

Technical Guidelines for import of eyed ova of rainbow trout in India

1. Preamble:

Among the freshwater salmonids, *Onchorhynchus mykiss* popularly known as rainbow trout is one of the promising cultivable fish species in Coldwater and has considerable scope for its expansion in uplands region. Being a low volume high value commodity, the trout has good potential for domestic consumptions as well as foreign export. In spite of having excellent positive traits, development and expansion of trout farming are yet to be done on a large scale.

This species is native to the Pacific drainages of North America ranging from Alaska to Mexico. However, it is the world's most widely introduced fish species which is cultured over 100 countries including India. In India, this species was transplanted from Europe by British settlers around the beginning of the last century primarily to meet their needs for sport fishing or recreational angling. But, since early-nineties the country has taken-up farming of rainbow trout in hills and aquaculture of rainbow trout is gaining significance in the context of income generation, employment opportunities and food security to the people of the hills. There are several species of trout, but rainbow trout is a species of choice for Coldwater aquaculture. Certain features such as base of anal fin shorter than its height, moderate sized scales and dark-colored spots on the body distinguish this species from the other salmonids such as salmon and chars. Elongated fusiform body with 60-66 vertebrae, 3-4 dorsal spines, 10-12 dorsal soft rays, 3-4 anal spines, 8-12 anal soft rays, 19 caudal rays, presence of adipose fin, absence of nuptial tubercles and body coloration of blue to olive green above a pink band along the lateral line are identifying characteristics of this species. The north-western Himalayan region of Jammu and Kashmir and Himachal Pradesh, central Himalaya region of Uttarakhand state, north-eastern region of Sikkim & Arunachal Pradesh and Nilgiris & Munnar hills in Peninsular India are potential areas for rainbow trout farming.



ICAR-DCFR, Bhimtal has been rendering technical support to different states for promotion of trout culture which got elevated from 147 tons during 2004 to 1500 tons (over six-fold) during 2020. Jammu & Kashmir and Himachal Pradesh are leading states in rainbow trout farming and seed production in India contributing more than 80% of the total trout production. This species was transplanted from Europe and Norway in the hill states and existing stock is more than 25 years old with mixed population. Due to inbreeding and mixing over the years, this stock has developed genetic fatigue and has not been performing well in terms of growth and breeding performance. ICAR-DCFR has genetically characterized the existing stocks of different geographical locations and concluded that the

country has three distinct stocks viz. Munnar stock, Himachal Pradesh stock and Jammu & Kashmir stock. Other states share the rainbow trout stocks from these three stocks which have been brought for either building their new stocks or replacing old stocks. In a recent study based on microsatellite markers, it was inferred that the rainbow trout stock from Munnar, Kerala is quite distinct from other four stocks examined from Western and central Himalayan region. Therefore, there is scope for genetic improvement of the existing stocks by introducing newly selected strains for enhancing aquaculture productivity in the Coldwater regions. In view of the above, ICAR- Directorate of Coldwater Fisheries Research, Bhimtal has prepared the guidelines for import of eyed ova of the rainbow trout in India.

2. Definitions:

Accidental escape means escape of aquatic organisms into the natural water body unknowingly by the importer / farmer / culturist / floods.

Aquatic animals mean all life stages (including eggs and gametes) of fish, molluscs and crustaceans originating from aquaculture establishments or removed from the wild, for farming purposes, for release into the aquatic environment or for human consumption.

Bio-hazard means an organism, or substance derived from an organism, that poses a threat to (primarily) animal / human health. This can include medical waste or samples of a microorganism, virus or toxin (from a biological source) that can impact animal/ human health.

Bio-security means in general terms, a strategic and integrated approach to analyze and manage relevant risks to human, animal (including aquatic) and plant life and health and associated risks to the environment.

Broodstock or brood fish means a group of mature individuals used for breeding purposes.

Certifying official means a person authorized by the Competent Authority to sign health certificates for aquatic animals.

Competent Authority means the authority responsible for Aquatic Animal Health as may be notified by the Ministry of Fisheries, Animal Husbandry and Dairying, Department of Fisheries, Government of India. For the purpose of these guidelines, the Secretary, Department of Fisheries will approve the proposals on recommendation of the National Committee on Introduction of Exotic Aquatic Species into Indian Waters, Chaired by the Joint Secretary (Fisheries).

Consignment (also termed as shipment) means group of live aquatic animals described in an aquatic animal import health standard, an international health certificate, a health certificate and / or in permit to import or export.

Exporting country means a country from which aquatic animals or aquatic animal products, biological products or pathological material are sent to a destination in another country.

Eyed Ova means a stage in developing eggs of rainbow trout when the embryo shows eyes as dark spots.

Alevin means a newly-hatched larva of rainbow trout possessing yolk sac.

Swim-up fry means newly-emerged rainbow trout after complete absorption of yolk.

Raceway means long, artificial, oblong-shaped RCC pond structure of the size of 15X3X1m, for the purpose of trout rearing in flow through system.

International aquatic animal health certificate means a certificate issued by a member of the personnel of the Competent Authority of the exporting country, certifying the state of health of the aquatic animals, and a declaration that the aquatic animals originate from a source subjected to official health surveillance according to the procedures described in the OIE Aquatic manual.

International trade means import, export or transit of aquatic animals, aquatic animal products, biological products and pathological material.

Import license means the requisite license for importing aquatic organism issued by the Competent Authority.

Importer means person/company importing aquatic organisms/aquarium accessories from outside the country.

Invasive species means non-indigenous species (e.g. plants or animals) that adversely affect the habitats they invade economically, environmentally or ecologically.

OIE-listed diseases mean diseases that are referred to in Chapter-1.2.3. of the Aquatic Code. (Synonym: disease listed by the OIE)

Pre-quarantine certificate means health certificate issued by an exporting country's Competent Authority certifying the health status of a consignment of aquatic animals.

Quarantine means maintaining a group of aquatic animals in isolation with no direct or indirect contact with other aquatic animals, in order to undergo observation for a specified length of time and, if appropriate, testing and treatment, including proper treatment of the effluent water.

Quarantine officer is a technically competent person authorized by the Competent Authority for purposes of inspecting and certifying compliance with the health requirements of the Competent Authority concerning the import and export of live aquatic animals.

Quarantine period means a minimum period of quarantine, typically as specified in an aquatic animal import health standard or other legally binding document (e.g. national or state regulations).

Risk analysis means the complete process composed of hazard identification, risk assessment, risk management and risk communication.

Shipment means a group of aquatic animals or products thereof destined for transportation.

Surveillance means a systematic series of investigation of a given population of aquatic animals to detect the occurrence of disease for control purposes and which may involve testing samples of a population.

Susceptible species means a species of aquatic animal in which infection has been demonstrated by natural causes or by experimental exposures to the disease agent that mimic the natural pathways for infection. Each disease chapter in Aquatic Manual contains a list of currently known susceptible species.

Triploid means specimen having 3 sets of chromosome (3N) and are sterile.

Sterile means specimen having rudimentary gonads and are not capable to breed.

3. Pre -requisites for import

- Permission to import eyed ova of rainbow trout must be obtained in writing from the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India.
- Only genetically improved strain through selective breeding of better performance in terms of growth and survival must be selected.
- Rainbow trout can be only transported at the eyed ova stage.
- Basic information of the strain such as history and growth performance etc. should be ensured.
- Eyed ova should be fertile to maintain the pure line of brood stock.
- Exporting farm should be certified as specific pathogen free (SPF) by governmental agency. This site should be free from VHS/IHN/IPN and should be committed to high sanitary procedures.
- Transportation should done maintaining a cold chain in a specially designed container. The said container should not be exposed to any kind of radiation at the airport.
- Imported eyed ova should be incubated in isolation at state trout farm maintaining all sanitary measures.
- Closed water re-circulatory system may be employed for hatching operation.
- Stock should be re-certified for quarantine especially, for pathogenic species-specific virus, bacteria and fungi etc.
- Post quarantine inspection by the scientists from ICAR-DCFR or other organisation is needed periodically.
- Growth performance should be evaluated in farm condition with technically association of ICAR-DCFR.
- Escape of fish from the farm must be strictly prohibited.
- Pure line of the stock must be maintained in farm conditions.
- Further dispersal of the imported strain by the state government agency should be done after satisfactory quarantine report and field validation of the performance.

4. Mode of import

- The farmer/state authority intending to import rainbow trout seed should be take prior permission from the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India.
- The permission of import shall be issued by the Competent Authority in Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, after examination of the proposal and due consideration of the recommendation of the National Committee on introduction of exotic aquatic species into Indian waters.

5. Quarantine

- Each batch of consignment of eyed ova will be examined on entry by Quarantine Officer at respective airport. The consignment should undergo quarantine at the importer's premises in a pre-designated area having necessary safeguards to check the spread of exotic pathogens as well as prevent the escape of the imported fish. Quarantine process will evaluate the health of the fish, check all documentation is in order and only approved species are included, and that no material of quarantine concern is present. Any prohibited fish species will be re-exported or destroyed, while prohibited material or material of quarantine concern will be seized and destroyed, all at importer's expense.
- The imported fish shall be accompanied by the permission of import issued by the DoF along with pre-quarantine certificate issued by the competent authority of exporting country stating that the farm/hatchery from where the consignment is exported, is covered under their national aquatic animal health surveillance or a pre-quarantine certificate showing status of OIE listed fish diseases of the farms with clear taxonomic specifications of the species.
- Upon arrival of the consignment, accompanying pre-quarantine and health certificate should be verified and imported species should be rechecked at the quarantine facility and certificate of quarantine be issued by the designated authority.
- Upon clearance from the port of entry, the consignment shall be transferred immediately to the approved quarantine facility.
- On receipt of consignment at quarantine facility, the imported stock should be subjected to prescribed quarantine protocol.
- The imported fish would undergo quarantine in approved quarantine facility for two weeks (14 days).
- During quarantine period, animals must be screened for OIE listed pathogens or any other emerging pathogens of significance relevant to rainbow trout, as susceptible host, to ascertain whether they are free from specified pathogens. If the stock is found containing any of the above pathogens, the stock must be destroyed by incinerated or other approved methods. The contaminated water must be disinfected appropriately under the supervision of a monitoring team. The cost involved in the process shall be borne by the importer.
- The cost of screening and testing shall be borne by the importer.

- Prior to disposal, all bags, polystyrene boxes and cartons used in import of fish must be either incinerated or effectively disinfected using a method approved by the competent authority.
- Prior to disposal, water imported with the consignment must be disinfected as per the standard procedure approved by the competent authority.
- After satisfactory completion of quarantine period, the consignment should be released to the importer with the quarantine certificate issued by the Quarantine Officer.
- The Department of Fisheries (DoF), Ministry of Fisheries, Animal Husbandry and Dairying, Government of India can revoke the permission or approval granted to the importer if these conditions are not met or there is a change in quarantine risk.

6. Penalties for violations

- The importer shall strictly comply with the environmental safeguards and bio-security requirements, exclusion and mitigation of biohazards and economic interest of the nation. The importer shall ensure that the imported fish is not released into the natural waters.
- The importer shall take adequate care to prevent any accidental escape of imported fish. In the event of accidental escape into natural waters, the matter should be immediately reported to the competent authority and the nearest Quarantine Officer.
- In case, the consignment does not pass quarantine, the entire consignment shall be destroyed at importer's cost as per the prescribed protocols.
- If during the course of inspection, if it comes to the notice of the Competent Authority that the importer willfully suppressed important information or deliberately furnished wrong information or, the consignment being imported is not the same or, the imported stock of species for which approval was not obtained, in such cases, the import permit shall be cancelled instantly and the imported stock destroyed without any notice of the importer.
- Fine or punishment may be imposed by the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India for the violation of the guideline.

7. Post quarantine Inspection

The Competent authority shall have right to carry out the post-quarantine inspection of hatchery, rearing facility and farms of the importer to confirm the specified norms for assuring that the imported fishes are used for the purpose for which they are imported and, to look at the magnitude of multiplication and horizontal spread of the imported fish species. The Competent Authority may also assign this responsibility to any designated Agency/Committee as and when required. Depending upon the convenience and availability of staff, the monitoring and inspection can be carried out by any member of monitoring team or by a whole team as may be decided and coordinated by the Ministry. The importer shall submit status report on transport, culture, rearing, breeding and retail etc. after the import. Report shall contain details on culture, pathogen screening, and disease, if any.

OIE-Listed diseases, infections and infestations in force in 2019

- Infection with *Aphanomyces invadans* (epizootic ulcerative syndrome)
- Infection with epizootic haematopoietic necrosis virus
- Infection with *Gyrodactylus salaris*
- Infection with HPR-deleted or HPRO infectious salmon anaemia virus
- Infection with infectious haematopoietic necrosis
- Infection with salmonid alpha virus
- Infection with viral haemorrhagic septicaemia virus
- Infection with *Aeromonas salmonisida*

Specific surveillance for trout in Europe

- Infectious haematopoietic necrosis virus (IHNV)
- Viral haemorrhagic septicaemia virus (VHSV)