PERIODIC REST FROM LIVESTOCK GRAZING IMPROVES THE RANGELANDS OF MITHAWAN, D. G. KHAN

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Abstract

The inhabitants of Mithawan protect family owned rangelands in summer each year by constructing loose stone walls for free grazing during winter. In October 1995, species wise cover percent, density and above ground biomass data were collected to detect vegetation differences between protected and unprotected area. Twenty 1 m^2 quadrats were studied randomly in both the areas.

The cover percent (10%) and above ground biomass (216 kg/ha) of *Chrysopogon aucheri* were higher three times in protected area than that of unprotected area, but its density remained unchanged which shows that the species is a grazing resistant. The cover percent (5%), above ground biomass (78 kg/ha) and density (3) of *Cymbopogon jawarancusa* were higher in un-protected area. The data show that *Chrysopogon aucheri* is a decreaser while *Cymbopogon jawarancusa* is an increaser under prevailing free grazing in Mithawan rangelands. The higher cover percent, above ground biomass and density of *Chrysopogon aucheri* and *Eleusine compressa* in protected area reveals that the grazed rangelands of Mithawan can be improved by providing periodic rest from grazing during growing season.

Introduction

Protection from grazing is often used to improve the vegetation of heavily grazed rangelands. Vegetation changes in the protected and grazed areas have been compared by various researchers in different ecozones. Airdried above ground biomass and vegetation cover percent in the protected area was significantly higher compared to adjacent grazed area (Khan, 1977 and Noor 1978 & 1989). Richard and Cushing (1982), Thurow *et al.* (1986), Tucker (1987) and Schulz and Leininger (1990) found that as a result of protection from grazing substantial increases in biomass, vegetation cover and density had occurred. This study was conducted to determine changes in vegetation in protected and unprotected sites located in arid ecozone, Mithawan.

Material and Methods

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The Mithawan hill torrent is approximately 993 k.m^2. The Dholi pilot watershed project a component of Mithawan hill torrent was implemented on 2861 ha, in 1995. The cultivated and range area constitute 204 ha (7%) and 2657 ha (93%) respectively. The elevation varies from 600 to 1300 meters. The human and livestock population were estimated at 3400 person and 5998 animal heads. Population of sheep, goats and cattle was 2937, 2123 and 716 heads respectively. Livestock rearing is the major economic activity and it contributes more than 60% to the family income. The system of construction of lose stone walls has been developed by the local tribes after centuries of evolution.

The terrain is hilly, rugged steep and rock outcrop is common. The area is dissected by gullies and streams. The parent material consists of conglomerate, shale, sand stone and limestone. The fans and foot slopes were dissected due to lowering of base level and meandering effects of Siri nullah. The soil is course textured, have high infiltration and low water holding capacity. Agriculture depends upon the perennial flow of water from Siri nullah.

The area falls in summer precipitation zone. The mean annual rainfall is 200 mm and 45% of it occurs in the form of conventional summer shawers. The mean maximum and minimum annual temperatures are 40°C in June and 7°C in January. May and June are the hottest dry months. (FAO, 1995).

Vegetation

The relief, slope, aspect and altitude determines the vegetation of the area. The rainfall pattern favours the growth of warm season vegetation. Main species of the area are:

Trees/Shrubs

Acacia modesta, Prosopis ceneraria, Salvadora oleoides, Zizyphus mauritiana , Zizyphus nummlaria, Indigofers oblongiflia, Astragalus spp *Nepata* spp. *Grewa* spp., *Tamorix dioica* and *Stocksia* spp.

Grasses

Chrysopogon aucheri, Cymbopogon jawarancusa, Aristida depressa, Heteropogon contortus, Saccharum munja, Eleusine compressa, Cenchrus ciliaris, Hyparrhenia spp. and *Lasiurus sindicus.*

Livestock production is an important component in Mithawan. Year long free uncontrolled grazing on range lands is common in the form of sedentary and semi-nomadic grazing patterns. The inhabitants exclude the livestock from