



FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTRY OF HEALTH

Food Hygiene and Safety Measures
Extension Package

February 2004
Addis Ababa

CONTENTS

Title	Page
1. Introduction.....	1
2. General Objective.....	2
3. Specific Objectives	2
4. Implementation strategies	3
5. Activities to be carried out with regard to Food Safety Measures	3
5.1. Introducing and Familiarizing Food Safety Package Programme.	3
5.2. Preliminary Surveying	3
5.3. Drawing up Action Plan Involving Community Participation.....	4
5.4. Training Activity	4
5.5. Creating Co-ordination Mechanism with Government and Non- Governmental Agencies who could be Potential Supporters of the Package Programme.	4
5.6. Involving Health Institutions and Health Workers of the area in the Activities of the Package Programme.	4
5.7. Motivate, Educate and Organize the Community to bring about Behavioural Change.	5
5.8. Food Preservation Methods Using Locally Available Resources And Practices.....	18
5.9. Exchange of Experiences.	33
5.10. Motivational Methods.....	34
5.11. Applying Local Rules and Regulations.....	34
6. Expected outcome/Results.....	35
7. Problems, which could be, encountered during implementation Process of food safety measures package and their possible solutions.....	35
8. Short methods of communication.	36
9. Monitoring and Evaluation.	37

1. Introduction

Food is one of the essential needs for survival and well being of man.

Why do we need food?

Food is needed for: -

- Growth and development.
- To provide energy for movement, work and for maintaining vital functions of the body, e.g. the heart needs energy to circulate blood in our body.
- Food is needed to repair and replace our body cells.

As food is essential for our life, it is also dangerous and cause diseases if not processed and maintained in sanitary and safe conditions. Diseases commonly transmitted to man through contaminated unsafe food can be divided into: -

- Those caused by pathogenic microorganisms (disease causing germs), such as diarrhoea, Typhoid fever, cholera, intestinal parasites such as Amoebiasis, diseases transmittable to man from animals, e.g. Tape worm, Anthrax, Bovine Tuberculosis etc.
- Chemical food poisoning can also occur if foodstuff has been in contact with hazardous toxic chemicals during food production, processing, storage and handling etc.

Therefore, foodstuffs, which have been contaminated by microbial pathogens or toxic chemicals, are dangerous to human beings, particularly to children, pregnant women, lactating mothers and aged people.

The problem of food borne disease is more serious among the rural communities because of their low level of awareness and generally the prevailing poor and unhygienic environment.

On the other hand mass catering places, where food is prepared and served to a large number of people in short time, such as hotels, restaurants, Cafeterias,

hostels, clubs, Military barracks, schools, weddings feasts etc are more prone to food borne diseases outbreaks.

As result many people are likely to be seriously affected by consuming unhygienic and unsafe food. Therefore, it is the duty and responsibility of each one of us to understand the danger of eating unsafe food and apply good hygienic practices to prevent and control food borne diseases.

Realizing the prevalence and seriousness of food borne disease, the Ministry of Health has incorporated Food safety measures into the health extension package programme of the country.

2. General Objective

To prevent and control food borne diseases and consequently create a healthy and productive society.

3. Specific Objectives

- 3.1. Create awareness and develop knowledge among communities about food safety measures.
- 3.2. Bring about behavioural change in keeping food safe and wholesome.
- 3.3. To enable people to understand how to safeguard food from contamination.
- 3.4. To inform and educate people about simple and practicable methods of keeping food safe and avoid spoilage.
- 3.5. To enable individuals and families how to protect themselves against food borne diseases.

4. Details of Implementation Strategies

- 4.1. Orient the community about the whole package Programme.
- 4.2. Carry out a preliminary survey.
- 4.3. Draw up action plan which would enable the community to participate.
- 4.4. Carry out training of trainers.
- 4.5. Create co-ordination mechanism with community members Governmental and nongovernmental agencies who can support the package programme.
- 4.6. Involve health workers from health institutions in the area.
- 4.7. Motivate, educate and organize the community and enable them to directly participate and bring about behavioural change.
- 4.8. Using demonstration methods
- 4.9. Carrying out on the job training
- 4.10. Using local resources
- 4.11. Doing experience exchange
- 4.12. Using incentives
- 4.13. Applying local rules and regulations
- 4.14. Carrying out monitoring and evaluation work.

5. Activities to be Carried out Regarding Food Safety Measures

- 5.1. Introduce the general food safety package programme to:-**
 - Administrative bodies
 - Trained or practical health workers in the area
 - Well known and influential community members of the area
 - Governmental and non-governmental organizations etc in the area.
- 5.2. Collecting information incorporating the followings:-**

- Condition of food service and food storage utensils and kitchen.
- The tradition about keeping food safe, feeding habit, knowledge, attitude and practice of the community.

5.3. Drawing up action plan involving the participation of the community

- Drawing up work plan based on the findings of the preliminary survey with the community participation
- Preparing work schedule of weekly, monthly or yearly as appropriate

5.4. Carrying out Training of Trainers

- Training of community segment, i.e. Trained or practical health workers, social development workers, well known and influential local residents, administrative bodies etc, who can be potential supporters of the package programme.

5.5. Civic Associations, governmental and non-governmental organizations such as: -

- Administration (for administrative support)
- Agriculture (to obtain training and support from development workers)
- Association (women's youth's) etc to establish co-ordination mechanisms)

5.6. Involving health institutions and health professionals of the area.

- To get direct technical assistance in the area where the package programme being implemented

5.7. Motivate, educate and organize the community in order to bring about behaviour change.

- At household level, deliver continuous and adequate education to mothers about how to maintain food safe.
- Teach about food safety measures in meetings, Edir and religious places at public holidays etc.

5.7.1. Trainings to be given Regarding Food Safety Measures and how to Maintain

5.7.1.1. Ways in which food may be contaminated: -

- Preparing food with dirty hands or eating
- By dirty market places
- By feeding meat or its product of infected animals
- By feeding fruit and vegetable produced in contaminated field
- From food handlers who have infectious diseases
- Food dropped on the ground
- From unclean or dirty kitchens
- Food washed or prepared with contaminated water
- When cooked or prepared and raw food are kept together
- Food kept uncovered where flies, cockroaches rats and other domestic animal and pets can have easy reach
- Through bad habits of touching pets while handling food.
- By touching food with dirty rag used to clean other items.
- By various chemical substances

- By unclean food preparation, storage and eating cutlery.

5.7.1.2. Signs of Spoiled Food

- Decomposition
- Foul smell
- Change of colour and structure
- Occasionally germination

5.7.1.3. Ways of detecting spoilage of left over food

- Imparts foul smell
- Looks musty
- Becomes mouldy or changes colour

5.7.1.4. Signs of spoilage of cereal

- Becomes mouldy and change its natural taste
- Decomposes /decays
- The grains stick together

5.7.1.5. Signs of Spoilage of Fruit and Vegetables:-

- The fruit becomes mouldy; at times shows sign of wilting and its normal size is reduced.
- Vegetables show sign of wilting, rough on touching shrinks, and looks like invaded by miniature living things
- Fruits show at times mouldy appearance
- Fruit occasionally show the sign of breaking disintegrating apart, sinking signs.

5.7.1.6. Signs of Spoilage of Egg

- When shaken with hand it gives out noise

- When placed in a bowl of water it floats instead of sinking
- When one looks through the egg towards the light it shows the sign of turbidity
- The shell of the egg becomes mouldy
- When one presses from the two oval ends it sinks and breaks apart

5.7.1.7. Signs of Spoiled Butter

- It shows bad smell and taste
- Smells like that of fish
- Butter, which is dirty and kept for a long time is considered to be spoiled.

5.7.1.8. Cheese

- Imparts un-natural taste and foul smell
- If cheese is produced from unclean milk and kept out of refrigerator for a long time it is considered spoiled.
- Have green or black colour

5.7.1.9. Signs of Spoilage of Fish

- Different colour and foul smell compared to the normal fish
- The gills become black or green
- The eye balls become black
- When one presses the meat it remains in sunken position
- In general the body becomes loose, wilts and loses its lustre.

5.7.1.10. Signs of spoilage of skinned chicken:-

- The meat sticks under the armpit, and at the ends of the wing, it imparts foul smell
- The ends of the wings become black

5.7.1.11. Signs of spoilage of edible animal raw meat

- Will indicate abnormal colour foul smell.
- The taste is abnormal, and when pressed becomes slippery.
- The red part of the meat turns into black and fatty part become loose and yellow in colour.
- If it is mutton, the red part becomes black the fatty part becomes flabby and turns in yellow in colour
- When sliced dried meat spoils it becomes loose and musty
- Any raw meat when pierced with pointed knife, if it gives off foul smell it is the sign of spoilage.

5.7.1.12. When Canned Food Like Meat Vegetable, Fish and Chicken Meat and the Like Spoil, They Indicate the Following signs.

Canned food, specially oil, sardine, etc. are usually distributed through food aid and then handled by merchants, the following items should be given care:-

- The bottom and top ends of the can swell towards outside
- The side of sealed line of the can sinks in ward
- The canned food, when opened gives foul smell and shows foam
- The soup of the canned food will have whitish milky colour

- The colour looks different from that of the normal food
- Canned food, whose expiration date has ended are considered spoiled.

5.7.2. **Food Borne Diseases and Their Methods of Transmission**

When one says food borne it does not mean that food itself transmit disease. It means that the food is not handled in clean conditions; hence the food becomes contaminated by disease causing microorganisms. These microorganisms grow and multiply in the food, hence people who consume this food may get poisoned or infected by organisms in the food. In general food borne disease are divided into two main sections:-

1. Diseases caused by poisons produced by microorganisms in the food

The pathogenic organisms multiply in the food and produce toxin. When one consumes the food, which contains the toxin, one gets poisoned by the toxin in the food. Diseases, which emerge in such manner, few hours after eating causes continued diarrhoea, vomiting and disturbance of the body. Persons who are with such disease, should immediately seek medical attention, otherwise it may lead to death. Other than microorganisms, food can be poisoned by different chemicals, pesticides, herbicides, rodenticides etc. These chemical poisons can reach to the food, if the container of the chemicals are not washed and cleaned properly. For example fetching water with such container without proper cleaning.

2. By intestinal parasites and infectious microorganisms:

Intestinal parasites and pathogenic microorganisms enter into food in various ways and cause different diseases by being transmitted to humans and from humans to humans. These diseases, as they are different their mode of transmission also vary. The main communicable diseases and their methods of prevention are the following:

FLIES. Flies are one of the main transmitters of food borne diseases. Flies rest on human excreta and other wastes, and carry on their hairy legs and body the pathogens and land on uncovered food, food utensils and contaminate the food with pathogens. Since the microbes and intestinal parasites are not visible with naked eye, we consume the contaminated food. This way we can catch the disease.

Diseases Transmitted by Flies are

- Typhoid fever
- Cholera
- Bloody diarrhoea

By contaminated water

Water, which is obtained from unprotected source, can be contaminated by human excreta, other waste and due to poor handling. When this contaminated water is used for food preparation, washing food utensils and also washing hands, it can transmit various diseases. Even if the water is safe, wiping food utensils with dirty towel will create similar problem, i.e. the transmission cannot be stopped.

Diseases Transmitted through contaminated water

- Cholera
- Bloody diarrhoea

- Amenbiasis
- Giardiasis

Vegetables and Fruits eaten in raw state

Salad and tomato are some of the few foodstuffs, which are consumed without cooking. These food items, if produced by irrigating with contaminated water, it is likely that intestinal parasites can multiply in the leaves of salad and on tomatoes. If the salad and tomato eaten raw, as they are usually, there is a chance for the consumer to be infected.

Diseases Transmitted Through Vegetables and Fruit Eaten Raw:

- Amenbiasis
- Giardiasis etc.

Diseases Transmitted through Raw Meat and Milk

Among diseases transmissible from animals to man are: Tapeworm, anthrax and bovine T.B. If a person infected by Tapeworm defecates on the field where animals graze, the bovine animal eats with the grass tapeworm eggs, become infected and the eggs develop in the meat of the animal. If the infected animal is slaughtered, if meat is consumed raw, the person gets infected with tapeworm. Anthrax is transmitted from animal to animal, and man gets infected when consumes the infected meat. Since this disease is a very serious disease, people who have eaten the infected meat through sharing ("Kircha") or used the skin of the dead animal should immediately seek medical attention otherwise he will die. If raw milk of cow is infected with T.B, the consumer may catch T.B. of the throat.

Milk obtained from healthy cow can become ideal growing media for pathogenic organisms by the following reasons: -

- When the cow's udder not kept clean regularly,
- From milk handler who does not observe personal hygiene and not healthy,
- Unclean milk utensils are some of the many items,
- Cow shed/barn, which is not kept clean, may contaminate the udder of the cow with pathogens, if the udder is not washed properly. Thus persons who consume the contaminated milk can be infected with different diseases,
- If the hand fingers of the milk handler is dirty and the nails not cut short it comes conducive for the multiplication of pathogens, hence they can easily pass to the milk during milking,
- Even if the milk, milk handler or, the udder of the cow are clean, yet if the milk utensils are not kept clean than others similar defects. Milk is ideal for bacterial growth in nature in our country, utensils used for milking or milk storage are of various makes and shape, and they are normally conducive as media for bacteria. Therefore, it is important to pay particular attention to utensils used for milking or milk storage such as containers made of straw ("chocho").

Contamination of food through dirty hands

Handling food and food utensils not washing hands with clean water and soap after visiting latrine, not cutting short our finger nails, and playing with pets are some of ways in which food-borne diseases are transmitted.

In short food borne disease are transmitted in the following ways: -

- Food not handled in hygienic manner
- Food and drink utensils not washed properly,
- Food handlers who are not clean and infected by infectious diseases,

- Preparing and eating food without washing hands properly,
- Consuming food which is prepared using contaminated water,
- Eating vegetables which are eaten in raw state without properly, washing,
- Eating food which is left uncovered, exposed to flies, dust and other contaminants; similarly food left overnight in such a manner,
- Consuming different food items without properly cooked, even if cooked food not eaten at proper time (left for long time) then eaten,
- Consuming meat, which is infected, eating food prepared under in sanitary condition and place exposed to the risk of food borne diseases.

5.7.3 Some main ways of Preventing Food from Contamination

In order to prevent food from contamination the following food hygiene principles must be applied:

- In any time, we must wash our hands with soap and water before preparing food and eating,
- After prepared food should be eaten while hot,
- Be it prepared, or raw, buy food from clean and hygienic market,
- Not using for irrigating vegetable with sewage effluent or dirty river water,
- Food and food contact utensils should not be exposed and contaminated by flies and rodents,
- Store cooked and raw food separately,
- Avoid bad practices such as sneezing, coughing spitting while preparing or serving food,
- While preparing food clean kitchen utensils and keep them clean,
- Not consuming meat, milk and their products of infected animals,

- Burying the meat of animal died of anthrax intact in a pit of 2 meters depth and burn in this pit,
- Be it at home or hotels, ensure that food handlers are healthy and keep properly personal hygiene,
- Cooling food at proper temperature for adequate time, and maintaining hot if not eaten immediately after preparation,
- Not using contaminated water for food preparation,
- Disposing properly solid and liquid wastes,
- Using properly constructed latrine and maintaining the latrine always clean,
- Training food handlers, and following up to ensure that they do medical check up as appropriate. By carefully implementing the above listed principles, we can prevent food from contamination and can achieve the desired end.

5.7.4 Methods of Keeping Food for Limited Time without Spoilage

Foodstuffs divided into three categories by nature of their quick spoilage

1. Food, which spoil quickly are: animal products (milk, meat, fish) vegetables such as tomato, salad, cabbage and the like are under this category
2. Food stuffs not spoiling quickly are cereals
3. Food items categorized between quickly spoiling and not spoiling easily are potato, carrot, sweet potato and the like.

In our country we have tradition of keeping food for a limited time from spoilage using different methods. Some of these methods are salting meat and fish, preserving in red chilli, smoking and slicing meat and fish and drying.

- Food items like potato, carrot and the like have nature of becoming damp, and wilting if kept in damp and ill-ventilated places, therefore, if they are stored in well ventilated and dry

places they can be kept in sound condition for limited time, occasionally they should be exposed to sunshine.

- If cereal food items are kept for long time in storage, they become musty and mouldy, therefore, consult the agricultural development workers and implement their advice.
- It is possible to preserve for a limited time tomato, salad, green pepper by putting in cold water. However, better to use only as much we need instead of throwing away after they spoil.
- Cooking, steaming food items can help to keep food without spoilage, however if they are kept not properly covered they are subject to spoilage.

However, even if it is possible to preserve food for a limited time by applying the above described methods, yet if they are not covered and maintained properly they are liable to contamination by various microorganisms also for spoilage.

5.7.5 Food hygiene principles which have to be practiced and promoted

Among our daily activities, the main one is preparation of food. The food we prepare and the utensils in which we prepare food have direct relation to our health. If the food utensils and food equipment for preparing food are not maintained in clean conditions, they are likely to be the multiplying media for disease causing agents. Therefore when using these utensils and equipment, we can easily be exposed to the risk of disease. Hence, in order to prevent food borne diseases, we have to apply the following basic principles regarding the cleanliness of food and food utensils and equipment.

5.7.6 Keeping cleanliness of food preparation and food serving utensils and cutlery

- We should wash our hands properly with clean water and soap before preparing and eating food.
- Food preparation equipment such as clay pot, iron pot, slicing table, knife and the like should be properly washed with hot water before preparing food. After use, they should be washed, dried, and be kept covered in clean cupboard.
- Food serving equipment such as plates, food baskets, spoons, and drinking cups, and similar items should be washed properly before serving food, and after usage they should be washed, dried, covered and kept away from access to flies, dust and other contaminants.
- Other equipment used for long storage of food items, such as pepper, shiro (powdered lentil), butter and the like should be cleaned after the contents are used and before storing again in them.
- Baskets for keeping Enjera, bread, should be kept away from access by fungi, moulds, and microorganisms which are likely to cause disease should be washed and exposed to sunshine.
- Cleaning regularly and plastering the areas of food preparation, and preventing from access to dust and other contaminants.
- The above described food preparation and food serving utensils and equipment be stored above ground level in properly constructed racks, the racks should be cleaned regularly, the food should be stored away from dust and access to flies and other pests.

5.7.7 Eating Food by Maintaining Food Clean and Safe

The food stuff that we consume daily are divided into two:-

1st Items consumed without cooking in raw state

2nd Items consumed after cooking

Among items eaten in raw state are:- Tomato, green pepper, salad, and the like vegetables; among fruit are: Oranges, banana and other fruit items. These items can carry disease-causing microbes on their skin. Therefore, we should develop the habit of washing properly these items before consuming.

Among foods consumed after cooking are: Carrot, beetroot, potato, cabbage and the like. Although they may not have health risk eaten after cooked, they should be washed after slicing and before cooking any prepared food stored should be kept covered in order to avoid contamination by dust, flies, and other contaminants. Any type of “Wot” after cooling can be potential media for growth of pathogenic organisms. Therefore, food kept cool (“Wot”) must be properly heated to prevent food-borne disease. As much as possible food should be put in cold places in order to prolong its shelf-life.

5.7.8 Methods of Preventing Milk Spoilage

In our country it is the tradition of milking cow and drinking raw milk. Milk produced from infected animals such as (cow, camel, goat) disease can be transmitted to humans. Even milk produced from healthy animals can be exposed to the risk of disease transmission, if faulty method of milking and handling are used. Therefore, the following basic precautions be applied where milking and processing milk is undertaken.

- Cleaning regularly the barn in which milk-cows kept,
- All milk utensils inside and outside be washed by using hot water and kept covered,
- Washing with clean water the udder of the animal before milking, and if possible wash the whole body,
- Washing our hands with clean water and soap before milking,
- Not drinking raw milk without boiling,

- Equipment used for storing milk and milk products such as butter, sour milk, cheese and the like should be washed properly and kept covered.

We can save ourselves and our family from food borne diseases by carefully applying the above-described preventive measures

5.8 Methods of preserving food by using local resources

5.8.1. Meat

1. Ensure that animal to be slaughtered for meat should be free from disease, e.g. not sick, no wounds, the hairs are normal etc. And observe the behaviour of the animal from six to twenty four hours. Thus by such observation ensure that the animal is healthy.
2. Places where animals are slaughtered should not be polluted by faeces and other waste; away from water sources, should have a pit for burying offal's; should be fenced and protected.
3. Equipment used for slaughtering be proper type and maintained clean.
4. When transporting, it should be in a covered and clean material.
5. Meat meant for daily use be sliced, salted or sprinkled with red pepper to keep it safe for a short time.
6. Those who are handling meat, e.g. transporting, slicing should keep strict personal hygiene rules and wear over all.

Keeping sliced meat

Picture

NOTE

- The meat of an animal died of natural cause should not be consumed by man, because it is dangerous to health.
- Slaughtering and selling meat in unsanitary place is dangerous to the health of the community, hence should be strictly prohibited.

5.8.2. Preserving Egg

- In order to save money and energy it is necessary to know how to preserve eggs.
- Eggs kept in hot places, specially exposed to sunshine spoil quickly, and consuming spoiled egg is injurious to health.
- It is customary to fill eggs in baskets or rug exposed to sunshine in market places. Eggs exposed to heat and sunshine spoils quickly. This type of act must be stopped.
- Eggs should be kept in a well aerated, cool place in baskets (hanged) at home
- For selling by taking to the market, eggs should be put in basket or covered with thin rugs stale and fresh eggs should not be put together.
- Eggs which are stale or likely to be rotten should be isolated and not be used for human consumption
- Damaged eggs should be used immediately and if spoiled should be discarded

- Eggs, which have come in contact with filth should be cleaned with clean rag and be kept. When to be used they should be cleaned by washing before processing for consumption.

Picture

5.8.3. How to preserve milk and milk products

Items obtained from milk such as sour milk, butter, milk from which butter extracted, cheese, fluid left after the cheese extracted and the like are called milk products. Milk and milk products are easily spoiling food items.

These food items are useful for building the body and for maintaining health, especially butter provides with energy necessary for carrying out our work. Farming households, generally choose selling milk and butter instead of using for themselves. This act is not fully accepted for the mere fact that it is preferable if they use for themselves first instead of selling for money. Therefore priority be given to the health of the farming household, and the remaining can be sold to obtain money. In any case milk and milk products should be preserved and used properly.

In order to accomplish this, we have to follow the following advice

- If milk is produced in clean utensils, and kept covered in cool place, it will not spoil quickly.
- Drinking raw milk can transmit disease, hence boil milk before drinking, and keep covered in cool place and use without keeping for long.
- If butter processed by heating it can last longer without spoilage.

- Any milk and milk product should be kept covered above ground level in a rack.

Picture

5.8.4. Storage of cereal and grain

All types of cereals and grains are produced by spending money and energy. Therefore, in order to avoid wastage of cereals, which are produced through much expense and energy should not be wasted. Hence using proper storage method would reduce the problem. Cereals and grain spoil because of different reasons. Stored cereals can be spoiled in short time by attack of cereal pest or other pest species. Cereals can be spoiled due to improper storage by fungi and moulds. Rats cause high damage to cereals kept in stores. Thus not knowing the method of building proper store expose the cereals to damage by rats. There are different methods of controlling rats. Some of these are to seal off holes and craves in the storage, which might serve for intrusion of rat into the store. Using different rodenticides carefully, similarly keeping cat for ration can reduce the wastage. In addition, before putting in store, the cereals should be dried properly to avoid moisture. Cereal, which is stored before cleaning and drying spoils quickly. Applying pesticides carefully to eliminate cereal pests. Before storing new products, the store and its surrounding should be plastered and maintained clean.

5.8.5. Preserving Vegetable and Fruit Items

Vegetable and fruit items, if not used while fresh will spoil quickly. This wastes the money and energy invested in producing the items. Vegetables, which are not consumed while fresh, be taken to market while fresh. In order to eat a balanced diet, the household should dry up the items, and store in clean place. In addition care is needed to avoid quick spoilage of immediately edible vegetables. Thus, wash and clean soil from such items as cabbage, green pepper, onion, carrot, tomato, potato and the like.

- Cut off the spoiled portion, and throw away, if not spoiled badly, better cook quickly and eat.
- Vegetables just brought should be put above ground level in cool and aerated place in baskets or rack.
- Traditionally onions and garlic are exposed to smoke and heat to remove moisture. This is a good practice because the heat removes moisture and avoids wilting. There are other methods to keep food for long without spoilage, some types of vegetables. This is storing buried vegetables in moisture free pit.

Picture

- Select dry location where there is no water and dig the pit
- The depth of the pit will depend on the amount of the vegetable to be stored.
- The pit should not be rectangular but must have the shape shown in the picture.
- The surrounding of the pit be graded to avoid flooding in.
- This will prevent flooding into the pit in case it rains.

- Spread properly grass and leave in the pit, which is dug.
- Spread these vegetables, which are in good condition.
- Types of vegetables to be selected for such method are: potato, sweet potato, carrot and the like.
- After having placed or spread the vegetables properly cover them up with more dry grass and leaves.
- Cover the grass with earth, which was bailed out, compact and put over it stone or flat lumber.
- If the earth is well compacted rain water and Moisture would not reach the vegetables.
- If the pit opened, the whole item has to be taken out completely. This type of storage (preservation) method is useful for vegetables to be sold in a market
- Vegetables to be used often can be accomplished by digging several small pits.
- If there is need to preserve different types of vegetables in the same pit, it is possible by putting different vegetables mixed in the same pit.

5.8.5.1. Potato

1. Choosing

Any plant product should be cut after it is ripe. Plant food item, which is picked after it is ripe, will have good colour and appearance. The taste and food value is complete. Vegetable, which is picked up without being ripe, the colour is not right, and if suitable storage is not done, it spoils quickly. The internal composition of the various ingredient is reduced. In addition, the water component of the ingredient may leak out. It wilts. If vegetable plant is exposed to heat and sunlight after they are taken out, they will change their colour. For example, if potato is

exposed to sunlight its colour turns to green. If it is kept in compressed, ill ventilated and dump place, it will germinate. To preserve potato for a prolonged time, it is necessary to separate the ripe one from the one not ripe. Similarly the one which is invaded by mold, and which has changed its colour should be isolated and discarded.

2. Shredding and Drying

Potato must be washed properly before shredding. This is to remove dirt or soil. After washing the skin is removed using a knife. The skinned potato is shredded in small slice. The slices should be the same size, because they will not dry at the same time if they are of different size. When potato is kept shredded, it will turn to black colour, hence a little salt should be added and cleaned with water. In addition if it is boiled for four minutes in water it will not change its colour. Then the slices should be washed and sun dried. To dry it properly expose to sunshine spread over wooden material. It is preferable if the drying surface is a mat or straw basket, or it can be tinfoil. The place for exposing to sunshine should be above ground level and can be a table or similar item. This will avoid access to the potato by chicken, animals or dust.

3. Putting in a can (sealing)

Before putting in a can and sealing, the spoiled pieces and those, which changed colour should be sorted out to be discarded. Similarly the powdered portion should be taken out by sieving and can be used with food. Then it should be washed, dried and put in suitable material the material can vary in

different places for example it can be clay pot with cover, guard or wooden container. The potato should be stored in dry place after it is in the container, the place should be above ground level.

4. Using the Ripe Potato for Food

It is possible to prepare food with the ripe dried potato. For the preparation add water five to one portion. Then cover the potato in water and put the content in iron pot. Then continue cooking slowly until it is cooked. If there is less water add more. This will help the food not to burn and retain the natural taste of the potato. Some times the dried potato is soaked in water for about one to two hours. This will accelerate the rate of cooking and the water soaked can be used for cooking further the potato. After the potato is cooked as described above, it can be used as food. For example, it can be prepared with “Shiro” (lentil), cabbage, or with meat in the form of “wot”.

5.8.5.2. Preserving Onion Exposing to Air Without Spoilage

<u>Type</u>	<u>Amount</u>
Red onion	As much as need

Preparation

- Collect onion after proper maturation
- Select not spoiled ones
- Plant two poles (angled) inside the house or outside where it will not be reached easily.
- Tie strong rope on the angled pole
- Tie in small bundle the collected onion
- Tie up the leaves together

- Hang the tied onion on the rope

Picture

<u>Type</u>	<u>Amount</u>
Garlic	As much as desired

Preparation

- Collect well ripe garlic
- Discard spoiled ones from the lot
- Tie the selected garlic in small bundle
- Select site well aerated with in the house,
- Tie strong rope between the angled poles,
- Hang the tied Garlic on the angled pole,
- Use whenever need arises

NOTE

Garlic can be preserved up to one year unless rainwater falls on it.

5.8.6. Care, which should be taken when preparing any kind of food,

1. The person who prepares food must always wash his or her hands before handling any food.
2. Wash and clean the utensils and equipment of food preparation and serving
3. Raise above ground the food preparation area
4. Cook well those food items which must be consumed in cooked state

5. Vegetables, which are to be consumed in raw state such as tomato, green pepper, salad and the like must be properly washed.

5.8.6.1. Methods of Washing Food Utensils

- From locally available material e.g. clay, wood and the like prepare at least two compartments for washing and rinsing. If possible use by building compartments from wooden material.
- The water for washing must be clean.
- For washing utensils use soap, if not use ash or endod, or use hot water for first stage washing.
- The second compartment should be used for rinsing, and then drying.

5.8.6.2. Equipment Made of Wooden Material for Washing Food Utensils

All food preparation and service equipment and water must be maintained clean. In addition a place for washing and drying must be well prepared.

Therefore: -

- Keeping cleanliness
- To save time and energy
- To safeguard the health of the household

Materials Needed for Making Service Equipment

- Wood (bamboo) or any locally available material
- Rope (Nails)
- Spade
- Gravel

- Deep plate (wooden plate) or if there is any other material such as hammer.

For washing utensils

How to Build

- Select appropriate location around the house for washing equipment and for drying
- Plant four angled poles at conducive height for human being
- Prepare other poles pieces for support.
- First dig wider pit and fill with gravel
- Plant the angled pole at appropriate place
- Nail or Tie the four angled poles together
- Nail the poles prepared to the horizontals as shown in the picture,
- The concaved centre seen in the picture is to serve for placing for washing plates.

NOTE

- The horizontals for the sides must be of equal size, while the centre horizontals shorter. Lastly tie well the sides to give strength
- The purpose of digging the pit is to avoid splashing the surrounding with wastewater, which might attract flies. And this would safeguard the health of the household.

2. Drying Place for utensils

How to Build

- Prepare four equal size wooden poles
- Nail two with each other (or Tie)
- Make the two horizontals to be tied centre to centre and nail them
- The pole piece prepared for the support should be side to side and then nailed.

NOTE

- When nailing the support poles they should not necessarily be parallel, but when nailing the second one, they should be parallel to each other.
- The support should be too wide in order to avoid slipping of utensils.

Picture

3. Rack for Utensils

Picture

Any household equipment and utensils after washing and cleaning should not be haphazardly left anywhere. In such case it is not possible to say that the equipment are washed and cleaned. Therefore cleaned equipment and utensils should be placed in a rack, which can easily be made from locally a available material.

Advantages of the Rack

- Equipment and utensil are kept in clean condition
- Materials haphazardly kept will have proper place.
- Time spent searching for a specific item is reduced.
- Gives orderly fashion to household utensils and materials

Items Needed for Making Rack

Wood or bamboo, earth, residue of Teff (grass), rope or nail

How to Build

- Select suitable place for the rack

- Arrange materials for building, cut into appropriate pieces in sizes. Plant four thick poles in corners
- Among the corners planted poles fill in small ones
- To build the rack, lay down pieces of the cut poles and tie them firmly.
- Plaster with mud to prevent slipping out of small equipment.
- After having placed on the rack various goods (equipment) put curtain

Rack, which is placed on the Wall

If the space in the house is small, we do not have to put racks on the ground. It is possible to construct partitioned rack placed joined to the walls.

Items Needed for Making Rack

- Wood or poles
- Nail

Picture

How to Build

- Cut poles in desired manner
- Join the pieces of poles as seen in the picture
- After joining the pieces, fix to the wall two these thick pieces and nail to the wall on the upper and bottom parts.
- Nail firmly the rack between standing pieces

- Now various items can be placed on the rack. If possible put curtain to maintain the cleanliness of the equipment

NOTE

Build firmly the back part of the rack and plaster to avoid slipping of small items.

This rack is useful not only for keeping food utensils, but also:

- Help to dry washed utensils
- Can serve for placing books, if separate location is arranged

4. Brush for Washing Bottles

- Items like bottle cannot be cleaned by inserting hands
- Hence dirt can be collected inside the bottle
- In the dirt inside the bottle microbes can start multiplication, which can be injurious to health.
- For this reason bottles meant to hold milk “Tella” must be washed properly.
- For washing these items we need to use brush
- The brush can easily remove the dirt collected inside the bottle.
- The brush for washing bottles can be made from fibre and rag
- The one made from fibres are divided into two.
- For one type the handle is made from wire and the other, the handle is made of wood.

Materials Needed for Making Bottle Brush

- Strong fibre
- Thin wire
- Two pieces of rounded wood about two “Sinzer” (40 cm)
- Piece of rag.

Making the Brush

- Two meters of string be prepared
- Cut the string into half “Sinzer” (10 cm)
- Cut the rounded pole at four corners and slice into two at one end
- Insert the string into the splintered place of the pole piece alternately
- When the string is properly inserted, tie up the end of the string to the wood or tie with string
- It is possible to make the handle with wire instead of wood
- When the handle is of wire, fold the thin wire then twist the wire.

How to Make Bottle Washing Brush Out of Rag

- On the end of thin round piece of wood wind rag properly arranged
- Tie firmly with wire or string
- After use, the brush be washed, dried and kept for further use for other time.

5.9 Exchange of Experience

At household level

- It is better if neighbouring house holds visit and gain experience from households who have applied basics of food safety measures so that they can implement in their own houses.

For Health Extension Worker

- Health extension workers also visit the activities of those who have shown excellence in their work and gain experience from them.

At kebele level

- Those kebeles, which have implemented successfully the food safety package programme, should be visited by other kebele members to gain experience.

5.10. Using Motivational Methods

- Giving prizes to those who have made good progress applying good hygienic practices.
- Giving certificate of recognition
- Giving incentives from locally available resources.
- Citing in meetings and public gatherings as an exemplary personality.

5.11. Applying local rules and regulations

- Co-ordination of local rules and regulations with those of government laws and regulations.
- Drawing up work plans which involve the local communities' participation.
- Implementation rules and regulations and policies issued by the government.

5.12. Monitoring and Evaluation

- Monitoring the implementation process of planned activities, monthly or yearly as appropriate,
- Evaluate the implementation level of activities by involving the communities.

6. Expected Outcome by Effectively Implementing Food Safety Measures Programme

- 6.1. The Community will eliminate food-borne diseases by preparing hygienic food and maintain the safety;
- 6.2. The community's knowledge and practice about food safety measures and how to prevent food spoilage will be promoted;
- 6.3. The community will have gained knowledge and skill in food safety measures and how to prevent and control food spoilage;
- 6.4. The package implementers have adequate information about the package programme;
- 6.5. The community's participation and practice will be developed starting from drawing up action plan to implementation.
- 6.6. Additional community members who will give support to the package worker will be created
- 6.7. The tradition of co-ordinated working pattern will be developed;
- 6.8. After acquiring knowledge and practice people from people would be able to accomplish what are expected from them on their own accord.

7. Problems, which could be encountered during the implementation process of food safety measures package and their possible solutions.

7.1. Problems, which could be encountered;

- Cultural and traditional influences
- Difficulty of not getting as much support as desired.
- Lack of attention and support from people who are directly or indirectly related to the implementation of the package programme.

- Low living standards of the community.

7.2. Possible Solutions

- Giving continuous education to the community members.
- Motivating continuously people who are related to the package programme
- Health Institutions and offices at different levels should follow up the matter and give possible solutions.
- Doing everything possible to improve the standard of living.

8. Short Methods of Communicating

8.1. Places for Communication Messages

- By house to house visit
- At village level
- In schools
- In health institutions
- In religious places (churches & mosques)
- At market places
- At traditional Institutions (Edir, Equb)
- At development offices

8.2. Ways of Communicating Messages

- Person to person contact
- By calling meetings.
- Group meetings.
- Using demonstrations.
- Using drama, songs, poems, and telling stories.
- Exhibition.
- By presenting different short acts during public holidays.
- Using tape recorder.
- Using posters, pamphlets and brochures.

- Using mass media available in the area e.g. radio, television
- Using health education films.

8.3. Messages to be communicated

This will be accomplished using the detailed package programme activities.

9. Monitoring and evaluation

9.1. Monitoring

- Number of people who were given health education:
Male _____Female_____ total_____
- Number of meetings carried out on food safety activities _____
- Health education materials used: Type _____and number_____
- Did the community implement food preservation methods?
- Do foodstuff containers have cover?
- Distance between kitchen or food preparation area and latrine.
- Is the food preparation area free from vermins? Is there place for storing leftover food?
- Is there a kitchen?
- Is the kitchen floor kept clean?
- Are the utensils and equipment of food preparation washed and kept clean?
- Is there a habit of washing hands with soap and water?
- Are prepared foodstuffs kept separate from raw foodstuffs?

9.2. Evaluation

- General and specific objectives of the package programme.
- Action plan prepared to implement the programme.
- Resources used for implementation of the action plan;
 - Human resource: profession and number

- Material resource: local and donated
- Financial: from people and from assistance
- Strategies for implementation of the action plan
 - Field trip
 - Compiling and analysing reports
 - By interviewing and discussing with beneficiaries.
- Activities accomplished.
 - Indicators for coverage (percent, in number or in ratio).
 - Strong points.
 - Weak points.
 - Changes brought about by the activities implemented.
 - Problems encountered.
 - Suggestions given to solve the problems.