Abstract

Production of plant biomass depends on abiotic and biotic factors, these factors vary across biomes. Concentration of carbon dioxide in the atmosphere is one of the abiotic factors. The effect of this factor on plant is intensively studied. Current climate changes includes global warming, that is influenced mainly by anthropogenic activity (burning fossil fuels and the consequent increase in the concentration of greenhouse gases: carbon dioxide, methane etc.). Due to the increased concentration of carbon dioxide in the atmosphere, plants likely increase their growth, photosynthetic activity, decrease their stomatal conductance and the rate of transpiration. Increasing concentration of CO$_2$ can thus have a positive impact on plants.

The FACE method monitors plant reactions to enhanced concentrations of carbon dioxide in the atmosphere in natural environment. The response of plants to increasing concentration of carbon dioxide is influenced by biotic and abiotic factors, which vary across biomes, and also by the type of plant metabolism (C3 and C4 metabolism). Plants with C3 metabolism react to increased concentrations of carbon dioxide immediately, but this response is diminished as they acclimatize over the years. In contrast, plants with C4 metabolism react with a delay, but there is not such a high degree of acclimatization.

**Key words:** CO$_2$, biomass production, biomes, C3 and C4 plants