

## Fungal succession during coir pith decomposition

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### SUMMARY

A laboratory study was conducted on the fungal succession in coir pith samples undergoing different degrees of decomposition at regular interval of 15 days from 0- 90 days. The results of the study revealed that coir pith samples: fresh ( $S_1$ ) and decomposed to different degrees ( $S_2 - S_9$ ) were initially invaded by primary saprophytic sugar loving fungal colonizers like *Rhizopus* sp., *Mucor* sp., *Syncephalastrum* sp. etc. As decomposition proceeded (30 – 60 days), the primary colonizers gave way for the colonization of secondary cellulose decomposers like *Aspergillus* spp., *Penicillium* spp., *Chaetomium* spp., *Trichoderma* spp., *Cladosporium* spp., *Monascus* sp., *Verticillium* sp., etc. In the last phase of decomposition (75 –90 days), wood rotting lignolytic basidiomycetes fungi like *Agaricus* sp., *Pleurotus* sp., *Trametes* sp., etc. emerged as dominant mycoflora.

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**Key words :** Fungal succession, Decomposition, Primary colonizers, Dominant mycoflora

Coconut coir pith or coir waste is the elastic, soft, spongy, highly hygroscopic, cork like pith material forming the non fibrous tissue of husk and is a renewable agro waste resource that accumulates in huge quantities. It is estimated that for extracting one kg of coir fibre, as much as two kg of coir pith is produced as a waste. It is a lignocellulosic waste and contains 34.8 per cent of lignin and 28.6 per cent cellulose (Gopal and Gupta, 2001). As it has no economic utility, it is often dumped outside the coir industry in large quantities. Being very low in density, it is blown away by wind when left on roadsides, thus causing vehicular obstruction. When it is burnt, it does not burn completely but emits abundant smoke for several days polluting the environment. Coir pith undergoes decomposition mostly by a plethora of microorganisms. This study brings out the successional colonization of coir pith that partakes in the decomposition process.

### MATERIALS AND METHODS

#### Source of coir pith waste:

Coir pith samples (25 kg), fresh and decomposed (at different degrees) were collected from coir waste disposal sites near each unit in thick gauge polythene bags from parts of Pollachi, Coimbatore District, Tamil Nadu.

#### Preparation of coir pith samples:

The coir pith samples were graded on the basis of

their year of decomposition as  $S_1$  (fresh) and  $S_2 - S_9$  (decomposed to different degrees). A quantity of 100 g of sample was taken in perforated thick gauge polythene bags.

#### Fungal succession in coir pith samples:

The experiment was performed at regular intervals of 15 days for 90 days to analyze the successional occurrence of various fungi in coir pith samples.

#### Medium for enumerating fungi:

For enumerating fungi, Potato Dextrose Agar Medium (Riker and Riker, 1936) and Oat Meal Agar Medium (Johnson and Curl, 1972) were used.

#### Enumeration of fungi:

Enumeration of fungi were done by serial dilution plate technique (Warcup, 1950). The number of fungal colonies per plate was carefully counted and the population of fungal flora was enumerated and expressed as number per g of coir pith on dry weight basis.

#### Identification of fungi:

The fungal isolates were identified based on their morphology, mycelia structure and spore formation (Domsch and Gams, 1972 and Ellis, 1976).

### RESULTS AND DISCUSSION

The succession of fungi occurring in coir pith was studied by observing the frequency of the predominant fungi appearing in coir pith samples to the total number of

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