RESEARCH NOTES

Expressing Sucrose Concentration in Solutions Used for Extracting Nematodes

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Plant nematologists often dissolve 484.5 g sucrose in a liter of water for centrifugal flotation of nematodes from soil or plant material (3, 8). The specific gravity of this solution is 1.14 (9, authors' determinations), not 1.18 (3). A solution with specific gravity 1.18 contains 673 g sucrose per liter of water or 475 g sucrose per liter of solution (9).

The specific gravity of vermiform nematodes from soil or plants appears to be between 1.04 and 1.09 (3, 6). This is considerably less than 1.14 and it is likely that nematodes have been extracted efficiently with a solution of 484.5 g sucrose per liter of water. In fact, Caveness and Jensen (3) found sucrose solutions with specific gravity as low as 1.10 satisfactory for separation of nematodes by centrifugal flotation. Of 570 *Ditylenchus dipsaci* (Kühn) added to soil, we recovered 291, 289, and 264 using sucrose solutions with specific gravity 1.10, 1.14, or 1.18, respectively, and using procedures specified by Caveness and Jensen (3). Solutions with specific gravity 1.05 yielded only 162 *D. dipsaci*. Other authors report satisfactory results with 1.0 M sucrose (2) and with which is 454 g sucrose per liter of water (1, 7); both solutions have a specific gravity close to 1.13 (9).

It is unlikely that water in soil or in material screened from soil sufficiently dilutes the sucrose solutions to affect the efficiency of nematode recovery. For example, if the volume of a sucrose solution with specific gravity 1.14 is increased 10% by addition of water, the specific gravity only changes to 1.13. In practical terms, therefore, the sucrose solutions with specific gravity 1.10–1.18 are suitable for flotation of nematodes from soil or plants. There is evidence that efficient extraction of certain nematodes from soil requires a precise specific gravity of the flotation solution (10) and extraction of cysts of *Heterodera* spp. from moist soil requires solutions with specific gravity 1.20 or more (4, 5).

Authors have specified the composition of flotation solutions in various ways; by stating the specific gravity, by describing the solution as $x\%$ (w/v), or by stating the solution contained x g sucrose per liter. Sometimes it has not been clear whether a solution contained x g sucrose per liter water or x g sucrose per liter solution. We suggest that flotation solutions be described as containing x g sucrose added to one liter of water, i.e., on a molal basis, because this is unambiguous and leads to the simplest and most practical way of preparing these solutions. Molar solutions are slightly more laborious to prepare, in that the solute must be dissolved uniformly and completely in the appropriate volume of solution, rather than in the appropriate volume of solvent. If necessary, the specific gravity or molarity of flotation solutions prepared on a molal basis can also be stated, or obtained by direct measurement or by reference to standard tables (9).

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