CHAPTER 8

SUMMARY
1. Introduction:

Phytodiversity is defined in terms of genus, species and ecosystem, corresponding to their fundamental and hierarchically related levels of biological organization i.e. species diversity, genetic diversity and ecosystem diversity. It is a concept, which refer to the range of variation of difference among same set of entities thus refers to variety within the plant kingdom. Phytodiversity is thus indeed commonly used to describe the number, variety and variability in plants. It is commonly used as synonym of plant taxonomy. Plant taxonomy is the most fundamental and the basic branch of Botany.

2. Objectives:

The Phytodiversity study leads to an up to-date knowledge of the vegetable resources and raw materials; the supplementary food plants and those providing fodder for the animals species that carry medicinal value and the data that throw some light on the Phyto geographical problems. Further, it is difficult for a post-graduate and research department in Botany to function unless the plants occurring in the surroundings are not well known. The important aspects of study include:

1. Survey of major places of District for 2 years in different seasons, collections of plant material particularly Angiosperms.

2. Preparation of herbarium sheets.

3. Maintenance of herbarium, especially prepared for flora of Sikar District.

4. Authentication of the collected plants from various states and National herbaria.

5. Medicinal value of various plants, if any use for local people of the District.
6. Providing means of identification to the flora components from family to infra-specific level through keys and diagnostic descriptions.

7. Standardization of nomenclature of plants according to the ICBN, along with local names.

8. Determinations of the flora and sketch of biological spectrum.

9. The outcome of this study will be a valuable document for taxonomic study, for P.G. student & research scholar.

3. Study area:

Sikar district is situated in the North of Rajasthan state between 27° 13'N, 28° 07 E/27.21° N 28.12° N. It occupies an area of about 7742.44 km². In the present work, attempt has been made to make an intensive survey of the Phytodiversity of the following tehsils of the Sikar district in Rajasthan namely; Sikar, Fatehpur, Laxamangarh, SriMadhopur, Dantaramgarh and Neem ka Thana.

The district is located in the north-eastern part of the state of Rajasthan. It is bounded on the north by Jhunjhunu district, in the north-west by Churu district, in the south-west by Nagaur district and in the south-east by Jaipur district. It also touches Mahendragarh district of Haryana.

The district has an area of 7742.44 km², and a population of 26,77,737 (2011 census). Sikar, Churu district and Jhunjhunu district's comprise the Shekhawati region of Rajasthan. The district has hot summer, scanty rainfall, a chilly winter season and general dryness of the air except in the brief monsoon season. The maximum and minimum
temperatures are 47 to 48 and 1 to 0 degree celcius. The average
temperature around the year is about 16 to 20 degree celcius. The normal
rainfall mostly received from south west monsoon is 459.8 mm.

4. Climate:

The Sikar district has a semi- dry/semi-arid climate. The climate of the
district has diurnal and seasonal variation in temperature and rainfall.
The average yearly temperature is 16° -20° C. The absolute minimum and
maximum temperatures recorded in Sikar are 1° C and 47° -48° C,
respectively. The winter season from November to March is followed by
the summer from April to June. The period from about the beginning of
July to the middle of September constitutes the rainy period. January is the
coldest month and May and June are the hottest months of the year. Hot
and dust rising winds are present throughout the area during summer. The
mean annual rainfall is 70 mm.

5. Methodology:

All the angiosperm species of the area have been collected and
described afresh, taking measurements of all the important parts of the
plant, flower, fruit and seed.

In the present studies the key for identification of the families have
been given after Bentham & Hooker’s system of classification. However, at
places Hutchinson’s classification was used for further splitting up of the
families. Key to Genera and species apply mostly to the plants have been
included in the present studies. An attempt has been made to describe the
plants in detail. The local name of the plants have noted by queries with
local people. In few cases particularly grasses the earlier descriptions
have been modified in accordance with actual specimen under study. All
the specimens were identified with the help of latest monographs and flora
and were later confirmed by matching the plants with authentic specimens
at the Forest Research Institute, Dehradun and Botanical Survey of India,
Jodhpur.

Result and Discussion:

The important statistics of the Phytodiversity studies are as under:

(A). Phytodiversity analysis;

In the present work 1 Algae, 2 Pteridophytes, 1 Gymnosperm and
351 Angiosperms species have been described. In total these fall into 80
families, 246 genera and 355 species (Table-4).

The family *Poaceae* maintains highest diversity among
angiosperms and monocotyledons both, containing 41 species under
27 genera. Fabaceae finds first rank in Polypetalae and third rank in
overall with 23 species and 14 genera and Asteraceae finds first rank
in Gamopetalae and second rank in overall with 28 species and 23
genera.

The genera with 3 or more species are: *Ipomoea* (7),
*Heliotropium* (5), *Cyperus* (6), *Cassia* (8), *Indigofera* (6),
*Aerva* (3), *Digitaria* (3)
Except for *Poaceae* (41 species) and *Cyperaceae* (8 species), the monocotyledons are very poorly represented. The remaining 12 species belong to 6 different families. The families represented by single genus and single species are: *Areceae, Typhaceae, and Hydrocharitaceae*.

Among the dicotyledons, the class Polypetalae is dominant and represented by 144 species belonging to 102 genera and 39 families. The families represented by single genus and single species are: *Papaveraceae, Fumariaceae, Polygalaceae, Portulacaceae, Elatinaceae, Oxalidaceae, Simaroubaceae, Balanitaceae, Meliaceae, Anacardiacea, Moringaceae, Rosaceae, Lythraceae, Punicaceae, Cactaceae and Apiaceae*. The largest family of this group is *Fabaceae* which comprises 23 species belonging to 14 genera.

The class Gamopetalae finds second place and it is represented by 20 families having 75 genera and 104 species. The families represented by single genus and single species are: *Plumbaginaceae, Primulaceae, Oleaceae, Salvadoraceae, Periplocaceae, Ehretiaceae and Pedaliaceae*. The largest family of this group is *Asteraceae* having 28 species and 23 genera.

The class Monochlamydeae is represented by 42 species belonging to 27 genera and 9 families. The families represented by single genera and single species are: *Proteaceae, Canabinaceae and Urticaceae*. The largest family of this group is *Amaranthaceae* having 13 species belonging to 8 genera (Table-6). The ratio of species belonging to Monocotyledons to Dicotyledons is 1:4.75, of genera.
1:5.36 and of families 1: 8.5. The ratio of the total number of genera to species under present study is 1:1.44, which is rather high in comparison to a corresponding for of India is 1:7, Rajasthan is 1:2.4, Gangetic plains is 1:2.2 and Desert is 1:1.9.

(B). Biological Spectrum

The observation based on present study (Table-9) revealed that 355 species of vascular plants may be divided into six major life-form classes. About 93 species belonging to Phanerophytes (26.1%), about 92 species belong to Chaemophytes (25.9%), 24 species to Hemicryptophytes (6.76%), 143 species to Therophytes (40.28%), and 3 species belong to Geophytes (0.84%).

It is evident from the comparative studies that the Therophytes are more than three times (40.28%) than that of the normal spectrum. Phanerophytes (26.1%), however, they are less than that of the normal spectrum (46%). Hemicryptophytes (6.76%) are less than that of the normal spectrum (26%). Chaemophytes (25.9%) are more than that of the normal spectrum (9.0%). Thus, the biological spectrum of the flora of Sikar district indicates 'Thero-phanerophytic' phyto-climate as this class shows the greatest divergence from the normal spectrum.

List of paper published;