



UNIQUE CHARACTER OF PARASITISM FOUND IN *SANTALUM ALBUM L. (INDIAN SANDALWOOD)*

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ABSTRACT: Parasitism is a well-known mechanism in plant kingdom, where the parasite draws nutrients from the host through haustoria. *Santalum album L.* (Indian sandalwood) is a classic example which exhibits partial parasitism during its initial growth phase. When an experiment for seed germination study for sandalwood was conducted a unique feature of sandalwood seedlings attaching its haustoria to itself was recorded. This is a rare phenomenon recorded at Institute of Wood Science and Technology nursery, Bengaluru. This phenomenon may be summarized as the efficiency of sandalwood seedling for drawing nutrients for its growth wherein it can attach haustoria to the same seedling in absence of any host plant.

Keywords: *Sandalwood Seed, Haustoria, Partial Parasitism, Santalum Album.*

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INTRODUCTION

Santalum album (Indian sandalwood) is known to be a partial parasite. It obtains some of the primary nutrients (N, P, K, C) including major access to nitrogenous solutes from available hosts (Rocha *et al.* 2014 and 2017; Lu *et al.* 2020; Radomiljac *et al.* 1998). Histologically sandalwood haustorium has hyline body on the periphery of host roots and penetration peg. It punctures the host tissue and forms laterally flattened ellipsoidal disc at the

cortex of host root (Deepa and Yusuf, 2015). It was also found by them that sandalwood plants connect another sandalwood plants through haustoria in nursery condition and histologically intraspecific haustoria were similar to other haustoria attached on leguminous and non-leguminous host roots.

OBSERVATION

During an experiment conducted at nursery of

Institute of Wood Science and Technology (ICFRE - IWST), a unique physiological behaviour of parasitic nature was observed in sandalwood seedling. It was found that a sandalwood seedling (*Santalum album*) made haustorial connection with self in absence of any other host plant. Actually, sandalwood seedlings were transplanted from sand tray to nursery covers (8' x 5') at four leafy stage with 7 cm height. After 40 days of transplanting, these were uprooted from nursery bags (mixture of sand:soil:FYM::2:1:1) with objective to measure the root length. During root measurement it was observed one of the seedling made haustorial connection with its lower part of stem (Photo 1). It was realized that during

transplantation from sand tray to nursery covers accidentally, the tap root was coiled upward and bend in U-shape. But haustorium has been successful in establishing connection with the same seedling (lower stem). This is first of kind report which shows that sandalwood can make haustorial connection to same plant.

CONCLUSION

The haustorium effectively extracts nutrients from the nearest available host—and, in the absence of any other host, even from the plant itself—demonstrating a highly efficient and indiscriminate mechanism for maximizing nutrient uptake.

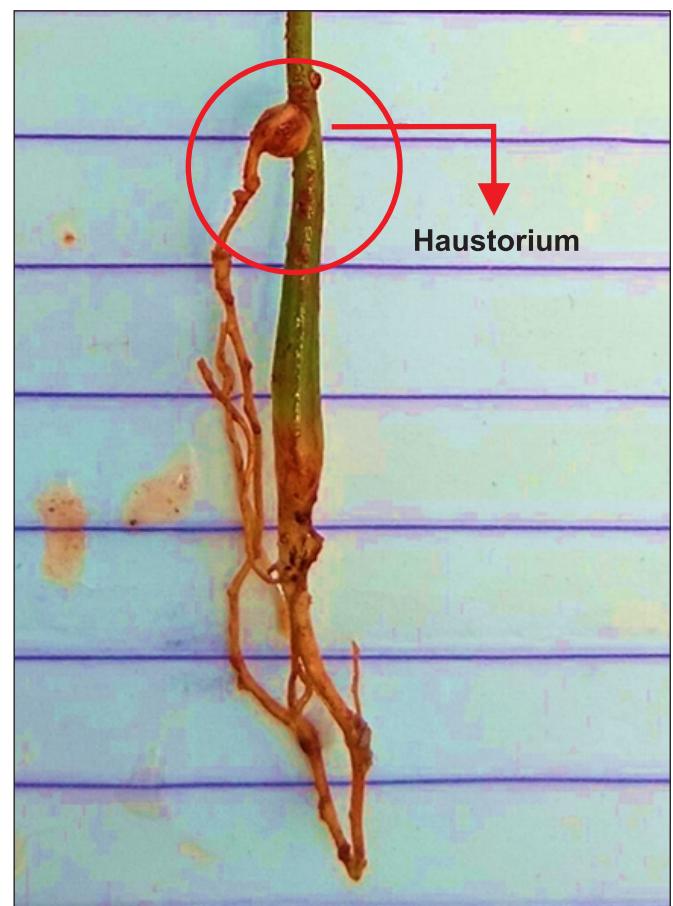


Fig. 1. Haustorium connection of sandalwood seedling with itself.

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REFERENCES

Deepa, P., and Yusuf, A. (2015). Histological and biochemical evaluation of *Santalum album L.* seedlings cocultivated with different hosts. *Ann Plant Sci*, 4(03), 1016-1021.

Lu, J. K., Li, Z. S., Yang, F. C., Wang, S. K., Liang, J. F., and He, X. H. (2020). Concurrent carbon and nitrogen transfer between hemiparasite *Santalum album* and two N₂-fixing hosts in a sandalwood plantation. *Forest Ecology and Management*, 464, 118060.

Radomiljac, A.M., McComb, J.A., Pate, J.S., and

Tennakoon, K.U. (1998). Xylem transfer of organic solutes in *Santalum album L.* (Indian sandal wood) in association with legume and non-legume hosts. *Annals of Botany*, 82 (5), 675–682.

Rocha, D., Ashokan, P. K., Santhoshkumar, A. V., Anoop, E. V., and Sureshkumar, P. (2014). Influence of host plant on the physiological attributes of field-grown sandal tree (*Santalum album*). *Journal of Tropical Forest Science*, 166-172.

Rocha, D., Ashokan, P. K., Santhoshkumar, A. V., Anoop, E. V., and Sureshkumar, P. (2017). Anatomy and functional status of haustoria in field grown sandalwood tree (*Santalum album L.*). *Current science*, 130-133.

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