

Method for the feasible acquisition of rating data and the use of the data for site-specific plant protection in agriculture – BoniPS

Julia Gitzel and Jürgen Schwarz

Julius Kühn-Institut, Institute for Strategies and Technology Assessment, Kleinmachnow

E-mail of corresponding author: julia.gitzel@julius-kuehn.de

The monitoring of the occurrence of pests by appropriate methods is an essential target for the use of the chemical pesticides on an adequate level. To use an effective amount of pesticides, it is necessary to control the fields intensively. This is usually done by ratings. These are supported by forecasting models and information from the official advice. However, the regional warnings and recommendations cannot replace the on the field assessment. The required rating is also usually complex and time consuming. Furthermore, the site-specific application of pesticides is hardly used in practice. Based on the rating information and taking into account the thresholds, a decision should be made, if a plant protection measure is being carried out. The aim of the project “BoniPS” is to develop a fully practicable process, from data acquisition onwards to site-specific application of pesticides. This includes also the creation of application maps for winter wheat, winter rape and pea. Therefore, the time required for the rating can be reduced. Data from forecasting systems, alerts from plant protection services and assessments from previous field crossings can be included in the decision-making. In addition, aerial photographs and knowledge of farmers about special characteristics of the fields could be taken into account. The app contains 136 pest profiles for 3 cultures as a help for determination. The characteristics includes the

retrieval of time of occurrence (BBCH stage), the injury level, the type of ratings and comparison images. During the rating, the user is also supported with guidance. This leads the user through the complex issue in simple steps. The rating line is a default or manual creation of rating points. The user could be navigated to the rating point via GPS to have an exact position. During the rating, there is a determination of infestation frequency and severity of pests and therefore a geo-referenced determination of the infested areas. The traffic light system is a tool for optimal and site-specific pesticide application. The infestation classes are: red = over / yellow = around / green = below threshold. With the help of the evaluated rating points, a site-specific application map for the application of pesticides can be created. The areas to be treated are marked in the map, but can be changed by the user. It's a simple process to help farmers/contractors to make the best possible decision. The results of the rating are transferred to a suitably equipped plant protection device for carrying out a treatment. The data documentation can be done in real time. BoniPS is the memory of the field through continuous, local data storage for documentation and verification. The site-specific application of pesticides may lead to a reduction of the treatment frequency index and into economical and environmental friendly improvements.