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Can commercial bioinoculants available on the market in Vietnam protect coffee seedlings from *Meloidogyne incognita* infestation under controlled conditions?

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Rationale:
Vietnam is the world's largest Robusta coffee exporter and contributes to around 53% of the global Robusta's coffee market, with 695,000 ha of land dedicated to coffee production. However, the coffee industry in Vietnam is facing major challenges due to several decades of intensive management and mis-management. Soil biodiversity is significantly reduced and soil physio-chemical properties highly degraded, resulting in increased Soil Borne Pests and Diseases (SBPD), including Fusarium and phytopathogenic nematodes (*Pratylenchus* and *Meloidogyne*). These phytopathogenic nematodes are widely distributed in the soil, damaging the coffee seedlings and responsible for 40% of the new plantations being removed soon after planting.

Methods:
The utilization of commercial bioinoculants containing microbial biocontrol microorganisms currently available on the market in Vietnam has been investigated under greenhouse conditions to assess their capacity to control the infection of *Meloidogyne incognita* isolated from roots of highly infected coffee trees in the Central Highlands. A list of 15 commercial bioinoculants, a positive control (chemical nematicide) and a negative control (untreated) were tested using two protocols: (1) nematodes inoculated to coffee seedlings 15 days after the application of the bioinoculants and (2) nematodes inoculated to coffee seedlings 15 days before the application of the bioinoculants.

Results:
Our results showed that regardless of treatments and the protocol, the presence of *M. incognita* did not induce any plant mortality. Chlorophyll content index, above fresh biomass, and nematode populations in the soil and roots were significantly different with bioinoculants compared to the negative control. The pre-application of bioproducts resulted in better nematode control than application performed post infection with *M. incognita*. The four most effective bioinoculants tested, suppressed 63%-81% of *M. incognita* population compared to the negative control regardless of the protocol. With the chemical nematicide control, the inhibition of *M. incognita* was 88-93%.

Conclusions & Perspectives:
Our study identified effective commercial bioinoculants that farmers can apply at the nursery to protect coffee seedlings. These bioinoculants will now be tested in the field, in coffee plantations with soil infested by *M. incognita,* to determine if they can effectively contribute to significantly reduce the populations of these SBPDs, in combination with/without other management practices such as lime or biochar applications.

Table of contents