Government of Jammu and Kashmir
Agriculture Production Department
Civil Secretariat, Jammu/Srinagar
****

Subject:- Launch of Aquaculture Development Scheme in J&K under UT Capex 2022-23.

Reference:- Administrative Council Decision No.155/14/2022 dated 19.12.2022.

Government Order No. 424- JK(APD) of 2022
Dated: 27 - 12 – 2022

Sanction is hereby accorded to the launch of:

a. Aquaculture Development Scheme 2022-23 along with operational guidelines as per **Annexure "A"**.

b. Consequent to the approval all beneficiary-oriented components of UT Capex Budget 2022-23 shall be merged under one single scheme i.e. Aquaculture Development Scheme 2022-23. The subsidy shall be back-ended and disbursed in DBT mode.

By Order of the Hon'ble Lieutenant Governor.

Sd/-
(Atal Dulloo) IAS
Financial Commissioner
(Additional Chief Secretary)

No.ASHF-PLG/18/2022 Dated:27-12-2022

Copy to the:-

1. Principal Secretary to the Lieutenant Governor, J&K.
2. Joint Secretary (J&K), Ministry of Home Affairs, Government of India.
3. Secretary to the Government, General Administration Department.
4. Director Finance, Animal/Sheep & Fisheries.
5. Director, Archives, Archaeology and Museums, J&K.
6. OSD to Advisor (B) to Hon'ble Lieutenant Governor.
7. Director, Fisheries, J&K.
8. Private Secretary to Chief Secretary, J&K.
9. Private Secretary to Additional Chief Secretary, Agriculture Production Department.
10. I/C Website.
11. Government Order File/Stock.

(Lalit Bhat)JKES
Deputy Director

Annexure **"A"** to Government Order No. 424-JK(APD) of 2022 Dated: 27.12.2022

Operational Guidelines under "Aquaculture Development Scheme (2022-23)"

1. The guidelines will be in force till 31st March, 2023 or replaced by a new set of guidelines whichever is earlier.
2. The support by the Department shall be available for the following components:
   i. Trout Culture in Private Sector*
   ii. Establishment of Carp Units*
   iii. Establishment of RAS for Cold Water Fisheries (Medium)
   iv. Establishment of Cage Culture in Open Water Bodies
   v. Establishment of Mini Feed Mills of production Capacity of 2ton/day
   vi. Setting up of trout packaging & marketing units in J&K for supply of trout at National level*
   vii. Assistance for Fish Transport Infrastructure through reefer Vans
   viii. Establishment of Biofloc Aquaculture System*
   ix. Establishment of RAS for Cold Water Fisheries (Large)*
3. The scheme shall be implemented through Fisheries Department J&K and monitored by Director Fisheries, J&K.
4. **Mode of operation:**
   i. Any individual /group of individuals/self-help group/cooperative society/farmers producer organization can avail the benefits of scheme.
   ii. Units may be established in multiples of 2 or 3 for better economies of scale & commercialization of schemes wherever indicated.
   iii. Efforts will be made to cover 20% SC/ST and 10% women beneficiaries.
   iv. The component wise details of benefits available are provided at "Annexure X" & the component details are given in "Annexure Y"
   v. The beneficiary can purchase machinery equipment from any registered company/ authorized dealer/ distributer/ sole manufacturer within or outside Union Territory of J&K. However, the rates shall be as per the company rate list or less.
   vi. The machinery/equipment should be certified as per requisite safety / quality standards and subsidy shall be released as fixed per unit by the

department regardless of prices as long as specifications prescribed are met.

vii. Interested beneficiaries shall submit their applications to their respective Assistant Director, Fisheries

viii. A brief business plan, indicating the site of establishment shall be enclosed with application.

ix. Once the beneficiary has established the unit (units), 50% of the unit (units) cost as subsidy amount or maximum ceiling, whichever is less, shall be released by the concerned Assistant Director, Fisheries on production of the invoice and physical verification of the unit by a team constituted by the Director Fisheries, J&K.

x. Such verification shall be carried out within 15 days of the submission of invoice and establishment of the unit. There will not be delay of more than 30 days in release of subsidy once the beneficiary has submitted the required documentation.

xi. Release of subsidy will be only through DBT.

xii. The beneficiary can opt for loan facility by depositing 10% marginal money and 50% of the unit (units) cost as total eligible subsidy amount or of maximum ceiling, whichever is less, will be released to the bank as back ended subsidy. Bank loan shall have defined lock in period as per RBI guidelines and terms and conditions of different commercial banks.

xiii. All such beneficiaries who intend to avail loan facility shall submit the form in the office of Assistant Director, Fisheries of concerned district along with supporting documents, if any.

xiv. The Assistant Director, Fisheries shall ascertain eligibility of beneficiary & shall forward the proforma bill of the unit along with copy of application of beneficiary and a letter to Bank. The bank shall follow all RBI guidelines for sanctioning such loan. After receipt of NOC from Bank, Assistant Director, Fisheries shall process the release of subsidy after verification of supply.

xv. Unit shall be monitored by the Assistant Director, Fisheries

5. Units shall be established subject to availability of funds.

6. The benefit under the Scheme shall be available to the units which have not availed similar benefit under any other scheme.

7. The cases under the Scheme shall be sanctioned by the respective Deputy Commissioners on the recommendations of the Committee of following officers after ascertaining the eligibility of the beneficiary.

a. Assistant Director, Fisheries
b. One member from District Administration
c. Representative of the Directorate of Fisheries

8. Guidelines shall be applicable only to the activities under which funds under Capex have been allocated to the Department.

9. The expenditure shall be restricted to the approved outlay/release of funds.

10. Supervision and monitoring: For effective control, look-after and proper supervision/ monitoring the beneficiary must install a metallic signboard of minimum dimensions of 3' x 2' outside the unit with full details of the unit

11. Director, Fisheries shall constitute a Project Monitoring Committee (PMC) for impact assessment & for monitoring the implementation of the scheme. He shall submit the impact assessment report in the first week of April 2023. Director, Fisheries if deemed necessary can incorporate additional clauses to streamline the implementation of the scheme. He shall also draft a document checklist required for implementing different components of the scheme.

12. Director, Fisheries shall submit the list of beneficiaries along with the benefits extended and address/phone number and photographs to the Administrative Department and upload the same on official website of the Department.

13. These guidelines are issued with the approval of competent authority.

Lalit Bhat,JKES
Deputy Director
ASH&F Department

Copy to the:

1. Financial Commissioner (Additional Chief Secretary) Agriculture Production Department for information of the Financial Commissioner.
2. Financial Commissioner (Additional Chief Secretary) Finance Department for information of the Financial Commissioner.
3. Principal Secretary to the Lieutenant Governor, J&K
4. Joint Secretary (J&K), Ministry of Home Affairs, GoI, North Block, New Delhi
5. All District Magistrates
6. Director Finance, Animal/Sheep Husbandry & Fisheries Department
7. Director, Fisheries, J&K.
8. OSD to Advisor (B), for information of the Advisor (B).
9. All Assistant Director s of Fisheries Department
10. In charge, Departmental website for updation on website.

Copy also to:

11. Convener J&K UTLBC, J&K Bank, Corporate Headquarters, Srinagar/Jammu
12. President, Lead Bank Department, Corporate Headquarters, Srinagar/Jammu

Annexure "X"

S. No.	Component	Pattern of Assistance	Eligibility of Beneficiary
1.	Trout Culture in Private Sector*	Unit cost: Rs 5.5 lac/unit 50% subsidy per trout unit with a subsidy ceiling of ₹ 2.75 lac. If an entrepreneur is interested to set up bigger units, he/she can establish multiple units with a maximum ceiling of 3 raceways per entrepreneur. (SC/ST/EWS/women beneficiaries shall be entitled to a subsidy ceiling of 60% per unit.)	Any individual /group of individuals/self-help group/cooperative society/farmers producer organization
2.	Establishment of Carp Units*	Unit cost: Rs 12.4 lac/unit (1 Ha) 50% subsidy per carp unit of 1 Ha with a subsidy ceiling of ₹ 6.2 lac. Size of units will depend on the availability of land by individual beneficiaries & the subsidy cost will be lowered on pro rata basis. (SC/ST/EWS/women beneficiaries shall be entitled to a subsidy ceiling of 60% per unit.)	Any individual /group of individuals/self-help group/cooperative society/farmers producer organization
3.	Establishment of RAS for Cold Water Fisheries	Medium RAS (04 tanks of minimum 50m^3 with capacity of 04 Tons/Crop) Unit cost: Rs 20 lac/unit 50% subsidy per medium RAS unit with a subsidy ceiling of ₹ 10 lac. If an entrepreneur is interested to set up bigger units, he/she can establish multiple units with a maximum ceiling of 2 medium RAS units per entrepreneur. (SC/ST/EWS/women beneficiaries shall be entitled to a subsidy ceiling of 60% per unit.)	Any individual /group of individuals/self-help group/cooperative society/farmers producer organization

4.	Cage Culture in Open Water Bodies	Unit cost: Rs 3 lac/cage with input costs 50% subsidy per trout unit with a subsidy ceiling of ₹ 1.50 lac. If the fishermen are interested to set up bigger units, they can establish multiple units with a maximum ceiling of 5 cages per entrepreneur or 25 cages per group of fisherman /self-help group/cooperative society/ farmers producer organization. (SC/ST/EWS/women beneficiaries shall be entitled to a subsidy ceiling of 60% per unit.)	Fishermen/ group of fisherman /self-help group/cooperative society/farmers producer organization
5.	Establishment of Mini Feed Mills of production Capacity of 2ton/day	Unit cost: Rs 30 lac/unit 50% subsidy per unit with a subsidy ceiling of ₹ 15.00 lac. If an entrepreneur is interested to set up bigger units, he/she can establish multiple units with a maximum ceiling of 2 feed mills per entrepreneur/society	Any individual /group of individuals/self-help group/cooperative society/farmers producer organization. Preference may be given to group of individuals/self-help group/cooperative society/farmers producer organization
6.	Setting up of trout packaging & marketing units in J&K for supply of trout at National level*	a. Facility to export Chilled trout fish from J&K Unit cost: Rs 24 lac/unit 50% subsidy per unit with a subsidy ceiling of ₹ 12 lac. (Details in annexure B) b. Facility to export frozen trout fish from J&K Unit cost: Rs 29.5 lac/unit 50% subsidy per unit with a subsidy ceiling of ₹ 14.75 lac. (Details in annexure B) (SC/ST/EWS/women beneficiaries	Any individual /group of individuals/self-help group/cooperative society/farmers producer organization. Preference must be given to self-help group/cooperative society/farmers producer organization

		shall be entitled to a subsidy ceiling of 60% per unit.)	
7.	Assistance for Fish Transport Infrastructure	Unit cost: Rs 10 lac/unit 50% subsidy per unit with a subsidy ceiling of ₹ 5.00 lac. (SC/ST/EWS/women beneficiaries shall be entitled to a subsidy ceiling of 60% per unit.)	Any fish farmer having a production capacity of 5MT & above. Groups of individuals/self-help group/cooperative society/farmers producer organization may be given preference
8.	Installation of Biofloc Aquaculture System*	Biofloc unit (07 tank of minimum 50m^3 with capacity of 05 Tons/Crop) Unit cost: Rs 7.5 lac/unit 50% subsidy per unit with a subsidy ceiling of ₹ 3.75 lac. If an entrepreneur is interested to set up bigger units, he/she can establish multiple units with a maximum ceiling of 2 Biofloc units per entrepreneur.	Any individual /group of individuals/self-help group/cooperative society/farmers producer organization
9.	Establishment of RAS for Cold Water Fisheries (Large)*	Medium RAS (10 tanks of minimum 50m^3 with capacity of 10 Tons/Crop) Unit cost: Rs 50 lac/unit 50% subsidy per medium RAS unit with a subsidy ceiling of ₹ 25 lac. (SC/ST/EWS/women beneficiaries shall be entitled to a subsidy ceiling of 60% per unit.)	Any individual /group of individuals/self-help group/cooperative society/farmers producer organization

* Approved activities against which funds have been allocated by Finance Department. Unit cost taken as per the guidelines of Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying.

Annexure "Y"

1. Trout Culture in Private Sector

The UT has an ample Cold-Water Resources in Kashmir region and hilly districts of Jammu region. To tap these resources optimally, the Department has established number of Trout Farms/Rearing units in the different localities of various districts as per the feasibility. It will not be out of place to mention that J&K is self-sufficient in Trout seed production & also caters to the demand of North-eastern States of the country and the Trout Seed has also been supplied to neighboring countries like Bhutan, Burma etc.

To tap water resources of J&K optimally, the Department proposes to establish Trout Rearing Units (Trout Raceways) in private sector under UT Capex. This will provide employment opportunities for the youth in areas having suitability for trout culture.

Aims and Objectives of the Scheme

- To boost the Trout Fish production in the UT
- To tap the water resources of the UT for Pisciculture.
- To generate employment avenues in the UT.
- To make trout fish available to the general public in J&K besides supplying trout to the rest of the country

Unit Cost and Pattern of Assistance

The breakup of the construction and input cost of the scheme is given as under:

I.	Construction cost for 50 cu.mt water volume (Preferably with dimension of 20m x 2.5m x1.2m)	Rs. 3.00 lacs
II.	Cost of seed (5000 seed @ Rs. 5/- per piece)	Rs. 0.25 lacs.
III.	Cost of feed (@ Rs 92/- per kg for 21.00 Qtls of feed) Quantity can vary as per rate at the time of supply.	Rs. 1.932 lacs
IV.	Implements/Equipment's/Transportation charges/Misc.	Rs. 0.318 lacs
	Total unit cost	**Rs. 5.50 lacs**

Economic Viability

The implementation of the scheme shall provide employment opportunities among un-employed population. The trout rearing has proved to be economically viable venture. The beneficiaries covered under the scheme will be able to produce 1.2 tons of saleable rainbow trout which will fetch him a turnover of Rs 4.8 lacs per unit per annum depending upon the viability of the unit and the interest and managerial skill shown by the farmer. Thus, the farmer can earn a handsome income per unit annually. The construction of more raceways in the private sector shall augment the Trout fish production of the UT besides contributing significantly towards the revenue generated from export of fish.

2. Establishment of Carp Units

Due to shrinking of Natural Water Resources and high demand for Fish, the rearing of fish in captivity has become imperative. The focus has been shifted towards Culture Fisheries in the UT. The main species of fish of commercial importance reared in the UT include the Common Carp, Indian Major Carps, Silver Carp, Grass Carp and some other species.

Water logged and low productive land can be utilized for construction of new Carp Ponds to boost the aquaculture and provide employment to the unemployed youth of the UT.

Aims and Objectives of the Scheme

1. To boost the fish production in the State.
2. To tap the water resources of the State for pisciculture.
3. To generate employment avenues in the UT.
4. To make fish available to the general public in rural and urban areas on reasonable rates.

Implementation and Management of the Scheme

The Department proposes to establish fish rearing units of different sizes with a minimum of 3 kanals of land in which one half dug half raised rearing pond shall be constructed. However, the unit area may increase, depending on the availability of the land but it should not be less than 3 Kanals in any case and the interested beneficiaries having feasible land will be preferred.

The details of the scheme for a basic land area of 3 kanals is as under:-

1. In a piece of 3 kanals of land the water spread area shall be at least 2 kanals and remaining area shall come under the dykes.
2. Since the climatic conditions of the UT is diverse in therefore the culture of species will be taken as per the feasibility. In Kashmir Division the Chinese Carps, Common Carp, Grass Carp and Silver Carp will be reared and the fingerlings (>70 mm) of 1000 Nos will be stocked in the basic pond of 2 kanals water spread area. In Jammu region the composite culture of Indian Major Carps and Chinese Carps shall be taken up. However, the ratio of the stocking of different species in pond will depend on the bottom/soil structure and the local climatic conditions including the physic-chemical parameters of the soil and water.

Unit Cost

S. No	Component	Unit Cost (Lac)
1.	Construction of new ponds	8.40/ha
2.	Input cost	4.00/ha

Size of units will depend on the availability of land by individual beneficiaries.

Construction of pond: The unit cost for construction of pond is as per the actual, subject to ceiling of Rs 8.40 Lacs for one hectare. The size of the pond

shall be as per availability of land. However, the basic unit in the UT shall comprise with minimum area of 3 kanals of land area.

The input costs for this scheme comprise of following components:

a. Fish Seed.
b. Manure.
c. Transportation.
d. Disease Prevention measures.

The ceiling for unit cost of the above listed components has been fixed as Rs 4.00 lacs for one ha of land. The actual assistance will depend on the area brought under the culture.

Economic Viability

After rearing, the fingerling for one calendar year the farmer can harvest on an average 500 kgs of fish in Kashmir Division and other cold zone of Jammu and 700 kgs in Jammu Division for 3 kanals area. The farmer can sell the fish @ 150-200/Kg. and can earn an amount of Rs 105000/- per annum for such pond. The selling price of fish in Jammu on an average shall be Rs. 150 per kg whereas, in Kashmir it will sell at about Rs. 200 per kg.

3. Establishment of RAS for Cold Water Fisheries

04 tanks of minimum 50m^3 with production capacity of 04 Tons/Crop

Re-circulatory Aquaculture System is indoor tank-based technology driven culture in which Fish is grown at higher density under controlled conditions and reusing the water after treatment. The technology is based on the use of mechanical and biological filters to clean the water for recycling back to Fish Culture tanks. Fresh water is also added to the tanks. A filtering system is necessary to purify the water and to remove/detoxify the harmful waste products and uneaten feed. In RAS, the Fish must be fed with nutritionally complete feed on daily basis to encourage fast growth and high survival.

During the present scenario, the increased focus on sustainability, consumer demand, food safety and cost effectiveness in aquaculture production calls for the continuous development of new production technologies. The RAS is a latest production technology that enable the large-scale Fish Farming by recycling water with very little or no pollution. The RAS is also useful in the areas where marginal land with feasible water resources is available. RAS affords growers the opportunity to manipulate production to meet demands throughout the year and to harvest at the most profitable times during the year. This flexibility in the harvest time allows the grower to rapidly respond to changing marketplace in order to maximize profitability.

RAS permits the growers to competitively respond to market price and demand fluctuations by altering harvest rates and time. On the other hand, the RAS is a complex system and require skilled manpower to manage successfully.

Constant Supervision, skilled technical manpower is required to manage and maintain the circulation, aeration, Bio-filter system and also for water quality analysis. Power back up is also a pre-requisite for RAS.

Medium RAS (Rs. 20.00 lacs)

S. No	Components	Amount (Rs. in lacs)
Capital Cost	Cost. Of 04 tanks @ Rs. 1.50 lac	6.00
	Equipment's	2.50
Operational Cost	Seed (20000 Fingerlings @ Rs. 5/-)	1.00
	Feed 8 MT @ Rs. 100/kg (FCR 1:2)	8.00
	Medicine	0.10
Misc.		2.40
Total		20.00

4. Cage Culture in Open Water Bodies

Cage aquaculture, though relatively new to the inland aquaculture scenario of the UT, brings in new opportunities for optimizing fish production from reservoirs, lakes, floodplain wetlands and for developing new skills among fishers to enhance their incomes. A cage is enclosed on all sides with mesh netting made from synthetic material that can resist decomposition under water for a long period of time and is generally small ranging from 1 m2 to 500 m2. Various types of cages are used in Cage Aquaculture: Fixed Cage is the simplest and used in 1-3 m deep waters; it consists of a net bag fitted to posts such that it does not touch the bottom and is normally placed in the flow of streams, canals, rivers, rivulets, shallow lakes and reservoirs. Floating Cage is used in water bodies deeper than 5 m; it is supported by a floating frame such that the net bag hangs in water without touching the bottom. There is wide range in shape, size and design to suit the requirement and conditions of fish culture in inland open waters. Culture of fish in enclosures such as cages and pens installed in open water bodies offer scope for increasing production obviating the need for more land-based fish farms.

Beneficiaries:

Interested and eligible local fishermen or members of Coop-Society/ Federation/SHGs will be trained and engaged in Cage Culture operations and in the ancillary activities/industries for smooth operation of the Project as well as for providing them livelihood opportunities.

Financial Assistance:

Fisheries Department, J&K shall extend financial assistance as per annexure for enabling an institutional setup and development in a project-mode. The cage culture unit shall be kept operational at all times to its full capacity for a minimum period of 3 years. Training shall be done by Fisheries Department, J&K

Cage Setup:

The Cage comprises of rigid floating frame (usually made of HDPE/PVC) as support and submerged knotless nylon netting as cage body. Size of a cage for fish culture in reservoirs can vary. However, for ease of operation and management, a cage with the dimensions 6 m (length) x 4 m (width) x 4 m (height) is considered a standard unit. Multiple cage units are installed as a battery comprising 6, 12 or 24 such cages, as per requirement, with catwalks for easy access to the fish stock.

Stocking, Feeding and Yield:

Although stocking densities should be determined by species requirements and operational considerations, the influence of stocking densities on growth and production has been determined empirically.

Cage Management:

Maintenance of cages, feeding, harvesting, etc., would be done by the trained local fishermen, members of Coop-Society/ Federation/ SHGs.

Harvesting: Harvest of fish in cages is less labor intensive compared to that in ponds. Cages can be towed to a convenient place and harvested by lifting the cage net. Also based on demand, partial or full harvest can be done.

Integrated Project Components and Unit Costs

Sl. No.	Component	Unit Cost (Rs. in Lakh)
1	Cage Unit (6 x 4 x 4 m = 96m^3) @ Rs.1.0 lakh/ Cage	1.00
2	Inputs Cost @ Rs.2.0 lakh/Cage	2.00
	Total	3.00

Estimated Project Costs & Returns Per Cage

Item	Amount/Quantity
Setup Cost: GI Cage Unit (6 x 4 x 4 m), and Inputs Cost: Fish Seed, Feed, etc.	Rs. 3,00,000
Culture/ Grow-out Duration	7-8 months
Weight of Fish at Harvest (average)	600 gm

Governance and Socio-Economics

Unlike the land-based aquaculture undertaken on private land, cage culture is practiced in common property resources. Therefore, the question – who owns the cages needs an important consideration.

(a) Fishers do fishing from water bodies as common property resource with free or almost free access.

(b) Fish produced from water bodies is essentially a natural resource and the traditional and local fishing communities have the 'natural

primary rights' to this resource.

(c) Livelihoods of many poor people depend on catching fish from reservoirs.

Considering the need to avoid conflicts, the best way to achieve the goal is to empower the fishers to take up this activity collectively without conflicts. Community (or a group of members of the community) should own the cages as a common property and they should be the beneficiaries of this technology.

A strong Governance platform based on co-management principles is essential for responsible cage culture operations to be undertaken by the community. But the existing fishermen/ cooperative societies have poor track record of functioning as a responsible entity to work as a group. This throws a big challenge on the Government to organize and empower the fisher communities and develop capacity among them to enable them to take up cage culture. SHGs, Cooperative Societies or other such groups should be given licenses to undertake cage culture.

5. Establishment of Mini Feed Mills of production Capacity of 2ton/day

Fishes like any other animals are provided with all the basic nutritional needs like proteins, carbohydrate, fats, minerals, vitamins etc for their growth, survival and multiplication, which has resulted in different feeding habits and diet selection. The fish particularly trout have shown to require supplementary feed as they cannot survive on natural feed in culture systems. Hence, adequate nutritional feed is important for Trout to augment their growth as well as increasing immunity towards infection and eventually achieve the desired production.

Fish culture in the J &K state is nothing new, but in the past, it was more of a hobby rather than rearing for income generation. During the recent years due to the successful implementation of schemes the fish culture has aroused great interest in the people. With the continuous expansion of the area under Trout fish culture and creation of more rearing units, there is a great need for setting up of additional feed mills to produce formulated feed for supply to the farmers as well as the departmental trout units and to enhance the growth performance, survival rate and finally fish for consumption in the state. The trout feed is presently manufactured in the departmental feed mills established at Trout Fish farming Project, Kokernag and Trout feed Mill, Manasbal.

The Department of fisheries has established a network of Trout Rearing /Carp Ponds in the feasible areas in both Govt and private sector. So far 1000 Trout units have been established in private sector besides about 56 farms / Hatcheries have been established in Govt. sector. Besides Carp rearing units have been established in Private Sector. New entrepreneurs are coming for establishment of Trout farms for large scale production. Presently the feed to private Rearing units and most of the government farms is supplied from Trout

feed mill Manasbal. In order to cater the demand of trout / carp fish farmers/entrepreneurs, the department proposes to establishment 06 mini feed mills of 2-ton capacity / day at Cluster Level in Jammu / Kashmir respectively.

Proposal for establishment of the mini feed mill
The Department proposes to establish mini feed mill having capacity of 2.0-ton capacity / day and shall have following components:

1 Intake Hopper
2 Grinding mill
3 Mixer
4 Pelleter.
5 Allied components including conveyers, storage bins, weighing machine, packing unit etc.

Unit cost:

Establishment of Mini Feed Mills	Rs 30.00 lac

6. Setting up of trout packaging & marketing units in J&K for supply of trout at National level

The Union territory of J&K is abundant in ice cold, pristine natural, water resources in the form of rivers, lakes, springs, streams, sars etc., which offers potential for diversified Fisheries activities viz. the Cold-Water Fisheries, Warm Water Fisheries, Reservoir Fisheries and Sport Fisheries. The environment, topography, climate etc., especially of Kashmir valley is well suitable for breeding, rearing, production and marketing of trout fishes. The snow-fed and glacier-fed streams, mountains, lakes and spring of the valley boost the healthy environment of two species of trout; Brown trout (*Salmo trutta fario*), and Rainbow trout (*Oncorhynchus mykiss*). The Rainbow trout is reared at various trout rearing units of J&K for sale to common masses besides being supplied to hotels and restaurants.

For many decades Trout fisheries was playing a role of a subsistence supplementary activity but all this changed in 1984 when Trout Fisheries in J&K received a major thrust with the establishment of Mother Trout Fish Farming Project, Asia's largest Trout Fish Farming Project, at Kokernag under European Union Assistance and the culture of Rainbow Trout was started. Since then, it has emerged as an important commercial activity and has been recognized as one of the self- employment sectors, besides being a source of livelihood for a large section of people in the UT. Over 3 decades, the Department has established 51 Trout Rearing Units including 15 Hatcheries/Rearing Houses in Government Sector making it the top producer of trout in the country.

The Department of Fisheries, J&K with the assistance of Government of India under various schemes like (CSS) of Rashtriya Krishi Vikas Yojana (RKVY)/CSS NMPS, Blue Revolution & PMMSY have played a key role in the

development of the sector. Under these schemes, 1000 Trout units have been established and RAS technology has also been introduced for intensive cultivation of trout in the various Districts of Jammu & Kashmir as per potential. With the result, the production of Trout in the UT has showed an increasing trend in the last 2-3 years. The production increased from 302 tons in 2016-17 to 1650 tons in 2021-22, Besides, 150 trout Beats have been established for Trout Angling. J&K is self-sufficient in Trout & the seed produced also caters to the demand of North-eastern States of the country and the has been supplied to neighboring countries like Bhutan, Burma etc. The expansion of Fish Farming in the Union Territory requires modern and scientific marketing facilities to support forward and backward linkage to ensure good returns & national availability from the established units.

Marketing:

To make fish available to consumers at the right time and in the right place requires an effective marketing system. To provide an extended market for the Kashmir Trout nationally with a focus on metros it is imperative to set up a system by which the delicacy can be readily available to the consumers outside the UT besides ensuring good returns to the Fish Farmers. Himalayan trout under the brand name "Kashmir Trout" can be made available at the national level through this intervention.

The Proposal: The Trout production in Jammu & Kashmir has increased considerably both in Government and Private Sector but with increasing the production proper marketing challenges are there. Pertinent to mention here that Rainbow Trout is produced in large scale and the Department intends to establish state of art Marketing facility in Private Sector equipped with all the modern technology of slaughtering, degutting, packing to increase the shell life of Fish so that the Trout Fish can be exported to other parts of India. Establishment of such type of marketing facility will fulfill the availability of trout outside the UT & at the same place accrue remunerative costs to the producers.

Objective of the proposal: The main objective of the proposal is to determine Marketing strategies for commercial exploitation of Trout being produced in Jammu and Kashmir under the brand name "Kashmir Trout" and also to promote sale of Trout Fish as it has been observed that the product branding play an important role in the promotion of sale. Most of the commercialized Fish Framers will not easily sell their produce due to poor mechanisms of marketing. This can also be associated to lack of enough branding of Fish products.
The other objectives are: -

a. Improvement of product value in the market for good returns to the producer.
b. The New Product Development and product diversification.
c. Online Marketing of the Produce.

Over the past decade, outsourcing has become a widely used and means to change their performance. The outsourcing will also make the Fish available to consumers at the right time and in right place by developing effective marketing

system. Tentative cost of the equipments is given below. Civil works shall be over & above the given costs & shall be borne by the beneficiary.

Facility to export Chilled trout fish from J&K

S. No	Particulars of the equipment	Tentative Cost (₹ in lac)
1.	Chiller room (10x10x8 feet) 0 to (-5)	2.50
2.	Ice Flaker/Solid Carbon Dioxide:	2.00
3.	Packing which shall include vacuum packaging machine, vacuum packing bags, thermocol boxes, card board boxes	5.00
4.	Provision for Generator set (30 KVA)	3.00
5.	Steel Tables, weighing machine, Chopper and cutting tools Descalers, cleaners, knives misc.	1.50
6.	Reefer van	10.00
	Total	**24.00**

Facility to export frozen trout fish from J&K

S. No	Particulars of the equipment	Tentative Cost (₹ in lac)
1.	Blast freezer with a batch capacity of 100Kgs	6.00
2.	Cold store (10x10x8 feet) temp range (-18) to (-22)	4.00
3.	Packing which shall include vacuum packaging machine, vacuum packing bags, thermocol boxes, card board boxes	5.00
4.	Steel Tables, weighing machine, Chopper and cutting tools Descalers, cleaners, knives misc.	1.50
5.	Provision for Generator set (30 KVA)	3.00
6.	Reefer van	10.00
	Total	**29.50**

7. Assistance for Fish Transport Infrastructure through reefer vans

Fish marketing in the UT is unorganized right from its catch to transportation particularly among the private fish producers in the state. Sale of fish to the potential areas like tourists' spots, urban areas & market hubs etc have not taken off effectively due to the lack of prompt transportation with cold chain facility. Most of the fish produced/catch in the UT lands nears catchment areas of the water bodies viz. units, rivers, lakes, reservoirs etc. For effective and efficient trade of the fish, transportation facilities need to be developed to facilitate the fish farmers to get competitive prices for their produce. The transportation facility has to be provided for transportation of fish from the producing centers up to the point of sale. The fish trade being unorganized in the UT has also slightly affected the consumption particularly in the rural areas. The quick transportation, means/delivery system is required so that the nutritive

value, besides hygiene of fish is retained and the optimum price is fetched by the fisher folk.

In order to facilitate the marketing infrastructure in rural as well as urban areas a cold system is required so that the fish reaches the consumer in fresh condition. Providing means of fast-track transportation of fish is proposed under the scheme in which refrigerated vans shall be purchased by the farmers so that the produce is collected and distributed to the places where they are in good demand to get remunerative prices. This will enable the transportation of fish from fish markets/ production centers to the potential market areas to ensure sale in efficient, effective and hygienic manner.

Refrigerated vans can be provided to the farmers to transport the fish from the landing centers and the ponds to the potential markets. The fish produce will be collected in fresh condition and transported to the nearest Mandis/Markets for sale. The sudden huge mortalities which may occur in the farms due to climatic factors or due to blockage of water supply, the farmers are unable to sell the fish locally, the vans can help in such case to transport the fish promptly to the potential market for sale.

Unit cost (Ceiling) = Rs. 10.00 lacs

Impact of the Scheme:

The scheme will help the sale of the fish hygienically under cold chain facility. The fish from the production units can be directly sold in the market and to the door steps of the consumers in the potential fish-eating areas and tourist centers. The fish farmers can utilize the services of these refrigerated Vans on regular basis more importantly at the time of natural disasters like flood/drought etc., and can transport their produce to the nearest market. Apart from ensuring nutritional and food security, it also helps in minimizing post-harvest losses, increase revenue; enhance employment opportunities and offers high standards of hygiene and sanitation leading to food safety.

8. Establishment of Biofloc Aquaculture System*

Bio-floc system is a waste water treatment which has gained vital importance as an approach in aquaculture. The higher C:N is maintained through the addition of carbohydrate source (molasses) and the water quality is improved through the production of high quality single cell microbial protein. In such condition, dense microorganisms develop and function both as bioreactor controlling water quality and protein food source. Immobilization of toxic nitrogen species occurs more rapidly in biofloc because the growth rate and microbial production per unit substrate of heterotrophy are ten times greater than that of the autotrophic nitrifying bacteria. This technology is based on the principal of flocculation within the system.

Composition and Nutritional value of Biofloc

Biofloc is heterogeneous aggregate of suspended particles and variety of microorganisms associated with extracellular polymeric substances. It is composed of microorganisms such as bacteria, algae, fungi, invertebrates and detritus etc. it is a protein rich live feed formed as a result of conversion of unused feed and excreta into a natural food in a culture system on exposure to sunlight. Each floc is held together in a loose matrix of mucus that is secreted by bacteria and bound by filamentous microorganisms or electro static attraction. Large floc can be seen with the naked eye but most of them are microscopic. Floc size range from 50 to 200 microns. A good nutritional value is found in biofloc. The dry weight protein ranges from 25 to 50 percent, fat ranges from 0.5 to 15 percent. It is a good source of vitamins and minerals particularly phosphorus. It also has an effect similar to pro-biotics. The dried biofloc is proposed as ingredient to replace the fish meal or soybean in the feed.

Benefits

- ★ Eco friendly culture system.
- ★ Reduces environmental impact.
- ★ Improves land and water use efficiency.
- ★ Limited or zero water exchange.
- ★ Higher productivity by way of enhancement of survival rate, growth-rate, feed conversion in the culture systems.
- ★ High bio security

Objectives:

- ★ To promote high yielding intensive fish farming in small area using BFT.
- ★ To encourage farmers and unemployed youth into income earning through small scale through BFT.

The unit cost for each unit is Rs. 7.50 Lacs which involves both the capital cost and input cost. The 1st year input cost includes cost of Seed/Feed/ and other miscellaneous charges; while the capital cost includes cost of tanks, installation, PVC fittings, Blowers, Generator etc.

Unit cost:

Establishment of Biofloc unit (7 tanks of 4m dia and 1.5 high)	Rs 7.50 lac

9. Establishment of large RAS for cold water fisheries

10 tanks of minimum 50m^3 with production capacity of 10 Tons/Crop

Re-circulatory Aquaculture System is indoor tank-based technology driven culture in which Fish is grown at higher density under controlled conditions and reusing the water after treatment. The technology is based on the use of mechanical and biological filters to clean the water for recycling back to Fish Culture tanks. Fresh water is also added to the tanks. A filtering system is necessary to purify the water and to remove/detoxify the harmful waste

products and uneaten feed. In RAS, the Fish must be fed with nutritionally complete feed on daily basis to encourage fast growth and high survival.

During the present scenario, the increased focus on sustainability, consumer demand, food safety and cost effectiveness in aquaculture production calls for the continuous development of new production technologies. The RAS is a latest production technology that enable the large-scale Fish Farming by recycling water with very little or no pollution. The RAS is also useful in the areas where marginal land with feasible water resources is available. RAS affords growers the opportunity to manipulate production to meet demands throughout the year and to harvest at the most profitable times during the year. This flexibility in the harvest time allows the grower to rapidly respond to changing marketplace in order to maximize profitability.

RAS permits the growers to competitively respond to market price and demand fluctuations by altering harvest rates and time. On the other hand, the RAS is a complex system and require skilled manpower to manage successfully.

Constant Supervision, skilled technical manpower is required to manage and maintain the circulation, aeration, Bio-filter system and also for water quality analysis. Power back up is also a pre-requisite for RAS.

Unit cost:

Establishment of large RAS for cold water fisheries (10 tanks of minimum 50m^3 with production capacity of 10 Tons/Crop)	Rs 50.00 lac

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