

## Aerobiology of *Alternaria solani* in relation to Phyllosphere of Potato

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A study of the incidence of conidia of *Alternaria solani* (Ell. & Mart.) Jones and Grout in air and the phyllosphere of three potato varieties showed that the population of *A. solani* registered a continuous rise and reached its peak in the last month of the crop (January) when plants were quite old and mature. There is a positive correlation between the two. Further, the incidence and spread of the pathogen was poor on Kufri sinduri as compared to Kufri sheetman and Kufri chandramukhi.

### Introduction

Pathogenic forms of micro-organisms are among the settlers of air-spora on the leaf surface which are responsible for disease incidence. The authors (1976 a, b) have studied air-spora and phyllosphere of potato during the year 1973-74 and assessed the seasonal and diurnal periodicities of microbes in relation to climatic conditions without any emphasis on the behaviour of conidia of *Alternaria solani*, the causal agent of leaf blight of potato. The present paper incorporates the incidence of conidia of *Alternaria solani* in phyllosphere of three potato varieties and in the air.

### Material and Methods

Phyllosphere of the three potato varieties Kufri sinduri, Kufri chandramukhi and K.

sheetman was studied by leaf washing technique at monthly interval from young and old leaves. The air-spora of the same potato field was also studied from September (warm season) to January (very cold season) at an interval of 15 days using culture plate method. A record of temperature and relative humidity of the field was maintained with the help of maximum-minimum and wet and dry bulb thermometers. The methods employed were the same as already described by the authors in their early papers (Raj Kumar & Gupta 1976 a, b)

### Results and Discussion

The data presented in figure 1 show that the conidial population of *Alternaria solani* on the surface of three potato varieties gra-

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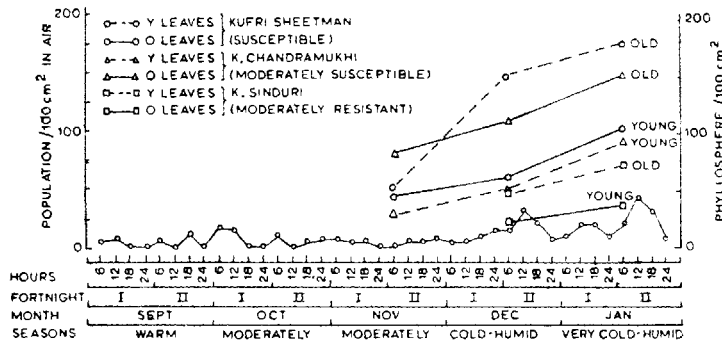


Figure 1

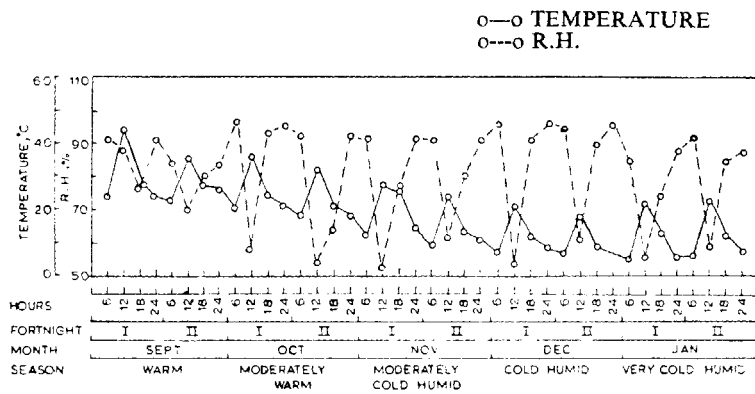


Figure 2

dually increased from November to January. The incidence and spread of conidia of *Alternaria solani* was comparatively high on Kufri sheetman and K. chandramukhi in contrast to K. sinduri throughout the duration of the crop. The maximum population of *A. solani* was encountered from the atmosphere at 'noon' hours of exposures during the last month (January) of the crop.

The record of temperature and relative humidity showed that the maximum incidence of pathogen both in air and on the plant surface was favoured by comparatively low temperature and high humidity.

The analysis of the air-spores and phyllosphere revealed that the population of *A. solani* registered a continuous rise from

September onwards and touched its peak in the month of January. Thus there is a positive relationship between the two. It is interesting, however, that the visible symptoms of the early blight were seen in the last week of December (cold-humid) though the pathogen was present both in the air and plant surface from the very beginning. The disease developed rapidly and was discernible to its maximum level, particularly on old and mature leaves, when plants attained senescence in the month of January. Some authors (Rowell 1953, Thomas 1948, Walker 1952 and Sinden et al. 1973) outside India have also reported that early blight usually occurs late in the season and on the lower and physiologically older leaves. Further,

Douglas (1972) noted that early maturing varieties of potato are generally more susceptible as are less adequately nourished plants that tend to mature more rapidly. The results of the present studies are in conformity with the above workers. The long duration crop of Kufri sinduri was found to be more resistant than the remaining two.

### References

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Further, aerobiological and phyllosphere studies can be of suggestive value in the spray schedules against the pathogen.

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