

# Biology of different Geographic Isolates of *Meloidogyne graminicola* Golden and Birchfield in Rice (*Oryza sativa* L.) cv. IET-4786

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**Abstract**—A pot culture experiment was carried out at the Directorate of Research, BCKV, Kalyani, Nadia, West Bengal to investigate the variations in the developmental stages and biological attributes of different geographic isolates of root knot nematode, *Meloidogyne graminicola* on susceptible rice cv. IET-4786 (Shatabdi). Four isolates of *M. graminicola* were used for the purpose. Isolates were recovered from Central Research Farm of BCKV (Gayeshpur, Nadia), Shyamsundarpur, Sumitrapur and Ashui villages of Gopiballabhpur-I block of West Medinipur district of West Bengal. Ex situ incubation period among four selected geographic isolates of *M. graminicola* varied from 1-3 days. In situ incubation period of *M. graminicola* was found maximum 4-6 days in Ashui isolate while minimum 2-5 days with Shyamsundarpur isolate. Penetration of rice root by J2 of *M. graminicola* was started at 6 hrs after inoculation in Shyamsundarpur isolate. J2 took at least 18 hrs to penetrate the rice root as observed with Sumitrapur isolate of *M. graminicola*. Duration of J2, egg to young female (premature female) stage and egg to adult female stage was recorded maximum with Gayeshpur isolate being, 7-8 days, 12-13 days and 14-16 days, respectively. Duration of the mentioned stages were recorded minimum with Shyamsundarpur isolate being, 4-5 days, 9-13 days and 11-14 days, respectively. The time lag between commencement of oviposition and formation of adult female was more with Ashui isolate being, 3-5 days. In contrast, the rest isolates took usually 2-3 days to oviposit after becoming adult. The minimum time to complete egg to egg stage and J2 to second generation J2 stage was with Shyamsundarpur isolate being, 13.8 days and 14.7 days, respectively. On the contrary, the maximum time to complete egg to egg stage and J2 to second generation J2 stage was recorded with Ashui and Sumitrapur isolate being, 18.2 days and 18.8 days, respectively. Maximum fecundity (100-1200 eggs/female) of *M. graminicola* was found with Shyamsundarpur isolate. Least fecundity was observed with Gayeshpur isolate. All the isolates of *M. graminicola* induced terminal elongated 'fish hook' shaped root gall just behind the root tip while, Shyamsundarpur isolate produced multiple elongated and button shaped root galls despite terminal root galls. These variations in the duration of life cycle and fecundity of *M. graminicola* among isolates are attributed due to difference in the biological behaviour of the isolates as because all the isolates were tested under same ecological condition and on same rice genotype.