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HOW PLANTS ADAPT TO CLIMATE

At the time of writing an astounding 400 000 species of plant have been described to science. Plants grow almost everywhere on Earth from the steamy wet tropics to the open ocean and the driest deserts. Plants even live *inside* the rocks and ice on the frozen continent of Antarctica. Each species of plant is closely adapted to its habitat. Over many millions of years and thousands of successive generations, each plant's physiology and behaviour has been fine-tuned by natural selection through disease, predation, climate and geology. Climate and geology exert the most significant pressures on plant evolution because they form the backdrop against which a plant's life is played out. Plants are literally shaped by their climate. Indeed, one could say that every plant species is a living expression of its climate – an awe-inspiring demonstration of the subtlety and richness of our planet.

Every plant is a living expression of its habitat, shaped by forces of climate and geology.

Every gardener knows that plants have particular cultural needs. We know that growing a tropical plant in a frosty area or an alpine plant in the tropics is a sure death sentence. Intuitively, we understand that each plant is adapted to specific climatic conditions which cannot be compromised. Learning how plants adapt to different climates helps us understand *why* plants are suited to certain garden conditions and not to others.

Limiting factors on plant growth

Each species of plant has a specific set of climatic parameters in which it can survive. The correct balance of temperature, water, sunlight and other factors is necessary for a plant to grow, complete its life cycle and pass its genes into the next generation. Outside these parameters the plant cannot function normally and it dies. Climatic variables work