THE MADHYA PRADESH STATE AGRO INDUSTRIES DEVELOPMENT CORPORATION LIMITED
(M.P. Government Undertaking)
"Panchanan Bhawan", 3rd Floor, Malviya Nagar, Bhopal – 462003
Phone : 0755-2556857 Email : mpagrohobpl@gmail.com

H.O/ Horti/ Smart Seed/ Silari/ 2025 - 26/3383 **Dated : 24.12.2025**

E–TENDER DOCUMENT FOR

SUPPLY, INSTALLATION, COMMISSIONING AND TRIAL RUN ON TURN KEY BASIS OF VARIOUS INFRASTRUCTURES UNDER

SMART SEED FARM – SILARI in DISTRICT NARMADAPURAM, and other places

(As per the approval under PM–RKVY 2025–26)

Estimated Cost: ₹105.00 Lakh

DATE OF PUBLICATION : 25.12.2025
DUE DATE OF OPENING : 19.01.2026

M.P State Agro Industries Development Corporation ltd
(Govt of M.P Undertaking)
III[rd] Floor, panchana Bhavan, Malviya nagar, bhopal.
Email : mpagrohobpl@gmail.com, Phone No (0755) - 2551967
GSTN - 23AACCM0330Q1ZM

H.O/ Horti/ Smart Seed/ Silari/ 2025 - 26/ 3383 **Dated : 24.12.2025**

NOTICE INVITING TENDER (NIT)

On behalf of Directorate of Horticulture and Food Processing, Online e-tender in prescribed document from eligible parties are invited for execution of works of Smart Seed Farm on turn key basis, up-to **19.01.2026** by **5:00 pm** along with online deposit of earnest money. The detailed e-tender and other information can be seen at **www.mpagro.org.in** and **www.mptenders.gov.in,** however participation is to be made through **www.mptenders.gov.in** only. Corrigendum will be published in these website only. The Managing Director of the Corporation reserves the right to amend/ reject any or all tenders without assigning any reason thereof.

Manager (Horticulture)

: CONTENTS:

MEANING OF WORDS

1. "Corporation" means the MP State Agro Industries Development Corporation Ltd as implementation agency of Department of Horticulture and Food Processing.
2. "Bidder/ Offerer" means the firm submitting its tender in response to this e-Tender.
3. "Supplier/ Executor" means the Bidder whose bid has been accepted and with whom an Agreement is executed.
4. "Work Order" means the order placed by the Corporation.
5. "Infrastructures" means the equipment, installations, works as listed in the Technical Specifications (Annexure-8).
6. "Department of Horticulture" means Directorate of Horticulture & Food Processing, Government of Madhya Pradesh, VIth floor, Vindhayanchal Bhavan, Bhopal and its offices in Madhya Pradesh as Beneficiary / Consignee.
7. "Turn-Key Basis" means supply, installation, testing, commissioning, training & handing over of full system to Department of Horticulture.
8. "EMD" means Earnest Money Deposit.
9. "SD" means Security Deposit.
10. "PM-RKVY" means Pradhan Mantri – Rashtriya Krishi Vikas Yojana.
11. "Site" means Smart Seed Farm, *SILARI, District NARMADAPURAM* or other ordered places.
12. "Commissioning/ trial run" means successful testing and acceptance of system by the Department.

DETAILS OF FARM

Sr	Name of Particulars	Silari Seed Farm
1	Establishment year	1927
2	Total area (ha.)	24.77
3	Khasra no	121, 123, 157, 187
4	Max. temp.	45.5 ^{o}C
5	Min. temp.	06 ^{o}C
6	RH	98
7	Avg. rainfall	980 mm
8	Type of soil	Medium black, Loamy soil
9	Soil PH	6-7.5

ANNEXURE - 1

1 DISCLAIMER

Although adequate care has been taken while drafting this tender document, the Corporation takes no responsibility for any error/ omission in the document. The bidders are advised to examine all contents of the document carefully. In case of any doubt, for ergonomic execution of entire works the bidder may submit their query or suggestion in writing, on or before the pre-bid meeting. The Managing Director of the Corporation reserves the right to make amendments in the clauses, reject any or all tenders without assigning any reason.

2 E-TENDER PROCESS

a) The tender is invited through state e-procurement portal www.mptenders.gov.in
b) The tender document can be downloaded online.
c) The bidders must submit Technical & Financial bids online in the respective portals on or before the last date & time.
d) Hard copies will not be accepted unless otherwise asked by this office.
e) Tender fee, EMD etc. should be paid online.
f) The opening and evaluation of the tender will be in two parts as "Technical bid" and Financial bid.
g) The technical bid offers will be scrutinized for confirming eligibility. Non-eligible offers will be rejected. The financial bid of eligible offer will be opened. Financial bid will be opened only after the completion of the official procedure on technical bid.
h) The contract will be awarded to the lowest responsive bidder (L1) subject to acceptance and approval by this office.

3 PROLOGUE

On behalf of the Directorate of Horticulture and Food Processing, the Corporation seeks to develop “Smart Seed Farm” at Silari, District NARMADAPURAM, Madhya Pradesh, under PM-RKVY (2025–26) Scheme.
The project aims to adopt latest advanced technologies to produce high quality plants and seeds:

- Hydroponics/Aeroponics
- IoT (Internet of Things) -based automation and sensors
- Traceability systems
- Aquaponics
- Precision farming &
- Modern Computerization system
- Protected cultivation

The tender invites eligible suppliers to execute the Supply, Installation, Testing & Commissioning (SITC) on a turn-key basis, including training, warranty and maintenance.

4 OBJECTIVE :

To develop smart seed farm to produce good quality fruit plant, improved vegetable seeds, through hydroponic, aquaponic technology well equipped with precision farming, IOT, sensor based automation system for irrigation systems, computerization system, development of traceability systems in protected cultivation, shade-net house, farm mechanisation for seed production through technologies such as sensors, GPS, machine learning algorithm to collect data about weather crop growth pattern, and make informed guidance about irrigation,

fertilization and pest management, for getting maximum profit at low cost per unit area, finally for getting acquainted with such technologies the demonstration to the farmers.

5 SCOPE OF WORK

The scope covers supply of materials, installation, commissioning on turn key basis. The toto works shall be in fedility with the tender objective and specification and or the time to time written instructions given by the Directorate of Horticulture and Food Processing. The activity includes to comply :-

(a) Precision Agriculture :- Involves use of technology as sensors, GPS Drones to collect data about crop conditions which can be used to guide accurately about fertilization, irrigation, and pest control.

(b) Hydroponics :- Involves growing crop in vertical stacked layers under controlled environmental conditions without soil and minimum use of water.

(c) Aquaponics :- Involves combination of aquaculture with hydroponic, here fish and plant are grown together in a closed loop system where the waste produced by fish shall be used as fertiliser to the plant, the waste gets used by plant and the fresh pure water is fed to fish for their growth thus an concept of organic cultivation is fulfilled.

(d) Sensor based automation :- To be used for tasks such as irrigation and fertigation.

(e) Internet of things :- Here the sensors are used to monitor temperature, pH, nutrient levels, while their devices can be used to control irrigation and fertigation.

(f) Traceability System :- Certain soil type propagates a typical variety and quality of crop and seed thus influencing to local adapted-ness to specific requirements for farmers to gauge seed quality, trueness of variety, germination percentage, purity, vigor, and appearance.

(g) Digitalization and Computerization of Seed Farm :- Here wide range of automation software and hardware platforms, multiple ground based sensors combined with maps, using artificial intelligence and prediction models, detailed agronomic data on crop condition, wireless communication and high performance data processing hardware, time to time developing scientific cultivation methods, Geographic information systems, yield monitoring platforms under the title of Precision Agriculture in harmony with Internet of things, mobile apps, robotics, unmanned aerial vehicles big data analysis, digital twins, block chain and hybrid cloud technology.

(h) Apart from above works the offerer for ascertaining ideal ergonomic and smooth functioning of the unit the miscellaneous works which is not mentioned in the document shall be needed to be done as desired by by the offerer/ Department of Horticulture or the Corporation.

6 EXPECTATION FROM THE OFFERER :-

In the context before quoting the bid the offerer is expected to visit and inspect the site in presence of the staff of the Horticulture Department and or staff of the Corporation of any working day and time. Similarly the offerer is expected to meet and clarify their doubts from the officials of Directorate of Horticulture and Food Processing and or Corporation. All supplies, installation shall be of good quality typical to comply to the objective and coordinately smooth running of the unit.

7. SCHEDULE OF TENDER :-

The Tender Document (TENDER) is invited under e- tender system. Bidding process will have following steps:

S.no	PARTICULARS	DISCRIPTIONS
1	Tender Document Fee (including GST)	Rs. 11,800/- (shall be paid online)
2	Date and time of start of purchase of Tender Document and or start of submission of Technical/ Financial Bids	10:30 AM ON **24.12.2025**
3	Pre bid meeting	3.00 pm ON **02.01.2026**
4	Last Date and time of purchase of online Bid	1:00 pm ON **19.01.2026**
5	Last Date and time of submission of online Bid	Up-to 4:00 PM ON **19.01.2026**
6	Date and time of opening Technical Bids.	5:00 PM ON **19.01.2026**
7	Date and time of opening of Financial Bids.	Will be displayed on website, only after finalizing technical bids.

Note :-

(i) The firms The detailed e-tender and other information can be seen at www.mpagro.org.in and participation through www.mptenders.gov.in.

(ii) Financial bids of only those tenderer will be opened, who will qualify in technical bid.

IMPORTANT:

01. THE TENDERERS WHO WISH TO PARTICIPATE IN THE E-TENDER SHOULD NECESSARILY SUBMIT TENDER DOCUMENT FEES THROUGH E-PAYMENT OF Rs 11,800/- (NO EXEMPTION IS ALLOWED TO ANY OFFERER/ BIDDER).
02. ALL PAGES OF THIS TENDER PAGE NO 1 TO 59 ARE TO BE SIGNED BY THE TENDERERS.
03. ANNEXURE 10 IS FORMAT OF FINANCIAL BID, WHICH IS TO BE FILLED ONLINE ONLY.
04. EMD FOR THE WORKS IS Rs 5,00,000/-.
05. FOR MSME OF THE STATE, EMD IS WAIVED OFF, HOWEVER FOR SUCH FIRMS SECURITY DEPOSIT @2% SHALL HAVE TO BE SUBMITTED AT THE TIME OF EXECUTION OF AGREEMENT AND THE AMOUNT OF EMD (Rs 5,00,000/-) SHALL BE WITHHELD FROM THE BILLED AMOUNT OF THE SUPPLIER OR EXECUTOR BY THE CORPORATION UNTIL THE SUCCESSFUL COMPLETION OF WARRANTEE PERIOD.

ANNEXURE–2

GENERAL TERMS & CONDITIONS

These General Terms & Conditions forms an integral part of the Tender Document. The Bidder shall carefully read and comply with all requirements in the objectives. Submission of tender implies full acceptance of all terms and conditions.

1. Submission of Tender :-

1.1 The tender shall be submitted online only through the e-procurement portal: **www.mptenders.gov.in**

1.2 Any tender submitted by any other mode shall be summarily rejected.

1.3 The Bidder must upload all required documents clearly readable; blurred documents shall lead to rejection.

1.4 Conditional or incomplete tenders will not be accepted.

1.5 The tender is non transferable.

1.6 In Prebid meeting, written suggestion within the scope of tender are invited from firms which would be officially scrutinized for its significance and if found suitable by the Managing Director of the Corporation, then only it can be incorporated as one of the clause in the form of Corrigendum, such Amendments in form of Corrigendum will be published only on said website only.

2. Tender Fee & EMD :-

2.1 Tender document fee is non-refundable amounting to Rs 11,800/- and is to be paid online mode only.

2.2 EMD must be deposited through online mode only.

2.3 Tenders without EMD shall be rejected.

2.4 EMD of un-successful bidders will be auto - online refunded to their transaction account.

2.5 EMD of successful bidder shall be with-holded by the Corporation upto the successful completion of warrantee period and in case of no dispute will be refunded to the supplier without interest.

2.6 No interest shall be paid on the EMD submitted in the Corporation.

2.7 EMD will be returned on receipt of request application from the executor/ supplier mentioning tender number and date, its M.R number and date, provided that total transaction being completed without any dues on the executor/ supplier.

2.8 The EMD shall be forfeited in following circumstances :-

(i) Fails to execute the agreement within the given time period.

(ii) Breaches any terms and conditions of the tender document and agreement.

(iii) Fails to comply to the objective of the work.

(iv) Submitts false documents.

(v) Engages in mall practice in qualitative works as well as in financial transactions.

(vi) If party withdraws their offer in part or in toto after opening of the technical bid of the e-tender or during the period of award of contract or successful completion of warrantee period.

(vii) If the Supplier/ Executor breaches any of all clauses of the tender document and agreement.

2.9 E.M.D for works is Rs 5,00,000/-

2.10 For MSME of the state, EMD is waived off, however for such firms Security Deposit @2% shall have to be submitted at the time of execution of agreement and the amount of EMD (Rs 5,00,000/-) shall be withheld from the billed amount of the

supplier or executor by the Corporation until the successful completion of warrantee period.

3. Security Deposit (SD) :-

3.1 2 percent Security Deposit of the billed amount will be held by the Corporation from the payment of the bill.
3.2 S.D. shall remain with the Corporation till completion of warranty period.
3.3 S.D. will be paid on the successful completion of the warranty period and in case of no dispute will be paid to the supplier.
3.4 No interest shall be paid to the executor / supplier on S.D.
3.5 for MSME of the state, EMD is waived off, however for such firms security deposit @2% shall have to be submitted at the time of execution of agreement and the amount of EMD (Rs 5,00,000/-) shall be withheld from the billed amount of the supplier or executor by the Corporation until the successful completion of warrantee period.

4. Validity of Tender :-

4.1 The bid shall remain valid for **180 days** from the date of opening of technical bid.
4.2 The Managing Director of the Corporation reserves the right to extend the validity of tender.

5. Quoting of Rates :-

5.1 GST (Goods & Services Tax)
5.2 Applicable GST shall be charged as per prevailing Government of India rates.
5.3 The Bidder must clearly mention the GST percentage (%) in the Financial Bid.
5.4 GST amount shall be shown separately and shall not be merged with the base price.
5.5 GST will be payable only on submission of valid tax invoice issued by the Supplier.
5.6 Any change in GST rate (increase/ decrease) shall be applicable at the time of billing as per statutory norms.
5.7 Firms shall quote rates as per the clause number 11 (technical specification) and the Scope of work (Annexure - 1, (5)).
5.8 *Firms shall quote rates which shall include 5% Corporation margin, FOR destination, inclusive of installation, commissioning and trial run on turnkey basis in toto.*

6. Acceptance / Rejection of Tender :-

6.1 The Managing Director of the Corporation reserves absolute right to accept or reject any tender wholly or partially without assigning any reason.
6.2 No claim shall lie against the Corporation in case of such rejection.
6.3 If rate received is not reasonable then on recommendation of committee, the Managing Director of the Corporation may decides to give counter offer of the rates decided by the Corporation to L-1 offerer. In Case the L-1 offerer does not agree on counter offer rates, the Corporation may decide to give counter offer to L-2 offerer.
6.4 The Counter offer will be issued by the Corporation only to those offerers whose offered rates are within the limit of L1+15% (lowest rate received +15%)

7. Responsibility of Supplier / Executor :-

7.1 Shall Supply, Installation, Testing (where ever needed) & Commissioning (SITC) of all items listed under the tender. Preference shall be given to the ISI marked accessories / equipment/ machineries, wherever possible ISI marked items will be accepted by Department of Horticulture.

7.2 Shall comply to all the guidelines and safety in fidelity with the applicable government rules, Corporation and Department of Horticulture shall not be responsible for any accidents during the entire works the Supplier / Executor shall ensure insurance of all things/ equipments or machinery and worker.

7.3 Shall provide test certificate where ever needed as per the government rules. Similarly the executor/ supplier shall acquire all such licenses, insurances, and permissions needed for completion of the works and contract.

7.4 Shall provide the working manual and circuit diagram of the equipments and electrical fittings.

7.2 On completion of the works the Supplier / Executor shall perform trial run in presence of committee and provide training to the staff of the Horticulture Department for one week thorough training along with trouble shooting guidline, manuals, and shall ensure the smooth operations of the works during warranty.

7.3 All civil/ electrical/ fitting works required for installation shall be arranged by the supplier.

7.4 The Department of Horticulture may take suitable necessary action in providing working environment during the completion of the works and warrantee period.

7.5 Supplier/ executor shall be responsible for safe custody of its works, materials, tools, accessories, equipments/ machineries etc. In any such matter, Corporation and Department of Horticulture shall not be responsible, therefore the supplier / executor shall ensure insurance of things or worker.

7.6 In case of unfortunate disaster beyond human control the Supplier / executor shall begin the works on normalization of the conditions. In such case no penalties shall be imposed by the Corporation as well as Department of Horticulture. No responsibility of supply and structure would be taken by Corporation or Department of Horticulture

7.7 The material found substandard or not confirming to the quality such material shall be taken back and replaced by new qualitative brand by the supplier/ executor at their own cost, in such case Corporation as well as Department of Horticulture shall not be responsible for financial or physical loss. If Corporation feels that material supplied is not as per the quality parameters/ specifications as mentioned in the tender document/ in supply order then, Corporation can decide to get it tested from the any government/ BIS laboratories or laboratories accredited by NABL (National Accreditation Board for Testing and Calibration Laboratories) at the risk and cost of the Supplier and if not found of good quality the Corporation has the right to refuse the substandard machinery or part.

7.8 After the execution of the agreement the Supplier/ executor shall submit the bifurcation of the quoted rates which shall include individual rate of the machine, equipment, structure, etc. During the contract period, if Corporation feels so, can place work order of such items to get installed and commissioned any place in Madhya Pradesh. The actual quantity and item may vary in the work order.

7.9 In the geographical area of Madhya Pradesh the executor/ supplier, shall not sell such items or works at lower price than is approved in the tender. If it is found from any means that the executor/ supplier had sold such items or works in Madhya Pradesh then in such condition the payment of bill will be reduced accordingly and payment shall be made as per the lower price on which the executor/ supplier has sold in Madhya Pradesh.

7.10 In case, the supplies are delayed by the supplier, the currency loss is caused to the Corporation or Department of Horticulture due to such delay, the supplier will be made responsible, and accordingly the recovery of the loss of amount will be made

from any amount of the supplier lying with the Corporation. The amount to be recovered will be decided by the Managing Director of the Corporation and it would be binding on the supplier.

7.11 The supplier / executor shall unconditionally maintain "healthy and transparent business / works relation" during the entire completion of the contract.

7.12 Firms shall submit self certified document whenever needed or asked by the Corporation / Department of Horticulture.

7.13 Any dues on the Supplier / Executor, Firm shall be deducted from any of their amount lying with the Corporation.

8. Execution of the Agreement :-

8.1 The letter of approval and execution of agreement will be issued by Head Office.

8.2 The executor/ Supplier shall ensure to execute the agreement on Rs1000/- stamp paper duly notarised and submitt in Head Office within the stipulated period of time (Annexure - 7).

8.3 If the executor/ Supplier fails to submit the agreement within the time period then his offer shall be cancelled and the EMD shall be forfeited by the Corporation.

8.4 The Managing Director reserves the right to accept or reject the agreement.

9. Issue Of Order :-

The order will be issued by Head Office or Regional Office. The actual quantity and item may vary in the work order.

10. Work Completion Period :-

10.1 The entire supply, installation, commissioning and trial run shall be completed within **180 days** from the date of Work Order.

10.2 Delay shall attract penalty as per Clause 13.

10.3 The supplier/ executor must intimate either verbal or written to the Consignee 7 days prior to dispatch of materials.

10.4 The Managing Director of the Corporation reserves the right to extend or reduce the work completion period in case of exigency.

11. Technical Specifications :-

11.1 The materials supplied must confirm to the specifications mentioned in **Annexure–8**.

11.2 Any changes made or deviation with respect to the specification which are without written approval or instructions from the Department of Horticulture, shall lead to rejection. If unexpected changes take place, the Corporation will not pay extra amount for the machinery or such works.

11.3 All electrical items/ equipments/ machineries shall be of ISI marked or must comply with relevant BIS standards where-ever are applicable.

11.4 The actual quantity and item may vary in the work order.

12. Inspection, Testing and Trial Run :-

12.1 The Corporation/ Department of Horticulture may inspect the materials at manufacturer’s premises or at site.

12.2 All applicable tests to be conducted and test report to be submitted during the trial run of Smart Seed Farm at Silari.

12.3 Trial run shall be done in the presence of the officials of Directorate of Horticulture and Food Processing, and the officials of the Corporation, however the convenient

date of trial run shall be taken by the executor/ supplier from the Directorate of Horticulture and Food Processing and Corporation.

12.4 During the trial run the supplier/ executor shall arrange all required tools, instruments, accessories and shall then handed over to the Department of Horticulture for further use. Supplier / executor shall have his own staff for hassle free smooth operation of trial run of the entire works.

12.5 The executor shall provide the log book mentioning daily record of activity in the site. The activity shall contain the visual information of crop health, crop mortality, crop yield, electrical failures, non functioning of any equipment, etc

12.6 The executor / supplier shall provide trouble shooting guide book for every machine, structure, coordinately running machines etc

13. Penalty for Delay :-

13.1 A penalty of 0.5% of contract value per week, subject to a maximum of 10%, shall be imposed for delay.

13.2 Beyond 10 weeks delay, the Corporation may terminate the contract and forfeit the EMD, in such case no payments shall be released to the supplier / Executor.

14. Warranty :-

14.1 Warrantee period shall be of three years from the date of successful trial run.

14.2 The supplier/ executor shall provide 3 years comprehensive onsite warranty along with warranty for accessories/part/component which shall be for 5 years availability.

14.3 Any defect arising during warranty must be rectified within a week time of written intimation by Department of Horticulture.

14.4 Replacement of defective materials shall be at supplier's / executor's cost.

15. Billing :-

The executor / supplier shall prepare the duly typed bill in triplicate mentioning the HSN number, GST detail, Corporation GST number, etc all typical as per government rules. The bill shall be produced to the Corporation after the successful execution of the works.

16. Payment Terms and Conditions :-

The payment shall be released on "Payment after Payment" basis i.e. on receipt of payment from Consignee (Department of Horticulture) and deducting the Corporation margin of 5% the Corporation will make payment to supplier which is as follows:

(i) 50% amount shall be paid by Corporation on the successful execution of the works, for this supplier/ executor shall have to take the Satisfactory Work Report duly signed by the official of Department of Horticulture and District Level Horticulture Officials. 30% amount shall be paid after completion of successful trial run and its duly signed trial report submitted to the Corporation. 10 % amount shall be paid after 30 days of date of successful training to the staff of Horticulture Department, for this supplier/ executor shall have to take the NOC form the Department of Horticulture. Remaining 10% amount shall be paid after successful completion of the warrantee period.

(ii) For execution of works or supplies and installation on site or place other than SSF-Silari, 90% payment shall be made on completion of the satisfactory work report duly signed by the official of Department of Horticulture. Balance 10% shall be released on completion of warranty period.

17. After-Sales Service :-

17.1 Supplier / executor shall provide free and prompt service during warranty period.

17.2 Service log-book shall be maintained at site for this purpose.

17.3 All worn out parts shall have to be replaced by new working parts, the Supplier / executor shall bear such cost. No payment shall be made by Corporation or Department of Horticulture for such visit or repairs.

18. PROVISIONS FOR STARTUP'S, M.S.M.E. AND PROVISION FOR SCHEDULED CASTE AND SCHEDULED TRIBE AND WOMEN ENTREPRENUER'S OF MADHYA PRADESH :-

According to the clause number 22 of store purchase rules 2015 (as amended in 2022) for STARTUP's and M.S.M.E of the Madhya Pradesh the EMD is waived off, It is mandatory for such entrepreneurs to submit all related documents / documentary proof duly self attested. Such firms whose rates are opened in the financial bid and falls up-to 15% range above the lowest found rate and that such firm had agreed to supply on the lowest rates in such circumstances the 25 to 50 percent of the total quantitative order, can be placed to such firms. Similarly to avail the benefits related to section number 23.1 of the Store Purchase Rules 2015 (as amended in 2022), it is mandatory for Schedule Caste, Schedule Tribe, Women – Owned entrepreneurs to submit all related documents/ documentary proof duly self attested. The firms who come under the category of Scheduled Caste or Scheduled Tribe shall be offered order up-to 4 percent of above said 25 percent quantitative order. Similarly the firms owned by the female (female proprietary firm) shall be offered order up-to 3 percent of the total above said 25 percent quantitative order.

19. Arbitration :-

18.1 All disputes shall be referred first to the Manager (Horticulture).

18.2 If unresolved by Manager (Horticulture), the matter shall be referred to Managing Director which shall act as an arbitrator whose decision shall be final binding on both the parties.

18.3 For all Legal proceedings the District Court Bhopal will have the jurisdiction.

20. Breach of terms and conditions or agreement :-

It is hereby declared that the firm had understood the tender in toto and thus in case of breach of terms and conditions or the agreement the Corporation shall forfeit the EMD and Security Deposit amount of the Supplier/ Executor.

Manager (Horticulture)

ANNEXURE-3

APPLICATION FORMAT & MANDATORY DOCUMENTS

1	Name of and address of Company or Firm.	
2	Name and address of Proprietor/ Partner/ Board of Directors.	1…… 2…… 3…… 4……
3	Contact number of Proprietor/ Partner/ Board of Director.	Land line No : Mobile 1 :- Mobile 2 :-
4	Name, designation, Address and mobile number of the person signing the tender. (if signing person is other than Proprietor/ Partner/ Director) **Fill Annexure – 5.**	Name :- Designation:- Address:-
5	e mail address.	
6	PAN number.	Number:-
7	Goods and Service Tax Registration.	No.:- Date of issue:-
8	Registration certificate issued by …….	Registration No:- Date of issue:-
9	STARTUP'S / M.S.M.E registration	Registration No:- Date of issue :-
10	D.I.C/ Factory health and safety certificate registration number (if applicable).	No.:- Date of issue:-
11	Category or Segment of party.	Manufacturer/ Processor / Producer.
12	Detail of firm whether Schedule Caste or Schedule Tribe or Women entrepreneur.	
13	Details of EMD for which rates are offered	**ONLINE AMOUNT SUBMITTED** Amount :-
14	Experience Details (Hi-Tech Agriculture / Automation / Protected Cultivation / IoT / Hydroponics	(Attach work orders & completion certificates)
15	**Turnover (Last 3 Financial Years) Certificate of C.A to be attached.**	Year 2022 -23:- Year 2023-24 :- Year 2024-25:-

Signature & Seal
of firm

ANNEXURE–4

AFFIDAVIT (Undertaking)

I, _____ S/o _____
aged _____ years, resident of _____,
Proprietor/ Partner/ Director of M/s _____,
hereby solemnly affirm and declare that:-

1. Our firm/company has **never been blacklisted** by any Central/State Government Department, Corporation, Board or Undertaking.
2. No criminal case or vigilance enquiry is pending against me/us or our firm.
3. All information and documents furnished in the tender are **true, correct and genuine** to the best of my knowledge.
4. We agree that if any information is found false at any stage, the Corporation shall have the right to **cancel the tender**, forfeit our EMD/ SD and blacklist the firm.
5. We fully accept all the **terms & conditions**, technical specifications and obligations mentioned in the Tender Document.
6. We will not claim any compensation for rejection of our tender or cancellation of contract.
7. We shall abide to execute all works as per the clauses of this tender and agreement.

Verified and signed on this day _____ at _____.

(Authorized Signatory with Seal)
Name of the signatory:-

Seal of the firm :-

Notary Seal & Signature

(To be submitted on ₹1000 Non-Judicial Stamp Paper duly notarised)

ANNEXURE–5

(To be given on Company Letterhead)

LETTER OF SIGNING AUTHORITY TO SUBMIT THE TENDER

To,

Managing Director,
M.P. State Agro Industries Development Corporation Ltd.,
Bhopal.

Subject: Authorization for submission of e-Tender

I, _____, Proprietor/Director/Partner of M/s _____, hereby authorize Shri _____ (Designation: _____, Mobile: _____) to submit our e-tender, participate in the bidding process, upload required documents and sign all tender-related papers on behalf of our firm for:**"Supply, Installation, Testing & Commissioning of infrastructures under Smart Seed Farm – Silari (PM-RKVY 2025-26)"**

The firm accepts all roles, responsibilities, terms & conditions mentioned in the tender.

Signature of Person Authorized
Name :

Aadhar card number :

Seal of Firm

Signature of the Director/ Partner/ Proprietor

Name :

Seal of the Firm :

ANNEXURE–6

:LIST OF SELF CERTIFIED MANDATORY DOCUMENT TO ASCERTAIN ELIGIBILITY:

S.no	For Ascertaining	Mandatory Documents	Uploaded page number
1	Manufacturer/ Producer/ Processor	DIC/ MSME/ Factory License issued by Labor Dept/ Pollution Control License.	
2	Letter of Authority in case the Signing Authority Is not Director/ Proprietor/ Partner.	Authorisation letter from manufacturer in favor of M.P. Agro Ind. Dev. Corpn ltd. Annexure - 5	
3	Private Limited Company	Articles of Association. (If required any one or all Director can sign Annexure - 3 for lending signing authority to its employee in this tender).	
4	Company / Firm	Proprietor. (If required proprietor shall sign Annexure - 3 for lending signing authority to its employee in this tender).	
		Partnership deed. (If required any all or any one partner can sign Annexure - 3 for lending signing authority to its employee in this tender).	
5	Tax	GST Certificate.	
6	Identification of Tax Payer of the firm	PAN Card and Aadhar Card.	
7	Whether product has qualitatively marked	ISI marked license / NABL certified license / ISO certificate	
8	Affidavit of "Undertaking"	Annexure-4 to be typed on Rs 1000/- Stamp Paper.	
9	Tender document is read and accepted.	Seal and Sign be displayed on each page of the tender and eligibility document.	
10	Annual turnover of ₹3.00 Crore in any of the last three financial years.	CA-certified Balance Sheets.	
11	Completed at least two similar hi-tech agriculture projects	Work Orders and Completion Certificates must be attached.	
12	In-house technically qualified staff to handle such project/ works	List of staff and its qualification to be attached.	
13	Line diagram of Organizational setup	(Neatly computer printed).	
14	Any other licenses which strengthen the eligibility of the offerer pertaining to Govt guidelines.	(AT BIDDERS DESIRE).	
15	Organizational Staff Details.	Name And Designations With Qualifications.	
16	Offices in Madhya Pradesh.	List mentioning address and contact number and email	

ANNEXURE–7

DRAFT AGREEMENT

This Contract Agreement is made and executed on this ___ day of _____, 2025 at Bhopal (M.P.), between the **Madhya Pradesh State Agro Industries Development Corporation Ltd. (MPAGRO)**, having its office at _____, hereinafter referred to as the **"Employer"**, and **M/s** _____, a firm/company having its registered office at _____, represented by its authorized signatory **Shri** _____, hereinafter referred to as the "Supplier**."**

Whereas the Employer has accepted the bid submitted by the Contractor for the work titled:

"Establishment of Smart Seed Farm – Silari on Turnkey Basis including Design, Supply, Installation, Testing, Training and Commissioning of Complete Infrastructure Under PM–RKVY."

for a total contract value of **₹ _____ (Rupees _____ only)**.

Now, therefore, this Agreement is hereby executed and witnessed as follows:

The Contractor agrees to undertake and complete the entire scope of work on a **Turnkey Basis**, including supply of all materials, machinery, equipment, components, fittings, civil works wherever required, installation, testing, commissioning, documentation, demonstration, and on-site training, strictly in accordance with the approved specifications, drawings, quantities, terms, instructions and conditions contained in the complete Tender Document.

It is expressly agreed and understood that **all terms, conditions, technical specifications, general conditions, special conditions, corrigenda, clarifications, qualifying requirements, BOQ, drawings and instructions issued as part of the Tender Document shall be deemed to be incorporated in this Agreement and shall constitute a binding and inseparable part of this Contract, without the need for reproduction herein.**

The Contractor shall complete the entire work within the period stipulated in the Work Order issued by the Employer, and shall ensure that all materials and equipment supplied conform to the prescribed quality standards and applicable national/international norms. The Contractor shall be fully responsible for the satisfactory performance, safety, durability and operational efficiency of all installed systems.

Payment shall be released strictly as per the Payment Terms specified in the Tender Document and shall remain subject to the Government's **"Payment After Payment"** policy, meaning that payments to the Contractor shall only be made after receipt of corresponding funds under the scheme. No advance payment shall be made, and no interest or additional claim shall be entertained on account of delayed fund release.

The Contractor shall provide warranty, service support and defect liability coverage for the period specified in the Tender Document, and shall attend and rectify any defect or malfunction at its own cost during the warranty period.

Any dispute arising out of or in connection with this Agreement shall be settled in accordance with the Arbitration & Conciliation Act, 1996, and the courts at **Bhopal (M.P.)** shall have exclusive jurisdiction.

This Agreement, the Tender Document and the Work Order together constitute the full and final understanding between the parties and supersede all previous communications or representations.

In witness whereof, the parties hereto have set their respective hands and seals on the date and year first above written.

SIGNATURES **SIGNATURES**

For the Supplier
M/s _____
Authorized Signatory_____
Signature_____
Seal: _____
SIGNATURES
Witnesses
Witness 1:
Name: _____
Address: _____
Signature: _____
Witness 2:
Name: _____
Address: _____
Signature: _____

For the Employer (MPAGRO)
M/s _____
Authorized Signatory_____
Signature_____
Seal: _____
SIGNATURES
Witnesses
Witness 1:
Name: _____
Address: _____
Signature: _____
Witness 2:
Name: _____
Address: _____
Signature: _____

ANNEXURE - 8

: SPECIFICATION OF VARIOUS ITEMS :

ANNEXURE – 8.1

TECHNICAL SPECIFICATION FOR
HYDROPONICS / AEROPONICS SYSTEM — 1000 SQ.M
Project: Smart Seed Farm – Silari (PM–RKVY 2025–26)
(With Water Quality Requirement + Nutrient Grade Requirement)

---

1. GENERAL DESCRIPTION & SCOPE

The Supplier shall design, supply, install, test and commission a **1000 sq.m Hydroponics / Aeroponics Unit** on turnkey basis.
System shall include structure, growing channels, towers, DWC, pumps, filtration, dosing, sensors, control panel, electricals, testing, O&M documentation and on-site training.
All components shall be:

- New & high-quality
- Indian market–available branded items
- IS/ISO compliant
- Suitable for local climate & operational conditions

---

2. DIMENSIONS & LAYOUT

- Total area: **1000 sq.m**
- Free working height: **≥ 4.0 m**
- Supplier to submit NFT + DWC + Tower layout plan. (Minimum 300 plants for each system and equal number of system to be provided for NFT/DWC/Tower layout plant)
- Drainage slope & channel to be ensured.

---

3. STRUCTURE & CIVIL WORK

3.1 Structural Material

- Hot-dip galvanized GI pipes (Tata/Jindal/Surya)
- Zinc coating: **≥ 80 micron (IS 4759)**
- Thickness: **2.0 mm**
- Sizes: 76 mm (columns), 60 mm (truss), 42 mm (purlins), 33 mm (bracing)

3.2 Fasteners

- High-tensile bolts **Grade 8.8**
- Hot-dip galvanized
- Brands: **Unbrako / TVS / LPS**

3.3 Foundation

- RCC M20 concrete
- Minimum anchoring depth: **1 m**

---

4. CLADDING, NETTING & FIXING

4.1 Polyfilm

- 200-micron UV-stabilised
- IS 15827 compliant
- Anti-drip & anti-fog
- Brands: **Garware / Agriplast**

4.2 Insect Net

- 40–50 mesh HDPE

- GSM: 70–90
- UV stabilized
- Brand: Garware

4.3 Fixing System

- Aluminium lock profiles (Grade 6063-T6)
- UV-coated zigzag springs

---

5. HYDROPONICS SYSTEM COMPONENTS *(Minimum 300 plants for each system and equal number of system to be provided for NFT/DWC/Tower layout plant)*

5.1 NFT Channels

- Food-grade PVC/HDPE
- Thickness: **1.8–2.0 mm**
- Size: 100 × 50 mm
- UV stability: 3–5 years
- Brands: **AmrutAgritech / SudarshanPlast / Jain Hydroponics**

5.2 DWC Rafts

- EPS/HDPE
- Thickness: 25–35 mm
- Density: ≥ 20 kg/m³
- Brands: **AquaPro / Amul EPS**

5.3 Aeroponic Towers

- Material: ABS/HDPE (Food-grade, UV-stabilised)
- Levels: 6–10
- Nozzles: Brass/SS anti-drip
- Droplet size: 5–25 microns
- Pressure rating: ≥ 5 bar
- Brands: **AmrutAeroTower / UrbanFarm / Local OEM**

WATER QUALITY REQUIREMENT (MANDATORY)

- **Source water TDS should be ideally below 500 ppm.**
- If water TDS > 500 ppm or hardness > 150 ppm,
  bidder shall propose suitable pre-treatment (RO / Softening / Filtration) as optional.

6. PUMPS, FILTRATION & NUTRIENT MANAGEMENT

6.1 Main Pump

- Monoblock/centrifugal
- Pressure: 3–5 bar
- Copper winding
- Brands: **Kirloskar / CRI / Lubi / Crompton**

6.2 Filtration

- Sand filter (primary)
- 120–130 micron mesh filter (secondary)
- Brands: **Netafim / Jain Irrigation / Finolex**

6.3 Nutrient Tanks

- HDPE food-grade
- Size: 500 L × 3 nos
- Brands: **Sintex / Vectus / Supreme**

6.4 Piping

- Laterals: LLDPE 16 mm UV-stabilised
- Mains: UPVC SCH 80 / HDPE PN-6
- PP/HDPE leak-proof fittings

NUTRIENT QUALITY REQUIREMENT

- Nutrients must be **Agricultural / Hydroponic Grade**.
- Approved Indian Brands:
  - **IFFCO**,
  - **Mahadhan**,
  - **Jain Hydroponic Nutrients**,
  - or equivalent certified suppliers.

---

7. SENSORS & AUTOMATION

7.1 EC Sensor

- Accuracy: ±0.05 mS/cm
- Temperature compensation
- Brands: **Hanna / Atlas Scientific**

7.2 pH Sensor

- Accuracy: ±0.05
- Replaceable probe
- Brands: **Hanna / Aqualytic**

7.3 Controller

- PLC/Controller with dosing logic
- Timed irrigation cycles
- Manual + Auto
- Brands: **Siemens LOGO / Delta / Autonics / Schneider**

7.4 Control Panel

- IP54/IP65 enclosure
- Components: Schneider / ABB / L&T
- MCB, ELCB, Indicators, Proper labeling

---

8. ELECTRICAL SYSTEM

- ISI-marked FRLS copper wire
- Junction boxes (IP-rated)
- Earthing: Minimum 2 pits
- Pump starter & isolation switch included

---

9. INSTALLATION & TESTING

- Proper mechanical erection
- Pressure & leak test
- Pump head & flow verification
- Sensor calibration
- 48–72-hour functional trial
- All parameters to remain stable

---

10. DOCUMENTATION REQUIRED

- Datasheets
- MTC (Material Test Certificates)
- Calibration certificates
- As-built drawing
- Electrical SLD
- O&M Manual
- Training record

ANNEXURE – 8.2

TECHNICAL SPECIFICATION FOR
SENSOR-BASED FERTIGATION AUTOMATION SYSTEM - All Complete
(COMMAND AREA: COMPATIBLE FOR 5000 SQ.M)
Project: Smart Seed Farm – Silari (PM–RKVY 2025–26)
Item: Fertigation Automation Unit (1 No.)

PART- A :-

---

1. GENERAL DESCRIPTION & SCOPE

The supplier shall design, supply, install, test and commission a **Sensor-Based Fertigation Automation System** capable of irrigating and fertigating a **5000 sq.m command area**. The system shall include:

- Fertigation tank unit
- Automated dosing unit
- EC & pH sensor system
- Motorized / solenoid control valves
- Distribution pipelines & manifolds
- Filters
- Pumps
- Electrical & control panel
- Commissioning & training

All items must be **Indian-market available**, high-quality, durable, and suitable for agricultural irrigation and fertigation systems.

---

2. DESIGN BASIS & PERFORMANCE REQUIREMENTS

- Command area: **5000 sq.m**
- Dosing accuracy: **±2–5%**
- EC accuracy: **±0.05 mS/cm**
- pH accuracy: **±0.05**
- Working pressure: **2.5–4.0 bar**
- Compatibility: Drip irrigation / micro-sprinkler systems
- Automation: Timer + Sensor feedback + Manual override

---

3. FERTIGATION TANK & MIXING SYSTEM

3.1 Main Mixing Tank

- Capacity: **2000 L**
- Material: **HDPE food-grade** (Sintex/Vectus/Supreme)
- UV-stabilized
- Reinforced outlet
- Level indicator marking (Min/Max)

3.2 Stock Solution Tanks (A/B/C)

- Capacity: **500 L each × 3 Nos**
- Material: HDPE
- Chemical-resistant
- Color-coded identification (A, B, C)

All ISI mark tanks

---

4. DOSING PUMPS (AUTOMATIC)

4.1 Dosing Pump Specification

- Type: **Diaphragm / Peristaltic**
- Flow: **1–20 LPH adjustable**
- Accuracy: ±5%

- Pressure: 3–5 bar
- Chemical compatible
- Makes:
    - **DoseTech**,
    - **Emec**,
    - **AquaDosing**,
    - **Ion Exchange India**

4.2 Dosing Channels

- Minimum **3 dosing injectors** (A, B, Acid)
- Multiple dosing channels
- Each individually programmable

---

5. FILTRATION SYSTEM

- Primary: **Sand Filter (40–50 LPM)**
- Secondary: **Screen/Mesh Filter 120–130 micron**
- Body: HDPE/FRP
- Makes: **Netafim / Jain Irrigation / Finolex**
- Pressure gauges on inlet/outlet

---

6. PUMPS (IRRIGATION & FERTIGATION)

6.1 Main Fertigation Pump

- Type: Centrifugal / Monoblock
- Capacity: **2.5–4 bar pressure**
- Flow: As per command area demand
- Motor: Copper wound
- Brands: **Kirloskar / CRI / Lubi / Crompton**

6.2 Standby Option

- Provision/quote for standby unit (optional)

---

7. WATER QUALITY REQUIREMENT (MANDATORY)

- Input water **TDS ideally < 500 ppm**
- Hardness < 150 ppm
- If TDS/Hardness is high, vendor must offer optional **RO/softening solution**

---

8. NUTRIENT QUALITY REQUIREMENT (MANDATORY)

Nutrients must be **Hydroponic/Agricultural grade** only.
Approved Indian brands:

- **IFFCO**
- **Mahadhan**
- **Jain Hydroponic Nutrients**
- **Mahindra Agri Nutrients**

Industrial-grade chemicals are **not permitted**.

---

9. SENSORS & AUTOMATION

9.1 EC Sensor

- Industrial grade
- Accuracy: ±0.05 mS/cm
- Auto temperature compensation
- Brands: **Hanna Instruments / Atlas Scientific**

9.2 pH Sensor

- Accuracy: ±0.05 pH
- Replaceable probe
- Brand: **Hanna / Aqualytic**

9.3 Controller & Logic Panel

- PLC / microcontroller based
- Functions:
    - Automatic dosing based on EC/pH
    - Timer-controlled irrigation
    - Stabilisation delay
    - Manual override mode
    - Alarms (low water, low EC/pH, over-acid dose etc.)

Controller Brands:

- **Siemens LOGO**
- **Delta**
- **Autonics**
- **Schneider Zelio**

9.4 Display Interface

- LCD/LED screen showing EC, pH, tank levels, dosing activity
- Free automatic firmware update, secure and encrypted communication, software and cloud integration
- Browser and remote control features (Application and web based)
- *Subscription for cloud storage for 3 years should be included.*

---

10. ELECTRIC CONTROL PANEL

- IP54/IP65 FRP enclosure
- Components: **Schneider / ABB / L&T**
- MCB / ELCB / RCCB
- Step-down transformer if required
- Proper cable management
- Surge protection recommended

---

11. PIPELINE & DISTRIBUTION SYSTEM

11.1 Mainline

- HDPE PN-6 or UPVC SCH 80
- Diameter: 40 mm to 63 mm (as per design)

11.2 Sub-main / Manifold

- LLDPE 16–20 mm
- UV-resistant
- Leak-proof PP fittings

11.3 Valves

- **Motorized control valves** (24V/230V)
  or
- **Solenoid valves** for zone automation
- Brand: **Netafim / Bermad / Jain / AquaSol**

---

12. PRESSURE MONITORING

- Glycerin filled pressure gauges
- Range: 0–6 bar
- One at pump outlet, one at each filter

PART- B :-

1. GENERAL DESCRIPTION & SCOPE

The Supplier/Contractor shall **design, supply, install, test, calibrate, commission and hand over** a fully automated, sensor-based fertigation and irrigation system covering a **command area of 5000 sq.m**, suitable for precision nutrient delivery, automated irrigation scheduling, and real-time environmental sensing under protected cultivation.

Scope shall include:

- Fertigation controller (EC + pH sensing)
- Dosing pumps (multi-channel)
- Pressure-regulated irrigation manifolds
- Solenoid valves, NRVs, filters
- Pipeline, fittings, flowmeters
- Soil moisture sensors
- RTD/temperature sensors
- Pressure sensors
- Cloud connectivity (if applicable)
- Power distribution panel
- Field cabling
- Delivery pumps
- Foundation and mounting
- Installation, testing, calibration
- O&M Manual and training (minimum 1 day)

All materials shall be **new, unused, OEM-certified**, meeting Indian/International Standards (IS/IEC/ISO/ASTM).

2. SYSTEM ARCHITECTURE (KEY PARAMETERS)

- Command area: **5000 sq.m** (5,000 m²)
- Irrigation type: Drip / micro-irrigation + fertigation
- Operating pressure: **3–4.5 bar**
- Flow requirement: As per hydraulic design (supplier must submit calculation)
- Number of irrigation zones: **3–6 zones (as per layout)**
- Nutrient management: EC + pH controlled
- Controller type: PLC/Embedded
- Pump capacity: 2–5 HP (as per hydraulic load)

Supplier shall submit CAD layout + hydraulic calculation + electrical SLD.

3. STRUCTURE, CIVIL & FOUNDATION WORKS

3.1 Pump/Fertigation Unit Mounting Frame

- Material: **Hot-dip galvanized steel**
- Zinc coating: **minimum 80 microns**
- Thickness: 2.0 mm
- Vibration-proof anchoring

3.2 Foundation Pad

- RCC slab: M20 grade
- Minimum thickness: 100–150 mm
- Anti-vibration pads for pump & controller
- Earthing pit chamber masonry as per IS rules

4. PUMPS & HYDRAULIC SYSTEM

4.1 Fertigation Pump (Primary Pump)

- Type: **Centrifugal / Monoblock / Multistage**

- Capacity: As per hydraulic requirement
- Pressure: **Minimum 4 bar**
- Material: Cast iron body / SS-304 impeller
- Motor: 2–5 HP, copper winding
- Protection: IP55 rating

Accepted Makes: Grundfos / CRI / Kirloskar / Lubi / Equivalent
OEM performance curve mandatory.

4.2 Dosing Pumps (Fertilizer Injection)

- Minimum **3 dosing channels** (A, B, C tanks)
- Flow accuracy: ±2%
- Chemical compatible (Acid/Alkaline safe)
- Material: PVDF/PP industrial grade
- Motor: Stepper/Brushless
- Control: PLC integrated

4.3 Filters

- Sand filter + 120–130 micron screen filter
- Housing: HDPE/FRP/PP
- Backwash valves included

---

5. AUTOMATION & SENSOR MODULES

5.1 EC Sensor

- Accuracy: ±0.01 mS/cm
- Range: 0–5 mS/cm
- Automatic temperature compensation
- Replaceable probe
- OEM calibration certificate mandatory

5.2 pH Sensor

- Accuracy: ±0.01
- Range: 0–14
- Replaceable probe
- OEM calibration certificate mandatory

5.3 Soil Moisture Sensors (Minimum 6 Nos)

- Type: Capacitive/Dielectric (not resistance type)
- Waterproof
- Accuracy: ±2% VWC
- Cable length: min. 5–10 m

5.4 Pressure Sensors

- SS body (SS316)
- Range: 0–10 bar
- 4–20 mA output

5.5 Flowmeter

- Ultrasonic / Electromagnetic
- Accuracy: ±1%
- Display: Digital

---

6. FERTIGATION CONTROLLER (CENTRAL CONTROL UNIT)

6.1 Controller Type

- PLC / Microcontroller-based
- Real-time EC & pH control
- Auto dosing + Auto flushing
- Minimum 10 programmable irrigation schedules

- Zone-wise fertigation logic

6.2 Display & Communication

- 7-inch industrial HMI / LCD
- Password protection
- Data logging
- Optional Cloud/Web access

6.3 Enclosure

- IP65 weatherproof
- Powder-coated steel cabinet

6.4 Electrical Safety

- MCB/ELCB/RCCB
- Surge protection (Class C/D)
- Earthing: As per IE Rules

---

7. NUTRIENT TANKS & CHEMICAL STORAGE

7.1 Tanks

- HDPE food-grade
- Capacity: 500 L × 3 Nos (A, B, C tanks)
- UV-stabilized
- Chemical-resistant
- Level indicator markings

7.2 Tank Plumbing

- PP/HDPE fittings
- NRVs
- Ball valves
- Overflow & drain lines

---

8. PIPING & FITTINGS (ALL FOOD-GRADE)

8.1 Mainlines

- UPVC Class-2 or HDPE PN6/PN8
- Pressure rating: ≥ 6 bar

8.2 Laterals

- 16 mm LLDPE
- UV-protected (IS 12786)

8.3 Fittings

- PP/HDPE
- UV-resistant
- Leak-proof locking collars

8.4 Valves

- Solenoid valves for automation
- NRVs
- Flush valves

---

9. ELECTRICAL WORKS (AS PER INDIAN ELECTRICITY RULES)

- Copper wiring (ISI, FRLS)
- 2 Earth pits (chemical earthing recommended)
- Control panel with labelled wiring
- IP65 junction boxes
- MCB/RCCB protection
- Conduit/Trunking

---

10. MATERIAL QUALITY, MAKES & STANDARDS

Item	Minimum Standard	Accepted Makes
Pumps	IS 9079	Grundfos/CRI/Lubi/KBL
Dosing pumps	Industrial grade	Netafim/Jain/Equivalent
Filters	ISO/ASTM	Jain/Netafim
Sensors	IP65/IP67	Hanna/Adafruit/OEM
Electrical	IS 732	L&T/Schneider/ABB
Tanks	IS 12701	Sintex/Equivalent

OEM test certificates mandatory.

---

11. DOCUMENTATION REQUIREMENTS

At Bid Stage

- Datasheets
- Hydraulic calculation
- SLD
- Sensor calibration certificate
- System P&ID
- CAD layout

12. PERFORMANCE GUARANTEE

- EC/pH stability: ±0.05
- Uniform fertigation: ≥ 90%
- Pump discharge as per datasheet
- No leakage in pipelines
- Sensor accuracy maintained for 6 months minimum

ANNEXURE – 8.3

TECHNICAL SPECIFICATION FOR
DEVELOPMENT OF TRACEABILITY SYSTEM (1 SET)
Project: Smart Seed Farm – Silari (PM–RKVY 2025–26)
Item: Traceability System (QR-Based Digital Tracking) — 1 Set

---

1. GENERAL DESCRIPTION & SCOPE

The Supplier shall design, develop, supply, install, test and commission a **QR-code based Digital Traceability System** for the Smart Seed Farm – Silari.
System will track:

- Seed Lot → Nursery → Field → Harvest → Store → Dispatch
- Batch-wise crop movement
- Stock in/out
- QR labels for trays, packets & produce
- Storage & movement logs
- Audit-ready reports
- Dashboard monitoring
- Mobile & Web interface

All hardware/software shall be **high-quality, India-available, branded, reliable, fully supported**, with complete training and documentation.

---

2. SYSTEM FUNCTIONALITY (CORE FEATURES)

System shall provide:

- QR code generation (unique IDs for each batch/lot)
- Batch creation & mapping
- Nursery → Field → Storage → Dispatch tracking
- Date/Time stamping
- Inventory management
- Digital register (Seed stock, Seedling stock, Issue/Receipt)
- PDF/Excel export
- User management & access control
- Data backup (local + cloud option)
- Device compatibility: Android mobile + Desktop/Laptop

---

3. SYSTEM ARCHITECTURE

- Web-based application (secure login)
- Mobile application (Android) – lightweight
- Backend database: MySQL/PostgreSQL
- Hosting: On-premise OR cloud (AWS/Netmagic/Zoho Cloud)
- QR Code Engine: ISO/IEC 18004 compliant
- Printer-scanner compatibility ensured

---

4. HARDWARE (HIGH QUALITY COMPONENTS)

4.1 QR Label Printer (Industrial Grade)

- Type: Thermal Transfer Barcode/QR Printer
- Print width: 4 inch
- Resolution: **203–300 DPI**
- Duty cycle: Heavy-duty
- Brands (Premium):
  - **Zebra ZD420 / ZT230**
  - **Honeywell PC42t**

- **TSC TE244**

4.2 Barcode/QR Scanner

- Type: 2D Imager
- Connectivity: USB/Bluetooth
- Brand:
  - **Honeywell Voyager / Zebra DS2208**

4.3 Labels (High Quality)

- Material: **Polypropylene (PP) waterproof labels**
- Adhesive: Permanent adhesive
- Size: 2”×2” or 3”×2”
- Roll length: 500–1000 labels
- Ribbon: Resin ribbon (UV resistant)

4.4 Mobile Device (Optional Supply)

- Android device (Version ≥ 10)
- RAM: 4–6 GB
- Brand: Samsung / Oppo / Vivo (mid-range professional models)

---

5. SOFTWARE SPECIFICATIONS

- Web application developed in secure framework (Laravel / Django / Java Spring)
- QR code generator with alphanumeric unique IDs
- Role-based access control
- Dashboard:
  - Today’s operations
  - Batch summary
  - Stock movement
  - Alerts
- Data export: PDF / Excel
- Audit log (every user action recorded)

---

6. DATA SECURITY

- Encrypted database (AES-256 recommended)
- Encrypted QR codes
- Daily auto backup to external drive
- Cloud optional backup
- Role-based login
- SSL-enabled (HTTPS) with certificate

---

7. INTEGRATION CAPABILITY

- Compatible with IoT sensors (future linkage)
- Can integrate with MIS/Computerization module
- CSV/Excel upload for legacy data

---

8. ELECTRICAL & NETWORKING REQUIREMENTS

- UPS: 1 KVA Microtek/Luminous for printer + PC
- LAN: CAT-6 cable
- Switch: 8-port, D-Link/TP-Link
- WiFi router: Dual band

---

9. DOCUMENTATION PROVIDED

- System Manual
- User Manual
- QR printing instruction

- Troubleshooting guide
- Backup & restore SOP
- Admin training booklet

---

10. INSTALLATION & DEPLOYMENT

Supplier shall:

- Install software on server/laptop
- Install printer/scanner
- Configure database
- Create sample batches
- Test operations in real-time
- Integrate with nursery/seedling workflow

---

11. TESTING & VALIDATION

- QR code readability test (50 random samples)
- Print durability test (water + handling)
- Data entry speed test
- Export/import check
- Stock tracing end-to-end test
- Login security test

---

12. OPTIONAL FEATURES (Quoted Separately)

- Cloud dashboard
- Geo-tagging
- Photo-based crop verification
- SMS alerts
- Multi-language support (Hindi + English)

ANNEXURE – 8.4

TECHNICAL SPECIFICATION FOR
INTERNET OF THINGS (IoT) SYSTEM — 1 SET
(COMMAND AREA : COMPATIBLE FOR 6500 SQM)
Project: Smart Seed Farm – Silari (PM–RKVY 2025–26)
Item: IoT Sensors + Gateway + Dashboard + Alerts — 1 Set

---

1. GENERAL DESCRIPTION & SCOPE

The Supplier shall design, supply, install, test and commission a **complete IoT Monitoring System** for Smart Seed Farm – Silari consisting of:

- Environmental Sensors (Temp, RH, Soil Moisture, Light, CO_2 optional)
- Data Logger / IoT Gateway
- Wireless Communication (LoRa/WiFi/4G)
- Cloud Dashboard (Web + Mobile View)
- Alerts & Notifications
- Historical Data Storage
- Reporting System
- Documentation & Training

All equipment must be **premium-quality, Indian-available, reliable, agriculture-grade**, suitable for field conditions (Dust, rain, heat).

---

2. SYSTEM FUNCTIONALITY

IoT System must provide:

- Real-time monitoring of environmental data
- Historical data trend charts
- Cloud dashboard
- Alerts via SMS/WhatsApp/Email
- Data export (Excel/PDF)
- Multi-user login
- Device health monitoring
- Mobile view compatibility

---

3. IoT SENSORS (AGRICULTURE-GRADE)

All sensors must be:

- Weatherproof (IP65/IP67)
- Calibrated
- Cable-protected
- UV-resistant
- Suitable for 24×7 outdoor operation

3.1 Temperature & Humidity Sensor

- Accuracy:
  - Temp: ±0.5°C
  - Relative Humidity: ±3% RH
- Range:
  - Temp: –10 to 60°C
  - RH: 0–100%
- Make (Premium Indian):
  - **SenseGiz / AgriNXT / OIZOM / Bosch**

3.2 Soil Moisture Sensor

- Type: Capacitive (not resistive)
- Accuracy: ±2%
- Depth: 15–30 cm

- Make: **Decagon/METER Group (imported), AgSensor India**

3.3 Light (Lux/PPFD) Sensor
- Range: 0–180,000 Lux
- Irradiance calibrated
- Make: **METER Group / SpectraAgri / OIZOM**

3.4 Soil Temperature Probe
- Stainless steel rod
- Accuracy: ±0.5°C
- Make: **METER Group / AgNext / AgriNXT**

3.5 Optional: CO_2 Sensor
- Range: 0–5000 ppm
- Accuracy: ±50 ppm
- Make: **SenseAir / OIZOM**

---

4. IoT GATEWAY / DATA LOGGER
- Industrial-grade LoRa/WiFi/4G/5G Gateway
- IP65 Enclosure
- Internal memory backup: 7–14 days
- Power options:
  - AC 230V
  - Solar + Battery (optional)
- SIM-based connectivity (4G/5G LTE)
- Make:
  - **SenseGiz G200**,
  - **AgriNXTIoT Hub**,
  - **OIZOM AQT-IoT**,
  - **Bosch IoT Gateway**

---

5. COMMUNICATION TECHNOLOGY
- LoRaWAN (preferred for large farms)
- OR WiFi + 4G/5G fallback
- Over-the-air (OTA) firmware update capability
- Secure data encryption (TLS/SSL)

---

6. CLOUD PLATFORM & DASHBOARD

Dashboard must provide:
- Real-time data (every 5–10 minutes)
- Graphs – Temp, RH, Moisture, Light, Soil Tempature, CO2 (optional)
- Soil moisture zones
- Device battery/health status
- Data download (Excel/PDF)
- Alerts configuration

Recommended Platforms:
- **ThingsBoard** (Open-source, widely used)
- **AWS IoT**
- **AgriNXT Dashboard**
- **Bosch IoT Suite**

(Local server installation option available)

---

7. MOBILE APPLICATION
- Android app (Web-based/PWA acceptable)
- View live sensor data

- Alerts on mobile
- Simple interface for farm operators

---

8. ELECTRICAL & POWER SUPPLY

- 230V AC input
- Low-voltage output to sensors
- Earthing as per Indian rules
- Surge protection
- Cable: ISI-marked copper wire
- Power backup: 3–4 hours mini UPS (recommended)

---

9. STRUCTURE & OUTDOOR INSTALLATION

- Pole-mounted sensors
- GI pole with foundation
- Height: 2–3 meters
- GI bracket + clamps
- Weatherproof junction box (IP65)
- Cable protection conduit (PVC/HDPE)

---

10. INSTALLATION & CALIBRATION

Supplier must perform:

- Sensor calibration (Temp, RH, Soil Moisture)
- Gateway configuration
- SIM activation (Day-1)
- Dashboard creation (User IDs, passwords)
- Data flow test
- Field range test
- Connectivity test

---

11. TESTING PROCEDURE

System acceptance only if:

- All sensors reporting live values
- Data updating every 5–10 mins
- Zero packet loss > 2%
- Dashboard graphs functional
- Alerts working
- Historical data visible

---

12. DATA STORAGE & BACKUP

- Minimum **1 year storage**
- Weekly automated backup
- Data export any time (Excel/PDF)
- Local + cloud backup options

ANNEXURE – 8.5

TECHNICAL SPECIFICATION FOR
AQUAPONICS SYSTEM — 1 SET
Project: Smart Seed Farm – Silari (PM–RKVY 2025–26)
Item: Aquaponics Demonstration System — 1 Set

---

1. GENERAL DESCRIPTION & SCOPE

The Supplier shall design, supply, install, test, commission and hand over a **complete Aquaponics Demonstration System** comprising:

- Fish culture tank(s)
- Biofiltration system
- Grow beds (Media/NFT/DWC combo)
- Pumps
- Aeration system
- Plumbing network
- Water quality monitoring
- Electrical system
- Training & documentation

This system is intended for **training, demonstration, research, seedling production & integrated farming education**.
All components must be **high-quality, durable, Indian-available**, suitable for continuous 24/7 operation.

---

2. SYSTEM CAPACITY & DESIGN BASIS

- Fish Tank Capacity: **2000–3000 L total**
- System Flow Rate: **600–1200 LPH (recirculating)**
- Growing Area: **50–80 sq.m (as per site)**
- Water retention time: 1–2 hours
- Fish stocking density: 10–20 kg/m³
- Suitable for Tilapia, Rohu, Catfish, Pangasius etc.

---

3. FISH TANK

3.1 Tank Material

- HDPE/LLDPE food-grade rotational-moulded tank
- UV-stabilised
- Thickness: Minimum 6–8 mm
- Capacity: 2000–3000 L
- Brands:
  - **Sintex / Vectus / Supreme / Sheetal**

3.2 Accessories

- Inlet pipe
- Overflow pipe
- Bottom drain
- Net cover to prevent fish jumping
- Tank stand (GI/MS powder-coated)

---

4. GROW BED SYSTEM

You may include any combination:

4.1 Media Beds

- Frame: GI square pipe
- Bed material: UV-stabilized HDPE troughs
- Media: **LECA / Expanded Clay Balls** (Brand: Hydroton/Indian equivalent)

- Bed depth: 25–30 cm

4.2 NFT Channels

- Size: 100×50 mm
- Material: Food grade PVC
- Thickness: 1.8–2.0 mm
- Brands: **AmrutAgritech / SudarshanPlast**

4.3 DWC (Deep Water Culture) Beds

- HDPE tubs / lined beds
- Rafts: Food-grade EPS 25–35 mm
- Hole spacing as per crop

---

5. BIOFILTRATION SYSTEM

5.1 Mechanical Filter

- Swirl filter or radial-flow settler
- Capacity: 100–200 L
- Material: HDPE drum/tank

5.2 Biological Filter

- Media: **Bio balls / Kaldnes K1/K3 moving-bed media**
- Volume: 50–100 L media
- Mesh strainer

5.3 Brands

- **AquaPro / Aquaponics Systems India / Aquatic Remedies**

---

6. AERATION SYSTEM

6.1 Air Pump

- Capacity: 60–120 LPM
- Power: 40–80 W
- Make:
    - **Resun / Boyu / Hailea / Kirloskar (blower type)**

6.2 Aeration Accessories

- Air stones (cylindrical/round)
- Silicon airline tube
- Manifold connectors

---

7. WATER PUMPS

- Type: Submersible/Centrifugal
- Flow: 600–1200 LPH
- Head: 2–4 m
- Make:
    - **Kirloskar / CRI / Crompton / Resun / Boyu**

Minimum 1 main pump + 1 optional backup.

---

8. PLUMBING NETWORK

- Mainline: uPVC SCH 80 or HDPE PN-6
- Laterals: LLDPE 16–20 mm
- Fittings: PP/HDPE (food-grade)
- Valves: Ball valves (CPVC/UPVC)
- Brand: **Finolex / Ashirvad / Supreme**

---

9. WATER QUALITY SENSORS & TEST KITS

9.1 Test Kits

- pH test kit (Aquarium grade or digital meter)

- Ammonia test kit
- Nitrite/Nitrate kits
- Brand: **Aquarium Systems / Aquatic Remedies / API Master Kit**

9.2 Optional Digital Sensors

- Digital pH meter (Hanna / Aqualytic)
- DO Meter (optional)

---

10. ELECTRICAL SYSTEM

- Control switchboard
- MCB/ELCB
- ISI-marked copper wiring
- Waterproof sockets
- Surge protection
- Optional: Mini UPS for aerator

---

11. STRUCTURE & INSTALLATION SETUP

- GI frame for NFT + media beds
- Corrosion-resistant GI/Aluminium support
- HDPE lining where needed
- Proper drainage and leveling
- Weather protection optional (shade net/roof)

ANNEXURE – 8.6

TECHNICAL SPECIFICATION FOR
PRECISION FARMING SYSTEM — 1 SET
Project: Smart Seed Farm – Silari (PM–RKVY 2025–26)
Item: Precision Agriculture System (Sensors + Smart Tools + Mapping Instruments) — 1 Set

---

1. GENERAL DESCRIPTION & SCOPE

The Supplier shall design, supply, install, test, commission and hand over a **Precision Farming Demonstration System**, including:

- Soil nutrient sensors
- Soil sampling tools
- Digital soil testing kit
- Drone-based/Handheld NDVI analysis (handheld option preferred for tender practicality)
- GPS-based field mapping unit
- Weather meter
- Moisture meter
- Android-based data logging
- Software dashboard & reporting
- Training & documentation

System will support **high-precision farm monitoring, crop diagnosis, soil-health assessment & yield improvement**.

---

2. SYSTEM COMPONENTS (OVERVIEW)

The Precision Farming Kit shall include:

1. Digital Soil Testing Kit
2. Soil Moisture Meter
3. Soil pH/EC Meter
4. Handheld NDVI Analyzer
5. GPS/GIS Mapping Device
6. Portable Weather Meter
7. Android Tablet/Smart Device
8. Carry Case
9. Software Dashboard

All components shall be **premium, Indian-available, lab-grade/agri-grade**, and robust for field use.

---

3. DIGITAL SOIL TESTING KIT (HIGH QUALITY)

3.1 Parameters

Must test minimum:

- N (Nitrogen)
- P (Phosphorus)
- K (Potassium)
- Soil pH
- EC
- Organic Carbon
- Zn, B (optional but recommended)

3.2 Make & Brand (Premium Options)

- **KrishiRasayan Soil Lab Kit**
- **Atul Soil Testing Mini Lab**
- **PradhanMantri Soil Health Lab (PM SHC) Kit Standard**
- **TranschemAgritech Soil Kit**

3.3 Features

- Digital colorimeter
- Ready reagents
- 200–300 tests capacity
- Carrying box
- Calibration chart
- 6–12 months reagent shelf life

---

4. SOIL MOISTURE METER

Specifications

- Probe length: 20–30 cm
- Range: 0–100% moisture (v/v)
- Accuracy: ±2–3%
- Instant reading (capacitive type preferred)

Brands

- **Lutron PMS-714**
- **Wensar Soil Moisture Tester**
- **Mextech SM series**

---

5. SOIL pH & EC METER (DIGITAL)

Specifications

- pH range: 0–14
- Accuracy: ±0.05 pH
- EC range: 0–20 mS/cm
- Temperature compensation

Brands

- **Hanna Instruments** (best)
- **Lutron**
- **Aqualytic**

---

6. HANDHELD NDVI ANALYZER (CROP HEALTH SCANNER)

Specifications

- NDVI measurement range: –1 to +1
- Instant crop stress indication
- Light-weight handheld device
- Data export via USB/Bluetooth

Brands

- **GreenSeeker Handheld (Trimble)** — *Industry Standard*
- **Agri-Tech NDVI Scanner (India)**

---

7. GPS/GIS MAPPING DEVICE

Specifications

- Accuracy: **2–5 meters** (agri-grade)
- Display: 2.5–3 inch
- Satellite systems: GPS + GLONASS
- Data logging capability
- USB/Bluetooth connectivity

Brands

- **Garmin eTrex 22x / 32x**
- **Garmin 64sx** (premium option)

---

8. PORTABLE WEATHER METER

Minimum Parameters

- Temperature
- Humidity
- Wind speed
- Wind direction
- Rainfall (optional)
- Light intensity

Brands

- **Kestrel 3500/5500**
- **OIZOM Mini Met Station**
- **Wensar Weather Kit**

---

9. ANDROID TABLET / MOBILE FOR DATA LOGGING

Specifications

- RAM: 6–8 GB
- Storage: 128 GB
- Android version ≥ 10
- SIM + WiFi
- Long battery life (≥5000 mAh)
- 5G compatible

Brands

- **Samsung Tab A7/A8**
- **Lenovo M10**
- **Realme Pad**

---

10. SOFTWARE / DASHBOARD

MUST INCLUDE:

- Soil test digital report
- Crop recommendation (NPK + dose suggestion)
- NDVI data entry + color-coded heatmap
- Moisture & EC logs
- Geo-tagging (GPS input)
- Graphs & charts
- Export in PDF/Excel
- Multi-user login
- Cloud backup
- Daily backup option

Framework:

- Web dashboard (secure login)
- PWA Mobile Support
- Database: MySQL/PostgreSQL
- Hosting: On-premise or cloud (AWS/Zoho optional)

---

11. ELECTRICAL & POWER

- Chargers for all devices
- Power adapters (ISI-marked)
- Optional power bank (20,000 mAh)
- Surge-protected connection

---

12. INSTALLATION, CONFIGURATION & CALIBRATION

The supplier shall:

- Calibrate pH meter

- Calibrate soil EC meter
- Calibrate NDVI device
- Configure GPS device
- Set up dashboard
- Create initial soil/crop datasets
- Ensure data syncing

ANNEXURE – 8.7

TECHNICAL SPECIFICATION FOR
MODERN COMPUTERIZATION SYSTEM / SMART OFFICE SETUP — 1 SET
Project: Smart Seed Farm – Silari (PM–RKVY 2025–26)
Item: Smart Office Setup (Computers + Networking + Printing + MIS Software)

---

1. GENERAL DESCRIPTION & SCOPE

The supplier shall design, supply, install, configure and commission a **complete Modern Smart Office Setup** including:

- High-performance Desktop Computers
- LaserJet Network Printer
- LED Projector
- Office Networking (LAN + WiFi)
- MIS Software (Basic Operational Management)
- Electrical & Power Backup
- Antivirus + Security
- Installation, testing, training & documentation

The system must be **reliable, durable, government-grade**, built with **top Indian brands** ensuring long-term stability.

---

2. COMPUTER SYSTEM (HIGH-PERFORMANCE)

2.1 Specifications

- Processor: Intel Core i5 (11th/12th Gen) OR AMD Ryzen 5
- RAM: **16 GB DDR4**
- Storage: **512 GB SSD (NVMe preferred)**
- Graphics: Integrated UHD
- Display: 22–24 inch LED Monitor (Full HD)
- Keyboard + Mouse (USB)
- Connectivity: LAN, WiFi, Bluetooth
- OS: **Windows 11 Professional (Licensed)**

2.2 Recommended Brands

- **Dell OptiPlex**
- **HP ProDesk**
- **Lenovo ThinkCentre**

---

3. LASERJET PRINTER (NETWORK + DUPLEX)

3.1 Specifications

- Type: Monochrome Laserjet
- Print speed: **18–25 ppm**
- Duty cycle: ≥ 8,000 pages/month
- Auto-duplex printing
- Network connectivity (LAN/WiFi)

3.2 Recommended Brands

- **HP LaserJet 137fnw / 108W / M126nw**
- **Brother DCP-L2541DW**

---

4. PROJECTOR (DIGITAL TRAINING UNIT)

Specifications

- Brightness: **3300–3800 lumens**
- Resolution: **Full HD (1080p)**
- HDMI, VGA inputs
- In-built speaker

- Wall/ceiling mounting kit

Brands

- **Epson EB Series**
- **BenQ MS/GS Series**

---

5. NETWORKING SYSTEM (LAN + WiFi)

5.1 Networking Hardware

- 8-Port/16-Port Gigabit Switch (D-Link/TP-Link)
- CAT-6 LAN cable
- Wall-mount patch panel
- RJ45 connectors
- PVC conduit casing

5.2 WiFi Router

- Dual-band router (2.4 GHz + 5 GHz)
- Coverage: 1200–1800 sq.ft
- Brands: **TP-Link Archer / D-Link / ASUS**

---

6. POWER BACKUP (UPS)

- 1 KVA UPS (Microtek/Luminous/APC)
- Backup: 30–45 minutes
- Pure sinewave recommended

---

7. ANTIVIRUS & SECURITY SOFTWARE

- Antivirus: **Quick Heal Total Security / Kaspersky / Bitdefender**
- Validity: **3 years multi-device license**
- Features: Real-time protection + Anti-ransomware

---

8. MIS SOFTWARE (BASIC OFFICE MANAGEMENT SYSTEM)

Included modules:

- File/document management
- Farmer database
- Input/output register
- Inventory stock ledger
- Seedling distribution register
- Nursery operations log
- Reporting module (PDF/Excel export)
- User roles (Admin, Operator)

Technology:

- Web-based (Local host or LAN server)
- Database: MySQL / PostgreSQL
- Access: Windows browser + Mobile view
- Backup: Auto weekly backup

---

9. MEETING & TRAINING ACCESSORIES

- Wireless presenter
- Projection screen (6×4 ft)
- HDMI cable (10 m)
- Power extension board
- Whiteboard + markers (optional)

---

10. ELECTRICAL INSTALLATION

- Switchboard connections

- Isolation switch for PC + projector
- Proper earthing
- ISI-marked wiring
- Surge protector for IT loads

ANNEXURE – 8.8

TECHNICAL SPECIFICATION FOR
MEDIA PREPARATION CUM SOLAR SOIL STERILIZATION UNIT.
(STRUCTURE SIZE: 10 × 8 METERS)
Project: Smart Seed Farm – Silari (PM–RKVY 2025–26)
Item: Solar-based Technology — Solar Media Preparation & Soil Sterilization Unit

---

1. GENERAL DESCRIPTION & SCOPE

The Supplier shall design, supply, install, test and commission a **Solar-Based Media Preparation & Soil Sterilization Unit** including:

- Covered 10 × 8 m working structure
- Solar heating system for soil sterilization
- Soil treatment chamber (heat-based sterilizer)
- Media mixing platform
- Shifting trolleys & tools
- Electrical/solar hybrid heaters
- Safety equipment
- Documentation & training

All materials shall be **high-quality, durable, weather-resistant, tender-grade**, and suitable for nursery media preparation.

---

2. STRUCTURE SIZE & PARAMETERS

- **Structure Size:** 10 m × 8 m (80 sq.m)
- **Type:** Open-side or semi-closed working shed
- **Purpose:**
  - Media mixing
  - Soil solarization
  - Cocopeat expansion
  - Sand/FYM blending
  - Soil sterilization (heat-based)

---

3. STRUCTURE FRAME MATERIAL (HIGH QUALITY)

3.1 Frame

- GI Square Pipe:
  - 60 × 40 mm | **Thickness: 2.0 mm**
  - 40 × 40 mm | **Thickness: 1.6–2.0 mm**
- Hot-dip galvanized: **Minimum 80 microns**

3.2 Roofing

- UV-stabilized polycarbonate sheet (6 mm)
  OR
- Color-coated steel sheet (0.45–0.50 mm)

3.3 Recommended Brands

- **TATA Structura / Jindal / JSW / Everest**

---

4. FLOORING (MEDIA PREPARATION FRIENDLY)

- PCC Flooring: **M20 grade concrete** (75–100 mm thick)
- Anti-skid finish
- Drainage slope: 1–2%
- Washable & disinfectant-friendly surface

---

5. SOLAR SOIL STERILIZATION SYSTEM

A Solar-based heat sterilization setup shall include:

5.1 Solar Thermal Collectors

- Type: Flat Plate Collector (FPC)
- Absorber: Selective coated copper/aluminium plate
- Panels required: **2–3 Nos. (2 m² each)**
- Supply temperature: **60–90°C**
- Brands: **TATA Solar, Supreme Solar, V-Guard Solar**

5.2 Solar Water Heater Tank

- Capacity: **100–200 L**
- PUF insulated
- Brand: **Racold / AO Smith / Supreme**

5.3 Solar-Driven Hot Air Blower (Hybrid)

- Electric Heating Element (1–2 kW optional)
- Airflow: 150–250 CFM
- Motor: Copper winding
- Brands: **Usha / Crompton / Havells**

---

6. SOIL STERILIZATION CHAMBER

6.1 Chamber Specifications

- Material: **SS-304 sheet**
- Thickness: **1.0–1.2 mm**
- Capacity: **50–100 kg per batch**
- Lid: Insulated with PUF
- Heat circulation: Forced hot air
- Temp Range: **60–80°C**
- Thermostat: Digital control

6.2 Trays

- SS-304 perforated trays
- 1.0 mm thickness
- 2–3 trays per batch

---

7. MEDIA MIXING UNIT

7.1 Mixing Platform

- Size: 2 m × 1.5 m
- Material: SS/HDPE mixing table
- Edge wall height: 25–30 cm
- Easy-clean design

7.2 Optional Power Mixer

- Electric mixer (0.5 HP)
- For cocopeat + sand + FYM blending

---

8. STORAGE BINS

- HDPE/LLDPE bins for:
  - Sand
  - FYM
  - Cocopeat
  - Sterilized soil
- Capacity: 200–300 L
- Brands: **Sintex / Vectus / Supreme**

---

9. TOOLS & EQUIPMENT

- Mixing shovels (MS with rubber handle)

- Rake (GI teeth)
- Hand trowel set
- Measuring bucket
- Moisture sprayer
- Wheelbarrow (HDPE tub + GI frame)

---

10. ELECTRICAL SYSTEM

- ISI-marked copper wiring
- MCB/ELCB Safety
- IP55-rated weatherproof switchboard
- Earthing pit
- Load management for heaters/blowers

---

11. SAFETY PROVISIONS

- Heat-resistant gloves (2 pairs)
- Protective apron (2 Nos.)
- Infrared thermometer
- Fire extinguisher (ABC Type – 2 kg)

ANNEXURE – 8.9

TECHNICAL SPECIFICATION FOR

(Turnkey SITC – Smart Seed Farm, Silari, PM-RKVY 2025–26)

SHADE NET HOUSE — 500 SQ.M

---

1. GENERAL DESCRIPTION & SCOPE

The Supplier shall design, supply, install, test and commission a **Standard Agricultural Shade Net House (500 sq.m)** suitable for seedling production, hardening, stock raising and horticulture nursery operations.

Scope includes:

- Structure (GI)
- Net covering
- Insect net on sides
- Door
- Foundation work
- Anchoring
- Accessories & fixtures
- Training + Documentation

All materials must be **high-quality, durable, UV stabilized, and suitable for farm/nursery use**.

---

2. AREA & DESIGN PARAMETERS

- Total area: **500 sq.m**
- Typical layout: 20 m × 25 m
- Ridge height: **4.0–4.5 m**
- Eave/gutter height: **3.0–3.5 m**
- Bay spacing: 4 m × 5 m

Supplier must submit:

- Plan
- Elevation
- Sectional drawings

---

3. STRUCTURE MATERIAL (GI PIPES – STANDARD AGRI MODEL)

3.1 Primary Members

- Columns: **60 mm OD × 2.0 mm thickness (GI Pipe)**
- Rafters (Top arc/truss): **48 mm × 2.0 mm**
- Purlins: **42 mm × 2.0 mm**
- Bracings: **32 mm × 2.0 mm**

3.2 Galvanization Quality

- Pre-galvanized / Hot-dip galvanized
- Zinc coating: **Min. 80 microns**

3.3 Acceptable Brands

- **TATA Structura**
- **Jindal Steel**
- **Surya / Apollo**

---

4. FOUNDATION & ANCHORING

- RCC Foundation: **M20 Grade (1:1.5:3)**
- Foundation depth: **75–90 cm**
- Foundation size: **300 mm × 300 mm × 900 mm**
- Anchor inserts: 60 mm OD × 300–400 mm GI pipe
- Proper curing (7–10 days)

5. SHADE NET (TOP COVERING)

5.1 Specification

- Shade net: **50% Green Agro Shade Net**
- UV Stabilized (Life: 3–5 years)
- GSM: **120–150 GSM**
- Type: Mono × Tape knitted
- Tear resistance: High
- Heat & UV resistance: Yes

5.2 Recommended Brands

- **Garware Technical Fibres (Best)**
- **KrishiNet / ShadePro**

---

6. SIDE INSECT NET (MANDATORY)

- 40–50 mesh UV-stabilised HDPE net
- GSM: **70–90 GSM**
- Fixed on 4 sides
- Pest-proof installation
- Edge reinforcement stitching

---

7. FIXING ACCESSORIES

- UV-resistant nylon rope
- GI Hooks & J-type fasteners
- PVC-coated binding wire
- Net clips (HDPE UV stabilized)
- Tensioning rope (6 mm)

---

8. ENTRY DOOR / ACCESS

- Size: **2.0 m × 2.0 m**
- Material: GI frame + HDPE net
- Hinges: Rust-proof
- Lockable latch

---

9. WIND & STRUCTURAL STABILITY

- Cross bracing
- GI diagonal support
- Structure must withstand **80–100 km/h wind speed**
- Anti-uplift anchoring

---

10. INTERNAL ARRANGEMENT

(As per project report – basic nursery requirement)

- Central walkway
- Bed marking lines
- Optional: Seedling stands / iron tables (as per department approval)

---

11. DRAINAGE ARRANGEMENT

- Peripheral drainage trench
- Slope: **1–2%**
- Prevents water accumulation near foundation

---

12. ELECTRICAL (OPTIONAL)

If included:

- ISI copper wire
- LED work light
- One switchboard
- MCB protection

---

13. INSTALLATION PROCESS

- Fabrication & placement of GI pipes
- Net installation & joining
- Door installation
- Insect netting on sides
- Anchoring & bracing
- Final tightening of all nets

---

14. TESTING & QUALITY CHECKS

- Structural alignment
- Net tension test
- Bracing stability
- Door smooth operation
- No sagging of nets
- No gaps for pest entry

---

15. DOCUMENTATION

Supplier must provide:

- GA drawings
- Material test certificates
- Net UV warranty
- Installation report
- Photographs
- Foundation details

---

16. TRAINING

Half-day onsite training for:

- Net house maintenance
- Tightening & seasonal adjustment
- Pest protection
- Cleaning & repairs

---

17. WARRANTY

- Shade net: **3 years (UV guarantee)**
- Structure: **1 year**
- Insect net: **2 years**
- Workmanship: **6 months**

---

18. SPARES & ACCESSORIES SUPPLIED

- Net clips (10 nos.)
- Binding wire (5 m)
- Rope spare (5 m)
- Extra hinge bolt set

---

19. PACKING & TRANSPORT

- GI pipes labelled
- Shade net packed in rolls

- Insect net rolled
- Door packed separately
- Transit insurance included

---

20. ACCEPTANCE CRITERIA

Will be accepted when:

- Structure stable
- Nets properly tensioned
- Door functioning
- No gaps/incomplete joints
- Training provided
- All documents submitted

ANNEXURE – 8.10

TECHNICAL SPECIFICATION FOR NATURALLY VENTILATED POLYHOUSE (AREA: 1000 SQ.M)

Project: Smart Seed Farm – Silari (PM–RKVY 2025–26) District- Narmadapuram

Item: Naturally Ventilated Polyhouse (NVPH) — 01 No. — Total Area: 1000 sq.m

---

1. GENERAL DESCRIPTION & SCOPE

The Contractor shall design, fabricate, supply, install, test and commission a **Naturally Ventilated Polyhouse** of **1000 sq.m** floor area on **Turnkey Basis**.

Scope includes:

- Complete GI structure
- Polyfilm cladding
- Insect netting
- Side/roof vent mechanisms
- Micro-irrigation system
- Fogging/misting system
- Benching & internal fittings
- Electrical & safety works
- Documentation, training & handover

All materials shall be **brand-new, first quality, IS-compliant**, and suitable for local climatic conditions.

---

2. DIMENSIONS & STRUCTURAL PARAMETERS

- **Total Area:** 1000 sq.m
- **Layout:** Multi-span NVPH
- **Bay Size:** 8 m × 4 m or 8 m × 5 m (bidder may optimize)
- **Gutter Height:** Min. 4.0–4.5 m
- **Ridge Height:** 5.5–6.0 m
- **Ventilation:**
  - Continuous ridge vent: 60–90 cm
  - Side roll-up vent: 3 m height
- **Design Wind Speed:150 km/h (minimum)**
- **Live Load:** 25 kg/sq.m minimum

Contractor must submit **GA drawings + Foundation drawings + structural calculations**.

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3. STRUCTURAL MATERIALS & QUALITY

3.1 GI Steel Structure

All pipes shall be **Hot-Dip Galvanized (HDG)**, zinc coating **80 micron minimum**.

Member	Size (OD)	Thickness
Columns	76 mm	2.0 mm
Truss top chords	60 mm	2.0 mm
Truss bottom chords	48 mm	2.0 mm
Purlins	42 mm	2.0 mm
Bracings	33 mm	2.0 mm

Permitted Brands: TATA Structura / Jindal / Surya / Equivalent IS-certified.

3.2 Fasteners

- High tensile **grade 8.8** bolts & nuts, hot-dip galvanized.
- Spring washers compulsory.

3.3 Foundation & Anchoring

- RCC Footing: **M20 grade concrete**

- Embedment depth: **1 meter or as per design**
- GI sleeves for column anchoring
- Anti-rust treatment for exposed portions

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4. CLADDING MATERIALS

4.1 Polyfilm (Roof & Sides)

- **200 micron (200 µm)**
- **UV-stabilized, multilayer, diffused**
- **Anti-drip | Anti-fog | Anti-sulphur**
- **Light transmittance ≥ 85%**
- Conforming to **IS 15827:2009**

Approved Makes:

Ginegar / Berry / EIFFEL / Iris / Kothari / Global Polyfilms.

4.2 Fixing Accessories

- Aluminum **locking profiles (double lock type)**
- Zigzag **spring inserts**, UV-protected
- Poly-strip barrier between GI spring & film

4.3 Insect Netting

- **50 mesh UV-stabilized HDPE net**
- GSM: **75–90 GSM**
- Tear-resistant, heat-sealed overlaps

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5. VENTILATION & SIDE CURTAINS

- Side curtains:
  - 200 micron UV film
  - Motorized OR manual gear-driven roll-up mechanism
  - Anti-flap design
- Ridge vent protected with insect screen
- Curtain motor:
  - 230V/415V AC
  - Limit switch
  - Overload protection

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6. IRRIGATION, FOGGING & FERTIGATION SYSTEM

6.1 Drip Irrigation System

- Drip lateral: **16 mm LLDPE**, 30 cm emitter spacing
- Main & sub-main: UPVC/HDPE Class II
- Filters: Sand + Screen filtration
- Ball valves, flush valves & accessories

6.2 Fogging/Misting

- High-pressure fogging system
- Nozzles: SS/Brass anti-drip type
- Operating pressure: 5–7 bar
- Pump:
  - Make: **CRI / Kirloskar / Lubi / Grundfos**
  - ISO 9906 compliance

6.3 Fertigation (Optional but recommended)

- Venturi injector OR dosing pump
- Pressure gauge, NRV, accessories

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7. BENCHING / INTERNAL FITTINGS

- Benches: GI frame + wire mesh
- Dimensions: 1 m width × required lengths
- Height: 0.8 m approx.
- Root trainer stands as per requirement
- Walkways clearly demarcated

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8. ELECTRICAL WORK & SAFETY

- ISI-marked copper wires (FR grade)
- MCB / RCCB panel board
- Earthing: Minimum **2 earth pits**
- LED tube/working lights
- Weatherproof junction boxes (IP65)

ANNEXURE – 8.11

TECHNICAL SPECIFICATIONS FOR HITECH FAN PAD STRUCTURE (1000 SQ. MET)

Sr.no	Item	Description / Specification
1.	Product	Green house with Fan & Pad cooling
2.	Size	500 sqm approx
3.	Bay size	8mx4m,with 2 side hockey 2 mtr wide
4.	Ridgeheight	6m
5.	Gutterheight	4m from floor area
6.	Gutter slope	2% slope need be provided in civil foundation work/ structure.
7.	Gutter Material	1.6 mm thick GI with hot dip Galvanization atleast 100 mm deep to avoid overflow during heavy rains.
8.	Structural design	The structural design need to be sound enough to withstand wind speed minimum 120 km/hr and minimum load of 25 kg/m2. There should be provision for opening one portion at either side for entry of small tractor/power tiller for intercultural practices.
9.	Structure	Complete structure made of galvanized steel tubular pipes of equivalent section conforming Indian Standards having wall thickness 2mm, structural member should be joined with fasteners properly.
	Columns	76mmOD, 2 mm thick
	BaseHorizontalBeam	60mmOD, 2mm thick
	Trusses	48mm OD, 2 mm thick
	Purlins	42/48mm OD, 2 mm thick
	Truss and others member	33/25 mm, 2 mm thick
	Hockey	60mm OD, 2 mm thick
	Foundations (Civil material as per HSR)	Telescopic type. The column size to be 35 cm x 35 cm x 80-90cm depth (according to site level) of CC 1:2:4 ratio properly compacted. Two holdfast should be used in perpendicular direction at 20cm apart in concrete starting from 20 cm from base
	Fasteners	All nuts & bolts must be of high tensile strength and galvanized.
10.	Entrance room and Door	One entrance room of size 4m X 3m X 3m (L X W X H) need to be provided and covered with UV stabilized opaque polycarbonate. SS mesh provided on side walls allow proper air ventTwo hinge doors of size 1m width, 2m height mounted in suitable strong GI sq section frame. One additional service door size 2mx1m to be fixed as per direction of officer-in-charge/ requirements. Floor of entry room made of PCC 1:4:8 with ceramic vitrified tile stop. Provision of lockable wardrobe for storage seeds etc.

11.	Cladding material	UV stabilized 200 micron transparent plastic films. Conforming Indian Standards (IS 15827: 2019), multi-layered, anti-drip, diffused, clear and having minimum 85% level of light transmittance.
12.	Fixing of cladding materials	All ends /joints of plastic film need to be fixed with two way aluminium profiles
13.	Spring Insert	Zigzag high carbon steel with spring action wire of minimum 2.3mm diameter PVC coated to fix sheet into Aluminium Profile.
14.	Exhaust fan and air circulation fan	Co-axial fan 08 number of 1250 mm diameter containing 6 numbers of SS/ aluminium blades, frame is made of GI materials followed by louver size 1380X1380X400mm size, 45000 CMH, 1440 1.5 HP 3phase Insect net to cover fan and pad leaving 2.0m corridor. Air circulation fans 08 numbers 400mm dia made of 7000CMH, 180watt, 1440 RPM
15.	Cellulose pad for cooling	Cellulose pad of thickness 6"thick,height:6',width as per structural design equipped with anodized aluminium frame. Cooling pad complete with all necessary framing material (Aluminium) as required for distribution and return, gutter, down spout cap and drip pan, 25-42 mm PVC perforated pipe, plumbing kit, suspension hardware & standard sink drain.
16.	Fogging system	4 way hanging type microfogger's to be installed with suitable heavy duty pump, filters, tank-1000 ltrs spacing 2.5x3m, PVC pipe and fitting
17.	Circular pump with accessories for cooling pad	Circular pump 220Volt single phase with required capacity & accessories to be provided for wetting &circulating the pad area.
18.	Digital controller with sensory devices	Programmable user selectable digital controller with sensory device (with one standby) and accessories of standard quality should be provided to operate the fan and pad system to control temperature and humidity inside the greenhouse.
19.	Electric wiring inside greenhouse	Using appropriate size multi strand copper wire to with stand desired load in required electrical gadgets/ appliances PVC conduit ISI marked.
20.	Shade net	UV stabilized 50% shading net (Aluminet) with motorised operated mechanism for expanding and retracting. Size of net should be equal to the floor area of greenhouse.
21.	Lighting system	LED grow lights with IP-65 protected fixture 150wt 30nos. with photo periodic control system
22.	Curtain wall	22 cm brick wall of 60cm height (30cm below and 30 cm above ground level on all the four sides. The wall needs to be plastered and water proofing cement with 1:6 ratio.
23.	Vent	Provision to be made for opening & closing of ventilation
24.	Rainwater drain system	PVC pipe 110mm, 2.5kg and fitting up-to ground level.

ANNEXURE - 9

FINANCIAL SUMMARY

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1. GST (Goods & Services Tax)

- Applicable GST shall be charged as per prevailing Government of India rates.
- The Bidder must clearly mention the **GST percentage (%)** in the Financial Bid.
- GST amount shall be shown **separately** and **not merged** with the base price.
- GST will be payable **only on production of a valid tax invoice** issued by the Supplier.
- Any change in GST rate (increase/decrease) shall be **applicable at the time of billing** as per statutory norms.

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2. Contingency Charges

- Contingency charges may include:
  - Transportation
  - Packing
  - Transit insurance
  - Minor civil finishing
  - Unforeseen adjustments
  - Small consumables
  - Preparatory work essential for installation
- Maximum contingency allowed shall be as per GoMP norms (generally **1% to 3%**).
- The Bidder must quote contingency **separately** in the Financial Bid.
- Contingency shall be released **only after submission of a utilization certificate** and approval of the Competent Authority.
- No contingency payment shall be made without adequate documentary support.

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3. Supervision Charges

- Includes:
  - On-site supervision
  - Skilled manpower deployment
  - Technical support staff
  - Safety supervision during installation
  - Monitoring during testing & commissioning
- The Bidder must mention **lump-sum supervision charges** separately in the Financial Bid.
- Supervision charges shall cover:
  - Site management
  - Erection supervision
  - Testing & commissioning supervision
  - Trial run monitoring
  - Training support to departmental staff
- Payment shall be made **only after submission of completion certificate** and satisfactory performance verification.

ANNEXURE - 10

BOQ (BILL OF QUANTITIES)

Smart Seed Farm – Silari (PM–RKVY 2025–26)

Note: Bidder shall fill ONLY the "Rate/Amount" columns. All quantities are fixed & non-negotiable.

S. No.	Description Of Work/Item	Qty	Unit	Base Rate (₹)	GST %	Gst Amount (₹)	Contingency (₹)	Supervision (₹)	Total Amount (₹)
1	Hydroponics / Aeroponics System (1000 Sq.M), Sensor-Based Automation System For Fertigation (5000 Sq.M), Traceability Development System, Internet Of Things (Iot) Unit, Aquaponics System, Precision Farming, Modern Computerization System, Media Preparation & Soil Sterilization Unit, Shade Net House (500 Sq.M)	1	Set						
2	Naturally Ventilated Polyhouse in 1000 Sqm (optional)	1	No.						
3	Hitech Fan Pad Structure in 500 sqm (optional)	1	No						