D-29: Interaction between *Pestalotia* sp. and stem-end rot pathogens of avocado

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Stem-end rotting and anthracnose are the major postharvest diseases of avacado in Sri Lanka. Stem-end rot is a disease complex caused by several fungi including *Phoma* sp., *Botryodiplodia theobromae, Phomopsis* sp., *Fusarium* sp. *Pestalotia* These were frequently isolated from flower parts, young leaves, unripe

or ripe fruit peels of avacado. *P. versicolor* was considered to be minor postharvest pathogen in avocado occasionally encountered in South Africa. However, experiments revealed that inoculation of fruits with *Pestalotia* sp. did not show any disease symptoms but delayed initiation of stem-end rot compared to control fruits. This study was carried out to establish interactions between *Pestalotia* sp. and stem-end rot fungi, on *Phoma* sp. and *B. theobromae.*

Phoma sp. & *B.theobromae* were isolated from stem-end rot lesions of ripe avocado fruits. *Pestalotia* sp. was isolated from peel of healthy unripe avocado fruits. These 3 fungi were maintained on Cook's 2 medium. Conidial suspension used for inoculation contained 4-5 x 10^5 ml^{-1}. Healthy fruits at harvesting maturity were used in all experiments.

To study the effect of *Pestalotia* sp. on infection of avocado fruits by these pathogens, 6 sets of fruits were inoculated separately with the following suspensions of conidia: (1) *Pestalotia* sp. (2) *B. theobromae* (3) *Phoma* sp. (4) *B. theobromae* + *Pestalotia* sp. (5) *Phoma* sp. + *Pestalotia* sp. (6) Control treated with drops of distilled water.

The inoculated fruits were incubated in moist chambers for 24 h and development of stem-end rot was observed daily. In another experiment, avocado fruits were subjected to the following for 1 10 min. periods:

Gp. 1- Dipped in a *Pestalotia* sp. conidial suspension.
Gp. 2- Control fruits (dipped in distilled water)
Gp. 3- Control fruits (without dipping)

Suspensions of conidia were prepared and 50 μl aliquots were placed on stetile petri dishes (4 replicate plates). Cook's 2 medium (20 ml) was poured ovdr the suspension of conidia and the plates were incubated. Growth of fungi were observed daily.

Gp. 1- *Pestalotia* sp. Gp. 2- *Phoma* sp. Gp. 3- *B. theobromae*
Gp. 4- *Pestalotia* sp. (25 µl) mixed with *Phoma* sp. (25 µl)
Gp. 5- *Pestalota* sp. (25 µl) mixed with *B. theobromae* (25 µl)

Pestalotia sp. was grwon in liquid cultures for 3 days and culture filtrates were mixed with Cook's medium. (1:2) Mycelial discs (5 mm diameter) from a *Phoma* sp. culture were placed on the centre of the medium, the plates were incubated and the diameter of the colonies measured daily. Spore germination assay was carried out by placing drops of suspensions of conidia of (i) *Pestolotia* sp. + *Phoma* (1:1), and (ii) *Phoma* sp. (control) and incubating in a moist chamber. After 5 h % germination was determined.

Avocado fruits inoculated with a mixed suspension of conidia of *Pestalotia* sp. + *Phoma* sp. developmed stem-end rot 6 days after inoculation while those inoculated with a mixture of conidia of *Pestalotia* sp. + *B. theobromae* or *Phoma* sp. alone also showed symptoms within 2 days of inoculation. The fruits inoculated with *Pestalotia* sp. alone remained without sysmptoms for 8 days. In the control fruits too, stem-end rot was observed after 4 days. When the avocado furits were dipped in a suspension of conidia of *Pestalotia* sp., the development of stem-end rot took place on the 9th day after treatement, whereas in the controls the symptoms were observed on the 6th day.

When the conidia of both *Pesalotia* sp. and *Phoma* sp. were mixed together and seeded in the agar meidum only the growth of *Pestalotia* sp. was observed. However, when *Pestalotia* sp. and *B. theobromae* were similarly seeded togethr both the fungi grew on the medium.

Culture filtrates of *Pestalotia* sp. inhibited the growth of *Phoma* sp. on Cooks 2 medium. The growth of the fungi was not affected when autoclaved culture filtrate of *Pestalotia* sp. was added to the midium. Further the addition of conidia of *Pestalotia* sp. reduced germination of conidia of *Phoma* sp. by 26%.

Phoma sp. and *B. theobromae* are the main causes of stem-end rot of avocado in Sri Lanka. *Pestalotia* sp. was also frequently isolated from avocado fruit but this fungus did not produce any disease symptoms in the fruits. This shows that *Pestalota* sp. is a natural inhabitant of avocado. *Pestalotia* sp. inhibits the conidial germination and mycelial growth of *Phoma* sp. *in vitro*. Further the culture filtrates of *Pestalotia* sp. have a similar suppressive effect on the growth of *Phoma* sp. It could be concluded that *Pestalotia* sp. may be a natural antagonist of *Phoma* sp. but does not show similar effect on *B. theobromae*, a main causative organism of stem-end rot in avocado.

The antagonistic effect of *Pestalotia* sp. on *Phoma* sp. could be used in the reduction of stem-end rot development of avocado.