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ANTHRACNOSE OF BETELVINE IN PAKISTAN

SALEEM SHAHZAD

Department of Botany,
University of Karachi, Karachi-75270, Pakistan.

Abstract

Anthracnose disease of betelvine caused by *Colletotrichum capsici* was more frequently detected in Karachi as compared to Thatta and Hub regions of Pakistan. *Colletotrichum gloeosporioides* was isolated only from infected plant samples collected from Karachi. Use of Benomyl and Topsin-M significantly reduced anthracnose disease.

Introduction

Betelvine (*Piper betle* L.), an important cash crop is grown on a commercial scale in Karachi, Thatta districts of Sindh and Hub region of Balochistan. Plants of betelvine are cultivated in conservatories under shady and humid conditions that also favours the development of many diseases (Chattopadhayay & Maiti, 1990). Anthracnose is one of the important diseases that in severe condition lead to death of plants producing up to 25-90% losses to the crop in different parts of India (Dastur, 1935; Chattopadhayay & Maiti, 1990). The present report describes the results of studies on the occurrence and control of anthracnose disease of betelvine.

Materials and Methods

1. Field survey: A survey of 75 betelvine fields in Karachi (25 fields), Thatta (35 fields) and Hub (15 fields) region was carried out during June 1996 - July 1999. At least 150 diseased specimens were collected from 25 fields (7 in Thatta, 15 in Karachi and 3 in Hub).

Infected plant parts were cut into 1 cm long pieces which after surface sterilization with 1% $Ca(OCl)_2$ were placed in Petri plates containing Potato Dextrose Agar (PDA) supplemented with Penicillin @ 100,000 units and Streptomycin @ 0.2 g per litre. The Petri plates were incubated at 28°C for 5-7 days and fungi growing on plant pieces were identified after reference to Barnett (1960) and Sutton (1980) and infection percentage recorded.

2. Control of anthracnose disease: Plants were sprayed with 0.25 and 0.5% solutions of Benomyl at 0-day and after 15 days of first application. Non-treated plants served as control. Data on disease intensity were recorded after 21 days of second application. Experiments were carried out at Karachi (one field in each year, 1996-1999), Thatta (one field in 1998-99) and Hub (one field in 1996-97). During 1998, Topsin-M was also used at the same dosages in one field at Karachi. Experiments were carried out in a Randomized Complete Block design with 3 replicates of each treatment. The results

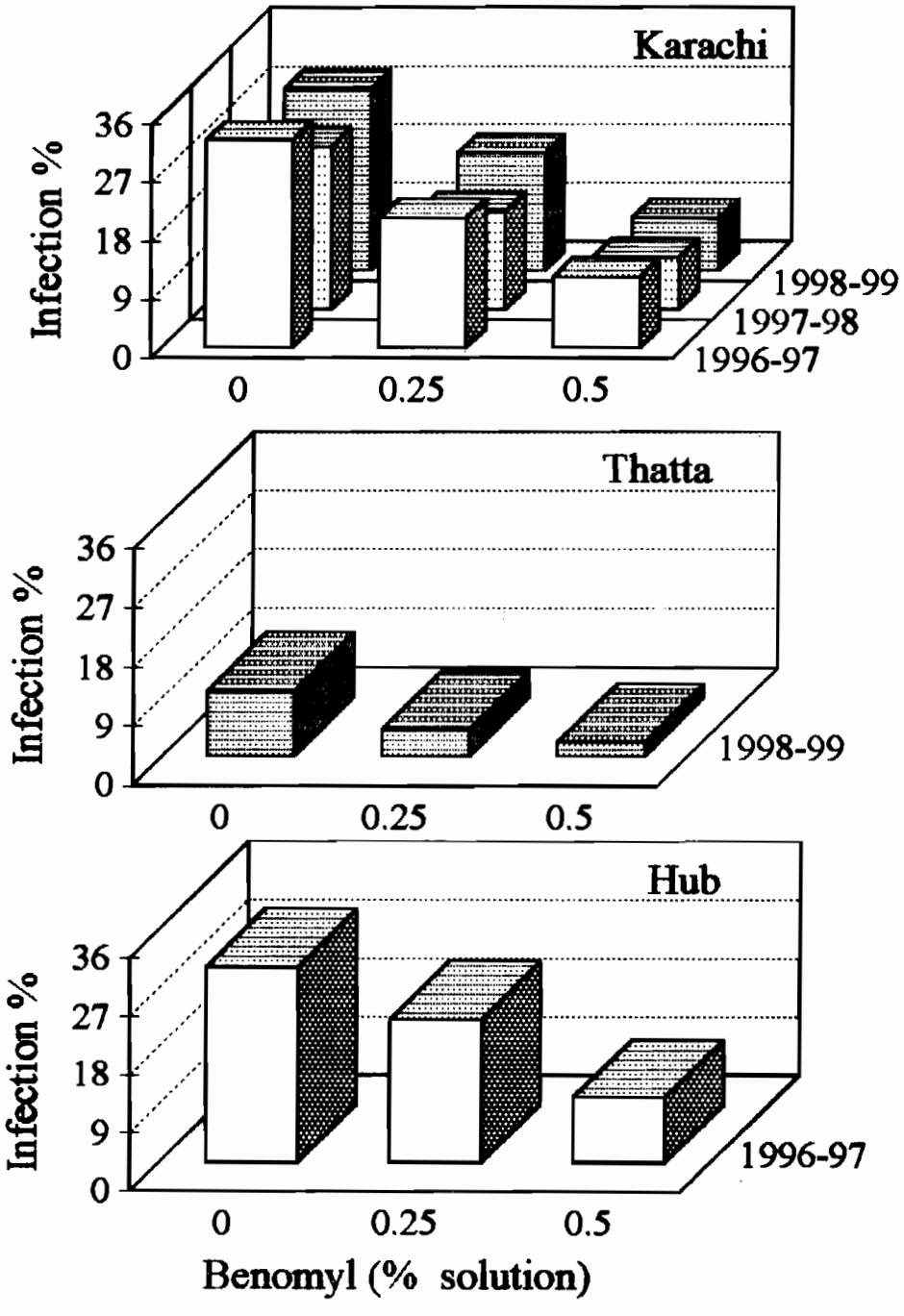

Fig. 1. Effect of Benomyl on the severity of anthracnose disease of betelvine.

were analyzed by One-Way Analysis of Variance and the means were separated by Duncan's Multiple Range Test.

Results

1. Field survey: Anthracnose disease caused by *Colletotrichum capsici* was more frequent in Karachi (60% farms) than in Thatta (20%) and Hub (20%) region. Infection was up to 30% in Thatta and up to 15% in Hub. *C. gloeosporioides* was isolated from affected plants collected from Karachi alone (20% fields with up to 10% infection). Anthracnose affected plants showed small black spots in the initial stages that eventually enlarged longitudinally producing black streaks on the stem. In severe conditions the stem showed constriction and splitting that lead to death of the plant. On leaf, brownish black spots surrounded by a yellow halo were produced. Anthracnose was found severe in 3 year old plantations as compared to young ones.

2. Control of anthracnose disease: During 1996-99, foliar application of Benomyl showed significant suppression ($p<0.05$) in anthracnose symptoms at all the field locations. Use of Benomyl @ 0.5% solution gave the highest suppression (Fig. 1). Topsin-M used as foliar spray also gave significant suppression in leaf spot symptoms (Fig. 2).

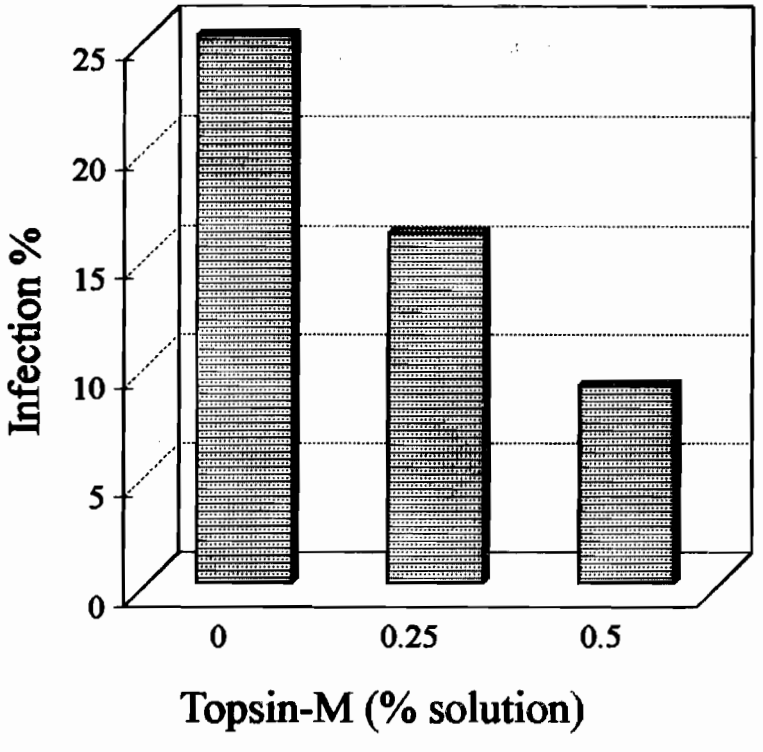

Fig. 2. Effect of Topsin-M on the severity of anthracnose disease of betelvine.

Discussion

Use of Benomyl and Topsin-M showed promising control of anthracnose disease on betelvine. Similar reports have been made by Maiti *et al.*, (1978) where Benomyl was found to be quite effective in the control of anthracnose of betelvine. Despite the efficacy of chemical fungicides, it may be mentioned that indiscriminate use of fungicides could produce environmental and health hazards especially on a crop like betelvine because the leaves are chewed directly by human beings. There is need to look into the residual effect of fungicides in leaves used for human consumption.

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