

Conformity Assessment Processes and Costs for Food Safety

Complying with HACCP: Case Study on Lebanon

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HACCP Principles

- **Hazard Analysis and Critical Control Point system (HACCP)**
- Accepted in food processing establishments to ensure food safety, ensuring the suitability of food for human consumption.
- While the application of HACCP to all segments and sectors of the food chain is possible, it is assumed that all sectors should be operating according to **Good Manufacturing Practices (GMP)** and the **Codex General Principle of Food Hygiene**.

HACCP Principles

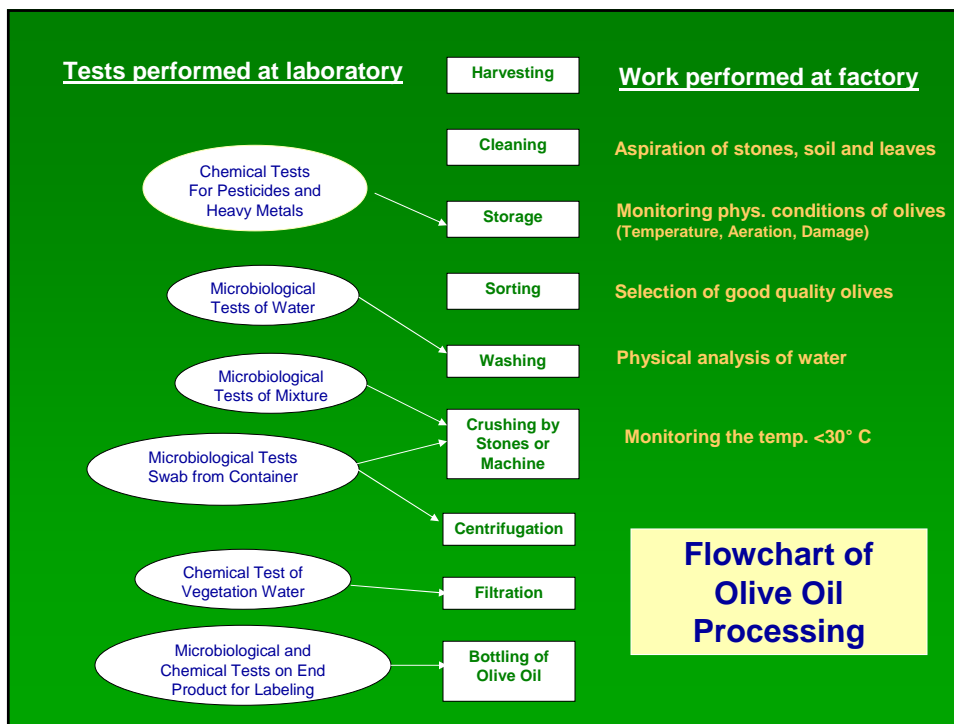
Hazard Analysis and Critical Control Point system

The HACCP system consists of seven major principles:

1. **Conduct a hazard analysis**
2. **Determine the Critical Control Points**
3. **Establish critical limits**
4. **Establish a system to monitor control of the CCP by scheduled testing and observations**
5. **Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control**
6. **Establish procedures for verification the HACCP system is working effectively**
7. **Establish documentation concerning all procedures and records appropriate to these principles and their application**

HACCP Planning

- The application of the HACCP system generally consists of a system of 12 logical steps to be followed.
- Focuses generally on the following:
 - **Construction of flow diagrams**
 - **Determination of Critical Control Points (CCP) and/or Attention Points (AP)**
 - **Establishing an analytical monitoring system for each CCP or AP**



| Type | Tests at Laboratory Level | Unit Price \$ |
|------------------------|--|---------------|
| 1 | Chemical Tests of Olives at storage Pesticides Residues | 60 |
| | Heavy Metals: Lead, Copper, Iron | 90 |
| 2 | Microbiology test for Water Total Count + Coliforms | 30 |
| 3 | Swabs for Microbiology from Containers of: Crushing | 30 |
| | Centrifugation | 30 |
| 4 | Microbiological Test of mixture Total Count + Coliforms | 30 |
| | Yeast & Molds | 30 |
| 5 | Chemical tests of Vegetation Water Acidity | 25 |
| | Polyphenols (HPLC) | 30 |
| 6 | End Products | |
| | Impurities (Centrifugation) | 30 |
| | Acidity | 25 |
| | Peroxide Value | 30 |
| | Iodine Value | 30 |
| | Fatty Acid Composition | 60 |
| | Pesticide Residues | 60 |
| | Moisture and Volatile Matter | 15 |
| | Refractive Index | 20 |
| | Saponification Number | 30 |
| | Specific Gravity | 20 |
| | Heavy Metals: Lead, Copper, Iron | 90 |
| Total per Batch | | \$ 765 |

Tests to be Performed for Olive Oil Processing

Notes:

- Highlighted tests are performed periodically, at least once per month.
- Maximum cost is \$765 and minimum cost is \$ 705.
- 1,2,3,4,5 & 6 are shown in the flowcharts of Olive Oil Processing.
- The prices mentioned in the table are at cost, based on cost of testing in Lebanon (2004) and are in US\$

Setting up a Food Quality Control Lab

Operational units

- A microbiology laboratory with isolated space for capital equipment and hoods and interconnected office space
- An inorganic laboratory with isolated space for capital equipment and hoods and interconnected office space
- An organic laboratory with isolated space for capital equipment and hoods and interconnected office space
- A cold room for storage
- A general storage room
- A weighing room
- A room for the heat generating incubators, autoclaves and furnaces
- A reception area
- A director's office
- A utility room/library
- A meeting room
- 2/3 smaller offices
- Lavatories
- Garage and parking space

Construction costs (from scratch)

| | |
|---|---------|
| ▪ Land | 50,000 |
| ▪ Construction (1000m2) | 400,000 |
| ▪ AC/Heating | 25,000 |
| ▪ Generator 60 KVA/installation (2 units) | 30,000 |
| ▪ Pick-up van | 25,000 |
| ▪ Office furniture/PC's | 50,000 |
| ▪ Admin expenses and fees | 10,000 |

Construction **\$ 590,000**

Personnel **\$ 157,200 (annually)**

(Director (1), Technical staff (7), finance & admin staff (4), electrician, cleaning)

Scientific equipment

| | |
|---------------------------------|---------|
| Capital equipment | 540,450 |
| Workbenches stools and trolleys | 20,000 |
| Documentation | 20,000 |

Equipment **\$ 580,450**

+ misc.

| | |
|---------------|------------------------|
| TOTAL: | US\$ 1,427, 650 |
|---------------|------------------------|