

Supplementary table 1. Relationships between enchytraeid and earthworm species richness, density, and functional groups (density of epigeics, endogeics and anecics for earthworms; % of *r*-strategists for enchytraeids)

| Enchytraeids | Species richness | | Density (ind.m ⁻²) | | <i>r</i> -strategists (%) | |
|---------------------------------|------------------|---------|--------------------------------|---------|---------------------------|---------|
| Earthworms | r | p-value | r | p-value | r | p-value |
| Species richness | 0.072 | 0.661 | -0.076 | 0.724 | 0.027 | 0.860 |
| Density (ind.m ⁻²) | -0.051 | 0.741 | -0.153 | 0.297 | 0.069 | 0.637 |
| Epigeic (ind.m ⁻²) | -0.127 | 0.427 | -0.271 | 0.072 | -0.011 | 0.940 |
| Endogeic (ind.m ⁻²) | 0.020 | 0.899 | -0.179 | 0.223 | 0.110 | 0.456 |
| Anecic (ind.m ⁻²) | 0.145 | 0.358 | 0.045 | 0.835 | -0.085 | 0.567 |

Bonferroni-corrected p-value for significance: p-value < 0.003 (15 combinations)

Supplementary table 2. Mantel test results between enchytraeid and earthworm communities in the different treatments. Upper half matrix: Mantel r, lower half matrix: p-values (23 permutations). Treatments are: control (T), Cuprafor Micro® at 0.75 kg Cu.ha⁻¹ (C1) and 7.5 kg Cu.ha⁻¹ (C10), Swing Gold® at one (D1) and at ten (D10) times the recommended dose, and a mixture of Cuprafor Micro® 0.75 kg Cu.ha⁻¹ and Swing Gold® at the recommended dose (M).

| Earthworms vs. Enchytraeid | T | C1 | C10 | D1 | D10 | M |
|----------------------------|--------|-------|--------------|-------|-------|-------|
| r | -0.462 | 0.346 | 0.743 | 0.050 | 0.821 | 0.236 |
| p-value | 0.833 | 0.333 | 0.042 | 0.375 | 0.167 | 0.417 |

Supplementary table 3. Mantel test results of earthworm communities between pairs of treatments. Upper half matrix: Mantel r, lower half matrix: p-values (23 permutations). Treatments are: control (T), Cuprafor Micro® at 0.75 kg Cu.ha⁻¹ (C1) and 7.5 kg Cu.ha⁻¹ (C10), Swing Gold® at one (D1) and at ten (D10) times the recommended dose, and a mixture of Cuprafor Micro® 0.75 kg Cu.ha⁻¹ and Swing Gold® at the recommended dose (M).

| Earthworms | T | C1 | C10 | D1 | D10 | M |
|------------|-------|--------|--------|--------|--------|--------|
| T | | -0.574 | -0.271 | 0.590 | -0.403 | 0.240 |
| C1 | 0.917 | | 0.505 | 0.055 | 0.604 | 0.313 |
| C10 | 0.792 | 0.125 | | -0.338 | 0.434 | 0.542 |
| D1 | 0.167 | 0.500 | 0.750 | | -0.446 | 0.504 |
| D10 | 0.750 | 0.167 | 0.125 | 0.833 | | -0.296 |
| M | 0.333 | 0.292 | 0.250 | 0.125 | 0.833 | |

Bonferroni-corrected p-value for significance: p-value < 0.003 (15 combinations)

Supplementary table 4. Mantel test results of enchytraeid communities between pairs of treatments. Upper half matrix: Mantel r, lower half matrix: p-values (23 permutations). Treatments are: control (T), Cuprafor Micro® at 0.75 kg Cu.ha⁻¹ (C1) and 7.5 kg Cu.ha⁻¹ (C10), Swing Gold® at one (D1) and at ten (D10) times the recommended dose, and a mixture of Cuprafor Micro® 0.75 kg Cu.ha⁻¹ and Swing Gold® at the recommended dose (M).

| Enchytraeids | T | C1 | C10 | D1 | D10 | M |
|--------------|--------------|-------|--------|--------------|--------|--------|
| T | | 0.001 | -0.131 | 0.929 | -0.104 | -0.614 |
| C1 | 0.542 | | 0.554 | -0.322 | 0.403 | 0.172 |
| C10 | 0.625 | 0.167 | | -0.184 | 0.380 | 0.406 |
| D1 | 0.042 | 0.792 | 0.667 | | -0.126 | -0.507 |
| D10 | 0.583 | 0.292 | 0.292 | 0.625 | | 0.465 |
| M | 1.000 | 0.375 | 0.208 | 1.000 | 0.333 | |

Bonferroni-corrected p-value for significance: p-value < 0.003 (15 combinations)