

**SIXTH FRAMEWORK PROGRAMME**  
**PRIORITY [Food Quality and Safety]**  
[ 5.4.1 Area: Total Food Chain]



**INTEGRATED PROJECT**

Project acronym: **QualityLowInputFood**  
Project full title: **Improving quality and safety and reduction of cost in the European organic and “low input” food supply chains**

Proposal/Contract no.: **506358**

***Open Call for Proposals for***

***Workpackage 2.2.2*** Effect of dairy management practices (organic, “low input” and conventional) on production efficiency, milk quality and herd health status and reproductive efficiency.

Date of publication of call text: ***14<sup>th</sup> April 2004***

***Deadline for submission of proposals:*** ***14<sup>th</sup> July 2004***

Start date of work on WP2.2.2: ***1<sup>st</sup> August 2004***

Maximum budget (EC contribution) available: ***330,000 Euro***

**Institutions eligible to apply:** Institutions based in the Enlarged European Union only.

**Role of new partner(s):**

The partner organization selected will compare the effect of selected management practices, such as feed types (e.g. perennial ryegrass, hybrid ryegrass, high sugar cultivars, naked oat and/or white clover) and conservation methods (hay, silage) on animal performance in organic and conventional production systems. The partner selected will use an existing long term comparative (organic vs conventional) dairy experiment. A detailed workpackage description has been developed (see below).

## FURTHER PARTICULARS

### OPEN CALL for proposals to carry out:

#### **Workpackage 2.2.2 Effect of dairy management practices (organic, “low input” and conventional) on production efficiency, milk quality and herd health status and reproductive efficiency.**

##### **1. Objective of the study**

The objective of the study is to compare the effect of selected management practices, such as feed types (e.g. perennial ryegrass, hybrid ryegrass, high sugar cultivars, naked oat and/or white clover) and conservation methods (hay, silage) on animal performance in organic and conventional production systems. The focus will be on assessments of nutritional quality of milk, production efficiency and costs, and the variation of these between production systems. The design of WP2.2.2 may be amended depending on data/deliverables from WP2.2.1.

##### **2. Description of work**

###### ***2.1 Main Experiment 1; Effect of forage type and level and energy supplementation level***

A herd of at least 160 dairy cows will be split into two equal main groups of animals (minimum of 80 animals per group; care will be taken to create groups with matching levels of parity, health status and productivity). Four subgroups of 20 animals will be established in each main group and be given the following diets (see also Table 1):

Main Group 1 (conventional group) will be fed, summer and winter, on either pure perennial ryegrass or hybrid ryegrass swards and receive either a high (current level of energy supplementation in the conventional herd) or low ( $\frac{1}{2}$  the current level of energy supplementation in the conventional herd) wheat grain energy supplement. Feed pattern will be to “feed to yield” for each cow and will be adjusted for summer and winter diets.

Main Group 2 (organic group) will be fed, summer and winter on either mixed perennial ryegrass/clover or hybrid ryegrass/clover swards and receive either a high (the same level of energy supplementation as the “low” supplement level conventional group) or low (half energy feed supplementation of “high” organic group) grain energy supplement. Feed pattern will be to “feed to yield” for each cow and will be adjusted for summer and winter diets.

Protein supplement will be as “normal practice” in the conventional and organic systems. If possible the same protein sources will be used for both organic and conventional cows, either by obtaining a derogation for the organic cows or by using appropriate farm grown pulses (e.g. beans) for the conventional cows.

Heifers will be reared to standard husbandry methods in two common groups (conventional and organic) and allocated to different “treatment groups at calving. Dry cows will be separated from the milkers and treated in 4 common groups (organic and conventional each with two different forage types).

<b>Table 12.</b> Feeding regimes used for different animal groups (Main group = 80 animals; subgroup = 20 animals)								
Diet:	Main group 1 (conventional)				Main Group 2 (organic)			
	Sub-group 1.1	Sub-group 1.2	Sub-group 1.3	Sub-group 1.4	Sub-group 2.1	Sub-group 2.2	Sub-group 2.3	Sub-group 2.4
Fresh forage grazing diet	pure H	Pure H	pure P	Pure P	H/ clover	H/ clover	P/ clover	P/ clover
Level of grain energy supplementation	Low	High	Low	High	Low	High	Low	High

H = Hybrid “high sugar” ryegrass; P = Perennial ryegrass

### Assessments

Milk yield and somatic cell counts will be determined for all individual cows at regular intervals over 2 years. Other milk quality parameters will be examined on 4 pooled samples from 3-5 cows per subgroup. Two assessments will be made during each outside grazing and indoor feeding period (= 8 treatments x 4 replicate pooled samples/subgroup x 4 sample dates = 128 samples per annum). Quality parameters to be assessed will include: total fat, fatty acid composition, linoleic acids, antioxidants including carotenoids and vitamin E, total protein, non-protein nitrogen, lactose, somatic cell counts and sensory quality (using trained taste panels).

Individual cows will be weighed and condition scores recorded at monthly intervals and examined daily for the presence of clinical and subclinical symptoms of mastitis. The incidence of all other clinical diseases will also be recorded.

To identify potential health and welfare problems metabolic profiles will be produced for a sample of each group.

Production efficiency and gross margin assessments will be carried out based on (a) milk yield and quality data, (b) efficiency of feed utilisation, (c) an analysis of capital, labour and variable costs of the different dairy production systems and feeding regimes.

### **2.2 Experiment 2; Effect of substituting wheat with other feed energy supplementation (switch-over studies)**

In each outside grazing and indoor feeding period wheat will be replaced with other feed energy supplements (e.g. naked oats, rye and barley) and/or cereals processed by different methods (e.g. rolling, grinding). After a 2 week adjustment period milk samples will be taken during the following week and analysed for the same characteristics as described under 3.1.

### **3. Expected competencies of new partner(s)**

The new partner institution would be expected to have extensive expertise in (i) small group dairy feeding experiments and (ii) livestock welfare, health status and productivity monitoring, and (iii) milk quality and microbiological analysis. The partner should also have

- (i) an established comparative (organic vs conventional) experimental facility (at least 80 cows of the same genotype in each the organic and conventional herd, matching housing and milking facilities) and
- (ii) facilities which allows separation of organic and conventional herds into 4 subgroups (minimum 20 animals per subgroup), that can be separately fed and monitored.

#### **4. Application format**

Organisations are expected to submit a

- (i) Detailed Workpackage Implementation plan** (Form 1) which includes a descriptions of **(a)** objectives, **(b)** description of work broken down into individual tasks, **(c)** deliverables and **(d)** Milestones and expected results.
- (ii) Detailed Financial plan** (Form 2) with costs broken down into Labour, consumable, travel, other costs, subcontracting and indirect costs, which conform with European Commission regulations about project costings.
- (iii) Institutional description (maximum 1 page)**
- (iv) CVs of all scientists involved the study** (Form 3)

The project language of the Integrated project is English and all proposals have to be submitted in English.