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STUDIES ON INSECT GALLS : NITROGEN STATUS AT THE GALL

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The insect galls formed on the leaves Cinnamomum zeylanicum (Lauraceae), Ficus glomerata (Moraceae) and Syzygium malaccensis (Myrtaceae) and the adjoining non-galled areas were compared with respect to soluble protein contents, total nitrogen contents and free amino acid distribution patterns. The insect larva inside each gall was removed before processing the tissue for analysis.

In all three plants the total nitrogen contents in the galled tissue was about half that of the adjoining non-galled tissue. However, the soluble protein levels at the galls were much higher than in the non-galled areas. In Syzygium the level in the galled tissue was seven times higher and in Ficus the level was five times higher than in the non-galled tissue.

Two dimensional paper chromatographic separation of free amino acids indicated the amino acid patterns to be strikingly different for galled and non-galled areas. Certain amino acids which were very low or absent in non-galled areas, appeared very prominently in the galled tissue.

Results clearly indicated an attraction of specific amino acids and/or proteins and an altered nitrogen metabolism at the gall site probably in response to signals from the larva growing inside the gall.