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SYSTEMATICS AND IDENTIFICATION OF PLANT-PARASITIC NEMATODE GENERA

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It is obvious from the above that the definitions given for systematics, identification and genus, are loose, variable, and submitted to revision, and this is a problem for systematists and identifiers.

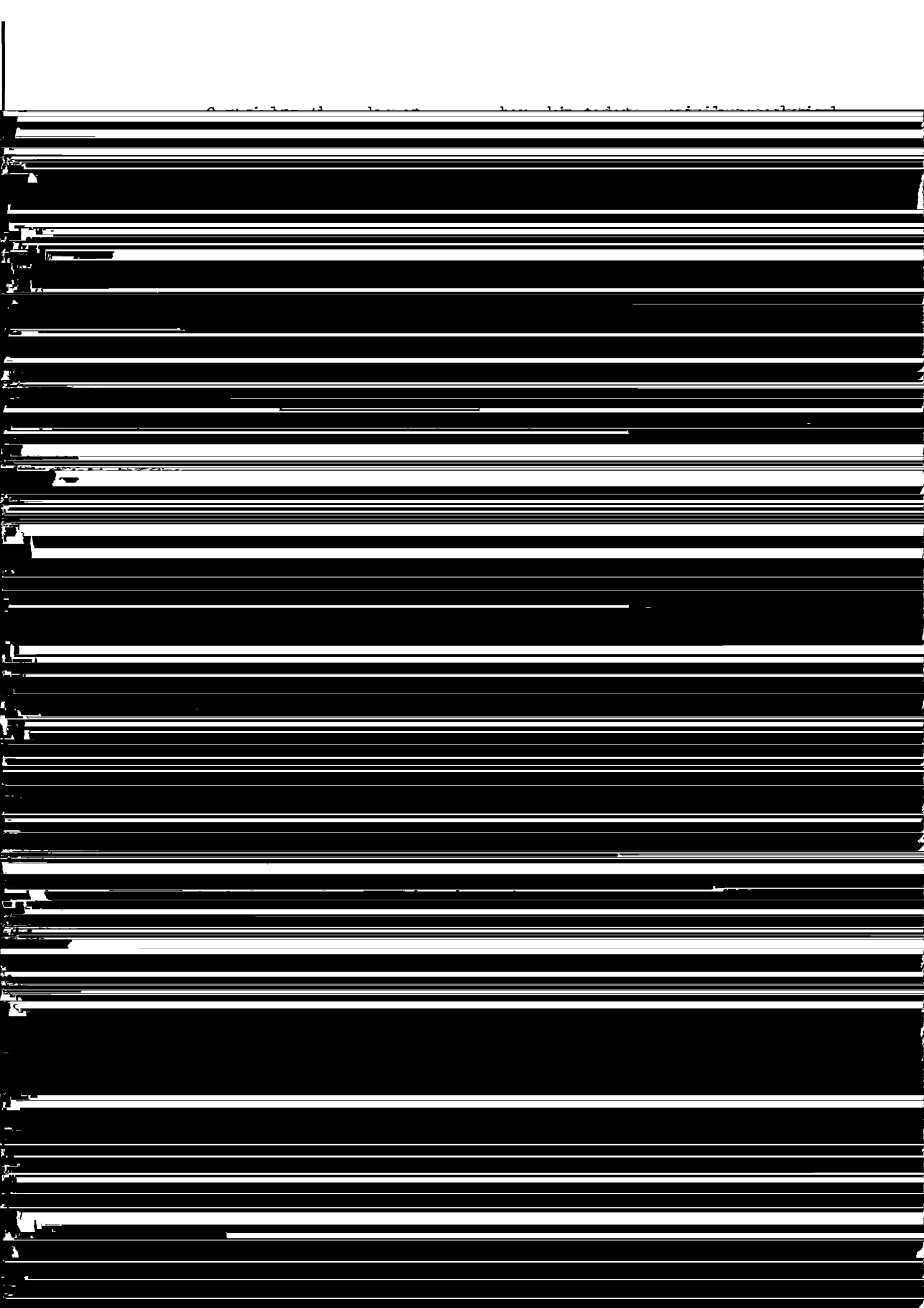
reason a number of genera in Belonolaimidae have been rejected in a recent study of that family (Fortuner & Luc, 1987). However, it is difficult to apply this rule to Criconematinae. In this subfamily most characters used to separate genera are those describing the ornamentation of the cuticle. If a criconematid were to be stripped of its cuticle, it would lose all its generic characters, and it would resemble all the other criconematid species, except for body and stylet lengths, and shape of the post vulvar part. In this and other traits (e.g. ontogeny of the female genital system, see below), the criconematids appear as quite distinct from the rest of the Tylenchina, which justifies the division of Tylenchina into two superfamilies.

- the number of female genital branches (monodelphy vs didelphy) must be carefully evaluated in various groups. Nematodes with only one anterior female genital branch belong to one of several categories:

- Criconematoidea, where all species are monodelphic, and where the female genital primordium never shows the initiation of a posterior branch;

- monodelphic Tylenchoidea where the genital primordium have two branches. In adult females, the posterior branch is reduced to a post-uterine sac. In some genera, the species show a continuous variation (morphocline) from two equal and functional branches, to a posterior branch shorter but functional, to a posterior branch reduced, differentiated but apparently not functional, and to an undifferentiated post uterine sac. If all other characters are similar, there is no reason to place these species in separate genera. This situation is found for example in *Helicotylenchus* (= *Rotylenchoides*) and *Radopholus* (= *Radopholoides*);

- however, in the majority of monodelphic Tylenchoidea, monodelphy is a good character, stable in a given group, clearly separating this group from didelphic genera. In such cases mono- or didelphy can be used for



Neodolichodorus have a shorter stylet and one species of *Brachydorus* was found with a longer stylet; also, the labial area of the latter genus is actually striated, as in the other two genera. It was thought at first that the characters above were not diagnostic at generic level but SEM face views revealed a very distinctive shape and position of the amphidial slits in the three genera: they are small and laterally directed in *Dolichodorus*, small and dorso-ventrally directed in *Neodolichodorus*, and large and oblique in *Brachydorus* (Luc & Fortuner, 1987; Raski & Luc, 1988). This is a good example of three genera that can be easily identified using key characters (tail shape; number of lines in the lateral field), but whose taxonomic validity was proved by systematic characters only seen with SEM;

- at subfamily level: the SEM face view is one of the most obvious common characters used to define the Heteroderinae. In the female, the oral disc is roughly squarish, elevated, and conspicuously detached from the lip sectors. The lip sectors are rounded, notably larger, and completely fused to form a roundish annulus. This structure is found in females of all genera of Heteroderinae, and it has not been observed outside this subfamily (Luc, Maggenti & Fortuner, 1988). It was also observed in the genus *Verutus* that has some characters at variance with the description of the Heteroderinae. Because of its female face organization, the genus is now confirmed as a member of the subfamily, where it represents the most ancestral known genus.

To summarize and conclude I intend to draw the attention of the

identification and expert-system technology, New York, Plenum Publishing Corp.: 35-44.

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DISCUSSION

Loof: Dr. Luc, I am very glad that you underlined the difference between key characters and taxonomic characters. This is the kind of thing I am always hammering on in my taxonomy lectures. There seems to be an intuitive feeling, that cannot be combatted too much, that a character that is very conspicuous and easy to see is by necessity an important taxonomic

character. In fact, there is no connection, and a character that may be insignificant as to its magnitude may be very fundamental for systematics, while a character that has a profound effect upon morphology may be taxonomically very unimportant. I am glad you emphasized the fact that key characters and taxonomic characters are two very different things, and that an identification key needs not be a copy of a classification system.

Fortuner: You said that the result of the work that will be done during this workshop is not to be used directly for future classification. Does that mean that you consider that nests of species (and I will define this later) cannot be used as basic bricks for building future classification?