

# INFRASTRUCTURE





## *Milk Processing Toolkit*



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### Infrastructure and processing site layout

When setting up the milk processing industry it is essential that the condition of the building - the construction materials and the building position- are all suitable to food production. The cow-hangar must be located away from swamps, ditches or refuse dumps where insects and rodents are probably found.

The site should allow waste water to drain away freely and have suitable facilities to dispose of waste food and rubbish. A supply of clean water is essential.

Physical layout

Basic services

Equipment

### 1.-Physical layout

Ideally the operational areas of the milk processing building should be at ground level, with the raw ingredients entering at one end and the finished goods leaving at the other.

The different operations should be kept separate from each other to prevent contamination. For example, perishable raw materials should be kept separate from non-perishable ones.

Packaging materials should be stored separately from the food items.

If possible, toilets should be located outside the processing building. If they are in the main building, there should be two doors between the processing room and the toilet.

Workers must have access to handwashing facilities with soap and clean towels.

The building should be constructed with smooth walls. The joint between the wall and floor should be rounded for easy cleaning. The building lines should be simple and square, without crevices and small places that can attract dust and may become birds nests. Windows should be covered with mosquito mesh to prevent the entry of flies and other insects.

The floor should be made of good quality concrete and should slope to a central drainage channel so that at the end of the day the whole area can be hosed down.

The drainage channel should be fitted with a heavy iron grating that can easily be removed for cleaning. The outlet of the drain should be covered with wire mesh to prevent rodents entering.

The ceiling and walls must be made from washable and easily dried materials. They must not be absorbent or porous.

The lighting should be natural if possible. If artificial lights are used they must not get in the way of the processing. The bulbs should be protected to prevent glass falling into the products if the lights are broken.

It is important to have good ventilation, especially where heating takes place. Large window openings should be covered with mesh to allow air and natural light into the building, while preventing insects and birds.

## **2.- Basic Services**

Three basic services are required for a basic honey processing operation:

### **Electrical power**

It is preferable to have access to electricity for lighting and for the operation of machinery. The electricity points should be situated high up the walls and away from water supplies so that they do not get wet during hosing down of the building.

### **Drinking water**

Drinking water should be available in sufficient quantities to allow for the safe, hygienic processing of food. Water must be protected from all possible sources of contamination. The storage tank must be covered. Clean water is often a scarce commodity and therefore efforts should be made to conserve it. Clean water must be available at all times. It is recommended that an elevated storage tank is used that is not reliant on the use of electricity. The use of a storage tank allows the water to be treated with a disinfectant. It is recommended that chlorine is added to water as a disinfectant. The recommended dosage is 2 ppm of free chlorine, which is equivalent to 100ml sodium hypochlorite solution per 2000 litres of water. At this level, the chlorine disinfects, but does not affect the taste of the water.

### **Disposal of waste water and material**

Provision should be made for the disposal of waste water and waste material

### **Basic facilities**

A small to medium scale fruit and vegetable processing unit must have the following basic facilities:

#### **Reception of raw material**

The plant must have a special area for the reception and storage of raw material until it is required. This area may simply be a shed or an appropriately designed room. The area should be clean, away from direct sunlight and with control over the temperature and humidity according to the type of material being stored. Care should be taken to ensure that rodents, birds and insects cannot get into the store building. The raw material storage area should not be used for the storage of other products that could contaminate it such as cleaning materials and pesticides. The quality of the finished product is directly dependent on the quality of the raw material. Thus the conditions of the storage area are of great importance. This storage area should have basic equipment such as weighing scales for the reception of raw material, as well as holders for supers containing honeycombs, buckets or drums containing honey. It should contain a freezer or a chamber at low temperature to store pollen in natura and propolis.

## Processing room

The processing room is the main place of activity. The different materials used during processing and the various pieces of equipment are kept here. Ideally, the room should be large enough to house all the equipment needed for the various stages, to allow the process to be continuous and improve the efficiency of processing.

## Quality control

Quality control operations should be carried out in a separate room. The room should be equipped with basic equipment such as a sink, running water and a bench or table where the tests can be carried out. The equipment for testing should be kept in this room. The pollen and propolis processing should be performed in rooms that are separated from the one of honey processing, except after the final processing of these products, when they can be mixed with honey in the honey processing room using a mixer.

## Storeroom for finished products

The storeroom should be clean and airy, free from damp and away from direct sunlight. The temperature of the room should be kept as low as possible to maintain the quality of the stored products. The storeroom should be fitted with shelves to allow neat and tidy storage of the processed foods. Processors should regularly test the quality of the stored products and make sure they rotate the stock, selling the oldest stock first.

## Other facilities

Some equipment needs to be stored outside the main processing area, but still accessible to the processor. The boiler or steam generator needs to be housed outside the main processing area to avoid contamination of the foods.

## Sanitary facilities

All sanitary facilities - changing rooms, toilets and hand washing areas should be kept separate from the processing area to avoid cross contamination.

## 3.- Equipment

Buying milk processing equipment requires careful thought to decide what is the best for the individuals specific needs. It is a good idea for buyers to visit trade fairs, manufacturers, equipment retailers and operating milk processing industries to observe the equipment under action. First time, buyers should search for advise from experts.

Several factors that should be considered when buying new equipment include the following:

- the robustness of the equipment
- the simplicity of servicing, cleaning and maintenance
- what spares must be help
- how long it will take to get replacement parts.

There are many different types of equipment available, some of which are essential to the milk processing industry while others are optional, labour saving devices. It is important to think carefully about what is essential and what the plant can manage without.