at Marquelia. Two palms at each of these localities were also found infested with the palm weevil.

In the Colonia Ruiz Cortines plantation two foci of high incidence were found. One focus contained 26 palms and the other 21. Both foci, separated by a distance of about 500 m, had the red-ring disease in various stages of development. Eleven more foci of 1-6 palms were found dispersed within an area of some 10 Ha at this locality.

From these results it is clear: 1) There is an important infestation of red-ring disease in this region not reported previously. 2) There is also a higher incidence of red-ring disease in Oaxaca than Guerrero. This incidence may be due to the fact that the cultivation of coconut palm in Guerrero is an older industry started 50-80 years ago and is a region where more primitive cultural methods are still practiced. Coconut palms once planted were allowed to grow indefinitely and most plantations have older trees which are not susceptible to attack by red-ring nematode. In the locality studied in Oaxaca there is a high density of young palms which is a reflection of the more recent increase in cultivation of coconut palm in that region. Finally, further studies must be done in order to know more about this problem.

EXPLORACION NEMATOLOGICA EN EL CULTIVO DE ALFALFA *(MEDICAGO SATIVA* L.) EN EL ESTADO DE MEXICO [NEMATODE SURVEY ON ALFALFA *(MEDICAGO SATIVA* L.) IN THE STATE OF MEXICO]. M. Pérez Mangas y R. R. Montessoro. Colegio de Postgraduados, Escuela Nacional de Agricultura, Chapingo; Instituto Nacional de Investigaciones Agrícolas, Chapingo, México.

Dada la importancia fundamental que tiene el cultivo de alfalfa en el Estado de México, se procedió a realizar un estudio nematológico para determinar las especies de nematodos que estaban asociados con el cultivo. Se llevó a cabo este estudio suponiendo que algunos géneros de nematodos fitoparásitos fueron en parte responsables de la baja en la duración del cultivo, de 7 años a 2 o 3 como máximo. El muestreo consistió en tomar muestras de suelo y parte del sistema radicular de las plantas que presentaban alguna anormalidad. Dicho muestreo se realizó tomando como guía las principales vías de comunicación, a una intensidad de muestreo de aproximadamente 0.5 o/o con un total de 95 muestras en 20,000 Has de cultivo. Después de analizadas dichas muestras por el método tamizado-embudos Baermann, se encontraron los siguientes géneros: *Tylenchorhynchus, Boleodorus, Aphelenchus, Pratylenchus, Tylenchus, Helicotylenchus, Xiphinema, Hoplolaimus, Psilenchus, Aphelenchoides, Ditylenchus* y larvas de *Meloidogyne.* Además, se hizo el estudio taxonómico del género *Pratylenchus,* encontrándose las siguientes especies: *P. zeae. P. minyus, P. penetrans, P. thornei, P. pratensis, P. flakkensis, P. scribneri, P. convallariae, P. pinguicaudatus,* y dos más que no fue posible identificar.

PLANT PARASITIC NEMATODES IN THE SAO FRANCISCO VALLEY, PERNAMBUCO BRAZIL [NEMATODOS FITOPARASITOS EN EL VALLE DE SAO FRANCISCO, PERNAMBUCO, BRASIL]. R. D. Sharma. Centro de Pesquisas do Cacau, Itabuna, Bahia, Brazil.

ABSTRACT

Thirty-two soil and root samples from different cultivated plants were collected from two locations in Sao Francisco Valley, Pernambuco, Brazil. *Meloidogyne incognita, Tylenchorhynchus phaseoli, Helicotylenchus* spp. and *Xiphinema* sp. were the most frequently encountered of the 12 genera of plant parasites identified. This is considered to be the first report of its kind from this area.

INTRODUCTION

On the request of SUVALE - Superintendencia do Vale do Sao Francisco, Pernambuco, a preliminary nematode survey of Juazeiro Velho Estate and Experimental Station, Bebedouro was done in the second week of May, 1973.

Nematological research in Pernambuco thus far has been restricted to yam nematode, *Scutellonema diascoreae* (3), the red ring nematode, *Rhadinaphelenchus cocophilus* (2) and the root-knot nematode, *Meloidogyne arenaria* var. *thamesi* (1).

This paper presents further information on the occurrence of plant parasitic nematodes in the Sao Francisco Valley, Pernambuco.

MATERIALS AND METHODS

A total of 32 soil and root samples were collected from the rhizospheres of 19 fruit trees and 4 vegetable crops showing poor growth. Methods of sampling, nematode extraction from the samples, and their further processing to permanent slides for species identification was done according to Sharma and Sher (4).

RESULTS AND DISCUSSION

Data on the percentage occurrence of plant parasitic nematodes encountered in this survey are presented in Table 1. A total of 12 different genera known to contain plant parasitic species were recovered. Certain genera such as *Aphelenchoides, Peltamigratus* and *Trichodorus* appeared to be uncommon in this region, each only occurring once in the samples. In contrast, species of *Meloidogyne, Tylenchorhynchus, Helicotylenchus* and *Xiphinema* were quite common, occurring in 27 to 51 percent of all samples.

It should be emphasized that in none of the samples were plant parasitic nematodes absent. One sample collected from around loquat tree *(Eriobotrya japonica)* at Bebedouro, contained 6 nematode genera namely, *Aphelenchoides, Pratylenchus, Trichodorus, Tylenchorhynchus* and *Xiphinema.*

Root and soil samples collected from onion and plots at Juazeiro Velho, contained four important plant parasitic nematode genera *Meloidogyne, Helicotylenchus, Criconemoides* and *Xiphinema.*

From the grape nurseries and field plantations, soil samples contained very high larval populations of *Meloidogyne incognita*, i.e. 23 and 19 thousand per 100g of soil respectively. The slightly lower population in the latter may have been due to mixed cropping with crotolaria *(C. spectabilis)* which is not a suitable host for *Meloidogyne* spp. Equally high populations of the root-knot nematode were also obtained from a sample around a fig tree *(Ficus carica).*

The population levels of *Tylenchorhynchus phaseoli* from Loquat, passion fruit, avocado and tangerine were 160, 200, 260 and 640 respectively and from guava, plum and sapote were only 20. Both *Xiphinema* and *Trichodorus* populations in a sample from loquat were 220 nematodes each. High numbers of *Criconemoides* were recovered, i.e. 400 specimens from a sample around a plum tree.

With the exception of coconut, french beans and musk melon, all plants examined were being attacked by plant parasitic nematodes. The root-knot nematode, *Meloidogyne* was the most widespread and was found in the rhizospheres of 11 different crops, followed by the stunt nematode, *Tylenchorhynchus* in 10 and the spiral nematode, *Helicotylenchus* in 7 different crops.

Saprozoic nematodes were encountered in high numbers from all the samples except samples from cacao, banana and orange which only contained pure populations of plant parasitic nematodes.

TABLE 1 - OCCURRENCE OF PLANT PARASITIC NEMATODES IN 32 SAMPLES COLLECTED IN THE SAO FARNCISCO VALLEY, PERNAMBUCO

NEMATODES		NAMES OF PLANTS	
	Occurrence (o/o)	Scientific	Common
Aphelenchoides sp.	3.4	*Diospyrus kaki*	Persimmon or kaki
Aphelenchus avenae	10.2	*Crotolaria spectabilis*	Crotolaria
		Eriobotrya japonica	Loquat
		Vitis vinifera	Grapes
Helicotylenchus multicinctus		*Allium cepa*	Onion
+ *H. dihystera*	30.6	*Anacardium occidentale*	Cashew
		Calocarpum sapota	Sapote
		Citrus reticulata	Mandarin
		Diospyrus kaki	Persimmon or kaki
		Lycopersicon esculentum	Tomato
		Prunusi domestica	Plum
Criconemoides sp.	10.2	*Allium cepa*	Onion
		Citrus reticulata	Mandarin
		Lycopersicon esculentum	Tomato
		Prunus domestica	Plum
		Allium cepa	Onion
Meloidogyne	51.0	*Anacardium occidentale*	Cashew
		Annona cherimola	Cherimoya
		Citrus sinensis	Orange
		Ficus carica	Figs
		Lycopersicon esculentum	Tomato
		Manihot esculentum	Manihot
		Musa cavendishii	Banana
		M. paradisiaca	"
		M. sapientum	"
		Theobroma cacao	Cacao
		Vitis vinifera	Grapes
		Citrus reticulata	Mandarin
Peltamigratus sp.	3.4	*Anacardium occidentale*	Gashew
Pratylenchus	10.2	*Eriobotrya japonica*	Loquat
Rotylenchulus reniformis	10.2	*Psidium guajava*	Guava
		Anacardium occidentale	Cashew
		Annona squamossa	Custard apple
Trichodorus sp	3.4	*Musa sapientum*	Banana
Tylenchorhynchus phaseoli	34.0	*Eriobotrya japonica*	Loquat
		Annona cherimola	Cherimoya
		Calocarpun sapota	Sapote
		Citrus aurantifolia	Lemon
		C. nobilis	Tangerine
		C. reticulata	Mandarin
		Eriobotrya	Loquat
		Passiflora edulis	Passion fruit
		Persea americana	Avocado
		Psidium guajava	Guajava
		Prunus domestica	Plum
Tylenchus sp.	6.8	*Calocarpum sapota*	Sapote
		Eriobotrya japonica	Loquat
Xiphinema sp.	27.2	*Allium cepa*	Onion
		Annona squamossa	Custard apple
		Citrus aurantifolia	Lemon
		C. nobilis	Tangerine
		C. reticulata	Mandarin
		Eriobotrya	Loquat
		Lycopersicon esculentum	Tomato
		Prunus domestica	Plum

CONCLUSION

A great diversity and large numbers of plant parasitic nematodes have been found to occur frequently at both the sampling sites. In particular the genera *Meloidogyne, Tylenchorhynchus, Helicotylenchus, Criconemoides* and *Xiphinema* were most abundant. Information available from other countries (5,6) where agriculture is practised under similar conditions to that of Sao Francisco Valley suggest that the nematodes are causing serious losses in crops such as grapes, onion, tomato and citrus. It is therefore neccesary to place more emphasis on determining practical means of combating plant parasitic nematodes in this area in the immediate future in order to avoid unnecessary losses.

REFERENCES

1. MOURA, R.M. 1967. Ocorrência em Pernambuco de un nematoide atacando a fruta pao de caroco. Instituto de Pesquisas Agronomicas de Pernambuco, Recife, Brasil. Bol. No. 20: 15 pp.

2. JOFFILY, J.M. 1944. A docenca do anel vermelho e sua ocorrencoa no Brasil. Centro Nac. Ensino Pesq. Agron. Bol. No. 3: 64pp. Rio de Janeiro.

3. LORDELLO, L.G.E. 1959. A nematosis of yam in Pernambuco, Brazil, caused by a new species of the genus *Scutellonema*. Rev. Brasil Biol. 19 (1): 33 - 41.

4. SHARMA, R.D. and S.A. SHER. 1973. Occurrence of plant parasitic nematodes in avocado in Bahia, Brazil. Nematropica 3 (1): 20 - 23.

5. TAYLOR, A.L. 1967. Introduction to research on plant nematology. Rome, FAO. 133p.

6. TAYLOR, D.P., SAAD, A.T. and W.E. SCHLOSSER. 1972. Occurrence and distribution of plant-parasitic nematodes in Lebanon. FAO Plant Prot. Bull. 20(2): 31 - 35.

RESUMEN

Se recolectaron 32 muestras de suelo y raíces de diferentes cultivos en 2 localidades del Valle de Sao Francisco, Pernambuco, Brasil. De 12 géneros de nematodos fitoparásitos identificados en el estudio, los más frecuentemente encontrados fueron: *Meloidogyne incognita, Tylenchorhynchus phaseoli, Helicotylenchus* spp. y *Xiphinema* sp. Este informe es el primero de este tipo que se realiza en esta área.

A NOTE ON PLANT PARASITIC NEMATODES ASSOCIATED WITH SUGARCANE IN TRINIDAD [NEMATODOS FITOPARASITOS ASOCIADOS CON LA CAÑA DE AZUCAR EN TRINIDAD]

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Although sugarcane is the most important crop in Trinidad and Tobago, very little is known of the nematodes which attack it, and their effect on growth and yield.

Examination of soil and root samples from ten locations in Caroni Estates revealed mixed populations of 11 plant parasitic nematode genera (Table 1). The most frequently occurring