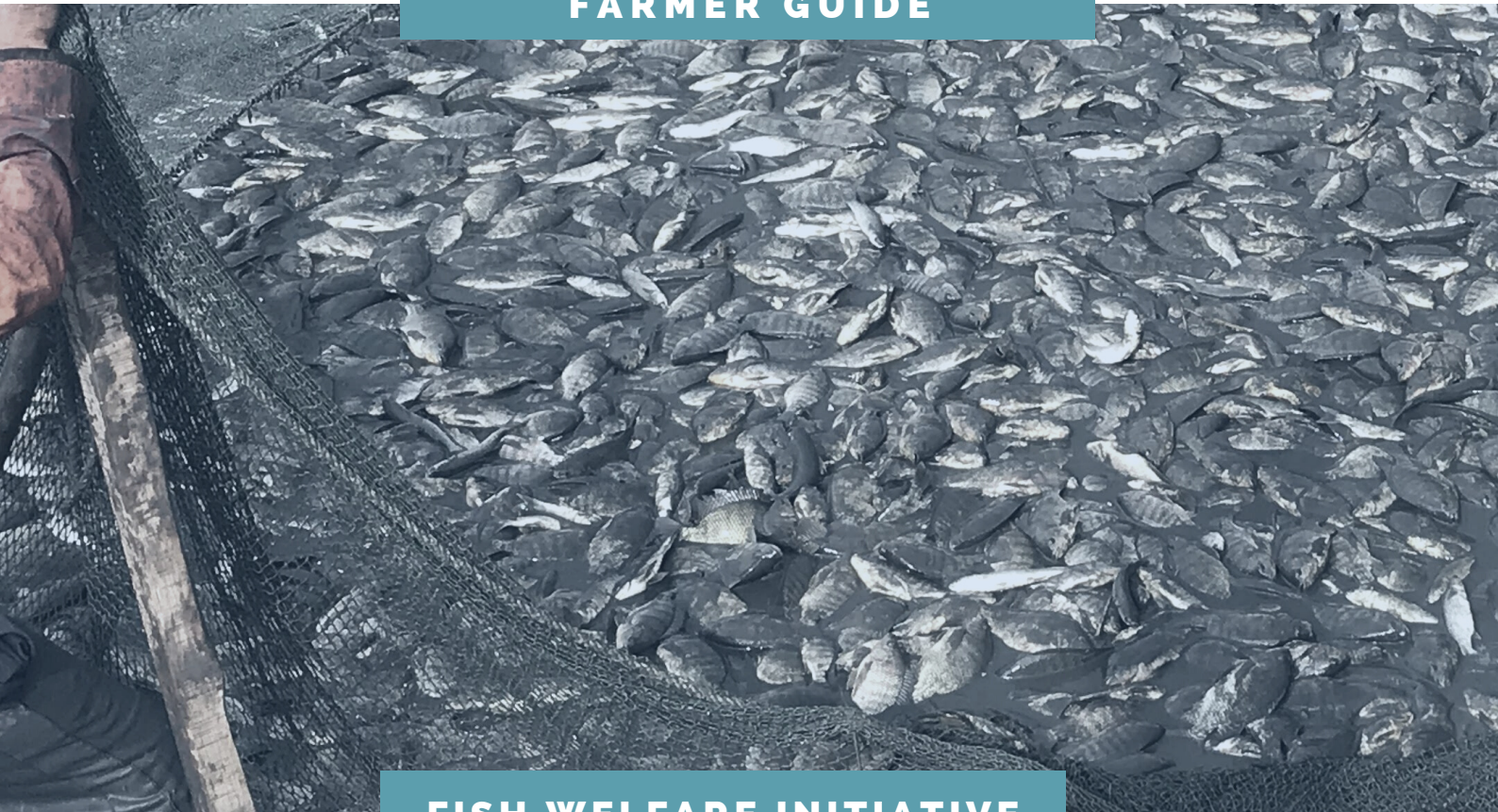


HANDLING & TRANSPORT PRACTICES FOR HIGH FISH WELFARE

FARMER GUIDE



FISH WELFARE INITIATIVE

✉ karthik@fwi.fish

🌐 fwi.fish

STOCKING DENSITIES

Healthy stocking densities are the most important way to ensure fish welfare.

High stocking densities

- increase disease rates
- lower water quality
- increase number of lesions
- increase aggressive behaviour
- increase mortality rates

NURSERY STAGE

Poor stocking and transportation from the hatchery are among the major causes of low survival in grow-out ponds.

Good Fry

Restless and fast swimming
Shiny and bright color
Smooth body
No injuries or marks
Swim against current
React vividly to touch

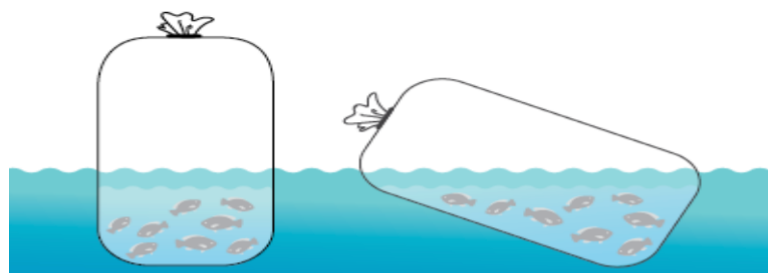
Bad Fry

Calm and quiet
Sluggish or inactive
Pale and dull color
Rough body/scales
Red marks on body
Slow or no reaction to touch

Releasing fish into the pond

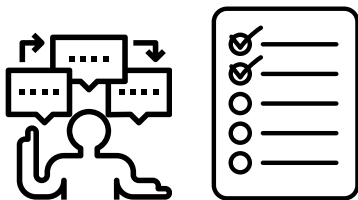
- Slowly add water from the pond into the bag over 30 minutes.
- Stock fish early in the morning on a dry day.
- Remove any dead fish.

Releasing fingerlings



CROWDING & HANDLING

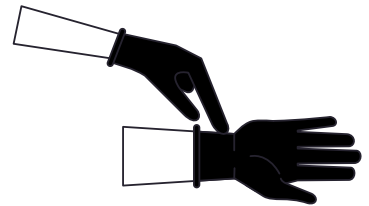
Crowding is very stressful for fish. **Minimize the frequency and time crowded.** Only crowd fish early during **cooler temperatures** (early morning or late evening) and when the **water quality is good**.



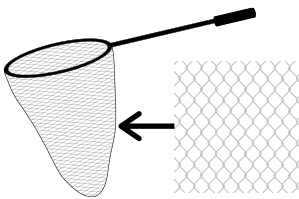
Plan the procedure in advance.



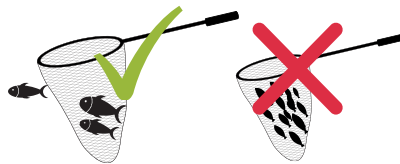
Do not feed fish 24-48 hours before crowding.



Use **gloves & disinfect** equipment.



Use **small-mesh rubber nets**.



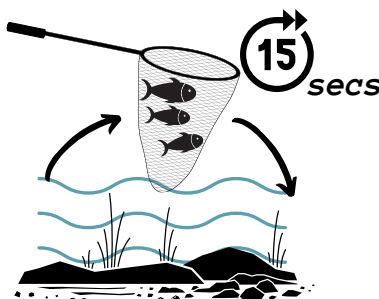
Avoid **crowding too many fish** at once. Attract only few with feed.



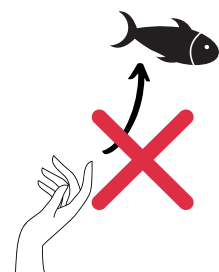
Keep fish in water as much as possible



Avoid lifting up **mud**.



Handle fish quickly (max. 15 seconds out of the water).



Never throw fish through the air.

Removing fish from water is very stressful for the fish. Poor handling increases the likelihood of future mortality and disease.

--> HANDLE FISH AS LITTLE AS POSSIBLE.

SAMPLING

Sampling refers to the temporary removal of fish from the pond to check the health, growth, and general well-being of the fish.

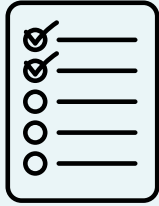
Sampling Best Practices

- Follow the instructions on Crowding & Handling above.
- Attract fish with feed and only catch few to avoid unnecessary stress to the individuals not sampled.
- The sample taken should be random and truly representative of the total population.
- While sampling, **cover the fish's eyes with a clean, wet cloth.**
- After sampling the fish, return them gently to the pond by letting them swim out of your hand or the net. Do **not throw them.**

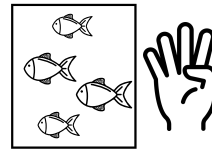


TRANSPORTING FISH

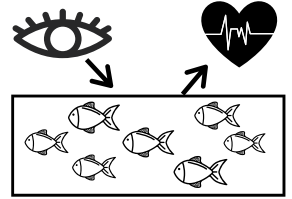
1. PREPARE YOUR FISH



1. Starve fish for 24-48hrs.

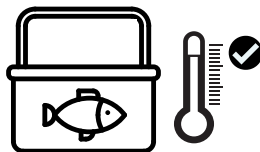


2. Count fish.

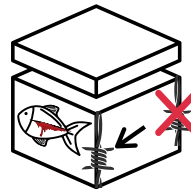


3. Observe fish
- are they healthy?

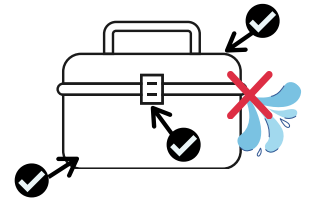
2. PREPARE CONTAINERS



1. Insulated.

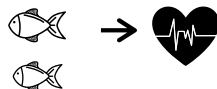
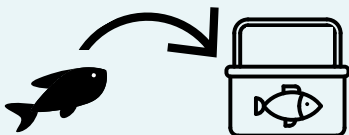


2. No sharp edges.

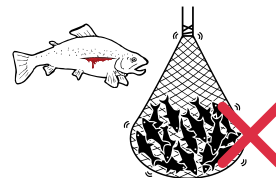


3. No leak.

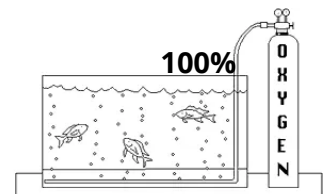
3. LOADING AND UNLOADING



1. Ensure fish are
clean and healthy.

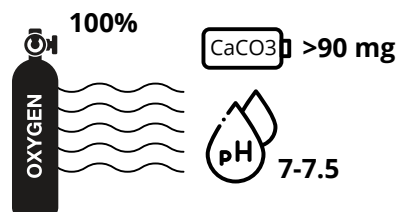
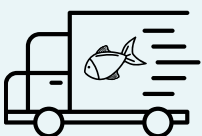


2. Prevent injuries.
a) Use soft nets.
b) Move single fish.

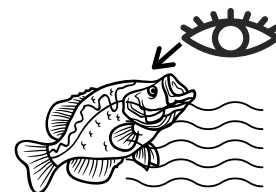


3. Oxygenate the water
to 100% saturation.

4. DURING TRANSPORT



1. Monitor water quality.
a) Dissolved oxygen: **100%**
b) Alkalinity (>90 mg CaCO₃/l)
c) pH (7 to 7.5)



2. Monitor **fish welfare**.