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Title: DISEASE MANAGEMENT AND PLANT GROWTH PROMOTION IN SOME SOLANACEOUS VEGETABLES WITH SPECIAL REFERENCE TO SOIL SOLARIZATION

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Abstract: Soil solarization is an eco-friendly and a holistic approach of disease management. Admiring this technology, a comprehensive study was made to study the effect of soil solarization in integration with FYM amendment and bioagent seed treatment on disease suppression and growth promotion of plants. Study on population dynamics of soil microflora revealed that among fungal pathogens *Fusarium* sp., *Pythium* sp., *Aspergillus* sp., and *Trichoderma* spp. were predominating. All the durations of solarization i.e. 15, 30, 45 and 60 days showed greater potential in reducing the fungal pathogens. The maximum reduction of all the isolated fungal species were observed in 60 days solarized plots. Maximum reduction of soil microflora was recorded at the depth of 5 cm depth. With the increase in duration of solarization period, decrease in soil microflora was observed. The least population of *Fusarium* sp. was observed at 5 cm depth in 60 days plots. (1.0×10^4 /g soil). Similarly, after 60 days of solarization, least population of *Pythium* sp. (1.0×10^4 /g soil) and *Aspergillus* sp. (1.33×10^4 /g soil) was recorded at the same depth. In case of *Trichoderma* spp., 2.0×10^4 /g soil was obtained in non-solarized soil at the depth of 5 cm. In contrast to this, the maximum population of the same was recorded at the depth of 5 cm after 60 days of solarization (4.33×10^4 /g soil). In case of actinomycetes, in solarized plots at the same depth, the reduction of actinomycetes population varied from 11.67×10^3 to 12.33×10^3 /g soil. The population of bacteria ranged from 34.57×10^5 to 7.83×10^5 /g soil in solarized plots at the same depth. Close and regular inspection revealed that solarized plots effectively controlled the incidence of both the pre- and post-emergence damping-off diseases in all the crops studied. In tomato, the maximum reduction of pre-emergence damping-off was recorded in 60 days solarized plots with FYM and seed treatment (66.42%). The maximum reduction of post-emergence damping-off was recorded in 60 days solarized soil in integration with FYM amendment and seed treatment with *T. harzianum* (86.69%). In case of chilli, the maximum reduction of pre- and post-emergence damping-off was recorded in 60 days solarization in combination with FYM amendment and seed treatment with *T. harzianum* (58.76 and 82.93%, respectively). In brinjal also, the FYM amendment and seed treatment with *T. harzianum* in solarized plots recorded maximum reduction of both pre- and post-emergence damping-off diseases. Abstract..... □ The study on influence of soil solarization on plant growth promotion of vegetable seedlings revealed that it greatly promoted plant growth. The germination in all the three crops viz., tomato, chilli and brinjal were recorded maximum in 60 days solarized plots with FYM amendment and *T. harzianum* treated seeds. In tomato, it was 81.83 per cent. Whereas, in chilli and brinjal, highest germination of 72.90 and 75.60 per cent, respectively were recorded. In case of solarized + FYM amendment, the maximum germination percentage recorded in tomato was 79.60 per cent after 60 days of solarization. In chilli and brinjal, the maximum germinations were 72.00 and 75.33 per cent, respectively. The shoot and root length and fresh and dry weights were recorded maximum in solarized + FYM amendment + seed treatment with *T. harzianum* in all the three crops studied. Duration of solarization played a major role in plant growth promotion. In tomato, the shoot and root length varied from 10.10 to 18.37 cm and 5.67 to 9.37 cm, respectively in solarized plots accompanied by FYM amendment and seed treatment with bioagent. The fresh and dry weights ranged from 7.72 to 20.50 g and 2.27 to 37.00 g in the plots having same treatment. Solarized plots with FYM amendment recorded slightly less length of shoot and root length and fresh and dry weights. In chilli, the maximum length of shoot and root and fresh and dry weight 19.47 cm and 8.07 cm and 5.23 and 1.54 g, respectively were recorded in same treatment. In brinjal too, the same treatment showed better results compared to the other treatments. The 60 days solarized plots recorded least population of deleterious microflora. The incidence of both pre- and post-emergence damping-off were least in 60 days solarized plots having FYM amendment and seed treatment with bioagent. The plots with same treatment showed highest germination percentage. The growth parameters also showed better results in FYM and seed treated plots. FYM amendment and seed treatment with *T. harzianum* added glory to the virtue to this approach of disease control and growth promotion.

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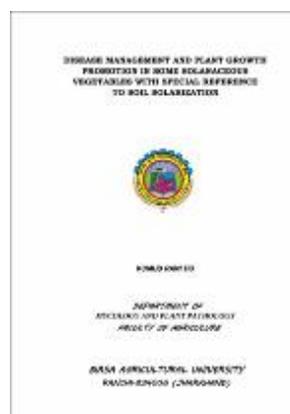
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