

Introduction

Frog infestation is a common problem in freshwater aquaculture systems, particularly in earthen fish ponds. Frogs and their larvae (tadpoles) can adversely affect fish production by competing for food, preying on fish eggs and larvae, and deteriorating water quality. In poorly managed ponds, their population can increase rapidly, leading to economic losses for fish farmers. Therefore, effective management and control strategies are essential for sustainable aquaculture. Frogs enter fish ponds naturally from surrounding wetlands, canals, or during monsoon rains. They reproduce rapidly, laying eggs in clusters that hatch into tadpoles within a few days.

Major issues caused by frogs

- ✓ Adult frogs feed on fry and fingerlings.
- ✓ Tadpoles consume plankton & feed, reducing food availability for fish.
- ✓ Frogs may act as vectors for pathogens, parasites from one pond to another.
- ✓ Oxygen depletion: Dense tadpole populations consume dissolved oxygen.
- ✓ High tadpole density increases organic load.
- ✓ They attract snakes, lizards and predatory birds, which may harm the fish also.

Identification of infestation

- ✓ Early identification helps prevent severe damage.
- ✓ Presence of frog eggs (gelatinous masses) on water surface.
- ✓ Large numbers of tadpoles swimming near edges.
- ✓ Croaking sounds, especially during evening/night.
- ✓ Sudden reduction in fish fry survival.
- ✓ Visible adult frogs around pond bunds.

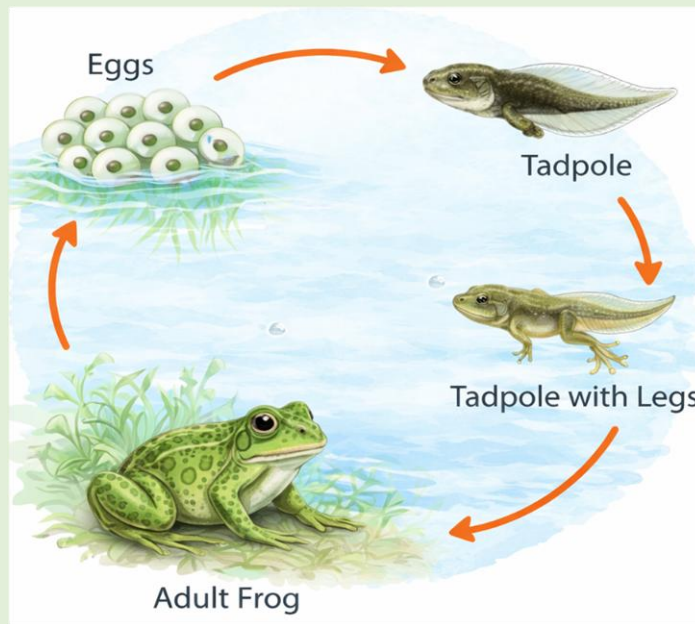


Plate: Schematic view of life cycle of a frog

Preventive measures

Prevention is always more effective and economical than control.

1. Completely drying and ploughing the pond before fish stocking.
2. Application of lime helps sanitize pond bottom.
3. Avoid intake of water from frog-infested sources.
4. Use screened inlets to prevent entry of frogs and eggs.
5. Maintain clean pond bunds, free from weeds and grasses.
6. Remove hiding places such as stones, logs, and debris.
7. Install fine mesh fencing or netting around pond periphery.
8. Use nylon screens on water inlets and outlets.

A. Mechanical control methods: These are safe and environmentally friendly.

- ✓ Collect the adult frogs manually during night using torches. Most effective during breeding season (February to August).
- ✓ Regularly remove floating egg masses using nets.
- ✓ Use fine mesh nets to scoop out tadpoles and repeat frequently to reduce the population.
- ✓ Use light traps at night to attract frogs, and make simple pitfall traps around pond bunds can also be effective.

NOTE: Instead of killing, release the collected or trapped adult frogs/ tadpoles/ egg masses into a permanent wild habitat (i.e. lake, reservoir, park-pond, river) away from the fish pond.

B. Biological control: Biological methods are eco-friendly and sustainable.

- ✓ Stocking of some carnivorous fish species that feed on tadpoles i.e. catfish (e.g., magur, singhi, pabda), snakeheads (*Channa* spp.), tilapia, chital, kawai etc. These fishes help reduce tadpole populations naturally.
- ✓ Duck integration: Ducks (Khaki Campbell/ Indian Runner) feed on tadpoles and small frogs, and therefore, integrated fish-duck farming can help control infestation effectively.

For further details, please contact:
Director, ICAR-MGIFRI, Piprakothi - 845429, E. Champaran, Bihar

Web: <https://mgifri.org.in/>

C. Chemical control: As most of the frog and toad species are legally protected under the Wildlife (Protection) Act, 1972 (WPA), following the 2022 amendment, 35 amphibians (frogs & toads) species have been included in Schedule I (3 species) and Schedule II (32 species) of the amended WPA (Dinesh *et al.*, 2025). Therefore, strictly avoid any use of chemicals for the target killings of the frogs/toads. Following methods may be followed for the preparation of ponds for fish rearing, and management of undesirable aquatic fauna which affects the growth, survival and productivity of fish.

- ✓ Mahua (*Basia latifolia*) oil cake (MOC) contains 4–6% 'saponin' and kills undesirable aquatic animals when applied @ 250 ppm. The toxicity lasts for about 10–15 days. Later, it serves as a base manure in the fish pond.
- ✓ Tea seed cake: It is typically applied at a concentration of 75–100 ppm, corresponding to approximately 5–10 ppm of active 'saponin' content.
- ✓ Bleaching powder: It acts as a disinfectant and helps to control undesirable fauna from fish ponds. It should be used at least 7-8 day before the stocking of fish. It is effective when applied @ 30 ppm.
- ✓ Avoid the use of any of the above-mentioned toxicants after stocking of fish into the ponds.

NOTE: The best strategy is preventive management and physical control, with limited use of mild pond treatments with potassium permanganate (KMnO₄) or limestone (CaCO₃).

D. Environmental management

- ✓ Identify and remove nearby stagnant water bodies (breeding sites of frogs), and prevent waterlogging around ponds.
- ✓ Avoid excessive aquatic vegetation in the fish pond. Keep pond edges clean.
- ✓ Frogs are attracted to light; avoid unnecessary lighting near ponds during night.

E. Integrated approach: The most effective strategy is combining multiple methods. An integrated approach ensures long-term control without harming fish or the environment.

- ✓ Proper pond preparation (drying, ploughing, liming, netting etc.).
- ✓ Physical removal (eggs, tadpoles, adults).
- ✓ Biological control (carnivorous fish, ducks).
- ✓ Preventive barriers (nylon screen/ net) on pond-dykes.

Advantages of frog management in fish ponds

- ✓ Improved survival of fry and fingerlings.
- ✓ Better feed (natural and supplementary) for fish.
- ✓ Enhanced water quality.
- ✓ Increased fish production and profitability.

Conclusion

Frog infestation in fish ponds is a manageable problem if addressed systematically. Preventive measures, regular monitoring, and integrated control strategies are key to minimize damage. Farmers should prioritize eco-friendly methods and avoid use of chemical to maintain a balanced aquatic ecosystem. Effective frog control measures and management ultimately contributes to higher fish productivity and sustainable aquaculture practices.



FROG INFESTATION IN FISH PONDS: CONTROL MEASURES AND MANAGEMENT STRATEGIES

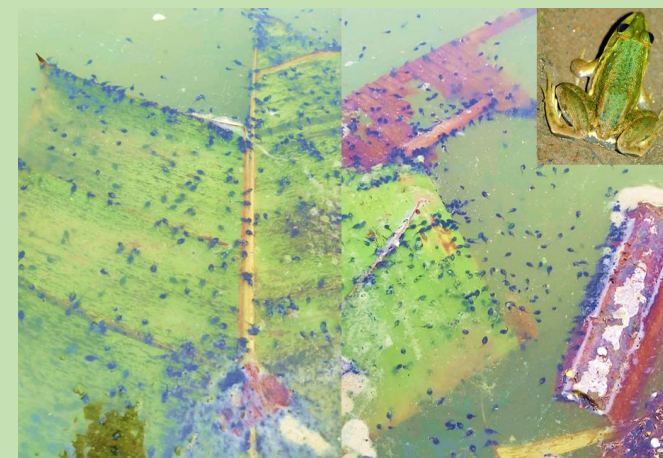


Plate: Fish-pond infested with tadpoles (18 February 2026, Sagahri, Tetaria, E. Champaran)

Authors:

Dr. Ravi Kumar, Scientist (Fisheries Resource Management)
Dr. Naveen B. Patil, Senior Scientist (Agril. Entomology)
Dr. Koushik Banerjee, Scientist (Agril. Meteorology)
Dr. Jadhav Amol Kailas, Scientist (Fruit Science)
Dr. Pratapa M. G., Scientist (Fish Health)
Dr. Lamella Ojha, Scientist (Animal Nutrition)
Dr. Anjani Kumar Singh, Director (ICAR- ATARI, Patna)
Dr. S.K. Purbey, Director (ICAR- MGIFRI, Motihari)

ICAR - Mahatma Gandhi Integrated Farming Research Institute

Piprakothi, Motihari, Bihar-845429

Web address: <https://mgifri.org.in/>