Pesticide Forecasting and Risk Assessment

ADAS, in partnership with Cranfield University, are offering a new and improved service for forecasting and mapping pesticide risk from diffuse agricultural sources within surface water drinking water catchments in England and Wales. The service provides the information that water companies require to target monitoring resources to high risk pesticides and catchments, and to target locations within catchments for effective management at source. A targeted approach, informed by proven science-based risk assessment, reduces costs and risk to the consumer.

Key drivers for water companies

- ✓ **Regulatory requirement to monitor for pesticides**
- ✓ **Risk-based monitoring plan required**
- ✓ **OFWAT fines for failures**
- ✓ **Costly treatment to remove pesticides from water**
- ✓ **Knowledge of higher risk areas to help with targeted engagement for catchment officers**

What does this joint service offer?

ADAS provides a seasonal forecast of pesticide usage and cropping for the coming year for ~200 active ingredients across a wide range of arable and horticultural crops plus grassland. Local agronomists and ADAS experts are consulted and their forecasts of expected usage combined with the best available cropping data to provide spatial datasets at 1km grid cell resolution that are designed to be used within the CatchIS modelling platform. They are accompanied by a rationale report that highlights expected key changes.

Cranfield Environment and Agrifood provides the CatchIS software, which uses a suite of mathematical models to combine knowledge of the fate and behaviour of pesticide compounds in the environment with soil, climatological and related datasets detailing catchment conditions. The model outputs are in a variety of user-friendly formats and include a seasonal prediction of individual pesticide concentrations for each surface water catchment. For high risk pesticides, more detailed modelling provides a catchment hotspots risk map and threshold exceedance indicator.

New features for 2020!

High resolution land use forecast | Based on annually updated, high resolution crop maps derived from satellite data to improve the spatial accuracy of crop locations to better predict chemical usage at grid square level. Current crop maps aligned with Defra June Agricultural Survey statistics to represent 'official' state of UK agriculture using novel algorithm. Forecast of next season's cropping based on knowledge of crop rotations and cropping intentions.

Interactive tool to explore the data behind the reports | A new standalone tool allows the user to view the modelling results in one place interactively via risk maps, excel spreadsheets and pdf reports.

New forecast weather scenarios | Based on the new HadUK-Grid 1km grid weather data available from the Met Office, the CatchIS models now use the very latest rainfall data available for the UK.   Climate change scenarios can also be swapped in for future planning.

Why ADAS & Cranfield?

- ✓ Both organisations are trusted experts in agronomy, agricultural diffuse pollution and data science
- ✓ Jointly improved the service over many years with continued collaboration with clients
- ✓ Transparency and annual validation against monitoring data are key to the success of the service