Chapter - II

REVIEW OF LITERATURE

Kazmi and Siddiqui (1953) identified 87 medicinal plants from Astore and upper Guruiz, valley. They also reported their local names, elevation, distribution and medicinal uses.

Hocking (1958) estimated in 1950 that about 84% of Pakistani population depends upon medicinal plants for their medicinal requirements.

Zaman and Khan (1970) have illustrated nearly about hundreds of medicinal plants of West Pakistan with their family, Botanical name, distribution, description, constituents and uses.

Singh and Pandey (1980) have recorded medicinal plant lore of the tribes of eastern Rajasthan. These Medicinal plants belong to 104 genera and 54 families. Information about these 125 plant species were gathered and documented from locals including vaids, herbalists and forest officials in tribal areas. Medicinal folk recipes were also documented.

Khan (1985) has carried out another survey and reported that 95 species were used by hakims and the annual consumption of medicinal plants was more than 5.65 million kg which valued approximately up to Rs. 36 million.

Bye (1986) has arranged a comparative study of Tarahumara and Mexican medicinal plants sold in market. He concluded that three fifth of the medicinal plants collected are sold in the local markets; It clearly indicates that these plants produce satisfactory effects in curing certain human diseases. Such, plants that are used for
similar ailments by two cultural groups with different ethno medicinal concepts may he of interest for intensive research.

Pie and Mnandhar (1987) have reported that in Himalayan Ranges at least 70 percent of the medicinal plants and animals consist of wild species, 70 to 80 percent of the population in this region on traditional medicines for health care.

Farooq (1990) has reviewed the medicinal plants of Pakistan. Fifty-two species of indigenous medicinal plants from 25 families of angiosperms were dealt with in accordance to their importance in the traditional medicine of Pakistan and India. In addition to their usages in oriental medicine, a description was given of their applications as drugs in European, American and African countries, Siddiqui and Khan (1991) published a report on a workshop arranged for the promotion of medicinal plants, organized by the Pakistan Forest Institute, Peshawar.

Chaudhri and Qureshi (1991) have indicated that as many as 709 species of the vascular plants of Pakistan, constituting about one tenth of the vascular flora, are in danger of being gradually wiped out or exterminated altogether.

Davies (1991) has reported that the awareness of the importance of plant biodiversity has been considerably raised in both developed and developing countries over the last decade. Some of the debate has not been helpful in fostering collaboration or progress towards a more rational support network. He attempts to identify and categorize existing efforts in operation in a wide range of institutions and bodies ranging from essentially environmentally orientated to crop-based organizations, Current funding and training initiatives was also discussed.
Iqbal (1991) has observed that oriental bees do not colonize the hives as is given to the application of the ecology paradigm. Contemporary discoveries and developments about resource management in mountains are elucidated. Assessments of the mountain environment, including wildlife habitat, tourism and recreation, forests, hazards, deforestation, food plant biodiversity, risk and hazard, are provided by the specialty articles.

Bennett (1992) has discussed three aspects of Amazonian ethnobotany i.e. indigenous plant use, the effects of indigenous management on rain forests, and the role of ethnobotany in sustainable development. According to Bennett, Ford in 1978 defines ethnobotany as the "study of direct interrelations between humans and plants". Though early definitions restricted ethnobotany's scope to traditional societies' use of plants, many now realize it is more inclusive. Ethnobotany is pivotal in providing solutions to rainforest destruction for both traditional and modern societies. Bennett, who is the present example from the Quijos Quichua and Shuar of Amazonian Ecuador, the two groups with which Bennett have worked most closely.

Osemeobo (1992) has studied that wild plant conservation is part of the Nigerian culture and is a major source by which the economic well being of rural economies is sustained. However, large-scale de vegetation of the natural ecosystems resulting from poor land use has threatened wild plants in various ecological zones. Nevertheless, vital information on wild plants is scanty. There are no accurate data to support conservation efforts in terms of species types, numbers, biology, ecology and silviculture of wild plants. Strategies for wild plant conservation are suggested. Wild plant conservation should evolve through research, land use controls establishment of arboreta, integrated agricultural production and habitat protection. Land use should
emphasize public education, public participation, incentives to landowners and the application of the rule of law.

Heywood (1992) has studied the practical steps that botanic gardens can take to become involved in plant conservation are outlined, beginning with a review of existing collections and accession policies. Different approaches to conservation are discussed including both in situ and ex situ. He further added that every garden can play a part, and in the light of the forthcoming (United Nations Conference on Environment and Development) it would be appropriate to launch an appeal to each and every garden to review its mission and consider what contribution it might make to the conservation of plant diversity which is increasingly under threat. Few institutions more suited to take a positive and active stand on conservation issues than botanic gardens as centers of plant exploration and introduction, of education and training, or research and ex situ conservation, reintroduction and the conservation and monitoring of natural habitats. Conservation involves dealing with living plants whether growing in the wild or in cultivation - and botanic gardens are by definition the institutions with most experience of how to raise plants, germinate their seeds, propagate them, and maintain them alive and healthy.

Goodman and Ghafoor (1992) have surveyed Baluchistan Province and collected 114 species with local ethnobotanical usage, the principle emphasis being on medicinal plants. For some plains, source area and market price are also given.

Ansari et al. (1993) have surveyed medicinal plants in District Khairpur. Information was provided on 35 species belonging to 23 families processing medicinal properties. All are widespread in the district. All the information regarding their
medicinal values and uses was collected from local people of the area, Hakims, professionals and from the concerned literature.

Figuieredo el at., (1993) have reported that local plants are a very important resource for the community of Gamboa, located at Itacuritica Island, Scpetiba Bay, Stake of Rio de Janeiro, Brazil. Ninety species of plants, belonging to 40 families, are used for a variety of purposes, such as food, construction, handicraft, and medicine. In a survey medicinal uses for plants were the most quoted by the community. Uses of medicinal plants within Gamboa and with other coastal communities are analyzed using diversity indices. Use by different categories of people based on sex, age, and economic activity was compared and significant differences were found among the groups compared, except for economic categories (fishermen and non fishermen). The theory of island biogeography is shown to be useful for analyzing different levels of resource uses on different islands.

Haq (1993) has surveyed Mansehra District and collected 53 wild and 17 cultivated medicinal plants. He enlists these plants with botanical, English and vernacular names, families, parts used, distribution, constituents:, medicinal and local uses.

Huston (1993) has concluded that terrestrial biological diversity is supported by solar energy captured by plants growing in soil. This soil based plant productivity also provides the foundation for human societies through production of food and renewable forms of energy. Variations in plant productivity, resulting from differences in inherent soil fertility, variations in climate and weather, and differences in chemical inputs and agricultural practices, produce patterns of biological diversity that are associated with the agricultural component of economic productivity. Ecological processes lead to a
generally negative relation between the diversity of plant species and potential agricultural productivity at both local and global scales, one implication of this negative relation is that preservation of areas of high plant biodiversity does not require the sacrifice of productive agricultural lands.

Rawat and Uniyal (1993) have reported that alpine meadows of western and central Himalayas, locally known as Bugyal(s) or Marg(s), are well known for their floral, faunal and aesthetic values. Located in the flatter or gently undulating terrain between the timberline (3,300 m) and the permanent snow line (5,400 m), these meadows are also used as summer grazing grounds by various pastoral communities. As many alpine species e.g. of sedges, grasses, forbs, and shrubs, are palatable. Their palatability and resistance to grazing seem to be comparable with those of the highly productive grazophilic communities of the British calcareous grasslands and Serengeti Plains of Africa. Accordingly it may be argued that, despite high seasonal grazing-pressures, alpine meadows can maintain good vegetative cover and species diversity. Such assertions are, however, being slowly countered by, for example, studies in alpine meadows of Jammu and Kashmir which have shown the loss of great amounts of vegetation cover due to excessive summer grazing, and wide occurrence of unpalatable weedy species of Viburnum, Stipa, Sambueus, etc.

South (1993) has reported that seven taxa of seaweeds feature in the diet of native Fijians Caulerpa racemosa, Caulerpa rusemosa var. occidentalis, Codium bulhopilum, Hypnea pannosa, Gracilaria sp., Solieria robusta and Acanthophora spicifera, with the preferred species being Caulerpa and Hypnea.
Winter and Botha (1994) have provided a short review of the role of a national botanic garden in propagating and selling indigenous plant species. Its relevancy to plant conservation is discussed.

Khan (1994) has studied the thorn forest area of the Punjab and its decline due to overgrazing, felling, wind erosion, desertification, salinity and water logging. He pointed to Salvodara oleoides for its great ecological and ethno botanical importance.

Salccm et al. (1994) have reported the biological activity of 59 indigenous plants used as insecticides. As there is an ever-growing awareness of the hazardous side effects of modem pesticides, more and more emphasis should be put on the use of insecticides of natural origin having specific action against insects only. Some of the plants reported here have great potential for actual use.

Siddiqui et al. (1994) have reported that medicinal plants were pharmacologically screened for their cardiac activity on isolated rabbit heart palpitation. Out of these 7 plants showed significant positive cardio tonic activity, along with the effects on the heart rate and coronary flow. In this research crude ethanolic and aqueous fractions were used.

Fay (1994) has concluded that various in vitro techniques are available for plant propagation, including seed germination, micropropagation, meristem culture and callus culture. The role of these techniques in the conservation of endangered plants is discussed, using examples drawn from the work of the Micropropagation Unit at Kew.

Murdock (1994) has observed that at least one-third of the threatened and endangered species of the United Slates live in wetlands. Southern Appalachian bogs and fens in particular, support a wealth of rare and unique life forms, many of which
are found in no other habitat type. In North Carolina alone, non alluvial mountain wetlands provide habitat for nearly 90 species of plants and animals that are considered rare, threatened, or endangered by the North Carolina Plant Conservation Program, the North Carolina Natural Heritage Program, the North Carolina Wildlife Resources Commission, or the U.S. Fish and Wildlife Service. These species include the hog turtle, mountain sweet pitcher plant, green pitcher plant, swamp pink, bunched arrowhead, and Gray's lily, all of which are either on the federal list of endangered and threatened species or under consideration for that list. Mountain wetland habitats for these species are being destroyed and degraded at an accelerating rate for highway construction and expansion and residential and recreational development, as well as for industrial and agricultural uses.

Phillips et al. (1994) have used quantitative ethnobotanical data to compare the usefulness of six floristically distinct forest types to mestizo people at Tambopata, southeast Peru. Ethnobotanical data were collected with informants in inventory plots and analyzed using a new technique that uses a two tier calculation process to derive an "informant indexed" estimate of each species' use value. Use values are estimated based on the degree of consistency between repeated interviews of each informant and between different informants. They concluded that (1) to maintain cultural autonomy, Amazonian people may need access to all local forest types, and (2) present and former floodplain forests in western Amazonia should be a conservation priority. These conclusions were made on the basis of evidence of: (1) ethnococological similarities among mestizo cultures in Peruvian Amazonia; (2) the similarity of family-level floristic composition at Tambopata and elsewhere in western Amazonia, (3) rapid floodplain deforestation; and (4) floodplain resource over extraction. Conservationists should focus on helping communities gain control of floodplain resources.
Cowling and Samways (1994) have studied the relationships between endemic plant richness (response variable) and latitude, area, mean annual rainfall, mean annual temperature and altitudinal range (explanatory variables) in fifty-two biogeography regions distributed across all major biomes on all continents. Latitude and area emerged as significant terms and accounted for 63% of the variance. Thus, large, low latitude regions harbor the highest numbers of endemic plant species, a pattern which is well documented. However, the analysis of model residuals showed that certain mid-latitude regions with semi-arid and strongly seasonal climates (especially Mediterranean climate areas) had much higher endemic species richness than predicted by the model. These areas should not be overshadowed by tropical rainforest regions when planning interventions for global plant biodiversity conservation. Furthermore, a general theory on plant endemism will need to account for these mid-latitude anomalies.

Cousins (1995) have studied the antibacterial, antiviral and antifungal properties of plants. They are used in human medicine, veterinary medicine and in crop protection.

Haq and Hussain (1995) have surveyed the medicinal plants of Palandri, District Poonch and revealed that there was 47 such plant in the area, the local names in Pahari, Urdu. Punjabi and Pushto were given. The local uses of the plants were enquired from the local people and medicinal uses of the plants were also discussed in detail.

Sadaqat (1995) has discussed 10 medicinal plants of the Cucurbitaceae, which were Benincasa hispida, Ciindlus sp, Corallorarpus epigalous, Cucumix melo, C. sativus, Luffo acutangula, L. echinata, Momordia dioca, Trichosanthis cucumcria and T.dioca.
Khaliq (1995) have reported the flora of Dabargai hills, Swat, consisting of 140 plant species belonging to 53 families. The locals are using 125 plant species for different purposes. These include, medicinal (69 sp.) fodder (76 sp.) fuel wood (18 sp.), timber (12sp.), vegetable (12sp.) fruit yielding (13 sp.), mud supporters (6 sp.) and hedge plants (4 sp.).

Martin (1995) has reported that the exploitation of well known Podophyllum hexandrum by a pharmaceutical firm. The company established a research station in Swat sometime back. They collected the rootstock from Swat area and cultivated the plants in laboratories elsewhere in Pakistan. Subsequently they shifted entire resource material to (heir base in Switzerland. The local communities were deprived of any benefit.

Martin (1995) has revealed that chief threat to the trees and shrubs of the Sulaiman range is the fuel shortage in these mountains. During long and severe winter season, a huge amount of wood is used as fuel. He also estimated that about 13000 people earn their living by selling the seeds of Pinus gerardiana in a good yielding year.

Sudarsanam et al. (1995) have carried out an ethnobotanical study in Andhra Pradesh. 106 plants were used to cure veterinary diseases. The plants arc listed in alphabetical order of family, genus and species with local names, voucher specimen number, parts used, methods of application and ailments treated.

Khan et al. (1996) have reported that fuel shortage in the Hindu-Kush Himalayas has adversely affected the biodiversity of the area. They suggested solutions for the hazardous impacts of fuel shortage by employing various strategies at local, regional and slate level. They also suggested that alternative sources of fuel should be
explored and fast growing trees should be planted on large scale while protecting the already planted trees and conserving the endangered plant species.

Sultana et al. (1996) have reported a total of 56 edible species of mushrooms from Pakistan. These include 4 species from Baluchistan, 3 from Sindh, 5 from Punjab and 44 from NWEP and Azad Kashmir. Some of the species that are being commercially exploited in the world include Agaricus hisporus, Auriculana spp., Coprinus comutus, Flammulina velluipes, Lentinus cdodes, Phellorina inquinans, Pleurotus ostreatus, Stropharia rugosounnulalu, Volvaeiella valvacea.

Khan (1996) has recorded more than 202 plant species from the Machiara National park area, Azad Kashmir. Local people are dependent on these plant resources for different requirements. About 50 plant species are used extensively in the area, Shinwari et al (1996) conducted an ethnobotanical survey of Kaghan valley, District Mansehra, NWFP and explored the traditional knowledge pertinent to medicinal plants use prevailing in the area, it was found that 48 species of medicinal plants are present in the valley, out of which only 26 species are used by locals for curing different diseases. The locals also use 21 plant species as food, shelter while more than 8 plant species are used as fodder.

Khan and Fevre (1996) have studied the indigenous knowledge of plants for medicinal purpose in northern Chitral. They reported that 55 plant species belonging to 39 families are used by local for medicinal purposes.

Shinwari and Shah (1996) have study the ethnobotany of Kharan District, Baluchistan. They reported 171 species of angiosperms used by local people for medicine, food, making houses, fodder, tool handles, axles, wheels, carts, ploughs, etc. The locally people totally depended on wild plants.
Ahmad and Sirajuddin (1996) have conducted studies to elaborate the
ethnobotanical profile of Swat. They classified the district of Swat into seven types of
forest, e.g., tropical dry deciduous forest, dry subtropical broad leaved forest,
subtropical Chir forest, moist temperate forest, dry temperate forest, sub alpine forest
and alpine forest, with their representative species, altitudinal ranges and localities. The
studies included 1541 species from 135 families reported from the area. The ecological
status of the 48 medicinal species was also reported.

Badshah et al. (1996) have undertaken ethnoecological studies of some plants of
Pirghar Hills, South Waziristan. The summer flora of Phirghar Hills in South
Waziristan Agency of Pakistan was found to consist of 97 species, which belonged to
43 families. Ethnoecological information revealed that 83 species had various local
uses.

Cowling et al (1996) have reported that the Cape Peninsula, South Africa, is
home to 2285 plant species and is a globally important hot spot of biodiversity for
higher plants and invertebrates. The predominant vegetation is fynbos, a fire-prone
shrub land, and 12 broadly characterized fynbos types have been described on the
Peninsula. According to them, human occupation of the Peninsula was limited, until
relatively recently. After Dutch colonization in 1652, direct mid indirect impacts on the
natural ecosystems of the Peninsula escalated dramatically, and by 1994, sonic 65% of
original natural habitat was either transformed by urbanization and agriculture, or
invaded by alien plants. Nonetheless, there is still excellent potential to conserve the
Cape Peninsula's remaining biodiversity,

Abbott (1996) has reported extensive uses of fresh and dried seaweeds by
coastal populations. A housewife in search of 11 puddings discovered the first
'extraction' of seaweed 'gelatin' now used for bacteriological purposes. Ethnic uses as food depend heavily on closely related species suitable for making cool, 'gelatinous' dishes or concoctions, or on species suitable for adding to soups or stews. Rarely, single species like Cochajugo (Durvillea antarctica) in Chile and Rirnu (Durvillea antarctica) in New Zealand point to different kinds of food preparation.

Richardson et al. (1996) have observed that the biodiversity of the Cape Peninsula (49 127 ha in extent) has been considerably affected by various factors since European settlement in 1652. Urbanization and agriculture have transformed 37% of the original area of natural vegetation. Lowland vegetation types have been worst affected; with almost half of the transformation occurring in one of the 15 recognized vegetation types. Vegetation at high altitudes has been little affected by urbanization and agriculture, but alien trees and shrubs are now threatening biodiversity in these areas. Of the area not affected by urbanization and agriculture 10,7% is currently under dense stands (>25% canopy cover) of alien plants and another 32.9% is lightly invaded. Dense stands of Acacia cyclops, the most widespread invader, cover 2510 ha, 76% of the total area under dense alien stands.

Lozano et al. (1996) have reported the distribution and conservation status of 102 plant species in mainland Spain and Balearic Islands were studied. Distribution data from herbarium and bibliographic sources were collected. Held work for the 78 taxa with the most restricted distributions was undertaken in order to improve the knowledge of their populations, distribution limits and possible threats. Some extreme examples of species with very low number of individuals or very narrow areas of occupancy are pointed out. Natural causes and land development are stressed as the most important factors of threat.
Prober (1996) has observed that grassy white box (Eucalyptus alhens Benth.) woodlands once covered several million hectares of the wheat-sheep belt of southeastern Australia. The pre-European floristic composition of these woodlands is little known, as almost all of them were rapidly cleared for cropping or modified by livestock grazing. Woodland remnants were surveyed across New South Wales (NSW), to describe range wide variation in the woodland flora, and to provide a basis for reserve design. Reserves in the white box woodlands are presently few, and are not representative of the natural variation. Most existing reserves occur on soils unsuited to agriculture, compared with the grazing or arable land of typical grassy woodland. Cemetery remnants, rail easements, Traveling Stock Reserves and roadsides provide the best opportunities for conservation on higher-quality soils. Remnant quality declined significantly in southern NSW, indicating a need for greater conservation effort in southern areas.

Tilman et al. (1996) have reported that functioning and sustainability of ecosystems might depend on their biological diversity. Elton's hypothesis that more diverse ecosystems are more stable has received much attention, but Darwin's proposal that more diverse plant communities are more productive, and the related conjectures that they have lower nutrient losses and more sustainable soils, are less well studied. Here we use a well-replicated field experiment, in which species diversity was directly controlled, to show that ecosystems productivity in 147 grassland plots increased significantly with plant biodiversity. Moreover, the main limiting nutrient, soil mineral nitrogen, was utilized more completely when there was a greater diversity of species, leading to lower teaching loss of nitrogen from these ecosystems. Similarly, in nearby native grassland, plant productivity and soil nitrogen utilization increased with increasing plant species richness. This supports the diversity productivity and diversity
sustainability hypotheses. Our results demonstrate that the loss of species threatens ecosystem functioning and sustainability.

Figueiredo at al. (1997) have conducted an ethnobotanical study of Atlantic Forest coastal communities located at Sepetiba Bay, Rio de Janeiro State, Brazil. Atlantic Forest remnants are top priority conservation areas, and include: native communities that depend on fish and small-scale agriculture. They conducted fieldwork in the community of Calhaus (Jaguanum Island) from 1989 to 1991, and interviewed adults on their use of plants. They also examined the diversity of (medicinal plants used among communities of different islands and found results similar to previous research at Gamboa (Itacuruca Island); communities living in smaller islands and on islands further from the coast use a lower diversity of plants. Also, older islanders show a deeper knowledge of medicinal plants than younger islanders.

Qureshi et al. (1997) have reported 15 species of Gymnosperms used as local medicines in Chitral District.

Rehman (1997) has reported 130 honeybee plants from Peshawar and adjoining areas. Honeybee plants include both cultivated and wild plants.

Shinwari and Khan (1998) have reported 27 species of trees and 24 species of shrubs used as local medicine, fodder, shelter, food and for cultural purposes from Margalla Hills National Park, Islamabad.

Shinwari and Khan (1998) have published a book on ethnomedicine of Margalla Hills National Park Islamabad. They reported 103 species of 92 genera and 49 families. Out of these, 26 plants were being sold in the market.
Hoareau and Da silva (1999) have reported that trade in medicinal plants is growing in volume and in exports. It is estimated that the global trade in medicinal plants is USS 800 million per year. The botanical market, inclusive of herbs and medicinal plants, in the USA, is estimated, at retail; at approximately USS 1.6 billion per annum. China with exports of over 120,000 tones p.a., and India with some 32,000 tones per annum dominate the international markets. It is estimated that Europe, annually, imports about 400,000 tones of medicinal plants with an average market value of USS 1 billion from Africa and Asia. A growing awareness of this new contributor to the foreign-exchange reserves of several national treasuries is beginning to emerge. To satisfy growing market demands, surveys are being conducted to unearth now plant sources of herbal remedies and medicines.

Hoareau and Da Silva (1999) have observed that medicinal plants are an integral component of ethnoveterinary medicine, Farmers and pastoralists in several countries use medicinal plants in the maintenance and conservation of the healthcare of livestock. Intestinal disorders in cows, in Mexico, are treated with herbal extracts of Polakowskia tucacco. Dietary supplements such as vitamin A in poultry feeds in Uganda are supplied through enrichments of amaranth (Amaranthus sp.). It is estimated that medicinal plants, for several centuries, have been widely used as a primary source of prevention and control of livestock diseases. In fact, interest of such use in the veterinary sector has resulted primarily from the increasing cost of livestock maintenance and the introduction of new technology in the production of veterinary medicines and vaccines.

Shinwari and Khan (1999) have discussed the dependence of the inhabitants of the Margalla Hills National Park, Islamabad, on surrounding plant resources for food,
shelter, fodder, healthcare, and other purposes. They recorded 50 species of herbs used medicinally by the habitants of the park. They found Aparagus adscendens and Viola canesense vulnerable to harvesting.

Chaudhary et al. (2000) have reported that about 5000 families in the District Swat are actively involved in the collection of medicinal plants and they collect more than 5000 tonnes of medicinal plants annually.

Shinwari et al. (2000) have discussed the conservation status of medicinal plants in Pakistan Hindukush Himalayas. They estimated that more than 10% of the flora is threatened, and 12% of the flora of Pakistan is used medicinally. They mentioned that the total number of medicinal plants of District Swat ranged from 55 to 345 species, as in example. They also reported that the natural resource base in the Hinduu-Kush Himalayas is deteriorating more rapidly than, in any other global region.

Dastagir (2001) has studied Pharmacognosy of Acacia nilotica and Juglans regia, which are used as maswaks for teeth cleaning in various parts of Pakistan.

Schippmarm (2001) has stated that gathering of medicinal plants can provide an important source of income for local people, but if it is not appropriately managed, wild harvesting may jeopardize the long-term viability of plant populations and plant habitats. Many medicinal plant species are threatened with local, commercial, and in some cases, biological extinction. The cause includes increasing damaged, a vastly increasing human population and intensive conversion of habitats. Concern over the fate of 14 internationally traded medicinal plan's has lead to their inclusion in the Appendices of the convention on International Trade in Endangered Species of Wild Flora and Fauna Convention of International Trade in Endangered Species (CITES),
and a further 233 plant species currently included in the Appendices have medicinal uses.

Qureshi and Khan (2001) have conducted the study in Kahuta, Rawalpindi to list the medicinal plants there. In total 25 species of herbs belonging to 18 families were recorded, which were being used medicinally by inhabitants of the area. Some of the most interesting and representative plants of the area were *Cyperus rotundas* L., mainly used for cholera, dyspepsia and fever and *Saussurea hereromala* D. Don as a tonic for animals. The oil of *Pongamia pinnata* (L.) Merill was applied to cure herpes and eczema. Leaves of *Euphobia helioscopia* L were used to cure mad dogs. *Boerhaavia diffusa* L. was useful for jaundice and other liver complaints.

Shinwari et al. (2002) have studied the current status of medicinal plants of Bar and Shinaki Valleys, Northern Area. They found that 22% of the plants (the larger percentage among various uses) were used by the locals for gastro-intestinal troubles, followed by 11% of the medicinal plants for bronchial and pulmonary ailments. They suggested *Canon bulbocastanum* (Zeera) and *Epheda gerdiana* for in vitro cultivation to obtain quick benefits and *Hippophae rhamnoides* to benefit the locals, as well as being a useful export from the longer-term point of view.

World Health Organization (2002) has reported that majority of the world's population currently depends on traditional medicine for their primary health and needs. Medicinal plants are widely used in household remedies and by practitioners of traditional systems of medicines, particularly in the developing world where public health care services may be limited. At the same time, interest in traditional and contemporary and alternative medicine in industrialized countries has grown rapidly.
The world market for herbal products based on traditional knowledge is now estimated to be worth USS 60 million.

Ahmad (2003) has reported that 31 medicinal and aromatic plant species were cultivated in Swat at three different sites. A preliminary result shows that Ginkgo bilohu, Crocus Sativus, Colchicum luteum, Matricaria chamomile, Viola odorata, Aconitum Vioaceum, Aconitum heterophyllum, Podophyllum hexandrum, Valeriana jatamansi and Bistorta amplexicaulis can be grown successfully as minor crops on marginal fields.

Hamayun (2003) has documented ethnobotanical knowledge of shrubs and trees of District Buner as the area has diverse flora and high ethnobotanical potential. It was found that 94 different plant species are used for medicinal, timber, fuel wood, and fodder, ornamental, agricultural tools, thatching, fencing, naming (folk lore) and fruit yielding purposes. Bulk of plant species show multiple uses like Juglans regia wood is used for making furniture, gun woody parts, carving and as fuel. Root bark (Dandasa) is used for cleaning and sparkling teeth. Leaves are used by womenfolk for coloring lips (make-up). Nuts are edible and are traded to other parts of the country. The fruits are aphrodisiac and also used as dye. Decoction of leaves is given in eczema and intestinal worms. Used in naming i.e. Ghuz several species like Abies pindrow, Berberis lycium, Juglans regia, Skimmia (aureola). Daphne oleoides and Pistacea integrima are under severe pressure from local population and require protection and conservation strategies.

Hamayun et al. (2003) have reported that people of District Buner, Pakistan, rely on medicinal plants for curing different ailments since time immemorial. However, recent and ever increasing dependency of locals on allopathic drugs along with
industrialization, urbanization and globalization trends slowly but surely are modifying indigenous values and culture. The existing ethnobotanical knowledge of the area will not remain intact for long. Thus folk recipes used for curing 30 common diseases in the area were documented.

Shinwari et al. (2003) have surveyed the Astore area, Gilgit to provide information on the conservation of plant biodiversity, potential income to local people, and to determine and monitor harvest levels of medicinal plant. They mentioned that rapid decline of plant resources due to their conventional use needs ex-situ and in-situ conservation, training of the community regarding collection of medicinal plants and their marketing. 5 species out of 34 medicinal plants were found to be endangered, 18 to be vulnerable and 19 to be rare. The major threat of endagement was noted to Betula utilis, Ferula narthex, Podophyllum hexandrum, Saussurea lappa and Taimirix gallica.

Iqbal and Hamayun (2004) have reported that Malam Jabba valley, District Swat, Pakistan contains 187 plant species of ethnobotonical importance, belonging to 75 families. The plants were classified as medicinal plants (95 Spp.), agro forestry based plants (57 Spp.), vegetable and pot herb (39 Spp.), ornamental (32 Spp.) honey bee attracting (31 Spp.), agricultural tool making (32 Spp.), plants yielding edible fruits (30 Spp.), thatching and sheltering (27 Spp.) fencing and hedge plants (19 Spp.), poisonous (16 Spp.) and timber yielding plants (14 Spp.). The vegetation of the area is under high biotic pressure as a result of indiscriminate deforestation for different purposes and overgrazing as the locals are primarily dependent on the plant resources of the area. People utilize wood mainly as fuel and cut trees to make more land available for agriculture, Ruthless collection of medicinal plants in the area has threatened the existence of some indispensable and valuable medicinal plants like
Paeonia emodi, Podophyli mi hexandrum, and Vateriana Jatamans i and Acorus calamus in the area.

Ahmad et al. (2004) have reported that Manikhel forests, the far southern extension of Hindu Kush Mountain ranges, exhibit rich floral diversity in its nearly 175 Km2 area. It comprises sub-tropical semi deciduous thorny forests in the southern low lying Mediterranean type of climate and evergreen Oak-Yew forests in the northern faces of the Himalayan type of climate. According to them a wide variety of plants are present in the area but this investigation includes only 172 plant species belonging to 80 families, whose common use is either known locally or they are in daily use for various purposes. Bulk of these plants exhibits multiple uses. The local population is entirely rural and poor. They are primarily dependent on the forest resources for their necessities.

Mohamed Bnouham et al., (2006) have medicinal plants with potential antidiabetic activity – A review of ten years of herbal medicine research (1990-2000), in this paper they discuss the Medical plants play an important role in the management of diabetes mellitus especially in developing countries where resources are meager. This review presents the profiles of plants with hypoglycaemic properties, reported in the literature from 1990 to 2000. The profiles presented include information about the scientific name, family, methodology used, the degree of hypoglycaemic activity and the active agents. The large number of plants described in this review (176 species belonging to 84 families) clearly demonstrated the importance of herbal plants in the treatment of diabetes. It also shows the effort to isolate new potential antidiabetic agents. The plant families, including the species (sp), most studied for their, confirmed hypoglycaemic effects include: Leguminoseae (11 sp), Lamiaceae (7 sp), Liliaceae (8
sp), Cucurbitaceae (7 sp), Asteraceae (6 sp), Moraceae (6 sp), Rosaceae (6 sp), Euphorbiaceae (5 sp) and Araliaceae (5 sp). The most studied species are: Citrullus colocynthis (Opuntia streptacantha Lem. (Cactaceae), Trigonella foenum greacum L. (Leguminosea), Momordica charantia L. (Cucurbitacea), Ficus bengalensis L. (Moraceae), Polygala senega L. (Polygalaceae), and Gymnema sylvestre R. (Asclepiadaceae). Many studies have confirmed the benefits of medicinal plants with hypoglycaemic effects in the management of diabetes mellitus. The effects of these plants may delay the development of diabetic complications and correct the metabolic abnormalities. Moreover, during the past few years some of the new bioactive drugs isolated from hypoglycaemic plants showed antidiabetic activity with more efficacy than oral hypoglycaemic agents used in clinical therapy.

Jain .S .P (1994) has studied the tribal medicines, particularly for diseases for which the modern medical system has no effective treatment, localities on the Neterhat Plateau and adjoining areas were surveyed. Visits were made in different seasons, four times in two years, and tribal “herbalists” or individuals having medical knowledge of the local flora and living in the area were interviewed. Data on the medicinal uses of 105 plants species were gathered, of which 46 were recorded as new.

Jason Holley and Kiran Cherla (2005) have revealed the Medicinal Plants Sector in India: A Review. In this book they reviewed the medicinal plants sector in India. The Sector has traditionally occupied an important position in the socio-cultural, spiritual and medical arena of rural and tribal lives of India. In recent years, due to growing recognition of natural products and process in sustaining human and environmental health, the economic as well as environmental importance of the medicinal plant resources have increased tremendously. This review is an outcome of
an in-house study commissioned jointly by International Development Research Center (IDRC) and the World Bank. The information gathered mostly from secondary sources, not only highlights the immense wealth of the resources which exists endemically in the country, but also indicates the diversity and magnitude of research and development work being carried out within as well as outsider the country. The book brings to the forefront a number of technical, socio-economic and policy related issues facing the sector, which need to be addressed taking a holistic view of the complex inter-sectoral implications. A strong argument has been put forward indicating an urgent need to develop a long-term strategy for achieving sustainable use and community based biodiversity conservation of valuable plant resources. Importance of medicinal plants as a vehicle for rural development and livelihood improvement of the poor communities has also been emphasized as the overall goal of the sector development.

Tinde van Andel (1996) has revealed that medicinal plants are the first of Prota’s four volumes describing medicinal plants of tropical Africa. Compiled by a large number of contributors, many of whom from African countries, this book will be very useful for anyone working with or interested in African medicinal plants. It includes detailed descriptions of 134 wild, cultivated and domesticated medicinal plant species, with distribution maps and small, but clear line drawings. Much effort is made to provide reader-friendly information on the bioactive compounds of these plants and possible links between traditional use and pharmacological activity. The paragraphs on trade, propagation, management and handling after harvest, often derived from inaccessible ‘grey literature’ are also quite useful. The inclusion criteria of species in this volume are not entirely clear to the reader. Accounts of 272 plants of minor importance are given without maps or drawings, and another 488 species with limited medicinal use are shortly mentioned. Why are these lesser important species included
in the book, while other widely used and internationally traded medicinal species like *Prunus africana* and *Tetrapleura tetraptera* are left out? Fortunately, these missing species can be found in the excellent on-line database Protabase. Field guides on useful plants always attract a large, non-scientist audience, including decision-makers in politics and rural development. These readers form a target group of the Plant Resources of Tropical Africa (PROTA) project, but are in general less familiar with botanical descriptions. They will be disappointed by the limited number of drawings and local names, and the absence of an index of illnesses and a glossary that explains medical terms like *dyspepsia* and *schistosomiasis*. For some species (e.g., *Microdesma puberula*), a very detailed wood anatomical description is given, which is of limited interest to people looking for medicinal plants. Such information would be more appropriate in the Timber volumes. The remaining space could then be used to include more drawings or species. Some general Genus information (e.g. “*Croton* comprises around 1200 species…”) is often repeated for each species, while it could be mentioned once, at the beginning of the Genus, to save space.

Singh V.K., et al., (2007) have studied Folk Medicinal Plants used for the Treatment of Bronchial Asthma in India. A paper was presented in the International Society for Horticultural Science. In this paper they review asthma has no cure in modern medicine. There are, however, claims made by “tribal herbal medicine men” known as ‘Shariya’, ‘Chermule doctor’, ‘Bhagat’, ‘Guru’, etc. in different remote forest zones of India, to cure the disease by employing local flora and fauna. Twenty-two such selected folk recipes for the treatment of Asthma have been reported in this paper. But for one, all folk recipes are plant based. The information has been collected by ethno-medico-botanical explorations of forests in the states of Madhya Pradesh, Orissa, Bihar, Rajasthan and Uttar Pradesh, between 1970–1997 through interviewing
tribals and other ethnic groups. The present report provides 22 folk prescriptions comprising 33 medicinal plants for treating asthma by tribals and other ethnic groups in India. Folk name of the drug along with its taxonomic determination, parts used, recipe, preparation of medicine, mode of application, dose, duration of treatment and precaution, if any, have been given for each claim. The data were compared with important ancient and recently published reports. Most of the uses reported here are contemporary and do not seem to have been reported earlier. Since information given is already in use for treatment of patients suffering from Asthma, it would be worthwhile to put these claims on scientific trials to validate the folk information recorded in the field. It is likely through such investigations new drugs of natural origin which may be very specific to combat the disease may be discovered.

Padavala Ajay Babu et al., (2006) have studied a database of 389 medicinal plants for diabetes. Medicinal plants used to treat hypoglycemic and hyperglycemic conditions are of considerable interest to ethno-botanical community as they are recognized to contain valuable medicinal properties in different parts of the plant. The active principles of many plant species with desired properties are isolated to cure ailments such as diabetes type-1 and type-2, respectively. Here, we describe DiaMedBase, a database containing information of medicinal plants for diabetes.

Berhanemeskel Weldegerima (2009) has reviewed on the importance of documenting ethnopharmacological information on medicinal plants; this paper reviews and discusses the importance of documenting ethnopharmacological information on medicinal plants. The literature review was done by collecting relevant information from journal articles, workshop proceedings, books and electronic resources. The review sums up the importance of documenting the indigenous traditional knowledge
on medicinal plants as being a vehicle for; (i) preserving cultural heritage, (ii) ethnopharmacological bases of drug research and (ii) preserving of biological diversity.

John J. W. Copen (2002) has studied Eucalyptus; the genus Eucalyptus. This book is Volume 22 of the Series: Medicinal and Aromatic Plants-Industrial Profiles, edited by Roland Hardman. Consistent with the theme of the series, this volume is a compendium of 18 chapters providing a comprehensive review of the economically and medically important plants of the genus *Eucalyptus*. The book is conveniently divided into three parts, and each chapter is followed by an extensive list of references. Part 1 contains six chapters that provide a general understanding of this genus of over 800 species, including the botany of the genus, impact on the environment in different parts of the world, cultivation and genetic improvements that have been made in the case of oil-bearing species, the chemistry of eucalyptus oil (with structures of more than 30 volatile and nonvolatile compounds), and a discussion of the theory and practice of distillation of eucalyptus leaf oils. Especially noteworthy is the extensive table (Table 5.2, 38 pp) listing the characteristic constituents of the essential oils from the various species of eucalypts including the total percentage of essential oil and percentages of individual components. Entries are accompanied by references to the primary literature. This would certainly be useful to those natural products chemists interested in essential oils. Part 2 contains five chapters that deal with the cultivation and production of eucalypts around the world with special reference to the leaf oils. One chapter each is devoted to Australia, China, South Africa, the rest of the Africa, and India. Discussion includes some history, the species cultivated, various aspects of cultivation, leaf harvesting methods, oil production, chemical comparison of the oil derived from various species/regions, economic aspects, and uses of the oil. Part 3 deals
with the biological and other end-uses of eucalyptus oil and contains seven chapters. One is devoted to the chemistry and bioactivity of the nonvolatile constituents of eucalyptus including the polyphenols, macrocarpals, and other phloroglucinol derivatives, notably the euglobals. Detailed discussion of the isolation, structure elucidation, biosynthesis, and the biological activity of euglobals is included. The antimicrobial activity of eucalyptus oil is discussed in the next chapter, followed by a chapter on its use in insect and pest control. A further chapter focuses on the chemical ecology of herbivory in eucalyptus with special attention to the interactions between mammalian herbivores (mainly marsupials), as well as insects, and the essential oils. Another chapter is devoted to eucalyptus oil products in the market and discusses the use of the oil in pharmaceutical products, perfumery, aromatherapy, personal care products, and insect repellents. The chapter includes several tables providing details of these products in condensed format. Professor Coppen summarizes the production, trade, and market for eucalyptus oil worldwide in one chapter, while the final chapter expounds on current trends and future prospects in research on eucalyptus oil. The appendices provide useful information for growers and producers of the oil that includes addresses for purchasing seeds, quality criteria for the oil, and packaging and labeling requirements. The book is well indexed with a separate subject index and a species index. The book will be of interest to the general natural products chemist interested in learning more about this extensive genus, as well as to specialists working in the field of eucalyptus chemistry, biology, pharmacology, or botany.

Reynolds .T (2004) has reported that *Medicinal and Aromatic Plants-Industrial Profiles*, gives extensive information on the chemical, biological, and medicinal aspects of the genus *Aloe*. The thick and fleshy leaf of aloe plants can be divided in three zones: the outer green rind; the mesophyll that produces, when the leaf is cut, a usually
yellow-brown exudate (drug aloes); and the innermost colorless parenchyma containing a transparent mucilaginous jelly (aloe gel). Two plants dominate the commercial aloe market and the research literature: *A. vera* (L.) Burm.f. (*A. barbadensis* Mill.), which furnishes the gel now largely used in cosmetic and therapeutic preparations, and *A. ferox* Mill as a source of the drug, a bittering or purgative agent. In the preface of this volume, the editor provides a brief but very interesting overview of the history of aloes. The following 17 chapters are grouped by subject to form four parts. In Part 1, Chapters 1 and 2 treat the geographical distribution of the genus *Aloe* and the taxonomy of the *Aloaceae*, respectively. Part 2 deals with chemical investigations of *Aloe* species at the levels of exudate, gel, and whole leaf extract. Chapter 3 is a comprehensive review of the numerous phenolic compounds so far isolated from *Aloe* plants. These substances, which commonly occur as C- and/or O-glycosides, do not exist in the leaf parenchyma, where polysaccharides and glycoproteins are characteristic. From inspection of the structures of the low molecular weight phenolics, it is evident that all of them originate from the acetatemalonate pathway through cyclization of poyketide precursors. Thus, this kind of secondary metabolism appears to be typical of the genus *Aloe*. In my opinion, the only flaw in this excellent survey of the *Aloe* constituents is that the biosynthetic issue is neglected. Chapter 4 covers the chemistry of carbohydrates occurring in the gel. The structure of the primary polysaccharide, an acetylated mannann, is widely discussed since it is unique among the known plant mannans. Aloe lectins are the subject of the next chapter. Lectins are sugar-binding proteins or glycoproteins that agglutinate cells and/or precipitate glycoconjugates; their presence in *A. arborescens* was first reported in 1978. Since then, several aloe lectins (aloectins) have been isolated and partially characterized. In this chapter, the chemical properties, as well as the biological and pharmacological activities, of these substances are
extensively reviewed. They describe separation procedures and physical methods for determining the chemical composition of aloe pulp (Chapter 6) and drug aloes (Chapter 7). Chapter 8 tackles questions concerning the production and the commerce of different types of aloe gel. It is particularly intended for aloe processors and aloe purchasers. Part 3 is devoted to the pharmacological aspects of aloes and includes six chapters. Chapter 9 reports a large number of therapeutic applications of different aloe preparations with special emphasis on the laxative and collateral effects of aloe drugs. The next four chapters focus on A. vera’s wound-healing abilities (Chapter 10), on A. vera as powerful healer for thermal and frostbite injuries (Chapter 11), on the prevention of sun-induced skin cancer with plant saccharides (Chapter 12), and on interactions of the specific components of the aloe pulp with the immune system (Chapter 13). Chapter 14 addresses exclusively the bioactive properties of A. arborescens (also known as Japanese aloe). The last three chapters of the book (Part 4) discuss topics that are apparently unconnected: chromosomal evolution in Aloe (Chapter 15), aloe leaf anatomy (Chapter 16), and pests of aloes (Chapter 17). The book is well written and properly indexed and referenced (with literature coverage extending to 2002); in addition, all figures, tables, and chemical formulas are printed in a clear and consistent manner. In conclusion, the volume is highly recommended to anyone interested in studying the fascinating aloe plant from chemical, biochemical, pharmaceutical, taxonomic, horticultural, and economic points of view. It should also be in the library of any institution established for research in the areas of phytochemistry and phytomedicine.

Merlin Willcox, Gerald Bodeker and Philippe Rosoanaivo, (2004) have discussed about the Traditional Medicinal Plants and Melaria. This book is built up of six Parts, systematically subdivided into twenty-five separate chapters. Two of the co-
editors of the book wrote the Forward and the rich Introduction. The **Part 1** is appropriately devoted to the ancient utilization of herbs for malaria control, highlighting the role of traditional medicine and the limitations of the current global strategy as well as the various issues involved. The **Part 3**, consisting of five chapters, is used to complement Part 1 in this regard, having examined the socio-cultural, ethnomedical and ethnographic perspectives of plant use by different cultures in fighting malaria within the local communities, mostly by self-medication. Both **Parts 1 and 3** therefore, correctly remind us that, indigenous use of herbs can serve as potential leads to anti-malarial drug discovery, and that indeed, as seen in **Part 2**, the first anti-malarial drug, quinine, came from the Peruvian *Cinchona* tree. Furthermore, similar old and new examples of anti-malarial herbal development efforts, as case studies from indigenous plants of China, India, Ghana, Mali, etc., are also presented. In **Part 4**, the presentation of the laboratory research techniques has addressed the issues involved in pharmacological methods including toxicological evaluation of candidate plants. The three chapters under **Part 5** deal with some clinical and observational research findings subsequently specifying some guidelines for research in this field. The book consistently highlights the basic herbal medicine philosophy of multi-component nature (similar to the orthodox Polypharmacy) which may tally with the principle of synergism and may explain the observed absence of drug resistance in herbal therapy but showing the contrast of the mono-component approach by current scientific methods. Finally, there are four chapters in **Part 6** dealing with the latest information and research findings on insect repellence and malaria vector control agents in medicinal plants. Additional tips on appropriate research guidelines for potential research entrants into this field are generously provided. Overall, the book “**Traditional Medicinal Plants and Malaria**” has clearly conveyed the following
massages: The basic concept for developing the first line anti-malarials, stemming from the study and acknowledgement of traditional medical skills of some indigenous cultures, is presented in details. The advent and subsequent introduction of synthetic chemistry into the anti-malarial drug discovery, has halted the basic concept; but alas, the current clinical and pharmaceutical eventualities of that singular act (e.g. side effects, drug resistance, etc.) had again reminded us to go back to base where Artemisia annua has been found to provide the answer. Many other candidate anti-malarial plants with supposedly perceived efficacies may be waiting for similar opportunities for anti-malarial screening and subsequent development. The list of such plants can be derived from the book, for all interested readers. This neatly packaged text therefore, is being recommended for many categories of readers including medical, pharmaceutical, general and industrial drug scientists. Libraries of health care, teaching and research institutions and those who want a current book of facts as a springboard for the long awaited anti-malarial herbal industry will find it useful. Relevant research students and established investigators in this field, planning to publish their findings can use the well-researched articles, buttressed with nearly 1,500 references, glossary of technical terms, general index and epilogue for literature citations. Traditional healers, who appreciate scientific investigations prior to the claim of efficacy, will love to use this book.

Ramar Perumal Samy, Peter Natesan Pushparaj and Ponnampalam Gopalakrishnakone (2008) have discussed about the A compilation of bioactive compounds from Ayurveda. This review deals with the key bioactive compounds and the role of medicinal plants in Ayurvedic systems of medicine in India and their earlier investigation. There has been an increase in demand for the Phytopharmaceutical products of Ayurveda in Western countries, because of the fact that the allopathic drugs
have more side effects. Many pharmaceutical companies are now concentrating on manufacturing of Ayurvedic Phytopharmaceutical products. Ayurveda is the Indian traditional system of medicine, which also deals about pharmaceutical science. Different type of plant parts used for the Ayurvedic formulation; overall outline of those herbal scenario and its future prospects for the scientific evaluation of medicinal plants used by traditional healers are also discussed. In India most of them, where Ayurvedic treatment is frequently used, for their ailments and provides instructions to local people how to prepare medicine from the herbs. As much as possible importance is also given for the taxonomic literature.

Pushpam Kumar (2004) has revealed that emerging policy issues on valuation of plant diversity for pharmaceutical uses done in the last 15 years (1985–2000) have been considered for this purpose. Their methodologies have been scrutinized, findings evaluated and policy recommendations examined. Since these studies were meant to address different concerns, it is difficult to arrive at a general conclusion. However, the value of a medicinal plant varies from $0.2 to $340 million per annum. Conservation of biodiversity based on the benefits of medicinal plants or bioprospecting is the subject of dissenting views. A conservation strategy on the basis of the benefits of bioprospecting alone will need detailed area-specific study instead of a general and large landscape valuation.

Vivienne L. Williams; T.F. Witkowski; Kevin Balkwill (2007) have studied the volume and financial value of species traded in the medicinal plant markets of Gauteng, South Africa, The demand for traditional medicinal plants and products in South Africa has created an extensive cross-border industry involving thousands of harvesters and traders. The market values of individual taxa vary considerably. Pricing structures
fluctuate between markets and over time as the cost of harvesting species varies depending on a gatherer's access to the resources and the proximity of markets to the harvesting sites. This paper estimates trade values, describes the prices paid for 22 plant resources, investigates pricing structures relative to the mass/volume sold and the factors that influence the market price for plants. There is an inverse and disproportionate relationship between the price per kilogram (R/kg) and mass of the product sold. The smaller the quantity sold, the higher the R/kg sale values are relative to sales of larger quantities. This relationship is evident in different plant part types (e.g. bark and bulbs), species and markets (shops and street markets). Given the high mass sold relative to the price, bulbs, like bark, have the lowest R/kg values compared to other products like roots, fruits and leaves. The prices paid for heavier/denser species is thus disproportionate to the mass sold. If the relative values are used as an indicator of plant vulnerability (assuming high values indicate greater vulnerability), then bias is created in favour of 'lighter' and less dense plant parts typically sold in small quantities because of the nature of the plant part and the manner in which it is marketed and required by customers.

Katrina Brown (2004) has valued plant medicines: the economics of culture or the culture of economics? This paper explores the scope and limitations of the economic valuation of biodiversity. How and why is this a useful exercise, but in what way is its usefulness constrained? These issues are discussed with particular reference to cultural values within the context of medicinal plants and phytopharmaceutical development. It is argued that whilst economic valuation is an extremely important and necessary aid to formulating conservation policy, it probably is not that informative about the motivations of people in their use of certain natural resources. This is especially true for the case of medicinal plants where belief systems about the causes of
disease and therefore strategies for healing are important. The paper reviews studies which have attempted to put monetary values on medicinal plants and the option values of pharmaceuticals developed from plants, and discuss the applicability of the various approaches. The implications for conservation policy and for likely collaboration between social and natural scientists are discussed.

Jason Holley and Kiran Cherla (2008) have studied the Medicinal Plants Sector in India: A Review. The book reviews the medicinal plants sector in India. The Sector has traditionally occupied an important position in the socio-cultural, spiritual and medical arena of rural and tribal lives of India. In recent years, due to growing recognition of natural products and process in sustaining human and environmental health, the economic as well as environmental importance of the medicinal plant resources have increased tremendously. This review is an outcome of an in-house study commissioned jointly by IDRC and the World Bank. The information gathered mostly from secondary sources, not only highlights the immense wealth of the resources which exists endemically in the country, but also indicates the diversity and magnitude of research and development work being carried out within as well as outsider the country. The book brings to the forefront a number of technical, socio-economic and policy related issues facing the sector, which need to be addressed taking a holistic view of the complex inter-sectoral implications. A strong argument has been put forward indicating an urgent need to develop a long-term strategy for achieving sustainable use and community based bio-diversity conservation of valuable plant resources. Importance of medicinal plants as a vehicle for rural development and livelihood improvement of the poor communities has also been emphasized as the overall goal of the sector development.
Rajasri Bhattacharyya, Sabita Bhattacharya and Siddhartha Chaudhuri (2006) have revealed that conservation and documentation of the medicinal plant resources of India. In India, activities in the field of medicinal plants, including conservation of germplasm, have been enhanced significantly during the past couple of decades and a huge volume of data is being generated out of these works. For maintaining the records in a consolidated form, documentation is required to store and manage all information on the related studies. In accordance with the implementation of various plans and programmes, some pioneer organisations started developing databases on medicinal plants. Based on the knowledge on contemporary works, as collected from published literature and websites, this article presents information on current activities in India in two important aspects of the field, namely, (1) conservation of medicinal plants; and (2) management of data generated from such studies. Another important aspect of the article is the announcement of plant conservation related software, ‘PlantCon’. This digitized database contains data of 40 selected nationally prioritized medicinal plants (list enclosed). The notable difference of ‘PlantCon’ from other databases lies in its conservation-related information which is up-to-date and covers a wide area of Indian geographical sites. The database provides information in a user-friendly manner.

Zabta Khan Shinwari and Syed Shahinshah Gilani, (2003) have studied sustainable harvest of medicinal plants at Bulashbar Nullah, Astore (Northern Pakistan), Rapid decline of plant resources due to their conventional use needs ex-situ and in-situ conservation, training of the community regarding collection of medicinal plants and their marketing. In this regard, the Bulashbar valley, Astore, District Diamer was identified as a case study. The main objectives of this activity were to enlist economic, medicinal and aromatic plants including their occurrence, general distribution and abundance in the project areas; to determine traditional use and
pharmaceutical values of each medicinal plant species found in the project area. Ethnobotanical studies of the area revealed that 33 plants were being used by the local communities for medicinal purposes. Two species, *Bunium persicum* and *Ephedra gerardiana*, are recommended for in vitro cultivation to obtain quick benefits. While *Hippophae rhamnoides* can be sustainably used for socio-economic uplift of the local communities.

Qureshi S. J., Khan. M.A., Ahmad. M. (2008) have done a survey of useful Medicinal Plants of Abbottabad in Northern Pakistan, Abbottabad District has an interesting location of biodiversity, which serves a starting point for the great mountainous areas of Himalayan ranges. This survey was undertaken with an aim to document the indigenous knowledge of this area as new sources of drugs. The inhabitants of the area have always used medicinal plants for various ailments and have for a long time been dependent on surrounding plant resources for their food, shelter, fodder, health care and other cultural purposes. However, encroaching industrialization and the accompanying changes in their life styles are responsible for the declining of practice in the local use of plants for medicine. After thorough study, 47 plants were found to be ethnobotanically important. For each species the following information is provided: Latin binomial, relevant synonyms, voucher specimen number, vernacular names, flowering period, distribution, parts used and medicinal use(s). The important species of the area are *Colchicum luteum*, *Cichorium intybus*, *Hypericum oblongatum*, *Ficus carica*, *Lactuca serriola*, *Justicia adhatoda*, *Otostegia limbata*, *Incarvillea emodi*, *Dodonaea viscosa* and *Cyperus rotundus*. *Dodonaea viscosa* is an excellent remedy for toothache. *Incarvillea emodi* is vulnerable due to loss of habitats. Most of the reported medicinal plants are effective in antihelmintic, carminative, expectorant, stomachic and antiseptic activities.
Sheikh Saeed Ahmad and Syed Zahoor Husain, (2008) have studied Ethno Medicinal Survey of Plants from Salt Range (Kallar Kahar) of Pakistan, has confined to document medicinal uses of plants utilized by local communities on salt range (kallar Kahar) Pakistan. The purpose of this study was to collect information about the interaction of various communities of the area with plant wealth. The study presents data on 29 species belonging to 18 families. It was found that local communities of the area have rich tradition of using natural plant resources for their common day ailments. Local inhabitants both men and women believe that these plants based medicines are easily available, inexpensive and with no side effects. It was found that common disorders such as fever, cold, cough and diarrhoea could be treated by simple herbal teas and herbal powders. The reason for using medicinal plants by the local people of the area was that they are simple living, poor and cannot afford expensive synthetic drugs and their knowledge about medicinal plants has been passed on from their ancestor’s for generations. It was concluded that local authorities and other funding agencies should promote the cultivation and conservation of such natural resources of medicinal plants by involving the local communities of the area. It is also suggested that plants based industries and markets should be promoted in the area to alleviate the poverty problems of local communities.

Rizwana Aleem Qureshi, Syed Aneel Gilani and M. Asad Ghufran (2007) have analyzed Ethno botanical studies of Plants of Mianwali District Punjab, Pakistan, Medicinally important plants are necessary for the production of the various drugs and curing diseases. The local people use 26 species of the vascular plants of the Mianwali district for medicine, furniture and agricultural implements and as the food. The local community is extremely knowledgeable about the local plants but unfortunately this knowledge is going to be lost as traditional culture is disappearing. The information
obtained while studying the flora of Mianwali District, Punjab is presented here. For each plant its botanical name, family name, vernacular names and method of using this plant is given. Total of 21 species belonging to 16 families were recorded for the medicinal use and five species utilized for agricultural implements and for other purposes.

Muhammad Ishtiaq Ch, M. A. Khan, Amin ullah Shah (2001-2003) have done a study on, Plants used for Family Planning and Sex Disease Treatment in Samahni Valley, Pakistan. An ethno medicinal systematic exploration of medicinal plants of tribal area of Samahni valley with an inventory and mode of use is presented in this paper. This study was carried out during the years 2001-2003, in Samahni valley district Bhimber A.K. (Pakistan), using methods consisting of semi-structured interviews employing a check list of questions, questionnaires, direct observations and biological inventories. An exhaustive survey was conducted by frequent planned visits to collect ethno medicinal and ethno botanical data, which were being used by tribal people for population control and sexual diseases. The geographical isolation and hilly terrain has permitted the survival of folk herbal medicines. The inhabitants of valley use medicinal plants for ailments of sex diseases; among these uncommon use of Daucus carota, Solanum nigrum, Solanum surrattense, Withania somnifera, Bombax ceiba, Amaranthus viridis and of particular interest is the persistent use of Ficus racemosa, Coriandrum sativum, Setaria italica, Tribulus terrestris, Ceropegia bulbosa and Ficus bengalensis to check or produce off springs as in case of family planning respectively.

As for traditional medicines, we report for the first time the use of 36 plant species, distributed in 26 families, to treat sexual diseases and control birth rate, in Samahni valley. The most of these plants grow wild (55.55%), are indigenous (61.11%) and are herbs (52.77%). The plant parts frequently used are seed (22.72 %), root (20.45%),
fruit, leaf and whole plant (9.09%) each. Medications are mostly prepared as decoctions and infusions. Most of curative species reported here are directed to control family size and treat sexual diseases; Syphilis, leucorrhoea, menorrhagia, amenorrhoea, blennorrhoea, haemorrhoids, hydrocoele and regularize menses. The paper discusses ethno medicinal uses in qualitative and quantitative methodology and enlightens how data for ethno medicinal inventory of medicinal plants can be used effectively at local and regional level.

Zabta K. Shinwari (2010) has studied medicinal plants research in Pakistan, Out of about 258,650 species of higher plants reported from the world; more than 10% are used to cure ailing communities. Beside many known drugs (e.g. tubocurarine, reserpine, aspirin and morphine etc) is discovered based on traditional knowledge. Majority of the people in Pakistan rely on medicinal plants to find treatment for their minor, even in some cases major diseases. Some wild plants are now being commonly used e.g. Ephedra, Artimisia, St. John’s wort, Hippophae beside some that have been domesticated e.g. Garlic, Ginseng and Cumin etc. There is a local market system (Pansara) specifically dealing with medicinal plants business in Pakistan and several plants are exported. Plants having active constituents are used to treat various ailments in both human and animal. In most instances, certain plant species are considered specific for a particular illness but occasionally they have mixed usage. Women, followed by children, are identified as the principal collectors of medicinal plants. Due to over-collection, several species have gone extinct in the Hindukush-Himalayan regions. Local collectors, vendors, herbal drug dealers and others are the ones who threaten the flora of Pakistan contribute (though unknowingly) to the extinction of some and bringing others to the brink of extinction. Though medicinal plants from wild are important source of income for local communities, but if not properly managed, this
may lead to the destruction of habitat and in return extinction of species. There is therefore, a need to find ways to harvest medicinal plants sustainably from the wild, train local collectors (in proper collection techniques, train the people in growing medicinal plants, and remove some of the middlemen from the trading chain. In the present article, an effort was made to review the status of medicinal plants research in Pakistan.

Shekhawat N.S. et al., (2006) have done a study on "Establishment and Economic Evaluation of Micro propagated Jeewanti (Laptadenia reticulata Wight & Arn) plants in field. They pointed at that Leptadenia reticulata weight & Arn is an important Medicinal plants. There is heavy demand of the plant and its biomass which cannot be fulfilled by the natural/present practices of propagation. Natural propagation of this plant in poor and the plants is threatened in nature. Thus, there is a need for applying biotechnological methods for large scale propagation. The hardened plants were transferred to polybags and kept in shade house for acclimatization. Subsequently field trails were carried at of some villages. This study establishment of micro propagated plants, cultivation, growth and net profit for biomass produced has been reported for environmental conditions of Rajasthan. Total dry biomass harvested was 2800 kg/acre for first year and 3000 kg/acre for second year.

Anand R.M. et al., (2006) have written about "A Survey of Medicinal plants in Kollimalai Hill tracks TamilNadu". Their survey of India was conducted to record the plants known in the tribal pockets. Inhabitants utilize a number of medicinal plants for the treatment of various attentions of phytochemists and pharmacologists to the need of the future critical study. If the efficacy of each plant is scientifically established then
these plant drugs can be recommended to rural people who are within the reach of these potential drugs.

Laloo R.C. et al., (2006) have explained that status of Medicinal plants in the disturbed and the undisturbed sacred forests of Meghalaya, northeast India. The population structure and regeneration efficiency of some important species are used by indigenous people as a traditional medicine were identified from a disturbed (sewer) and undisturbed (Marian) sacred grave of Meghalaya. Medicinal flora of the two sacred groves consists of 80 woody species. Species richness was adversely affected by anthropogenic activities and it’s decreased from 57 in the undistributed to 41 in the distributed sacred grove. The position of common species was changed from undisturbed to disturbed forest. The population structure and regeneration potential of Camellia Caduca (endemic and less frequent), Cinnamomum pauciflorum (endemic and rare) Erithroxylum kunthianum (endemic) and picrasma Javanica (rare) were studied.

Aravind Singh (2007) has studied "Boerhaavia diffusa: An over-exploited plant of Medicinal importance in eastern Uttar Pradesh" He pointed out Boerhaavia diffusa is an herbaceous plant species growing prostrate or ascending upward in habitats like grasslands agricultural fields, fallow lands, waste lands and residential compounds. It belongs to the family Nycatginaceae of Angiosperms. The plant is mentioned in the Atharvaveda with the name 'punarnava', because the top of the plant dries up during the summer season and regenerates again during the rainy season. Thus the plant generally perennates through the roots in the soil. The plant is digestive, diuretic, and anti-inflammatory and it’s effective in Jaundice and stomach ailments.
Jeyaram K. and M.N.V. Prasad (2007) have studied that "Drosera indica L. and D. burmanii vahl medicinally important insectivorous plants in Andhra Pradesh-regional threats and conservation". Drosera indica L. and D. burmanii vahl have stated that population is dwindling due to various environmental factors, medicinal value is one. Extensive field surveys have been carried out during 2001-2003 and the causes for their depletion were recorded. Seeds collected were subjected to various treatments to observe the germination. The rate of germination is unpredictable. To using scanning electron microscopy of the seeds indicated distinct sculpture for these two species.

Indrayan A.K. et al., (2007) have revealed that "Comparative chemical study of two varieties of attractive medicinal plant kaempferia galanga Linn. They pointed out 'kasthuri' and 'Rajani' varities of medicinal and ornamental plant kaempferia galanga Linn. Differ morphologically. The essential oil from their rhizomes has remarkably different specific gravities, refractive indices, saponification and iodine value. A total no. of 58 and 56 compounds have been identified in ‘kasthuri’ and ‘Rajani’, respectively.

Dwivedi S.N et al., (2005) have exhibited that “Medicinal plant use by the tribal and rural people of Santa district, Madhya Pradesh for the treatment of gastrointestinal diseases and disorders". The gastrointestinal ailments are very common among the people of our country and Tribal are live that it is a root cause for the occurrence of several other diseases. Modern synthetic medicine has so far not produced any effective curative drug. It only gives temporary relief. However, traditional herbal medicine has a better remedy for the diseases of digestive system.

Sanjay Kr.Uniyal et al., (2006) have explained that “Quantitative assessment and traditional uses of high value medicinal plants in chhota Bhangal area of Himachal
Pradesh, Western Himalaya”. They highlighted eight traded and locally used medicinal plants were collected from the alpine zones of chhota Bhangal. The study aimed to qualified the current status of these plants in terms of density, frequency and biomass, and also document the indigenous use of these plants for traditional health care.

Somesh Yadau and Himshikha Yadau (2007) have explained about “An Assessment of cytotoxic potentiality of medicinal plant (Momordica charantia) Fruit Extract on the Root meristem cells of vicla Faba. They said Momordica charantia fruit extract aqueous solution was proved to be mitodepressive except with 100 ppm concentration for 2 hrs treatment. The mitodepressive increased as the time of exposure was increased. Several chromosomal aberrations were also increased as the time exposure was increased. Several chromosomal aberrations were also induced during the treatment. Chromosomal breakage, bridge formation and polarity abolition at anaphase were also recorded.

Rajeev Kumar Singh (2007) in his Article “Floristic wealth of Valmiki National park, Bihar-An overview” He study about the, a general account of the vegetation pattern of the National valmiki park has been described. About 700 species spread over 459 genera and 117 families are reported. Apart from this, rare and threatened plants, endemic species, economically important plant and factors affecting the vegetation are also discussed. Conservation measures are proposed to product the natural vegetation.

Datta S.K. (2001) has reveled that “Marketing of wild Medicinal plants” is quite extensive knowledge of medicine available from Indian forests lies only with the tribal societies that inhabit such regions. Ensuring an end to the age-old exploitation of tribal societies at the hands of intermediates and by the effective intervention of state
government and NGOS, the tribal economy based on sale and production of wild medicinal plants can truly thrive from its integration with the market economy.

Manu N. Kulkarni (2004) have revealed that Drug Makers, Providers and Users" focused on the discovery-to-delivery process, IPRs, and the benefit of building alliances in the pharmaceuticals industry. However, the issue of clinical trails, which is of great importance in India given its significance as a clinical trails destination, was not discussed extensively at the meet.

Wishvas Rane (2003) has revealed that prices of drugs over the last four years shows that there has been a consistent overall rise in drug prices. Drugs which need to be used over a long period, such as those used for tuberculosis and diabetes, are especially affected.

Jean. O. Lanjouw (2005) has studied that Indian pharmaceutical firm. The set of diseases still in need of better low-cost treatments has seen a trend increase in its share of patenting and bibliometric citation. While overall investment pharmaceutical R&D in India surged over the past five years, it became less targeted towards the health needs of the developing world.

Lalitha N. (2005) has discussed three important aspects of the Canadian pharmaceutical industry; compulsory licensing (CL), Price control on patented drugs and the R&D scenario. Unlike other developed countries, which have adopted the route of providing higher intellectual property rights (IPRs) production to promote the growth of the domestic pharmaceutical Industry, Canada chose to limit IPRs on Important pharmaceutical industry is backed by a well-established homegrown chemical Industry, Canada lacks this advantage.
Richard Evans Schulte’s (1993) has discussed 80,000 species of plants in the Amazon forests only minuscule percentages have been even superficially analyzed. It will be default to obtain sufficient quantities so many species from such a remote area. A recent 48 years study of medicinal and toxic plants of the Colombian part of the Amazon has recorded nearly 1500 species utilized by the aboriginal population.

Prabhakar Joshi (1993) has revealed that 7 plant species used by then in case of snakebite and 11 in case scorpion stings are enumerated. The myths and beliefs surrounding these creatures are also briefly described. Attempts have been made to compare this data with practice of other tribes and Ayurveda- the Indian traditional system of Medicine.

Singh V.K. (1993) has discussed forty two commercially important medicinal species of the area, widely used in the indigenous systems of medicine. For each plant drug, the Vernacular name(s) in Unani, Ayurvedic/Hindi, along with their botanical equivalent, annual output and consumption. Time of collection and place(s) of common Occurrence are provided in tabular form. The need for the organized bulk collection of such drugs by the tribal has been stressed to improve their economy.

Abduraham E.M. et al., (1993) have highlighted that traditional medicine is widely used in Nigeria. Each region in the country has it own traditional recipes for various ailments. Most of these recipes, particularly those of the Northern region of Negeria are not properly documented Nine most commonly and widely dispensed preparations in part of the Northern Nigeria and described 5 of these preparation are used for the treatment of epilepsy and 2 each for diarrhoea and dyserrery.
Baku E.S.K. et al., (1993) have explained about the practical experience gained over the years on the efficiency of Medicinal plants through the work of Nazareth Healding complex, Ghana. Ninety nine taxa of local therapeutic value collected and used in the 30 primary Health center attached to the complex within a radius of 45 kms are brought to light. Scientific screening of all herbs reported is suggested in the contest of claims reported.

Amin E.L. and Rayah Mohammed (1993) have reviewed the native uses of Medicinal plants of Sudan for treating asthma, body pain, cough and cold and other diseases etc. The information provided includes botanical names and local names and shot botanical description, mode of application along with precautions. The research between Medical Experts and traditional Medical people has been stressed to find new drug of natural origin".

Singh V.K. (1993) has explained that modern medicine does not offer satisfactory cure for ailments like Asthma, Arthritis, Jaundice, leucoderma, piles etc. Therefore, the Folk name of the drug plant or its part along with the taxonomic determination, part used, recipe, preparation of medicine, mode of application have been detailed for each clan.

Singh V.K and A.K.M Ghoushe (1993) have discussed about the many fold expansion of the pharmacies of ISM consuming enormous amount of raw materials, leading to the extinction and depletion of forest wealth, need for the plantation of some medicinal plants. A list of plants having good exports potential which should receive priority for plantation is provided.
Ahmad R.V (1993) has explained that the medicines used in Indian system of medicine to cure different ailments, are manufactured by utilizing, minerals and animals mainly the plants. There are about 1500-2000 plant species reported to be medicinal in the Country. At present some 1500 drug yielding plants are well identified and well known with their uses and vernacular names.

Raychaudhuri S.P. and Javed Ahmad (1993) have discussed the experimental demonstration cultivation practices of some important plants in India viz., sandal Wood, balangu, seed etc. A list of 144 medicinal herbs of choice of cultivation has been studied cultivation aspects of important Drug yielding plants commonly used in indigenous system of medicine re-stressed.

Pareek S.K and Rajendra Gupta (1993) have discussed that the medicinal and aromatic crops have produced radical changes in the economics of Cultivation due to their increasing demand of raw materials in the country and also for exports. Account of such crop which may be included over marginal lands with low inputs. Cultivating some medicinal plants changes the landscape and proved more remunerative over fertile irrigated lands in certain parts of the country.

P.C. Data (1993) has explained the biotechnology includes DNA manipulation, tissue and cell culture etc, if the object is direct application in industries. DNA manipulation have given additional power to conventional plants treading of genotyps changes become directly available to plants breeders Cell culture separates cells having genetic diversity and facilitate selection from them.

Soejarato D.D and C. Gyllenhaal (1993) have discussed about the nomenclature deficiencies with the hope that if would motivate a scientific and other techniques of medicinal plant research to report more carefully and accurately the taxonomy and
The nomenclature of medicinally useful plants. So that it will increase the quality and completeness of our scientific communication.

Vinay Tandon (2006) has stated that the conservation of an animal or flora species in its natural habitat and encompasses conservation of taxa (species, varieties) and the genetic species and ecosystem level. Thus, it is important not just to conserve certain plants but to conserve the genetic variation within that species, as also to conserve the habitats where such species in habit naturally.

Srinivasan S. (2001) has revealed that the number of drugs under the drug price order; such a dilution has not been recommended by the report of the government appointed committee of drug pricing.

Amit Sengupta (1994) stated that the government has yielding pressure from industry and moved towards easing control mechanisms for pharmaceuticals in the new drug policy. The impact of the policy on the production of drugs and their prices should be assessed against the background of the government’s earlier moves to progressively minimize controls.

Wish Vas Rane (1993) has discussed about the drug prices appear to have stabilized in the first six months of the year, this is not an indication of a trend, for it has to be seen in the context of the very high price rise in the previous six months.

Chandra Prakash Kala, Pitamber Prasad Dhyani, and Bikram Singh Sajwan (2006) have discussed about the medicinal properties of plant species have made an outstanding contribution in the origin and evolution of many traditional herbal therapies. These traditional knowledge systems have started to disappear with the passage of time due to scarcity of written documents and relatively low income in these
traditions. Over the past few years, however, the medicinal plants have regained a wide recognition due to an escalating faith in herbal medicine in view of its lesser side effects compared to allopathic medicine in addition the necessity of meeting the requirements of medicine for an increasing human population. Through the realization of the continuous erosion of traditional knowledge of plants used for medicine in the past and the renewed interest at the present time, a need existed to review this valuable knowledge of medicinal plants with the purpose of developing medicinal plants sectors across the different states in India. Our major objectives therefore were to explore the potential in medicinal plants resources, to understand the challenges and opportunities with the medicinal plants sector, and also to suggest recommendations based upon the present state of knowledge for the establishment and smooth functioning of the medicinal plants sector along with improving the living standards of the underprivileged communities. The review reveals that northern India harbors a rich diversity of valuable medicinal plants, and attempts are being made at different levels for sustainable utilization of this resource in order to develop the medicinal plants sector.

Green Halgh (1979) has stated that the various forms in which herbs are traded, the specific aspects of major herbs, the uses of the herbs and the quality specifications. In the field of marketing he has discussed the pattern of world trade for herbs, the pricing and consumption characteristics of the major markets. He has concluded that growing herbs is of no encouragement to un-experienced growth who aims for quick return from small investment.

Bannerman et al., (1983) have reported that the medicinal plants are used at the household level by women taking care of their families, at the village level by medicine
men or tribal shamans, and by the practitioners of classical traditional systems of medicine such as Ayurveda, Chinese medicine, or the Japanese Kampo system. According to the World Health Organization, over 80% of the world’s population, or 4.3 billion people, rely upon such traditional plants-based system of medicine to provide them with primary health care.

Atisso (1983) has stated that the global market for medicinal plants has always been very large. According to the international trade centre, as far back as 1967, the total value of imports of materials of plant origin for the pharmaceutical and cosmetics industry was of the order of USD 52.9 million. From this amount, the total value grew to USD 71.2 million in 1971, and then showed a steady annual growth rate of approximately 5-7% through to the mid-1980s.

Ashok Sharma, Anup Kumar and Virmani (1984) have analysed the biological background for cultivation of senna including soil, climate, land, manures, irrigation and weeding. They have also analysed the various types of pests and disease that cause damage to the plant and effective steps to overcome the same.

Sundaresh (1981) has reviewed the ‘Export potential of Medicinal plants and their derivatives in India’. Senna is found to be one among the principle drug finding a wide market abroad and he has stressed the need for increasing the production of medicinal plants where soil conditions are suited for their cultivation.

Kapur and Atal (1989) have analysed the market potential for Senna. The major import markets are found to be U.S.A and U.K. and most of the produce is shipped from Tuticorin and Bombay. The estimated world demand for Senna is 10,000 tonnes per annum on an average. Hence, the authors have stressed the need to increase cultivation of Senna in India.
Farnsworth and Soejarto (1991) have discussed and analyzed about the basic preventive and curative health care since time immemorial. Recent estimates suggest that over 9,000 plants have known medicinal applications in various cultures and countries, and this is without having conducted comprehensive research amongst several indigenous and other communities.

Pareek, et al., (1993) have critically evaluated that cultivation expenses of medicinal plant is Rs.3,000 per hectare under irrigated conditions and the price for senna is around Rs.800 per quintal for pods of average fair quality.

Tempesta and King (1994) have discussed the significance of the medicinal plants sector has begun to emerge. Interest in natural materials by the dominant economic powers had waned from the last 1960s to the early 1980s as new possibilities in biotechnology and the systemization of drugs beckoned. But by the mid-1980s there was a renewed interest in natural materials and approaches to health care, coupled with recognition that technology alone could not solve the pressing health care needs of the world’s population.

Srivastava et al., (1995) have explained about the allopathic medicine too owes it tremendous debt to medicinal plants: one in four prescriptions filled in a country like the United States are either a synthesized form of or derived from plant materials

Pearce and Purushothaman (1995) have developed a theoretical model and estimated the commercial use value of medicinal plants of Tropical forestlands. They argue that the use value component of medicinal plants is relevant for conserving biological resources, especially in developing countries. It is reported that there are several ways to approach valuation of medicinal plants. Important among them are (1) by looking at the actual market value of the plants traded (2) by looking at the market
value of the drugs for which they are the source material and (3) by looking at the value of the drugs in terms of their life saving properties. The empirical estimate of the study shows that the value of medicinal plants ranges from $0.01 to $21 per hectare.

Simpson (1997) has estimated pharmaceutical company’s Willingness to Pay (WTP) to preserve a hectare of land for biodiversity prospecting. Per hectare value is ranges from $0.02 to $2.29. According to the estimate, he argue that conservation effects should not be based only on value of biodiversity prospecting since it may generate a negligible part of economic value. The current status of the medicinal plants sector in India is supported the primary health care needs of most of the country’s population. Much of the health care sector in India is informal, as she has three major systems of traditional medicine. However, many plants products are used for tribal and folk medicinal practices, which have not been properly studied. India therefore is one of world’s most medico-culturally diverse countries. India, known to be a storehouse of biological diversity, has to focus on sustaining the resource base of medicinal plants. Efforts to relieve pressure on wild plants through cultivation have made a good start but have a long way to go. This is a complex issue by virtue of the sheer numbers of plant species and the need for sustainable propagation, suitable agronomic practices, the selection of superior genotypes and linking production to people.
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