INTRODUCTION

Rose is an ancient symbol of love and beauty. In India numbers of rose varieties are present, but *Rosa floribunda* Baker, is very common and susceptible plant to various fungal diseases. It is small perennial herbaceous plant. It forms clusters of attractive double lightly fragrant blossoms that possesses very stable pink or white colour used in the preparation of gulkand. It acts as tonic and laxative. Fruits of the rose are the good source of vitamin C; petals are used to make the skin healthy and glowing. It cures dry and patchy skin. Its herbal tea used in the treatment of cold and cough. Rose water and rose vinegar also prepared from it. Such economically and medicinally important plant is infected by *Diplocarpon* rosae Wolf, *Sphaerotheca pannosa* Walworth ex Fers, *Alternaria alternata* (Fr.) Keissler, and *Botrytis cinerea* Pers., causing black spot, powdery mildew, leaf spot and leaf blight respectively. Among all these fungal diseases leaf spot caused by *Alternaria alternata* and leaf blight caused by *Botrytis cinerea* are very common and serious threats to rose plantation.

These diseases are managed by farmers following various management practices. Among these use of fungicides has become an important part of agriculture. These fungicides are most extensively used in countries those are having high agronomic technology. Generally the countries with high use of pesticide are highest producers of agricultural products. India ranks 6th in the use of fungicides and is 7th in the productivity (Schwin, 1981). At present there are more than 35 thousand pesticidal compounds in the world involving about 1,500 basic ingredients. Government of India has approved more than 128 pesticidal compounds for the management of crop diseases. But in recent years application of fungicides has plagued with very serious
problems. Among these problems, development of fungicide resistance in the pathogenic fungi is very important. There are many examples of fungicide resistance in the fungal pathogens from developed, developing and underdeveloped countries like USA, UK, France, Germany, Japan, and Australia and also in South East Asian countries. In India it appears that studies on fungicides resistance have been neglected. In India only few reports on fungicide resistance in fungal pathogen are available (Gangawane and Saler, 1981; Gangawane, 1981; Gangawane and Reddy, 1985 and 1988, Rao and Reddy, 1988; Annamalai and Lalithakumari, 1987 and 1990; Waghmare, 1991; Arora et al.1992; Gangawane and Kamble, 1993; Gangawane and Kamble, 2001; Apte and Kamble,2008) . Keeping this end in view, reduction in fungicide resistance percentage in rose pathogens by using various methods has been considered. Warth utilizing in the present study to control the growth of Alternaria alternata and Botrytis cinerea with minimum concentration of fungicides.

Therefor following are some of the major aspects studied during the course of the present investigations.

- To determine sensitivity of Botrytis cinerea and Alternaria alternata to carbendazim.
- To study effect of passage on the development of carbendazim resistance in Botrytis cinerea and Alternaria alternata.
- To study physiological and biochemical characteristics of sensitive and resistant isolate of Botrytis cinerea and Alternaria alternata.
- To study synergistic effect of other agrochemicals on the development of carbendazim resistance in Botrytis cinerea and Alternaria alternata.
To study survival ability of resistant isolate of *Botrytis cinerea and Alternaria alternata* in mixed population.

To study effect of Botanical Bio pesticides on the growth of sensitive and resistant isolates of *Botrytis cinerea and Alternaria alternata*.

Samples of leaf spots and leaf blight of rose were collected from the different districts from Maharashtra (Kolhapur, Satara, Sangli, Solapur, Pune, Ratnagiri, Shindudurg, Osmanabad, Aurangabad and Nagpur). These samples were collected in clean sterile polythene bags. The bags with samples were brought to the mycology and plant pathology research laboratory of Dept. of Botany, Shivaji University, Kolhapur. From these samples 10 isolates of *Botrytis cinerea* and ten isolates of *Alternaria alternata*, were obtained. These isolates were maintained on Czapek Dox Agar medium at 4ºC. Minimum Inhibitory Concentration (MIC) of carbendazim was evaluated using food poisoning technique. Isolates of both pathogens showed variation in MIC against carbendazim.

Fungicide spray programme may influence the development of fungicide resistance in the pathogen. Therefore, effect of passage on carbendazim resistance, individually, alternately or in mixture with other fungicides with different mode of action was studied. Resistance in the pathogen may increase or decrease its virulence. Comparison between the wild sensitive and resistant isolate was made for pathogenicity. This was due to altered metabolism in resistant pathogen. Therefore, physiological and biochemical characteristics of resistant isolate were tested.

Agrochemical such as Fungicides, Insecticides, Herbicides, Antibiotics, Fertilizers, Salts and Micronutrients etc. were used in disease management. There is likelihood that these agrochemicals may affect development of fungicide resistance in
pathogens. Many of these agrochemicals may break the resistance or vice-versa, when used in combination. Both in vitro and in vivo studies were carried out.

There is potential danger of development of resistance in the pathogen against a fungicide used in the management of disease. The resistant isolates are dispersed in to the mixed population of plant pathogenic fungi. Therefore, survival ability of resistant isolate among the different proportion was studied. It gave fitness of fungicide resistant isolate.

In addition to fungicides role of botanical pesticides in the management of fungicide resistant isolate of Botrytis cinerea and Alternaria alternata, was also studied, for this alcoholic and aqueous leaf extacts of Melia azedarach L. Clerodendrum inerme L. Gaertn. Hyptis suaveolens L. Poit. , Swietenia macrophylla King, and Tagetes erecta L. were used.