

BIOLOGY WEEK FOUR

TOLERANCE

Tolerance is the ability of living organisms to withstand or tolerate little unfavourable changes in the environment which affect their survival. It can also be defined as – ability of organisms to withstand or survive prevailing adverse conditions within certain minimum and maximum limit in the habitat.

Tolerance is the ability of an organism to survive when subjected to certain abiotic factors or biotic factors. Living organisms can only live in a particular habitat if they can tolerate the ranges of the abiotic factors that operate in it. Too little or too much of certain environmental factors such as light, heat, cold, acidity and alkalinity might produce unfavourable conditions.

Tolerance range

Tolerance range is defined as the range between the minimum and maximum limits to which organisms can tolerate certain changes in their environment to survive. It is the range of environmental conditions that are tolerable for survival in a species. In other words, too little or too much of a specific environmental condition may result in death.

In other words, too little or too much of a specific environmental condition may result in death. Death occurs beyond this range. For example, for most animals, the minimum temperature, the limit is 0 degrees Celcius while the maximum limit is 42oC. Their tolerance range is 0 – 42oC. Below 0oC or above 42oC, the organisms may die. Take temperature, for example. Polar bears survive very well in low temperatures but would die from overheating in the tropics.

Geographical range

Geographical range refers to the areas where specie of organism can only be found within the minimum and maximum limits of its tolerance. Different abiotic factors like rainfall, temperature, light intensity, availability of food, relative humidity, day length, wind, etc are often responsible for the geographical boundaries of species of organisms. Many other abiotic factors can determine a species range, including dissolved oxygen, canopy cover, conductivity, alkalinity and pH.

Also, Interactions between species can cause limitations to a species geographic range. The most obvious interaction that limits range expansion is predation, where prey species do not move beyond their range to avoid predator attack and mortality. Geographic range edges can also be determined by competition, where less competitive species are forced into suboptimal conditions within the range to avoid the stress of reduced food and habitat.