

Effect of some oil cakes and saw dust application on root-knot (*Meloidogyne incognita*) infection and root nodulation of soybean

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Soybean crop is attacked by root-knot nematode which reduces its growth and yield in direct relation to the initial inoculum level of the nematode (8). With the aim to manage the root-knot damage on soybean by non-chemical methods, present studies were conducted on the effect of some oil cakes and saw dust application (when used as soil amendment) on root-knot development, plant growth and root nodulation of soybean.

Saw dust and five oil cakes, viz., mustard (*Brassica nigra*), neem (*Azadirachta indica*), linseed (*Linum usitatissimum*), mahua (*Madhuca indica*) and castor (*Ricinus communis*) were finely powdered and applied in soil at the rate of 5 per cent (W/W) in 10 cm earthen pots, each containing 500 g of sieved autoclaved soil along with a set without amendment + nematode and another without amendment and no nematode to serve as control. The pots were regularly watered to facilitate decomposition of organic matter for 15 days. Two seeds of soybean (*Glycine max*) were planted per pot. Each treatment was replicated 5 times. Five-day seedlings were inoculated around collar region with freshly obtained *Meloidogyne incognita* larvae at the rate of 4 larvae/g soil. Observations

were recorded at 95 days after inoculation on plant growth (shoot and root weight), root nodulation (number of nodules and weight of 10 nodules) and root-knot development (gall index and larval population in roots).

Shoot weight, root weight, root nodulation and weight per 10 nodules was significantly reduced in nematode inoculated plants compared to the uninoculated control. This confirms the pathogenic nature of *Meloidogyne incognita* on soybean as also the report of Sharma and Sethi (8). Reduction in number of nodules in nematode infected plants has also been reported by many investigators (3, 5).

Shoot and root weight of plants was significantly increased by application of all oil cakes compared to nematode inoculated plants without any amendment. The effect on plant growth within the treatments was observed in the order - mustard > neem > linseed > Mahua > castor > sawdust. Root gall index and nematode larval population in roots was significantly reduced by application of all amendments compared to untreated control and observed in the order - mustard < neem < linseed < mahua < castor < sawdust < control.

Significant increase in number of nodules per root system as well as nodule weight (per 10 nodule) was also recorded as a results of oil cake application compared to control and sawdust treatment. The order of this effect was control < sawdust < castor < mahuva < linseed < neem < mustard.

Efficacy of oil cakes in reducing root-knot infection on vegetables with increased plant growth has earlier been reported by many workers (1,2,4,9,10). This has been attributed (6,7) to increased availability of plant nutrients during decomposition of these oil cakes.

Increased plant growth of soybean as a result of application of various oil cake amendments compared to control observed in the present studies may be attributed to reduced root-knot infection, increased root nodulation and/or release of nitrogen and other nutrients from oil cakes.

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