Powdery mildew occurring on the wild as well as cultivated plants are due to fungi belongs to the order Erysiphales and family Erysiphaceae. The fungi grow ectoparasitically on the surface of the plant parts. The superficial mycelium of the fungi produce enormous number of conidia, usually on the leaf surfaces and other aerial part, which appear like a mass of white powder, hence the disease is popularly known as “powdery mildew”.

Powdery mildew is more common on cultivated plants and grow luxuriantly in dry and cool climate. It grows abundantly in low temperature with high humidity. Germination of conidia of the fungi in dry season supports the production of dark superficial perithecia, cleistothecia present in group. Depending upon the environmental conditions the powdery mildew diseases cause significant destruction and loss in crop plants and ultimately to the production. With the onset of summer, they began to disappear and the plants become free from the infection during scorching heat and rainy season. Hirata (1966) reported that powdery mildews occur on more than 40,000 plants species of Angiosperms. This disease was dominantly reported on members of families like Asteraceae, Cruciferae, Leguminosae and Cucurbitaceae.
Cucurbits is a common term used for all the wild and cultivated members of family Cucurbitaceae. This family represents with 90 genera and 700 species. Most of the cucurbits are cultivated as a fruit and vegetable in all over the world. The cucurbits in the field are affects by several pathogens like bacteria, virus, mycoplasma, nematodes and fungi.

However, powdery mildews of cucurbits is very wide in its distribution. It occurs everywhere in cucurbit growing area of the world, (Salmoon, 1900). In India cucurbits are mainly infected due to *Erysiphe cichoracearum* and *Sphaerotheca fuliginea* however in northern part of India, *Leveillula taurica* was also reported on the cultivated plants, which reduce the yield considerably. In the literature cited very little information was available regarding the host range of the pathogen; biochemical changes occur due to the pathogen and the eco-friendly management of the disease. Considering the importance of the fact present topic has been selected and the thesis is divided into two parts.

The first part of the research work has been fully devoted on extensive survey of powdery mildew occurring on cucurbits from Jalgaon District of Maharashtra State. For this combine report of 2004, 2005 and 2007 of survey has been prepared and detail symptomological and etiological record has been prepared from wild and cultivated members of cucurbits. For further studies of powdery mildew only ten host crop plants of this region has been selected they are, 1) *Citrullus fistulosus* stock; [Round gourd]; 2) *Citrullus lanatus* stock [water melon]; 3) *Cucumis*
sativus L, [cucumber], 4) Cucumis melo L; [musk melon]; 5) Cucurbita maxima, Duch ex Lank [Read pumpkin], 6) Cucurbita pepo. L; [pumpkin]; 7) Lagenaria siceraria, stanal; [Bottle gourd]; 8) Luffa acutangula (L). Roxb [Ridge gourd]; 9) Luffa cylindrica (L) Roem. [Sponge gourd];/10) Momordica charantia L. [Bitter gourd].

The growth of powdery mildew was mostly reported on old leaves but in some plant it was also reported on other part like young stem, tendril, flower and fruits. The incidence of powdery mildew on different part of the crop in relation with loss in crop yield has been recorded. Attempts have been made to know the other pathogens occurring along with powdery mildew on the crops. In order to known the life cycle of the pathogen a survey of cucurbits and non-cucurbits plant has been made in the same region. Physical factor like temperature, relative humidity, rainfall etc as well as pH of soil plays a vital role in disease development hence attempts have been made to study these physical factor and the results are very much interesting.

Second part of the work deals mainly on the histopathological work and the biochemical changes of ten cucurbit crop plants which were infected by Erysiphe cichoracearum and Sphaerotheca fuliginea. Result regarding change in chlorophyll contain in plant, reducing sugar contain crude fat, Ash, Carbohydrates changes etc. are studied in detail. Comparatively biochemical changes in healthy and infected leaves of cucurbits showed interesting results in its content. Results of such study is
found to be highly significant for the pathogen causing powdery mildew of cucurbit.

Eco-friendly management of the disease were studied in detail by using biological products. Effect of higher plant extract to control powdery mildew occurred due to Erysiphe cichoracearum and *Sphaerotheca fuliginea* where studied in detail at different concentration level. Effect of Neem Parthenium, Citrus, Jowar, Ipomea, Custard apple, Oscimum, leaf extract prepared in water used separately given promising results. Effect of curd plant Ash and cow urine was also tested. In order to study the combine effect of leaf extracts of higher plant and biproducts of plant and animals; ‘Dashparrni’ aqueous extract was prepared. The spray of this extract at 10% concentration is highly effective to control the growth of powdery mildew of cucurbit. Chemical fungicides and sulphur fungicides are also used to spray on the cucurbit and the results are very much interesting. Attempts have also made for integrated management of powdery mildew of cucurbit.