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OPEN AND OVER GRAZING LOOSING BIODIVERSITY AND INTRODUCING NEW WEEDS AT UTTARKASHI DISTRICT OF UTTARAKHAND STATE#

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Abstract

Grazing ecology that refers to analysis of biotic and abiotic influences on the grazing process is an upcoming discipline of ecology, moving out of the shadows of the overall range of grassland ecology (Shankar and Singh, 1996). Grazing usually refers to the process of complete or partial removal of the living or dead aboveground parts of herbaceous plants (Hodgson, 1979), and grazing ecology aims at 'understanding interactions and inter-relationships of the plant-animal interface' (Heady and Child, 1994). Considering the recycling of minerals in the grazing ecosystem, the linkage with the soil assumes crucial importance. Hence, it is desirable to bring soil-plant-animal interactions in to the fold of grazing ecology. Grazing ecology also derives strength from the concept of co-evolution of pasture plants and herbivores (McNaughton, 1985; Heady and Child, 1994).

Keywords: Weeds, nomadic grazing, new weeds invasion, fertilizers, fungicides

#Short Communication

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Introduction

Uncontrolled grazing is highly detrimental to grassland regeneration. Trampling, grazing and browsing kills most of the seedlings. Uncontrolled grazing has done the maximum damage to the Indian grasslands particularly to their regeneration. Grazing compacts the soil, reduces aeration, and upsets the soil water regimes, increases run off and risk of erosion. It throws the succession back several stages of retrogressive deterioration. Grazing tends to make excessively moist area drier. Bor (1942) has rightly pointed out that excessive grazing by goats, sheep and cattle may not only destroy the forest crop but converts the area in the barren ground.

Plant body structure, primary productivity and the conservation of energy are greatly influenced by chemical composition of soil and its type. The studies of mineral cycling have practical bearing on forestry and agriculture where the recommendations need to be based on precise knowledge of amount of the element involved in the life cycle of plant and their subsequent fate, till return to the soil (Agrawal, 1989). Shankar *et al*. (1975) studied the pattern of interspecific association in Sehima- Heteropogon grasslands under three different system of management. They reported burning as a factor that can change the nature of correlation of plant species in tropical grassland, opined that negative association can be considered as differential habit requirement in which one species tends to exclude the other. Vegetation is not a random assemblage of individuals rather they are distributed in some characteristic pattern and have definite structure and composition. This is due to interaction between the species and also due to similar response of plants to the some microclimate. The plants growing in such communities may exhibit interspecific association or may be distributed independently. Many of the behavioral characteristics of any species are social in nature and cannot be observed in a single individual isolated from others of its own kinds. Such characters are concerned with interspecific relationship and occur only when species are growing together. Thus, the concepts of association and correlation have been used as a tool for understanding the biological relationship among species (Sundriyal and Joshi 1992).

Four factors are especially important: density, timing, size and chemistry. For instance, at very high densities, green foxtail plants tend to compete strongly with each other and thus remain very small. These small plants probably have little competitive effect on the crop even when there are many of them. At medium densities, green foxtail plants grow larger and can severely reduce crop yields. In this example, a reduction in weed numbers may actually increase the weed problem.

Material and Methods

Uttarkashi district is located in the catchment of two major river system of India i.e. Ganga,Yamuna and tributaries. The district lies between N 30^0 27′ latitude and E 78^0 54′ to 79^0 25′ longitude and has a total geographical area approximately 8016 sq. km. Among of which 21% land are used fr Agriculture or Horticulture. So traditional crop like cereal plants are *Tritium vulgare* (wheat), *Oryza sativa* (rice) and that make about 75% of total cereals of Uttarkashi rest *Zea maiz* (Maize). The minor cereal plants viz *Elusine corsicana* (samak) and pseudo cereals like *Fagopyrum esculentum* (kutu), *Amaranthus causation* (Ramdana) etc are included in remaining 25% of cereals. More than eight

species of family Papilionaceae viz. *Dolichos lab lab* (Sem), *Glycine max* (soybean), *Pisum sativum* (matar), *Lens esculentum* (masoor), *Phaseolus munga* (urd), *Phaseolus radiatus* (moong), *Vigna sinensis* (Rajama) etc were produced by organic methods except Rice and Wheat.

After heavy grazing and infestation of chemical, fertilizer, insecticides, fungicides and seeds from outer agencies, it has been observed by us weeds crops drastically increased however production of the crops increases in the area through the support of hybrid seed, chemical, fertilizer, insecticides, fungicides etc.

Result

During the survey at Uttarkashi villages i.e Gainwla (Barshali), Chinyali, Matli , Dhrashu etc following weeds were observed either fields and nearby area of farming fields during Ravi, Khariff and Jayad session. Following weeds replace our natural grasses of the area .

S. N	Botanical name	Local Name	Life Span	Habit	Family
1	*Amaranthus viridis*	Junga-li chaulai	Jan-Dec	Erect	Amaranthaceae
2	*Avena fatua L.*	Jawatu	Apr-May	Erect	poaceae
3	*Chenopodium album*	Bathua	Jan-Dec	Erect	Euphorbiaceae
4	*Coronopus didymus L. Smith*	Jungle ajwan	Mar-Oct	Erect	Brassicaceae
5	*Convolvulus arvensis*	Heyranpatu	Sep-April	Climber	Convolvulaceae
6	*Cleome viscose L.*	Jakhya	Jul-oct	Erect	Cleomaceae
7	*Cynodon dactylon L. pers*	Dubla	Apr-Jul	Grass	Poaceae
8	*Cyperus compressus L.*	Murya	Jul-Nov	Sedge	Cyperaceae
9	*Cyperus rotundus L.*	Motha	Jul –Dec	Grass	Cyperaceae
10	*Eclipta prostata L.Mant.*	Bhangiri	Mar-Sep	Prostrate	Asteraceae
11	*Eleusine indica L. Gaertn*	Jharnpriya-kodu	Jul-Nov	Grass	Poaceae
12	*Euphorbia heterophylla L.*	Dudhya	Feb- Aug	Erect	Euphorbiaceae
13	*Euphorbia hitra L.*	Chota-dudya	Sep- Oct	Erect decumbent	Euphorbiaceae
14	*Lantana camera L.*	Kuri Ghas	Jan- Dec	Erect	Verbenaceae
15	*Malva parviflora*	Soncheli	Jan-June	Prostrate	Malvaceae
16	*Medicago polymorpha*	Ghadu	Aug-Sep	Decumbent	Fabaceae
17	*Melilotus alba Medikus*	Safed senji	Aug-Oct	Erect	Fabaceae
18	*Melilotus indica(L)*	Ban methi	Aug- Oct	Erect	Fabaceae

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19	*Oxalis latifolia Humb.*	Bilmoria	Jan- Oct	Erect	Oxalidaceae
20	*Polygonum plebeium*	Dondya	Jan-Dec	Erect	Polygonaceae
21	*Rumex hastatus*	Almoro	Feb-Oct	Erect	Polygonaceae
22	*Solanum nigrum*	Makoi	Aug-Sep	Annual	Solanaceae
23	*Tridex procumbens*	Kanphuli	Jan-Dec	Erect	Asteraceae
24	*Anagallis arvensis*	Billi booti	Feb-Oct	Erect	Primulaceae
25	*Asphodehus tenuifolius*	Bhokat piazi	Jan-Dec	Erect	Asphodeliace
26	*Achyranthes bidentata*	Chicheree	Jan-Dec	Annual/ Erect	Amaranthaceae
27	*Asparagus racemosus*	Satrawar	April –October	Perennial	A.racemosus.
28	*Centella asiatica*	Brahmi butti	April -October	Prostate	Asteraceae
29	*Carthamus oxycantha*	Pohli,Kandiari	April - September	Annual weed	Asteraceae
30	*Fumaria indica*	Shahtra, Pitpapra	Jan-Dec	Semi erect, Annual weed	Fumariaceae
31	*Glium aparine*	Wambooti	Jan- Dec	Annual/ erect	Rubiaceae
32	*Lathyrus aphaca*	Dokanni	Annual	Jan -May	Papiolanaceae
33	*Lathyrus sativus*	Kurri, Chraal ,Kasseri	Annual	Dec- May	Papiolanaceae
34	*Lepidium sativum*	Halon	Annual	Dec -Jan	Brassicaceae
35	*Phalarish minor*	Dumbi sittee	Annual	Jan-July	Poaceae
36	*Saponaria vaccaria*	Takla	Annual	July -Dec	Caryophyllacea e
37	*Spergula arvensis*	Van dhaniya Kalri booti	Annual	Dec - Jan	Spergulaceae
38	*Stelleria media*	Stelphullan booti	Annual	July - March	Caryophyllacea e
39	*Eupatorium adenophorum*	Kala bansa/ Bhangu	Annual	Erect	Astraceae
40	*Ageratum houstonianum*	Fulmundya/ pardeshi ghas / flossflower	Annual	Semi Erect	Asteraceae

Conclusion

It can be concluded from the present study that open grazing disturbs the species distribution in the studies grasslands, communities. The most palatable species get eliminated from the area due to heavy grazing and less palatable species took places of the

eliminating species. The green biomass of the species was also observed reducing due to excessive grazing and trampling of the grazing animals. The correct capacity of the grazed plot was also get affected due to open free grazing. Thus, open free grazing practice for the temperate grassland is found to have negative effects on the studies parameters. It has been observed by author's 20% new weed species invaded and 10% old species replaced by new weed species and most of new species are occurred from outside seeds, nomads (Shepherded/Gujjars). These Shepherded and Gujjars comes here every march of the year from plain area with their sheep, goats, buffalo, horse , cow and bullock etc. carrying with different kinds of weeds through their animals external organs i.e hair, tail, horns, foot etc. Weeds are attached to their external organs and reached till grater Himalaya (above 4000Mtrs). Authors suggested that nomadic grazers should clean their extremities'. It has also been obserbes after using chemical, fungicides, the numbers of weed increases and our traditional crops are almost weed less.

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