

Causes of mortality of fish eggs and spawn and their treatment

Improper production and delivery of seed to farmers or poor management of broodfish and fish seed by farmers once stocked, may lead to decline in fish production.

Some of the causes of mortality of fish eggs and spawn are:

- Poor water quality
- Poor pond hygiene
- Presence of Pests
- Poor management of broodfish and seed
- Transportation stress
- Conditioning of fish seed
- Mortality of eggs and hatchlings
- Diseases and parasites

Poor water quality

- It is known that a lot of major carp eggs perish during incubation as a result of heavy siltation (particularly so during the first few weeks after the onset of monsoon), oxygen depletion, high hydrogen sulfide level, etc.
- This problem is all the more serious if reservoir water is taken directly to hatching tank.
- Similarly, newly hatched spawn also suffers from the above mentioned problems.
- High density of eggs and spawn also contributes to high mortality, particularly in Chinese type of carp hatchery where a large quantity of unfiltered water is used.
- Use of filtered water will greatly help reduce mortality of fish eggs and spawn.

Poor pond hygiene

- Mass mortality of seed in carp nursery ponds is frequently encountered in Karnataka (Mohan and Shankar, 1995).
- Mortality of seed is attributed mainly to prevalence of protozoan parasites, particularly in ponds which are not dried properly prior to stocking.
- Pond drying followed by liming is known to considerably reduce mortality and improve seed quality.

Presence of Pests

- The presence of fairly shrimp (*Streptocephalus* spp) in carp nurseries is known to hamper the growth and survival by competing with fry for food, space and oxygen.
- Presence of weed fishes in nursery pond leads to the production of stunted fingerlings.

Poor management of broodfish and seed

- Competition among fish seed producers to meet demand some times leads to poor management of broodfish and fish seed may negatively affect seed quality.

- Substandard quality seed is frequently observed as a result of high stocking density in nurseries.
- Fish hatcheries in India are concerned more about the quantity rather than the quality of fish seed and produce them without following any selection norms.
- Consequently, the seed suffer from high rates of mortality, poor growth and are prone to diseases and parasites.

Transportation stress

- During transportation fish seed is subjected to confined environment, higher metabolic load, stress, strain and exhaustion. As a result, the seed becomes susceptible to diseases and parasites.
- Chowdhury (1996) used scale loss and tail damage of carp after transportation as quality indicators.

Conditioning of fish seed

- Conditioning is acclimatizing seed to a restricted environment prior to packing and transportation.
- During this period the seed is stocked at a very high stocking density in a hapa or a pond with running water, but without provision for food so that the weak seed dies and only the healthy fry survives.
- The seed that survives the `stress test' only is selected for transport to a required destination. This type of conditioning of fish seed is commonly practiced in several States of India.

Mortality of eggs and hatchlings

- Fish farmers in West Bengal at times encounter heavy mortality of eggs and hatchlings during incubation period.
- This has been found to be due to immature bursting of egg shells and release of premature hatchlings before the anticipated period of hatching. Such hatchlings either do not survive or suffer mortality at subsequent stages.
- To overcome this problem, fish farmers of the State have been using a solution which is a mixture of extract of catechu (*Acacia catechu*) and Myrobalan (*Myrobalus indica*).
- The plant extract enhances hatching period and prevents hatchlings from premature release due to the presence of tannin which helps harden the egg membrane (chorion).

Diseases and parasites

- High stocking density, artificial feeding, water fertilization, etc. have become common husbandry practices in carp nursery and rearing systems to optimize returns.
- These high density systems offer the ideal environment for disease outbreak because such systems have stressed host and virulent pathogen.
- Depending on the nature and severity, the disease may cause mass mortality of the affected population in a short time, produce protracted small scale mortality, reduce growth, make the larvae unsuitable for stocking.

- The need for adopting suitable health management measures to reduce the loss due to diseases is being increasingly felt by hatchery operators.