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Root-knot disease caused by *Meloidogyne graminicola* : A limiting factor for growth and yield of barley (*Hordeum vulgare* L.)

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ABSTRACT: Root-knot nematode (*Meloidogyne graminicola*) causing root-knot disease of rice has recently been observed as a new problem in barley. This disease was noticed for the first time during the course of our regular monitoring of diseases in the various barley trials. *M. graminicola* affected growth and yield of the infected barley plants. The plant height, ear length, test weight, number of kernel/spike and grain yield were reduced. The disease was observed in patches consisting of stunted/ dwarfed plants along with yellowing. Number of patches in a field varied from one to six with considerable area. Within two weeks of sowing, patches of dwarf plants became visible. However, these patches in the fields became more distinct within three weeks of sowing owing to normal growth of the surrounding healthy plants. Plant stand in the patches was also poor. The poor stand was directly related to reduction in yield. Number of grains/spike was greatly reduced with shriveled grains. In general, irrespective of the fields, this disease was more severe in sandy loam, soil in comparison to loam and clay soil. Maximum reduction in yield was found in sandy loam followed by loam and clay soils. Yield losses in infested fields varied between 2.5% to 23.5%. However, yield losses were much higher (36%-73.4%) in the patches irrespective of the soil types. Root gall index was positively correlated with the yield losses. In severely infected plants, heading was also badly affected. In the present studies, an attempt was made for projecting a real scenario on losses in a field or in an area, which may be applied while estimating yield losses due to root-knot disease. This is the first attempt to estimate the losses due to root-knot disease of barley in naturally infested fields.

Key Words: Barley, growth parameters, loss appraisal, patches, *Meloidogyne graminicola*, root-knot disease.