

Microorganisms Associated with the Deterioration of Copra

Copra, the dried endosperm of *cocos nucifera* L is subjected to deterioration during processing and storage. The present study aimed at locating the microorganisms capable of causing deterioration under field conditions in Trivandrum, Kerala, during 1976-77.

Samples of copra were collected at monthly intervals from 4 different oil mills over a continuous period of 12 months and associated microflora were determined at each sampling by standard procedures. Pathogenicity was proved by artificial inoculations and identity confirmed by C. M. I. London.

The following fungi were recorded.

Aspergillus niger Van Tiegh, *A. flavus* Link ex Fries, *A. flavus* Link ex Fries Sclerotial isolate, *Rhizopus stolonifer* (Ehren. ex Fr.) Lind, *R. oryzae* Went & Prinsen Geerlighe, *Mucor hiemalis* Wehmer, *Botryodiplodia theobromae* Pat, *Penicillium citrinum* Thom, *Curvularia senegalensis* (Speg.) Subram, *Cochliobolus lunatus* Nelson & Haasis, *Paecilomyces lilacinus* (Thom) Samson, *A. ochraceus* Wilhelm., *A. tamaritii* Kita, *A. Chevalieri* (Mangin) Thom & Church, *A. oryzae* Ahlburg Cohn and *A. fumigatus* Riesenius.

The following Bacteria were also encountered

Bacillus subtilis (Ehrenberg) Cohn, *Enterobacter aerogenes* (Kruse) Hermache & Edwards, *E. aerogenes* - non aerogenic strain, *Pseudomonas fluorescens* (Trevisan) Migula Biotype of Stainer *et al.*, *Staphylococcus aureus*

Rosenbach, *Serratia marcescens* Bizo and *Sareina lutea* Schroeter.

Of the above fungi and bacteria *Rhizopus stolonifer*, *R. oryzae*, *Mucor hiemalis*, *Penicillium citrinum*, *Curvularia Senegalensis*, *Cochliobolus lunatus*, *Paecilomyces lilacinus*, *Aspergillus oryzae*, *A. fumigatus*, *Bacillus Subtilis*, *Enterobacter aerogenes*, *Pseudomonas fluorescens* and *Sarcina lutea* are new reports on copra.

Actinomycetes did not show a definite pattern of occurrence. Only *Streptomyces* Spp. was noticed, but never proved pathogenic.

Though several workers have identified the fungal and bacterial flora associated with copra in India and abroad (Ward, 1937, Subrahmanyam, 1965 and Nair and Sreemulanathan, 1970), such a continuous study is a new line of approach.

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RESEARCH NOTES

REFERENCES

NAIR, M. K. C. and SREEMULANATHAN, H.
1970: Spoilage of copra by *Penicillium*
frequentans westling. Agri. Res. J. Kerala
8:125

SUBRAHMANYAN, V. 1965: Control of infec-

tion and production of quality products from
coconut without machinery, or application
heat. Philipp. J. Nutr. 18: 218-234.

WARD, F. S. 1937: Deterioration of copra caused
by bacterial and moulds. Scient. Ser. Dep.
Agric. Straits Settle. F. M. S. 20: 20 95-108.