INTERACTIONS OF ROOT-KNOT NEMATODE AND CYLINDROCLADIUM BLACK ROT (CBR) ON RUNNER PEANUT

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Cylindrocladium black rot (CBR), caused by *Cylindrocladium parasiticum*, and root-knot nematode, caused by *Meloidogyne arenaria* (Ma), are important soilborne diseases on peanut in Georgia. The number of infested fields with CBR and nematode has apparently increased in Georgia in recent years. Yield losses from CBR alone in some fields in Plains and Attapulgus, GA have exceeded 50%. Root-knot nematode and CBR are frequently found together in peanut fields. Severe losses have been found in Virginia type peanuts when root-knot nematode and Cylindrocladium black rot occur in the same fields, as often occurs in poor rotations on sandy soils. However, Georgia farmers grow runner type peanuts, and the CBR/nematode interaction has never been documented. The objective of this study was to determine the potential interactions between the root-knot nematode and CBR in runner peanut, particularly in the CBR-resistant and Ma-resistant genotypes.

Greenhouse and microplot experiments were conducted in 2006 and 2007 with three runner peanut genotypes Tifguard (resistant to *M. arenaria*), C724-19-25 (susceptible to *M. arenaria*), and Georgia-02C (moderately resistant to CBR). Microsclerotia of *C. parasiticum* were produced on potato-dextrose agar (PDA) for inoculating greenhouse and microplot tests. *Meloidogyne arenaria* race 1, originating from a peanut field in Tifton, GA, was reproduced on tomato or eggplant for inoculation. The three peanut genotypes were grown in all combinations of three *C. parasiticum* inoculum densities and three nematode levels in both greenhouse and microplot tests. Root rot rating, gall index, and whole plant weight were assessed for greenhouse tests. Root rot rating, gall index, plant mortality, and pod yield were measured for microplot tests.

In the greenhouse, addition of 500-3000 eggs/plant of *M. arenaria* did not affect the root rot induced by 1.0 to 5.0 microsclerotia of *C. parasiticum* per g soil. In microplot experiments, the root rot ratings from Georgia-02C and C724-19-25 were higher in plots infested with *M. arenaria* (0.4-2.0 eggs/cm^3 soil) and *C. parasiticum* than in plots with *C. parasiticum* alone; however, *M. arenaria* did not increase the root rot ratings on the nematode resistant Tifguard. This was inconsistent with the greenhouse results. Gall indices were not affected by *C. parasiticum* inoculations in the greenhouse or microplots. In both 2006 and 2007, a significant interaction between *C. parasiticum* inoculum densities and nematode level was observed on plant mortality. CBR inoculum greatly increased mortality on C724-19-25 and Georgia-02C, but not on Tifguard, in the presence of *M. arenaria*. This synergism was more apparent at lower inoculum levels, but on the nematode-susceptible cultivars plant mortality was consistently higher from co-inoculations of the two pathogens than from either alone. Simultaneous inoculation with *M. arenaria* decreased yield incrementally on C724-19-25 and Georgia-02C as *C. parasiticum* inoculum levels increased, but even a high level of *M. arenaria* (2.0 eggs/cm^3 soil) did not decrease yield of Tifguard when also inoculated with *C. parasiticum*. Tifguard will be an excellent tool for management of both root-knot nematode and CBR.