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Effect of Temperature Acclimation of Entomopathogenic Nematodes, *Steinernema carpocapsae* and *S. longicaudum* Infective Juveniles at Lower and Higher Temperature

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Entomopathogenic nematodes (EPNs) in the genus *Steinernema* are potential biological control agents of a variety of insect pests. Ambient environments are important to nematodes. Especially, nematode mobility, infectivity, development, and reproduction are closely related with temperature because EPNs are poikilothermic.

Low and high temperatures negatively influence nematodes. Although infective juveniles develop to adults and reproduce progenies at low and high temperatures, their progenies remain inside the cadaver and eventually. Because temperature is the most important factor to nematodes and symbiotic bacteria for practical use and production, low and high temperature effects on nematode and symbiotic bacteria were examined in this study.

IJs SgD and SIN in glass beakers were kept in 13°C and 35°C incubators for 3 days before inoculation for temperature acclimation. The acclimatized IJs were inoculated at the rate of 80 IJs in 13°C and 35°C incubators and processed above experiments in the same incubators, that is, larval mortality, nematode development, and reproduction were checked as above. There were 4 replicates/temperature with 10 Petri dishes per replicate.

Larval mortality caused by acclimated IJs of SgD and SIN occurred sooner than not acclimated IJs but not different between acclimated and not acclimated IJs.

Acclimation of IJs at lower temperature 13°C and higher temperature 35°C increased penetration ability. The number of adults was significantly higher in the acclimation than non-acclimation. For example, SgD acclimation at 13°C and 35°C resulted in 5.1 and 30 adults/cadaver, compared to 3.4 and 15.4 adults/cadaver for non-acclimation.

Interestingly, acclimated IJs influenced development and reproduction depending on nematode species. Two species, SgD and SIN, developed to adults but did not reproduce at 13°C. At 35°C SgD developed to adults and reproduced progenies. However, and SIN did not reproduce progenies although they developed to adults.