

# The Survey of the Plant Parasitic Nematodes, Distributed in the Fields of the Export Plant and the Seed Potato.

## I. Classification of the main plant parastitic nematodes separated from sampling soil.

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A preliminary survey was complished by the Baermann funnel method throughout the sampling soil of 357 fields which grown export plant and seed potato in Japan in 1958. It was indicated that 223 fields out of 357 fields were infested with the plant parasitic nematodes, and at least 16 genera of parasitic nematodes inhabited.

The root-knot nematodes showed the widest distribution of all the 16 genera discovered, and the root-knot nematodes were found at 74 fields surveyed.

Likewise, it was a kind of Spiral nematode (*Rotylenchus robustus* FILIPJEV) undiscribed in Japan 55 fields, Dorylaimus spp. (contained possible plant parasitic nematodes) 44 fields, Root lesion nematodes (*pratylenchus* spp.) 39 fields, Cyst nematodes (*Heterodera* spp.) 23 fields, several species of True spiral nematode (*Helicotylenchus muticinctus* GOLDEN and *Helicotylenchus* spp.) 34 fields, and Reniform nematode (*Rotylenchulus reniformis* LINFORD & OLIVEIRA) 9 fields.

The results of this survey indicated that the ectoparasitic nematodes, especially, out of the plant pasasitic nematodes, are more widely distributed and are causing considerably more damage than previously believed.

Prefecture & field No.	Plants (Summer season)			Species															
	1956	1957	1958	<i>Tylenchorhynchus</i> sp.	<i>Ditylenchus dipsaci</i>	<i>Hoplodaimus</i> sp.	<i>Helicotylenchus multicinctus</i>	<i>Rotylenchus robustus</i>	<i>Pratylenchus</i> spp.	<i>Rotylenchulus reniformis</i>	<i>Heterodera</i> spp.	<i>Macrogynus</i> spp.	<i>Criconemoides</i> spp.	<i>Tylenchulus semi-pentranis</i>	<i>Aphelenchoides bessei</i>	<i>Aphelenchoides ritzeni-bosi</i>	<i>Dorylaimus</i> spp.	Miscellaneous	
Hokkaido 1	cabbage	potato	tulip						+		+							+	
" 2	onion	onion	lily															+	
" 3	dahlia	dahlia	dahlia															+	
Fukushima 1	potato	lily	lily															+	
" 2	—	rice	red pine					+										+	
" 3	cucumber	cucumber	gladiolus															+	
" 4	—	gladiolus	"															+	
Ibaragi 1	sweet potato	sweet potato	lily															+	
" 2	rice	lily	"						+									+	
" 3	sesame	kochia scoparia	gladiolus															+	
" 4	rice	eggplant	"						+									+	
" 5	—	tobacco	"															+	
" 6	tobacco	sweet potato	"															+	
" 7	sweet potato	rice	"															+	
" 8	—	—	"						+									+	
" 9	—	—	"															+	
" 10	—	—	"															+	
" 11	—	—	"															+	
" 12	—	—	"															+	
Tochigi 1	tobacco	sweet potato	lily															+	
" 2	welsh onion	yam	"															+	
" 3	taro	legenaria	gladiolus															+	
" 4	rice	pumpkin	"															+	
" 5	"	gladiolus	"															+	

[illegible]

Prefecture & field No.	Plants (Summer season)			Species														
	1956	1957	1958	<i>Tylenchorhynchus</i> sp.	<i>Ditylenchus dipsaci</i>	<i>Hoplostomatid</i> sp.	<i>Heterodera robustus</i>	<i>Heterodera multicaucus</i>	<i>Heterodera</i> spp.	<i>Pseudocylindrus</i> spp.	<i>Rosellinia caudiformis</i>	<i>Rosellinia</i> spp.	<i>Metataphelenchus</i> spp.	<i>Criconemoides</i> spp.	<i>Aphelenchoides basalis</i>	<i>Aphelenchoides</i> spp.	<i>Dorylamus</i> spp.	Miscellaneous
Toyama 14	rice	rice	tulip															##
Yamanashi 1	—	—	lily							+								##
" 2	—	—	—															##
" 3	—	—	—							+								##
Nagano 1	chrysanthemum	gladiolus	chrysanthemum		+													##
" 2	"	chrysanthemum	herbaceous peony		+													##
" 3	mulberry	radish	carrot		##						+							##
" 4	radish	soy bean	lily		+													##
" 5	tomato	dientar spectabilis	"		+													##
" 6	—	chinese bellflower	chinese bellflower															##
" 7	potato	carrot	lily							+								##
" 8	rice	soy bean	gladiolus															##
" 9	eggplant	watermelon	"															##
" 10	rice	rice	"															##
" 11	—	—	"															##
" 12	soy bean	soy bean	"							+								##
" 13	—	—	"							+	+	+						##
Gifu 1	sweet potato	sweet potato	"							+			##					##
" 2	"	"	"															##
Shizuoka 1	"	lily	lily							+	+	+						##
" 2	"	sweet potato	"							+								##
" 3	"	tobacco	"							+								##
" 4	—	peanut	gladiolus							+								##
" 5	sweet potato	rice	"										##					##
Aichi 1	mulberry	watermelon	"															##
" 2	forest	forest	"							+								##
" 3	—	sweet potato	"							+								##
" 4	sweet potato	"	"										+					##
" 5	—	"	"															##
" 6	rice	rice	rice															##
" 7	sweet potato	cabbage	gladiolus										+					##
" 8	"	potato	"															##
" 9	"	spinach	"															##
Aichi 10	fallow	sweet potato	gladiolus															##
" 11	—	cabbage	"							+	+							##
" 12	—	burdock	"															##
" 13	sweet potato	sweet potato	"							+								##
" 14	—	—	dahlia															##
Mie 1	sweet potato	sweet potato	gladiolus	+						+								##
" 2	watermelon	rice	"										+					##
" 3	taro	soy bean	"															##
" 4	—	taro	"															##
" 5	sweet potato	sweet potato	"							+			##					##
" 6	"	"	"							+			##					##
" 7	corn	"	"											+				##
" 8	sweet potato	"	"															##
" 9	"	rice	"										##					##
" 10	"	sweet potato	"															##
" 11	corn	"	"															##
" 12	tea	tea	"										##					##
" 13	sweet potato	sweet potato	"							+	+							##
" 14	carrot	"	"										##					##
" 15	radish	gladiolus	"									##						##
" 16	sweet potato	soy bean	"										+					##
" 17	"	sweet potato	"										##					##
" 18	"	"	"							+	+							##
" 19	watermelon	watermelon	"															##
" 20	sweet potato	"	"										##					##
" 21	"	soy bean	"							+								##
" 22	"	"	"															##
" 23	"	sweet potato	"															##
" 24	soy bean	"	"															##
" 25	sweet potato	taro	"										+					##
" 26	soy bean	"	"															##
" 27	cabbage	watermelon	"															##
" 28	sweet potato	"	"															##



Prefecture & field No.		Plants (Summer season)			Species																
		1956	1957	1958	<i>Tylenchorhynchus</i> sp.	<i>Diclytenchus dipsaci</i>	<i>Tylenchus</i> spp.	<i>Hoplostemonus</i> sp.	<i>Helicoverpa</i> spp.	<i>Pratylenchus</i> spp.	<i>Rhizoglyphus</i> spp.	<i>Heterodera</i> spp.	<i>Metatylenchus</i> spp.	<i>Cricetomyia</i> spp.	<i>Aphelenchoides bessei</i>	<i>Aphelenchoides bessei</i>	<i>Tylenchus</i>	<i>semi-pentastomus</i>	<i>Doryctes</i> spp.	Miscellaneous	
Nara	4	watermelon	lily	lily								+									+
"	5	arum	"	"																	+
"	6	tomato	arum	"																	+
"	7	lily	gladiolus	"																	+
"	8	sweet potato	lily	"						+											+
"	9	butter bean	cucumber	"																	+
"	10	watermelon	spinach	"							+										+
"	11	"	burdock	dahlia																	+
"	12	azuki bean	soy bean	"						+											+
"	13	"	"	"																	+
"	14	gladiolus	watermelon	"																	+
"	15	azuki bean	tobacco	"																	+
"	16	"	soy bean	"																	+
"	17	dahlia	dahlia	"						+	+		+								+
"	18	azuki bean	azuki bean	"						+	+										+
"	19	watermelon	watermelon	"																	+
"	20	sweet potato	dahlia	"																	+
Tottori	1	"	sweet potato	gladiolus																	+
"	2	"	watermelon	"																	+
Tokushima	1	"	"	lily																	+
"	2	watermelon	burdock	"																	+
"	3	mulberry	mulberry	"																	+
"	4	"	potato	"																	+
"	5	"	"	"																	+
"	6	"	taro	"																	+
Saga	1	"	"	"																	+
"	2	"	"	"																	+
"	3	"	"	"																	+
Nagasaki	1	"	sweet potato	potato																	+
"	2	"	"	"																	+
"	3	"	rice	"																	+
"	4	"	sweet potato	"																	+
"	5	"	"	"																	+
Nagasaki	6	"	sweet potato	potato																	+
"	7	"	soy bean	"																	+
"	8	"	mulberry	"																	+
"	9	"	sweet potato	"																	+
"	10	"	"	"																	+
"	11	"	"	"																	+
"	12	"	"	"																	+
"	13	"	sweet potato	"																	+
"	14	"	"	"																	+
"	15	"	"	"																	+
"	16	"	"	"																	+
"	17	"	"	"																	+
"	18	"	"	lily																	+
"	19	"	"	rape																	+
"	20	"	potato	carrot																	+
"	21	"	"	plantain																	+
"	22	"	"	cabbage																	+
"	23	"	"	lily																	+
"	24	"	"	"																	+
"	25	"	"	"																	+
"	26	"	"	"																	+
"	27	"	"	mandarin orange																	+
"	28	"	"	lily																	+
"	29	"	"	"																	+
"	30	"	sweet potato	"																	+
"	31	"	"	"																	+
"	32	sweet potato	"	"																	+
"	33	"	"	"																	+
"	34	"	"	"																	+
"	35	"	"	"																	+
"	36	"	"	"																	+
"	37	"	"	"																	+
"	38	"	"	"																	+

Prefecture & field No.	Plants (Summer season)			Species									
	1956	1957	1958	<i>Tylenchobius</i> sp.	<i>Ditylenchus</i> sp.	<i>Hoplodactylus</i> sp.	<i>Helicoverpa</i> sp.	<i>Helicoverpa</i> sp.	<i>Helicoverpa</i> sp.	<i>Helicoverpa</i> sp.	<i>Helicoverpa</i> sp.	<i>Helicoverpa</i> sp.	Miscellaneous
Nagasaki 39	ramie	sweet potato	lily										##
" 40	soy bean	soy bean	"										##
" 41	"	"	"										##
" 42	"	potato	potato				++	+	++		+		##
" 43	"	sweet potato	horse bean				+		++		+		##
" 44	"	"	soy bean										##
" 45	"	"	sweet potato					+				+	##
" 46	"	"	"										##
" 47	"	"	chrysanthemum										##
" 48	"	sweet potato	sweet potato										##
" 49	"	"	potato				++						##
" 50	"	"	"				+	+					##
" 51	"	pumpkin	cabbage										##
" 52	"	sweet potato	sweet potato										##
" 53	"	"	"										##
" 54	"	"	soy bean									+	##
" 55	"	"	rape									+	##
" 56	"	"	soy bean					+					##
" 57	"	"	carrot								+		##
" 58	fallow	fallow	fallow								##		##
" 59	"	"	"								##		##
" 60	"	"	"								##		##
" 61	"	"	"								##		##
" 62	"	"	"						##				##
" 63	"	"	"					+					##
" 64	"	"	"									+	##
" 65	"	"	"										##
" 66	"	"	"									+	##
" 67	"	"	"										##
Kumamoto 1	sweet potato	sweet potato	lily					++					##
" 2	mulberry	mulberry	"				+						##
" 3	sweet potato	sweet potato	"				+						##
" 4	tobacco	"	"					++					##
Kumamoto 5	sweet potato	sweet potato	lily					++			+		##
" 6	"	tobacco	"					++					##
" 7	"	"	"										##
" 8	"	corn	potato								++		##
" 9	"	"	"										##
" 10	"	"	"										##
Oita 1	string bean	rice	lily					++			+		##
" 2	"	watermelon	"			+							##
" 3	"	taro	"			+							##
Miyazaki 1	"	"	sweet potato									+	##
" 2	"	rice	potato										##
" 3	"	"	"									++	##
" 4	"	"	"										##
" 5	"	"	"										##
" 6	"	"	"								+		##
" 7	"	"	"									+	##
" 8	"	"	"										##
" 9	"	lupine	"								+		##
" 10	"	rice	"									+	##
" 11	"	"	iris						+				##
" 12	"	rice	potato								+		##
Kagoshima 1	"	"	lily				+		++				##
" 2	sweet potato	sweet potato	"					++				+	##
" 3	"	"	"										##
" 4	"	"	"										##
" 5	"	"	"										##
" 6	"	"	"						++				##
" 7	"	"	"					+	++				##
" 8	"	"	"				++						##
" 9	"	"	"						++				##
" 10	sweet potato	cucumber	"						++				##
" 11	"	sweet potato	"										##
" 12	sweet potato	eggplant	"						+				##
" 13	eggplant	cucumber	lily				++	++					##
" 14	"	"	sweet potato										##
" 15	sweet potato	sweet potato	lily					+				++	##

## many, ++ moderate, + few