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7.3-10% Loss in Fruits of *Litchi Chinensis* during Transportation in Nepal & India

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ABSTRACT
Leaf-spot on *Litchi chinensis* sonn. of family sapindaceae is common disease caused by the pathogens *Pestalotipsis spp*. and gives different symptoms on leaves i.e. red patches, pore, outgrowth or elevation of tissues, black a white dots, construction, loss of apex, Dwarfism, lost half porton etc., While during the transportation of fruits external layer i.e epicarp and Mesocarp infected by several members of Mucoracae Dube (1979&'83) and causes 7.3-10%Loss in fruits during transportation (rise in temperature).

1. Introduction

Litchi chinensis (Gaertn.) sonn. of family sapindaceae, having fruit type Berry(edible part aril of the seed) is very common during middle of May to June in North Bihar or July in most of the part of Northern India. Dr.A.K.singh , I.C.A.R New Delhi reported one lakh hectare land occupies the cultivation of litchi. Farmers of Bihar, Punjab, Tamilnada, Karnataka & Dehradun are economically benefited, where as only in plain region of Nepal especially Biratnagar, Inarva, Rajbiraj, Lahan, Janakpur, Nepalgang, Bhairva and other places, where scattered cultivation by landlord. Maximum import of litchi during the month of June from India to Nepal is seen. It is sold at price up to N.C Rs.300/100 pcs is depending upon the shape and size of the fruit in the local market of Biratnagar, Nepal. Litchi fruits are usually consumed fresh. They remain in fit condition 3-5 days. Locally but during the transportation a little to remarkable loss in fruit condition is also reported. The fruit of litchi contains epicarp, Mesocrap and endocarp. The epicarp and Mesocarp is fused and externally becomes spinous red coloured after ripening and good for cattle-food, while endocarp contains aril and seed.

2. Review of literature

Grove(1919)[5] described the term Coelomyces to include those fungi, which form conidia inside a cavity of the host. Pycnidial or acervular Deuteromycotira are now placed under the class coelomycetes. Order Melanconiales comprises Melanconiacae and the genus *Pestalotiopsis* causes leaf spot of litchi Grove (1935&'37)[6] & Sutton(1973)[9] .Anonymous(1984)[1] mentioned some important varieties in Bihar 'china', 'purbi', ' Deshi', ' Bedana', 'Dehra Rose', in uttar Pradesh, 'Rose-scented', ' early large red', 'kalkatia', 'Muzaffarpur'. Hill (1976)[7] & Pandey(1988)[8] described litchi in their books,where as Gopalan et.al (2007)[4] mentioned the nutritive chemical present inside fruits of litchi. Dube (1979&83) mentioned the genus *Pestalotiopsis*. aril is fleshy and juicy, sweet in taste, preferred by everyone. Aril is preserved by canning with syrup for the export trade Hill(1976)[7]. It is tropical fruit of India and Nepal Pande (1988)[8]. Goplan et.al(2007)[4] described nutritive value of *Litchi or Nephellium litchi, N. longana*.

3. Food value of Litchi – The chemical nutrients present in the fruit of litchi was described by Gopalan et.al (2007)[4] as given below-

N.litchi contains moisture-84.1, Protien-1.1, fat-0.2, Minerals-0.5, crude fibre-0.5, Carbohydrate-13.6 per hundred germs of edible portion, Energy -61K cal, calcium-10, Phosphorus-35, Iron-0.7 mg/100grms. Thiamine-0.02, Riboflavin-0.06, Niacin-0.4, Vitamin C-31 mg/100gms. Oxalic acid-19 mg, Mg-10, Sod-124.9, Pot-159, Cu-0.30, S-19, Cl-3 mg/100gms.while *N. longana* hasmoisture-83.9, Protein-1.4, fat-0.3, minerals-0.8, caudefibre-0.5, carbohydrate-13.1, energy-61 Kcal,calcium-50, phosphorus-35.

4. Morphological Symptoms

1. Data of collection-06/06/2019 at 8.15P.M.
2. Length of leaf- 2.8-11.3cm.(Measurement of 8 leaves)
3. Dorsal surface-1 to 10 Red Patches. Pore-Single to several
4. Ventral Surface- outgrowth or elevation (+), redspot(+),Blackdot(+,5-15 or more)),white dot (+,2-15 in no.), Pore-(+) constriction of more tissues upto 1.1 cm. length (+), cutmark-1 to 2 (+).
5. Irregular growth of tissues-(+).
6. Loss of apex in leaf-(+) in 5 leaves.
7. Dwarfism-(+).
8. Loss of half portion-(+) in 2 leaves.
9. Colour- Reddish-brown
10. Branching-(+)
11. Orientation of leaves-4,2,1&1.
12. Epicarp & Mesocarp of fruit of litchi show oozing of while colour secretion due to saprophyfic fungi in half-portion on Date 08/06/2019 i.e after 48hrs.

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5. Microscopic observation

1. Place–Dept.of Botany, M.M.A.M campus, Biratnagar, Nepal on Date 03/07/2019 at 11.1512.0 A.M
2. Epicarp & Mesocarp- Externally infected by the members of Mucoraceae under 100x, which shows white colour mycelium, sporangiophore and sporangia several in no.forming loosely attached one to another (After detached & during 8-12 hrs of packed-transportation).
3. 1, out of 34 fruits showed rotten, brown, white oozing covering about 5.75cm^2 area out of 78.75cm^2, i.e 7.3% loss in single fruit or 7.3 % to 10% loss during the transportation of litchi fruits.

Litchi. leaf

I. leaf spotted portion-larger oval & black shaped structure under 40x

II. conidia inside acervulus packed or cleistohtecium like.

III. Individual conidium resembles with *Pestalotiopsis.* according to Grove (1919,'35 and '37)[5,6]

IV. Mycelium (+).

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