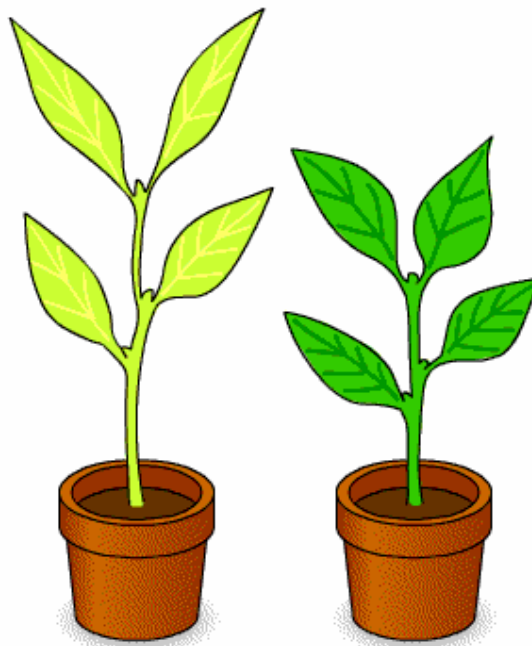


## Hormones (auxins and tropisms)

Plants can respond to gravity, moisture and light. These responses are called **tropisms** - growth movements caused by **auxins** or 'plant hormones'. Auxins make some parts of a plant grow faster than others; the result may be that the plant bends towards or away from the **stimulus**.

### 1. Etiolation

When a plant is left in the dark it puts all its energy into growing up to reach the light and makes very little chlorophyll. It will become **etiolated**. Eventually it should reach the light and then it can start to turn green by making chlorophyll for photosynthesis. **Etiolation** is the result of a tropism



These two plants were grown from cuttings so they are genetically identical. They are both the same age, but one has been left in a

dark place.

You may notice that your houseplant turns all its leaves towards the window. It does this because light coming from one side destroys the auxin in a leaf on that side. On the other side auxin makes the leaf grow faster. The result is that the leaves are turned towards the light for photosynthesis. We call this a **positive phototropism**.

**Diagram Of positive phototropism**

Roots grow down into the ground by a - towards gravity. The shoot from a seed underground **positive geotropism** can grow upwards, away from gravity, by a **negative geotropism**.

## 2. Auxins

- are plant hormones.
- are also known as 'chemical messengers'.
- affect how fast parts of a plant grow.
- produce responses called **tropisms**.

You should know that we can use auxins **commercially** to:

- make roots grow on cuttings.
- control the production of fruit.
  
- control and kill weeds.

### **Grow better cuttings**

An example of how auxins or plant hormones can be used commercially.

You can buy geranium plants from a garden shop which may cost two or three pounds each. It is much cheaper to buy one and take cuttings from it. When your plant is growing nicely, you can cut a piece off it, dip it in rooting powder and then put it in some potting compost. The rooting powder will make it grow strong healthy roots. This is how the garden shop might produce their plants to sell to you.

## 3. Tropisms

Tropisms are responses made by plants to stimuli such as gravity, moisture and light.

- Tropisms can be **towards** a stimulus (**positive tropism**)
- Tropisms can also be **away from** a stimulus (**negative tropism**)

