

# PRIMING EFFECT OF EXOGENOUS SALICYLIC ACID TOWARDS GROWTH INHIBITION OF *PHYTOPHTHORA* SPP. CAUSING ABNORMAL LEAF FALL DISEASE IN RUBBER (*HEVEA BRASILIENSIS*)

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Abnormal leaf fall (ALF) disease caused by *Phytophthora* spp. is the most destructive, annually recurring disease of *Hevea* in India causing a reduction in latex yield by 38 to 56 per cent. Induced resistance by hormones is considered to be an eco-friendly strategy to stimulate plant defense against pathogen attack. The exact mechanism played by them inside the host machinery is very important while considering elicitors for field application. In this effort, exogenous application of Salicylic Acid (SA) was carried out to investigate its role as a priming stimulus. It was observed that exogenous application of SA activated defense mechanism in *Hevea* and it also had a role in inhibiting growth of *Phytophthora* spp. A significant reduction in disease severity was observed in both *Phytophthora*-tolerant and susceptible clones of *Hevea* at varying concentrations of SA treatment which also revealed that the strength of SA signaling was different in both the clones. Microscopic studies demonstrated a protective effect in both tolerant and susceptible clones in SA-treated plants against *P. meadii* which could be attributed to transcription of defense genes thereby delaying disease progression. This suggested effectiveness of SA as a priming agent over time for ALF disease management in *Hevea brasiliensis*.

**Keywords:** Abnormal leaf fall disease, *Hevea*, Phytohormones, Salicylic acid

*Hevea brasiliensis*, an economically important industrial crop, is used to produce latex of commercial utility and is widely cultivated in Southeast Asia. Various pathogens and pests cause threat to rubber tree growth and latex production. Abnormal leaf fall (ALF) disease caused by *Phytophthora meadii* is one of the major devastating diseases causing considerable reduction in the yield of natural rubber (Khompatara *et al.*, 2019). It infects petioles,

causes extensive defoliation of mature leaves, and reduces latex production, thereby causing significant economic loss.

*Phytophthora* has two-phases of infection which starts with an initial biotrophic phase, where the pathogen requires living cells, which is followed by a second necrotrophic phase, wherein the pathogen depends on dead plant tissue (Arévalo-Marin *et al.*, 2021). The change of phase occurs 24 to 48 hours post infection. The