CHAPTER II

REVIEW OF LITERATURE
In India, the plant diseases were recorded much before Theophrastus period as evidenced by many ancient religious literature, *Rigveda*, *Atharva Veda* (1500-500 B.C.). The *Artha Shashtra* of Kautily (321-186 B.C.) *Sushruta Samhita* (200-300 A.D.) *Vishnu Puran* (500 A.D.) etc. are ancient books from India where plant diseases and other enemies of plants have been mentioned alongwith the methods to control them. From these ancient books it appears that the system of agriculture had developed much earlier and special attention was given to plant diseases and pests. Many symptoms viz., blight, rust, root rot etc. were known at that time. In *Rigveda*, not only the classification of plant diseases has been given but the germ theory of disease was also advocated. The learned persons in Vedic period were aware of the fact that diseases are caused by microorganisms. *Vraksha Ayurveda*, a book written by surapal in ancient India is the first book in which light has been thrown on plant diseases. Symptoms of plant diseases are mentioned in Bible, Shakespeares poems and dramas and other Christian literature in the same manner as they have been mentioned in Hindu methodology, Jataka of Buddhism, *Raghuvansha* of Kalidasa and other ancient literature. Rust, Smut, downy and powdery mildews. Blight are quoted very often in Bible.

It is evident from the ancient literature that the fungi were not unknown to our land. It is therefore
surprising that in India, the study of fungi commenced practically after the middle of the nineteenth century.

A survey of available literature reveals that almost no or very less systematic of forest diseases has been undertaken in India. Previous records merely consist of occasional notes and / or short papers from various officers and workers of the forest department describing some diseases of forest plants caused by fungal pathogens.

In this field of study, the very first article on Fungal diseases of some forest trees was published by Cook in 1876-77 and then in 1877-78 in Indian Forester.

Barkcly (1886 a. b. 1890a, b, c, 1891) reported the rusts of Abies semitheana and Cedrus deodara. Investigations on rusts of forest trees include details of various species of Peridermium (Khan, 1928; Bagchee, 1929) and Cronartium coleosporium (Khan, 1928).

The work on forest mycology and pathology before 1920 was reviewed by Bagchee (1931). Later on Bagchee (1933,1941, 1956, 1950a, 1950b and 1969) made valuable contributions on the fungi of forest plants.

Butler (1950) contributed greatly to our knowledge about various rust diseases of wild plants. Arthur and Cummins (1932), Sydow (1938), Ramkrishnan and Soumini (1946). Thirualachar (1945,1946,1949a, b 1950) Thirumalachar and Narshan (1947) Gopalkrishnan


The period of 1950s can be regarded as the best decade of this century as regards to new spurt in the stream of endeavour and intensity of work at various mycological centers, then a foot in the country some of the workers who started work during this period are continuing.

The praiseworthy contributors are Ramakrishnan (1951, 1952); Ramakrishnan & Sundram (1952, 1954, 1955); Subramanian (1952a, b; 1956a, b; 1962a, b; 1971); Thirumalachar & Govindu (1953a, b; 1954, 1956); Thirumalachar & Mishra (1953); Chona &
Munjal (1954); Das (1957); Salam & Rao (1957); Agnihotru (1958, 1962, 1965, 1971, 1979) Dube (1958); Mohanty (1958); Salan et al (1958); Vasudeva (1958, 1963); Agrawal et al (1959); Chona et al. (1959); Chiddaarwar (1959a, b, 1962); Munjal et al (1959a, b, 1960, 1961); Sehgal (1959); Agarwal & Beliram (1960); Jain et al, (1960).

Studies in the field were again substantiated and enriched by several others who made their contributions from 1960 and onwards and some are still continuing. For their valuable contributions Agrawal (1961, 1962a, b, 1965); Agarwal & Hasija (1961a, b, c, 1964, 1966); Bhargava & Mishra (1961); Lall et al (1961), Nair & Tyagi (1961); Ananthanaryanan (1962): Hasija (1962a, b, 1963a, b, 1964, 1966a, b,); Lall & Gill (1962); Munjal & Kapoor (1962, 1963); Prasad and Sinha (1962); Rao (1962, 1964, 1965, 1966); Ganguly & Pandotra (1963); Patwardhan (1963); Sukhapure & Thirumalachar (1963, 1965); Agrawal & Sahni (1964); Govindu & Thirumalachar (1964); Pandotra & Ganguly (1964); Parndenkar (1964); Patil (1964 a, b, 1973, 1974a, b, 1989); Pavgi & Singh (1964, 1965, 1971); Pavgi & Upadhyay (1964); Sahni (1964, 1966 a, b, c, (1968); Srivastava et al, (1964); Tandon & Chandra (1964); Patwardhan & Sathe (1965); Ray (1965); Chowdhary (1966, 1971); Munjal & Sethi (1966); Pandotra (1966); Patil & Thirumalachar (1966,); Prasad et al. (1966); Gupta (1967); Muthappa

Though there appears a sharp decline in the quantum of work done during 1970s. However the contribution of Narain & Saksena (1971); Rawia (1971); Singh (1971, 1976); Agrawal & Singh (1972); Rai et al., (1972); Rao & Patil (1972); Agrawal & Sharma (1973); Sharma & Agrawal (1973); Gupta (1974); Pande (1974); Panwar & Vyas (1974); Rao & Narania (1974); Singh et al., (1974); Malik & Purkeyastha (1975); Reddy et al., (1975); Sharma (1975); Vittal (1975); Bhargava & Nath (1976); Mathur & Jaiprakash (1976); Mishra et al. (1976); Sublish & Singh (1977); Gaikwad & Rene (1977); Gupta & Madan (1977, 1982); Kamal et al., (1977, 1978, 1979 a, b, 1980a, b, c, d.e, 1981 a, b, 1982, 1983 a, b, 1984a, b, 1985, 1986, 1990a, b,); Kanaujia (1977); Kapoor & Chowdhary (1977); Rajak (1977); Raut (1977); Singh (1977, 1979, 1980, 1981); Somani et al., (1977); Tandon & Srivastava (1977); Tripathi & Beniwal (1977); Agarwal & Sarbhoy (1978, 1980); Kamal & Singh (1978 a, b, 1980a, b, c, 1981); Kapoor and Agarwal (1978); Kanaujia & Sing (1978a,b); Rajak & Gautum (1978); Rajak et al., (1978); Singh (1978, 1980 a, b,); Singh & Kamal (1978a, b, c,);
Bilgrami et al., (1979, 1981); Mishra & Nema (1976); Kumar (1979); Kumar & Kamal (1979 a,b,c, 1981 a,b,c, 1982, 1986); Srivastava & Bhargava (1979); Chitriv & Somani (1980); Chitriv & Wanglkar (1980); Chos & Ikram (1980); Chouhan & Panwar (1980a,b); Chowdhary (1980, 1982a, b); Chowdhary & Bhal (1980); Dargan & Thind (1980); Deoray (1980); Ghosi & Gupta (1980); Gupta et al., (1980); Kar & Mahaptra (1980 1981); Kumar et al., (1980); Lal & Mathur (1980); Mathur (1980); Nath & Bhargava (1980); Pandey et al (1980); Peddy et al., (1980); Rai et al., (1980, 1982a,b, 1986); Sakia & Sarbhoy (1980a, b, 1981a, b, 1982); Singh et al (1980); Srivastava (1980, 1982a, b,); Thind & Dargan (1980); Vyas et al (1980); Wadje & Deshpande (1980); deserve mention.

(1985); Ahmed (1986, 1989); Das et al., (1986); Gupta et al., (1986); Kamal & Naraiyan (1986); Kar & Ghos (1986); Mahrishi (1986); Mohanan & Kaveriappa (1986); Nair (1986); Upadhyay et al., (1986); Kumar & Verma (1987); Panwar & Kapoor (1987 a, b,); Subramanian & Bhat (1987); Sultana (1987); Verma & Kamal (1987); Agarwal et al., (1987); Thebeholia & Sinha (1988); Gupta (1988); Kar & Das (1988); Das et al., (1988); Mishra (1988); Manoharachary & Rao (1988); Rao & manoharachary (1988, 1989a, b,); Rao et al., (1988); Singh et al., (1988); Verma et al., (1989); Adhikari (1989); Bhansali (1989); Budathoki et al., (1989); Gour & Sharma (1989); Gupta & Kamal (1989); Khan & Krug (1989); Nagraj (1989, 1990); Panwar & Patil (1989); Purohit & Chawla (1989); Rao (1989); Raut & Hoshi (1989); Ananthaphadmanaban (1990); Crous, P. W. and Wingfield (1990); Das & Chattopadhyya (1990); Deighton (1990); Dubey et al., (1990); Hsieh & Goh (1990); Kamal et al., (1990); Kodrick et al., (1990); Kobayashi & Onaki (1990); Nagraj et al (1990); Pandotra (1990); Rai & Kamal (1990); Sutton & Hodges (1990); Sarbajna & Chattopadhyay (1990); Sivanesan & Haich (1990);

In beginning of 1990's a lot of valuable endeavours have been made on Deuteromycetes particularly hyphomycetes from different from different parts of world including India. Chandra et al (1991); Firdousi et al (1991); 3.Sarbhoj & Agrawal (1991); Kamal

However, in Madhya Pradesh no significant work regarding the extensive and detailed survey of forest has been undertaken. Credit goes to Agrawal, Hasiza, Sahni and Co-workers at R. D. University, Jabalpur for their initial contribution in taxonomy of the forest, fungal pathogens during early 1950s. Several workers have worked on the foliicolous fungi occurring in the forest plants causing foliage disease in Jabalpur and surrounding areas.