



Short Communication

Corrigendum to “Population energetics of bacterial-feeding nematodes: Stage-specific development and fecundity rates” [Soil Biology and Biochemistry 28 (3) 271–280, 1996]

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A B S T R A C T

Nematodes play significant roles in carbon and nitrogen biogeochemical cycles in soils. The contributions of individual species to these processes depend, in part, on differences in their population ecology. Formatting errors were discovered that made portions of our previously published work on this subject nearly unintelligible. Herein, we correct those errors.

Several years ago, we published a series of papers (Ferris et al., 1995, 1996, 1997, 1998, 2004) to elucidate the contributions of nematodes to soil fertility in organic and low-input agricultural systems. Those studies demonstrated that nitrogen mineralization rates were affected by nematode densities, particularly by species that feed on bacteria. Nematode densities are the product of developmental, survival, and fecundity rates. The increased understanding of the significant role that bacterial-feeding nematodes play in soil-ecosystem processes also increased interest in the results from our original papers (e.g., Du Preez et al., 2022; Van den Hoogen et al., 2019).

For use in additional modeling studies, Sánchez Moreno requested clarification of the results from Ferris et al. (1996). While responding to this request, we identified typographical and typesetting errors which made the results virtually uninterpretable, and we ascribe the problems to ineffective proofreading on our part.

1. Methods

We referred to Venette and Ferris (1996), a publication reported as ‘submitted,’ for laboratory protocols to study bacterial-feeding nematodes and for basal temperatures to calculate degree-days (DD). Those details appear in Venette and Ferris, 1997. The basal temperature for *Cruzanema tripartitum* was not estimated in Venette and Ferris, 1997, rather, Ferris et al. (1996) presumed a basal temperature of 10 °C in

accordance with that used elsewhere for soil nematodes.

2. Results

Body weights of individual females ranged from 0.48 to 7.71 µg, not grams as originally reported.

Herewith, we present a corrected version of the original Table 2. We now also report the duration of egg production in days at 20 °C, an element that we originally indicated was in the first figure of Ferris et al. (1996), but it was not. With this addition, the results now accurately reflect the original statement, “The species in the Rhabditidae had egg production periods ranging from 5.5 to 9.9 d, while those in the Cephalobidae ranged from 10.6 to 21.4 d” (Table 2).

We hope that the revised data will be useful to soil ecologists.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

This is a corrigendum to a nearly 30-yr old paper. Original data are

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Table 2
Duration and rate of egg production in seven species of bacterial-feeding nematodes, and duration of total life course, measured at 20 °C.

Species	Basal threshold (T)	Production duration						Production rate						Total life course	
		d	±	SD	DD _T	±	SD	Eggs female ⁻¹ d ⁻¹	±	SD	Eggs female ⁻¹ DD _T ⁻¹	±	SD	d	DD _T
Abod	13.8	10.6	±	3.1	65.6	±	19.0	20.6	±	11.8	3.32	±	1.90	19.3	119.6
Abut	14.8	13.2	±	4.0	68.7	±	20.6	12.9	±	1.3	2.47	±	0.25	21.6	112.4
Burs	10.6	6.4	±	1.0	59.7	±	9.5	19.7	±	5.0	2.09	±	0.53	10.1	94.2
Cele	5.0	5.5	±	1.3	82.6	±	20.1	58.1	±	10.8	3.87	±	0.72	7.6	113.7
Ceph	0.0	21.4	±	2.0	427.1	±	39.2	12.5	±	1.7	0.62	±	0.09	30.0	599.6
Cruz	10.0	9.9	±	0.9	98.8	±	9.0	57.4	±	12.4	5.74	±	1.24	15.4	153.8
Rhab	1.4	7.6	±	1.4	140.7	±	25.5	65.7	±	20.7	3.53	±	1.11	11.6	215.8

Abod, *Acrobeloides bodenheimeri* (Cephalobidae); Abut, *Acrobeloides buetschlii* (Cephalobidae); Burs, *Bursilla labiate* (Rhabditidae); Cele, *Caenorhabditis elegans* (Rhabditidae); Ceph, *Cephalobus persegnis* (Cephalobidae); Cruz, *Cruznema tripartitum* (Rhabditidae); Rhab, *Rhabditis cucumeris* (Rhabditidae); d, days at 20 °C; DD_T, degree-days above a basal temperature threshold (T); SD, standard deviation.

no longer available.

References

Du Preez, G., Daneel, M., De Goede, R., Du Toit, M.J., Ferris, H., et al., 2022. Nematode-based indices in soil ecology: application, utility, and future directions. *Soil Biology and Biochemistry* 169, 1086–40.

Ferris, H., Eyre, M., Venette, R.C., Lau, S.S., 1996. Population energetics of bacterial-feeding nematodes: stage-specific development and fecundity rates. *Soil Biology and Biochemistry* 28, 271–280.

Ferris, H., Lau, S., Venette, R., 1995. Population energetics of bacterial-feeding nematodes: respiration and metabolic rates based on carbon dioxide production. *Soil Biology and Biochemistry* 27, 319–330.

Ferris, H., Venette, R.C., Lau, S.S., 1997. Population energetics of bacterial-feeding nematodes: carbon and nitrogen budgets. *Soil Biology and Biochemistry* 29, 1183–1194.

Ferris, H., Venette, R.C., van der Meulen, H.R., Lau, S.S., 1998. Nitrogen mineralization by bacterial-feeding nematodes: verification and measurement. *Plant and Soil* 203, 159–171.

Ferris, H., Venette, R.C., Scow, K.M., 2004. Soil management to enhance bacterivore and fungivore nematode populations and their nitrogen mineralization function. *Applied Soil Ecology* 24, 19–35.

Van den Hoogen, J., Geisen, S., Routh, D., Ferris, H., et al., 2019. Soil nematode abundance and functional group composition at a global scale. *Nature* 572, 194–198.

Venette, R.C., Ferris, H., 1997. Thermal constraints to population growth of bacterial-feeding nematodes. *Soil Biology and Biochemistry* 29, 63–74.