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Patel et al., 2023 KS-2973
Popular article ISSN:2583-4150

EFFECTS OF TEMPERATURE ON PLANTS AND ANIMALS

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Received: July 08, 2023*; Accepted:* Oct 10, 2023

Introduction

Temperature: It is the most important ecological factor affecting almost all the metabolic activities of the organisms. Temperature has been found to have a variety of effects on living things, including a major impact on cells, morphology, physiology, behaviour, growth, and the distribution of both plants and animals. The majority of plants and animals are able to grow in places with highly precise climate parameters, such as temperature and rainfall patterns. Any change in the local climate has the potential to have an impact on the local flora and fauna as well as the ecosystem as a whole. Some animals have already relocated to colder areas in response to a warming climate. For instance, certain animals and plants in North America are relocating further north or to higher altitudes in search of adequate habitats. The life cycles of plants and animals are also impacted by climate change. For instance, many plants are beginning to develop and bloom sooner in the spring as temperatures rise and to last longer into the autumn. Some animals are emerging from hibernation earlier or beginning their migration at various periods. Some of well-studied effects of temperature on living organisms are following:

Temperature and cell

The cells and their components are fatally affected by the minimum and maximum temperatures. As ice forms or water is lost and electrolytes accumulate in the cells in extreme cold, cell proteins may be damaged; heat coagulates proteins.

Temperature and metabolism

Most of the metabolic processes in microbes, plants, and animals are controlled by different types of enzymes, and since enzyme activity is influenced by temperature to a certain extent, an increase in temperature will also increase the rate of metabolism and show figure no. 1.

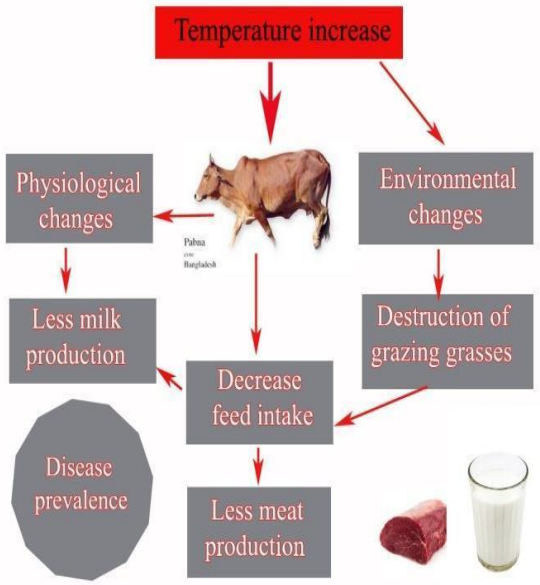

Fig. 1. Effect of temperature in animal

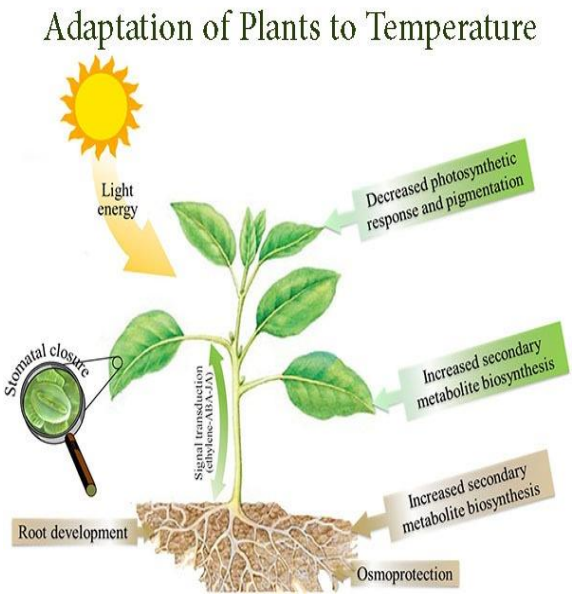

Fig.2. Effect of temperature in plant

Temperature and reproduction

The temperature required for gonad maturation, gametogenesis, and lib. -ration of gametes differs depending on the species. For instance, some species reproduce consistently throughout the year, while others only do so during the summer or the winter, and still others have two breeding seasons-one in the spring and one in the autumn. The majority of organisms base their breeding seasons on temperature. Temperature has an impact on animal fecundity as well. Fecundity is an animal's potential for reproduction, or the total number of offspring it is capable of bearing over the course of its life time.

Temperature and sex ratio

The sex ratio of a species in some animals depends on the ambient temperature. For instance, it has been discovered that temperature affects the copepod *Maerocyclops albidu's* sex ratio. There is a huge increase in the number of men as the temperature rises. On days when the mean temperature stays between 21 and 25 °C, males outweigh females in the rat plague flea, *Xenopsylla cheopis*. But as the temperature drops, the situation reverses.

Temperature and growth:

Temperature has an impact on various animals' and plants' rates of growth. High air temperature inhibits the growth of shoots, which inhibits the growth of roots. A high soil temperature is more important because serious root injury results in a significant reduction in shoot growth. When it comes to animals, mature trout do not feed or grow until the water is warmer than 10 °C.

Temperature and colouration

The temperature has an impact on the size and colouring of animals. Many species of animals, including insects, birds, and mammals, are deeper in colour in warm, humid climes than they are in cool, dry regions. The appearance of plant colour and scents are also regulated by temperature. Some thermophilic plants can brighten their bloom colour by raising the temperature during the flowering season, however most thermophilic plants would lose much of their colour at considerably higher temperatures. Most plants' flower colours can be kept brilliant for a long time at somewhat lower temperatures, but if the temperature is too low, the colour won't be bright and the natural colour won't show and show figure no. 2.

Temperature and morphology

According to Bergman's rule, temperature also has an impact on an animal's absolute size and the relative characteristics of its various bodily sections. For instance, birds and mammals grow larger in colder climates than in warm climates, and larger species can be found in colder climates. However, in colder areas, poikilotherms tend to be smaller.

Temperature and cyclomorphosis

During the hot summer months, certain cladocerans like Daphnia exhibit a fascinating phenomenon known as cyclomorphosis, which is a manifestation of the relationship between seasonal changes in temperature and body structure. Between the winter and summer months, these crustaceans exhibit a conspicuous difference in the size of their helmet or head projection.

Temperature and animal behaviour

Animal behaviour is typically influenced by temperature. In temperate waters, temperature has a significant impact on how wood borers behave. For instance, compared to Bankia campanulaia, whose assault intensity is at its peak in the winter, both Martesia and Teredo generally appear in lower numbers.

Conclusion

Both plants and animals are significantly impacted by temperature, which affects their development, behaviour, and overall survival. The rate of plant and animal growth and development is greatly influenced by temperature. Animals and plants have adapted to fit particular temperature ranges. They exhibit various degrees of resistance to temperature changes, with some species doing better in colder areas than others. Animal and plant

behaviour is affected by temperature. For instance, animals may modify their migratory paths, hibernation schedules, or activity patterns in response to temperature changes. The effects of climate change-related changes in global temperatures on plants and animals are extensive. The delicate balance of different species can be upset by changing ecosystems, shifting habitats, and rising temperatures, all of which have an impact on bio-diversity.

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