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How do trees know that autumn is coming

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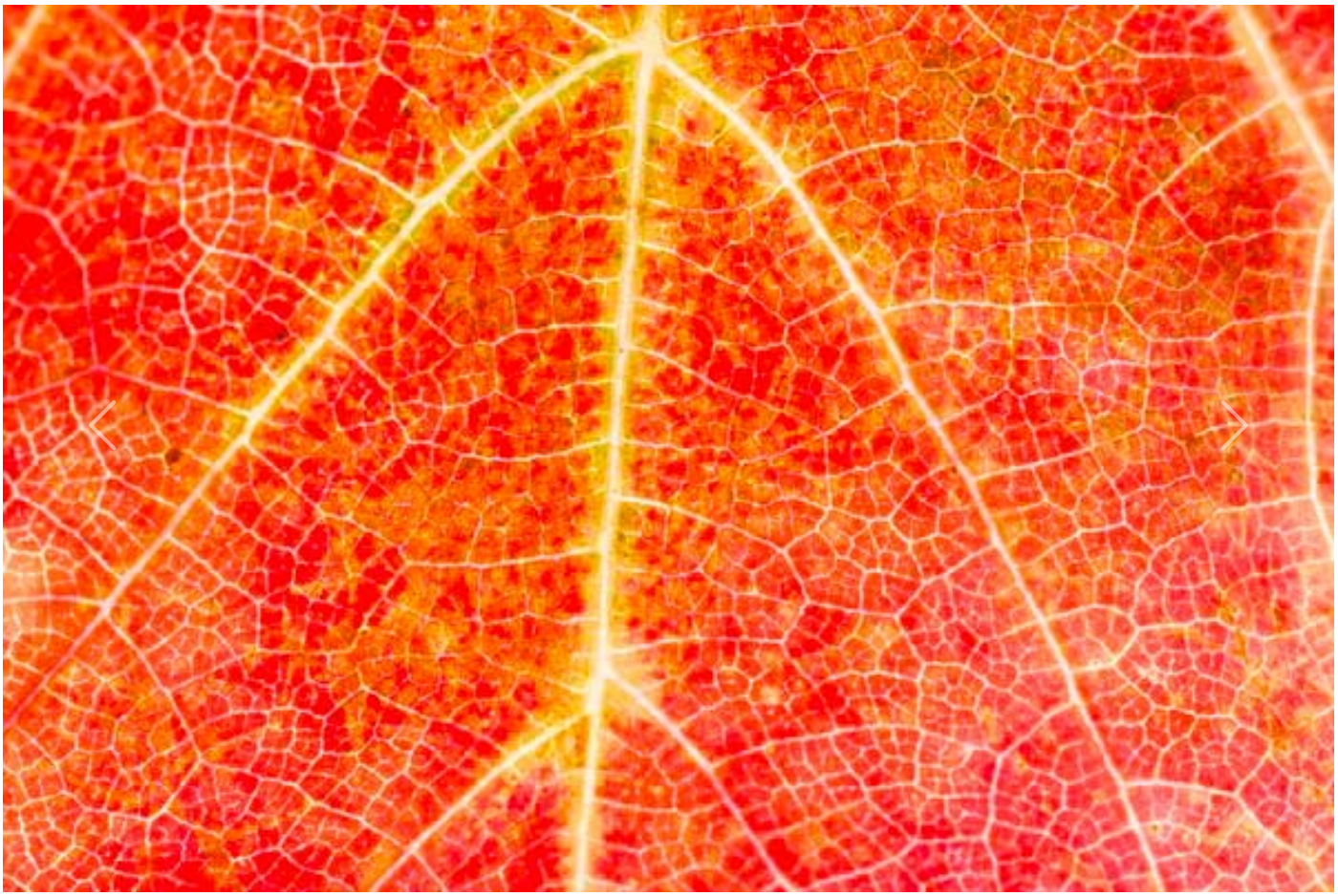

Leaf fall is one of the sure signs that autumn has arrived. But before the ground is covered with multicoloured litter, the leaves change their colour. Naturally, this is not a random process, but is associated with natural biological changes.

How do trees know that autumn is coming?

Primarily because temperatures drop and the days become increasingly shorter. Less light means a slowdown of photosynthesis. Owing to it, a pigment in the leaves called chlorophyll is activated, which colours the leaves

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green. Especially in spring and summer, when the sun is strong, we observe the intense green colour of plants.

In autumn, trees begin to reduce the production of chlorophyll as a result of reduced sunlight, and gradually other pigments present in the leaves, such as carotenoids and xanthophylls, responsible for the yellow colour, become visible. Lower temperatures also favour the appearance of these “colourful” pigments.

Why do plants have colour – coincidence or necessity?

Morphological (physical) resistance to insects depends on plant structures that physically influence insect choice, movement, feeding, copulation, or oviposition. These may include **colour**, trichomes (hairs), surface waxes, stone cells (sclereids) containing silicon, and others.

The colour of leaves, flowers, fruits and other plant organs is not random and has arisen at least in part in order to reduce attack by certain insect species.

Trichomes (hairs) influence insect movement, feeding and egg laying through their shape, density, length, and other characteristics.

The wax layer on the cuticle of leaves and other organs, besides protecting against excessive evaporation, serves as a physical barrier to a number of pathogens and repels pests.

Stone cells in fruits and other organs also play a role in plant resistance to insect attack.

Plants and phytophagous (plant-feeding) insects have coexisted throughout the millions of years of the history of planet Earth. In practice, plants are the only group of living organisms that can generate their own energy. Something we often fail to realise is that all other organisms in the food chain are either directly or indirectly dependent on plants. Over millions of years of evolution, plants have been under enormous selective pressure to develop a defence system to avoid or neutralise insect attack.

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More on the topic

The relationships between plants and insects are in the focus of modern plant protection