

Technical Bulletin #11:

How to Stock a Pond

Why are transportation and stocking so important?

Good-quality and healthy fingerlings are important to determining the success of any fish farming activity. Good-quality fingerlings grow faster, produce larger adults, have lower FCRs, and tend to be healthier. If stocked correctly, they will produce the desired size of fish for market at the appropriate time.

How do I choose a good hatchery to buy my fingerlings from?

Select a hatchery that produces healthy, vigorous fingerlings that are all about the same age. Make sure that the hatchery knows how to transport fingerlings properly.

How should a fingerling be transported?

There are four phases of fingerling transport: 1) conditioning, 2) packaging, 3) transport, and 4) acclimation. Let's look at them one at a time.

Conditioning: Condition starts with the harvesting of fingerlings. The fingerlings should have a sample collected from them. The weight and number of fish collected are used to calculate the average weight of each fingerling using the following formula:

$$\text{Average Weight} = \frac{\text{Total Weight of Sample}}{\text{Number of Fish in Sample}}$$

This should be done at least three times and the average of the three samples used as the average weight. Once the average weight of the fingerlings is calculated the hatchery will be able to collect the correct number of fingerlings to meet the farmer's needs by calculating the total weight of fish to be collected and shipped.

Fingerlings should be harvested 24 hours before transportation to the farm. The harvested fingerlings should be placed in a large clean tank or a hapa that is filled with clean, high quality water. During the condition period the fingerlings **SHOULD NOT** be fed. It is important that the fingerlings void their gut before being transported. Fingerlings with full guts require more oxygen to digest their food, and the fecal and ammonia waste contaminate the water, increasing the stress of transport.

Packaging: After 24 hours of conditioning, the fingerlings should look healthy and vigorous and there should be minimal mortalities before they are considered suitable for transport to the farm. A second sample of fingerlings should be taken at this time to determine the average





weight. It is not uncommon for the fingerling weight to change after they have voided the contents of their gut.

Each bag can hold between 0.5kg and 2kg of fingerlings, depending on the species to be shipped and the length of time they will be confined in the bag. The best way to weigh the fingerlings is to fill a small bucket with water and weigh it. While the bucket is on the scale, using a dip net, transfer fingerlings into the bucket until the pre-determined weight of fingerlings has been added to the bucket.

Fingerlings should be shipped in heavy-duty, double-walled plastic bags (a bag within a bag) for protection. The bag should have no tight corners where fish can be trapped and suffocate.

The double bag should be 1/3 filled with high-quality water. Then the fingerlings are transferred to the double bag. The air is removed from the bag and a diffuser attached to an oxygen tank is inserted into the water. The oxygen is turned on and the bag inflated as it bubbles through the water. When the bag is fully inflated the diffuser is slipped out and the top of the bag twisted closed and is secured with rubber bands. The oxygen in the bag will greatly prolong the amount of time the fingerlings can be left in the bag. Store the bags of fingerlings in a cool shady place out of direct sunshine.

Transport: Properly packaged fingerlings can survive in good condition for many hours of transport. However, keeping the shipping time to a minimum lowers stress and increases the chances of success. It is best to attempt to transport during the cool of the day. Keep the fingerlings covered and out of direct sunlight. Ensure that the temperature of the bags does not get too high, as this will increase stress and mortalities of the fingerlings.

The transport team should avoid unnecessary stops and delays. For example, stop for lunch on the return trip rather than on the way to deliver the fingerlings. If it is dark when the fingerlings arrive at the farm, do not wait until morning to stock. It is preferable to stock in the dark if necessary.

Acclimating: Fish can tolerate a lot of changes in water chemistry and quality, but only if the change is slow. Rapid changes in water chemistry are very stressful or even fatal to fingerlings. To properly acclimate the fingerlings to their new pond; place the transport bags into the pond in a shady place to allow the temperature to equalize.

When the temperature has equalized the bags can be opened one at a time. Carefully open the bag and role the open edge down. Once the bag is open the oxygen levels inside the bag will drop rapidly. Look into the bag to make sure that the fingerlings look healthy and vigorous. Ensure that there are not more than a few mortalities in the bag.

The farmer should sample several bags to ensure that the proper stocking rate has been achieved.

Splash the pond water into the bags so that it slowly mixes with the water from the hatchery that is in the bag. When the bag is half full let the fingerlings sit for a short time to adjust to the new water chemistry. After a few minutes again splash water until the bag is filled with the new ponds water. Again let it rest for a few minutes while the fingerlings acclimate. Gently empty the bag into the pond





at the end of this time.

Alternative Acclimation: An alternative to placing fingerlings directly into the receiving pond is to transfer them into a large hapa set up in the receiving pond. Placing fingerlings in a hapa is especially helpful if there are high mortalities, as it is then possible to collect and count all mortalities. Keeping the fingerlings in the hapa for the first three weeks also allows the farmer to feed train and evaluate the condition of the fingerlings before releasing them into the pond.

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