

Abstract

Physical dormancy of seeds is a widespread adaptation, allowing plant seeds to time the germination to a suitable season. Seeds with physical dormancy possess hard seed coats, which are impermeable to water and sometimes also to gases. This allows seeds to create a long-term seed bank and to wait for favourable conditions even for years. There are two main mechanisms, which break physical dormancy and enable water to enter the seed. The seed coat can be disrupted through the whole surface, or in one specialized place only. The disruption through the whole surface is common in the seeds dispersed by endozoochory. In this case, the long-distance seed dispersal brings an important advantage. In physically dormant seeds, which are dispersed by other ways, a complicated structure called water gap is usually present in the seed coat. Water gap responds to exogenous signals and controls when the water enters the seed. In such a case, physical dormancy can be broken as a response to annual or diurnal temperature fluctuations, which times germination into a proper time of the year. Another species germinate in response to high temperatures during a fire. This ensures, that seedlings emerge in suitable conditions with a high level of available nutrients, low competition and that they can restore the damaged population.