

Fish Feed

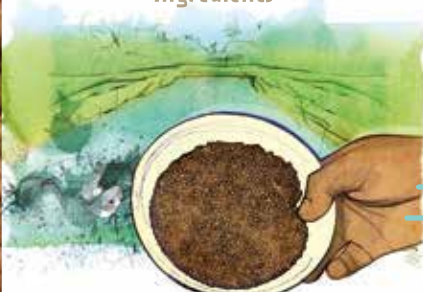
Storage
Not too much, not too little
Size
Ingredients



How? Why? Where? What?
Store feed in a shaded, dry place in clean, closed bags or containers to avoid entry of rodents and insects.

Fish Feed

Storage
Not too much, not too little
Size
Ingredients



How? Why? Where? What?
Overfeeding results in feed wastage, poor water quality and slow growth.

Fish Feed

Storage
Not too much, not too little
Size
Ingredients



How? Why? Where? What?
Pellets for a particular fish species should be the right size and age-appropriate so the fish can swallow them. Some fish have big mouths but small throats!

Fish Feed

Storage
Not too much, not too little
Size
Ingredients



How? Why? Where? What?
Homemade feed should only contain ingredients recommended by the relevant aquaculture authorities.

Fish Health Management


Regular monitoring
Quarantine
Sick fish
Medicines



How? Why? Where? What?
Daily observation of fish behaviour and feeding activity allows early detection of problems.

Fish Health Management

Regular monitoring
Quarantine
Sick fish
Medicines



How? Why? Where? What?
Keep newly-bought fish in a separate pond or tank for at least 21 days to see if they harbour disease.

Fish Health Management

Regular monitoring
Quarantine
Sick fish
Medicines



How? Why? Where? What?
Move sick fish to a special tank or container for treatment and to prevent disease-transfer to healthy fish.

Fish Health Management

Regular monitoring
Quarantine
Sick fish
Medicines



How? Why? Where? What?
Use authority-approved medicines, in recommended dosages.

Water Management

Water quality
Monitoring
Water inlets
Wise use of water

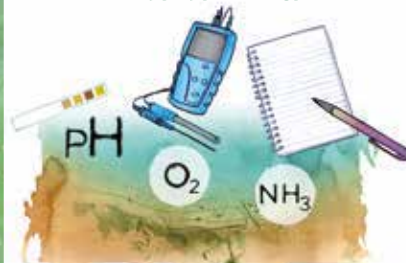


How? Why? Where? What?
Good water quality allows fish to grow faster and stay healthy.



Water Management

Water quality
Monitoring
Water inlets
Wise use of water



How? Why? Where? What?
Farmers should learn how to measure and maintain pH, oxygen and ammonia levels to ensure good fish health and maximise growth.



Water Management

Water quality
Monitoring
Water inlets
Wise use of water



How? Why? Where? What?
Place screens across inlets to prevent entry of wild fish to ponds. They may eat stocked fish and carry diseases and parasites.



Water Management

Water quality
Monitoring
Water inlets
Wise use of water



How? Why? Where? What?
Using wastewater from ponds to irrigate crops can improve income and reduce environmental pollution. Money is saved on fertilizer and diversity in farm products can positively affect family nutrition.



Farm Management

Good maintenance
Garbage
Fuel and oil
Medicines and chemicals



How? Why? Where? What?

Check the condition of dikes, pipes, tools, inlets, outlets, and canals regularly, and repair in time.



Farm Management

Good maintenance
Garbage
Fuel and oil
Medicines and chemicals



How? Why? Where? What?

Store solid waste in strong, sealable containers to prevent animals to gain access or cause pollution.



Farm Management

Good maintenance
Garbage
Fuel and oil
Medicines and chemicals



How? Why? Where? What?

Avoid leaks from car or tractor engines by means of good maintenance. Fuel and oil pollute the soil and even a little oil in the water can spoil the taste of fish.



Farm Management

Good maintenance
Garbage
Fuel and oil
Medicines and chemicals



How? Why? Where? What?

Should be kept in closed containers locked up in a room out of reach of children. Treat chemicals with care as fumes can be harmful to human health.



Good Handling on Board


Vessel
Icing
Garbage
Personal hygiene



How? Why? Where? What?
Daily cleaning of the vessel reduces the chance of contaminating fish.

Good Handling on Board

Vessel
Icing
Garbage
Personal hygiene



How? Why? Where? What?
Place clean ice underneath, around, and on top of fish to prevent fish from spoiling quickly. Avoid contact between meltwater and fish.

Good Handling on Board


Vessel
Icing
Garbage
Personal hygiene



How? Why? Where? What?
Do not throw garbage overboard. Plastics can be just as deadly to marine life as oil or chemicals.

Good Handling on Board

Vessel
Icing
Garbage
Personal hygiene



How? Why? Where? What?
Clean clothes, washing of hands, no smoking and no spitting reduce the risk of germs being passed from the handler to fish.

Bad Handling

Stepping on fish
Throwing fish
Spitting
Dirty tools



How? Why? Where? What?
Physically damaging fish spreads bacteria and enzymes which results in faster spoilage of fish.

Bad Handling

Stepping on fish
Throwing fish
Spitting
Dirty tools



How? Why? Where? What?
Handle fish with care. Bruised or damaged fish are easily contaminated with dirt and bacteria and do not look attractive to buyers.

Bad Handling

Stepping on fish
Throwing fish
Spitting
Dirty tools



How? Why? Where? What?
Spitting is unhygienic and could spread bacterial and viral infections.

Bad Handling

Stepping on fish
Throwing fish
Spitting
Dirty tools



How? Why? Where? What?
Dirty tools, including boxes, will add more bacteria to the fish, and make them rot faster.

Dangerous Additives

Formalin
Antibiotics in fish farming
Borax
Insecticides



How? Why? Where? What?
This chemical is highly toxic and harmful to human health. Fish preserved with formalin is not fit for consumption.

Dangerous Additives

Formalin
Antibiotics in fish farming
Borax
Insecticides



How? Why? Where? What?
Unwise use of antibiotics can cause health problems in human consumers due to the development of antibiotic resistance.

Dangerous Additives

Formalin
Antibiotics in fish farming
Borax
Insecticides



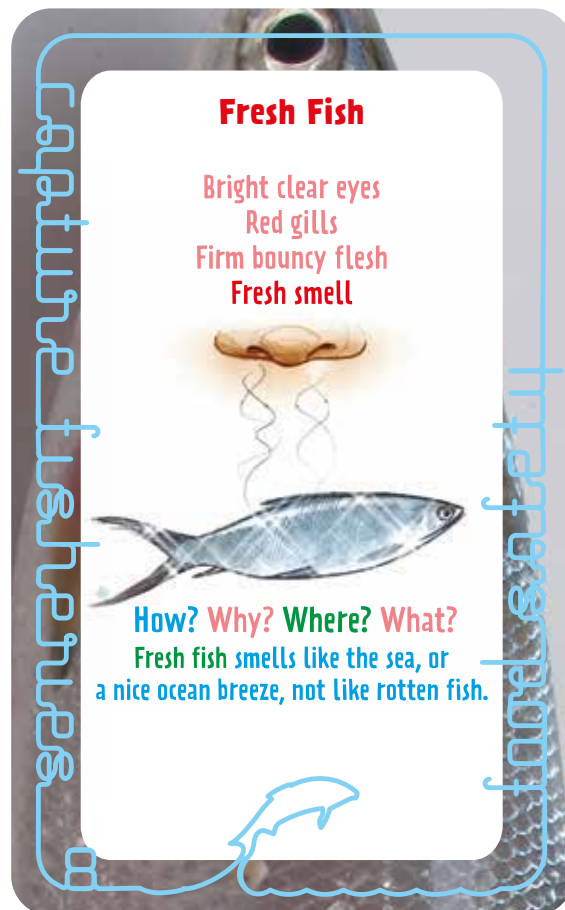
How? Why? Where? What?
Prohibited for use as a preservative in fish and fish products.

Dangerous Additives

Formalin
Antibiotics in fish farming
Borax
Insecticides




How? Why? Where? What?
Unauthorized, or inexperienced use of insecticides can cause serious health problems for consumers, such as cancer.



Principles of Good Handling

Cool
Fast
Clean
Gentle



How? Why? Where? What?
Once you catch the fish, cool it with clean, crushed ice to slow down spoiling by bacteria and enzymes. Let the melt water run off.

Principles of Good Handling

Cool
Fast
Clean
Cool



How? Why? Where? What?
To avoid bacteria and enzymes damaging the fish, transport fish quickly. If transporting great distances, use lots of ice to keep fish fresh.

Principles of Good Handling


Cool
Fast
Clean
Gentle



How? Why? Where? What?
Keep everything that touches the fish clean to prevent contamination.

Principles of Good Handling

Cool
Fast
Clean
Gentle



How? Why? Where? What?
Rough handling, resulting in split skin, bruising or burst guts, will make the fish spoil faster.

Good Handling during Landing

No animals
No waste
Drainage
Fresh water supply

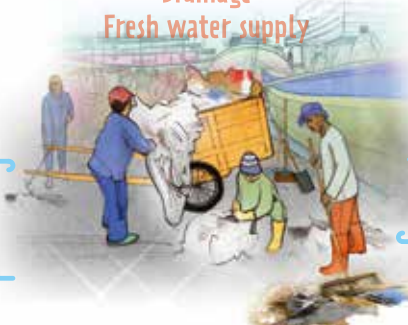


How? Why? Where? What?

Animals carry germs and other parasites, and should be kept away from landing sites to reduce contamination and prevent food safety risks.

Good Handling during Landing

No animals
No waste
Drainage
Fresh water supply



How? Why? Where? What?

A waste disposal system should be in place. Collect, reduce, re-use and recycle.

Good Handling during Landing

No animals
No waste
Drainage
Fresh water supply

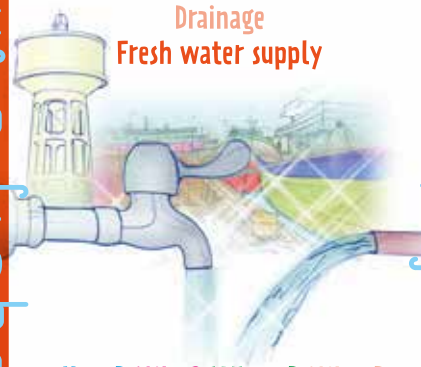


How? Why? Where? What?

Keep the drainage ditch clear and clean to avoid clogging, and for speedy discharge of waste water.

Good Handling during Landing

No animals
No waste
Drainage
Fresh water supply



How? Why? Where? What?

Fresh, clean water must be available for cleaning of landing site and equipment. Never use dirty port water! It can contaminate fish, posing a serious health threat to its consumer.

Traditional Processing

Drying
Salting
Hot smoking
Fish products



How? Why? Where? What?
Cheap traditional method of preservation using the wind and sun. Reducing the water content inhibits the growth of microorganisms.

Traditional Processing

Drying
Salting
Hot smoking
Fish products



How? Why? Where? What?
Salt can prevent, or drastically reduces, bacterial growth. Salted fish provides preserved animal protein even in the absence of refrigeration.

Traditional Processing

Drying
Salting
Hot smoking
Fish products



How? Why? Where? What?
Prevents fish from spoiling. Heat and smoke reduce the moisture content which slows down bacteria growth. Smoking changes the colour and infuses a new flavour to fish.

Traditional Processing

Drying
Salting
Hot smoking
Fish products



How? Why? Where? What?
Fish can be processed into many different products such as fish balls, crackers and nuggets.

Fish Products Labelling

Brand name
Ingredients
Date
Net weight



How? Why? Where? What?
A brand name is used to identify a manufacturer's product distinctively from others of a similar type.

Fish Products Labelling

Brand name
Ingredients
Date
Net weight



How? Why? Where? What?
To help consumers make healthy and safe food choices, common names of ingredients and other additives must be listed on a food label.

Fish Products Labelling

Brand name
ingredients
Date
Net weight



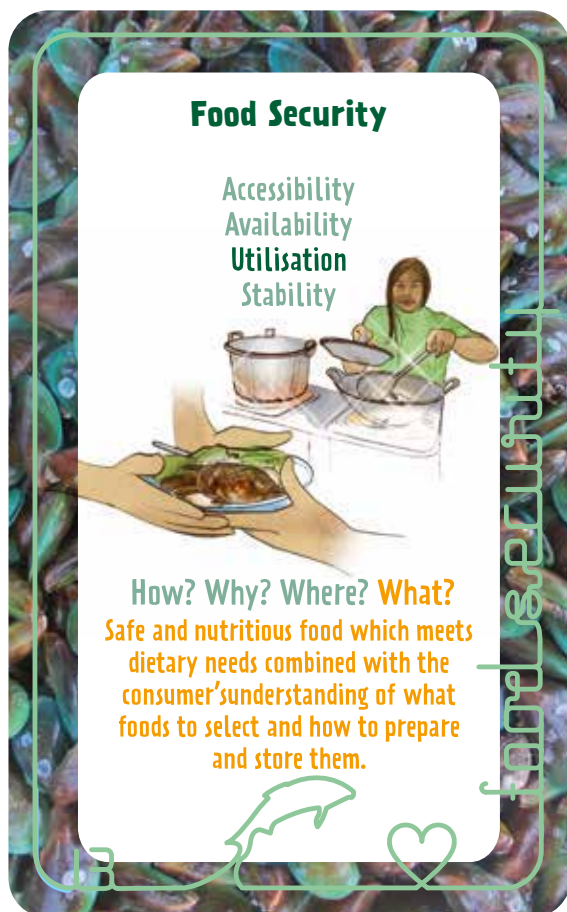
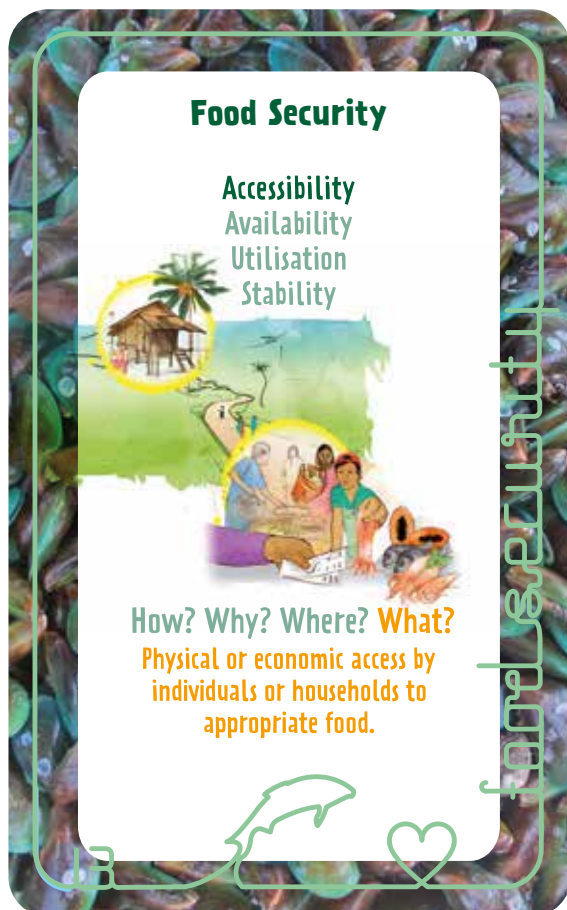
How? Why? Where? What?
Expiration and best before dates indicate to consumers how long an unopened food product remains safe to eat.

Fish Products Labelling

Brand name
ingredients
Date
Net weight



How? Why? Where? What?
The amount of food included in the package, after packaging, or water or oil, is removed.



Eating Fish is Healthy

Minerals and vitamins
Fatty acids
Animal protein
Fish is tasty



How? Why? Where? What?
Fish contain vitamins and minerals which are essential for healthy growth, strong immune systems, and brain development.

14

Eating Fish is Healthy

Minerals and vitamins
Fatty acids
Animal protein
Fish is tasty




How? Why? Where? What?
Fish has high levels of unsaturated omega-3 fatty acids that are important in the prevention of heart disease but cannot be made by the human body itself.

14

Eating Fish is Healthy

Minerals and vitamins
Fatty acids
Animal protein
Fish is tasty



How? Why? Where? What?
Animal protein is important in the prevention of malnutrition. Where diets lack animal protein, levels of stunting are high.

14

Eating Fish is Healthy

Minerals and vitamins
Fatty acids
Animal protein
Fish is tasty




How? Why? Where? What?
Fish is delicious. Enjoying good meals together is important for family time.

14

Fish Consumption in Indonesia

Amount
High-Low consumption
Taboos
GEMARIKAN



How? Why? Where? What?
Fish consumption in Indonesia in 2016; 43.94 kg/capita which equals 120 grams/person/day

Fish Consumption in Indonesia

Amount
High-Low consumption
Taboos
GEMARIKAN



How? Why? Where? What?
The highest fish consumption is in Maluku, Sulawesi and Riau. The lowest in East Nusa Tenggara, West Java, Central Java and the city of Yogyakarta.

Fish Consumption in Indonesia

Amount
High-Low consumption
Taboos
GEMARIKAN



How? Why? Where? What?
Pregnant women avoid eating fish because they believe that fish can cause their babies to suffer health problem and get poor skin condition.

Fish Consumption in Indonesia

Amount
High-Low consumption
Taboos
GEMARIKAN



How? Why? Where? What?
A campaign by the Ministry of Marine Affairs and Fisheries to promote the consumption of fish all over Indonesia.

Preventing Malnutrition

Enough food
Exclusive breastfeeding
Proper sanitation and hygiene
Quality of food



How? Why? Where? What?
Children have small stomach capacity so should eat several healthy meals or snacks during the day. Fish provides essential micronutrients and animal protein to children's diets.

Preventing Malnutrition

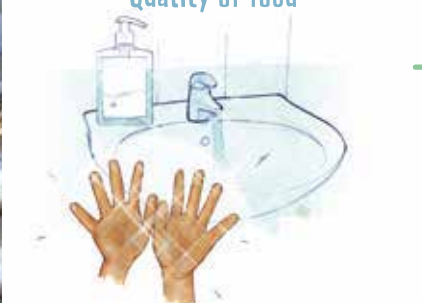
Enough food
Exclusive breastfeeding
Proper sanitation and hygiene
Quality of food



How? Why? Where? What?
Starting immediately after birth, breastfeeding for the first 6 months of child's life is one of the most important steps to ensure good health, optimal growth, and the prevention of malnutrition. Fish provides essential minerals, vitamins and fatty acids for the mother.

Preventing Malnutrition

Enough food
Exclusive breastfeeding
Proper sanitation and hygiene
Quality of food



How? Why? Where? What?
Hygiene, hand washing with soap, and proper sanitation are essential in the prevention of disease and malnutrition.

Preventing Malnutrition

Enough food
Exclusive breastfeeding
Proper sanitation and hygiene
Quality of food



How? Why? Where? What?
Each meal should contain a good variety of ingredients, including fruits, vegetables and foods of animal origin such as fish and fish products, eggs, chicken and other meat.

