GENERAL INTRODUCTION:

Forest Floor is a rich source of flora and fauna and plays a very dynamic role in maintaining the stability of ecosystem on earth. Diversity among forest floor plants species often proves to be instrumental for the sustenance of many a major species and in addition, that may make provision for supplying many a commodity of real worth. Scanty sun light that enters through the canopy of forest trees encourages copious growth of herbs and climbers (Kenders and Standover, 2003) beneath the trees. Forest floor plants often treated as weeds, thus, regulate the ecological niche and are also necessary to restore the soil texture, pH, spectrum of nutrients, organic content of soil, water retention capacity, drainage capacity of soil and a host of other determinants.

Weeds that grow spontaneously on forest floor are used by the forest dwellers to maintain various traditional needs of their lives. In recent years lots of researches have been helped to identify various economically important aspects of earlier considered weed plants, although lots more to be done to facilitate the development of mankind. Virtually weeds are considered as plants with aggressive growth and reproduction and invasiveness in and outside of its natural habitat (Janick Jules 1979).

In a critical sense weeds can survive in various climatic conditions, reproduction rate is very high and has a purposeful role of utility to human (David Quammen, 1998). There are 250,000 plant species, of which 8000 are weed. Total 3% of plants throughout the world is considered as weed.

To the forest fringe villagers weed is a ‘grace of God’ for providing food, medicine, fuel, fiber as well as fodder for animal. For proper exploitation, utilization and sustainable development of these natural resources a concrete knowledge of their habitat, life cycle,

nature, variations, biotic and abiotic interactions, physicochemical properties and the extension of dependence of local people's life on them is very much necessary.

Phenology is an important aspect that deals with the time of major events taking place in the life process of a plant, right from its germination till maturity. Carolus Linnaeus first began to explore the phenological nature of known plants in Sweden in middle of eighteenth centuries. His book 'Philosophia Botanica' depicted the process for compiling annual plant calendar of leaf opening, leaf fall, flowering and, fruiting correlating with climatological views. Phenological knowledge helps in better management of forest ecosystem and evaluation of growth period's length. Phenology is also related to the growth of crop and impact of insects on yields, flowering and fruiting time, insect and disease infestation. Phenology includes seasonal changes of the periodic events of plant species in connection to their climatic alteration. Generally, herbs reproduce in rainy season whereas woody trees consider summer or hot season for flowering and fruiting (Bhat and Murali, 2001; Joshi and Janardanam, 2004; Ramirez and Briceno, 2011), Every plant species exhibits particular relation with specific weather factors (Ramirez and Briceno, 2011). Influence of weather change on plant life form was investigated and documented by Naeem and Wright (2003) and by Linderholm, (2006). It has been noted flowering of most plant species are influenced either by dry weather or phylogenetic force or several times both during summer season (Godoy *et. al*, 2009; Singh and Kushwaha, 2006). Period of fruiting phenology has been significantly investigated in relation with variable abiotic factors like temperature, rainfall etc. For instance, a research in connection of the phenology of Mexican Neotropical forest exhibited fruiting peak in dry season for most of the species and there was a negative relation between precipitation and number of plant species in fruiting (Cortes-Flores *et. al*,2013). Temperature has been noted as an important factor influencing flowering and fruiting phenology (Rathcke and Laccy, 1985). There are

so many distinct factors for flowering and fruiting including moisture (Schnelle,1955), spatial scales (Goulart, *et. al*, 2005), nutrient concentrations (Wielgolaski, 2001) and day length (Imaizuki and Kay, 2006). Phenology of different trees and shrubs has been learned elaborately by different workers (Dahlgren. *et. al*., 2007; Gariglio, *et. al*, 2012), but the study of phenology of herbaceous plants are scarce (Kudo, 1992; Risberg and Granstorm, 2009). Few studies like study related to diversity of the phenophases for the length of inflorescence in *Ocimum basilicum* L, (Bonnardeaux, 1992), evaluation of flowering time of *Ocimum basilicum* L, including the literatures of Basker and Puttievsky, (1978); Lemberkovics *et. al*., (1993); Randhawa and Gill, (1995); Lemberovics *et. al*., (1996); Gill and Randhawa, (1996); Gupta, (1996) can be of worth mentioning.

Intraspecific diversity promotes formation of new ecotypes, ecophenes, chemotypes, cytotypes etc. Functional variation was properly considered as the part of biodiversity that is measured for those species occurred in an ecosystem, by range of values for organismal traits which affects ecosystem functioning (Tilman,2001). This species-based concept was elaborated to incorporate intraspecific plasticity (Violle *et. al*., 2007; Cianciaruso *et. al*., 2009), which is now well accepted as an important contributing factor to community wide functional plasticity (De bello *et.al.*, 2011; Albert *et.al.*, 2012; Violle *et. al.*, 2012). Diversity in the functional traits of conspecific individuals often becomes comparable to variation between two species (Medrano *et. al*., 2014; Mitchel and Bakkar, 2014,). Intraspecific diversity shows an immense source of communitywide variance for some traits (Auger and Shipley, 2013; Kang *et.al.*, 2014). Research on individual diversity has shed light on different instances of interrupted plasticity pertaining to morphologically or functionally different variants of leaves (heterophylly, heteroblasty), fruits (heterocarpy), or seeds (heterospermy, heteromorphism) (Mandak,1997; Wells and Pigliucci, 2000; Imbert, 2002; Matilla *et.al*., 2005, Zoz*tet.al*., 2011).

The analysis on natural variation in ecologically valuable traits has an impressive role in evolutionary biology (Turesson, 1922, Clausen, Keck and Hissey, 1948). Distribution and abundance of a species is affected by natural selection, gene flow and genetic drift (Christine and Monica, 1999). If the species is introduced in a new environment, then they exhibit a little bit genetic variation due to genetic bottle neck and drift experienced by the small founding population (Barrett and Richardson, 1986). Genetic variations or local adaptations considers as very poor if selection is weak, unpredictable or gene flow carries among population (Antonovics, 1976). The environmental factors are responsible for plant diversity as well as habitat of individual are major cause of genotypic plasticity (Turesson, 1922). Morphological plasticity of an individual is regulated by various environmental factors. (Schlichating, 2012). Plants exhibit a number of phenotypic variability in response to environmental change (Ivancich, *et. al*. 2012).

Morphology of a plant sample plays a vital role in identification of a plant. External morphology of a plant includes stem, leaf, flower, fruit and seeds characters. If morphological features are not enough to explain diversity then anatomical characters plays a vital role on it (David *et al.,* 2008). Different traits like leaf surface, Leaf length and width, leaf margin are necessary parameters for systematic and phylogeny study of a plant (Meyer, 1959). Physiological, morphological and anatomical diversity plays a significant role for adaptation of a plant influenced by environmental changes. Especially physiological variations and life-history based traits allow individuals to grow and reproduce temporarily or spatially by environmental factors (Gratani, *et. al*.,(2006. Kuiper and Kuiper, 1998). However morphological diversity is more related to the plant capacity for growth in forest floor (Navas and Garnier, 2002, Crick and Grime, 1987). Lots of studies focused on morphological variations to understand the intraspecific variation has already been carried out throughout the world by different research workers like Mezghami *et al*., (2017),

Aryakia. *et.al*. (2016), Priya *et. al.* (2015), Slomka *et.al.* (2012), Mwase *et al* (2014), Whitlock *et al*, (2010), Costea *et. al*., (2001), Costea and De Manson (2001), Espara-Sandoval *et. al*, (1996), Tarshis and Tarshis, (1990),

Morphological diversity corroborates with the changes in genome complement of a species. Selection pressure exerted by ecological factors lead this whole dynamism. Several workers like Foote in 1997, Duke, 2006 & 2010, Kadkhodaei *et al.* 2011, Endonela *et. al.* 2015 and Apostol *et.al.*in 2016 have already been established the fact with the help of different molecular biological tools like SSR, RAPD etc. Sharma *et. al.* in 2009 experimented on *Andrographis paniculata* using RAPD technique and have shown that remarkable phenological diversity including seven morphological quantitative characters like, plant height, number of branches, number of leaf, leaf length, leaf width, dry weight of whole plant and seed production per plant and three qualitative phenological characters such as leaf color, flower color and days for flowering etc. were due to genetic diversity among different genotypes of *Andrographis paniculata*.

Phenotypic diversity has been stated as a change in phenotype followed by a single genotype which occurred in various environment (Bradshaw, 1965). A population with highly changeable environment shows more phenological and genetic plasticity. Morphological diversity evolves when there is a presence of adequate variations (Via and Lande, 1987). Individual plant character is changed at morphological and physiological level (Price et.al. 2003). Schoen and Brown in 1990 used *Hordeum spontaneum* and *Lycopersicon pimpinellifolium* to explore the nature and implication of genetic variation among different populations of inbreeding and out breeding plants.

Phenotypic, Genotypic and physiological plasticity are common features for a plant. A number of species show wide variations in nuclear DNA contents. Genomic polymorphism

leads to bring changes in total chromosome complementation by means of chromosome endoreduplication and other nuclear processes promotes the formation of polyploid cells, plant tissues and plant portions (Lewis, 1980; D'Amato 1985& 1989). It includes changing in the amount of certain genome portion alone or may be produced from diversity in the number of B chromosome, unequal crossing over and leads to deletion or duplication of chromosomes or chromosomal aberration. Other significant processes like DNA amplification, DNA underreplication, and DNA loss take place in S phase of the mitotic cycle or in differentiated cells either *in vivo* or *in vitro* (Nagl. 1979; Zamir and Tadmor 1986; Prince 1988, Deumling and Clermont 1989, Cionini 1989). Further study reveals that divergence and evolution of a species are influenced by proliferation or deletion of nuclear DNA. (Bennett and Smith, 1976).

Changes in genome may not be restricted only to specific diversity, but also associated with various environmental conditions and developmental stages affecting many populations or individual plant species (Prince,1988a, b,1991; Bassi, 1990; Cavallani and Natali,1991; Natali et al, 1993; Prince and Johnson, 1996). *Microseris douglassi* representsing geographically, ecologically and morphologically variable populations in California showed a 14% variation between population means with those having different DNA content restricted to Mesic and xeric sites (Prince et al ,1981 b). A study on 210 plants of *Microseries douglassii* revealed no significant correlations in temporal variation of DNA and precipitation in various years (Prince *et al*. 1986). In a study DNA contents in various accessions were found to magnify significantly with increase in temperature of germination, again indicating the presence of adaptable fluid domains in the nuclear DNA (Ceccarelli et al. ,1997). Similarly, a significant positive correlation was reported between duration of maturity of fruit and the DNA content of *Glycine max* (Graham, Nickel, and Rayburn, 1994). The variation in DNA content among ten Italian cultivars and

experimental lines of *Pisum sativum* (Cavanalli and Natali, 1990) was found to be correlated with root and shoot growth during various developmental stages. Increment or decrement of DNA amount in same plant species was studied by many workers (Bennett and Smith, 1971; Ohri et al. 1998; Pegington and Rees,1970; Singh *et al*, 1996). Genetic and phenotypic diversity of *Ocimum basilicum* L., its viral disease incidence, economic importance, highly adaptability, phenotypic variability was discussed by Nagai, Duarte and Santosh, (2011). In the light of the study of karyotype and nuclear DNA content variation at intra and inter species level has been recorded in *Tephrosia* sp. In case of. *Tephrosia purpurea*, *Tephrosia villosa* and *Tephrosia multiflora* DNA density increased with increase in DNA content. (Raina *et al*., 1986). Study of genetic diversity and germplasm conservation techniques for *Crotalaria* sp was discussed by (Wang ML et al., 2006).

Majority of Indian population reside in the remote village areas. They utilize various plant parts as food, fodder and medicine and also for various other purposes to run their livelihood. They also use plants as a source of medicine from time immemorial (Singh and Lahiri, 2010; Tripathi *et.al*., 2013). Plant based health care system is followed by more than three quarters of world population (Choudhury *et. al*., 2010). Traditional health care system is affluently used and accounts for near to 40 % of all ailments (WHO, 2002-05). Plants except medicinal purposes are also prominent source of alternative income for poor forest fringe people (Kala, 2010). Investigation related to ethnobotany has emphasized various plants with important medicinal properties (Schultes,1962). Local ethnic community residing in areas of rich biodiversity have a fair knowledge regarding uses and conservation of medicinal as well as economically important plants (Raghunathan, *et. al*., 2012).

According to World Health Organization more than 3.5 billion people in developing countries believe in the efficacy of medicinal plants in restoring normal health (B alick and Cox, 1996). A large number of people (near about 70 – 80%) in Africa visit

Traditional Medical Practitioners (TMP) for their ailments (Cunningham, 1993; Abebe, 1998).

Medicinal plants play a significant role in developing the novelties of drugs and progress in learning (Pramono, 2012). Medicinal plants have immense participation for conventional medical practices as a prime source of medicine of local racial groups. These plants have not only nutritional value but also have healing and mystic values to the local communities (Abhink, 1995). With increasing variation in tribal groups and lavish biological resources, India appears one of the dominant country in terms of ethnobotanical wealth (Kala, 2005).

In developing countries, too, there is an increasing demand for incorporating traditional medicines, particularly the herbal preparations and the researchers are increasingly getting involved in investigating the rich potential of these plants as ethnomedicine (Dutta and Dutta, 2005; Jain, *et. al*., 2010; Jayaprakash, *et. al*., 2011).

Different weedy herbs are endowed with many curative properties and are still not in conventional medicinal use due to ignorance. One of such plant is *Lantana camara* L., which is initiated in India as ornamental plants, but has been completely acclimatized and found in all parts of this country. Although it is considered as an important medicinal plant and different parts of it is used to cure many ailments (Ross,1999). In India there are so many works were conducted on chemical constitution of *Lantana camara* L. Its leaf oil is considered as a remedy for wounds; its roots are applied to treat tooth ache and flowers are essential for chest complaint in children (Kirtikar and Basu, 1981). Leaf extract of *Lantana* is used for various purposes, such as anti-proliferative (Saxena, 1992), anti-microbial (Begun, *et.al*., 1995), fungicidal (Sharma and Kaul, 1992), insecticidal and nematicidal (Day, 2003). Shoot of *Lantana camara* shows strong antioxidant properties (Basu, 2006). According to Irvine (1961) plant extracts of *Lantana camara* are significantly utilized for

treating of sores, chicken pox and measles, fevers, cold and cough, rheumatism, asthma and high blood pressure in Central and south America. In Asian countries leaf extract of *Lantana* are applied to heal cuts, rheumatism, ulcers and intestinal worms. Leaf of *Lantana camara* contains a steroid named as 'Lancamarone' manifest properties of cardiac tonic (Sharma and Kaul, 1959). Stem and bark of *Lantana* produces an alkaloid Lantamine' which exhibited anti-pyretic and antispasmodic features as commensurate to those of Quinine (Sastri,1962). In India decoction of this plant is used to treat cold and applied as lotion for wounds as well as pounded leaves are utilized to heal cuts, ulcers and swellings (Verma and Verma, 2006). Like *Lantana camera*, *Crotalaria pallida* is another such weed. *Crotalaria* is one of the largest genera in tropical Africa, consisting of 690 species, and the species are distributed in Africa, Madagascar, China, United States of America and India (Le Roux, *et. al*.,2009). Flowers of *Crotalaria pallida* Ait. is consumed as vegetable and seeds are used for substitution of coffee in Cambodia. In some cases, roots of this plant are chewed with betel nut in Vietnam. In conventional health care system *Crotalaria pallida* Ait. is applied to cure urinary problems and fever, a poultice of the roots is used to swelling of joints and leaf extracts are essential to release intestinal worm (Chong, *et. al.*, 2009). Although *Crotalaria pallida* Ait. is emphasized as a medicinal plant, it is rather more widely used as a green manure and to check soil erosion. *Crotalaria pallida* Ait. exhibits symbiotic relationship with different soil bacteria that produce nodules on roots and fix atmospheric Nitrogen and thereby increase soil fertility. 'Dage' a fermented product is made from the seeds of *Crotalaria pallida* Ait.

Likewise, *Tephrosia purpurea* is used as a fodder before flowering, but it is reported to cause livestock poisoning in Australia. In northern India, dry plant parts of it is collected for fuel. All parts of the plant have tonic and laxative properties. The dried plant is utilized as diuretic and useful in healing bronchitis, bilious febrile attacks and obstructions of the

liver, spleen and kidneys. It is also recommended as a blood purifier, in the treatment of boils and pimples and is considered a cordial treatment. In southern India, a decoction of the fruit is given for intestinal worms and a fruit extract is used to relieve bodily pains and inflammatory problems (Arnold and Harry, 1968). The roots are bitter in test and the decoction is used as a nematicide for treatment against *Toxocora canis* larvae which cause a lung disease in Sri Lanka and it is also used for treating dyspepsia, colic, and chronic diarrhea and as an anthelminthic. *Tephrosia purpurea* of Fabaceae is also a weed of similar kind. In many places it is cultivated as green manure crop. It is found throughout India and Srilanka to grow on poor soil. *Tephrosia purpurea*, is reported to have a host of phytochemicals such as flavones, flavanones and prenylated flavonoids, chalcones, rotenoids, glycosides and sterols (Pelter, *et. al*., 1981). Total plant body of *Tephrosia purpurea* is applied to treat tumors, ulcers, leprosy, allergy, inflammation, rheumatism, asthma and bronchitis (Kirtikar and Basu, 1956). The aqueous mixture of seeds has been found to have significant hypoglycemic activity *in vivo* in diabetic rabbits (Rahman, *et. al*., 1985). Another study on *Tephrosia purpurea* revealed that in it flavonoids are major components for its antimicrobial property (Gokhale and Saraf, 2000). An investigation of Tephrosia *purpurea* explored its use as hepato-protective agent, stabilizing of mast cell and erythrocyte membrane integrity promoting effect in various animal models (Murthy and Srinivasan, 1993; Gokhale, *et. al*., 2000).

Generic name '*Ocimum*' is derived from a Greek word 'Okimon' which denotes fragrance. Species of '*Ocimum*' play a remarkable role in many religious executions throughout the world. However, this is regarded as a sacred plant in Hinduism. Basil plant is considered as a totem for love, protection, courtship, truthfulness and also good luck. In various religious festivals the smoke from incineration of Basil is said to bring peace of mind and induce the holy power.

Parkinson has claimed the Basil's fragrance to be 'fit for a king's house' indicating its royal aroma and has also mentioned that Basil can be applied 'to procure a cheerful and merry heart'. Gerard and Culpeper also mentioned Basil to be a perfect medication for melancholy and natural curative for insect bites including scorpion, mosquito and bee.

Ocimum canum Sims. is applied in e orthodox health care for oral problems, fever, insect bites, constipation, parasite infection, cold and cough, inflammation, headache, joint pain and dysentery, diabetes mellitus as well as diabetes insipidus. Basil leaves are also used as a remedial agent for combating pests in crop fields. The essential oil obtained from its seeds of *Ocimum canum* Sims is a prominent source of camphor, eugenol, Bita-caryophyllene, limonene, myrcene, camphene, naphthalene, a-pinene, caryophyllene and valenene. These components contain medicinal properties including antiemetic, anti-stress, antiviral, antibacterial, rubefacient, antidiabetic, anti-asthmatic, antimicrobial, anticancer, insecticide, antifertility, antifungal, antimalarial, antioxidant, expectorant, analgesic, antispasmodic,

Essential oil from basil seed has found to be very significant to prevent fungal infection in pea nuts. It has also been noted to be effective against some fungi like, *Aspergillus parasiticus, Aspergillus flavus* etc. Leaf leachate of *Ocimum canum* Sims has been recorded to act as inhibitor of aflatoxin and a suppressor of fungal growth. Depending on that properties this plant is recognized as a preservative of stored food staff from infection of fungi and aflatoxin in storage system (Adjou, *et. al*.).

According to Nyarko, *et. al*., (2002), the extraction of *Ocimum canum* Sims, decreases blood sugar and increases insulin secretion. It is realized as a long established racial therapy in Ghana, South Africa for diabetes mellitus.

According to another school of thought Basil is recognized for curing of cough. Basil‘s essential oil is effective for curing intestinal worm, indigestion, cancer due to its anti-oxidant and cytotoxic property. This plant is also helpful for treating eye irritation, epileptic attacks, renal colic, vomiting, painful kidneys, epileptic convulsions, painful urination and weak immune system.

Even though the plants concerned here are wild and weedy in nature but many a physical, chemical as well as biotic factor play significant role in their existence, wellbeing and sustenance. Among a host of factors water is a vital one and play significant role of plant development and existence right from the germination of seed till maturity.

Alteration of water level during monsoon promotes the change of species composition and finally modifies community characteristics. Several anthropogenic threats cause damage of plants. Soil erosion is another abiotic factor that regulates the dynamics of vegetation (Das, 2017).

In addition to scarcity of water some other anomalous factors like, fire, flood, winds, climate changing, tsunami, even including human activities like, forest cleansing, weeding etc. and grazing, browsing by cattle immensely influence the spontaneous growth of such weeds as well as their sustenance (Dale, et. al. 2001).

Disturbance forces exert a huge effect on the vegetation and modify the biotic community. Such impact on population and disturbance regulates plant association, species dominance and plant succession in future. A disturbance of such kind for a long duration promotes reformation of flora of perennial herbs, shrubs and trees. Species diversity is highly related with instability due to disturbance, as a result these weeds are compelled to adapt in a different way in the changed environment for survival (Sousa, 1984). According to Kight (2012), biodiversity is affected by various factors comprising of human, latitude, weather

and topography. Besides species composition richness of any single species is often gets completely changed by several human activities.

Sequential modification of earth is followed by various human activities thus results in alternation of productivity, configuration and variability of an ecosystem as well (Vitousek, ,1994; Houghton *et. al*.,1995; Pimm., *et. al*., 1995; Vitousek, ,1997; Matson *et. al*., 1997; Tilman,1999).

Human activity possesses fragmentation of natural habitat which initiates damage of those species that lived only in surrounding areas. It forms a number of variations in composition of plant communities (Tilman, *et. al.*, 1994). Major human related components that influence biodiversity in tropical areas are deforestation and displacement, over utilization, arrival of exotic species and weather change. (Morris, et.al., 2004; Sala, *et. al*.,2000).

Over land use by local people stimulates deforestation as well as forest fragmentation. Regular cleaning of forest floor in an attempt of collecting fuel articles, harvesting of herbs from forest floors for medicinal purpose and grazing by animals cause serious damage to the seedlings and saplings posing serious threat to the existence of such weeds of worth (Motta,1996).

Floristic survey of California, U.S.A., explored in an attempt an equivalent relationship of human affect, invasion and the sustenance of endangered species (Viers, et. al., 2006; Williams, et. *al*., 2005). A further investigation revealed that human created problems initiated the complexity among the environment, spatial distribution and natural life form diversity (Dobson, *et. al.*,2001; Scott, *et.al*., 2001; Seabloom, *et. al*.,2002; Williams, *et. al*., 2005; Schawartz, *et. al*., 2006; Harrison *et. al*., 2006).

The grazing of domestic animals seriously influences the composition of flora and soil properties of forest, grassland and thereby affects soil microbial community too, and in

effect, the nutritional enrichment of soil (Kohler. *et. al*., 2005; wang., *et. al*., 2011), though grazing is considered beneficial to combat the growth of unwanted shrubs and also in minimizing the risk of forest fire (Tsiouvaras. *et. al*.,1989; Loiseau and Merle, 1988; Sabiiti and Wein, 1991; Magadlela, *et. al*.,1995; Ferrer, *et. al*,1997,). Grazing may even cause reformation of plant morphology and physiology. Both direct and indirect effects of grazing cause damage of plants, which leads to the directional alternation in the arrangement and configuration of plant communities (Archer and Smeins,1991; Briske, 1991).

The principal impact of grazing on plant growth is the decrease of photosynthetic capacity with the decrease in leaf area. It lessens the availability of assimilated compounds to root, seeds, developing fruits as well as growing stem (Willard and Mckell,1973; Donaghy and Fulkerson, 1997).

Increasing the potency of grazing can minimize the reproduction power of plant (Buwai and Trlica, 1997). Both of bovine and ovines plays an important role for decrease in growth of ligneous species (Kosko and Bartolome, 1983; Harradine and Jones, 1985). However, contrary to the conventional detrimental effect of browsing there is another notion that a browed plant grows better than a normal one (Whitham, T.G., *et. al*.,1991; Danell, K, *et. al*.,1994). In addition to the aforesaid factors restricting the spontaneous weed growth, different pests are also posing great problem for the natural growth of them.

Surveys explored that the fungal pathogen of *Lantana camara* L. is *Corynespora cassiicola*, which was considered as a successful biological control of it (Barreto, et. *al*., 1995; Pereira and Barreto, 2001). Except this several causal organisms are responsible for causing defoliation and debilitation of this plant. Sooty Mildew is a condition of plant where black discoloration is found in leaf, caused by insect pests and Powdery mildew is a condition when sufficient light is not provided to plant.

A particular type of fungus, *Pleiochaeta setosa* (Kirchn.) causes brown spot disease in *Crotalaria anagyroides* (Hughes, 1951). In India 'Cow-pea' is attacked by 'Pod borer' scientifically known as *Maruca vitrata*. (Sharma, H.C, 1998). Furthermore, a study by SIleshi. *et. al,* 2000, explores that in Mangochi and Zomba districts of Southern Malwai, 30 insects are noted as natural enemy for different leguminous genera including *Aeschynomene, Crotalaria, Desmodium, Indigofera, Mucuna, Phaseolus, Tephrosia* and *Vinga.* Effective insects are as follows *Anoplocnemis curvipes, Aphis fabae, Hilda partruelis, Mylabris dicincta, Nezara viridula* etc. Nevertheless, weed plants having medicinal values, are under threat due to deforestation, overgrazing, browsing and rampant exploitation. So, it emphasizes the immediate requirement for devising a measure to combat them. Conservation of natural resources as well as their sustainable utilization is significant reaping the benefit of conventional knowledge (Payyappallimana and Fudeeva, 2003).

OBJECTIVES OF THE STUDY:

1. To search out some regularly available weed plants of herbs and shrubs nature, growing on the forest floor in the district of Paschim Medinipur.
2. Study of phenology of the selected species considering different events of life like, time of sprouting, flowering, fruit setting, fruit maturity, fruit dehiscence.
3. Morphological diversity at intraspecific level of chosen species is to be investigated.
4. Quantitative estimation of DNA, RNA and Protein of selected species in search of diversity at the intraspecific level for all the species under study.
5. Study of utilities of selected plants considering ethno medicinal importance, source of food or fiber, fuel wood and other miscellaneous use by selected forest fringe villagers is to be carried out.
6. Damage of the chosen species due to any biotic cause will be looked into with a purpose to register the nature and extent of damage caused to the species to contravene any measure for abatement of that.
7. A strategy for proper management of the selected species in an attempt of sustainable exploitation of them would be made.