**MANIPULATION EXPERIMENTS**

Internationally unique research infrastructure used for manipulation experiments includes both laboratory equipment (growth chambers, special bioreactors) and the infrastructure for field experiments (lamellar domes, open top chambers, modulated illuminating systems, shelters eliminating precipitation and UV radiation). Most of these devices enable simultaneous evaluation of interactive effects of multiple factors (especially the impact of elevated CO2 concentration, drought stress, UV radiation, temperature, spectral composition of radiation, mineral nutrition). In this way, manipulation experiments simulate the expected climate change as reliably as possible. In addition, automatic control of these devices enables the simulation of modes ranging from long-term stable conditions to rapid fluctuations of environmental factors. Within the platform of growth chambers we may not only control temperature, relative humidity and light intensity, as it is common in standard chambers, but it is also possible to simulate the increased CO2 concentration, cold (freezing) stress, or the spectral composition of light. In cooperation with other research institutes, universities and industry, such simulation of the mentioned conditions is used e.g. for the selection of tolerant genotypes of crops according to the expected future climatic scenarios, understanding the processes of acclimation and adaptation of plants, assessment of the environmental impact of GC on the production and quality of food, validation of growth models based on the scenarios of climate change, the development of remote sensing methods for early detection of stress caused by extreme synoptic situation or climate change and the development of phenotyping methods for breeding plants with enhanced resistance to biotic and abiotic stress. This infrastructure is also used for the needs of the AnaEE infrastructure.