Journal of Nematology 34(2):183. 2002.

Erratum

Relationship Between Crop Losses and Initial Population Densities of *Meloidogyne arenaria* in Winter-Grown Oriental Melon in Korea

D. G. Kim[1] and H. Ferris[2]

This article originally appeared in volume 34 number 1, March 2002. Due to the poor quality of figure 7 (page 48), it is being resupplied to you. Please replace the original page with the following.

ation that the fixed production costs of this and many cropping systems are substantial. In this case, they include costs of bed preparation, mulching, the drip-irrigation system, and plastic cover construction. Since potential net returns (R) are (1 − 0.336) (V_eHY_e + V_lHY_l) for this cropping system (see above), N is determined by spreadsheet solution of eqn. 2 to determine the Pi level at which L = R. Where there is no nematode management, $\beta = 0$ so that eqn. 2 becomes identical to eqn. 1. In the oriental melon production system, without nematode management, the profit limit is not reached because the greatest crop yields are at the early harvest when residual relative minimum yield is 0.5 even at high population levels. Here the resolution provided by the double damage function becomes apparent. Returns from the late-season component of the yield can become negative at moderate Pi in September (PL1 in Fig. 7). Even when the nematicide is applied, returns may become negative at some Pi (PL2 in Fig. 7) if efficacy of the treatment is less than 100%. A strong argument could be made for terminating the crop after the early-season harvest to avoid net losses in the late season when the Pi is high.

Because there are strong linear and Seinhorst relationships between yield of oriental melon and *M. arenaria* J2 counts in both September and January (Figs. 2,3; Tables 1,2), either model or sampling date could be used for yield prediction and advisory purposes. However, in January, when temperatures are below freezing, the soil is covered with mulch, and plastic covers have already been built, it is difficult to apply any nematode control measures. Therefore, we strongly recommend that soil sampling for advisory purposes be performed during the fall when growers still have time to apply the necessary treatments.

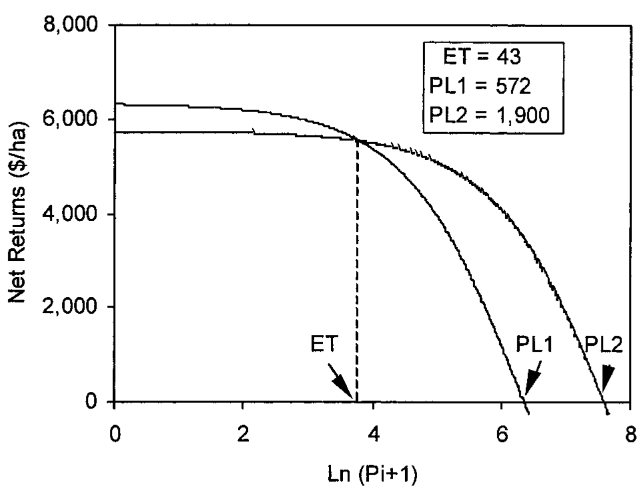

FIG. 7. Net returns ($/ha) from late-season harvest of an oriental melon crop in relation to preplant population densities (Pi) of *Meloidogyne arenaria* in September. The dashed line indicates expected returns from the late harvest after an application of fosthiazate where the efficacy of nematode control was 75%. The Pi at which returns for the management during the late harvest were equal to the cost of management (ET) was 43 J2/100 cm^3 soil. PL1 is the Pi at which net returns for the late harvest become negative without management, and PL2 is the point at which returns become negative with management at 75% efficacy.

Damage functions describing the loss of yield as a function of nematode density can vary with geographic, edaphic, and climatic conditions with cultivars (Cooke and Thomason, 1979; Ferris, 1978; Griffin, 1981; Roberts et al., 1981). Soil temperatures for the crop season influence nematode development and multiplication rates and, consequently, degree of crop damage (Griffin, 1981; Roberts et al., 1981). For example, the tolerance limit of sugarbeets to *Heterodera schachtii* is 430 eggs/100 cm^3 soil when the temperature is 19 °C, but 63 eggs/100 cm^3 soil when the temperature is 23–27 °C (Cooke and Thomason, 1979). In our field plots, the average soil temperature at the 10-cm depth under the plastic film was <10 °C at planting. It increased to 22 °C by the start of the early harvest period in mid April. By the end of the second harvest period in July, the average soil temperature was 29 °C. The warm soil temperatures under plastic film undoubtedly influence the low ET levels of *M. arenaria* on oriental melon.

Although soil moisture is another source of variation (Barker, 1982; Mein et al., 1978), oriental melon usually is grown in drip-irrigated beds mulched with black plastic film (Fig. 1). Consequently, soil moisture in oriental melon greenhouses is relatively constant throughout the growing season. The effects of soil texture and other important edaphic factors (Barker et al., 1985) require further investigation so that the models developed in this study can be made more robust.

The data and concepts provided herein should be useful in nematode assay programs as well as in efforts to determine yield losses to *M. arenaria* in oriental melon production areas. We reiterate that, for practical purposes, assay samples should be taken preferably in September and that soil containing more than 14 juveniles/100 cm^3 should be recommended for nematode treatment at current costs of fosthiazate. The effectiveness of the nematicide treatment, however, has been highly variable (Wong et al., 1970), and development of consistently effective, low-cost control methods is necessary.

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Cho, M. R., B. C. Lee, D. S. Kim, H. Y. Jeon, M. S. Yiem, and J. O.