

# Six-month report to programme management committee

August 2001

## FQS-Link project

**Project Number:** FQS12

**Project Title:** Rapid Analytical Systems for Raw Produce  
Quality and Safety Attributes

**Project start** 01-02-2001  
**Project end** 31-01-2004

**Elapsed time** 6 months

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## **1. Project objectives**

To investigate the scientific and technological issues in the implementation of rapid sensor instrumentation for organophosphorus (OP) residues in raw food products, as a model system for the further development and extension to other analytes.

## **2. Project progress**

Current progress is shown on the attached Gantt chart. This chart shows completed work and progress compared with the original project plan.

## **3. Milestones for six month period**

Deliverable 1 (Task 1.1 – Final selection of priority OP compounds)

This deliverable was completed on time and identified 7 target compounds shown in appendix 1.

Deliverable 2 (Task 3.1.2 – biosensor array design)

This deliverable was completed on time and is shown in appendix 1.

Milestone 1 (Task 2.4 – operational extraction method)

This milestone is due to be completed at the end of July but is delayed due to technical problems detailed in section 4 below. The current projected delivery date is 03-12-2001, as shown on the attached Gantt chart.

Milestone 2 (Task 4.2 – instrument specification)

This milestone, due to be completed at the end of July, has been achieved.

## **4. Research report**

Overall, 23% of the project work is complete with 17% of the project time elapsed. One technical meeting was held in February 2001 and another is planned for early September 2001.

### Workpackage 1(Acetylcholinesterase enzymes)

The target OP's have been identified and work is underway to establish methods to characterise the chosen (modified)-enzymes that are inhibited by the OP's (task 1.2). The University of Perpignan have supplied information regarding a large number of native and modified enzymes and they will then supply the selected enzymes deemed suitable for the biosensor.

Immobilisation studies using carbodiimide are on course. Studies using histidine or biotin tags are still in the early stages and are waiting for tagged enzymes to be supplied. The University of Perpignan will supply or manufacture these tagged enzymes. It is envisaged that these tasks (1.3.2 and 1.3.3) will catch up and finish on time.

### Workpackage 2 (OP extraction)

Work has progressed with sample preparation and selection of the solvent system (tasks 2.1.1 and 2.1.2). Phytosol D was found to be the most appropriate solvent system, but expensive. Problems were encountered using a faulty extraction vessel purchased from Advanced Phytonics. This problem has led to little progress in the tasks directly linked to the extraction process (tasks 2.1.3, 2.2 and 2.3). As a result an improved design for the extraction vessel has been formulated. Jenway have agreed to produce this new, re-engineered extraction vessel. This will be ready at the end of August 2001. The workpackage has been rescheduled to run for three months from receipt of the new extraction vessel. Provided the work starts at the beginning of September the finish date will be at the beginning of December 2001 (see the attached Gantt chart).

This overrun of workpackage 2 should not present problems for the linked, task 1.5. The early studies in task 1.5 involve stability of enzymes on the sensor surface and then the effect of a range of buffers containing 10% alcohol will be investigated. Input of knowledge gained from workpackage 2 will not be required until later in the task. Consequently, it is envisaged that there will be no problems with the completion of task 1.5 and it will finish according to the project schedule.

### Workpackage 3 (Biosensor arrays)

Specifications and design of the biosensor array have been agreed (tasks 3.1.1 and 3.1.2) giving deliverable 2 (see appendix 1). Work on the fabrication of the biosensor started early but is still on course to finish on the original finish date to allow integration with other work packages running in parallel. Work also started early on assessing the non-enzymatic reproducibility (task 3.3.1). This task has gone well and is ahead of schedule.

### Workpackage 4 (Instrumentation)

The instrument specifications have been agreed (task 4.1), achieving milestone 2 on schedule. Much of this was achieved at the first technical meeting, taking into account the end-user requirements. The University of the West of England and GEM supplied information regarding electronic and analytical performance. It is expected that the final instrument should have an accuracy and precision within 5%, with a target cost per test of £5.00.

### Workpackage 5 (Evaluation)

Not due to start until January 2003

## **5. Project changes**

The project management officer has been informed of the slippage seen in workpackage 2. Milestone 1 will now be achieved by the beginning of December 2001.

## **6. Publications**

R Luxton. Pesticide Biosensors. FoodLink News, No 35, June 2001

## **7. PhD students employed**

No PhD students are employed on this project. The University of Leeds employ two 0.5 FTE technicians under the direction of Dr Paul Millner. One has 9 years experience in this field the other is new and has recently undergone training.

## **8. Exploitation report**

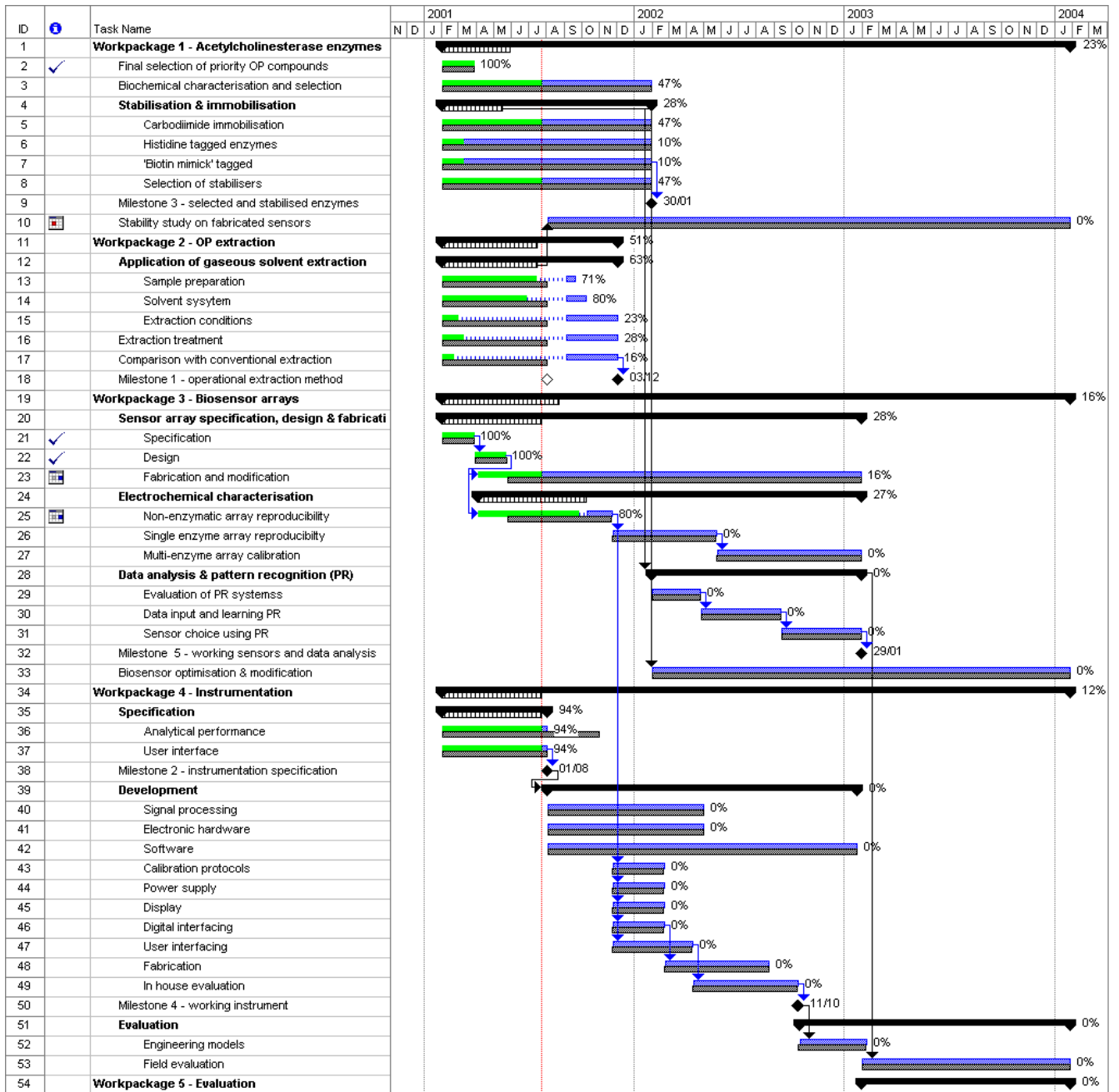
At the inaugural Project Management Board an exploitation committee was appointed. The members represent industry, academia and the end users. They are:

Martin Fall	Jenway (exploitation manager)
Robin Pittson	GEM
Martin Hall	CCFRA
John Pickles	Weetabix
Richard Luxton	University sector.

The exploitation committee is due to hold its first meeting within the next three months.

## **9. Project Monitoring Officer's comments**

# Gantt Chart as of: 23-07-2001



## Deliverables

### Rapid Analytical Systems for Raw Produce Quality and Safety Attributes

Project No. FQS12

#### **Deliverable 1 (task 1.1) - Final selection of OP compounds**

Completed on schedule.

The final choice of OP compounds, identified as being important to the food industry, was agreed at the PMB of the 11<sup>th</sup> April 2001. In total 7 compounds were identified, These were:

Chlorpyrifos-ethyl  
Pirimiphos-methyl  
Chlorpyrifos-methyl  
Malathion  
Dichlorovos  
Dimethoate  
Acephate

## Deliverable 2 (task 3.1.2) – Design of Biosensor

Completed on schedule

Presented to the PMB 11<sup>th</sup> July 2001

Nb. This is the screen used to print the sensors not a diagram of the array itself.

