# A simple method for measuring seedling growth

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One of the problems of measuring the growth of seedlings is that in conventional growing media the roots are hidden and often damaged when the growing medium is washed off. The following method was developed to allow linear measurement of both root and shoot of a seedling from the point of germination for several days afterwards.

The seedlings are grown on agar in wide-bore glass tubing. A solution of technical agar (1–2%) is prepared in the usual way; it can be enriched with nutrients if required. (Students have successfully used the method to investigate the inhibitory effect of the presence of heavy metal ions in the agar.) The boiled agar is cooled to about 50 °C (possibly a higher temperature if a number of glass tubes need to be filled) and a glass tube (e.g. 7–8 mm diameter) placed so that about half is immersed in the agar solution. If a finger is placed over the top end of the tube the agar will remain inside the glass tube, so it can be removed with the tube and solidified by cooling in cold water (e.g. a running tap). If precision is required in filling all the glass tubes to the same height, use of a pipette filler may be advisable.

The seeds used were cress seeds, which were small enough to drop into the standard-bore glass tubing and germinated quickly on the agar; tubes with wider bores may well work with larger seeds. Measurement of early growth is easily done with a ruler although it is complicated by root and shoot branching after several days. The glass tubes are best stored in a test-tube in a rack; 1 cm depth of water in the bottom of the test-tube will reduce drying out.

■ SAFETY: Ensure that ends of glass tubes have been rounded by heating. Care should be taken when dissolving the agar as it can easily boil over.