BIOMASS DYNAMICS OF SOME PLANTS OF PARASNATH

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ABSTRACT:

Tourism, the second largest industry of India which is often termed as smokeless industry through its invisible expert leads to employment generation, foreign exchange earnings and revenue collection which ultimately boost financial status of an area. It however is a process where influx of a large number of people at a particular time and place take place which is bound to inflict negative effect on environment of that place. So the proposed research work conceived and formulated to keep requirement of such database. Parasnath an important tourism destination of Jharkhand has been selected for this case study.

During present investigation six common species of Parasnath hill were taken. Their above ground and below ground matter was investigated to get an idea regarding the effect of tourism on overall productivity of the plants.

INDEX TERMS: **Parasnath, Tourist area, above ground biomass, below ground biomass**.

I. INTRODUCTION :-

Tourism, the second largest industry is being accepted as a major tool for socioeconomic upliftment of an area. Often termed as smokeless industry, tourism through its invisible expert leads to employment generation, foreign exchange earnings and revenue collection which ultimately boost financial status of an area. Tourism however is a process where influx of a large number of people at a particular time and place take place which is bound to inflict negative effect on environment of that place. Total dry matter is considered as a measure of its system's efficiency to fix energy (Kucera, C.L, 1967).This excess organic matter is of great importance because organism of other trophic level depend upon it. The allocation of carbon (C) to ANPP and BNPP in forests has been the subject of several reviews (Nadelhoffer and Raich1992; Gower et **al.** 1997), and remains an important topic for future research because global changes in climate and pollution loading are intimately tied to this balance.In some communities, shoots may die throughout the growing season while newshoots emerge (Mathews & Westlake, 1969).

The important contributions to the production relation of grassland communities of India have been revised by sing (1976) Pandey (1977) Tiwary& Sing (1981).During analysis of productivity above ground and below ground is taken into consideration and they are treated as separate compartment. The proposed research work conceived and formulated to keep requirement of such database. Parasnath an important tourism destination of Jharkhand has been selected for this case study.

During present investigation six common species of Parasnath hill were taken. Their above ground and below ground matter was investigated to get an idea regarding the effect of tourism on overall productivity of plants.

II. MATERIAL AND METHODS :-

Plant species for present investigation were collected from both above grounds as well as below ground. Biomass was studied by simple harvest method. Plants were selected randomly and 20 individuals of each species were uprooted taking care of underground system. The above ground and below ground portions were separated and their dry matter was estimated. For dry matter estimation plant parts were oven dried at 80^0C and weight of dried plant parts was taken carefully. Plant selectedforpresent study were –

Euphorbia hirta L.
Sida cordifolia L.
Desmodium triflorum Vail.
*Cynodon dactylon (*L.*)* Pers.
Tridax procumbens L.
Evolvulus alsinoides L.
Dicanthium annulatum (Forssk.) Stapf

III. RESULT AND DISCUSSION :-

Euphorbia hirta L., *Sida cordifolia* L., *Desmodium triflorum* Vail, *Cynodon dactylon (*L.*)* Pers., *Tridax procumbens* L., *Evolvulus alsinoides* L., *Dicanthium annulatum* (Forssk.) Stapf. are the species selected for present study. The above ground dry matter of *Euphorbia hirta* in controlled condition was recorded to be 0.0067 gram plant^{-1}. Thecorresponding value for this plant in tourist area reduced to 0.0063 gram plant^{-1}. So far the below ground biomass is concerned it was 0.0014gm plant^{-1}in touristarea and was 0.0021 gm plant^{-1} in controlled condition.

Above ground dry matter of *Evolvulus alsinoides* in controlled condition was found to be 0.0038 gm plant^{-1}while the value for touristarea was recorded 0.0116 gm plant^{-1}. So, far the below ground biomass is concerned, it was 0.0005 gm plant^{-1} in controlled condition whereas it was 0.0029 gm plant^{-1}in tourist area.

Above ground dry matter of *Sida cordifolia* in controlled condition was found to be 0.0115 gm plant^{-1}whilethat oftouristarea was recorded to be 0.0072 gm plant^{-1}. So, far the below ground biomass is concerned its value was 0.0063 gm plant^{-1}in controlled condition where as 0.0015 gm plant^{-1}in tourist area.

In case of *Desmodium triflorum*, the above ground dry matter was found to be 0.0064 gm plant^{-1}in controlled condition while the value for tourist area was recorded 0.0026 gm plant^{-1}. On the other hand the value was found to be 0.0026 for below ground biomass in controlled condition where as 0.0056 gm plant^{-1}in tourism area.

Above ground dry matter of *Cynodon dactylon* in controlled condition was found to be 0.0041 gm plant^{-1}while the value for tourism area was recorded 0.0152 gm plant^{-1}. So, far the below ground biomass is concerned its value was 0.005 gm plant^{-1}in controlled condition where as 0.028gm plant^{-1}in tourist area.

Above ground dry matter of *Tridax procumbens* in controlled condition was recorded to be 3.8 gm plant^{-1}while the value for tourism area was recorded 0.0038 gm plant^{-1}. The below ground biomass on the other hand was found to be 0.022 gm plant^{-1}in controlled condition and its value was 0.020gm plant^{-1}in tourist area.

Above ground dry matter of *Dicanthium annulatum*in controlled condition was recorded to be 0.0046 gm plant^{-1} while the value for tourism area was recorded 0.0033 gm plant^{-1}. The below ground biomass on the other hand was found to be 0.0032 gm plant^{-1} in controlled condition and its value was 0.0024 gm plant^{-1} in tourist area.

Results clearly indicates that tourism significantly affects the overall ecosystem. Various plants of tourism area responds differently to changed situation according to their own metabolic capacity and the same is manifested in their above ground and below ground biomass production. *Euphorbia hirta* recorded decrease in biomass because of tourism activityconditions. Similarly a fall in both above ground and below ground biomass was noticed in *Sida cordifolia* and *Evolvulus alsinoides*. There was no change in above ground biomass for *Tridax procumbens* which may be due to its complete adjustment to the adverse condition whereas its below ground portion shows increase in biomass which may be due to the fact that it is adjusting to the adverse condition and during this process it tries to keep its nutrients and other substances in its roots as a defense mechanism against the adversity. Also the below ground biomass of two species *Cynodon dactylon and Tridax procumbens* also increase due to the same reason as stated above. In all other plants the biomass decreased in the adverse condition of tourism. This clearlyindicate that the above mentioned species are finding it hard to survive in tourism conditions. On the other hand some species exhibited considerable increase in their biomass. Some species are prevalent in tourism area and they have adjusted their assimilatory capacity in changed circumstances.This fact is

further manifested in marked change in biomass of controlled as well as tourism area.The results of present investigation indicate that tourism area is also responsible for change in productivity but it varies from species to species.

IV. TABLE

Table 1: Table showing above ground biomass and below ground biomass of tourist area andcontrolarea of different plant species.

Sl. No.	Name of the species	Above ground biomass (gm plant $^{-1}$)		Below ground biomass (gm plant $^{-1}$)	
		Tourist area	Control area	Tourist area	Control area
1	*Euphorbia hirta* L	0.0063	0.0067	0.0014	0.0021
2	*Sida cordifolia*L.	0.0072	0.0115	0.0025	0.0063
3	*Desmodium triflorum* Vail.	0.0064	0.0026	0.0026	0.0056
4	*Cynodon dactylon (*L.*)* Pers.	0.0041	0.0152	0.040	0.028
5	*Tridax procumbens* L.	0.038	0.038	0.022	0.020
6	*Evolvulus alsinoides* L.	0.0038	0.0116	0.0005	0.0029
7	*Dicanthiumannulatum*(Forssk.) Stapf.	0.0046	0.0033	0.0032	0.0024

V. ACKNOWLEDGEMENT

The authors of this paper kindly acknowledge support from the Department of Botany, Vinoba Bhave University, Hazaribag and all those who directly or indirectly helped us in doing this project at any point of time.

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