INTERNATIONAL MELOIDOGYNE PROJECT

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MELOIDOGYNE ON UPLAND RICE IN IVORY COAST

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A general survey of soil parasitic nematodes on upland rice was made in Ivory Coast in 1977. About 300 samples were taken from fields in every rice growing area in the country. The nematodes were extracted from soil and roots by the methods of Seinhorst (elutriator and mistifier), and counted at generic level under a dissection microscope. The determination of the identity of the different species is still in process, but general conclusions on the geographical repartition of the genera can already be drawn. Only the repartition of Meloidogyne will be discussed here.

Individuals belonging to this genus were found in many samples. Actually it is second in numbers only to Helicotylenchus. The map shows its distribution in Ivory Coast. In a particular sample, either no Meloidogyne was found - this is indicated on the map by a zero- or some were present, in the soil - indicated by a 'S' and/or in the roots - indicated by a 'R' - The larger the letter, the greater the population (Fig. 4).

It is evident from this map that the populations of Meloidogyne are not equally distributed in the country. They are more frequent and abundant in a long and narrow area in the south part of Ivory Coast. In the West and North-West regions, Meloidogyne does occur but the populations are smaller and scattered. In the North-East regions, the rainfall - less than 1200 mm - is unable to support upland rice cultivation.

The cause of this particular distribution is not yet known but it may be due to different ecological conditions: vegetation, rainfall, soil or other causes such as cultural practices. The area where Meloidogyne is abundant is a forest region, but the West is also a forest region, with a mean annual rainfall of 1400-1600 mm, but in the West, similar mean rainfall can be found. However, in the South, the rainfall is distributed during two rain seasons, whereas there is only one in the West. The distribution of Meloidogyne does not seem to be related to the nature of the soil: in the area where this nematode is abundant are present the three main types of soil which exist in Ivory Coast (granite, schiste and basalt).

The cultivation practices differ slightly. In the South, the upland rice is grown first, just after clearing the forest, whereas in the North there is a first crop of yam before the rice, but it is not known if this is significant. In every village are used different local rice cultivars

but that cannot be the explanation of the difference in the distribution of Meloidogyne: migrant people from the North have recently introduced in the South their knowledge of upland rice culture together with their traditional cultivars.

Whatever may be its cause, this particular distribution of Meloidogyne may have a very practical aspect. Upland rice is often part of a rotation including vegetables: tomatoes at the SODEFEL (Societe pur le Developpement des Fruits et Legumes) in the North, winged bean at the 'Foundation Nestle' in the South. In the North, tomato was found to be no or very slightly infested by the root-knot nematode. In the South, the winged bean was very heavily dammaged. Is this because different species of Meloidogyne attack preferentially either rice or vegetables, or because of particular ecological requirements of the rice Meloidogyne? The identity of the rice Meloidogyne is not yet known and may be different of the M. incognita - M. javanica - M. arenaria complex parasitic on vegetables. It is contemplated to start detailed studies on the taxonomy and the physiological and ecological requirements of the rice Meloidogyne to try and explain its repartition in Ivory Coast and clear its relations with and the danger it may offer to the vegetable cultures of this country.

SUMMARY

In the Cote d'Ivoire Meloidogyne species occur more frequently in the southern part of the country. Ecological factors, cultivation practices and the movement of peoples are being considered in the distribution study. In upland rice and vegetable rotations, tomato is lightly attacked in the north while in the south the winged bean is severely damaged.

RÉSUMÉ

Meloidogyne sur riz de plateau en Cote d'Ivoire

En Cote d'Ivoire les especes de Meloidogyne sont presentes de façon plus fréquente dans la partie méridionale du pays. L'influence des facteurs écologiques, des méthodes de culture et des migrations des cultivateurs sur leur répartition est etudiée. Dans des rotations culturales incluant riz de plateau et plantes maraichères, la Tomate est peu attaquée dans la région nord tandis que le Haricot ailé est gravement atteint dans la région sud.

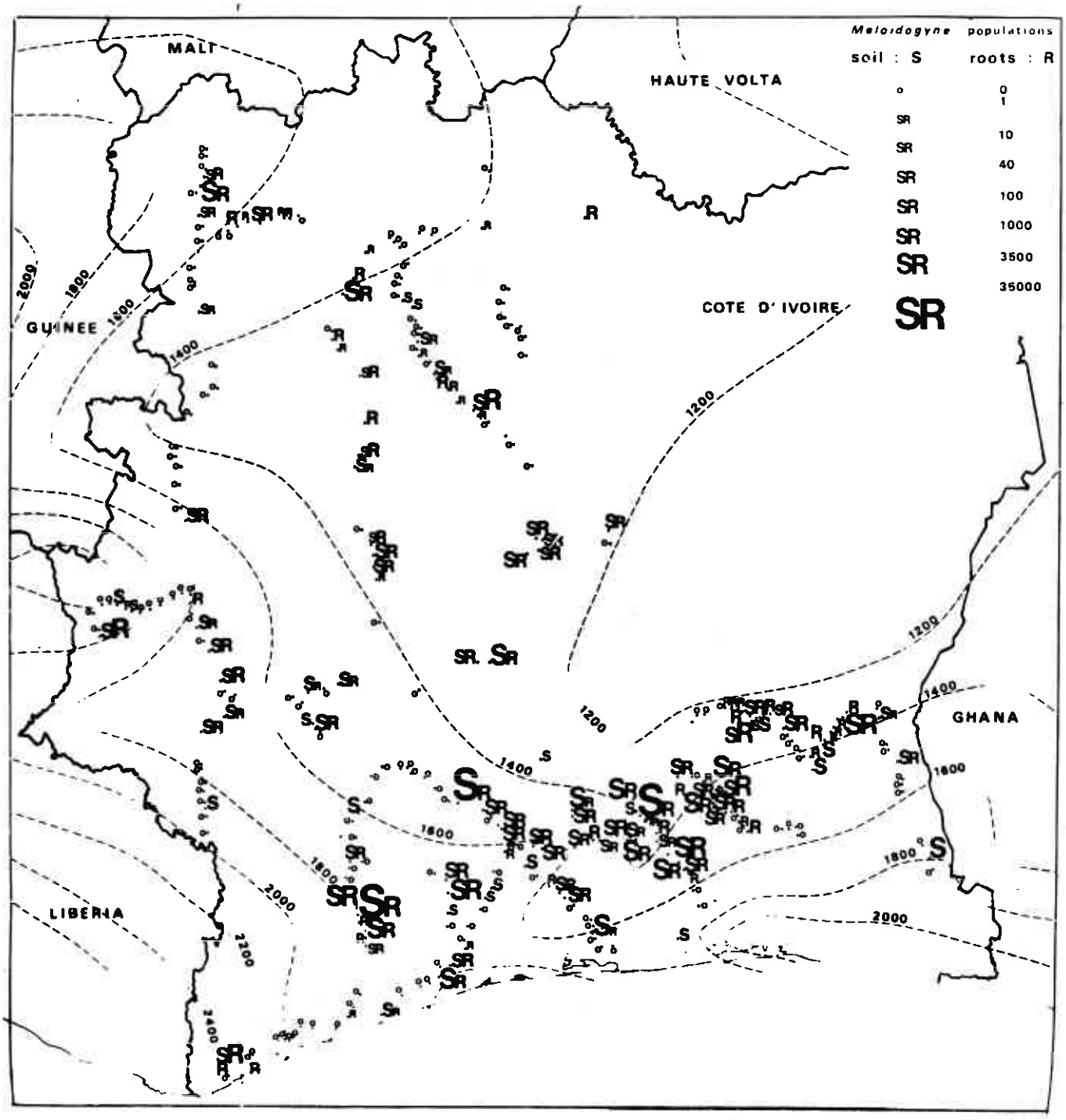

Fig. 4. Repartition of Meloidogyne species in Ivory Coast.
Distribution of Meloidogyne species in Ivory Coast.