P.50 - Future crop protection systems using innovative diagnostic tools and precision spraying technologies

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A system whereby diseases, pests and weeds can be identified at a much earlier stage than is now the case would make it possible to limit the amount of chemicals to be applied. Earlier identification could also allow the grower to use biological control or take other, localized measures. Moreover, application of pesticides using optimal spraying techniques, can add to the reduction of pesticide use. The Endure sub activity RA22 focuses on the optimal combination and integration of innovative diagnostic tools and precision spraying techniques to reduce pesticide usage. During the first 12 months 2 reviews have been produced. One describes applicable techniques for detection op plant pathogens in air, soil, starting material and in the field. The other describes existing technologies and research prototypes for precision spray applications. Combination of these reviews has resulted in a review describing how diagnostic tools can facilitate the use of precision spraying techniques. Subsequently, an innovative crop protection system will be designed, involving the following processes in the cropping system. Prevention: How to guarantee disease free starting material and soil? How to use arbuscular mycorrhizal fungi to protect the crop form diseases? Monitoring: How to detect pathogens and pests in the air and in the field? Interpretation: How to transfer detection data into spraying maps with preferred dosages? Collection of existing data regarding damage threshold research; development of DSS, dose-response relations, map resolution, etc. Application: Which precision spraying technique to use taking into account the specific demand for the application. The resulting model envisages how crop protection can be performed in the future using innovative technologies in such a way that hardly any pesticides need to be used.