MORPH - The new project

Defra has granted funding for a new five-year research project at Warwick HRI. The aim of the project is to improve the uptake of simulation models and in so doing, advance management practices in commercial horticulture.

To encourage uptake, new delivery systems will be developed, so that the models are quick and easy to use. These could include internet and mobile phone access in addition to the present PC-based systems.

To achieve a successful outcome from the project, all stakeholders will be involved from the start.

Stakeholders include the entire food supply chain as well as companies supplying farm management software, equipment and chemicals.

A new team of software developers and scientists at Warwick HRI will work with Glasgow Caledonian University to produce different and more appropriate tools. For continuity these will collectively be known as MORPH5.

The MORPH Team

James Murphy, Roy Kennedy, Clive Rahn, Richard Reader
Rosemary Collier, Kath Phelps, Caroline Park, Jane Fellows
The MORPH project itself

The project team will build on the opinions expressed by growers and consultants at a recent series of consultation workshops funded by Defra. There was unanimous agreement amongst workshop participants that MORPH should provide decision support tools for individual crops, rather than using the more general approach that is taken at present.

To keep industry views at the forefront of the research, part of the project will be led by Dr Caroline Parker, of Glasgow Caledonian University, who is a leading expert in decision support for agriculture and horticulture in the UK. She will supervise Caroline Park, who will work very closely with the industry. Caroline Park’s research will culminate in a PhD thesis based on the findings of the project.

Caroline Park will be conducting case studies with UK processors, marketing organizations and growers, initially on Brassica crops. She will work closely with the software development team at Warwick HRI to develop and test packages that fulfil the requirements for information and decision support that she identifies. In this way the horticultural industry itself will drive the design of the fifth generation of MORPH software.

Caroline Park is new to horticulture, but her previous experience is highly relevant. Caroline is from the Scottish island of Islay and she was brought up on a 16000 acre estate where her father was the farm manager. Her background is in livestock management, but she has a keen interest in all areas of agriculture. Caroline’s first degree was in computing with a special interest in human factors and agricultural systems. Over the past 2 years Caroline has worked with farmers, agronomists, scientists and programmers to build a decision support system for weed management within winter wheat.
Defra funding will provide us with a real opportunity to research ways of making simulation models more useful to the industry. The funding is for a minimum of 5 years and will allow time for new packages to be produced and tested during two growing seasons. We will develop a business plan to ensure that MORPH5 continues to exist long after this initial funding has ceased. The aim is to raise private finance to ensure that software can be updated in line with developments in computer technology, that bugs are fixed and that an active distribution mechanism is maintained.

The MORPH Project Plan

At the moment, several vegetable and fruit models can be downloaded from our web site www.warwickhri.ac.uk/morph. These are MORPH3 models. During the next year these existing models will be refurbished and will become available in a new version, MORPH4, which will be more reliable than its predecessor and have more user-friendly HELP facilities. Several new models will also be released in MORPH4.

The team will work in close collaboration with the Horticultural Development Council which will arrange publicity. The revised MORPH4 models will be demonstrated around the country over the next two years and training workshops will be run.

MORPH5 will be tested by companies participating in specific case studies. Decisions on general release dates for MORPH5 will be made during the project.

Please do not hesitate to contact the project team by emailing morph.support@warwick.ac.uk
**MORPH Team Contact Details**

**Kath Phelps**  Warwick HRI  kath.phelps@warwick.ac.uk
Kath is the modeller responsible for the mathematical aspects of many models. She has been responsible for MORPH for the past 3 years and initiated the current project. She will lead the project for the first year after which Rosemary Collier will take over.

**Dr Rosemary Collier**  Warwick HRI  rosemary.collier@warwick.ac.uk
Rosemary is an entomologist. She has been closely involved in the design and production of pest models for over 20 years and has been successful in introducing models to the industry. Rosemary will have overall responsibility for the project and advise on pest models.

**Dr Caroline Parker**  Glasgow Caledonian University  c.g.parker@gcal.ac.uk
Caroline is a senior lecturer, consultant and human factor specialist with 12 years research experience in the identification of user needs for agricultural IT systems. She will direct the human factors aspects of the research.

**Richard Reader**  Warwick HRI  richard.reader@warwick.ac.uk
Richard is a mathematical modeller and software developer. He has had technical responsibility for MORPH since 2001. Richard will be responsible for design and build of software solutions.

**James Murphy**  Warwick HRI  james.murphy@warwick.ac.uk
James is a programmer responsible for conversion of MORPH to 32-bit. He will program software solutions and provide support to end-users.

**Jane Fellows**  Warwick HRI  jane.fellows@warwick.ac.uk
Jane is an agronomist with considerable programming experience. She has extensive expertise in *brassica* crops and in crop scheduling. She will act as project archivist and communications officer.

**Caroline Park**  Glasgow Caledonian University  c.park@gcal.ac.uk
Caroline’s first degree is in computing with a special interest in human factors and agricultural systems. She will work with the growers on this project to find and test solutions to their information and decision needs.

**Dr. Emily Paremain**  Warwick Ventures  e.paremain@warwick.ac.uk
Emily is a business development manager with particular interest in commercial opportunities arising from plant bioscience research at Warwick HRI. She will advise on the business plan.

**Dr Roy Kennedy**  Warwick HRI  roy.kennedy@warwick.ac.uk
Roy is a plant pathologist/epidemiologist who investigates the usage of mathematical models within fungal plant disease detection and control systems in glasshouse, and outdoor vegetable/flower crops. He will be consulted about interface design for disease models and will participate in some demonstrations.

**Dr Clive Rahn MBA**  Warwick HRI  clive.rahn@warwick.ac.uk
Clive is a soil scientist. He is coordinator of EU-ROTATE_N which is developing a model based decision support system to optimise nitrogen use in horticultural crop rotations across Europe. Clive will advise on the transfer of nutrition models to MORPH.

**Dr Xiangming Xu**  East Malling Research  xiangming.xu@emr.ac.uk
Xiangming specialises in the epidemiology of diseases of perennial fruit and ornamental crops. He will advise on the implementation of fruit disease models in MORPH.

**Dr Andrea Grundy**  Warwick HRI  andrea.grundy@warwick.ac.uk
Andrea is a weed scientist who specialises in weed seedbank dynamics and the use of emergence and competition models to optimise the timing of weed control. She will advise on the feasibility of distributing weed models within the MORPH environment.