus

Results and Discussion

In total of 2000 records were collected and 1376 plants were identified. In total of 95 species of which 17 legume, 20 grass and 58 other families, were coincided. In botanical composition the shares of the species by family groups were 23,4%, 26,2% and 50,4% respectively for legumes, grass, and others in increasing order. Similar results were reported by Koç and Gökkuş (1996) and Şimşek (2005). 9 legume (*Onobrychis hajastana, Trifolium hybridum, Medicago papillosa, Trifolium alpestre, Trifolium ambiguum, Vicia caracca, Medicago varia, Trifolium pratense, Lotus corniculatus)* and 10 grass family of plants *(Bromus erectus, Dactylis glomerata, Bromus tomentellus, Festuca sp., Koeleria cristata, Poa pratensis, Agropyron intermedium, Androgopogon sp., Agropyron repens, Phleum montanum)*, which contributes to the botanical composition positively, were determined. Vegetation study results were given in Table 1.

It was revealed that half of the studied grassland zones were in medium quality while the rest was in good class.

Frequency of the legumes in the vegetation varied between 4 and 36 in the studied area. In general, having been found in medium and good grasslands in altitudes from 900 to 2196 m asl these species were distributed in places with slopes of 5-68%. In legumes, *Onobrychis hajastana,* was the most frequent specie as *Lotus corniculatus* (0,3%) was the rarest.

Table 1. Important species found in the study area

Species	Frequency	Longitude	Latitude	Altitude (m)	Slope (%)	BC* (%)
Legumes						
Onobrychis hajastana	36	37,736139	45,24130	900-2136	5-65	2,6
Trifolium hybridium	28	37,694183	45,16588	1953-2136	20-65	2,0
Medicago papillosa	24	37,741961	45,32969	1560-2136	20-68	1,8
Trifolium alpestre	18	37,694183	45,16588	1885-2136	10-21	1,3
Trifolium ambigium	12	37,741961	45,32969	1995-2196	5	0,9
Vicia caracca	12	37,710438	45,05891	1550-1885	10-65	0,9
Medicago varia	10	37,736139	45,24130	1550-1770	21-65	0,7
Trifolium pratense	7	37,736139	45,24130	2136-2196	5-65	0,5
Lotus corniculatus	4	37,728563	45,35610	1885-2050	10	0,3
Grasses						
Agropyron intermedium	35	37,726307	45,39782	1250-2136	10-65	2,6
Bromus erectus	29	37,736139	45,24130	2050-2197	5	2,1
Dactylis glomerata	29	37,694183	45,16588	1050-2136	10-65	2,1
Bromus tomentellus	28	37,730174	45,16614	660-2040	10-65	2,0
Festuca sp.	16	37,736139	45,24130	1885-2196	5-10	1,2
Androgopogon sp.	11	37,705961	45,11593	765	40	0,8
Koeleria cristata	10	37,741961	45,32969	765-2196	5-40	0,7
Poa pratensis	4	37,726307	45,39782	1995	5	0,3
Agropyron repens	2	37,700035	45,04576	1050	51	0,1
Phleum montanum	1	37,700035	45,04576	1050	51	0,1

* Botanical Composition

On the other hand, frequency of the grass family in the vegetation was between 1 and 35. These family plants were usually found in altitudes of 765-2197 m asl in medium and good grasslands with slopes from 5 to 68%. The most frequent grass specie was *Agropyron intermedium* (2,6%) while *Phleum montanum* (0.1%) was the rarest.

Moreover, it was determined that *Artemisia* sp. *Achillea* sp., *Mentha longifolia ve Thymus parviflorus*, considered among aromatic and medicinial plants due to their chemical compound contents were common in the study area.

Results and Discussion

The quality grass and legume species determined in this study, conducted in the natural vegetation of Yusufeli district in Çoruh valley, are the most valuable species. So it is of great importance to consider the characteristics of these species in rightful improvement and management programs for productivity, nutritional value and soil protection aspects.

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