Low-resource environments (e.g., dry or infertile soils) result in limited growth and development, which in turn constrain crop productivity. Drought is viewed as the single most important environmental stress decreasing crop productivity and it will be a major challenge for European agriculture due to climate change projections.

Drought may cause nutrient deficiencies even in fertilized fields. The mechanisms that plants have evolved for nutrient uptake, translocation and assimilation may not function optimally under drought conditions. It is generally accepted that fertilization is most effective when plants are not water-stressed, and that irrigation is most effective when nutrients are not scarce. Considering that most vegetable and seed crops are cultivated in semiarid areas and in regions suffering from temporary drought, it is important not only to ascertain how water stress affects the nutrient uptake and assimilation capability of these crops but also to identify genes/genotypes to increase crop resilience to face drought and nutrient deficiency under an indisputable climate change.

Objectives

- Identification of wheat genotypes leading to better capacity of plants to cope with drought stress
- Identification of wheat genotypes leading to better ion homeostasis under drought stress
- Definition of crop management strategies that minimize drought stress impact and improve allocation of nutrients in grains and nutritional quality of seeds
- On-farm validation of promising wheat lines in production systems based on a reduced use of inputs

The final goal will be to maximize grain yield and quality under agriculturally unfavourable conditions (i.e. drought, unbalanced nutrient supply) in an environmentally sustainable way.