

# Occurrence and abundance of parasitic nematodes of papaya (*Carica papaya* Linnaeus) in western region of Burkina Faso.

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Plant-parasitic nematodes represent a constraint to papaya cultivation throughout the world. The objective of this study was to perform a comprehensive survey of the major nematode populations associated with papaya production in Burkina Faso. Papaya fields were surveyed in 7 localities of two western regions (Cascades and Hauts-Bassins) (Figure 1).

## Results

Table1: Occurrence and abundance of major nematode genera in soil and root samples from 69 papaya fields in Burkina Faso

Genus	Family	Occurrence (%)	Abundance (n/dm <sup>3</sup> soil or n/g root)	
			Max	Mean ± standard error
<b>Soil nematodes</b>				
<i>Rotylenchulus</i>	Hoplolaimidae	97.1	28 240	3 989 ±746
<i>Helicotylenchus</i>	Hoplolaimidae	95.6	7 940	1 349 ± 180
<i>Meloidogyne</i>	Meloidogynidae	81.1	3 840	354 ± 66
<i>Scutellonema</i>	Hoplolaimidae	71.0	560	77 ± 13
<i>Pratylenchus</i>	Pratylenchidae	42.0	320	26 ± 6
<i>Criconeimoides</i>	Criconematidae	30.4	60	9 ± 2
<i>Paratrichodorus</i>	Trichodoridae	8.7	240	5 ± 4
<i>Xiphinema</i>	Longidoridae	7.2	40	2 ± 1
<i>Tylenchorhynchus</i>	Telotylenchidae	1.4	20	1 ± 1
<b>Root nematodes</b>				
<i>Meloidogyne</i>	Meloidogynidae	73.9	268	27 ± 7
<i>Rotylenchulus</i>	Hoplolaimidae	31.9	89	2 ± 1
<i>Helicotylenchus</i>	Hoplolaimidae	42.0	25	1 ± 1
<i>Pratylenchus</i>	Pratylenchidae	31.9	4	1 ± 1

**Nine genera of nematodes were associated to papaya fields. *Rotylenchulus* spp., *Helicotylenchus* spp and *Meloidogyne* spp. were the more abundant genera.**

Table 2: Densities of the populations of parasitic nematodes in the soil and the roots associated with papaya in Burkina Faso localities sampled.

regions	localities	N=69	Soil nematodes (number/dm <sup>3</sup> of soil)					Roots nematodes (number of root)					
			Roty.	Helico.	Melo.	Scutello.	Praty.	Total	Melo.	Roty.	Praty.	Helico.	Total
Cascades	Karfiguèla	3	18 927 b	0 a	0 a	0 a	0 a	18 927 c	1 a	0 a	0 a	0 a	2 a
	Tengrèla	12	7 497 ab	1 387 b	288 b	95 ab	13 a	9 299 bc	62 a	9 a	1 a	1 a	72 a
	Bama	9	4 280 ab	2 131 b	513 b	93 ab	31 a	7 049 bc	49 a	1 a	0 a	0 a	50 a
Hauts-Bassins	Diarradougou	30	2 446 a	1 301 b	367 b	102 ab	34 a	4 250 ab	19 a	0 a	0 a	1 a	21 a
	Farako-Ba	9	1 276 ab	1 229 b	371 b	13 a	27 a	2 916 ab	13 a	0 a	0 a	1 a	14 a
	Finankè	3	1 367 ab	1 727 b	473 b	53 ab	20 a	3 640 ab	3 a	0 a	0 a	0 a	3 a
Probabilities	Fasso	3	340 a	667 b	147 b	7 a	20 a	1 180 a	0 a	0 a	0 a	1 a	1 a
			0,04	0,001	0,003	0,05	> 0,05	0,02	> 0,05	> 0,05	> 0,05	> 0,05	> 0,05
Signification			*	***	**	*	ns	*	ns	ns	ns	ns	ns

The means followed by the same letter do not differ significantly according to the Student-Newman-Keuls test at the respective thresholds \*: 0.05% Significant; \*\*: 0.01%; \*\*\*: 0.001%; Very highly significant; ns: not significant NB: raw data underwent Log10(x+1) transformation before ANOVA Legend: Roty. *Rotylenchulus*; Helico. *Helicotylenchus*; Melo. *Meloidogyne*; Scutello. *Scutellonema*; Praty. *Pratylenchus*

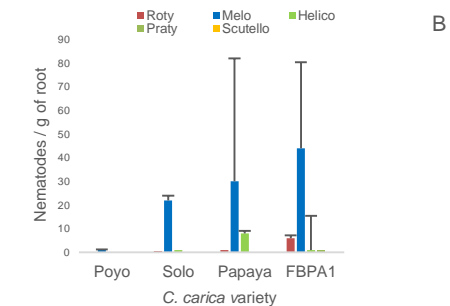
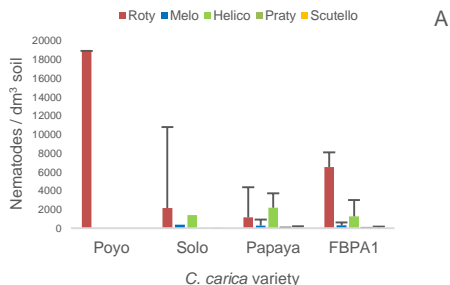


Figure 4: Parasitic nematode populations observed in the soil (A) and in the roots (B) of four papaya varieties

***Meloidogyne* spp. were found in Solo, Papaya and FBPA1 varieties whereas *Rotylenchulus* spp. were mostly found in Poyo and FBPA1 soils.**

## Material and methods



Figure 1: Localization of sampled sites in Burkina Faso



Figure 2: *C. papaya* tree with fruits



Figure 3: Nematode galls formed on papaya roots

Soil and root samples were collected from 69 fields and nematode genera associated with papaya were identified based on their morphology with the Mai and Lyon key (1975).

## Conclusion and Perspectives

**Nine genera of nematodes were identified on *C. papaya* in Western Burkina Faso. Nematode abundance and distribution differed in the localities sampled. Incidence of *Meloidogyne* spp. and *Rotylenchulus* spp. varied according to papaya varieties. Molecular characterization of nematode species is needed for better control strategies.**

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