Short Communication

Allelopathic Effect of *Eucalyptus tereticornis* on Neem

S. Umesh Kanna, K. Kumaran and C. Surendran
Forest College and Research Institute
Tamil Nadu Agricultural University
Mettupalayam-641 301, India

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The term allelopathy, literally meaning mutual harm, refers to the positive or negative influences of one plant with or without microbial action upon another through chemical means other than nutritional. Allelopathy depends on chemical compounds mainly added to the environment from living plants or dead and decaying parts (Tang 1986). The number and diversity of the compounds involved in allelopathy are growing rapidly. These chemicals may be produced by various parts of the plant such as roots and leaves (Horseley 1977), pollen (Ortega *et al.* 1988), seeds or fruits (Friedman *et al.* 1982), although roots and leaves are the main sources (Horseley 1977). Autotoxicity is apparently a negative feature of allelochemical production avoided by some species through excreting or sequestering of chemicals involved in structures. The allelochemicals can be classified based on the nature of producers, systematics of donor and receiver, inhibitory and stimulatory activity or upon the self or alien origin. During the last few years efforts have been made to exploit allelopathy for weed management, pest management, comparison and rational cropping, agroforestry and other.

The gap between demand and supply of food, fibre and wood is increasing day by day. Therefore, trees have been introduced in good agricultural lands, and this is gaining momentum. This practice has been recently termed as agroforestry. Surprisingly, *Eucalyptus* is being largely included in the agroforestry programme because of its characters like fast rate of growth at earlier stages, freedom from pests and diseases and adaptability to diverse soil and climatic conditions. However, in the last seven to eight years, the popularity of trees among private planters has suffered a dramatic change, because of heavy damage to adjoining crops. Keeping aside all other controversies linked with the tree, the area under *Eucalyptus* plantation often houses poor vegetation. For such an antiphytosocial property allelopathy has been proposed to be the reason (Kohli 1990). Like in any other plant, the bulk of allelochemicals of *Eucalyptus* in the rhizosphere are added through dead and deacy of fallen plant parts, mainly leaves. These allelochemicals which get released upon decay were injurious to vegetation growing nearby (Singh and Kohli 1992). The chemical content was maximum up to a distance of 1 to 2 m from the stem compared to the soil closed to the roots. Through HPLC these chemicals were identified as galic acid, gentisic acid, syringic acid, vanillic acid, caffeic acid, ferulic acid and cinnamic acid. These chemicals significantly reduce the chlorophyll content of the leaves (Kohli 1990),

Figure 1. Naturally regenerated neem seedling growing at the base of *Eucalyptus tereticornis*.

cellular respiratory ability, hydrological status of the plant and protein content. Enzymes like protease, polyphenol oxidase, peroxidase and alpha-amylase are also badly affected (Kohli 1990).

In contrary, in the present observation the leaf litter under *Eucalyptus tereticornis* was frequently removed manually and a natural regeneration of neem *(Azadirachta indica)* was noticed right at the base of the tree (Fig. 1). The germination, growth and establishment were closely observed. After six months the neem seedling was found to be healthy, vigorous and without any abnormality. From this observation, it can be concluded that neem can be a good companion of *E. tereticornis* in a mixed woodlot as it tolerates allelopathy of *E. tereticornis*. However, the reason for the tolerance by neem needs further investigation which is under progress.

References

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