Grasses comes from Old High German word *"gras"* – generally used for livestock grazing and they evolved in late cretaceous era (Stromberg, 2011; Prasad *et al*., 2011). Grasses and their values have been recognized since time immemorial as the present day cereal crops are the cultivated varieties of their wild ancestors. Use of grasses, as food resources or as fodder has led to extensive breeding programs and improvement in pasture land. In India concept of scientific pasture management has not been properly planned, despite the fact that India has one of the largest livestock populations in the world, with an estimated 520 million heads.

Grasses are uniformly distributed on all continents and in all climatic zones. They are cosmopolitan in distribution with important centers of diversity in Brazil, Central North America, Southern-east Africa, and Australia and occupy the whole world. Surprisingly grass species (Gramineae members) are more in Arctic regions than the other familes. They are able to grow in a range of habitats like marshy area, desert, water, water logged area, etc. (Clayton and Renvoize, 1986; Osborne *et al*., 2011).

Grasslands (also called greenswards) are one of the most important natural resources and ecologically productive land (Trivedi et. al., 2007). They occupy approximately 25% (33 x l06 km^2) of the land surface of the earth (Shantz, 1954). Current estimates of the global extent of grasslands range from 16% (Whittaker and Likens, 1973, 1975) to 30% (Ajtay *et al*., 1979). The difference between the estimates of the potential extent of grasslands and the current extent provides an indication of the degree to which humans have, and are, modifying this ecosystem type. In the temperate regions much of the area of natural grasslands has been converted to cropland. In the subtropical and tropical regions in the area occupied by savannas is increasing as a result of conversion of forest to pasture for domestic livestock. Rather than this, in Savana grassland mostly found warm and hot climatic condition, having rainfall varies between 500-1000 mm. Humans have had an enormous influence on the structure and function of grasslands worldwide. In India, the total area covered by grassland is around 72 million ha. (Mishra, 1978). To a large extent the potential distribution of grassland ecosystems is determined by climatic variables, principally temperature and precipitation (Whittaker, 1975). In general, grasslands occur between forests and deserts. They are located in areas in which water availability falls below the requirement for forest at some time during the year, but is sufficient to support grasses as the dominant plant type.

Socio-economics is the study of the relationship between economic activity and social life. The field is often considered multidisciplinary, using theories and methods from sociology, economics, history, psychology and many others. It has emerged as a separate field of study in the late twentieth century. In many cases, however, socio economists focus on the social impact of some sort of economic change.

Current knowledge of fruits/seeds of grass species is very meagre. External features of seeds and small fruits tend to be neglected in Floras, and even in detailed

taxonomic studies, which is suprising in view of the stability and high systematic value of external characters (Lawrence, 1951). Morphological features of caryopses have been used in many studies to identify and compare genera and taxa (Peterson and Sanchezvega, 2007). These characters had been recognized as basic criteria for identifiacation and authentification of plants (Yousuf *et al*., 2008).

Sufficient knowledge on morphology and identification of very young seedlings of such species regenerating and establishing in natural forests is also lacking. Seedlings have been grown under the lab conditions and also analyzed for their characteristic features in the field to ease the identification of the good quality grasses in the field itself before their full growth. This will help the foresters even to remove the highly unpalatable grasses growing in the field at its seedling stage itself, making way for the higly palatable grasses to grow without much of competition.

Apart from this micromorphological study is also very important as a systematic point of view. Many workers have reported micromorphological features of the grass leaves. Desai (2012) studied morphology and micromophology of 182 grass species of South Gujarat. Caryopses morphology and anatomical variations have not been studied much.

Anatomical studies of grasses have provided some important diagnostic features in coastal and inter-coastal parts (Metcalfe, 1960; Ogundipe and Olatunji, 1992; Keshavarzi *et al*, 2002). Metcalfe (1960) in his book on "Anatomy of the monocotyledons, I. Gramineae" and several papers dealing with the anatomy of grasses and anatomical peculiarities such as root, culm and leaf anatomy and epidermal characteristics etc. have been used in grass systematic at generic and specific level. Wleaherwas (1930) studied the endosperrn of *Zea* and *Coix* and he summarized that the embryo of *Zea* and *Coix* is present only on one side by the endosperm but latter on it was surrounded expect at the base. Endosperm shows at maturity a higher degree of differentiation than is ordinarily attributed to it. Rost (1973) studied caryopsis coat in mature caryopses of *Setaria lutescens*. Rost *et al.* (1990) studied caryopses anatomy of the *Briza maxim.* They observed that seed coat cuticle extends all around the caryopses, except in the plancental pad region. In the present study attempt to describe the anatomical features of culm, leaf parts and caryopses have been carried out.

In the present thesis some of the lacunae in the detailed study of information of 100 grass species growing in Panchmahal and Dahod districts have been tired to be covered up. It has been divided into two volumes.

Volume 1 includes morphological and morphometric studies. It covers the following aspects in details:

- Diversity of grasses found in Panchmahal and Dahod districts.
- Socioeconomic study was carried out to identify the different potential uses of the grass species and their associated members growing in these regions by the tribals.
- Morphological features of the collected mature grass species.

- Characterization of the caryopsis using its morphological, micromorphological and morphometric characters.
- Seedling features and dichotomous key to identification of the species have been prepared.

Volume 2 includes the vegetative anatomical studies carried out of the different parts of 100 grass species. It covers the following aspects in detail:

- Caryopsis anatomy
- Culm anatomy
- Leaf anatomy
- Dichotomous key to identification of the 100 species have been prepared individually using anatomical characters of caryopsis, culm and leaf.
- Identification of species belonging to a particular genera has been given at the end of the detailed description of species.

Photographs depicting the diagnostic features have been included along with the text in the respective volumes.

Objectives of the present study were as follows:

- Documenting diversity of grass species in Panchmahal and Dahod districts of Gujarat.
- Collection, identification and storing of the collected species by preparing herbarium.
- Socioeconomic survey of Baria and Godhra forest divisions to identify economic value of the collected species.
- Characterization of grass species seedling and preparation of key for identification of the grass species at seedling stage.
- Study anatomical features of vegetative parts and preparation of dichotomous key to the identification of these grass species.
    - Culm
    - Leaf
        - ❖ Leaf blade
        - ❖ Leaf sheath
        - ❖ Ligule
- Characterization of grass caryopses and preparation of dichotomous key to the identification of these grass species
    (a) Morphological and micromorphological
    (b)Anatomical
- Identification of species belonging to a particular genera has been given at the end of the detailed description of species.