

OTHER CONTRIBUTIONS — — — OTRAS CONTRIBUCIONES

A SIMPLE SIPHON METHOD FOR SEPARATING NEMATODES FROM EXCESS WATER¹ [UN METODO SIMPLE DE SIFON PARA SEPARAR NEMATODOS EN AGUA]. F. E. Caveness, International Institute of Tropical Agriculture. PMB 5320, Ibadan, Nigeria.

ABSTRACT

A siphon method is used to concentrate nematodes. The water-nematode residuum is poured into the wash bottle and left to settle for 5 or more hr. Rubber tubing of 3-mm inside diam, filled with water to form the siphon, is then slipped over the spout and with a head of 47 cm³ the excess water is emptied in about 6 min leaving a nematode concentrate of 10 to 45 ml. There were no significant differences in losses (0.5% or less) from single species or mixed species of nematodes.

INTRODUCTION

Methods commonly used to isolate nematodes from soil and plant parts have been well reviewed and summarized (1, 2, 3, 4, 5, 6). The nematodes isolated are generally contained in excess water. Concentrating the nematodes by decanting, centrifuging, sieving, or by bulk concentration tubes and siphoning, can be labourious and subject to human and manipulative error. In the IITA nematology laboratory a simple siphon method employing Nalgene 500-ml wash bottles with spout and tubulation moulded in one piece is used to concentrate nematodes with little labour, standardized loss of nematodes and independence of operator skill and interest.

MATERIALS AND METHODS

Nematodes are isolated from soil samples or comminuted plant parts using the modified tray method of the Baermann technique (6). Our tray and basket size leaves a water-nematode residuum of about 480 ml. Each residuum is poured into a 500-ml wash bottle with the aid of a funnel. The wash bottles are placed 10 to a rack on the elevated central shelf of the laboratory table and left for 5 hr or more (Fig. 1). The racks are constructed so that the wash bottles rest at an incline of 8° (9-mm elevation) to facilitate nematode drift and settlement away from the tube opening. Rubber tubing of 3-mm (inside diameter) filled with water to form the siphon is slipped over the wash bottle spout. With a siphon head of 47 cm the wash bottles empty in about 6 min. (Cutting the spout back to its maximum opening drained the wash bottle in 58 sec and increased nematode losses 13-fold.) A series of trials were run at 4 different inclines for the wash bottles using *Pratylenchus sefaensis* Fortuner, 1973, isolated from maize roots and a mixture of soil nematodes to give a comparison between nematodes of a generally uniform body weight, size and activity for a single species and a mixture of species.

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RESULTS AND DISCUSSION

Table 1 shows no significant loss of nematodes after a suitable settling time whether the wash bottle is elevated or not and no significant difference in losses between a single species or a mixed species of nematodes. Requirements of concentrate volume determined the incline used. *P. sefaensis* egg losses averaged 1.9% in 2 tests. Settling times for nematodes compatible with numbers lost can be determined from Table 2.

RESUMEN

Un metodo de sifón es usado para concentrar nemátodos. El residuo de agua y nemátodos se vacía en una botella y se deja asentar por 5 o más hr. Tubería de caucho con 3-mm DI se llena con agua para formar un sifón, y se coloca encima del pico con una columna de agua de 47 cm el exceso se vacía en cerca de 6 min dejando una concentracion de nemátodos de 10 a 45 ml. No hubo una diferencia significativa en pérdidas (0.5% or menos) de especies individuales o mezcla de especies en el proceso.

LITERATURE CITED

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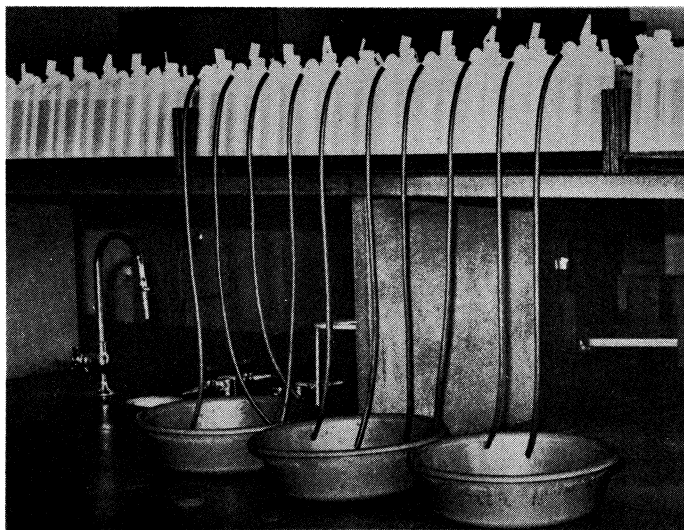


Figure 1. Wash bottles on racks used for settling nematodes isolated from soil or plant parts. Excess water is siphoned (center) leaving nematodes in a concentrate volume determined by wash bottle incline.

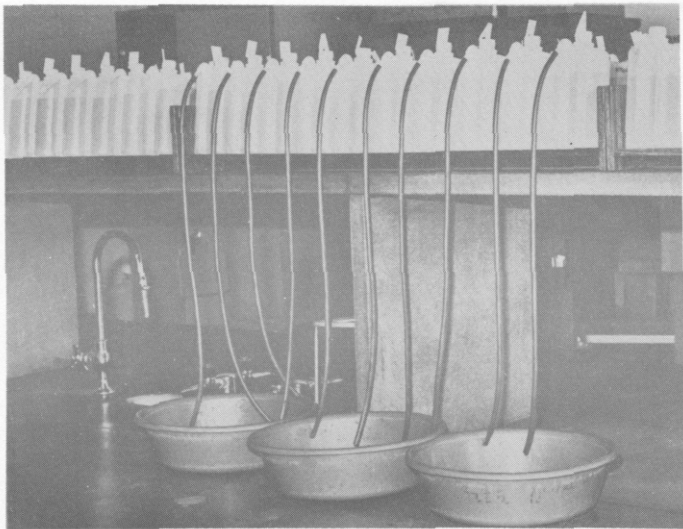


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Table 1. Nematodes lost in siphon waste water and volume of concentrate at 4 wash bottle inclinations after a settling time of 15 hr.

Wash bottle incline in degrees	Nematodes in waste water		Nematodes lost %	Concentrate volume ml
	<i>P. sefaensis</i>	Mixed nematodes		
0	13	11	0.5*	10
3	7	12	0.4	11
8	9	11	0.4	30
13	1	1	0.04	45

* Percentages derived from means for 10 replications each. Mean sample size for *P. sefaensis* = 2,473; for mixed soil nematodes = 2,820 per wash bottle.

Table 2. % nematodes lost with siphon waste water after several periods of time allowed for settling at 8° incline.

Settling Time in hr	<i>Pratylenchus sefaensis</i> % lost	Mixed soil nematodes % lost
1	65.6*	60.4*
2	24.2	22.9
3	12.7	15.4
4	3.1	26.5
5	1.3	4.7
6	1.1	5.9
9	0.4	1.5
12	0.1	0.7
15	0.4	1.5
48	0.1	0.5

* Percentages derived from means for 3 replications each. Sample size for *P. sefaensis* = 2,478; for mixed soil nematodes = 2,547.