USING LASER CAPTURE MICRODISSECTION OF ROOT-KNOT (LCM) IN THE FIELD NEMATODE ON COTTON PLANTS

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ABSTRACT

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Root-knot nematodes (*Meloidogyne* spp.) are obligate, sedentary endoparasites that infect roots of a wide range of plant species and cause considerable economic loss to many crops.

Roots of cotton plants; susceptible Giza 90 and resistant Giza 80 to root-knot nematode (RKN), *Meloidogyne incognita*, were inoculated and allowed to develop feeding sites (giant cells) for 25 days post inoculation. The nematode feeds on these giant cells (GCs) that consider the sole source of nutrition for growth and reproduction of the nematode throughout its life cycle.

Thus in this work, laser capture microdissection (LCM) was used to collect these giant cells (GCs) which formed during the interaction of root-knot nematode *Meloidogyne incognita* on cotton plants from paraffin-embedded sections. The results indicated that, the differences in shape and size of giant cells in both two cultivars of cotton plants, also the differences in width and length of adult females in the same cultivars, and by a specific software package were used to select the infected cells by moving the cursor, shown by the red line, and the laser provides enough energy to cut both the transfer film and the tissue.

The biological experiment to study the life cycle of root-knot nematode *Meloidogyne incognita* race 3 on cotton plants; susceptible Giza 90 and resistant Giza 80, were carried out at temperature 25-30°C. Concerning susceptible cotton Giza 90, the result revealed that, the second stage juveniles required 25 days post inoculation (dpi) to develop and produce the second stage juveniles of the next generation. Whereas, in resistant cotton Giza 80, the second stage juveniles required 45 days post inoculation (dpi) to develop and produce the second stage juveniles of the next generation.

Key words: **Root-knot nematode (RKN)-Laser Capture Micro dissection (LCM)-giant cells (GCs)-cotton plants- days post inoculation (dpi).**

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