The new European training network ‘Crop Life’, which is coordinated by the University of Kiel, was established in the first half of this year. The starting point for the ‘Crop Life’ project is the increasing worldwide need for plants as food and energy sources. Crop productivity depends on photosynthesis, a process performed by leaves, which produces sugars and other compounds that are together called ‘assimilates’. The longer the life of a leaf, the more photosynthetic assimilates it can produce. The lifespan of leaves is therefore of utmost importance for plant productivity.

Leaf lifespan can however be cut short when plants are exposed to detrimental environmental stress conditions such as drought and heat. With respect to the forecast future climate such environmental stress conditions are expected to occur more frequently and much less predictably. Despite the paramount importance of leaf lifespan for plant productivity, the genetic, physiological and environmental factors that control how long leaves and plant organs live are poorly characterised and understood. The network will take a multidisciplinary approach to identify the key factors that determine lifespan and exploit this knowledge for the breeding of new varieties with higher productivity.

A new generation of scientists with skills from different disciplines is required to study and manipulate leaf lifespan, which is an important trait in plant breeding programmes. Within the scope of ‘Crop Life’, 13 young scientists working in six European countries will investigate the connection between lifespan and productivity in barley and ryegrass. Barley is an annual small grained cereal, which is the fourth largest crop worldwide. It is a model for all cereals, including its highly important and economically-relevant relative wheat. Ryegrass is a sweet grass of increasing relevance for biomass and energy production. It is also the main crop of temperate grassland agriculture.

The network includes partners from universities, research institutes and companies. The partnership includes seven universities and research institutes from Denmark, France, Great Britain, Poland, Switzerland and Germany, including leading European laboratories that presently work on the control of lifespan and senescence processes in cereals and grasses. Two plant breeding companies – Nordeutsche Pflanzenzucht (NPZ) and Euro Grass Breeding (EGB) – and the large Carlsberg brewery are also partners in the network. The breeding companies have intensive interactions with scientists at universities. They use biotechnological and molecular approaches in addition to classical plant breeding methods. The involvement of these companies together with the association of further partners from the private sector will ensure that the training of the young scientists will be relevant for practical application, and greatly increase their career prospects.

In order to optimise and promote international interactions, the young scientists within the network don’t work in the country from which they originate but rather they have to relocate to a partner lab in another European country. Moreover, as a part of the training programme, each young scientist will have secondments to other partner laboratories in universities and in companies. The young scientists are trained in state-of-the-art methodologies in disciplines such as cell biology, molecular biology, biophysics, biochemistry and physiology. They will perform part of their research activities under agricultural conditions in field sites using plant material provided by the breeding companies (Fig. 1).

The European Union supports the training network within the framework of the Marie Curie activities providing €3.4m. This supports the integrated training of 11 young doctoral and two postdoctoral researchers, who are linked across Europe. This financial support will be also used to invite outstanding scientists (as visiting researchers) for participation in training activities such as workshops and summer schools. Several of the training events are open to young researchers from other laboratories outside the network.

Genetic, physiological and environmental factors...