A Small-scale Hatchery for Common Carp

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A Small-scale Hatchery for Common Carp

by

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1989

Illustrated by: Trya Yudhantara and
Ovidio F. Espiritu, Jr.

The techniques described in this book were developed for culture of common carp in the Saguling and Cirata Reservoir Regions in West Java, Indonesia. They can easily be adapted to other locations.

Produced by

The Aquaculture and Fisheries Development Project
for the Resettlement of Communities
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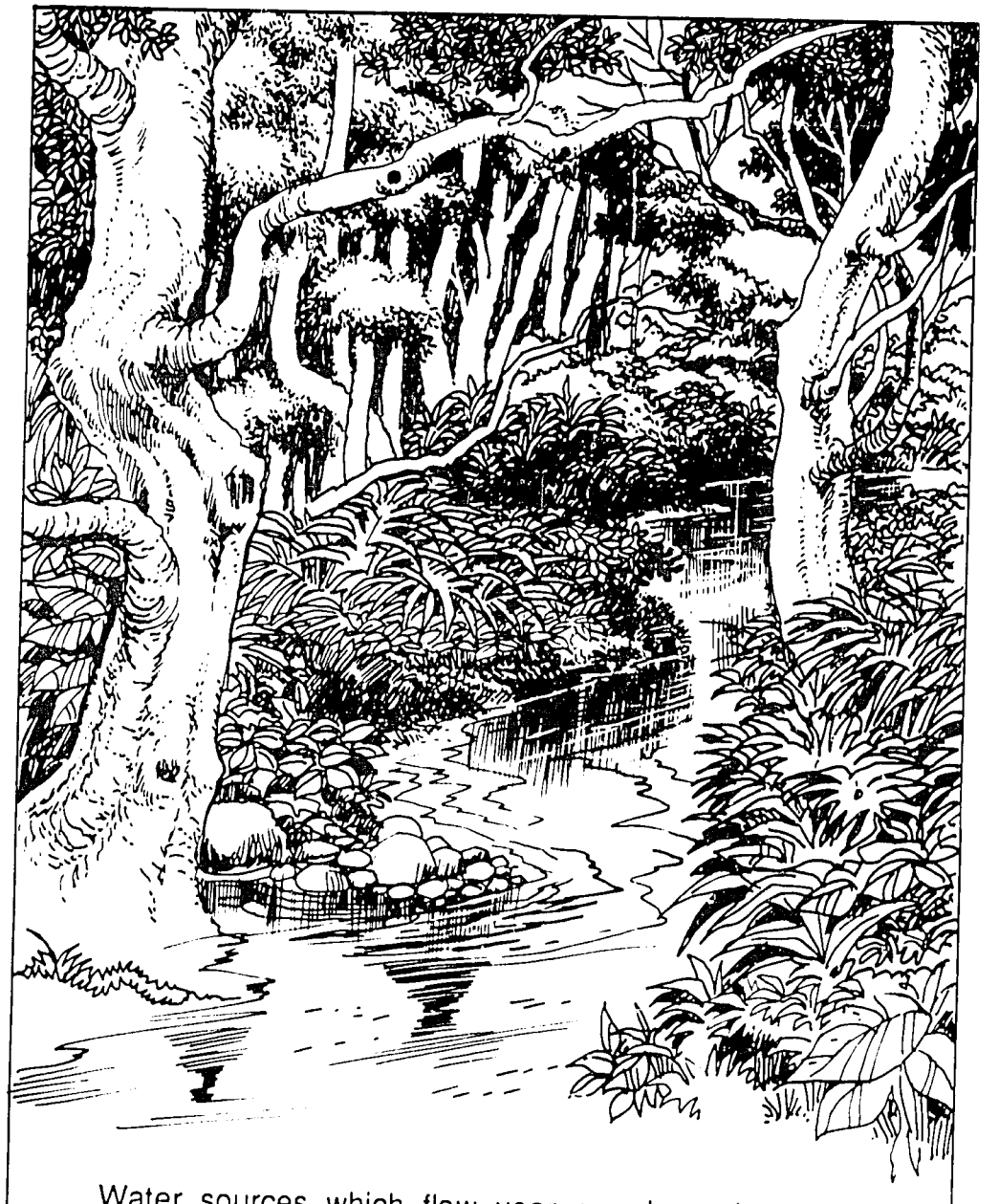
A cooperation between the Institute of Ecology, Indonesian State Electric Company (IOE UNPAD-PLN), Bandung, Indonesia; and the International Center for Living Aquatic Resources Management (ICLARM), Manila Philippines, with funding from the International Bank for Reconstruction and Development.

This book is also available in Bahasa Indonesia.

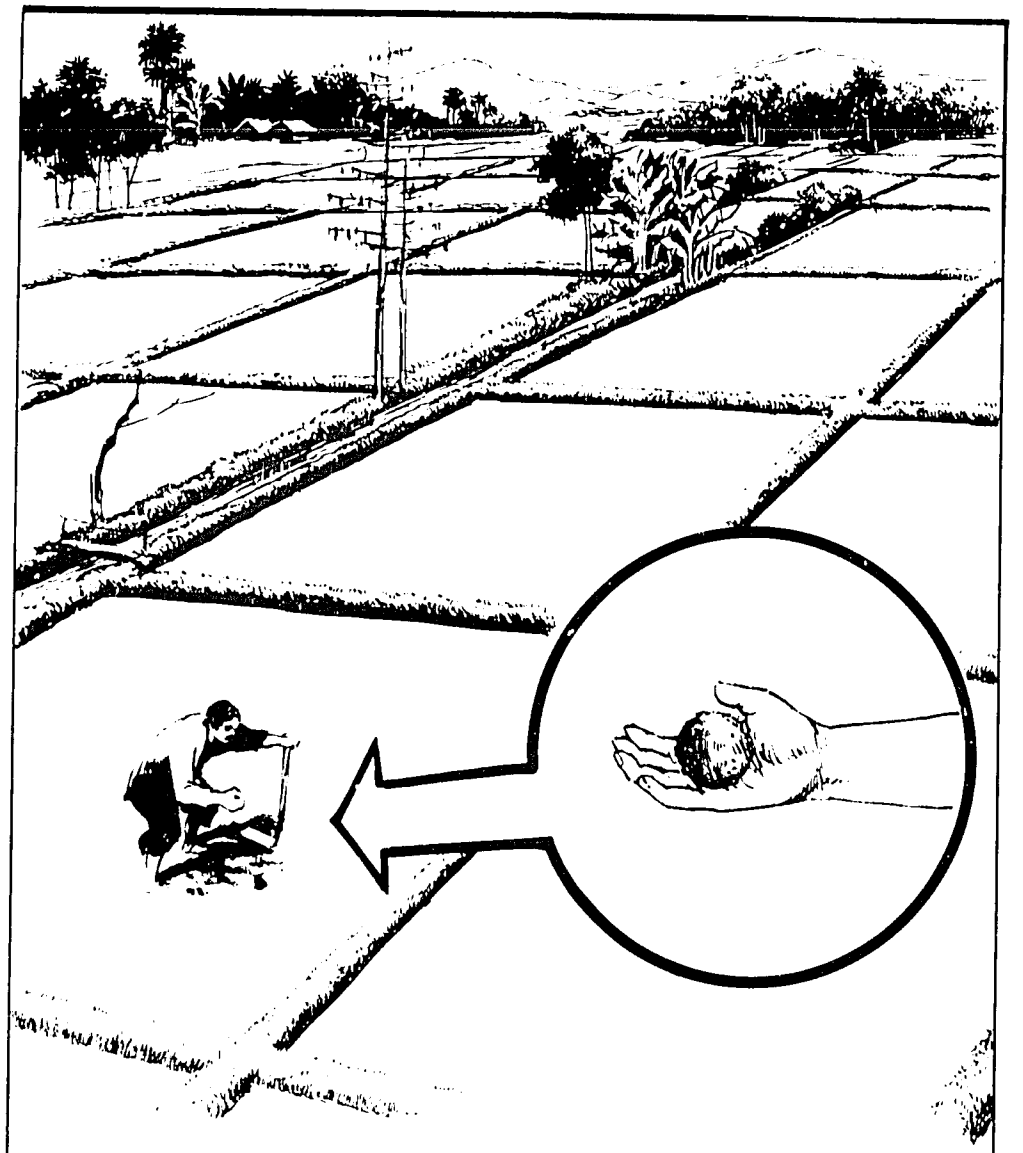
The hatchery techniques described here were developed in Bandung, Indonesia. Indonesia is one of the world's largest aquaculture producers of common carp. In 1984 alone, Indonesia produced 80,930 t of common carp. The techniques can easily be adapted for use in other countries where common carp are grown.

Common carp is an excellent dish with rice, held in high esteem in West Java and other places in Indonesia.

At traditional and social events, religious or ritual meals, common carp is a special food served to guests.

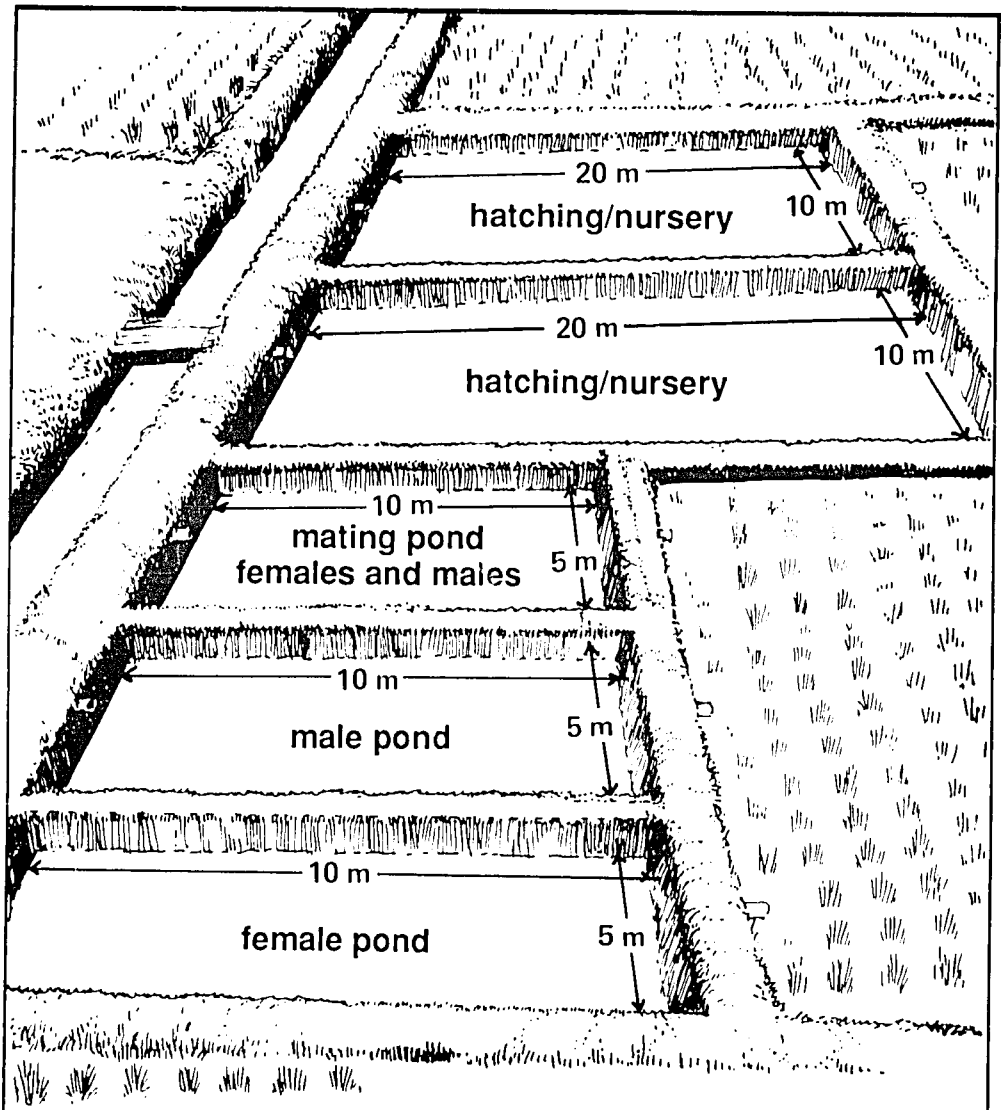


Water sources which flow year round are important for constructing common carp hatcheries.



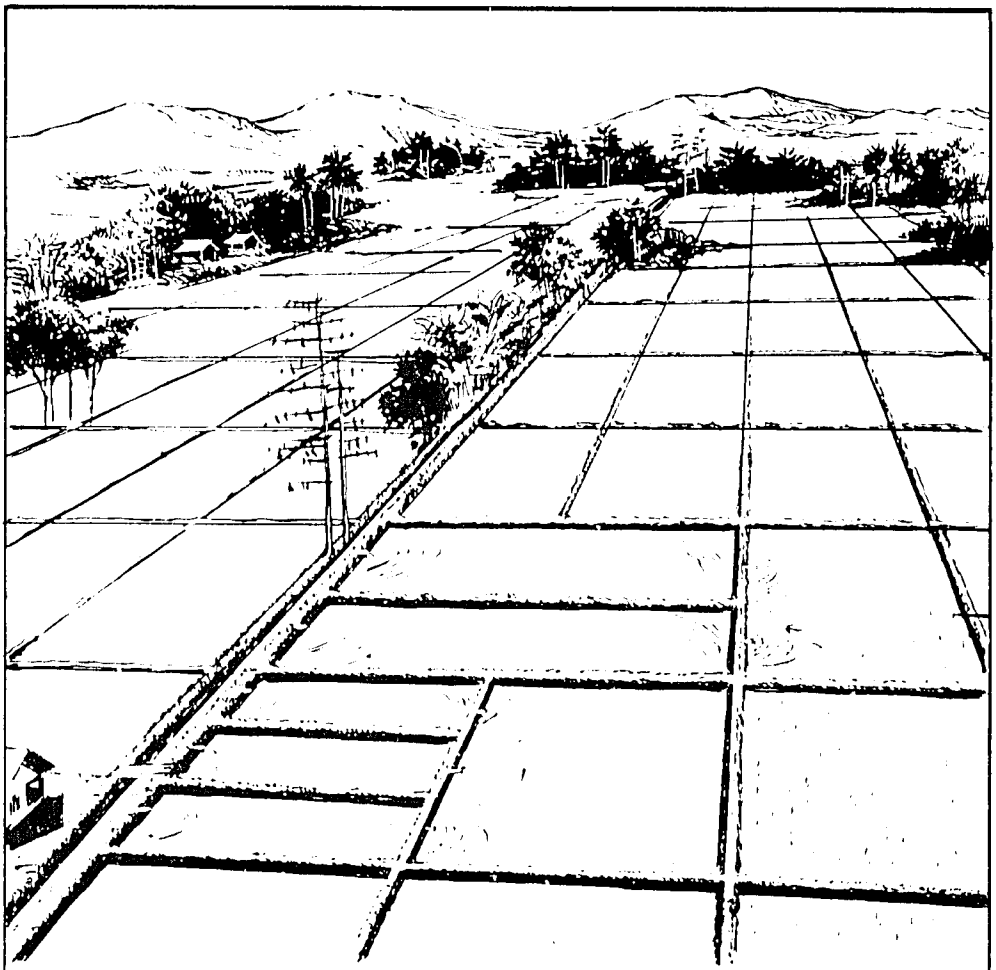
Before constructing a pond, first examine the location and soil condition of the intended site. The land is suitable if the soil holds its shape when moistened and formed into a ball.

Dig a standard size pond using the cooperative village-help system.

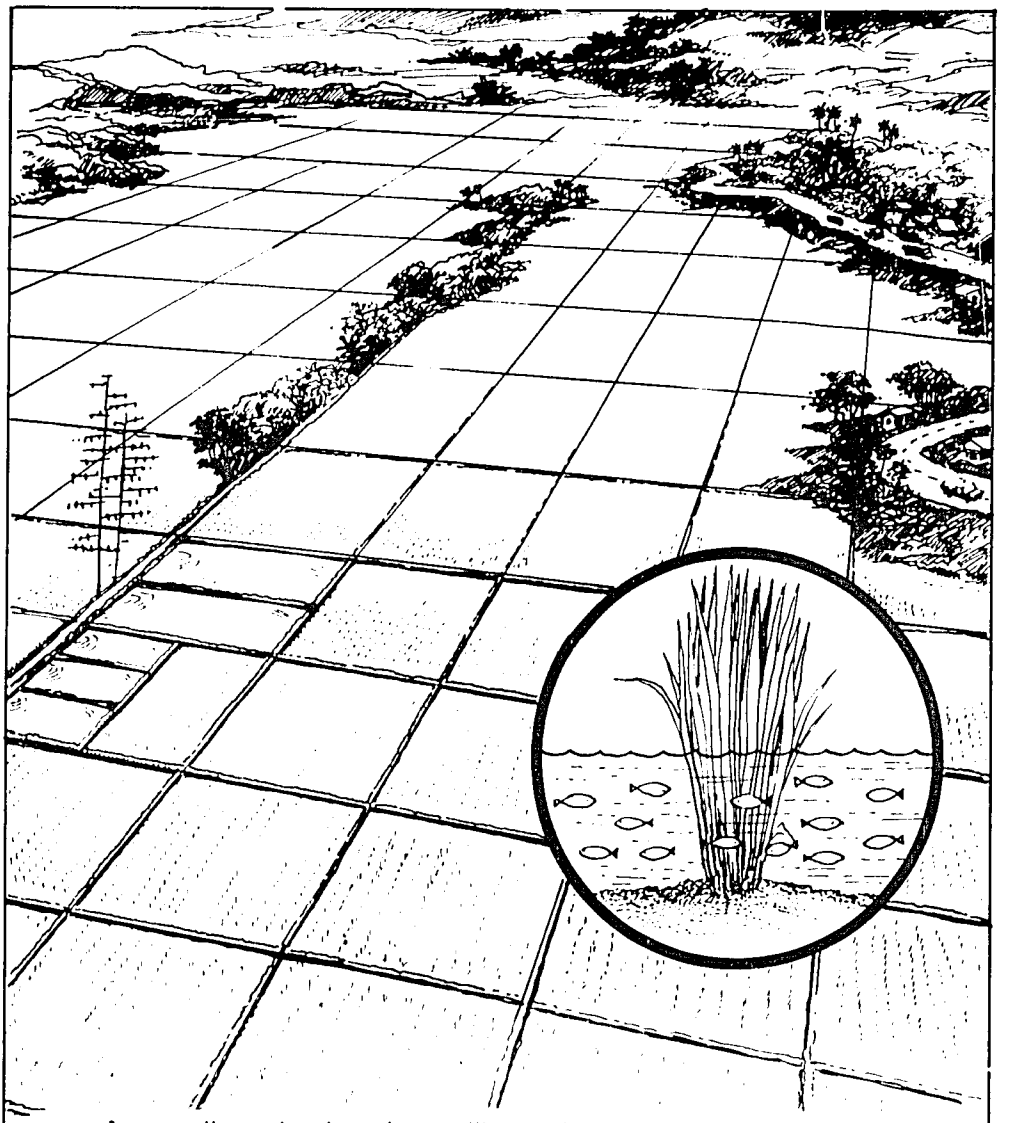


Make:

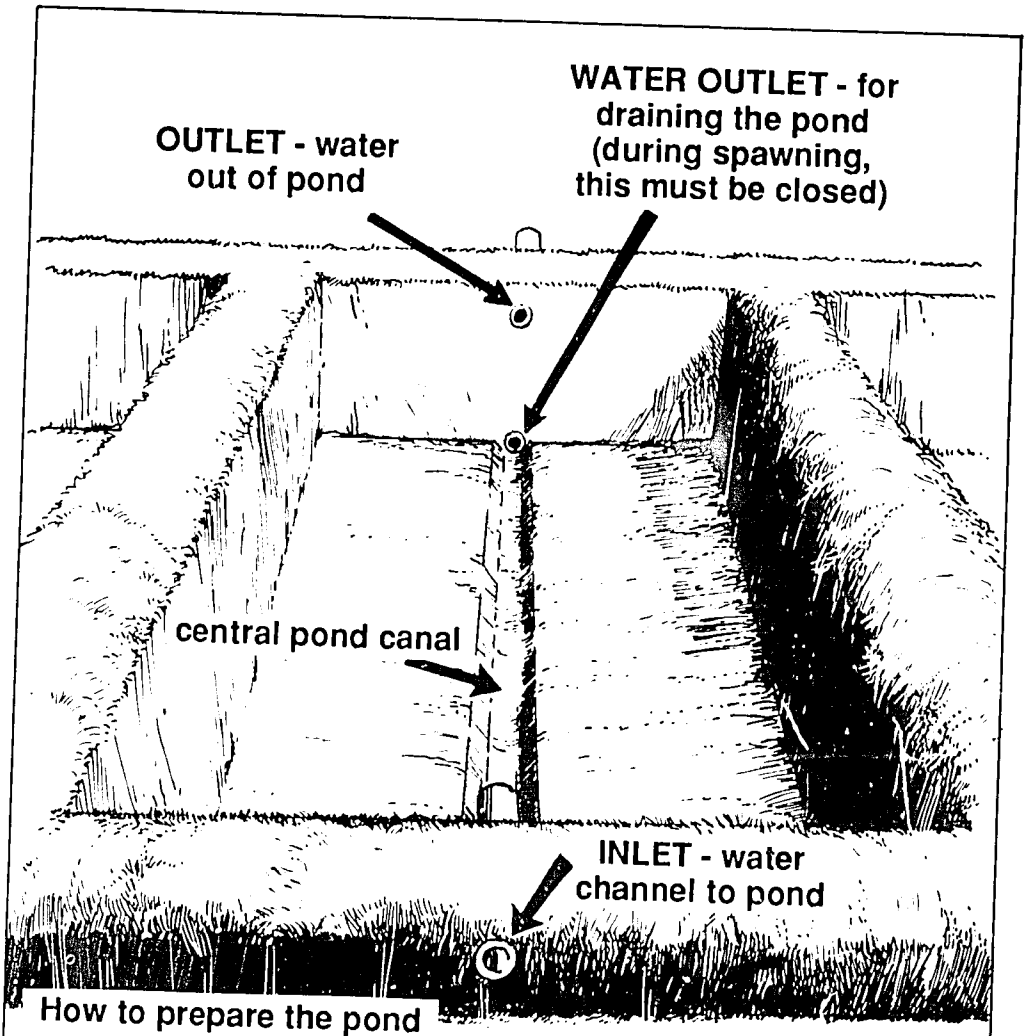
- 3 ponds, each 40-50 m^2 in size, 50-cm deep.
- 2 ponds, each 200-300 m^2 in size, 50-cm deep.



The total size of the hatchery ponds is not more than 1,000 m^2. In ricefields, the hatchery can be designed and shaped to fit so that common carp can be stocked together with the rice plants (thus, profits from the rice harvest will be augmented by profits from the harvest of common carp). In ricefields using a concurrent rice-fish system, hatchery ponds can be used for producing fish seed which can be grown in ricefields, or sold separately.

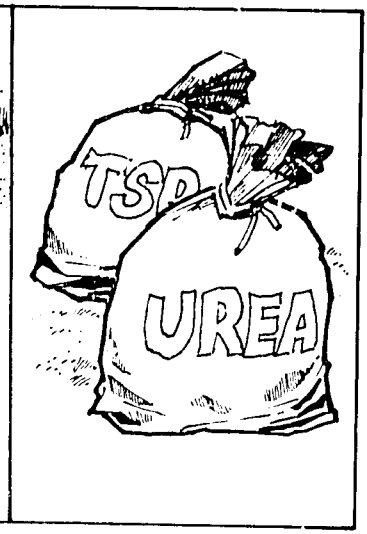


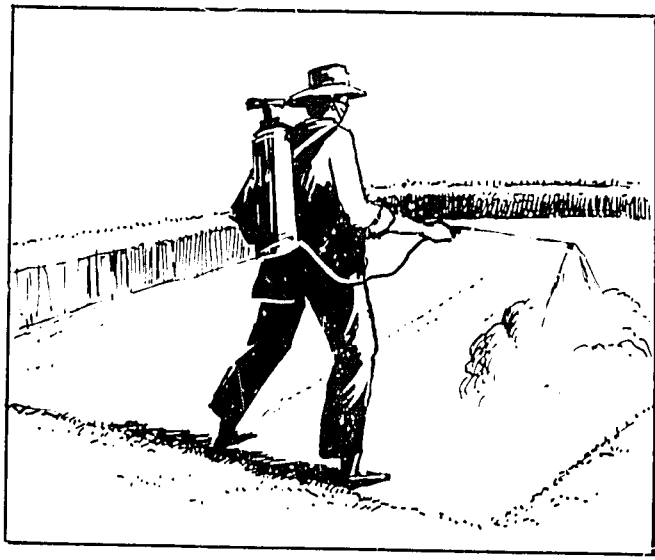
A small-scale hatchery like this can yield fish seed for stocking many hectares of ricefields. Common carp and rice can be cultured together. This system can be used to produce advanced common carp fingerlings for sale to other growers or, if the common carp are restocked in the ricefields, for direct sale to residents in your area.



How to prepare the pond

- The spawning pond must always be clean.
- To prepare the spawning pond, allow it to dry in the sun until the earth in the pond bottom is a little cracked.
- Fill the pond with water to knee level.
- Put the egg collectors (see p. 21-23) about 5-10 cm below the water surface.
- On the pond bottom, spread clear plastic to catch eggs which sink.





Three days before putting egg collectors into the ponds, scatter 2 kg triple super phosphate (TSP) and 4 kg Urea, and spray 100 ml Sumithion EC 50 in the hatching ponds. This increases the ponds' fertility and kills pests.

Insecticide kills fish pests and diseases. Always follow directions and safety precautions when using insecticide.

How to apply fertilizer and insecticide in a 200 m^2 pond

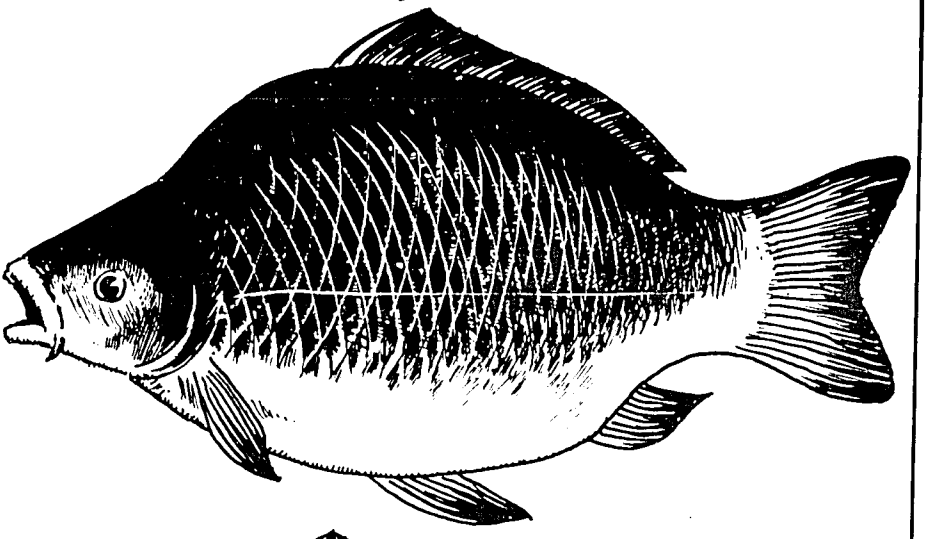
time	fertilizer	insecticide
3 days before stocking	2 kg TSP 4 kg Urea	100 ml
1st stocking day	2 kg TSP 4 kg Urea	100 ml
5th day	2 kg TSP 4 kg Urea	
10th day	2 kg TSP 4 kg Urea	
15th day	2 kg TSP 4 kg Urea	
20th day	2 kg TSP 4 kg Urea	
25th day	2 kg TSP 4 kg Urea	
30th day	harvest fry (common carp seed)	

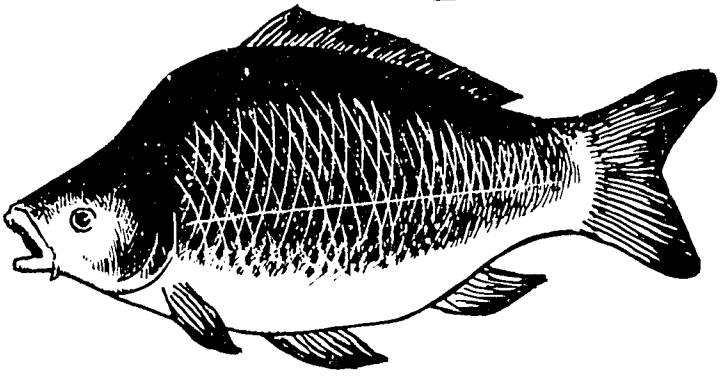
Perform this in an orderly manner and continue along

Insect predators in the pond eat small fish fry.

Choose good quality broodstock for mating/spawning. Put the males and the females in separate ponds.

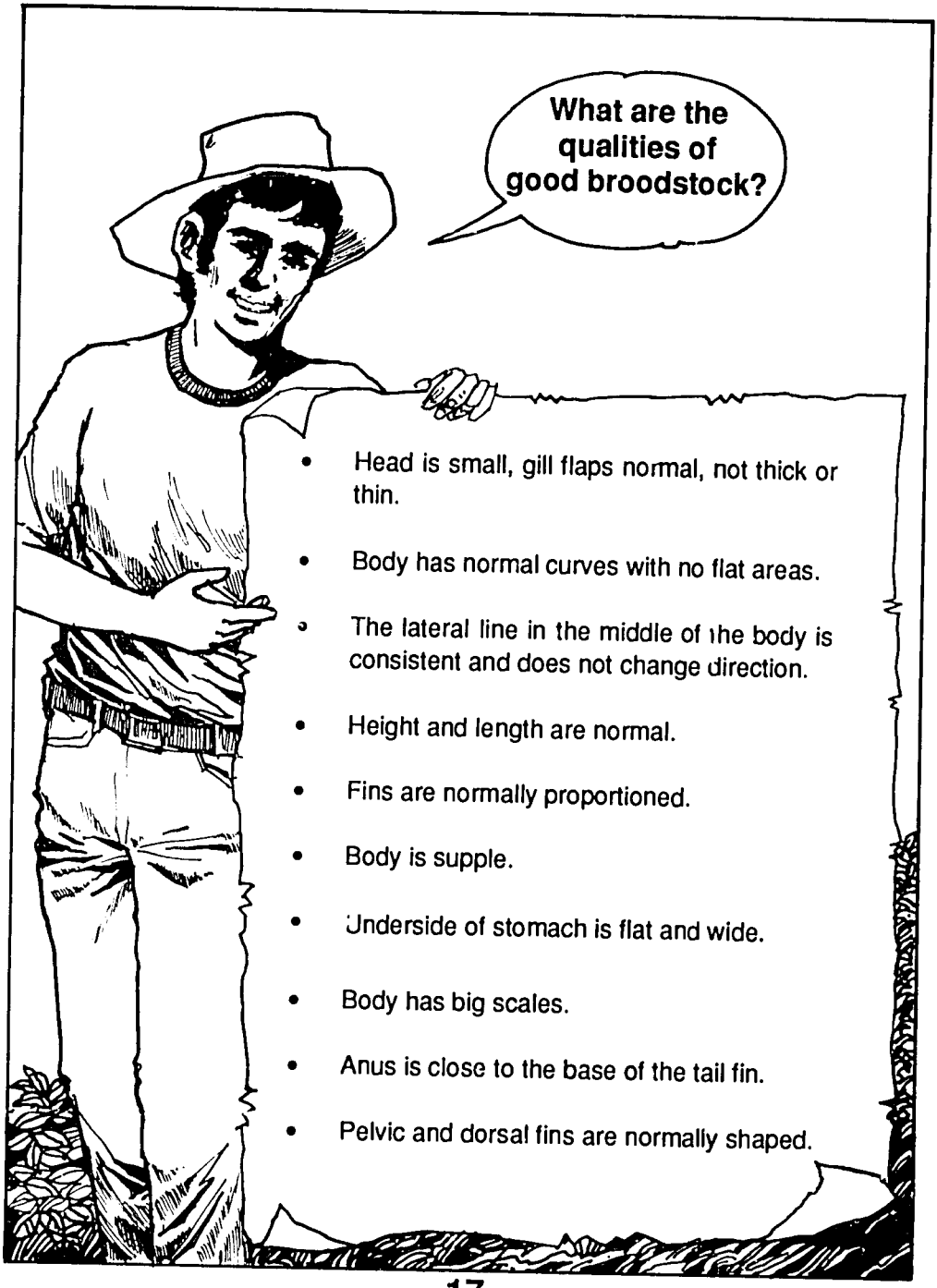
females which are ready to mate are fat





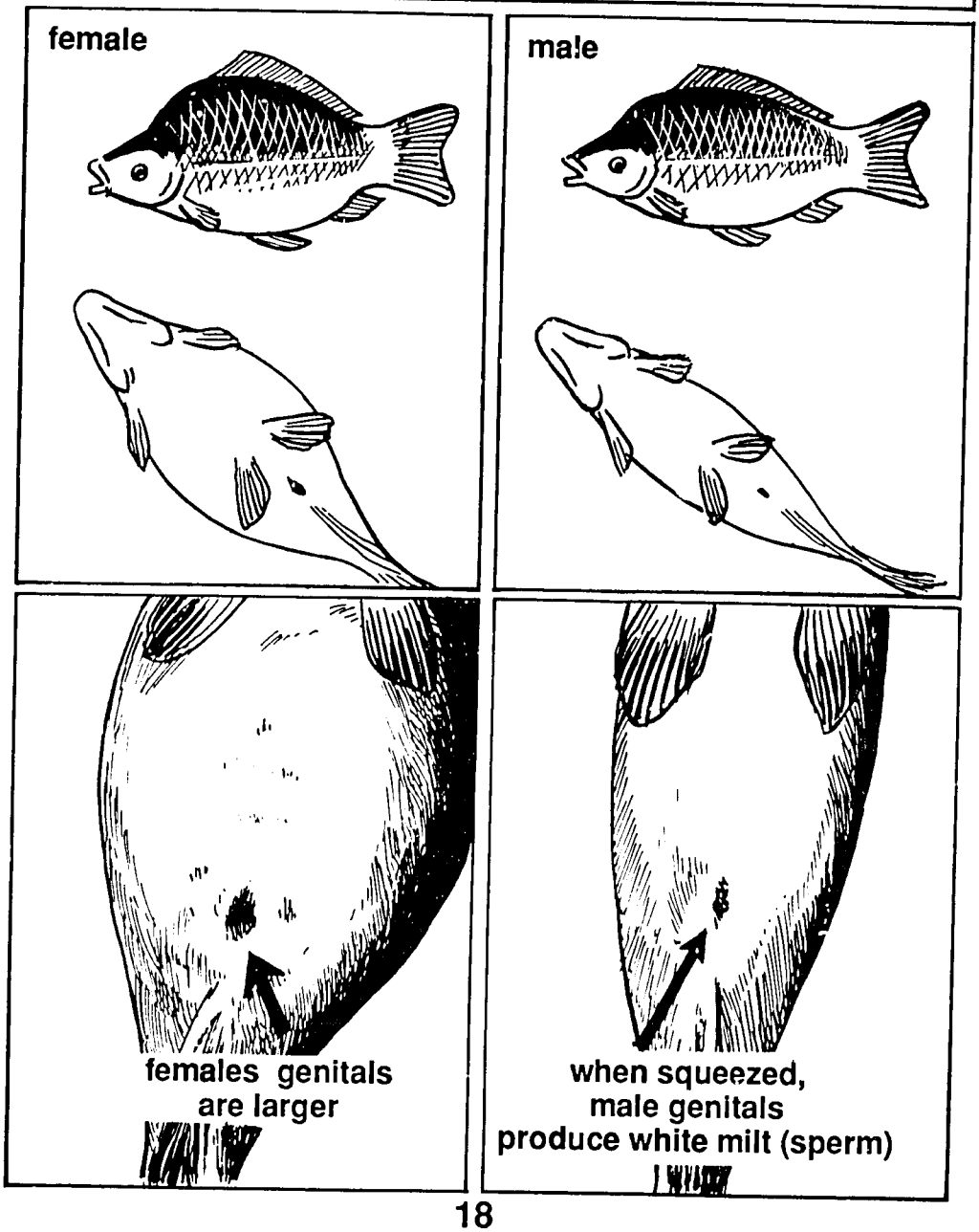
males are slender

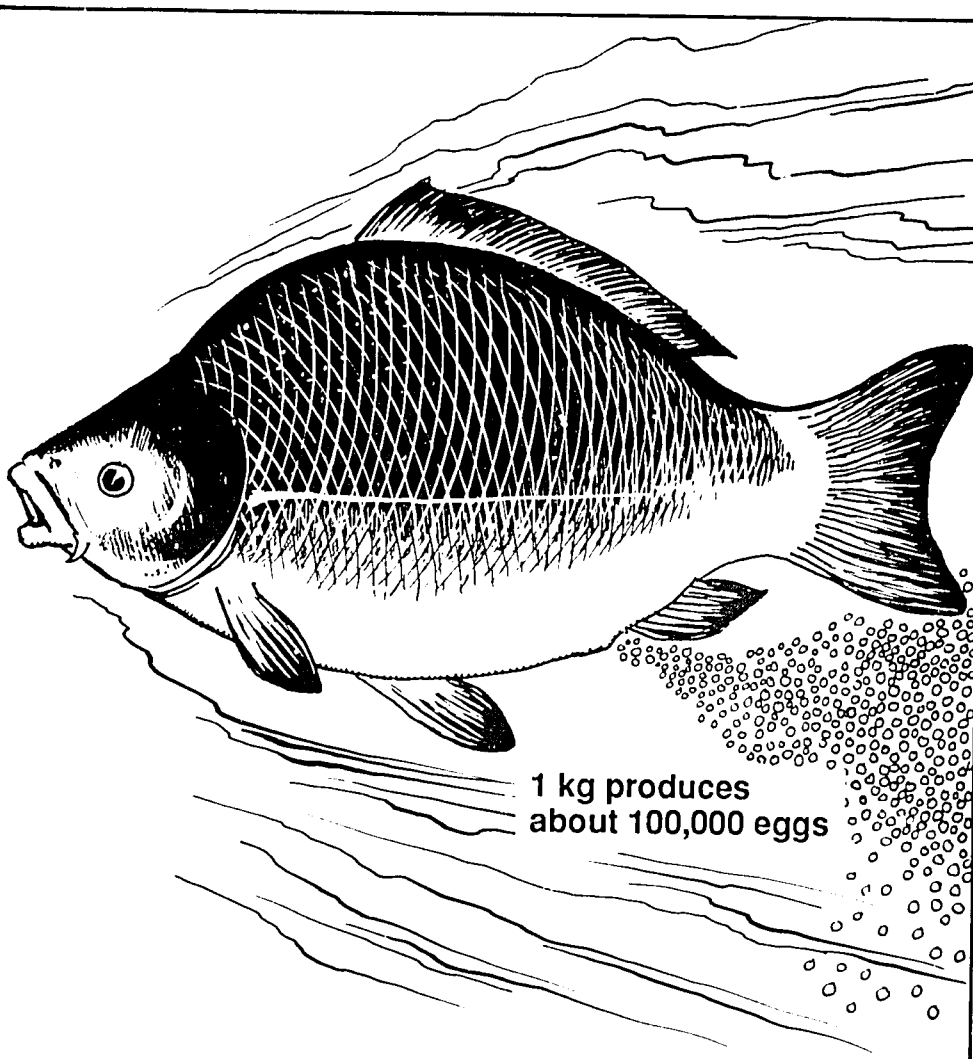
There are many strains and varieties of common carp: some covered in scales, some with a few large scales ('mirror' carp). The fish shown here are typical Indonesian scaly varieties.



- Head is small, gill flaps normal, not thick or thin.
- Body has normal curves with no flat areas.
- The lateral line in the middle of the body is consistent and does not change direction.
- Height and length are normal.
- Fins are normally proportioned.
- Body is supple.
- Underside of stomach is flat and wide.
- Body has big scales.
- Anus is close to the base of the tail fin.
- Pelvic and dorsal fins are normally shaped.

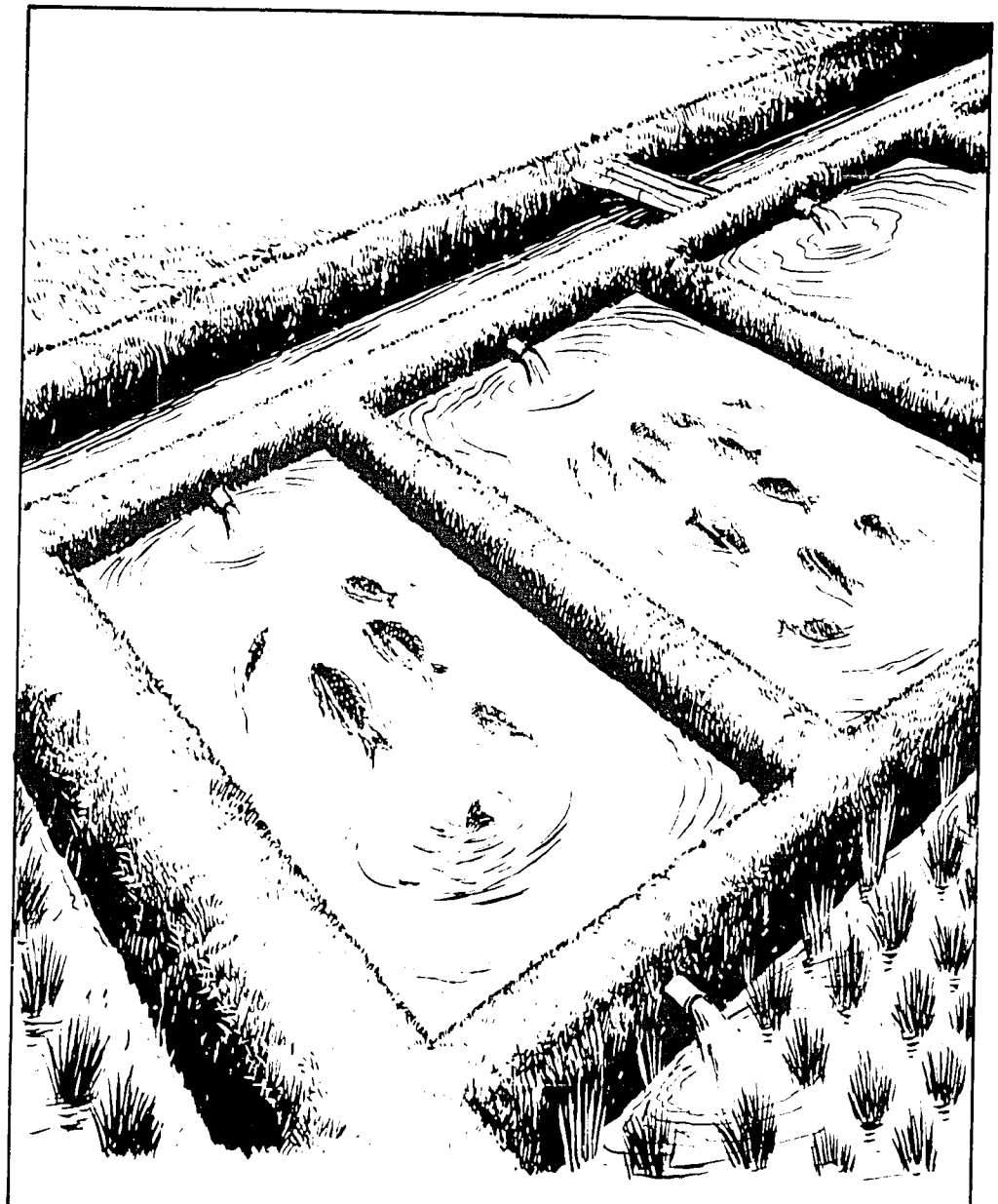
How to distinguish the female and male broodstock



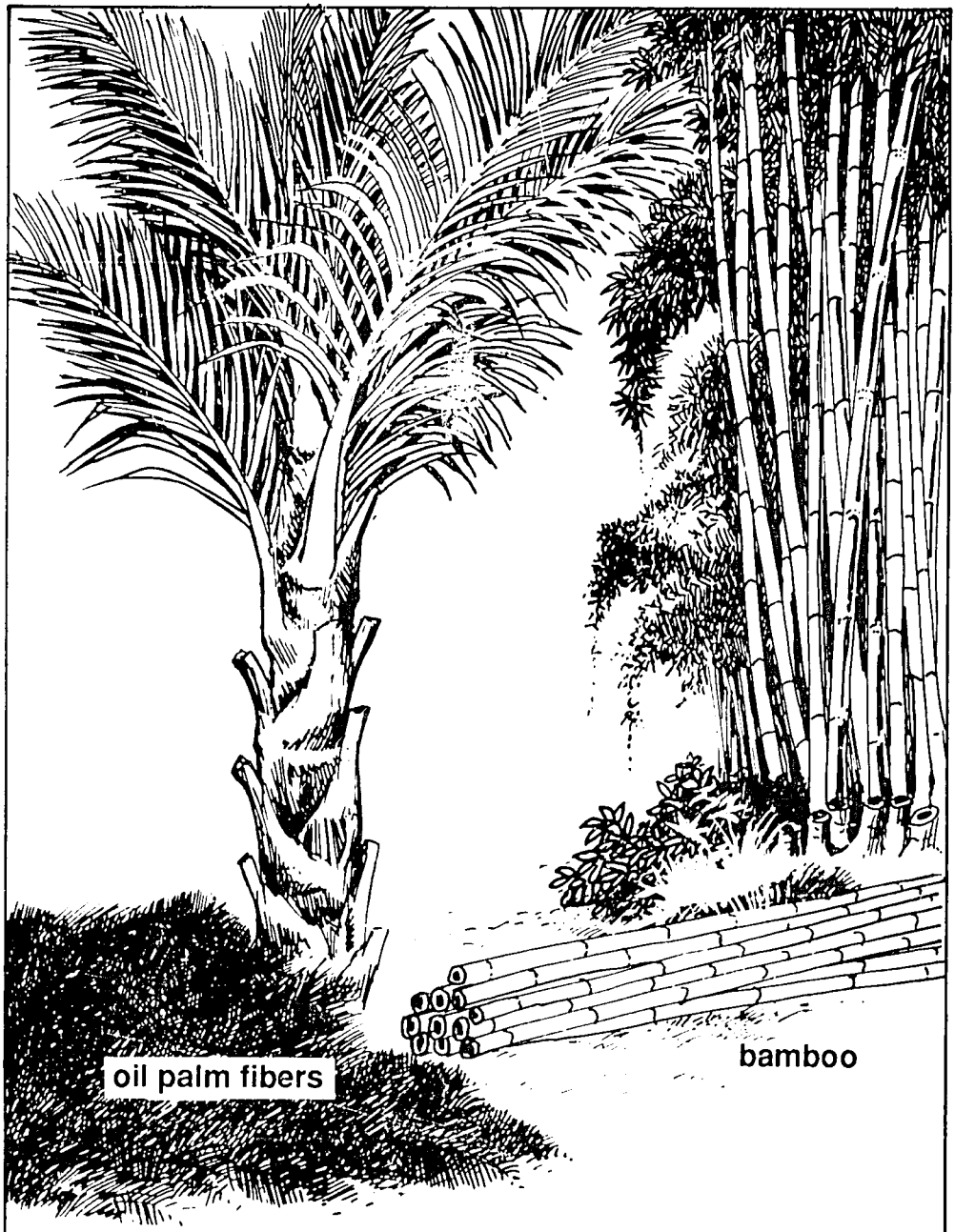


How to choose common carp

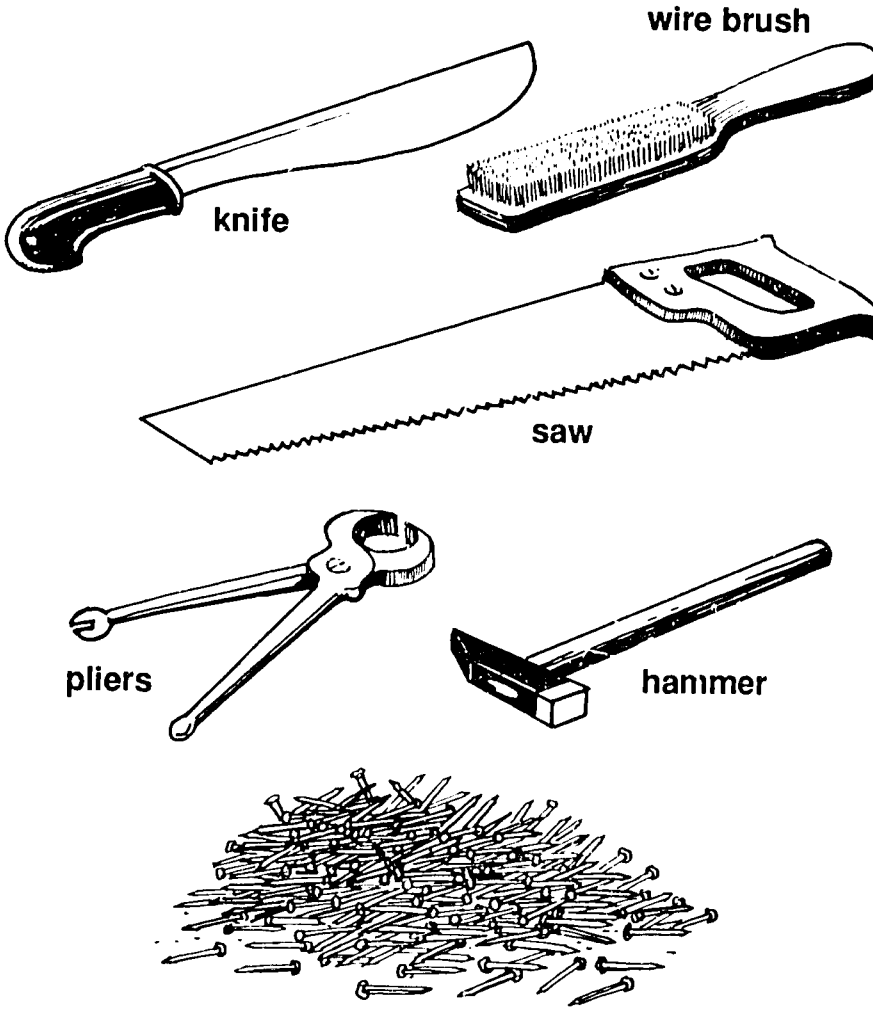
- no mixed colors
- no parasites on the body
- not too fat or too thin
- normal body shape, fins and scale pattern



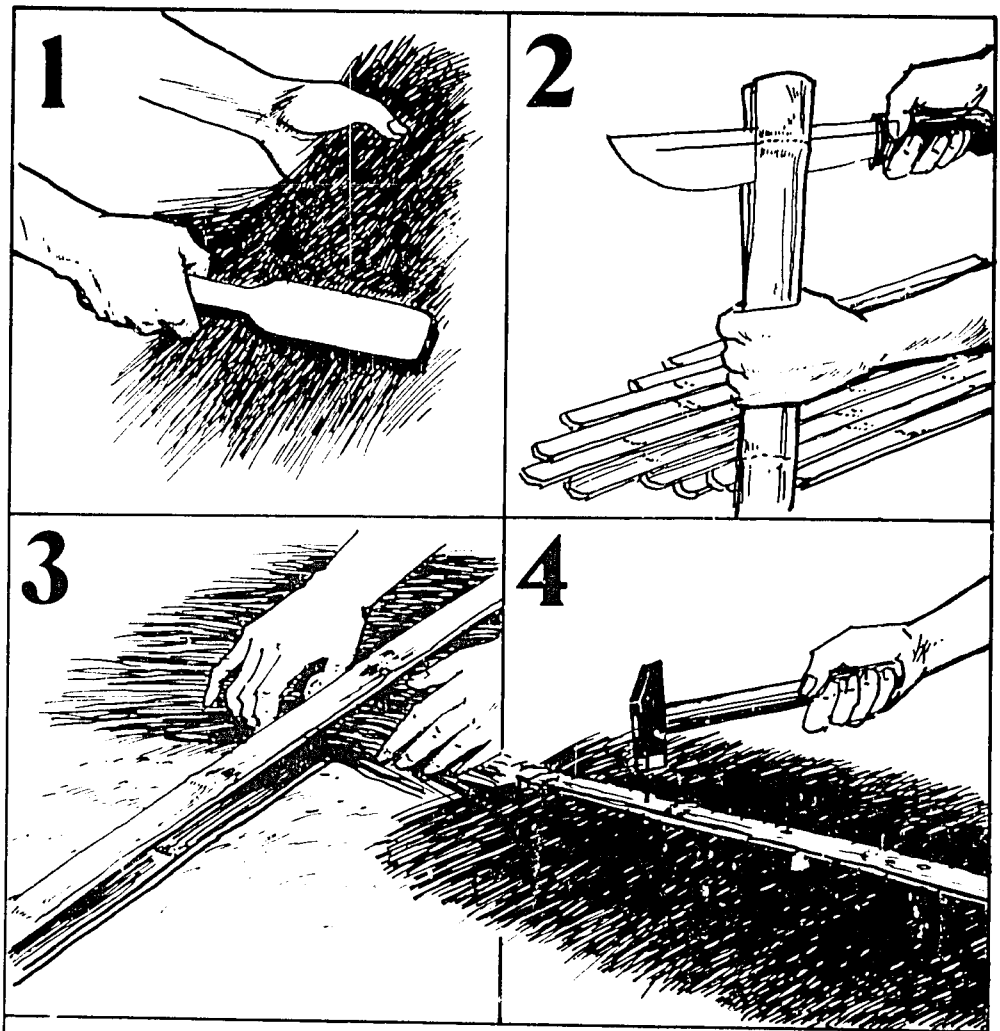
Keep female and male broodstock in separate ponds.



Prepare egg collectors from oil palm fibers and bamboo.

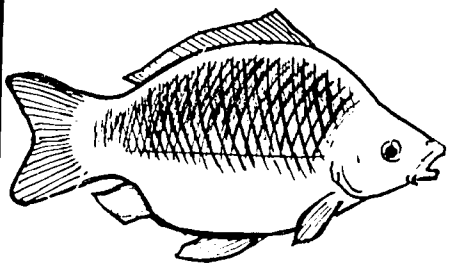


These tools are needed to make egg collectors.



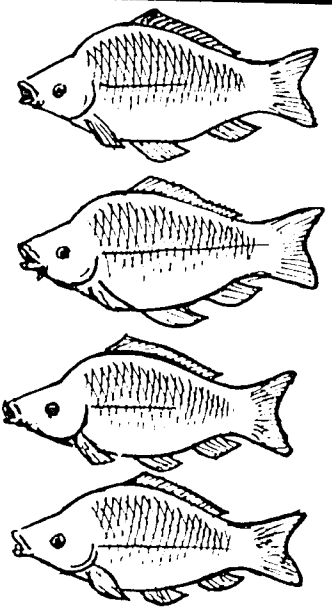
How to make egg collectors

1. With a wire brush, comb the oil palm fibers.
2. Split bamboo in half lengthwise and smoothen rough edges.
3. Arrange the fibers between two bamboo pieces.
4. Pinch and nail them together.



1 kg

female

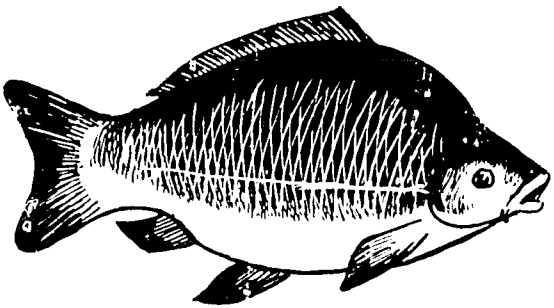


1 kg

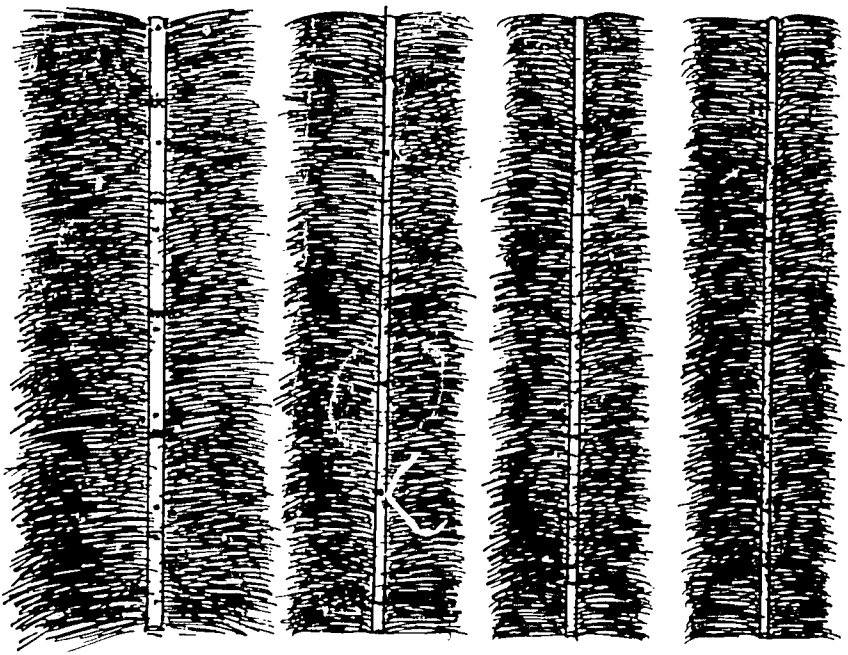
male

1 : 4

For the spawning pond, choose broodstock from the male and the female ponds. For every 1-kg female in the mating pond, put 2-4 males with a corresponding total weight of 1 kg.



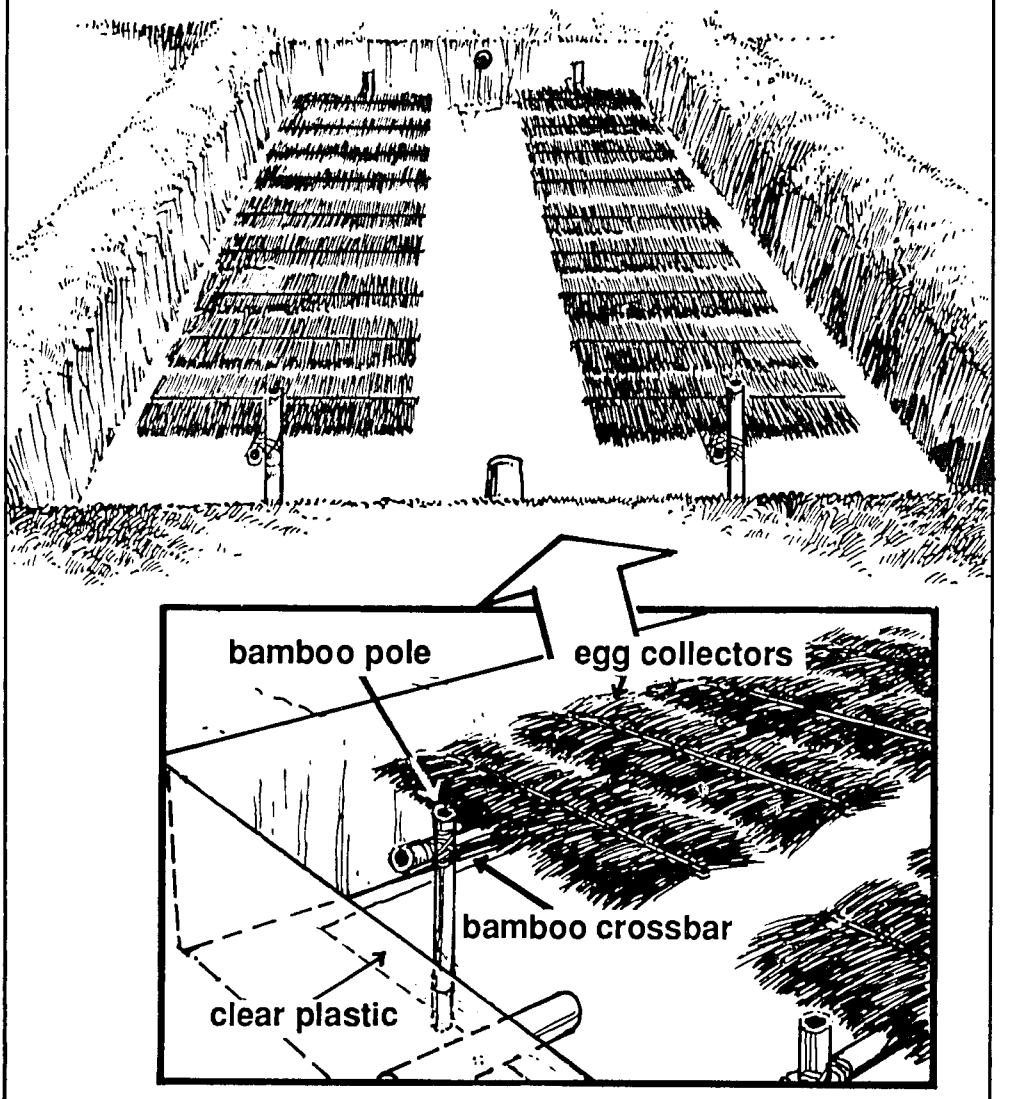
1 kg

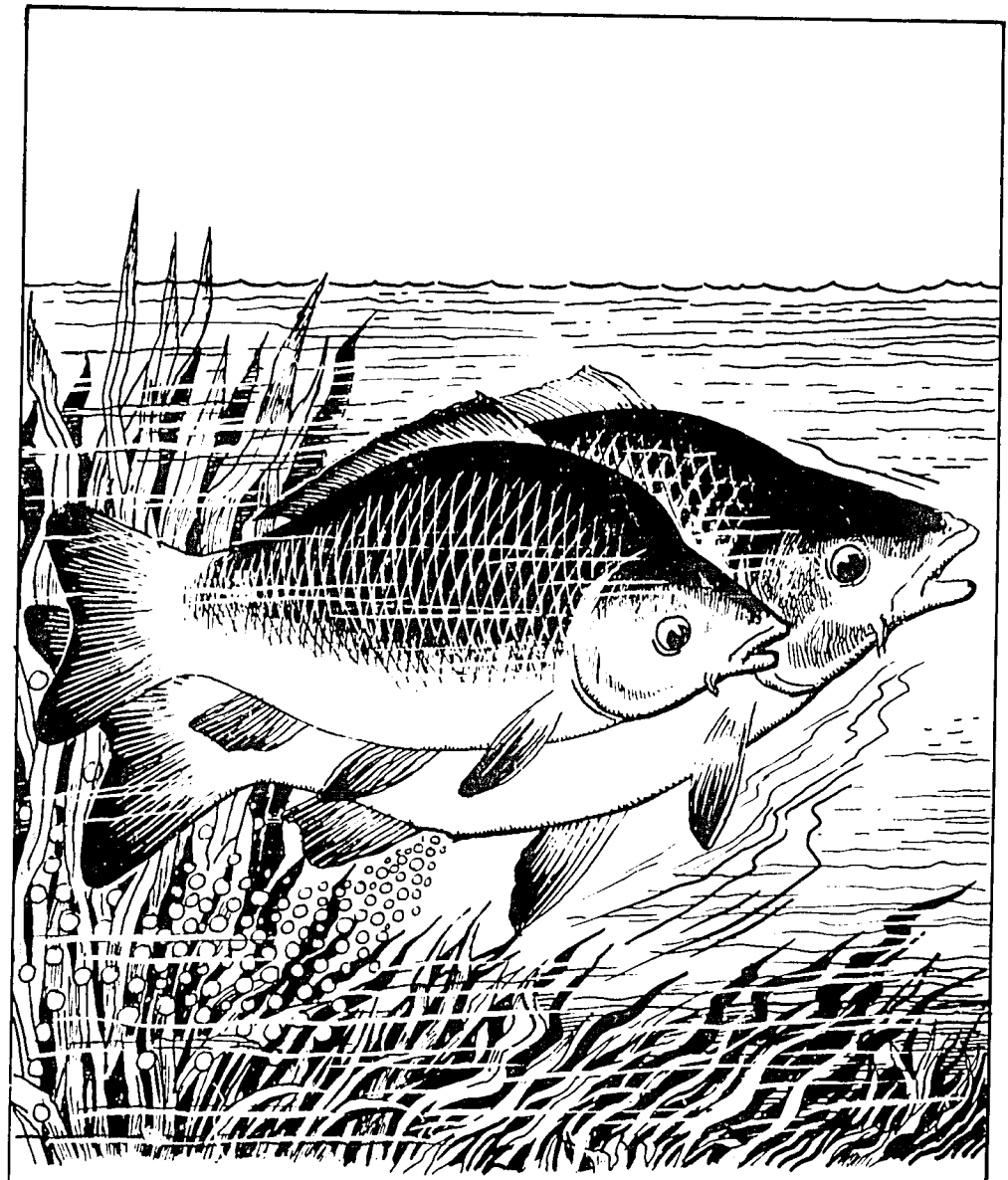


Each 1-kg broodstock female needs four egg collectors for its eggs.

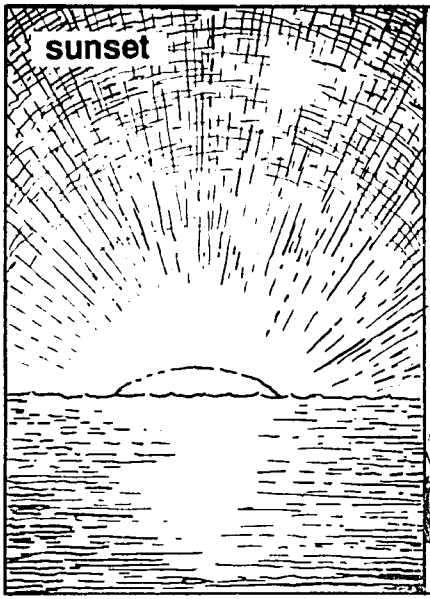
How to stock the spawning pond

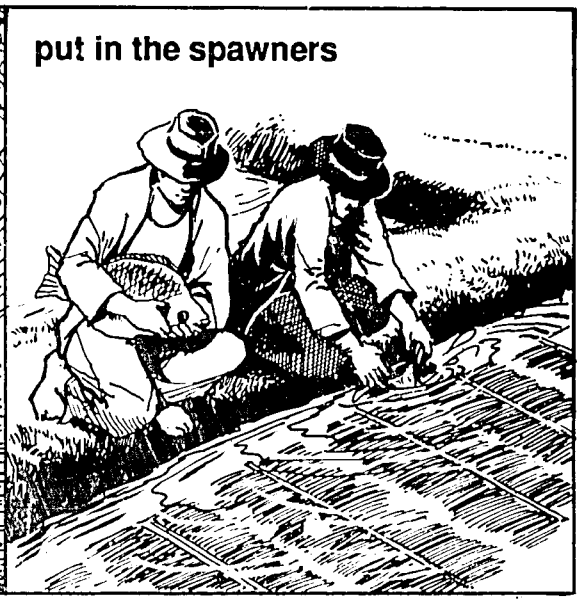
1. Make bamboo poles for the pond.
2. Make a bamboo crossbar for the bamboo poles, about 2 cm below the water surface.
3. Place the egg collectors on the bamboo crossbar.
4. Put the broodstock fish into the spawning pond.

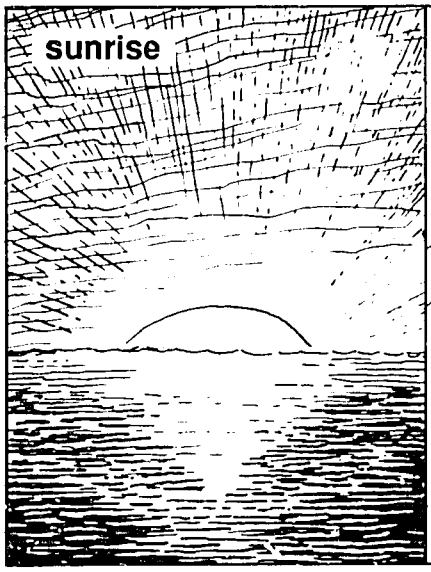


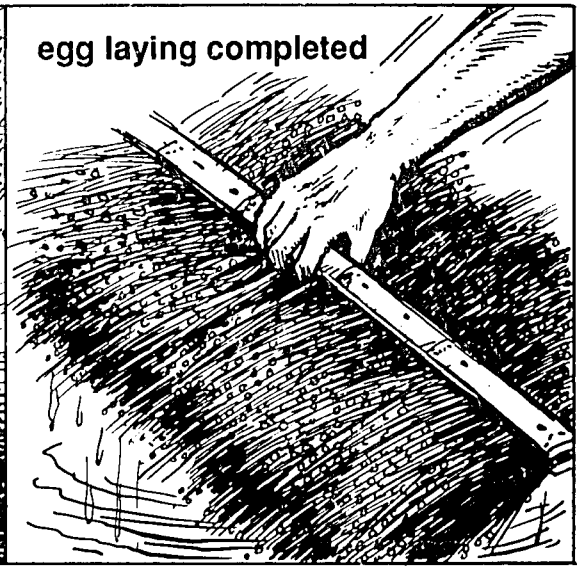


The male and female during spawning (egg laying) in a natural lake.

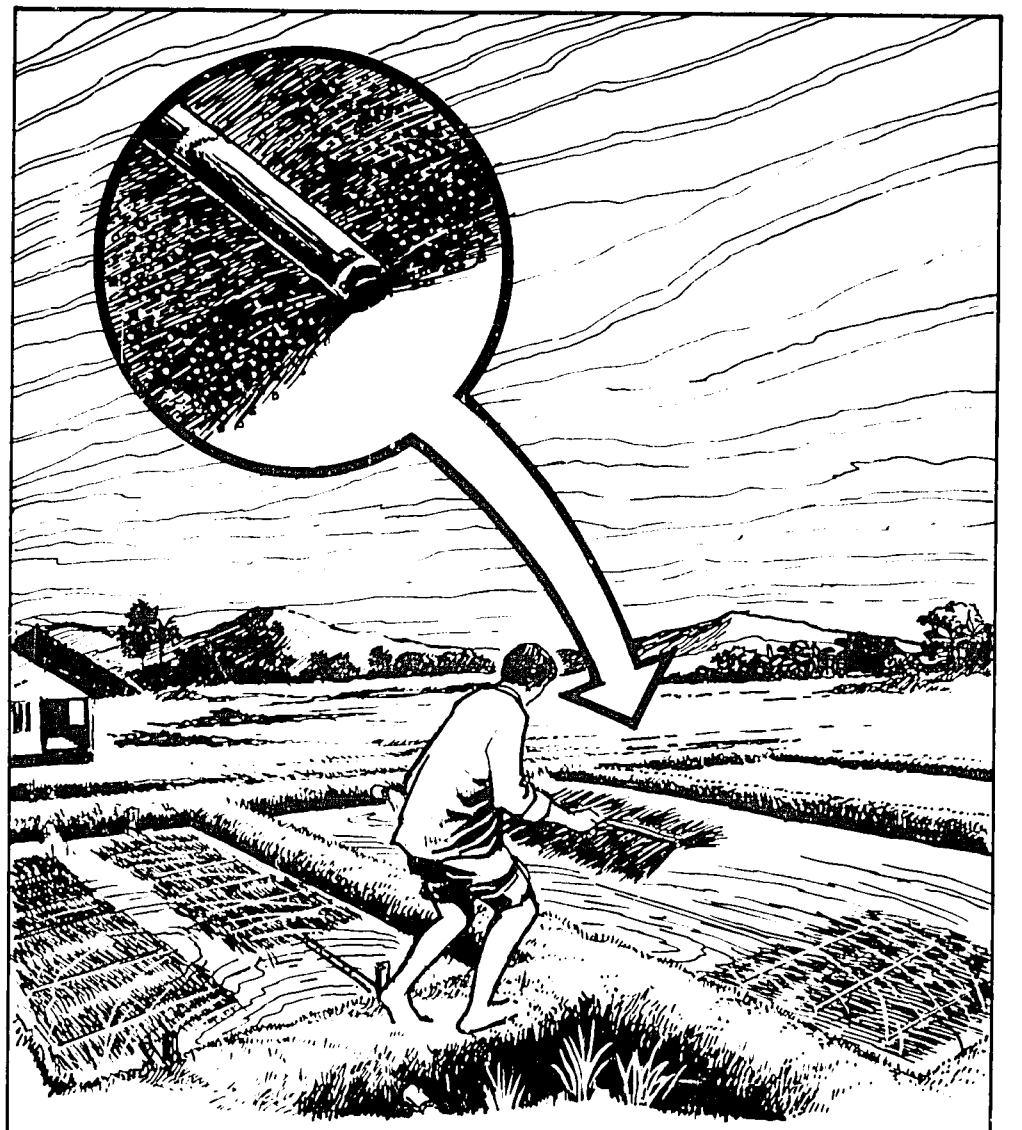








Common carp lay eggs between 6:00 p.m. and 6:00 a.m.

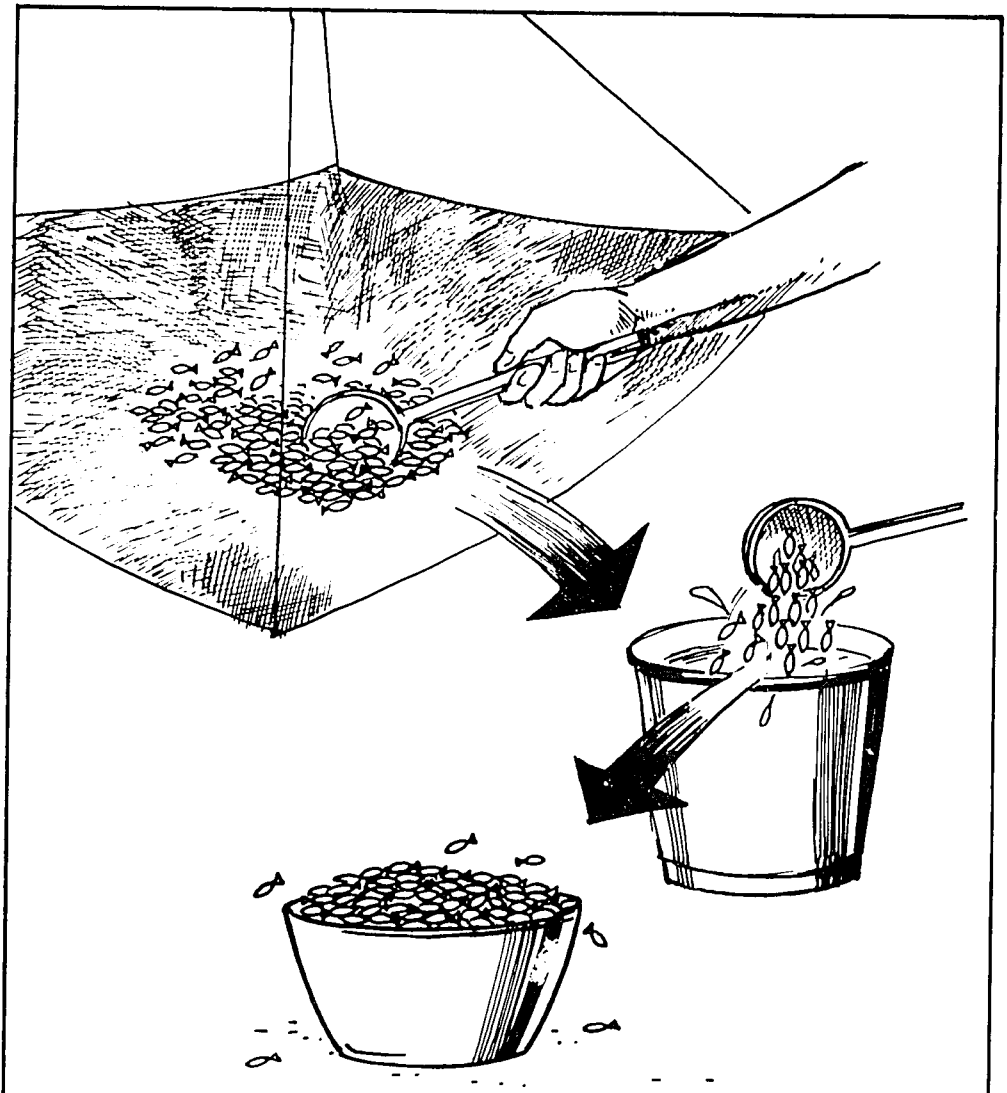


Transfer egg collectors already filled with eggs to previously prepared (see p. 10-13) nursery ponds for hatching.

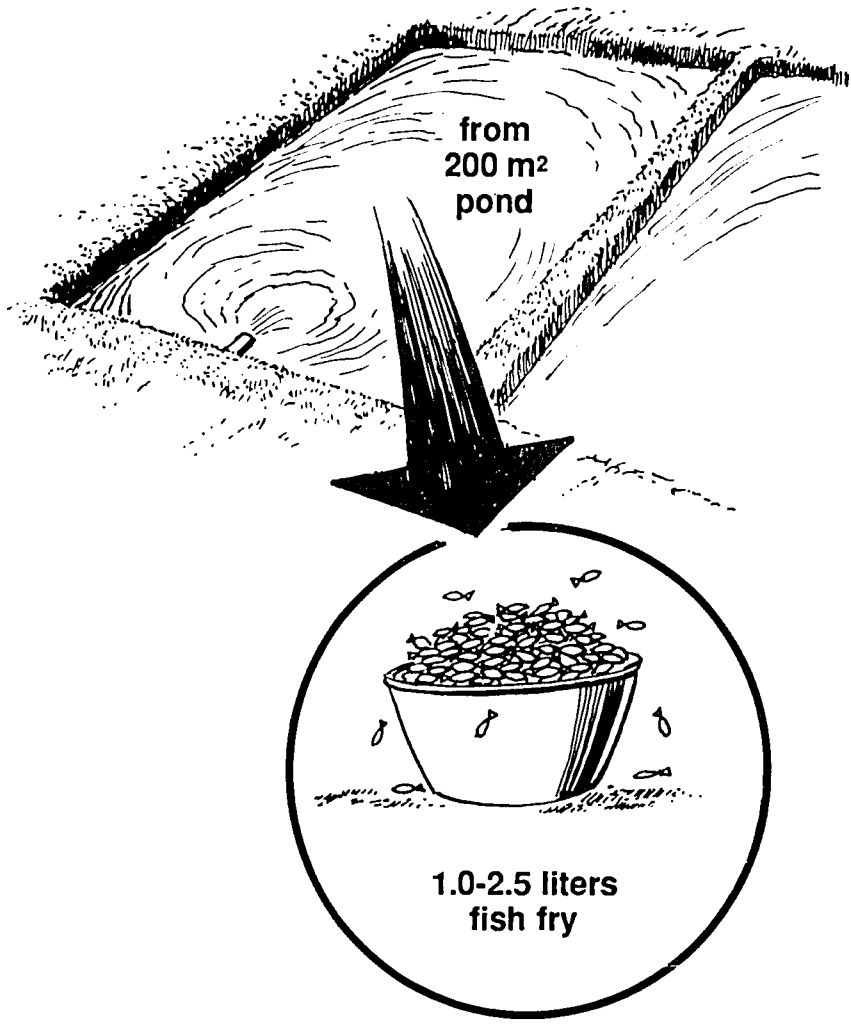
After 2-5 days, the eggs hatch. Lift the egg collectors out of the pond.

Fertilize the nursery pond using the schedule on page 13. Fertilization stimulates the growth of natural fish food.

Harvest fish fry with a fine mesh net.

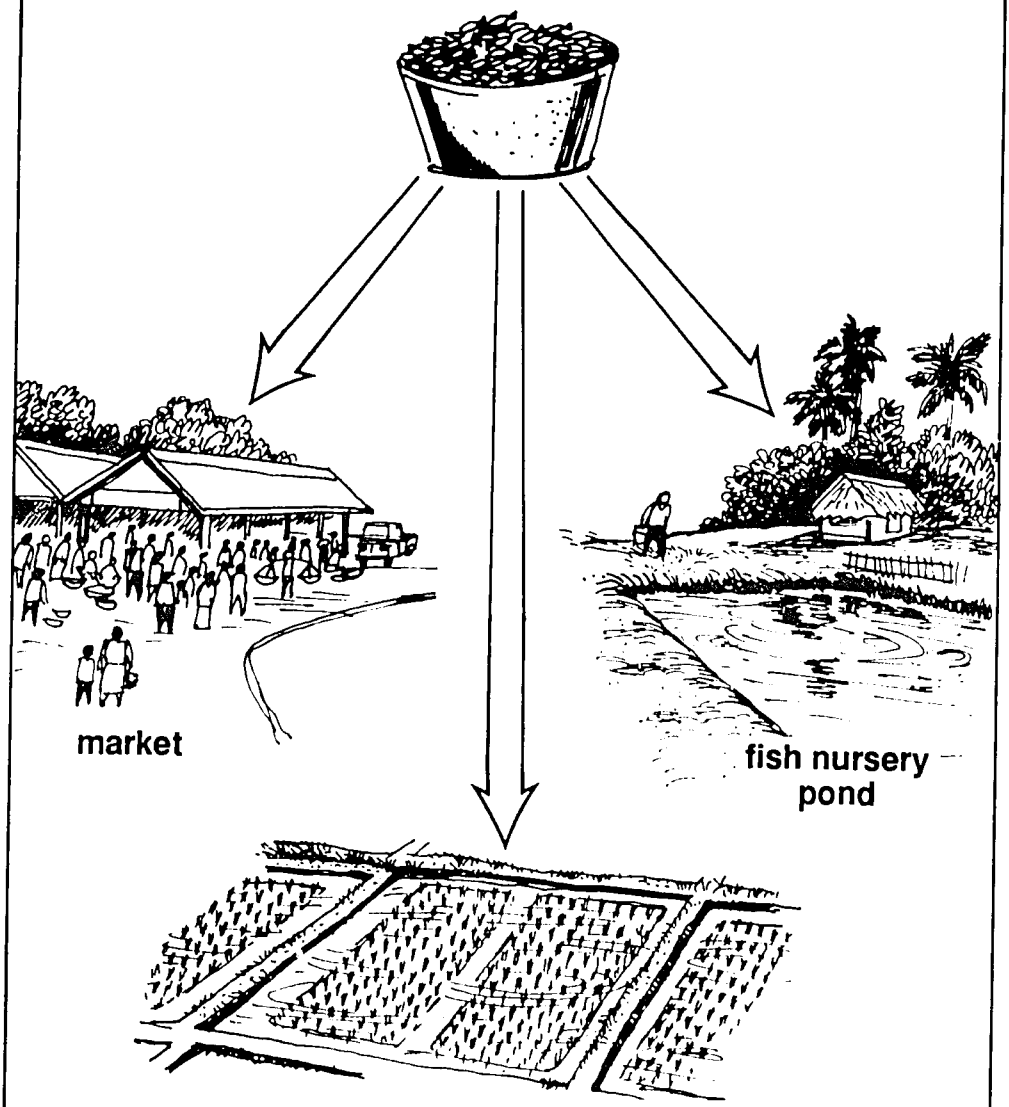


Fish fry can be scooped up and measured in a small bowl. Like all fish moving activities, this should be done in a cool/shaded area and as rapidly and gently as possible, minimize the time the fish spend out of water.



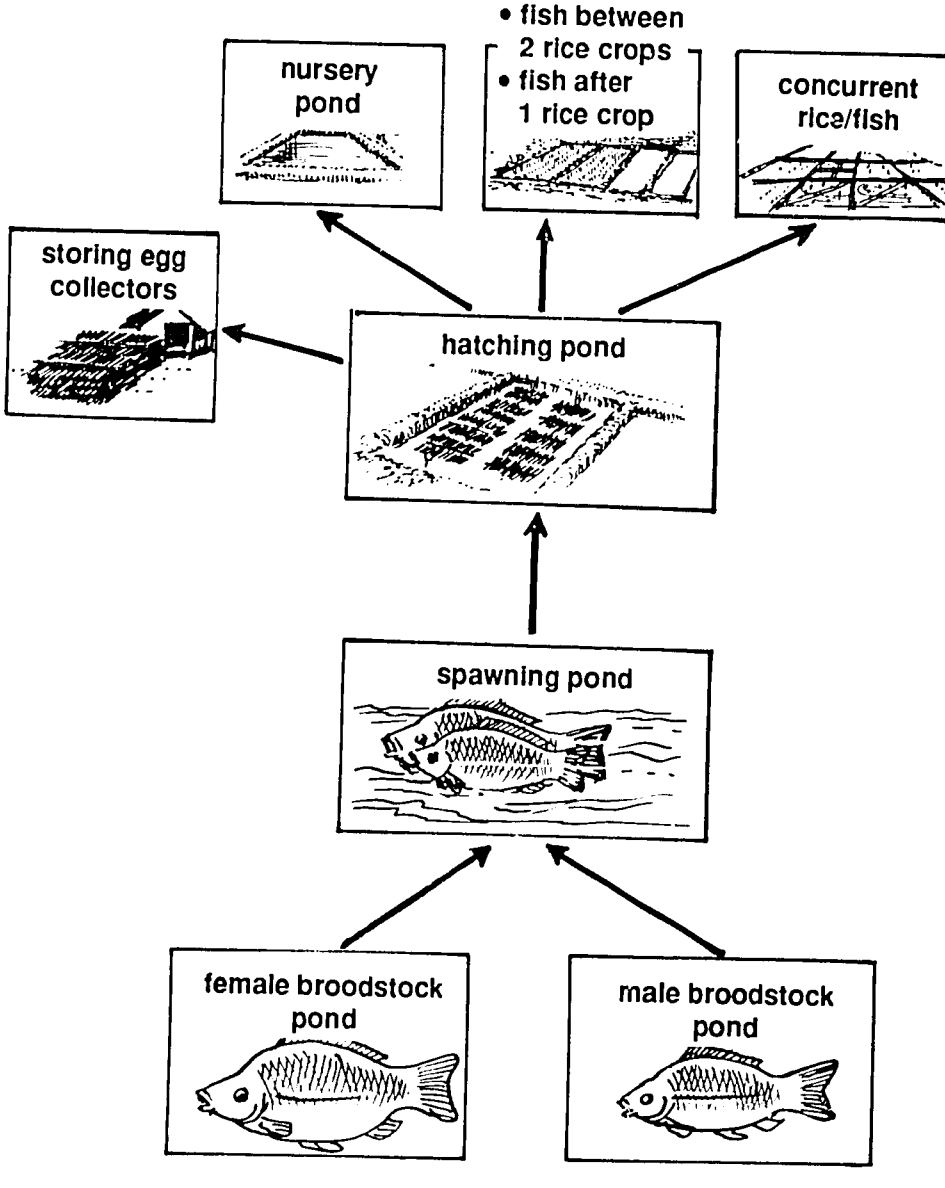
Harvest fish fry after 30 days. The fish fry are 1.0-1.5 cm in size, the yield should be about 1.0-2.5 liters/200 m^2 pond.

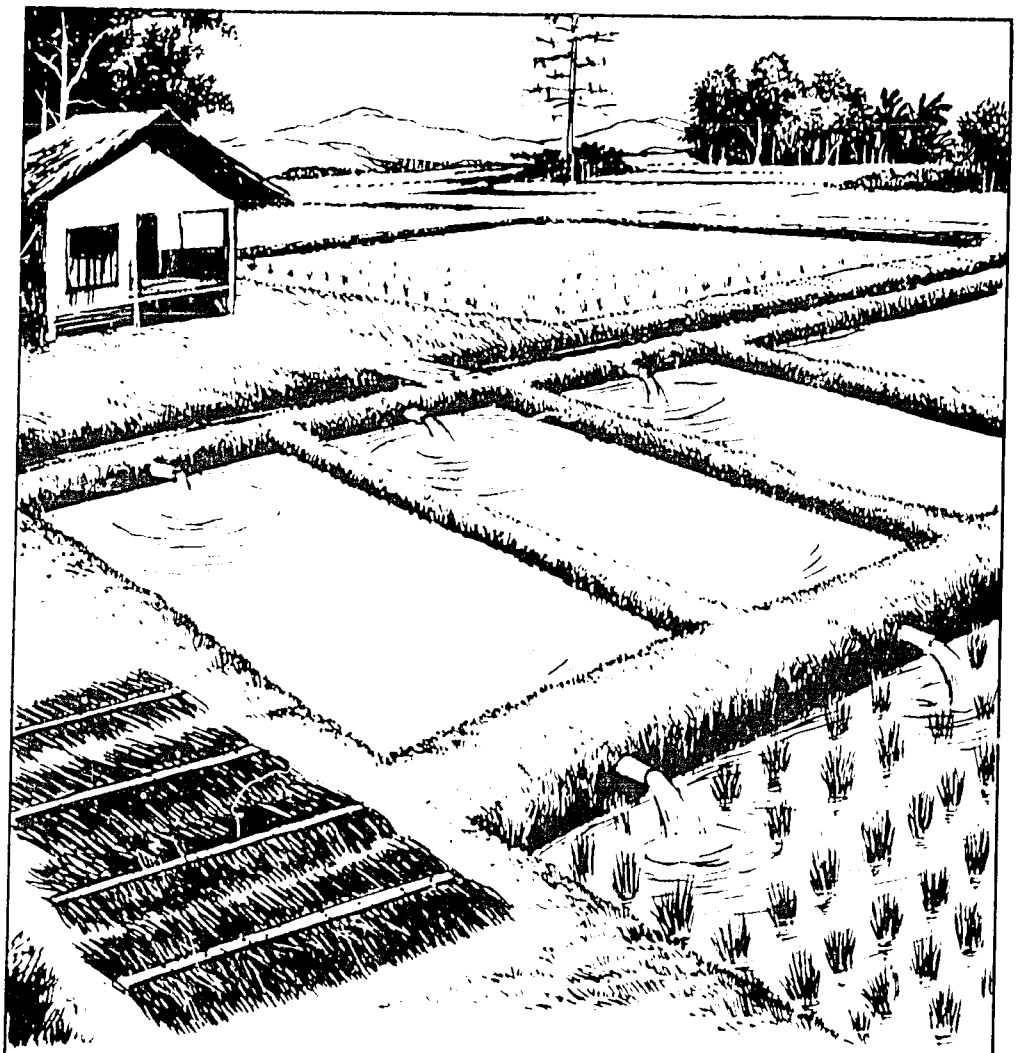
Routes for fish fry



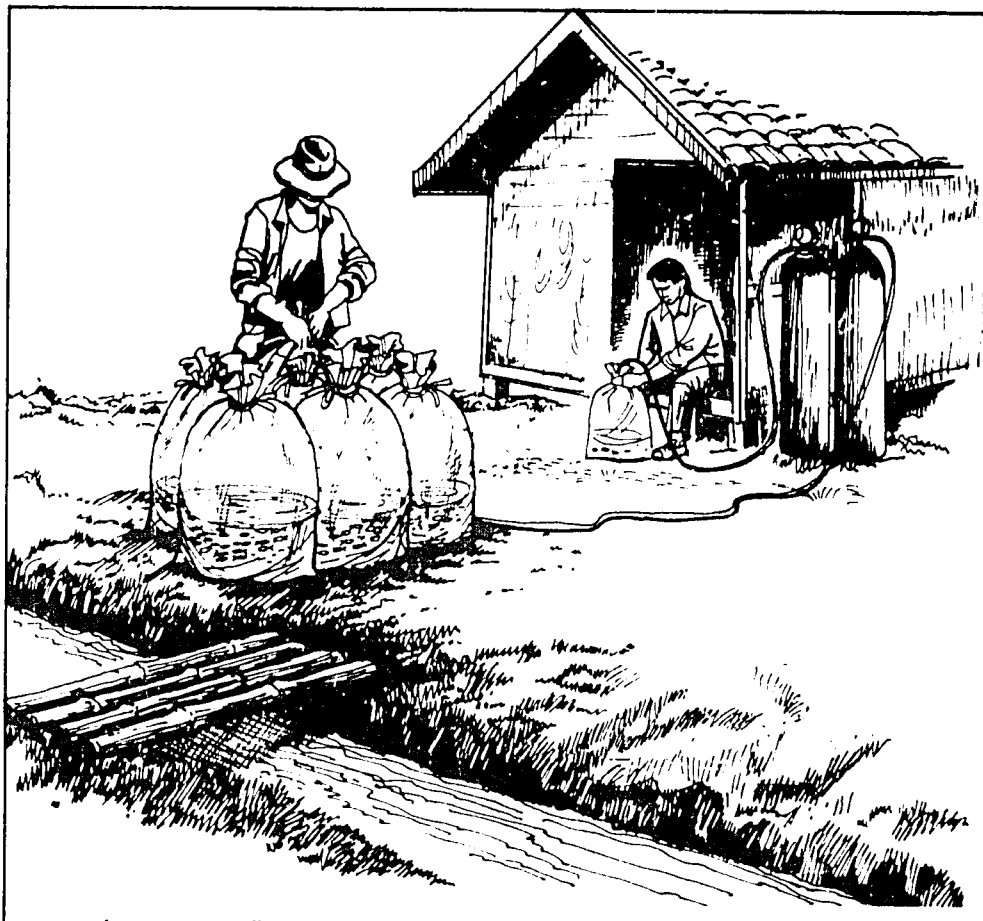
- concurrent rice-fish culture
- fish crop between 2 rice crops
- fish crop after 1 rice crop

Production and Marketing scheme

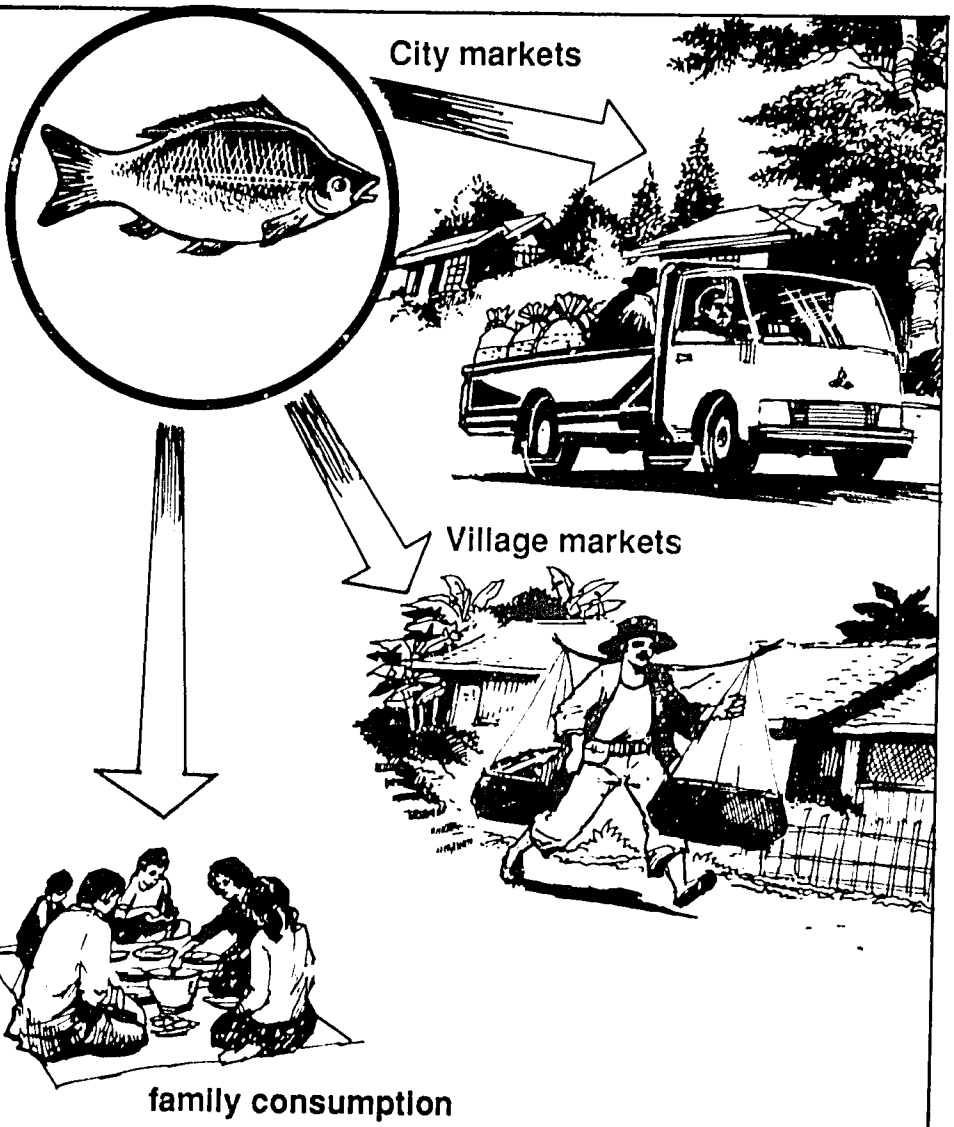




Culture and spawning of common carp in small ponds is profitable and easy to do.

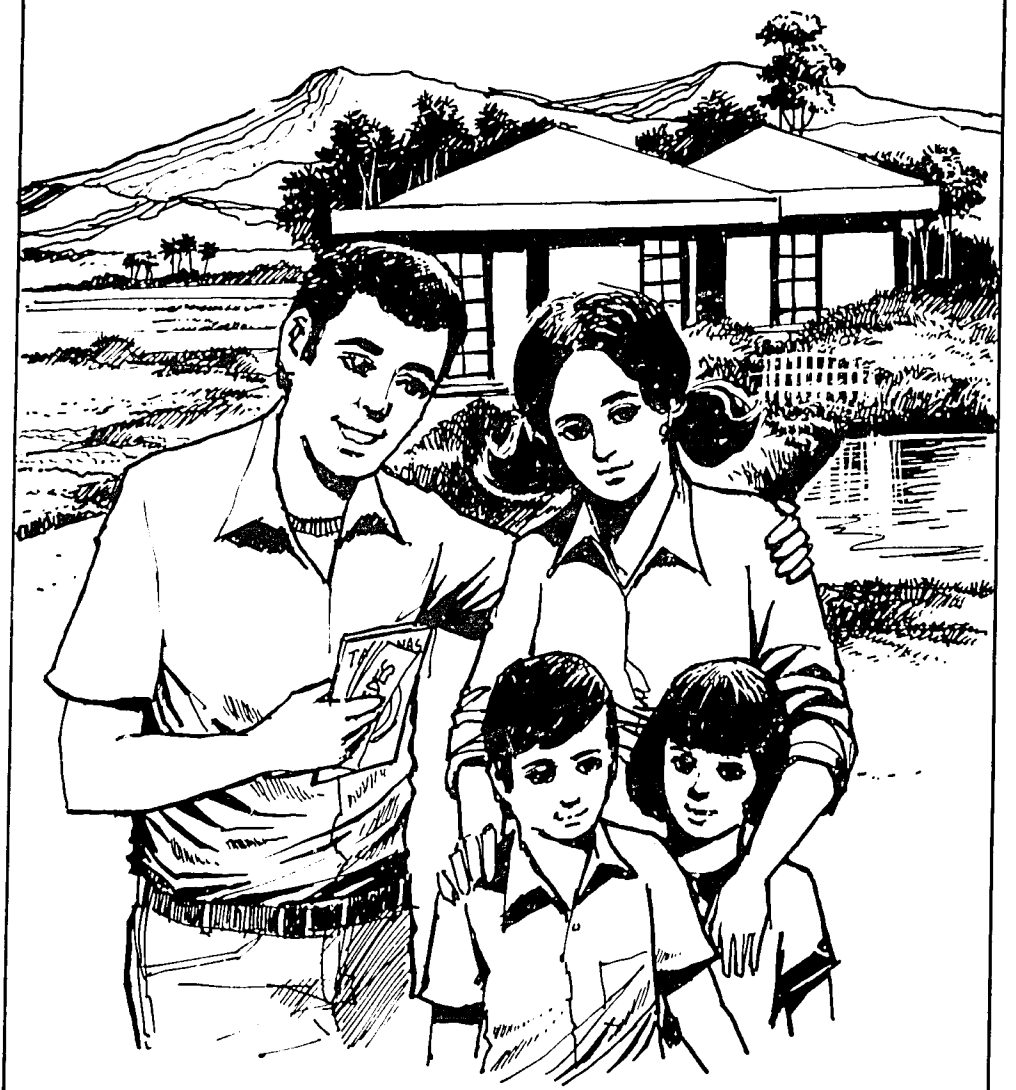


Large profits can be made by selling fish seed to other farmers. Fish can be transported live using 3 l plastic bags, rubber bands and a bottle of pure oxygen gas. Open the bags and fill them 1/3 with clean water. Add no more than 5 kg of 1-3 cm size fish. After filling with water and fish, squeeze the upper part of the plastic bag to force out the air, and inflate the bag with pure oxygen until the bag is about 2/3 full with oxygen. Bend the top of the bag and tie it securely with two or three rubber bands. The majority of fish will survive a 4-5 hour journey. Always transport fish when it is cool (night, early morning). If you must transport during the day keep bags in the shade or under cover.



Growing common carp is a profitable business - a source of added income and protein-rich food for the family.

Profits from selling seed fish (fry and fingerlings) can be used for family needs.



Selling common carp can increase the family's income and nutrition and thus help uplift the quality of their lives.

Common carp is nutritious food, good for the health of children and adults.

Units of measure

kg	=	kilogram
g	=	gram
m	=	meter
cm	=	centimeter
ml	=	milliliter
l	=	liter