

III MATERIALS AND METHODS

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During this investigation the Rotorod Air Sampler devised by Perkins (1957) was used. This device relies upon the high efficiency with which small airborne particles are deposited on narrow cylinders oriented at right angles to high velocity winds. A small constant speed battery operated motor is used to whirl thin sticky coated brass rods about its axis at a constant high speed. It has been developed into a cheap and portable and high efficiency sampler with high sensitivity. It is well fitted to use in the field and relatively independent of external wind speed.

Collecting arms of the model are made up of 0.159 cm (1/16 inch) square section brass rods slightly bent inwards. The vertical arms are 6 cm long and 4 cm from the axis.

According to Gregory (1951) the width should give more than 60 to 70% efficiency of deposition for 20 μ diameter spores at wind speed above 4 m.p.h. (2 mm/se). The model employs D.C. controlled speed motors of the type used for record players with the rods in position, the motor gives 2300 r.p.m.

SAMPLING RATE :-

The sampling rate is the volume swept by the collecting surface per unit time. The dimensions

selected make this as -

$$\begin{aligned}
 & 2(\text{arms}) \times 0.159 \text{ cm} \times 6 \text{ cm} \times 8 \times 2300 \text{ rpm} \times 10^{-3} \\
 & = 48.0 \times 10^{-3} \times 2300 \text{ litres/minute.} \\
 & = \text{approximately } 110 \text{ litres/minute.}
 \end{aligned}$$

SAMPLING METHOD :-

Sampling was carried out by operating Rotorod air sampler. The collection efficiency of this model is 85%. The petrolium jelly is used as a adhesive on cello tape.

The rotorod sampler has been used for a wide variety of air borne particles. After the application of jelly to the cello tape, the edges of the cello tape are trimmed back to the width of the rods with sharp razer blade. (The alternative would be to apply the transparent cello tape trim and then coat with adhesive). The cello tape is cut into four equal parts 1.5 cm length, before adhesive is applied and after applying the adhesive these are exposed for one hour and then mounted beneath a cover glass with suitable mountant like Glycerine jelly which has the best optical properties for visual examination. It was prepared as follows -

Gelatine	1 gm.
Glycerol	7 gm.
Water	6 ml.
and Phenol	1%

SCANNING :-

The total spore counts obtained on the known areas during morning and evening were scanned under 10 x 45 x eye piece objective combinations of the microscope regularly. The number of spores per unit volume of the air was computed with the help of conversion factor and efficiency.

Assuming the trapping efficiency to be 85% with help of conversion factor, the number of spores counted on the tape of known area was readily converted into an estimated number of spores per cubic meter of air. All timings are given in Indian Standard Time (IST). The identifications of the spores was based on -

- i) The microscopic characters,
- ii) The comparison with parasitic and sprogytic fungal material collected in and around the field, and studied microscopically and comparing with the reference slides, and
- iii) The comparison with cultural characters, in all possible cases specific and generic counts were made which are based on the colour, shape and other dignostic characteristics of the spore.

SAMPLING SITE :-

Rotorod air sampler was kept inside the Library

hall of the Sadguru Gadage Maharaj College, Karad at the height of 2 meters from ground level. Karad is situated between 17.3 north Latitude and 74.11 east Longitude. Height from the main sea level (MSL) is 1874 feet.

PERIOD OF INVESTIGATION :-

The air spora of the S.G.M.College Library was investigated for a period of six months, from 1st January, 1987 to 30th June 1987. Daily two counts were taken during morning at 11 a.m., and evening at 4 p.m. (11 a.m. to 12 noon, and 4 p.m. to 5 p.m.).

WEATHER :-

During the period of investigation daily record of temperature, rainfall and humidity were obtained from Agronomy centre, located at Satara.

During this investigation period the minimum relative humidity was 29% and the maximum 98% with the total rain fall.

This investigation period is divided into two seasons roughly as Jan.87 to 15 Feb.- Winter - cold, and 15th Feb. to 30th Jun.87 which is hot one. In cold season the minimum temperature was 12°c and in hot season maximum temperature was 38.7°c .