

Rothamsted Repository Download

A - Papers appearing in refereed journals

Doncaster, C. C. 1966. Additional notes on setting up moisture-controlled observation chambers. *Nematologica*. 12 (4), p. 645.

The publisher's version can be accessed at:

- <https://dx.doi.org/10.1163/187529266X00554>

The output can be accessed at:

<https://repository.rothamsted.ac.uk/item/96ww9/additional-notes-on-setting-up-moisture-controlled-observation-chambers>.

© Please contact library@rothamsted.ac.uk for copyright queries.

C. C. DONCASTER¹⁾: *Additional notes on setting up moisture-controlled observation chambers.*

Because it is difficult to set up moisture-controlled observation chambers as described by Doncaster (1964), the following modifications are suggested: —

1. *Pattern of chamber.* A hole about 8 mm diameter is drilled through the wall (Wl.) between the seedling slot (S.Sl.) and the top plate (T.Pl.) (See Fig. 5, Doncaster, 1964) for filling the chamber with sand or glass balls after assembly. The chamber is easier to make with the top plate and wall in one piece, using "Delrin"²⁾ which is probably less active chemically than aluminium. The bottom plate (B.Pl.) is of stainless steel.

2. *Setting the distance between upper and lower cover-glass windows.* When thin roots are to be accommodated, two hypodermic needles of about 27G size (0.415 mm outside diam.) are laid parallel about 1 cm apart between the upper and lower cover-glass windows (C.u. and C.b.). They function as spacers which should just touch both windows when the height of the grub screws (G.S.), has been adjusted and the bottom plate tightened. Size 25G needles (0.520 mm outside diam.) can be used for seedlings with thicker roots.

3. *Placing seedlings and nematodes in the chamber.* To avoid damaging large nematodes by introducing them to the assembled chamber through a hypodermic needle, they can be placed in a drop of water around the seedling's roots on one window of the chamber before the bottom plate (B.Pl.) is fitted and before the chamber is filled with sand or glass balls.

4. *Sealing the chamber.* After assembling the chamber, all joints and screw holes can be sealed by rubbing them with a precast rod of a mixture of equal parts of paraffin wax and vaseline. The lower rabbet (R.l.) should not be waxed if the bottom plate is to be moved and replaced, because sand or glass balls adhere to it and prevent it from re-seating properly.

5. *Filling the chamber.* Dry, washed, sieved sand or graded glass balls are poured into the assembled chamber through the 8 mm diameter hole in the wall. Grade 9 Ballotini glass balls from Jencons (Scientific) Ltd., Mark Road, Hemel Hempstead, Herts., England range from 0.318-0.418 mm diam. and pack in one layer between the observation windows if they are spaced apart with 27G needles. If 25G needles are used, Grade 8 Ballotini (diam. 0.452-0.520 mm) pack better.

By tapping the chamber with a finger, beads begin to fill the observation area, but the nematodes are not moved from their point of introduction. Beads are closely packed around the roots by flooding the whole chamber while tapping it with the fingers or by vibrating it electrically.

The cost of making chambers is now £ 15 each.

DONCASTER, C. C. (1964). Four patterns of observation chamber for studying nematode behaviour. *Nematologica* **10**, 306-312.

¹⁾ Rothamsted Experimental Station Harpenden, Herts., England.

²⁾ "Delrin" is a stable form of polymerized formaldehyde with good machining properties and is obtainable from Polypenco Ltd., Gate House, Wewyn Garden City, Herts., England.

Fig. 1. Two alternative presses for bonding up to six Fenwick multi-chamber counting slides simultaneously. (For method of use see text).

Fig. 2. Top perspex component of counting slide drilled with inlet and outlet holes (Top left). Rigid P.V.C. spacer as supplied by E. G. Millington (Centre left). Perspex base with engraved graticules (Bottom left). Complete slide bonded with Araldite and set in Press A (Right).

| | | | |
|------------|------------------------|-------------|--------------------|
| Bs = Base | Fr = Frame | Rd = Rod | Sp = Spacer |
| Cl = Clamp | PB = Positioning block | Sl = Sleeve | Sp* = Loose spacer |