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Inflorescence and Leaf Galls on *Palisota barteri* Caused by *Meloidogyne javanica*[1]

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Meloidogyne spp. are recognized worldwide as causing root galls on a wide range of plants. They have also been reported to cause galls on above-ground parts of 26 plant species in 22 genera, either under natural field conditions or after artificial inoculation (2,3,5,8,10–13).

We observed galls containing root-knot nematodes on inflorescences and leaves of *Palisota barteri* Hook. f. in a Florida nursery. Inflorescences of *P. barteri* are thyrsus with white petals and, at maturity, produce red berries (Fig. 1A). Infected flower bracts and bracteoles had small galls. Inflorescences were stained in acid fuchsin-lactophenol, and mature *Meloidogyne* sp. females with egg masses were observed in the bracts and bracteoles (Fig. 1B–D). We observed that the nematode completed its life cycle and produced eggs in the inflorescence of *P. barteri*.

To our knowledge, *Meloidogyne* spp. have not previously been reported to complete the life cycle in the inflorescence of any other plant (4,6). The flowering period in many plants is very short, but in *P. barteri* inflorescence development and flowering occur over several weeks, which is ample time for the nematode to complete its life cycle. Flowers of *P. barteri* develop at the bases of the leaves where they may easily become contaminated with juveniles from infected leaves. Dense foliage (Fig. 2A) protects nematodes in the flowers from irradiation and helps to maintain a humid environment for nematode infection and development.

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Numerous galls were observed on *P. barteri* leaves of all ages. An average of 16 galls occurred per leaf, but more than 50 galls were counted on some leaves. Young severely galled leaves became crinkled, or twisted and distorted. Galls occurred on both upper and lower leaf surfaces and were randomly distributed on the apices, margins, and bases of the leaf blades, including the midveins (Fig. 2B, C). Galls also occurred as finger-like projections on leaf petioles (Fig. 2D). The shapes and sizes of leaf galls varied. Some galls appeared as cones in a pit (Fig. 2E), others as spires or ridged cylinders (Fig. 2F), but most appeared as mounds or cones (Fig. 2B, C, G). The largest conical gall was 7.7 mm in diameter at the base and 5 mm high. Circular depressions usually appeared on the sides of leaves opposite large conical galls.

Maturing *Meloidogyne* sp. females were visible beneath the epidermis of leaf galls (Fig. 2H). Egg masses were either outside the leaf epidermis, or inside the leaf tissue. Perineal patterns and juvenile morphometrics were typical of *Meloidogyne javanica* (Treub.) Chitwood (1). Eggs extracted from *P. barteri* leaves were used to inoculate tomato plants, and eggs from these tomato cultures were used in a differential host test, the results of which were typical for *M. javanica* (9). The population of *M. javanica* from *P. barteri* also reproduced and caused galls on roots of *Ardisia crenata* Sims, *Brassaia actinophylla* Endl., and *Maranta leuconeura* E. Morr.

Galls were not observed on roots of *P. barteri* plants even though leaves were severely galled by *M. javanica*. Foliage galls without root galls have been reported on *Siderasis fuscata* (Lodd.) H. E. Moore (7). *Meloidogyne incognita* was observed to spread on *S. fuscata* in a commercial nursery; 50% of the plants were reported to show some leaf infection (7).

Both *P. barteri* and *S. fuscata* are mono-

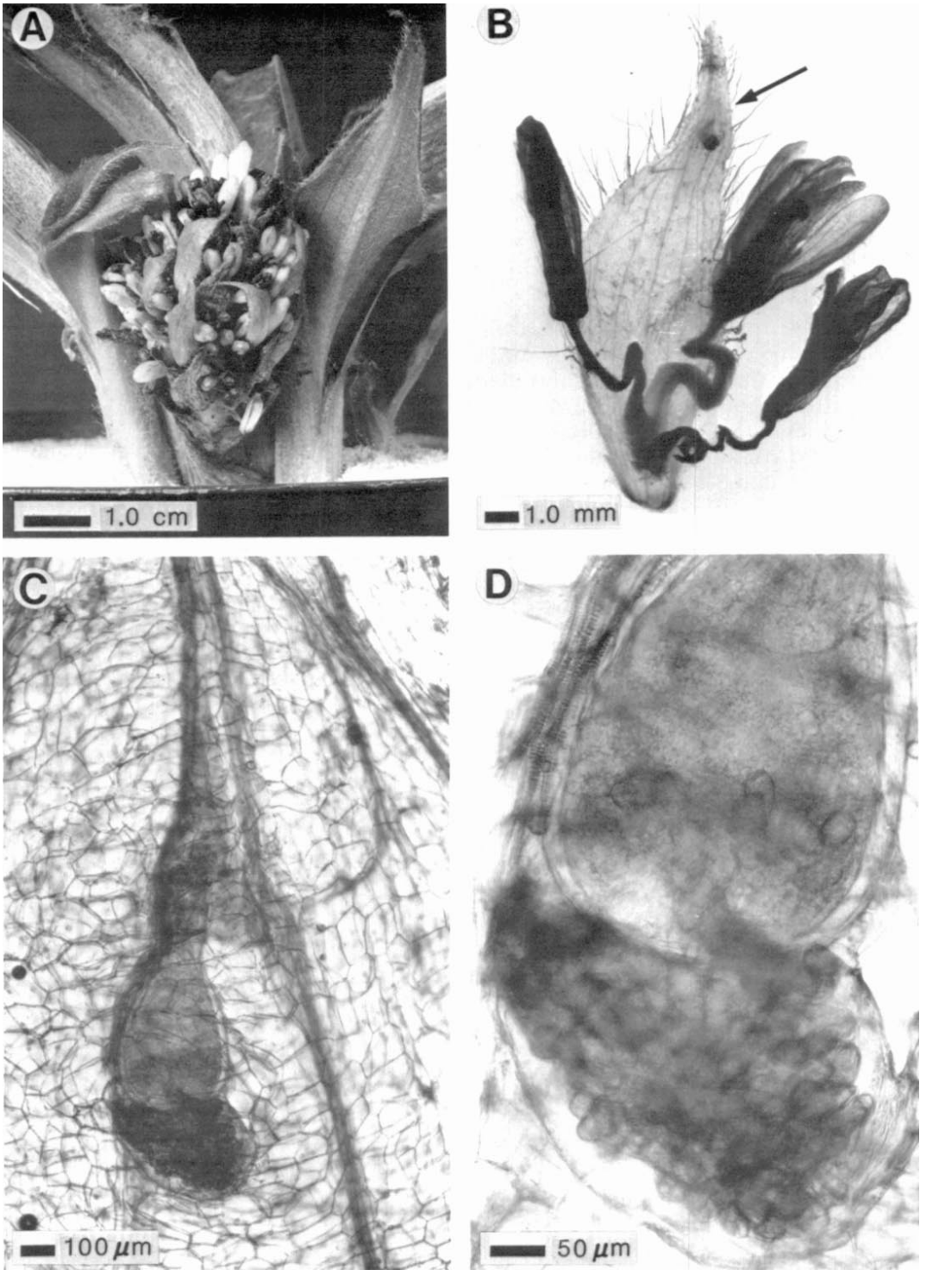

FIG. 1. Reproduction of *Meloidogyne javanica* on flowers of *Palisota barteri.* A) Inflorescence thyrsus. B) Individual flower, showing *M. javanica* female and egg mass (arrow). C) Closeup of egg mass and female with head in vascular tissue. D) Mature female with eggs in gelatinous matrix.

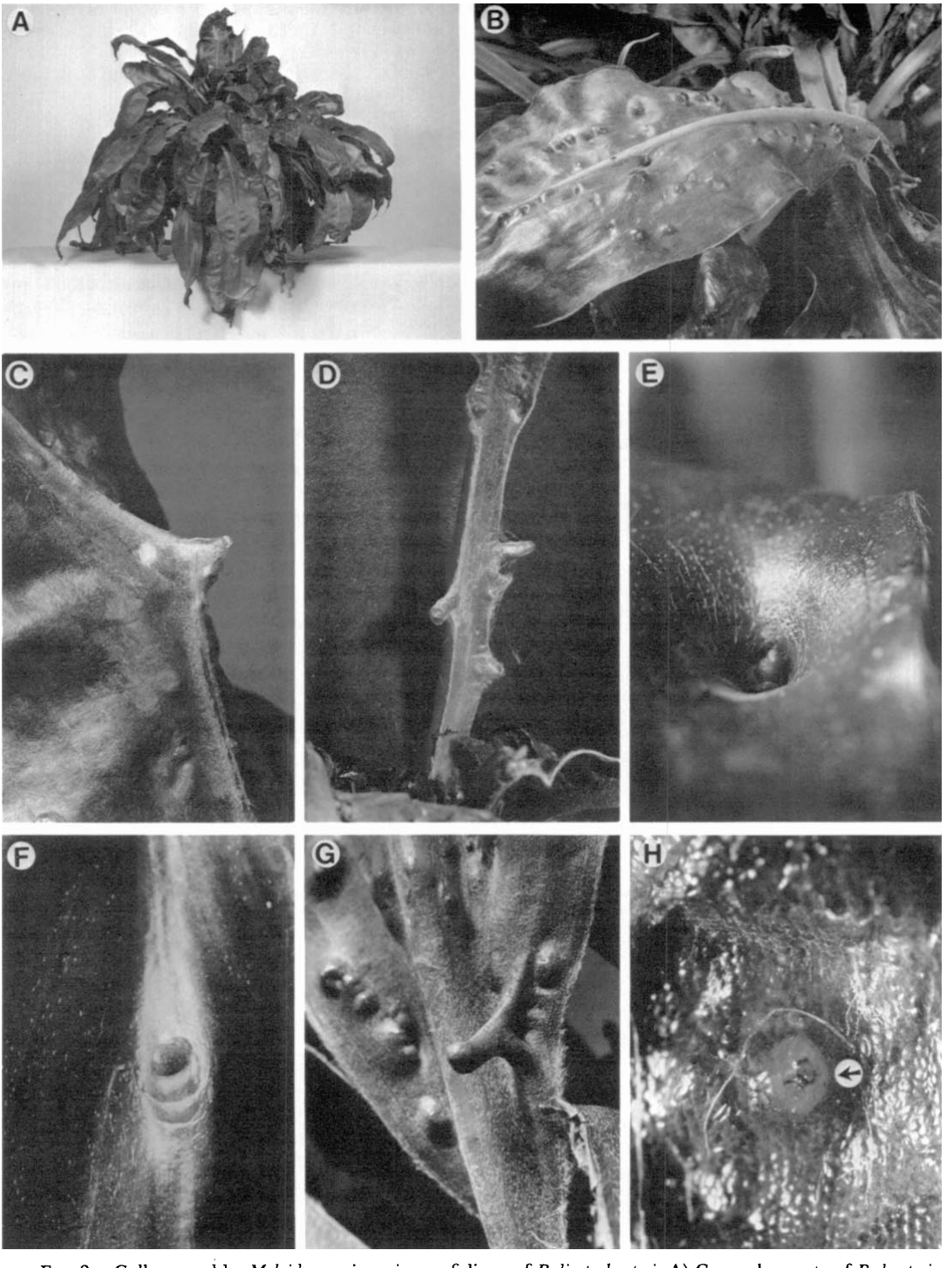

FIG. 2. Galls caused by *Meloidogyne javanica* on foliage of *Palisota barteri.* A) General aspects of *P. barteri* plant with galls. B) Portion of leaf with numerous mound and cone-like galls. C) Conical gall on leaf midrib. D) Galls appearing as finger-like projections on leaf petiole. E) Cone-like gall in pit. F) Gall appearing as spire or ridged cylinder. G) Large gall resembling cone with knob. H) White *M. javanica* female visible beneath the leaf epidermis.

cots in the family Commeliaceae. The basic morphology of these plants appears to favor root-knot nematode development in aboveground plant parts. Leaves of both plants develop in the crown near the soil; they are large, 20–30 cm long, and densely arranged so that nematodes on younger leaves are protected from direct solar irradiation. The dense pubescent foliage, especially the convoluted young leaves, aid in retaining surface moisture, thus providing a favorable humid environment for nematode activity.

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