

 **P.21 - Durable management of plant genetic resistance**

SURE consortium

Plant genetic resistance is one of the means to improve crop protection against pests and diseases. Resistance durability is a key aspect to be promoted within crop protection. This can be achieved by evaluating the differential durability of resistance genes and their combinations, the impact of cultural practices (disease prevention, rotations...) and the gene deployment management. In the frame of ENDURE network of excellence, several teams from several research institutes are currently coordinating their efforts in order to address this question: "how to durably manage plant genetic resistance against pathogens?". The durability of resistance genes is not predictable per se. However, assessing the impact of resistance genes on populations of pests and pathogens can yield decision support for using these genes in breeding strategies and for varying deployment in time and space (Sapoukhina et al., 2008, same conference). Promoting experiments aimed at the evaluation of selection pressures exerted by resistance genes on pest and pathogen populations, and initiating the use of such information in modelling approaches, are considered by the group to be the highest priority because of the knowledge gaps that exist here. Focussing on these two aspects will contribute to further optimise the deployment of resistance genes in crop protection systems. We will describe the joined programme of activities developed in the frame of ENDURE: it is subdivided into two parts corresponding to the complementary efforts of two task forces. The first task force consists of pathologists and geneticists who will concentrate on acquiring and analyzing experimental data on selection pressures for different pathosystems (wheat x rust and wheat x Septoria leaf blotch, Solanacea x nematode, apple x scab, oilseed rape x blackleg, grapevine x downy mildew, and to a lower extent: tomato x *Bemisia*/virus, potato x leaf blight, banana x *Mycosphaerella*). The second task force consists of mathematicians who will concentrate on modelling approaches. This second task force will make as much use as possible of the experimental data acquired by the other task force.