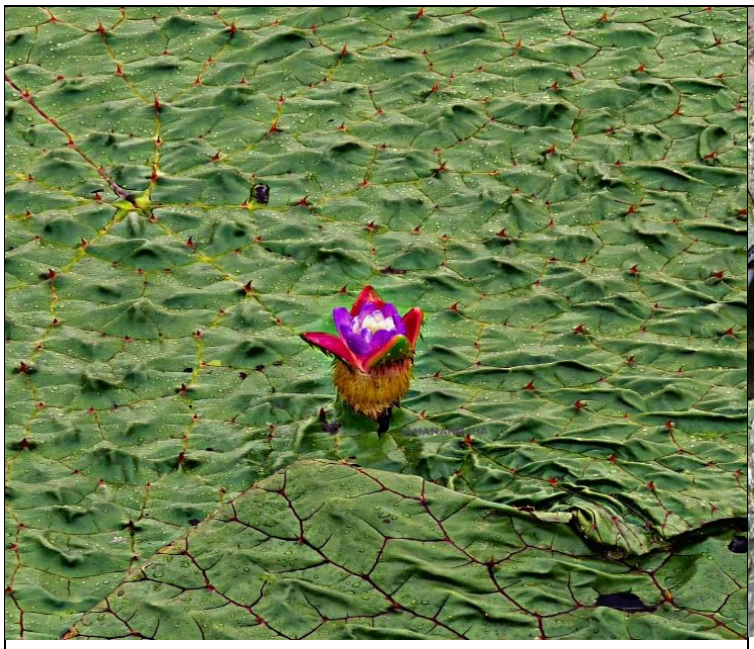
सत्यमेव जयते

Guidelines

Central Sector Scheme for Development of Makhana

OPERATIONAL GUIDELINES




National Makhana Board (NMB)
Horticulture Division (Technical Unit)
Department of Agriculture & Farmers Welfare,
Ministry of Agriculture & Farmers Welfare,
Govt. of India
Krishi Bhawan, New Delhi-110001.

INDEX

Central Sector Scheme for Development of Makhana

OPERATIONAL GUIDELINES

1. INTRODUCTION

1.1. Makhana (Fox nut & Gorgon nut in English) is biologically known as *Euryale ferox* belongs to the family of 'Nymphaeaceae'. This commonly known and widely used aquatic crop is high on nutrition content, and a non-cereal food. Besides being an excellent dietary source of carbohydrates, protein, minerals and fiber, this crop is loaded with therapeutic benefits and has been used in Ayurveda and Unani system of medicine in India. Thus, makhana can be considered as a wonder crop that can not only ensure the food and economical security of the poor and marginal farmers, but along with aquaculture can increase the productivity of the otherwise marginal wetlands to its maximum. It is an excellent anti-oxidant and has been traditionally used for the treatment of chronic diarrhea, diabetes, gonorrhea, kidney disorders, constipation, stomach-ache and beri-beri in Ayurveda and Unani medicine. Fox nut is believed to possess aphrodisiac properties. An alkaloid 'drummine' is found in the leaves is considered to be responsible for the anti-rheumatism activity and all the plant parts are reported to have tonic, astringent and de-obstruent properties.

Although the crop is cultivated in different parts of the world, but India is home to nearly 80% of the global produce. Makhana is a plant that is mostly found and grown in tropical and subtropical climates. Also known as 'Black Diamond' due to its multi-purpose use in medicine, healthcare, nutrition, the plant can be consumed in various forms. It is also widely consumed by people across the globe as a popular breakfast, evening snack, curries and sweetmeats. The plant has assumed great commercial importance in the last few years with ever increasing export potential to leading countries across the globe.

1.2 Distribution & Production:

In India, Makhana is mainly distributed in the states of Bihar, West Bengal, Odisha, Chhattisgarh, Manipur, Tripura, Assam, Jammu & Kashmir, Madhya Pradesh & Uttar Pradesh but commercially produced in few states only. It is estimated that Bihar accounts for more than 90 percent of total Makhana production in the country. Districts and cities including Darbhanga, Madhubani, Saharsa, Katihar, Purnea, Supaul, Kishanganj, Araria and Sitamari are major producers of Makhana.

In addition to India, Makhana (fox nut) grows well in the tropical and sub-tropical parts of the world and is an important crop of South-East Asian countries like China, Japan, Malaysia, Thailand, Philippines, Nepal and Bangladesh.

India dominated Global Makhana production, while China remains a secondary producer. Other countries, like Japan and Thailand, have limited production but could expand cultivation due to growing global demand. With rising awareness of Makhana as a superfood, India has a strong opportunity to further expand its export market and strengthen its position as the World's leading supplier of Makhana. Recently makhana has been accorded GI tagging by Ministry of Commerce under the name "Mithila Makhana" vide notification dated 16.08.2022 to pave the way for its seamless export and branding.

Makhana is presently marketed as a pop with very limited value addition. In spite of being a wholesome, nutritious, organic food, the potential of Makhana production still remains under-exploited and by and large remains till date, besieged with several constraints like lack of technological interventions, absence of organized marketing structure, inefficient supply chain and most importantly weak socio-economic condition of Makhana growers and processors. However, it remains an unequivocal fact that this sector holds immense potential both as fresh product and value addition, product development and innovation.

An intensive and focused intervention on different aspects of Makhana production and a comprehensive collaboration between different stakeholders is required in improving the livelihood of millions of Makhana growers and bringing glory to this under-explored wet land wonder. The supply chain of makhana involves farmers, wholesalers, traders, and exporters. However, there are challenges in the supply chain, including dependence on old farming practices, climatic conditions, limited processing, lack of proper storage & distribution systems, and limited access to credit for farmers. Makhana farmers are also facing challenges like limited mechanization, lack of market access and unstable selling price. Farmers & Fishermen families in various districts of North Bihar (Darbhanga, Madhubani, Saharsa, Supaul, Madhepura, Purnia, Katihar, Kishanganj and Sitamarhi) directly or indirectly depend on makhana cultivation and processing for their livelihood.

1.3 Establishment of National Makhana Board:

The establishment of National Makhana Board in Bihar was announced in Union Budget 2025-26 with primary objectives to improve production, processing, value addition and marketing. It was also mentioned that the people engaged in makhana sector will be organized into FPOs and provided handholding and training support. The Board will work to ensure that farmers engaged in makhana cultivation received the benefits of all relevant Government Schemes. The Board will operate under the administrative control of the Ministry of Agriculture & Farmers Welfare, Government of India, and will be dedicated to formulating policies, implementing initiatives, and providing necessary support to boost the growth of the Makhana sector.

The Board's key focus areas include enhancing the production and productivity of Makhana through scientific research, improved farming techniques, and better plant protection practices. It will also aim to streamline the processing infrastructure by promoting modern technology and value addition to improve the quality and shelf-life of Makhana products. Additionally, the Board will work towards expanding domestic and international markets for Makhana by facilitating better marketing strategies, branding initiatives, and export promotion.

Accordingly, The National Makhana Board was established by Ministry of Agriculture and Farmers Welfare vide Gazette Notification number 28-02/2025 Hort-Tech on September 14, 2025 The Board shall function under the overall authority, supervision and control of the Central Government.

1.4 Major objectives of National Makhana Board are as under: The National Makhana Board shall have the following objectives, namely:

i. Promote production and new technology development in makhana;

ii. Strengthen post-harvest management in makhana;

iii. Promote value addition and processing in makhana;

iv. Facilitate market, export and brand development in makhana;

v. Research and Development: Focus on promoting scientific advancement and modern technological solutions to enhance the productivity, quality, value addition and sustainability of Makhana industry etc.;

vi. Capacity Building: Provide training to farmers, FPOs and other stake holders on technology upgradation, and entrepreneurship development;

vii. National & international Collaboration: Facilitates collaboration between government agencies, research institutions, private sector, international organizations and countries to promote the holistic development of makhana industry;

viii. Board will work for convergence with other government schemes for benefitting to farmers; and

ix. Any other objectives as may be determined by the Central Government for promotion and development of makhana sector.

Raising of financial resources for meeting the administrative cost & objectives of the board.

The Board is being set-up for overall development of makhana sector. The board will be able to deliver on its objectives only if it has sound financial resources. The fund with the approval of Board will be utilized for creation of infrastructure like NABL Accredited labs for analysis of samples which in turn will generate revenue for the board. Further, the board can also raise funds through membership drives and donations from export houses & financial institutions. However, Board may not be able to become self sufficient in the near future as its mandate is development and not commercial in nature

and will require budgetary support for meeting administrative cost from DAFW, under its " other centre sector scheme".

Annual Action Plan: The National Makhana Board will invite yearly Action Plan from State Agriculture/ Horticulture Departments/SAUs/ CAUs/ICAR as per their requirements and consolidate the action plan. The Board will recommend the Yearly Action plan to Horticulture Technical Division, DAFW, for approval, allocation and release of funds.

2. Central Sector Scheme for Development of Makhana:

The central sector scheme has been approved to develop strategies to enhance production & productivity, quality, increase value addition and diversification, expand export markets and strengthen domestic sales. The Scheme will be implemented with bottom up approach through yearly AAP. The scheme will be demand and need based in each segment. Technology will play an important role in different interventions. The interventions envisaged for achieving desired goals would be varied and regionally differentiated with focus on cluster development deploying modern and hi-tech interventions, duly ensuring backward and forward linkages.

The major proposed programmes for development of makhana under Central Sector Scheme:

The scheme will be implemented as Central Sector Scheme with 100% GOI share to be made available as budgetary support under the progarmmes of DA & FW.

2.1 Research & Development:

There are limited improved varieties of makhana to increase productivity available and research institute has only recently tried to set up research as to develop better cultivars. Given the important market opportunities that exist and given that makhana is mostly grown by poor and vulnerable households in flood-prone production areas. There seems to be an important positive, and pro-poor, return to public investments in the development of improved varieties for pond cultivation.

Due to the increased demand, makhana cultivation has endogenously diffused to flooded rice fields in the off-season. This might open important new opportunities for increased production and seasonal income smoothening for rice farmers situated in these flood-prone vulnerable areas. As most research has until now focused on pond cultivation, it thus seems important to better understand these systems and develop improved technologies taking into account specific constraints of these production environments.

The R & D has not kept pace with development of technologies for nursery management, tissue culture standardization, seed production & storage, harvesting, post-harvest and value addition of Makhana. There is urgent requirement for conducting research for these activities and mechanization of various activities, notably the harvesting, popping and value addition which is presently labour intensive and hazardous to labour involved in these sectors.

R & D activities may be initiated by the public sector institutions for which project-based support will be made available from the scheme. The public sector institutions will identify the gaps and submit projects for approval to Board, through respective States, for developing time bound new technologies and validate the existing technologies which are already available in the field within the country or abroad.100% assistance will be provided to Institutions excluding manpower, which are already having the infrastructure for carrying out the Research.

2.2 Production

2.2.1 Seed production/ planting material production

Scientific seed production of makhana is non existent at the moment. The seed left in the ponds at the time of harvest is used for germination of new crops. This process drastically reduces the productivity and quality of the produce. The seed production technology & its storage for long time is not available at the moment. It is proposed to promote scientific seed production, nursery management and storage of seed under the scheme. It is also proposed that public sector research system may develop tissue culture technology for production of planting material in future.

2.2.2 Makhana cultivation/ area expansion

The scheme will focus primarily on increasing both production and productivity through adoption of improved and appropriate technologies for ensuring quality. Special emphasis will be given for adoption of area based cluster approach for optimum use of infrastructure and creating backward linkages for farmer group/FPO/FPCs and forward linkages with markets. Availability of good quality planting material will receive focused attention.

Fox nut fruit is a berry, large, round, spongy consisting of 20-25, small black seeds which are processed into the final edible product i.e. makhana. It is ideally cultivated in stagnant perennial water bodies like ponds, land depressions, oxbow lakes, swamps and ditches where a water depth of 1-1.5 meter is maintained throughout the year.

Although India is considered to be largest makhana producing country but potential for expending makhana cultivation in traditional & non-traditional areas is yet to be realized. It is estimated that by bringing additional areas with latest technology under makhana cultivation will provide export opportunity, making local demands and also help in increasing farmer income. Makhana cultivation integrated with fish & other aquatic plants like water chestnut will be an additional income source to women & landless farmers.

Makhana cultivation in traditional ponds & new technology of field cultivation will be supported under the scheme to increase the production and productivity of the crop. The cost of cultivation is at **Annexure-I.**

2.2.3 Post-Harvest Management

The ripe fruits burst during the month of July-August and the ripened seeds get settled in the bottom of the pond within 2-3 days. Collection of seeds from the pond bottom starts from August onwards and is a very tedious job performed only by skilled professionals mainly comprising of women population of a specific community of 'Mallah' of northern Bihar. The collected seeds are thoroughly washed to remove mud and other debris from pond bottom. The yield of Makhanamay vary from 12-20 quintals/ hectare.

The fresh cleaned seeds of fox nut are sun dried for 2-3 hrs to reduce the moisture content to approximately 25%. Further, the dried seeds with optimum moisture percentage are graded for uniform heating and popping. Wooden framed sieves of different sizes with highest pore size of 12 mm diameter and lowest of 4 mm diameter respectively are used for grading of seeds. Next in processing comes pre-heating where the sun dried, graded seeds are heated in earthen pitcher or iron pan with continuous stirring. These pre-heated seeds are then stored under ambient conditions for 48-72 hours for the equilibration of moisture, a process known as tempering. Finally, the pre-heated and tempered seeds are roasted at a temperature of 300ºC and cracked with wooden hammer to obtain popped makhana lava. The recovery rate for popped makhana is 40-42% and on average, 100 kg of seed yield 38-40 kg of popped nuts. The popped makhana is then packed in gunny bags with plastic lining and can be stored for long time. It has been estimated that 30-40% post production losses are faced by the farmers at various stages i.e. harvesting, drying, heating, & popping due to lack of technology and machinery for these operations. It is proposed to handle this situation by providing incentives for carrying out R & D and also creation of infrastructure & machinery by the farmers under the scheme.

2.2.4 Value Addition & Processing

Makhana is primarily marketed as a pop with very limited value addition. In spite of being a wholesome, nutritious, organic food the potential of Makhana production still remains under-exploited and by and large remains till date, besieged with several constraints like lack of technological interventions, absence of organized marketing structure, inefficient supply chain and most importantly weak socio-economic condition of Makhana growers and processors. However, it remains an unequivocal fact that this sector holds immense potential both as fresh product and value addition, product development and innovation. Thus, an intensive and focused work on different aspects of Makhana production and a comprehensive collaboration between different stakeholders will be highly significant in improving the livelihood of millions of Makhana growers and bringing glory to this under-explored wet land wonder. The drudgery involved in harvesting process warrants development of advanced technologies and equipment's to improve the efficiency of Makhana harvesting as well as reducing the operational hazards which is another major field wherein the entrepreneurs can be major players.

Makhana nut needs to be processed/popped to be used as food. There is requirement for

technology for storage of nuts and also modern technology & machinery for heating, popping and value addition of makhana for making it usable. The cost of value addition and processing projects is at **Annexure-II.**

2.2.5 Marketing & promotion

Being loaded with heavenly goodness, be it gluten free protein source or an antioxidant rich fruit with low glycemic index, low calories and fat content, the popularity of Fox nuts is increasing among the health-conscious consumers, thus, boosting its market growth. Fox nuts are highly popular in countries like India, China, Japan and Thailand with India being a major player in the global Fox nuts market. India's exports of fox nuts grew at 11.2% annually from 2013 to 2017 and in 2017-18, India exported USD 21.2 Million worth of fox nuts to the world. The global fox nuts market is estimated to grow by USD 72.5 million during 2019-2023 and the presence of several untapped markets are likely to encourage new players to enter the market thus, boosting the economic potential of this wonder crop.

2.2.6 Conducting Seminars/ Workshops/ Conferences:

Following types of Seminars/ Workshops/ Conferences will be organized:

a. **International Level:** Project based Financial assistance up to Rs.7.50 lakhs for organizing 3 days International Level Seminar / Workshop / Conferences in the country with 300 number of participants including farmers / stakeholders / officials etc. by inviting global experts on Makhana for delivering lecture in the Seminars/ Workshops/ Conferences will be given to implementing agency on the receipt of project proposal as per MIDH norms.

b. **National Level:** To create awareness about Makhana & disseminating knowledge on scientific Makhana, two days National Level Seminar be organized under NMB. The number of participants including farmers/ stakeholder/ officials, etc. to be 300 each day. Maximum assistance of Rs.5.00 lakhs (100%) per seminar is available under the scheme as per MIDH norms.

c. **State Level:** To create awareness about Makhana & disseminating knowledge on scientific Makhana, two Days State Level Seminar be organized under NMB. The number of participants including farmers/ stakeholder/officials, etc. to be 250 each day. Maximum assistance of Rs.3.00 lakhs (100%) per seminar is available under the scheme as per MIDH norms.

d. **District Level:** To create awareness about Makhana & disseminating knowledge on scientific Makhana, two day District Level Seminar on Makhana be organized under NMB. The number of participants including farmers/ stakeholder/officials, etc. to be around 200. Maximum assistance of Rs.2.00 lakh for two day programme will be available under the scheme as per MIDH norms.

   Any Stakeholders who wanted to organize the above International/ National/ State/ District Level Seminars cum Awareness Programme/Workshops/ Conferences may forward their proposal on Makhana. The seminar, workshops etc. can also be organized for shorter periods on prorate basis.

The seminars, workshops, conferences, for all interest groups will be organized with the help of SAUs, ICAR institutes and KVKs and other institutions having technical expertise in makhana.

2.2.7 Trainings/ Exposure Visits:

Under trainings/Exposure Visits, three types of physical trainings/exposure visits for farmers others stakeholders, Officers will be conducted, as under:

(i) Within State Training: The assistance will be given as per MIDH norms.

(ii) Out of State Trainings and Out of State Exposure Visits: The assistance will be given as per MIDH norms.

(iii) Outside the country Trainings/ Exposure Visits (Project based): The assistance will be given as per MIDH norms.

2.2.8 Field Demonstrations: The FLDs for farmers will be organized with the help of SAUs, ICAR institutes and KVKs and other institutions having technical expertise.

2.2.9 Training Modules/Checklist:

Training Modules for Trainings on Makhana for: (i) General Introductory Course, (ii) Training on Scientific Makhana Production, (iii) Specialized training on Makhana and Integrated Farming System (iv) Trainings on Post Harvest Management and Value Addition of Makhana (v) Market and Brand Development, Digital Marketing (vi) Export Promotion, (vii) Use of Artificial Intelligence and Drone Technology, Mechanization etc. will be developed by SAU/ICAR institutes.

3.1 Pattern of Assistance & Eligibility: The scheme will be implemented as central sector scheme with 100% funding from GOI. Assistance will range between 35-60% of cost norms for individuals & FPOs as per Annexure. Assistance to public sector, on project basis, will be 100% **Annexure-III.**

Eligibility Criteria : Makhana farmers, fishermen, SHGs, FPOs, Women SHGs, FPCs, Cooperatives, Public Institutions, registered companies, proprietorships firms, state/central govt., Agriculture/ Horticulture departments ICAR/SAUs/CAUs. Further, SAU/CAU/ICAR/CSIR/IIT etc will be treated as NLA, their project proposal will be submitted directly to Board.

Convergence : with PMMSY, NRLM, PMKSY, PDMC, PMKUSUM, AIF, MIDH, PMFME, KCC, MGNREGA, APEDA, ATMA, KVKs etc schemes.

Credit Linkages:

- The National Makhana Board under this scheme will coordinate with state government to facilitate KCC to the farmers/fishermen.

- The Board will facilitate credit facilities like term loan for infrastructure projects by including Convener of State Level Bankers Committee (SLBC) in the Executive Committee of the Board.
- Board with the support of NABARD will help FPOs platform in all makhana growing states.
- The expertise of NABARD will be used for preparation of model projects and DPR's to facilitate credit linkage for infrastructure projects.
- The provisions of credit guarantee provided under AIF etc. will be used for convergence under the scheme

Insurance: Board with state government will coordinate for coverage under Pradhan Mantri Fasal Bima Yojna (PMFBY)- RWBCIS for Makhana farmers.

3.2 Annual Action Plan (AAP):

The components under the scheme can be broadly categorized as R& D, Production, post-harvest management, Processing, Marketing and Extension activities

AAP needs to be supported with data/write up on communities involved in production, existing area, variety/species available, R&D, infrastructure for harvesting, value addition and marketing. The AAP should be based on the gaps in these sectors, as per need of the State. The production/ area expansion should be determined based on availability of seed/planting material. While finalizing the AAPs, due attention will be paid for earmarking specific targets for Scheduled Caste, Scheduled Tribe, women beneficiaries.

Based on the strength of the sector in the State, the State in coordination with State Agriculture University/ICAR will develop specific prospective plan to ensure and enable perspective planning. States will prepare the perspective/strategic plan and road map for overall development of makhana in respective State. This will form the basis for preparing Annual Action Plan (AAP). The Strategy & Road Map formulated by States should invariably contain information on geography & climate, potential of makhana development, availability of land, SWOT analysis, strategy for development and plan of action proposed to be taken to achieve goals in each district of the State. The document should focus on technologies having comparative advantage and natural potential for development in the State, adoption of cluster approach for production and linking with available infrastructure, or to be created, for post harvest management, processing, marketing and export. While selecting the cluster, preference should be given to those areas where natural resource base and water resources have been developed under watershed development programmes, Rashtriya Krishi Vikas Yojana (RKVY), Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS), Fisheries development schemes etc.

In order to strengthen/promotion of Farmer Interest Groups (FIG), Farmer Producer

Organizations (FPOs), Self Help Groups (SHGs) and Cooperatives, due attention has to be paid for allocation of targets to these groups while finalization of Annual Action Plan by the States. These groups/organizations may also be eligible for availing assistance under various components of the scheme.

3.3 Steps for Annual Action Plan (AAP)

- Horticulture Division, DA & FW will communicate the tentative outlay for the year to National Makhana Board (NMB) at the start of financial year. States will make tentative sector-wise/district-wise and institution wise allocation which in turn will prepare AAP.
- Nodal officers of Potential Districts will prepare sector wise action plan and submit to State HQ.
- States will prepare a consolidated proposal (AAP) for State as a whole, get it recommended by the State Level Executive Committee (SLEC), preferably constituted for MIDH or the Committee under the Chairmanship of Principal Secretary (Horticulture/ Agriculture) and furnish the same, to National Makhana Board as per format. Board will forward DA&FW for consideration and release of funds.
- All issues relating to makhana development, covering R&D, production, post-harvest management, value addition, and marketing will be covered by States.
- Annual Action Plan should ensure necessary convergence with other schemes of GoI and State.
- The AAP should reach NMB before 20 th of February every year.
- Formats for submission of Annual Action Plan to DA&FW are specified in **Annexure-IV.**

3.4 Fund flow mechanism

- Based on approved AAP and UC, Horticulture Division, DAFW will release Funds to NMB as per existing procedures of the Ministry of Finance, GoI.
- NBM in turn will release fund to State Governments, UTs, ICAR/SAUs/CAUs etc. as per the extant financial rules and instructions issued by Ministry of Finance from time to time.
- Flow of funds and the utilization by NMB, the Implementing Agencies / SHMs / SAUs/ICAR/Institutes/PSU etc. from Government of India and utilization of funds shall be governed by extant financial norms.
- Implementing Agencies will make arrangements for ensuring transfer of funds to beneficiaries as per existing applicable procedures.
- Board will make provision of service charges @ 2.5% in the AAP for the funds routed through it by the DAFW as applicable in other schemes .

3.5 Target Beneficiaries

The beneficiaries under field based & project-based activities will be identified by State Government in association with National Makhana Board, based on eligibility criteria of the operational guideline of the scheme.

The scheme was launched in Bihar and subsequently extended to all the potential makhana growing states. Makhana cultivation and processing is mainly done by the deprived community including landless farmers and fisherman community. Therefore, special focus to these groups will be given under the scheme through maximum participation of SC/ST/ Women beneficiaries/ SHG's and FPO's in promotion and awareness programme. Special thrust will be given for involvement and empowerment of women under this scheme. Women farmers and fisherman generally involved in the popping and packaging of makhana. Training and capacity building programme, seminar and workshops will be organized for maximum participation of women and women SHG'S. Modernization and mechanization of the makhana popping industry at village level on small scale will definitely reduce the drudgery faced by the women involved in the sector.

4. Committees & Operational Structure

A two tier structure System will be adopted i.e. Board of Management, and Project Approval & Monitoring Committee. The programme of Board and Scheme will be monitored through all digital tools applicable for other scheme/monthly progress reports/ inspection reports from States as well as by having review meetings, regular field visits, etc. The implementation of the programme will be monitored at National level by Horticulture Technical Division, DA&FW.

The Board shall operate through the following sub-committee:

4.1 Project Approval and Monitoring Committee (PA&MC):

For approval of Annual action plan, projects/proposals more than 10.00 lakhs and credit linked back ended subsidy, effective implementation, monitoring, etc. of activities under NMB, a Project Appraisal & Monitoring Committee (PA&MC) will be constituted under the Chairmanship of Secretary Agriculture, DAFW, with the following members:-

I.	Secretary Agriculture, DA&FW	Chairman
II.	Joint Secretary, Ministry of Food Processing Industries (MoFPI) or Representative	Member
III.	Joint Secretary, Ministry of Rural Development (RD) or Representative	Member
IV.	Joint Secretary, Ministry of Fisheries or Representative	Member
V.	ADG (Agricultural Engineering), ICAR	Member
VI.	Chairman, APEDA or Representative	Member
VII.	Chairman, NABARD or Representative	Member
VIII.	Director, Internal Finance Division (IFD), DA&FW	Member
IX.	Additional Commissioner (Horticulture), DA&FW	Member
X.	Horticulture Commissioner (DAFW)	Member Secretary

- The Committee will Appraise and approve the AAP received from States and other Implementing Agencies as per operational guidelines, cost norms and pattern of assistance.
- The NMB will consolidate the AAP's received from various States and submit yearly AAP to Horticulture Technical Division of DAFW.
- The Committee will Appraise and Approve the projects under project based activity as per operational guidelines, cost norms and pattern of assistance. The projects will consist of Credit linked projects from private sector/farmers and non credit linked projects from Public sector.
- The Committee will oversee the implementation of projects.
- Committee shall monitor implementation of programme of the Board.
- Coordination with State Agricultural & other Departments for on-ground implementation of policies.
- Periodic stakeholder consultations will be held to review challenges and opportunities.
- To effectively execute its objectives and ensure the comprehensive development of the Makhana sector, the Board through Executive Committee may establish specialized sub-committees for Research & Development, Marketing, Retail & Export Promotion, Quality Control & Standardization and Capacity Building as and when required. These sub-committees will focus on key functional areas, facilitating targeted efforts and strategic interventions.
- Performance Evaluation: Assessing the impact of implemented initiatives and recommending improvements for future policies

5. Project Approval Modalities Categorization.

The components under the scheme are categorized as field based activities and project based activities.

- The field based activities include area expansion, seed production, nurseries, ponds, harvesting equipment, on farm handling units, cultivation, training, laying of demonstrations, extension activities (Seminars, conferences, exposure visit, trade summit, awareness programme, print material etc.), market & export promotion and brand development.
- The project based activities will include R&D projects, Post-harvest Management, Processing & Value Addition, Centres of Excellence, Infrastructure like quality control and residual analysis Labs. Format for submission of projects is at **Annexure-V**.
- All SAU's/KVKs/ICAR institutes will submit project proposals, DPR as per format, directly to the Board.
- The projects related to post harvest, value addition, processing and other infrastructure projects like residual analysis laboratories are meant for the benefit of farmers and private sector. These projects are credit linked and subsidy release will be back ended as per extant norms. The projects of R&D, Centre of Excellence, Establishment of Quality control and Residual Analysis Laboratories

are generally meant for public sector and will be not be credit linked. However, in case any of these projects are undertaken by private sector then credit linkage will be required.

- The applicants under project based activity will submit the projects to State level Committee Executive Committee (SLEC) with complete DPR, bank sanction and appraisal, financial closure and financial viability. In case of public sector projects, bank sanction may not be required.
- The field based activities and credit linked back ended subsidy projects upto cost of Rs 10.00 lakhs per project will be approved by State Level Executive Committee (SLEC).
- The projects and activities more than cost of Rs 10.00 lakhs will be forwarded by SLEC of concerned states to Project approval and monitoring Committee/DAFW for approval through NMB.
- In case of credit linked & back ended Projects, the subsidy sanctioned by PAMC will be released by Board to concerned lending bank and kept in subsidy reserve fund account. The lending bank will release/adjust 50% of subsidy to the project after receiving satisfactory JIT report about completion of the project and locking period of three years from the date of last installment of term loan disbursement. The remaining 50% subsidy will be released by bank after receiving satisfactory JIT report for commencement of commercial production by the project.
- The subsidy amount will not exceed term loan component of the project.
- The applicant will complete project within 18 months from the date of first disbursement of term loan by the lending bank.

6. Synergy and convergence:

While preparing the yearly Action Plan, efforts will be made for Synergy and convergence with related schemes, of DA&FW, KVIC, MSME, APEDA, Ministry of Fisheries, Ministry of Rural Development and Ministry of Food Processing Industry. Convergence will also be made while implementing scheme in the field for overall promotion & development of the sector.

7. Setting up of Project Management Unit/ Cell (PMU):

A dedicated PMU/ Cell at National level to drive and steer programme on Makhana" is to be set up to look after overall execution & implementation, monitoring, etc. of the scheme in the country under the Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Govt. of India. PMU/ Cell/ Unit will be headed by Additional Commissioner (Horticulture), DA&FW with five Experts /Theme Experts and other supporting staff. Theme Experts will include Experts from the different field as per the requirement including Experts for implementation, monitoring, supervision of activities.

8. MISSION MANAGEMENT:

a. Administrative support for PMU/ Cell under NMB

For managing various activities of Board and implementation of the scheme, including hiring of Chief

Consultants/ Consultants/ Experts need based and supporting staff, etc., administrative expenses, miscellaneous, etc. at National Level, State Level, the provision of funds made under NMB shall be utilized as per existing procedure applicable for other Central Sector Scheme.

b. INSTITUTIONAL STRENGTHENING / FPO/ START-UP PROMOTION:

(i) Head Quarters at National level and that of NMB and State functionaries will be strengthened for database creation and collection, use of Information Technology, development of software and procurement of hardware, hiring of vehicle, etc. for which funding may be made available either under appropriate components of NMB or expenditure may be met out of the Mission Management support by the implementing agencies.

(ii) NMB may appoint the regular staff as per the rules of DOE and the separate proposal will be submitted to DOE for the same.

(iii) Assistance will be available for strengthening/ promoting of Farmer Interested Groups (FIGs)/ Farmer Producer Organizations (FPOs)/Startups/ Self Help Groups (SHGs), etc. involved in Makhana, Women Self Help Groups (SHGs) be promoted under the component of "Empowerment of Women through Makhana".

(iv) Agri- entrepreneurs & agri- startups will be encouraged for their involvement in Makhana/ Makhana production and supported/ facilitated under different components of NMB.

c. COLLABORATION WITH INTERNATIONAL AGENCIES/ORGANIZATIONS:

Attempts will be made to collaborate with International Agencies/ Organizations/ Federations like FAO, UNDP, World Bank, Asian Development Bank, etc. and countries, etc. which have developed modern/latest technologies in Makhana sector for taking up programmes for development of Makhana in the country. Under collaborative programme, activities to be undertaken would include import of technologies/equipments/machineries, hiring of International Domain Experts, organizing Out Side the Country exposure visits/ study tours, training programmes, etc. of the concerned officials, farmers/ beekeepers, etc. under aegis of NMB. Funds for this purpose will be earmarked in Annual Budget of NMB/ AAP of NMB. For "Promotion of new global technology for development of scientific Makhana".

Middle level officers of NMB/ progressive farmers/fishermen may be deputed for outside trainings/exposure visit on Makhana to the countries which have developed modern/latest technologies in Makhana sector.

9. Dashboard : A dashboard will be launched by Board which provides dynamic information on area under cultivation, farmers involved, processing units, production details and on coverage of central government schemes that benefit Makhana growers and workers. Coordination with State Agricultural

Departments for on-ground implementation of policies. Periodic stakeholder consultations will be held to review industry challenges and opportunities.

10. Nodal Agency designated at National Level for implementation of CSS scheme and other arrangements: The Central Sector scheme (100% funded by Central Government), will be implemented by National Makhana Board (NMB), under the Department of Agriculture & Farmers Welfare for overall holistic development and promotion of Makhana sector at National level.

11. The operational guidelines of central sector scheme can be revised, as per the requirement, with the approval of Honorable Agriculture Minister.

Annexure-I

Cost of cultivation of Makhana (per ha) in Field System

Sl. No.	Particulars	Quantity (kg/No.)	Rate per unit (Rs.)	Amount (Rs.)
A	**Input cost per ha.**			
1.	**Nursery raising of Makhana** (500-600 m^2 nursery area is required for 01 ha.)			
i.	Field preparations			1000.00
ii.	Cost of Makhana seed (any improved variety)	30 kg/ha.	255/kg.	7650.00
iii.	Seed treatment with Imidacloprid 70 WS or thiomethoxam 25 WG	@ 5 g/kg seed		500.00
iv.	Irrigation (water standing up to 1ft height)	6 hrs.	100/hr.	600.00
v.	Manpower wages for irrigation cleaning of water and sowing of Makhana seed	1	412/day	412.00
	Subtotal (a)	-	-	**10,162.00**
2.	**Makhana saplings transplanting in main field (Area= 01.00 ha.)**			
i.	Field preparations (ploughing, levelling and puddling)			2500.00
ii.	Irrigation (water standing up to 1ft height in Makhana field)	20 hrs.	100/hr.	2000.00
iii.	Chemical fertilizers (N-75: P_2O_5-45: K_2O- 30 kg/ha.)			
	a) Urea	02 bags/ha.	266.5/bag-45 kg	533.00
	b) DAP	01 bags/ha.	1350/bag-50kg	1350.00
	c) MOP	1 bags /ha.	1740/bag-50kg	1740.00
	d) Lime powder (Agricultural grade)	50 kg/ha.	10/kg.	500.00
iv.	Manpower wages for broadcasting of chemicals fertilizers and lime in Makhana field	2	Rs.412/day	824.00
v.	**Transplanting cost:** Root dip treatment: Solution of imidacloprid70 WS or thiomethoxam 25 WG @5 g/lit of water for half at the time of transplanting cost of Makhana saplings in main field	2.5 acre	7500/acre	18750.00
vi.	**Drone Sprayer** : Foliar Spray of Nano Urea, Nao DAP, water soluble , micro nutrients , NSKE etc. by Drone Sprayer	Rs. 350/ flight 03 flights/ha per spray	03 spray required per ha. (09 flights / ha. x Rs. 350)	3150.00
a	Nano Urea -500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 225 x 3	675.00
b	Nano DAP -500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 600 x 3	1800.00
c	Neem Oil - 500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 300 x 3	900.00
d	PGRs/ micronutrient-250ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 185 x 3	555.00
e	WSF-0-52-34- 100g /10 lt. of water OR per flight of Drone Sprayer		Rs. 30 x 3	90.00
vii.	Manpower wages for weeding and irrigation in Makhana field	10	Rs.412/day	4120.00

viii.	Irrigation (4 to 5) at 10-15 days after interval (water standing up to 1ft height in Makhana field)	35 hrs.	100/hr.	3500.00
ix.	For three foliar spray of NSKE-1500 ppm Neem based insecticides @ 1lt. per ha per spray	03 litter per ha	@Rs500 per litter	1500.00
x.	Manpower wages for three foliar spray of NSKE	3	Rs.412/day	1236.00
	Subtotal (b)	-	-	**45,723.00**
xi.	**Harvesting cost of Makhana seed by manually**	**Yield (q/ha.)**	**Rs./q**	
A	First harvesting	17 q/ha	3500.00	51000.00
B	Second harvesting	02 q/ha	5000.00	10000.00
C	Third harvesting	01 q/ha	7500.00	15000.00
	Subtotal (c)	**20 q/ha.**	**-**	**76,000.00**
	Grand Total (Subtotal a+b+c)	-	-	**1,31,885.00**

*As adopted from State Agriculture University, Sabour, Bihar

Cost of cultivation of Makhana (per ha) in Pond System

Sl. No.	Particulars	Quantity (kg/No.)	Rate per unit (Rs.)	Amount (Rs.)
A	**Input cost for per ha.**			
1.	**Management of Makhana seedlings in initial stage (December to February)**			
i.	Makhana Seed (any improved variety)	50 kg.	255/kg.	12750.00
ii.	For three foliar spray of NSKE-1500 ppm Neem based insecticides @ 1lt. per ha per spray	03 litter per ha	@Rs500 per litter	1500.00
iii.	Manpower wages for Spaying of Neem based insecticides, cleaning of water etc.	2	Rs.412/day	824.00
	Subtotal (a)	-	-	**15,074.00**
2.	**Pond System: Gap filling and uprooting of dense Makhana saplings (Area= 01.00 ha.)**			
i.	Pond preparations (cleaning of aquatic weeds etc.)	-	-	2500.00
ii.	**Drone Sprayer**: Foliar Spray of Nano Urea, Nao DAP, water soluble, micro nutrients, NSKE etc. by Drone Sprayer	Rs. 350/ flight 03 flights/ha per spray	03 spray required per ha. (09 flights / ha. x Rs. 350)	3150.00
a	Nano Urea -500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 225 x 3	675.00
b	Nano DAP -500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 600 x 3	1800.00
c	Neem Oil - 500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 300 x 3	900.00
d	PGRs or micronutrient -250ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 185 x 3	555.00
e	WSF-0-52-34- 100g /10 lt. of water OR per flight of Drone Sprayer		Rs. 30 x 3	90.00
iv.	Manpower wages for broadcasting of chemicals fertilizers and lime in Makhana field	2	Rs.412/day	824.00
v.	Gap filling and uprooting of dense Makhana saplings	2.5 acre	2500/day	6250.00
viii.	Integration of Fish Yearlings	7500/ha.	Rs.10/- per fish yearlings	75000.00
Ix	For three foliar spray of NSKE-1500 ppm Neem based insecticides @ 1lt. per ha per spray	03 litter per ha	@Rs500 per litter	1500.00
	Manpower wages for three foliar spray of NSKE	3	Rs.412/day	1236.00
	Subtotal (b)	-	-	**94,480.00**
x.	**Harvesting cost of Makhana seed by manually**	**Yield (q/ha.)**	**Rs./q**	
A	First harvesting	15 q/ha	3500.00	52500.00
B	Second harvesting	02 q/ha	5000.00	10000.00
C	Third harvesting	01 q/ha	7500.00	7500.00
	Subtotal (c)	**18 q/ha.**	**-**	**70,000.00**
	Grand Total (Subtotal a+b+c)	-	-	**1,79,554.00**

*As adopted from State Agriculture University, Sabour, Bihar

Cost of cultivation for Seed production in Field system

Sl. No.	Particulars	Quantity (kg/No.)	Rate per unit (Rs.)	Cost including 20% additional over cultivation cost (Rs.)
A	**Input cost per ha.**			
1.	**Nursery raising of Makhana** (500-600 m^2 nursery area is required for 01 ha.)			
i.	Field preparations			1200.00
ii.	Cost of Makhana seed (any improved variety)	30 kg/ha.	255/kg.	9180.00
iii.	Seed treatment with Imidacloprid 70 WS or thiomethoxam 25 WG	@ 5 g/kg seed		600.00
iv.	Irrigation (water standing up to 1ft height)	6 hrs.	100/hr.	720.00
v.	Manpower wages for irrigation cleaning of water and sowing of Makhana seed	1	412/day	494.40
	Subtotal (a)	-	-	**12,194.40**
2.	**Makhana saplings transplanting in main field (Area= 01.00 ha.)**			
xii.	Field preparations (ploughing, levelling and puddling)			3000.00
xiii.	Irrigation (water standing up to 1ft height in Makhana field)	20 hrs.	100/hr.	2400.0
xiv.	Chemical fertilizers (N-75: P_2O_5-45: K_2O- 30 kg/ha.)			
	a) Urea	02 bags/ha.	266.5/bag-45 kg	639.60
	b) DAP	01 bags/ha.	1350/bag-50kg	1620.0
	c) MOP	1 bags /ha.	1740/bag-50kg	2088.00
	d) Lime powder (Agricultural grade)	50 kg/ha.	10/kg.	600.00
xv.	Manpower wages for broadcasting of chemicals fertilizers and lime in Makhana field	2	Rs.412/day	988.80
xvi.	**Transplanting cost:** Root dip treatment: Solution of imidacloprid70 WS or thiomethoxam 25 WG @5 g/lit of water for half at the time of transplanting cost of Makhana saplings in main field	2.5 acre	7500/acre	22500.00
xvii.	**Drone Sprayer**: Foliar Spray of Nano Urea, Nao DAP, water soluble, micro nutrients, NSKE etc. by Drone Sprayer	Rs. 350/ flight 03 flights/ha per spray	03 spray required per ha. (09 flights / ha. x Rs. 350)	3780.0
a	Nano Urea -500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 225 x 3	810.0
b	Nano DAP -500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 600 x 3	2160.0

c	Neem Oil - 500 ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 300 x 3	1080.00
d	PGRs or micronutrient -250ml /10 lt. of water OR per flight of Drone Sprayer		Rs. 185 x 3	666.00
e	WSF-0-52-34- 100g /10 lt. of water OR per flight of Drone Sprayer		Rs. 30 x 3	108.00
xviii.	Manpower wages for weeding and irrigation in Makhana field	10	Rs.412/day	4944.00
xix.	Irrigation (4 to 5) at 10-15 days after interval (water standing up to 1ft height in Makhana field)	35 hrs.	100/hr.	4200.00
xx.	For three foliar spray of NSKE-1500 ppm Neem based insecticides @ 1lt. per ha per spray	03 litter per ha	@Rs500 per litter	1800.00
xxi.	Manpower wages for three foliar spray of NSKE	3	Rs.412/day	1483.20
	Subtotal (b)			**54,867.60**
xxii.	**Harvesting cost of Makhana seed by manually**	**Yield (q/ha.)**	**Rs./q**	
A	First harvesting	17 q/ha	3500.00	61200.00
B	Second harvesting	02 q/ha	5000.00	12000.00
C	Third harvesting	01 q/ha	7500.00	18000.0
	Subtotal (c)	**20 q/ha.**	**-**	**91,200.00**
	Grand Total (Subtotal a+b+c)	-	-	**1,58,262.00**

*As adopted from State Agriculture University, Sabour, Bihar

Annexure-II

Post-harvest processing and value addition cost norms

A. Micro level Enterprises (up to 100 kg raw makhana seed per day)

S. No.	Name of Equipment	Capacity	Cost (Rs)
1	Screens set for grading of seeds (07 screens)	100	Technical civil work should not exceed more than 25 % of total project cost
2	Primary roasting machine (kg/h)	50	
3	Roasting and popping machine (kg/h)	10-12	
4	Popped makhana grading screens (kg/h)	50	
5	**Civil Works**	**800 sq ft**	
Total Cost (Rs)			**10,00,000.00**

B. Small level Enterprises (200-500 kg raw makhana seed per day)

S. No.	Name of Equipment	Capacity	Unit Cost (Rs)
Makhana primary processing machineries			
1	Batch type raw makhana seed washer (kg/h)	100	.
2	Seed grading machine (kg/h)	200	
3	Batch type primary roasting machine (kg/h)	100	
4	Final roasting and popping machine (kg/h)	20-25	
8	Popped makhana grader (kg/h)	100	
9	Miscellaneous instruments (moisture meter, thermal sensors, sealer, bag stitching machine, etc.)		
Makhana secondary processing and value addition machineries			
1	Makhana flavouring and instant kheer manufacturing unit (kg/h)	20	Technical civil work should not exceed more than 25 % of total project cost
2	Makhana puffs production unit (kg/h)	20	
3	Civil Works	2000 sq ft	
Total			**39,00,000.00**

C. Medium level Enterprises (1500 kg raw makhana seed per day)

S. No.	Name of Equipment	Capacity	Unit Cost (Rs)
a. Makhana processing machineries			
1	Continuous raw makhana seed washer (kg/h)	500	Technical civil work should not exceed more than 25 % of total project cost
2	Seed drying machine (kg/batch)	700	
3	Seed grading machine (kg/h)	1000	
4	Continuous primary roasting machine (04 units, kg/h)	200	
5	Cooling tunnel conveyor (04 units, 6 m length, kg/h)	200	
6	Holding/tempering bins (20 Nos, kg)	200	
7	Final roasting and popping machine (04 units, kg/h)	50	
8	Popped makhana grader (02 units, kg/h)	200	
9	Miscellaneous instruments (Transformer, moisture meter, thermal sensors, sealer, bag stitching machine, etc.)		

b. Processing and value addition machine			
1	Makhana flavouring plant (kg/h)	100	Technical civil work should not exceed more than 25 % of total project cost
2	Makhana pasta production plant (kg/h)	200	
3	Makhana instant kheer and powder plant (kg/h)	100	
4	Makhana puffs production plant (kg/h)	50	
5	Pack house/Storage of Makhana (tons)	100	
c.	Civil works	6000 sq ft	
Total			**3,00,00,000.00**

D. Large level Enterprises (>1500 kg raw makhana seed per day)

S. No.	Name of Equipment	Capacity	Unit Cost (Rs)
a. Makhana processing machineries			
1	Continuous raw makhana seed washer (03 units, kg/h)	500	
2	Seed drying machine (07 units, kg/batch)	250	
3	Seed grading machine (kg/h)	1000	
4	Continuous primary roasting machine (08 units, kg/h)	200	
5	Cooling tunnel conveyor (08 units, 6 m length, kg/h)	200	
6	Holding/tempering bins with conveyors (20 Nos, kg)	500	
7	Final roasting and popping machine (08 units, kg/h)	50	
8	Popped makhana grader (04 units, kg/h)	200	
9	Connecting conveyors, elevators, material handling devices		
10	Loaders, Forklift, and walkers		
11	Miscellaneous instruments (Transformer, moisture meter, thermal sensors, sealer, bag stitching machine, etc.)		
b. Processing and value addition machine			
1	Makhana flavouring plant (kg/h)	200	Technical civil work should not exceed more than 25 % of total project cost
2	Makhana pasta production plant (kg/h)	500	
3	Makhana puffs production plant (kg/h)	200	
4	Pack house/Storage of Makhana (200 tons)	100	
c.	Civil Works		
Total			**7,00,00,000.00**

*As adopted from CIPHET, Ludhiana

Annexure-III

Unit cost, pattern of assistance & Admissible Subsidy					
S. No.	**Components**	**Unit**	**Unit cost (Rs. in lakh)**	**Pattern of Assistance**	**Maximum Admissible Limit**
A	**Production**				
1	**Seed production**	ha	1.58		
i	Public Sector			100%	5 ha
ii	FPOs			50%	10 ha per FPO
2	**Makhana cultivation including INM, IPM**				
a	Pond cultivation including nurseries	ha	1.79		
i	Farmers			40%	2 ha max.
b	Field cultivation including nurseries	ha	1.32		
i	Farmers			40%	2 ha max.
c	Construction of new pond	ha	7.00		
ii	Farmers			40%	1 ha max. (credit linked)
3	**Frontline Demonstrations with integrated farming**	nos.	2.00	100%	Public sector (01 FLD in each block up to 2 ha)
4	**Training of farmers**	nos.	Rs 1000/ farmer	100%	Max 2000 farmers/block/per year
5	**Harvesting equipments**				
a	Mechanical Harvesting (Equipment) credit linked	nos.	7.00		
i	Public Sector			100%	max 01 number/agency
	Farmers			50%	max 01 number/farmer
ii	FPO			60%	max 02 number/farmer
b	Traditional Ganj harvesting equipments	nos.	Rs. 3200/ ganj	50%	10 number/ha- max 2 ha
B	**Post harvest processing and value addition-**				
1	**On farm handling unit**	nos.	4.0	50%	01 number/beneficiary
2	**Micro level Makhana processing unit credit linked**	nos.	10.00		Individual components for value addition can be availed as per Annexure
i	Public Sector			100%	01 number/Agency
ii	Private Sector			35%	01 number/beneficiary
iii	FPO			50%	01 number/beneficiary
3	**Small level Makhana processing unit credit linked**	nos.	39.00		
i	Private Sector			35%	01 number/beneficiary
ii	FPO			50%	01 number/beneficiary
4	**Medium level Makhana processing unit credit linked**	nos.	300.00		
i	Private Sector			35%	01 number/beneficiary

ii	FPO			50%	01 number/beneficiary
5	**Large level Makhana processing unit credit linked**	nos.	700.00		
i	Private Sector			35%	01 number/beneficiary
ii	FPO			50%	01 number/beneficiary
C	**R & D (Technology Development)**		Project based	100%	
D	**Market and Export Promotion & Brand Development**				
1	**Buyer Seller, Promotional Meets (Max. 1.00 lakh)**	nos.	Project based	100%	max 1.00 lakh
2	**Makhana Pavilions in National Level Trade Fairs (Max. 1.30 lakh)**	nos.	Project based	100%	max 1.30 lakh
3	**Infrastructure Support for Setting Up of Sales Outlets (Max. 20.00 lakh)**	nos.	Project based	50%	max 10.00 lakh
4	**Scheme for Quality Certification (Max. 5.00 lakh)**	nos.	Project based	50%	max 2.50 lakh
5	**Brand Building Support**	nos.	Brand publicity through Digital Marketing, Brand publicity through mass media, Assistance for printing publicity materials, Assistance for outdoor advertising		
a	Government/FPO		Project based	100%	(Max. 25.00 lakh)
b	Companies/Organization		Project based	50%	(Max. 12.50 lakh)
6	**Setting up of Makhana Pavilions in major international fairs**	nos.	Project based	100%	(Max. 25.00 lakh)
a	Public Sector	nos.		100%	as per actuals
b	FPO/Exporters	nos.		50%	as per actuals
7	**Assistance to exporters for participation in International Exhibition, Trade Fair, makhana diwas, Buyer seller meet.**		Project based	(Max. 25.00 lakh)	as per actuals
a	Public sector	nos.		100%	as per actuals
b	FPO/Exporters	nos.		50%	as per actuals
8	**Award for Export Excellence**	nos.	Award in 6 Fields in Gold, Silver and Bronze categories	100%	as per CDB norms
E	**Exposure visits within and**	nos.	Project	100%	as per NHM/MIDH norms

	outside India		based		
F	**Seminars, conferences, trade summit, awareness programmes, print material**		Project based	100%	as per NHM/MIDH norms
G	**Residual analysis, food quality testing lab (NABL accreditation) Public sector**	nos.	project based	100%	Rs. 800.00 lakh credit linked (as per NBHM norms)
H	**Centre of Excellence for Makhana with technical support from ICAR**	nos.	Project based	100%	1000.0 lakh as per NHM/MIDH norms

Cost Norms adopted from other schemes

S. No.	Components	Unit	Unit cost (Rs. in lakh)	Cost Norms Adopted from
1	Construction of new pond	ha	7.00	PRADHAN MANTRI MATSYA SAMPADA YOJANA
2	Training of farmers	nos.	Rs. 1000 per farmer	MIDH
3	Mechanical Harvesting (Equipment) credit linked	nos.	7.00	CIPHET, Ludhiana& SMAM scheme
4	On farm handling unit	nos.	4.00	MIDH
Market and Export Promotion & Brand Development				
1	Buyer Seller, Promotional Meets	nos.	(Max. 1.00 lakh) Project based	As per Coconut Development Board
2	Makhana Pavilions in National Level Trade Fairs	nos.	(Max. 1.30 lakh) Project based	
3	Infrastructure Support for Setting Up of Sales Outlets	nos.	(Max. 20.00 lakh) Project based	MIDH
4	Scheme for Quality Certification	nos.	(Max. 5.00 lakh) Project based	As per Coconut Development Board
5	**Brand Building Support**			
a	Government/FPO		(Max.25.00 lakh) Project based	As per Coconut Development Board
b	Companies/Organization			
6	**Setting up of Makhana Pavilions in major international fairs**	nos.	(Max.25.00 lakh) Project based	
a	Public Sector	nos.		
b	FPO/Exporters	nos.		

7	**Assistance to exporters for participation in International Exhibition, Trade Fair, makhana diwas, Buyer seller meet.**		(Max.25.00 lakh) Project based	
a	Public sector	nos.		
b	FPO/Exporters	nos.		
8	**Award for Export Excellence**	nos.	(10.00 lakh) Award in 6 Fields in Gold, Silver and Bronze categories	
E	**Exposure visits within and outside India**	nos.	Within State 1000 Rs./ day/participant & upto 1.5 Lakh per participant outside India.	MIDH
F	**Seminars, conferences, trade summit, awareness programmes, print material**		Project based	MIDH
G	**Residual analysis, food quality testing lab (NABL accreditation) Pvt. sector**	nos.	(Max.800.00 lakh) Project based	National Beekeeping and Honey Mission
H	**Centre of Excellence for Makhana with technical support from ICAR or any other research organization**	nos.	(Max.1000.00 lakh) Project based	MIDH

Cost norms for field demonstrations including Integrated farming demonstrations		
S. No.	**Particulars**	**Cost (Lakh)**
1	Frontline Demonstration of maximum 1 ha	1.8
2	Travel expenses for 2 external trainer for max. 2 visits@Rs.500 per trainer per visit	0.02
3	Honorarium for max. 2 external trainer for max. 2 visits @Rs.1000 per trainer per visit	0.04
4	Food expenses for 50 participants @Rs. 50 per participants per day for 2 events	0.05
5	Print literature & pen and pad @Rs. 50 per participants for 30 participants	0.025
6	Logistics support, Integrated Farming etc.	0.065
	Total	**2.00**

*As modified and adopted from ATMA Norms

Annexure-IV

Format for submitting Detailed AAP

1. **Background information**

   i) Details of Communities and genders involved in Makhana Cultivation/ Processing.
   ii) Existing area under cultivation.
   iii) Production of raw makhana from the state.
   iv) Varieties/ species being used for cultivation.
   v) R&D infrastructure available in the state for Makhana.
   vi) No. of farmers/ families involved in makhana cultivation.

2. **Seed availability**
   i) Technology for seed production.
   ii) Technology for seed storage.
   iii) Quantity of seed required and quantity available in state.

3. **Harvesting Technology**

   i) Existing technology being used of harvest and post harvest.
   ii) Recent technologies available in public domain.
   iii) Gaps in harvesting technologies.

4. **Value addition and processing**

   i) Number of processing infrastructure available along with their capacity.
   ii) Technology available.
   iii) Required Technology for processing.
   iv) Volume and value of processed makhana from the state.

5. **Gaps**

   i) Gaps in seed requirement, production and storage.
   ii) Gaps in Production technology.
   iii) Gaps in varieties as per soil and climate requirement.
   iv) Gaps in harvesting technology.
   v) Gaps in availability of required machinery used for makhana cultivation, harvesting and processing.

6. Yearly Action Plan with physical & financial targets as per components of C.S.S. for development of makhana in enclosed format.

Format for AAP of Central Sector Scheme for Development of Makhana

Name of States/Organization……..

S. No.	Components	Unit	Unit cost (Rs. in lakh)	Pattern of Assistance	Maximum Admissible Limit	Phy Target	Fin. Outlay	GOI Share	Beneficiary Share	Remarks
A	**Production**									
1	**Seed production**	ha	1.58							
i	Public Sector			100%	5 ha					
ii	FPOs			50%	10 ha per FPO					
2	**Makhana cultivation including INM, IPM**									
a	Pond cultivation including nurseries	ha	1.79							
i	Farmers			40%	2 ha max.					
b	Field cultivation including nurseries	ha	1.32							
i	Farmers			40%	2 ha max.					
c	Construction of new pond	ha	7							
ii	Farmers			40%	1 ha max. (credit linked)					
3	**Frontline Demonstrations with integrated farming ***	ha	2	100%	Public sector (01 FLD in each block up to 2 ha)					
4	**Training of farmers**	nos.	Rs 1000/ farmer	100%	Max 2000 farmers/block/per year					
5	**Harvesting equipments**									
a	Mechanical Harvesting (Equipment) credit linked	nos.	7		SMAM norms					
i	Public Sector			100%	max 01 number/agency					
	Farmers			40%	max 01 number/farmer					
ii	FPO			50%	max 02 number/farmer					
b	Traditional Ganj harvesting equipments	nos.	Rs. 3200/ ganj	50%	10 number/ha - max 2 ha					

B	**Post harvest processing and value addition-**									
1	**On farm handling unit**	nos.	4	50%	01 number/beneficiary					
2	**Micro level Makhana processing unit credit linked**	nos.	10		**Individual components for value addition can be availed as per Annexure**					
i	Public Sector			100%	01 number/Agency					
ii	Private Sector			35%	01 number/beneficiary					
iii	FPO			50%	01 number/beneficiary					
3	**Small level Makhana processing unit credit linked**	nos.	39							
i	Private Sector			35%	01 number/beneficiary					
ii	FPO			50%	01 number/beneficiary					
4	**Medium level Makhana processing unit credit linked**	nos.	300							
i	Private Sector			35%	01 number/beneficiary					
ii	FPO			50%	01 number/beneficiary					
5	**Large level Makhana processing unit credit linked**	nos.	700							
i	Private Sector			35%	01 number/beneficiary					
ii	FPO			50%	01 number/beneficiary					
C	**R & D (Technology Development)**		(need based Projects)	100%	Need based (for Public Sector)					
D	**Market and Export Promotion & Brand Development**									
1	**Buyer Seller, Promotional Meets (Max. 1.00 lakh)**	nos.	Project based	100%	max 1.00 lakh					

2	**Makhana Pavilions in National Level Trade Fairs (Max. 1.30 lakh)**	nos.	Project based	100%	max 1.30 lakh					
3	**Infrastructure Support for Setting Up of Sales Outlets (Max. 20.00 lakh)**	nos.	Project based	50%	max 10.00 lakh					
4	**Scheme for Quality Certification (Max. 5.00 lakh)**	nos.	Project based	50%	max 2.50 lakh					
5	**Brand Building Support**	**nos.**	**Brand publicity through Digital Marketing, Brand publicity through mass media, Assistance for printing publicity materials, Assistance for outdoor advertising**							
a	Government/FPO		Project based	100%	(Max. 25.00 lakh)					
b	Companies/Organization		Project based	50%	(Max. 12.50 lakh)					
6	**Setting up of Makhana Pavilions in major international fairs**	nos.	Project based	100%	(Max. 25.00 lakh)					
a	Public Sector	nos.		100%	as per actuals					
b	FPO/Exporters	nos.		50%	as per actuals					
7	**Assistance to exporters for participation in International Exhibition, Trade Fair, makhana diwas, Buyer seller meet.**		Project based	(Max. 25.00 lakh)	as per actuals					
a	Public sector	nos.		100%	as per actuals					
b	FPO/Exporters	nos.		50%	as per actuals					
8	**Award for Export Excellence**	nos.	Award in 6 Fields in Gold, Silver and Bronze categories	100%	as per CDB norms					
E	**Exposure visits within and outside India**	nos.	Project based	100%	as per NHM norms					

F	**Seminars, conferences, trade summit, awareness programmes, print material**		Project based	100%	as per NHM norms					
G	**Residual analysis, food quality testing lab (NABL accreditation) Public sector**	nos.	project based	100%	Rs. 800.00 lakh credit linked (as per NBHM norms)					
H	**Centre of Excellence for Makhana with technical support from ICAR**	nos.	Project based	100%	1000.0 lakh as per NHM norms					
*Area covered under one demonstration will be 1 ha.										

Annexure-V

Application format for Infrastructure Projects to be submitted along with DPR under Central Sector Scheme for Development of Makhana

S. No.	Description	Status	Page No.
1.	Date of Receipt of Proposal in State Department		
2.	State Level Executive Committee (SLEC) Recommendations/ State Level Executive Committee (SLEC) Minutes		
3.	Promoter/Beneficiary		
4.	Project Location		
5.	Constitution of Company/ Firm/FPO		
6.	Certificate of Registration of the Company/Firm with date		
7.	Details of Directors/ Partners in Company/Firm		
8.	Memorandum and Articles of Association		
9.	Copy of Resolution to undertake activity and Authorized Signatory		
10.	Project Activity/Details and capacity		
11.	MSME/SSI/DIC Registration (as applicable)		
12.	Approval/License from FSSAI (In case of Food Processing Proposals)		
13.	Land/ownership – owned/leased details		

	along with CLU Certificate, if applicable		
14.	Approved Plan/Map of the Building		
15.	Detailed Project Report		
16.	Basic data sheet		
17.	(i) Project Cost		
	(ii) Means of finance, financial closure, financial viability as per bank appraisal		
	(iii) Amount of Subsidy recommended by State Level Executive Committee (SLEC)		
18.	Technology details and source of technology		
19.	Machinery required and source		
20.	CA Certificate regarding Means of Finance		
21.	Detail financial appraisal of Bank/FI with date		
22.	Term loan sanction letter of Bank/FI with date and amount		
23.	Bank certificate on the status of term loan account of the borrower as regular/not NPA		
24.	Bank A/c Statement showing date wise details of release of Term Loan		
25.	Affidavit for non-availing of subsidy from any other central government scheme for this project.		
26.	NOC/Consent of Pollution Control Board		

27.	Certificate for civil works by Chartered Engineer (Civil)		
28.	Certificate for Plant & Machinery by Chartered Engineer (Mechanical)		
29.	CA Certificate for Expenditure		
30.	Visit Report of State JIT with photographs of Project		
31.	Bank certificate for Completion / Status of Project		
32.	Certificate for start of commercial production with date		
33.	Any other information		

Model Performa for Processing Projects

DETAILED PROJECT REPORT

ON

(Specify the name of project/ component)

Submitted To:

NATIONAL MAKHANA BOARD

Submitted By :……
……..
…….

CONTENTS

EXECUTIVE SUMMARY				
S No	**Particulars**	**Information(s)**		
1	Name of the applicant/Organization			
2	Name of Promoter/ CEO			
3	Complete postal address of the applicant / organization with Pin Code			
3	Mobile No and E-mail ID of applicant			
4	Constitution/Legal Status of the Applicant: (i.e. Govt. organization, NGO, Co-operative society, Company, Partnership Firm, Proprietorship Firm, Individual, FPO, Self Help Group etc.)			
5	Capacity of the project/Unit per annum			
5	Name of Component(s)/Project			
6	Brief description of the project/Component (s)			
7	a) Objectives			
	b) Duration of the project			
	c) Justification for assistance			
	d) Technical details- Methodology			
	e) Details of proposed Technical Resource Person (s) to the project			
8	Project location along-with clear cut Survey/ Khasra /Gat/Khata No, Village, Mauza, Tehsil/Taluka, District, State etc as per the land revenue records.			
9	Project area in ha/SqM			
10	Duration of the project	1st year	2nd year	3rd year
11	Availability of raw materials			
12	Means of Finance (Rs in Lakh)			
	• Total project cost			
	• Applicant/Organization contribution			
	• Term Loan, Venture Capital etc(if any)			
	• Proposed Financial Assistance from NMB			
13	Other information if any			

CHAPTER-1: BACKGROUND OF THE PROJECT

1.1 Introduction

1.2 Indian scenario

1.3 Global Scenario

1.4 Production/ Availability of Makhana in the District / State/ Country / Import

1.5 Product Background

1.6 Production and Distribution of Makhana in the State, India as well as in the catchment area

1.7 Month wise availability of Makhana

S.N.	Month	Location	Crop	Remarks if any
1	January			
2	February			
3	March			
4	April			
5	May			
6	June			
7	July			
8	August			
9	September			
10	October			
11	November			
12	December			

CHAPTER-2: PROCUREMENT STRATEGY

2.1. Raw Material availability (mention about Local/ District/ state/ Country /Imports)

2.2. Sources of Procurement (Direct from farmers/ Local market/ states/ Country/ import)

2.3. Process of Procurement

2.4 Arrangement of Transportation

2.5 Storage facility of raw material

CHAPTER – 3: METHODOLOGY FOR PROCESSING

3.1 Technology for processing

3.2 Manufacturing process

3.3 Processing Flow Diagram

3.4 Source of Technology and Machinery.

CHAPTER – 4: MARKETING STRATEGY OF THE PRODUCT(S)

4.1 Market Feasibility

4.2 Packaging of the product

4.3 Branding of the product

4.4 Marketing and Sales Strategies

4.5 Available Marketing Channels in the area

S.No.	Name and location market	Distance in Km from Block HQ	Commodities handled
1.			
2.			
3.			

4.6 Sales of Processed Product

Sales of Existing Products								
S.N.	Product name	Total Annual production in cluster (qtls.)	Total Annual Sales (Rs. per qtls.)	Market	Export	B2B	B2C	E-Com

CHAPTER- 5: MARKETING STRATEGY

5.1 Market Potential

5.2 Global Scenario

5.3 Indian Scenario

5.4 Production/ Availability of Makhana in the State Proposed

CHAPTER- 6: SWOT ANALYSIS

Detailed timeline for construction of proposed project and proposed date for commencement of operation:

S. No.	Activity	Date of start	Date of completion
	Land		
	Building		
	Lay out of the project		
	Plant & Machinery		
	Insulation		
	Erection and Commissioning		
	Trial run		
	Commercial production		

CHAPTER- 7: FINANCIAL ANALYSIS

7.1 Estimated Cost for Makhana Processing Unit with capacity of : -

S.No	Name of items	Cost details			Proposed assistance		
		Per unit cost	Phy. (Nos)	Total Cost (Rs. in Lakh)	Per unit cost	Phy. (Nos)	Total Cost (Rs. in Lakh)
	(A) Building:-						
(i)	Shed of PBX ----- Sqft						
(ii)	RCC work for Office, Toilet, Changing room, Godown etc of 1000 Sq ft						
(iii)	……..						
(iv)	……						
	Sub Total of "A"						
	(B) Plant equipment, machineries etc. - Capacity						
	(a) None- Recurring expenditure						
(i)							
(ii)							
(iii)							
(iv)							
(v)							
(vi)							
(vii)							
(viii)							
(ix)							
(x)							
(xi)							
(xii)							
(xiii)							
(xiv)							
(xv)							
(xvi)							
(xvii)							
(xviii							
(xix)							
(xx)							

b.							
(i)							
(ii)							
(iii)							
(iv)							
	Sub Total of "B"						
C- Manpower							
(i)	Manager						
(ii)	Supervisor						
(iii)	Operator						
(iv)	Skilled Labour						
(v)	**…….**						
	Sub Total of "C"						

Remarks-The above mentioned cost and components are indicative only. Applicant may collect the quotations from reputed/Branded Venders as per requirement in the project and mentioned with specification of the Plant & Machinery along with their cost

CHAPTER- 8: Projected balance sheet (if available)

CHAPTER- 9:Financial Indicator (Break even analysis at maximum capacity utilization, etc)

CHAPTER- 10: Profit and Loss statement for 3 years

CHAPTER- 11: Financial Closer

(a) Promoter Share
(b) Term Loan
(c) Term Loan in lieu of receivable subsidy

ANNEXURES

1. Lay out plan of the Civil structure prepared by civil engineer.
2. Poof of land issued by revenue department.
3. Minutes of State Level Steering Committee (STATE LEVEL EXECUTIVE COMMITTEE (SLEC)) of the concerned State in which the project proposal recommended by the Committee to NMB.

ABBREVIATIONS	
AAP	Annual Action Plan
APC	Agricultural Production Commissioner
APEDA	Agricultural and Processed Food Products Export Development Authority
ASCI	Agricultural Skill Council of India
AYUSH	Ayurveda, Unani, Sidha & Homeopathy
CEO	Chief Executive Officer
CHC	Custom Hiring Centre
CoE	Centre of Excellence
CSIR	Council of Scientific & Industrial Research
DA&FW	Department of Agriculture, & Farmers Welfare
DoAHD&F	Department of Animal Husbandry, Dairy & Fisheries
DoNER	Ministry of Development of North Eastern Region
DARE	Department of Agricultural, Research &Education
DONER	Development of North Eastern Region
DoE	Department of Expenditure
DPR	Detailed Project Report
EC	Executive Committee
CDB	Coconut Development Board
EIC	Export Inspection Council
EMC	Empowered Monitoring Committee
FAO	Food & Agriculture Organization
FDA	Forest Development Agency
FIG	Farmers Interest Group
FPC	Farmer Producers Company
FPO	Farmer Producer Organization
FSSAI	Food Safety and Standards Authority of India
GC	General Council
GFR	General Financial Rules
GOI	Government of India
GST	Goods & Service Tax
HC	Horticulture Commissioner
HMNEH	Horticulture Mission for North East & Himalayan States
HRD	Human Resource Development
ICAR	Indian Council of Agricultural Research
ICMR	Indian Council of Medical Research
IFD	Integrated Finance Division
IIT	Indian Institute of Technology
JLG	Joint Liability Group
KVK	Krishi Vigyan Kendra
KVIC	Khadi and Village Industries Commission
QP	Qualification Pack
MANAGE	National Institute for Agricultural Extension Management
MC	Managing Committee
MS	Member Secretary
MSME	Ministry of Small & Medium Enterprises
MoC&I	Ministry of Commerce & Industry
MoFPI	Ministry of Food Processing Industries
MoCAF&PD	Ministry of Consumer Affairs, Food & Public Distribution

MIDH	Mission for Integrated Development of Horticulture
MNREGS	Mahatma Gandhi Rural Employment Guarantee Scheme
MT	Metric Tonnes
MM	Mini Mission
NABARD	Nation Bank for Agriculture & Rural Development
NAFED	National Agricultural Cooperative Marketing Federation of India Ltd.
NERAMAC	North East Region Agricultural Marketing Corporation
NCDC	National Cooperative Development Cooperation
NFSM	National Food Security Mission
NHB	National Horticulture Board
NHM	National Horticulture Mission
NI-MSME	National Institute for Micro, Small and Medium Enterprises
NIN	National Institute of Nutrition
NLSC	National Level Steering Committee
NMOOP	National Mission on Oilseeds and Oil Palm
NMPB	National Medicinal Plants Board
NRLM	National Rural Livelihood Mission
NSC	National Seeds Corporation
NSSO	National Sample Survey Organization
PAC	Project Appraisal Committee
PA&MC	Project Approval and Monitoring Committee
PDMC	Per Drop More Crop
PMFBY	Pradhan Mantri Fasal Bima Yojna
R&D	Research & Development
RKVY	Rashtriya Krishi Vikas Yojana
SAU	State Agricultural University
SC	Sub Committee & Schedule Castes
SFAC	Small Farmers' Agri-Business Consortium
SFC	Standing Finance Committee
SHG	Self Help Group
SHM	State Horticulture Mission
SLBC	State Level Bankers Committee
SLEC	State Level Executive Committee
SRLM	State Rural Livelihood Mission
ST	Schedule Tribes
TC	Technical Centers
TSP	Tribal Sub Plan
UNDP	United Nations Development Programme
VFPMCs	Village Forest Project Management Committees

National Makhana Board (NMB)
Horticulture Division (Technical Unit)
Department of Agriculture & Farmers Welfare,
Ministry of Agriculture & Farmers Welfare,
Govt. of India
Krishi Bhawan, New Delhi-110001.