**QualityLowInputFood Objectives**

- **Objective 1.** To quantify and improve nutritional (and sensory) quality characteristics of organic and other "low input" foods in line with consumer expectations.
- **Objective 2.** To increase the cost-efficiency all along the organic and other "low input" food chains, while improving or maintaining food quality.
- **Objective 3.** To contribute to minimising food safety risks all along the food chain (including the stages of production, processing, distribution and consumer food handling).
- **Objective 4.** To contribute to reducing environmental impact and fossil energy use in organic and "low input" farming.

**Food issues consumers are concerned about (Mintel 1999)**

<table>
<thead>
<tr>
<th>Issue</th>
<th>% of consumers expressing concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM foods</td>
<td>50</td>
</tr>
<tr>
<td>Pesticides</td>
<td>40</td>
</tr>
<tr>
<td>Antibiotics in meat</td>
<td>30</td>
</tr>
<tr>
<td>Food-poisoning</td>
<td>20</td>
</tr>
</tbody>
</table>

**Differences in dry matter, mineral, vitamin, protein and sugar concentrations between organic and conventional crops reported in the literature by 2000**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Lower</th>
<th>Similar</th>
<th>Higher</th>
<th>% of reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>NO3</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Ca</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Mg</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Fe</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Cu</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Zn</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>PR</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>CH</td>
<td>100</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

n = 20, number of publications included = 4.
Differences in mineral and amino acid content between organic and conventional foods

% difference to conventional


DM P K Ca Mg Fe Cu Mn Zn AA EAA

Aluminium Lead

* not determined

QualityLowInputFood: Activities

SUBPROJECT 1. Consumer expectations and attitudes towards organic/low input food quality and safety (UNEW; SP-Coordinator)

WP1.1 determine consumer perceptions, expectations and attitudes about quality & safety of organic and low input foods
  - Review and reanalyses of existing data sets
  - Questionnaire based quantitative consumer surveys

WP1.2 determine actual consumer buying patterns and behaviour (evolution of decision making process)
  - semi-quantitative/semi-structured interviews,
  - consumer choice experiments and/or
  - supermarket “loyalty card” based buying-pattern analyses.

SUBPROJECT 2. Effect of organic/“low input” production methods on food quality & safety and human health

WP 2.1. Effect of crop management practices (organic, “low input” and conventional) on nutritional composition and sensory quality of food crops

WP 2.2 Effect of livestock management practices (organic, “low input” and conventional) on the nutritional composition and sensory quality and safety of meat and dairy products

WP 2.3 Effect of consumption of feeds/foods from different production systems (organic vs. conventional) on health (animal models only)
WP 2.1. Effect of crop management practices (organic, “low input” and conventional) on the nutritional quality of food crops

Crops: wheat, potato, cabbage, onion and lettuce

<table>
<thead>
<tr>
<th>Crop Management</th>
<th>Crop protection</th>
<th>Crop fertilisation</th>
<th>Rotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conventional</td>
<td>Conv.</td>
<td>Conv.</td>
<td>2</td>
</tr>
<tr>
<td>2. Low Input 1</td>
<td>Conv.</td>
<td>Org.</td>
<td>2</td>
</tr>
<tr>
<td>3. Low Input 2</td>
<td>Org.</td>
<td>Conv.</td>
<td>2</td>
</tr>
<tr>
<td>4. Organic</td>
<td>Org.</td>
<td>Org.</td>
<td>2</td>
</tr>
</tbody>
</table>

Assessments: minerals, vitamins, pesticide residues, characteristic secondary metabolites and/or mycotoxins, crop yield and health analyses and soil physical, chemical and biological analyses

WP 2.2. Effect of livestock management practices (organic, “low input” and conventional) on the nutritional quality and safety of foods

WP 2.2.1 Effect of dairy management practices/diets (organic, “low input” & conventional) on the nutritional quality and shelf life of milk (survey)

Production systems UK

1. Grazing only spring calving organic S-Wales
2. “ ” convent. S-Wales
3. Grazing + HES all year round convent. S-Wales

Assessments: FA-composition (CLA), Vitamin E (stereoisomers of α-tocopherol), β-carotene, lutein, zeaxanthin and copper, antioxidative stability and flavour

WP 2.3. Effect of organic food consumption on livestock and human health

WP2.3.1 Animal model study: Effect of Chloro-Choline-Chloride (CCC) treatments of feed wheat on pig reproductive performance (UNEW)

WP2.3.2 Dietary Intervention study: Effect of organic vs. conventional food based diets on immune status in rats

Target:
- WP2.3.3 Cohort study of effect of organic vs. conventional food based diets on human health parameters (long term impacts)

SUBPROJECT 3. Improve quality & safety and reduce cost in organic and “low input” crop production systems

WP3.1 Strategies to optimise soil quality characteristics
- mineralisation capacity and disease suppressiveness

WP3.2 Strategies for the control of seed borne diseases
- seed treatments (curing solutions/AAAs, BCA, elicitors)
- Agronomic methods to prevent disease development
- Interactions with pest control (combination plants, beetle banks)

WP3.3 Precision fertility management systems improve
- production efficiency/reduce costs and reduce crop susceptibility to diseases and pests
- maintaining or improving nutritional and sensory quality of crops

WP3.4 Strategies to prevent enteric pathogen contamination of lettuce crops fertilised with manure

WP3.5 Integrated preventative crop protection systems
- variety selection x fertility (irrigation) management systems
- alternative treatments (e.g. elicitors, biological control, mechanical) to replace pesticides in organic and "low input" systems
SUBPROJECT 4.
Improve quality and safety and reduce costs in organic & "low input" livestock production

WP4.1 & 4.2 Controlling endo- and ectoparasites (including zoonoses) of pigs and poultry
- 4.1 Management strategies (e.g. litter management, rodent control)
- 4.2 Alternative treatments (herbal remedies, plant extracts etc.)

WP4.3 Controlling gastrointestinal diseases in the pig
- Acid Activated Antimicrobial feed additives (stomach level)
- Probiotics/nutriotics

WP4.4 Improve sensory quality (reduction of cost & food safety) of pork
- alternative protein crops
- breed selection x diet interactions
- replacement amino-acid supplements.

WP4.5 Efficient farm/farmer group specific mastitis prevention plans.

WP4.6 Bovine feeding regimes which improve microbiological safety (product efficiency and sensory quality) of milk (and beef)

SUBPROJECT 5.
Framework "minimum" and "low input" processing strategies, which ensure food quality and safety

WP5.1 Consolidated framework/Code of practice for "minimum" and "added value" processing strategies in organic and "low input" food production and processing (food quality and safety focused)
- Literature review/desk study
- Delphi surveys of processing experts
- Commodities covered: milk, meat, cereals, fruit/vegetable

WP5.2 Case study 1. Assessment of chlorine replacement strategies for fresh cut vegetables
- Ozone, organic acids, essential oils (etc.)
- Commodities: lettuce, dried fruit and vegetables

WP5.3 Case study 2. Assessment of processing technologies which improve the nutritional composition of dairy products

SUBPROJECT 6.
Strategies to improve quality and safety and reduce costs along the food supply chain

WP6.1 Analysis of structures, conduct and performance of supply chains for organic foods in Europe

WP6.2 HACCP manuals and training schemes for organic food production and processing systems
- Consultation of a network/database of quality assurance specialists
- Preparation of quality and safety focused commodity specific (poultry, pork, dairy, milk, cereals, field vegetables) HACCP manuals
- Develop and deliver HACCP-courses based on the HACCP manuals
QualityLowInputFood: Activities

General Assembly
Project Board
SP0 Co-ordination
Co-ordination team

SP1 Consumer
studies
SP2 Nutrition
studies
SP3 Crop
Production
SP4 Livestock
Production
SP5 Food
Processing
SP6 QA & Supply
chain
SP7 Horizontal
Activities

WP7.1 Environmental and sustainability audits
- NO3 leaching; P-run-off; energy use

WP7.2 Cost benefit analyses and socio-economic impact assessment

WP7.3 Dissemination and technology transfer
- Website (www.qlif.org)
- Annual Congress for producers, farmers and other stakeholders

WP7.4 Training of graduate and postgraduate researchers

Thank you very much