INTRODUCTION

Next to rice, Jowar (Sorghum vulgare L.), "king of millets" is one of the most important food crops. It is suitable for areas with low rainfall and can withstand drought to a considerable extent which makes it an ideal crop for cultivators over a vast dry tract of Central and Southern India. In India, sorghum crop occupied an area of 15302.00 thousand hectares, having a total production of 7753.00 thousand tonnes in 1971-72.

The plant stalks and foliage green or dry provide excellent fodder for cattle. Some have sweet and juicy stalks from which syrup is obtained and from certain varieties sugar is produced. Sorghum forage is said to be more palatable than maize forage and its grain is equally good (Karper and Quinby, 1947). Sorghum grain contains more protein and fat than rice and more fat but less protein than wheat and rye (Anderson and Martin, 1949).

In view of its utility in human diet, fodder for cattle and industrial uses, sorghum attracts the immediate attention of scientists to improve its yield and quality. Amongst the several factors that are responsible for such low yield in grain as well as fodder diseases occupy an important place. Wall and Ross (1970) estimated a loss of 33.8 million
bushel in grain sorghum and 1.5 million tonnes in forage sorghum representing 9 per cent of the total crop in United States. The crop suffers from several diseases damaging particular part or all parts of the plant viz. seedlings, roots, stalks, foliage, inflorescence and grain.

The foliar portion of a crop plant plays a greater role for the production of grain and fodder, as the foliar surface is the main part where the synthesis of food material takes place. Any reduction in the surface area of the foliar portion leads to poor harvest of grain and fodder and simultaneously the quality is affected. The foliage diseases viz. fungal leaf spots, blight, rust, downy mildew and sooty moulds are the main agents which affect the leaf area. The fungal leaf spot diseases lead to the rotting of the leaf resulting in the spoilage of the fodder and thus making it unfit for consumption by cattle and ultimately the grain yield and quality are also affected. Many of the pathogenic fungi attacking sorghum leaves invade the mesophyll and plug the xylem vessels resulting in the death of the plant.

For the improvement of sorghum, the main emphasis is on the evolution of a variety resistant to diseases specially fungal leaf spot diseases which are the main theme of the present investigations. Breeders are facing the problem to have a resistant source for incorporation of the resistant genes in high yielding varieties so that the losses due to
the diseases may be reduced and simultaneously the extra expenditure for control measures may be avoided. However, to breed a variety which is resistant to diseases not so easy as it takes time and labour. Therefore, the only feasible proposition to a farmer is to adopt control measures as the disease spreads.

In view of the importance of the crop, wide spread occurrence, destructive nature of the diseases and lack of detailed information regarding fungal leaf spot diseases, the present investigations were carried out with the following objectives in view.

1. Symptomatology of the fungal leaf spots.
2. Morphological and cultural characters of the pathogens involved.
3. Physiological studies of the pathogens on different media, pH and temperatures.
4. Nutritional studies of the organisms on various carbon, nitrogen, sulphur and phosphorus sources.
5. Pathological studies on the nature of transmission, survival and perpetuation of the diseases.
6. Host range of the associated fungi.
7. Screening of germ plasms for resistance against the pathogens.
8. Bioassay of fungicides in the laboratory and testing of the highly efficacious ones for the control of the diseases in pot culture experiments.

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