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Development of sooty moulds in mango orchards in relation to weather parameters and major sucking pests

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Abstract

Aim: Sooty moulds proliferate on mango foliage, subsisting on the honeydew created by sucking pests. It reduces photosynthetic area of tree. Factors affecting the development of sooty moulds on mango trees was studied for three consecutive seasons (2013, 2014 and 2015).

Methodology: Data were recorded at weekly interval from trees of mango cv. *Dashehari* of 20-35 year age selected with planting at 7.5 m × 7.5 m to 10 m × 10 m distances at 22 different locations in Lucknow district. Sooty moulds incidence and severity data were analyzed for relationship with sucking pest incidence and weather data.

Results: Sooty moulds incidence and severity was found to vary across the seasons. Peak incidence (28.8 %) of sooty mould was recorded during the 11th Standard Meteorological Week (SMW) with peak severity (14.2 %) during 17th SMW of the year 2013. During the year 2014, peak incidence (27.8) and severity (15.6 %) of sooty mould was recorded during 40th SMW. Similarly, peak incidence (42.5 %) and severity (27.5 %) of sooty mould was recorded at 25th SMW during the year 2015. The higher incidence and severity of sooty mould was recorded during the year 2015 compared to 2014 and 2013. Mango hoppers peak incidence was observed during 13th, 19th and 23rd SMW during the year 2013, 2014 and 2015. Whereas, the scale insect peak incidence was recorded during 9th, 39th and 14th SMW during the year 2013, 2014 and 2015 respectively. Scale insect incidence had significant positive correlation with the sooty mould incidence ($r = 0.65$) and severity ($r = 0.60$). Among the weather parameters, only rainfall had positive correlation with incidence ($r = 0.35$) and severity ($r = 0.37$) of sooty moulds. Step wise regression analysis showed that the hopper and scale insect incidence could influence the disease incidence upto 45 % and severity upto 39 %. When significant weather factor rainfall was taken into consideration, the corresponding values increased to 51 % and 47 %. However, scale insect incidence had exponential relationship with the incidence and severity of sooty mould.

Interpretation: The studies indicated that scale insect, hopper and rainfall together play a vital role in the development of mango sooty mould. Other weather factors did not have significant relationship with sooty mould development, but their indirect effect cannot be ruled out.

