INTRODUCTION...
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Seeds play a vital role in Agriculture and serve as important reservoirs of the source of inoculum of various diseases. They also serve as vehicles of dissemination of the pathogens, thus playing a very crucial role in the epidemiology of seed grains. This increases the pressure on the seed producers to offer seeds that are free from the pathogen. Seed borne inoculum of many diseases are inconspicuous and cannot be revealed by direct inspection of dry seed. The detection of seed borne pathogens (Neergaard, 1977) and the implementation of control measures are important aspects of plant disease management.

Routine seed health testing methods have been developed for fungal pathogens, being internationally standardized and more widely brought into use only in the last 25 yrs, however for many important seed borne bacterial diseases, even the standard laboratory routine seed health testing methods are yet to be developed. Therefore the sampling procedures commonly used are not sufficient.

There are several traditional methods, which could detect pathogenic bacteria on/ in the seeds and these methods vary quite markedly. However each of these methods have several inherent drawbacks. E.g., Field inspections mainly rely on the development of symptoms. The symptom development is dependent upon proper environmental conditions like temperature, relative humidity, sunlight, etc. further reliance on symptoms is not adequate since the similar disease symptoms may be expressed by more than one kind of pathogen. The other methods include extraction/isolation of the bacterial
Pathogens followed by laborious and time-consuming procedures and also complex biochemical and physiological identification schemes.

The use of selective or semi-selective media involves cost factor. Also, extraction of the pathogen on the media suffers from the interference for the highly competitive saprophytic bacteria.

Further there is a need to develop new and suitably modified. Serological Techniques which are cost effective and do not require highest skills, expertise, sophisticated equipment like in ELISA or IFST. Such techniques should be very rapid, less time consuming and sensitive, so that these techniques could be used in small seed health testing laboratories/ quarantine stations.

Some of the seed borne bacterial diseases, which are of economic importance internationally and in India, and particularly in Karnataka are, the bacterial blight of paddy caused by *Xanthomonas oryzae* *pv. oryzae*. This pathogen is seed borne and the disease causes a loss of 6-60%, (Srivastava *et al*., 1966) while Rao and Kauffman (1971) reported loss upto 50%. The infection at the tillering stage of paddy can lead to total crop loss (Mew *et al*., 1993). Ahmed and Singh (1975) reported that the yield losses in cultivars Saket and IR 24 were 14.7% and 81.3% respectively due to this disease.

Bacterial spot of tomato caused by *Xanthomonas vesicatoria* is a seed borne disease. In recent years Bacterial spot of tomato is assuming a very serious proportion particularly in the summer and monsoon crops, affecting fresh market tomatoes in Karnataka. The disease not only affects the yield but the quality of the fruits. Under severe disease
conditions weight loss of market fruit has been estimated to be as high as 52% (Pohrunezny and Volin, 1983).

*Xanthomonas campestris* pv. *campestris* the casual agent of black rot of crucifers is a very serious disease causing huge loss, it is mainly a internally seed borne disease.

Among pulse crops cowpea, known as poor mans pulse is rich in vitamins and amino acids. Bacterial blight of cowpea caused by *Xanthomonas axonopodis* pv. *vignicola* is the most devastating disease both in summer and early Khariff season. The incidence of bacterial blight of cowpea has increased in India in recent years.

Bacterial blight of paddy, Bacterial spot of tomato, Black rot of crucifers and Bacterial blight of cowpea form some of the major crop diseases in India/Karnataka which are mainly seed borne and selected in the present investigations to detect the presence of these seed borne bacterial pathogens. Therefore the present investigations was undertaken with the following objectives:

- To develop antisera against some important seed borne phytopathogenic bacteria viz., *Xanthomonas oryzae* pv. *oryzae*, *Xanthomonas campestris* pv. *campestris*, *Xanthomonas vesicatoria* and *Xanthomonas axonopodis* pv. *vignicola*.

- To apply serological techniques such as Indirect Immunofluorescence Staining technique (IIF) and Enzyme linked immunosorbent assay (ELISA) in the detection and identification of seed borne phytopathogenic bacteria.

- Standardization of serological techniques such as ISDP to increase the efficiency of identification of seed borne phytopathogenic bacteria.
Application and modification of new serological techniques like Immunofluorescence Colony Staining Technique (IFCS) in the detection and identification of seed borne phytopathogenic bacteria.

- Application of Dot Immunobinding Assay (DIBA) for the detection of phytopathogenic bacteria.

- Comparing the efficiency of the various serological techniques with the dilution plating techniques.