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Research Article

Cultural studies on *Alternaria ricini* causing leaf spot of castor

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ABSTRACT

Among all the solid media tested, the maximum growth of the fungus (colony diameter) was recorded in Richard's agar (89.33 mm) whereas in liquid media, the maximum mean dry mycelial weight of the fungus was observed in Potato dextrose broth (291.00 mg). The optimum temperature range between 25°C to 30°C and pH of 6.0 favoured better growth of the pathogen. Among the different carbon and nitrogen sources were tested, the sucrose and calcium nitrate were found more effective as carbon and nitrogen sources, respectively, for better growth of the pathogen.

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INTRODUCTION

Castor (*Ricinus communis* L.) belonging to the family Euphorbiaceae is an important non-edible, export oriented industrial oilseed crop in India, India is the leading producer of castor and it has a prominent place in dry lands due to its drought resistance, quick growth, deep root system and wax coating on shoots. In India it occupies 7.87 lakh ha with an annual production of 10.54 lakh tones and a productivity of 1339 kg ha^{-1}. In Karnataka, the total area of castor was 23.00 thousand hectares with an annual production of 16.00 thousand tones and productivity of 696 kg ha^{-1} (Anonymous, 2007). Castor oil and its derivatives are used in several industries like perfumery, cosmetics, textile, paints, printing inks, adhesives, plastics, rubber, lubricants, paper, chemicals and pharmaceuticals etc. The oil also finds a place in domestic medicine as purgative. Oil cake of castor forms valuable manure for many commercial crops.

Castor plants are attacked by numerous diseases, under high relative humidity, but only a few occur in the high plains, In recent years, leaf spot caused by *Alternaria ricini* is assuming serious proportions in major castor growing areas and affecting yield as well as oil content. The earlier reports of *Alternaria* leaf spot on castor in India were made by Dastur (1913), Chibber (1914) and Dey (1945) and Pawar and Patel (1957). Hence, the present study was carried out for the effect of solid and liquid media and optimum temperature and pH for better growth of the *Alternaria ricini* causing leaf spot of castor.

MATERIALS AND METHODS

The experiment was conducted in the Department of Plant Pathology, College of Agriculture, UAS, GKVK, and Bangalore, for cultural studies on *Alternaria ricini* causing leaf spot in castor, during 2009-2010. The leaves of castor, having typical symptoms of leaf spot were collected from the field and cultured on Potato dextrose agar medium for isolation of the pathogen.

The six different solid media namely, Richard's agar, Czapek's agar, Brown's agar, Coon's agar, Sabouraud's dextrose agar and Potato dextrose agar media and eight liquid media such as Malt broth, Potato dextrose broth, Richard's broth, Sach's broth, Coon's broth, Sabouraud's dextrose broth, Czapek's broth and Glucose peptone broth were tested for effective growth of *Alternaria ricini*.

Potato dextrose agar was prepared and 15 ml of the medium was poured into the sterilized Petri plates under aseptic conditions. Inoculations were made with identical culture discs (5 mm diameter) and the inoculated plates were incubated at 10° C, 15° C, 20° C, 25° C, 30° C and 35° C in BOD incubator with three replications each. The colony diameter (mm) of the