

## A New, Efficient Technique for Permanent Nematode Storage<sup>1</sup>

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A new technique for permanent storage of preserved nematodes is being used for specimens housed in the repository of the Bureau of Nematology at the Division of Plant Industry of the Florida Department of Agriculture and Consumer Services. Nematodes preserved in 2% formalin can be quickly and easily heat sealed in glass

ampoules (Fig. 1A) to eliminate problems of slow evaporation or time-consuming glycerine dehydration.

In attempts to develop an easy, inexpensive technique, glass tubing (4, 5, 6, and 7 mm outside diameter) and three types of commercial freeze dry lyophilization ampoules were tested. A hand-held propane jet torch fitted with a pencil flame burner unit was used (Fig. 2). Ampoules fabricated from the 4-mm and 5-mm glass tubing (2.5 and 3 mm, respectively, inside diameter) were the most satisfactory because of the following characteristics:

1) The ampoule can be partially filled and

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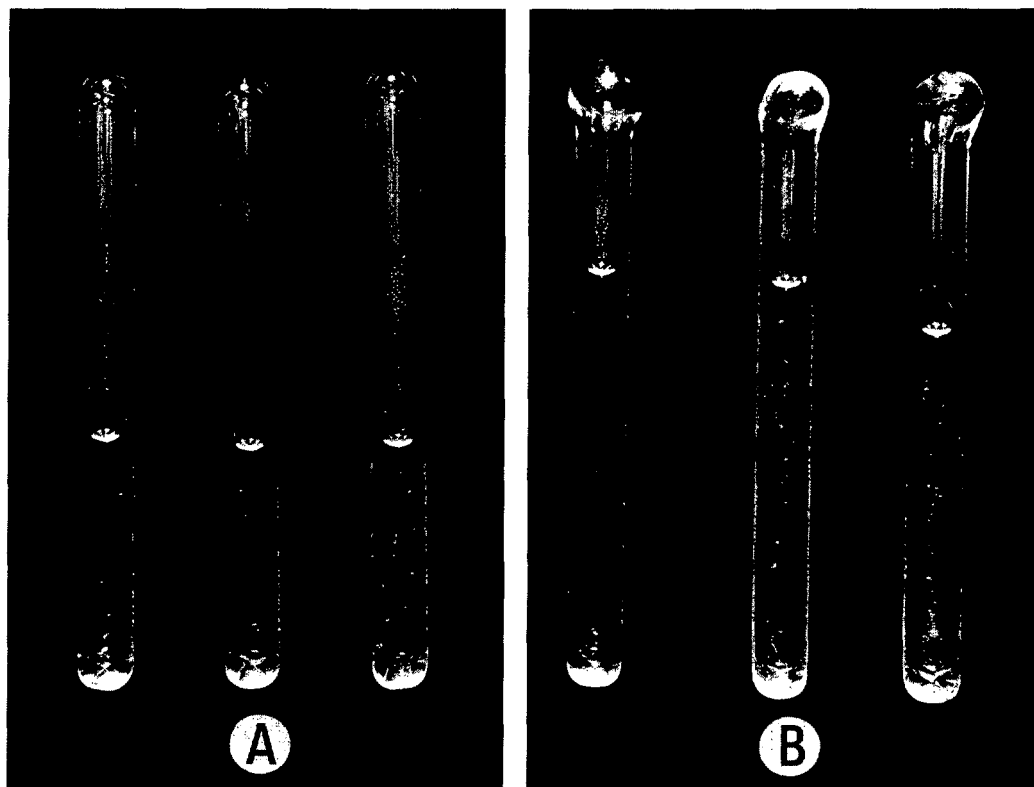


FIG. 1. Heat-sealed ampoules made from 55-mm lengths of 5-mm-o.d. glass tubing. A) Ampoules with normal sealed tips. B) Ampoules with ballooned tips resulting from excessive exposure to flame during sealing.

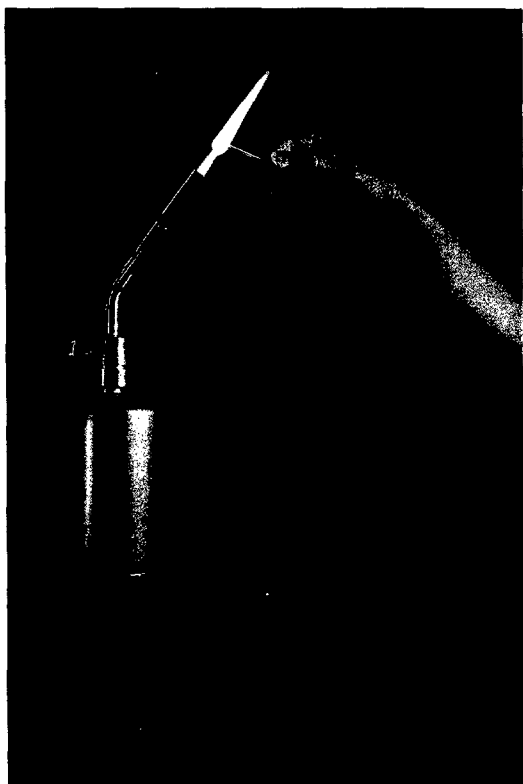


FIG. 2. Sealing ampoule with propane jet torch.

rapidly sealed in 15 seconds by an experienced technician.

- 2) The fluid is retained so effectively by surface tension that open-ended ampoules can be gently inverted or laid on their sides without loss of contents.
- 3) Opening of ampoules is easy and relatively safe. When specimens are needed, ampoules break open easily without the difficulties and hazards encountered using the same length ampoules of larger diameter.
- 4) Ampoules can be stored singly or in multiples in screw cap vials. Many ampoules containing aliquots from a single population can be stored in a large jar

for later distribution, eliminating the need to open and reseal vials.

Although ampoules were successfully fabricated from 5–9-mm-o.d. glass tubing and sealed with a propane torch, glass blowing or lyophilization equipment is recommended for 7-mm-o.d. or larger tubing (1). Vacuum sealing is not necessary.

Ampoules are easily made from 50–60-mm sections of 5-mm-o.d. glass tubing. After one end has been sealed and the glass has cooled, the ampoule is filled with a capillary pipet to about one-third with nematodes in a nonvolatile preservative, such as formalin, and the other end is sealed. Fluid should fill no more than one-third of the ampoule to suppress ballooning during sealing and to avoid specimen loss when the ampoule is opened.

Best results at sealing were obtained by directing the hottest point of the flame approximately 2 mm below the edge of the glass rim, rather than directly at the rim. The ampoule was quickly withdrawn from the flame the instant the seal appeared complete; this suppressed ballooning (Fig. 1B) and prevented rupturing of the seal from air expanding within the ampoule.

Although a limited number of nematode specimens in the Florida Collection of Nematodes have been sealed in glass ampoules since 1979, the technique has now been refined for simplicity, accessibility of specimens, and permanence. Equipment and materials required for this technique are both inexpensive and readily available, and many variations and modifications are feasible. Nematologists throughout the world should be able to use this ampoule technique to eliminate problems inherent with storage in capped vials.

#### LITERATURE CITED

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