

Solid Waste management by Degrading fungi

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ABSTRACT

We witness a significant increase in day to day solid waste materials in all the areas. This is largely because of rapid population growth and economic development in the country. The per capita of municipal solid waste generated daily in India ranges from 100 gm. in small towns and 500 gm. in large towns. So solid waste management has become a major environmental issue today. It is well known fact that different mycoflora are very good decomposer. In our research project, we had identified the fungal population present in municipal waste soil of Patna. Fungal genera responsible for the degradation of so many vegetables and fruits had also been investigated. This gave a detailed microbial population present and responsible for the degradation of waste and its proper management.

Key words: Saprophytic, decomposition, environment, population.

Some soil fungi are beneficial for solid waste management. Some saprophytic fungi cause decay & decomposition of dead remain plants and their waste taking up the complex compounds (cellulose and lignin) by secreting enzymes. Many saprophytic fungi by degrading the plant wastes maintain the never ending cycle of CO₂ (carbon dioxide), which is most important raw material for plant photosynthesis in nature. Present paper deals with extensive survey of fruits & vegetables degrading mycoflora from garbage soil of Patna using different baits i.e. fruit and vegetables.

Patna is the capital city of Bihar geographically located between 25.35°N

latitude and between 85.5° & 85.16° east longitude having a mean elevation of 173ft. above sea level. The city is warm populated and has comprehensive sectors such as residential, commercial, educational, medical, agricultural, other function.

Collection of samples :

During study soil samples of garbage site *i.e.*, Musallahpur Hat, Bazaar samiti, Rampur nahar were scraped from layer of soil not exceeding 10cm deep, mixed packed in sterilized polythene bags with 95% ethanol for 30 minutes and stored at 5°C.

niger, *Fusarium* sps, *Mucor* sps, *Penicillium* sps, *Trichoderma lignorum* & *lekakoro* found. On bait vegetables *A.niger*, *curvularia lunata*, *Fusarium* sps, *Rhizopus nigricans* & *Torula graminis* were observed, some fungi *A. niger*, *Fusarium* sps, *Torula graminis* were found on both.

A total of 12 different fungal species were found, which were responsible for the degradation of different waste materials. All these fungal species were omnipresent in the soil of Patna and were actively involved in degradation of wastes and maintaining our ecosystem

James *et al.*² studied yeast fungus from cloud forest reserve in Ecuador. Rashad *et al.*⁷ isolated *Fusarium oxysporium* on banana and Grape, *A. oryzae* on Orange, *A. niger* on apple, *A. flavus* on mango. Sarkar *et al.*⁹ said that fungus *Macrophomina phaseolina oryzae* degrade banana. Gooble *et al.*¹ studied the effect of farming system, habitat type, and bait type on the isolation of entomopathogenic fungi from citrus fruit soil in south Africa. Sarfaraj khan *et al.*⁸ explained fungi on vegetables and their ethnomedicinal value. Miedes and Lorences⁴ identified the *Penicillium* degraded apple and tomato. Perombelon *et al.*⁵ identified *Clostridium* species responsible for decay of

Potatoes. Pieta *et al.*⁶, are related with degrading fruits and vegetables in soil.

References :

1. Goble, T.A., J.F. Danes, M.P. Hill and S.D. More (2010) the effect of farming system. From citrus fruit in the Eastern Cape province, South Africa. Vol. 55, No. 3, pg 399-412.
2. James S.A., G.M. Cadet, El Carve and B.P. (2011) *J. Syst. Evol. microbiol*, 2: 263-266.
3. Malik K., M.A.D., Rice E.I. (1966) *Oklahoma bot.* 2: 120-127.
4. Miedes, E. and E.P. Lorences (2004) *Journal of Agricultural and food Chemistry*, 52 : 7957-7963.
5. Perombelon M. C.M., Cullings Hander J. and A. Kelmon (1978) *Phytopathology* 69: 163-173.
6. Pieta D. and T Kesik (2006) *Actea Sci. Bot. Hortoxin Coltus*, 5(1): 71-78.
7. Rashad R. Al-Hindi, Ahmed R. Al-Najda and Saleh A. Mohamed (2011) *Journal of microbiological research* 5(4): 443-448.
8. Sarfaraj Khan marwat, Mir Ajab khan, Mohammad aslam khan, Mustaq Mohammad zafar *et al.* (2009). *Pak. Jr. of nutrition*, 8(5): 530-538.
9. Sarkar Supriya, S. Girisham and S.M. Reddy (2011) *Journal of recent advances in applied Science (JRAAS)* 26: 12-18.