

Solutions

2.1 The growth of a plant shoot towards light.

2.2 Downwards; gravitropism/geotropism.

2.3 Ethene.

3.1 Auxin moves/accumulates on the shaded side of the shoot; auxin stimulates cell elongation, so cells on the shaded side elongate more than on the lit side; the shoot bends towards the light source.

3.2 Put germinated seedlings of the same age/length in a box with a hole on one side, so light enters only from one direction; keep a control batch in uniform light/darkness and the same moisture/temperature; leave for a set time, e.g. 2–3 days; record the direction of growth and measure shoot length with a ruler; make careful, labelled biological drawings of the seedlings showing the bend towards the light.

3.3 Rooting powder contains auxin, which stimulates cell elongation/division and root growth at the cut stem, so cuttings root and grow into clones of the parent plant. Other uses: auxin weed killers – spraying broad-leaved weeds makes them grow too fast and die; auxin in tissue culture to promote growth of mass-produced plants; gibberellins to end seed dormancy, promote flowering or increase fruit size; ethene to control fruit ripening in storage and transport (any one, B1).