

KERALA AGRICULTURAL UNIVERSITY
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No. CoH/Cpbmb/EAPs/03/2021

20.02.2021

TENDER NOTICE

Sealed tenders are invited in the prescribed form from competent firms/persons for the supply of the following equipment / works under various projects at the Centre for Plant Biotechnology and Molecular Biology with specifications as detailed below:-

I. Polyhouse

Green house size : 13m x 20 m = 260 sqm, Number of bays : 02, Bays width: 8m. x 4m, Green house width : 13 m, Green house length : 20m, Side Height 3.0 m, Centre Height: 4.5 m, Shape: Dome.

Structure

A) Frame: All Structure, Rafters, Purlins, Trusses are galvanized and design as per IS 875 standards. All GI steel pipe are as per IS 1239/4923/3601 standard.

All pipes with 2 mm thickness.

- i) Foundation Pipe:** 48 mm OD 2mm GI pipe. The foundation pipe will be 4 ft.
- ii) Column Pipe:** 60 mm OD x 2mm thickness GI pipe.
- iii) Arch pipe:** 48 mm OD x 2mm thickness GI pipe.
- iv) Purlins pipe:** 42 mm OD x 2mm thickness GI pipe.
- v) Bressing Pipe:** 32 mm OD x 2mm thickness GI Pipe

The inter row and Intra row distance of pipe: 8 m x 4 m.

b) Nuts and other metallic parts: This budget includes all the elements required to join and watertight the components such as fittings, clamps, screws and nuts, plated against corrosion.

Covering

Top Cladding Material: High quality UV stabilized 5 Layered (Ginegar (Israel) / Politiv Make) LDPE Sheet 200 micron thick with driplock (anti drip) diffused, anti dust, anti condensed and properties.

Diffused light transmission in PAR : 60%, Light transmission in PAR : 77%, Anti Drip, Anti Dust, Area recommended : Recommended for Hot Areas.

Poly Locks

Poly lock profile will be made up of aluminum section fixed with zigzag spring of GI material with 12 gauge to withstand the wind load of 100 km/house.

Door

Entrance room & Door

One entrance room of size 5m x 3m x 3m (L x W x H) will be provided and covered with UV stabilize 200micron film. Two hinge doors of size 2m width & 2m height double door with sliding and made of half polycarbonate.

Fitting accessories

Minimum 12 Gauge GI wire will be used to fix shade net with sliding arrangement for opening & closing as per requirement **Pulleys** assembly with nuts & bolts will be provided. **Curtain rings** & Curtain clamps with respect to standard specification will be provided.

Fabric UV stabilized (minimum 150 GSM) will be used for side apron which will be of 1.5m above ground level

Foundation work

The vertical poles and trusses of structure will be done with telescopic insertion method. CC foundation (1:4:8) & 20mm BT metal , CC pillar 12" x12" will have 2- 2.5ft. below actual ground level with 600mm dia. The foundation pipe is made out of 48mm OD 2mm thick ISI mark GI pipe. Base construct with bricks and cement upto height of 2 feet from ground level.

II. Atmospheric control system for the high tech green house

Cellulose pad for cooling

Cellulose pad of thickness 4" thick, height 5', width 16mtr equipped with anodized Aluminum frame. Cooling pad complete with all necessary framing material (aluminum) as required for distribution and return, gutter, down spout cap and drip pan, plumbing kit, pump 220 Volt single phase, 50 cycle, drilled PVC piping cap, pad retainer, all suspension hardware, metal flashing required to seal pad for vent opening overflow 32 mm PVC & 40 mm standard sink drain with bypass assembly. Axial flow fan 50" – 04 Nos.

Fogging System

4Way Foggers of 28 lph,

Working pressure :- 4 bar at this pressure, the average droplet size :50 to 100 µm. **Density** :- One fogger to 0.3 m – 0.4 m² for propagation.

Type of Fogger :- Cross way nozzle ,hanging type (NETAFIM MAKE)

Fogger discharge range:- 28 LPH

Pipe Imported :- 16 mm LLDPE (10 kg/cm²) (NETAFIM MAKE)

Motor:- 1.0 HP monoblock pump (CG/ KIRLOSKAR Make) :- 1no.

Filter (Screen) :- 10 KG/M³(ISI)

Pressure meter:- 10 bar one.

Return gutter, control valve assembly

Tank :- 500 lts – 1 Nos.(ISI Make)

Composite Environmental Control panel

Temperature, Relative Humidity control system & Shading system including field sensors, switchgear, power & signal cabling & wiring: Control Panel will microprocessor based, programmable & site settable Temperature (20°C to 50°C & RH (30 to 80%))

Digital Temperature Controller:

Specifications: Digital microprocessor based Controller, 4 digit LED display for displaying measured values and another 4-digit LED display for displaying settings, Soft touch operation Platinum sensor probe Pt- 100, Set point lock within the setting panel to protect setting changes, Level lock to ensure that the parameter can be read but cannot be changed, Sensor failure indication, Display resolution 0.1. Accuracy 0.1°C, Automatic hysteresis control. Wide selectable temperature ranges from 0°C to 100°C, 4.4 KVA load can be directly connected to the powered output, Input- 200-240 VAC, 50 Hz. Single phase, Ambient 5°C -50°C, RH upto 90%.

Digital Humidity Controller

Specification: Digital microprocessor based, On/Off control for Humidifying, Hysteresis / Differential 1% - 9%, Delay timer 0-240 sec, Direct / Reverse selectable, Lock functions to prevent miss operating, Feather touch operation, Fast response sensor – line resistance < 10Ω, Display Accuracy indicating value $\pm 0.2\%$ ± 1 digit.

Plitz / Cyclic Timer for Humidity specific for fogging, misting system, controlled by timer to reduce water logging condition in the Green House.

Specification: 0-999 Min/sec On, 0-999 Min/sec OFF, automatic cycling. Accuracy quartz, Power output can be directly drive misting unit load upto 4.4 KVA, Control system for the green house to operate and switch/control the GH equipment's to achieve the set Temperature & Relative Humidity parameters. Supply, suitably install, wire up with signal cabling and use appropriate temperature sensor (0.1OC resolution, + 0.2 OC accuracy) and RH sensor (1% resolution + 5% accuracy) and or transducers to give signal inputs for the digital controller, which, based on the approved logic will operate the following equipment's (Based on the set point):

- A. Fan & Pad System
- B. Fogging generator, Pumps.

All the above will be switched by using suitable contactors and back up MCBs of approved ratings and Schneider's Make. Controller will have continuous digital display of set point and running parameter values. The set point can be changed at site with incremental/ decremental push buttons.

III. Genotyping by sequencing of 10 varieties of black pepper

Technical Specifications to the work

Library Preparation: Genome digestion with suitable enzyme pair, preparation of Illumina compatible library.

Sequencing: Raw data of minimum 120Mb per sample by sequencing on 150X2 Chemistry using Illumina platform.

Analysis: Data quality control by filtering reads containing adapter or with low quality, Tag clustering analysis, SNP detection and genotyping, identification of QTL for drought tolerance.

Delivery Time: 7-9 weeks.

IV. Whole Genome Sequencing and assembly of two black pepper samples

Technical Specifications to the work

Library Preparation: DNA Seq library prepared and validated out using high sensitivity screen tape.

Sequencing: Sequencing of library on Illumina platform using 2x150 bp paired-end read module, delivery of approx. 110 Gb data per sample (150X Coverage).

Analysis: Bioinformatics analysis including filtration of sequences based on quality analysis, *de novo* assembly, gene, SNP/Indels, SSR identification, SNP/Indels annotation.

A final compiled report has to be provided within 6 weeks.

V. Membrane spotter

1. Membrane spotter for uniform dispensing of reagents on membrane.
2. Printing two lines simultaneously, with provision for controlling the speed of dispensing and the pressure on membrane.
3. Printing length minimum 25 cm on the membrane.
4. Provision of variable speed for controlled dispensing of reagents and auto-reverse facility.
5. Holding tank with 500µl capacity.
6. Total recovery of unused reagents should be possible.
7. The quote for the item specified above should clearly be inclusive of the charges for the supply, packing & forwarding, transit-insurance and freight to site, installation, testing and commissioning, dismantling/reinstallation, labour charges etc if any. Prices quoted for the item is to be on-site basis and also be inclusive of basic price, excise duty and other taxes.
8. Excise duty, Tax, Insurance, Warranty period, delivery time and Terms of payment are also to be specified.

Last date of receipt of Tender : 20-03-2021 at 2.00 pm

Opening of Tender : 20 -03-2021 at 2.30 pm

Terms and Conditions

1. Tender form

The tender form may be downloaded from the Related Documents section in the following web link in the internet <http://www.kau.edu/tenders>. The cost of tender form will be accepted by way of DD in favour of Professor & Head, CPBMB, CoH payable at SBI, Vellanikkara and should be enclosed along with Tender. The tender cost should be specified, while submitting the tender. The cost of Tender form is as follows:-

Cost of Tender Forms

Particulars	Cost (Rs.)
Supplies costing above Rs. 50,000/- upto Rs. 5,00,000/-	0.2 % of cost of tender rounded to the nearest multiple of 100 , subject to a minimum of Rs.500/- and maximum of Rs. 2000/-

2. Tenders shall be accompanied by Tender fee, GST and Earnest Money Deposit of 2.5% of the total rupee equivalent cost of the quoted items (subject to maximum of Rs. 50,000/-) by way of 3 crossed Demand Draft separately for GST, EMD and tender fee in favour of **the Professor & Head, CPBMB, College of Horticulture, Vellanikkara** drawn on the State Bank of India, KAU Campus (Branch Code 70670). Cheques will not be accepted. While calculating the total offer amount for items where alternate options have been given, the cost of the costliest option alone need be considered. Where quantity requirements have not been specified in the Tender Notice, the cost of one unit may be reckoned for arriving at the EMD amount.
3. The sealed cover containing the tender documents should be super scribed as “**Tender for Equipments / works as per tender No. CoH/Cpbmb/EAPs/03/2021 dt: 19-02-2021**” and should be addressed to the Professor & Head, CPBMB, IT-BT Complex, College of Agriculture, K. A. U. P.O, Thrissur, Kerala – 680 656.
4. Tender shall be accompanied by an agreement as per format appended, executed on Kerala Stamp paper of face value Rs. 200/-. The format of the agreement is available for download from the Related Documents section in the following web link in the internet <http://www.kau.edu/tenders>.
5. Late and incomplete tenders and tenders without EMD and agreement in Kerala stamp paper will not be accepted.
6. Firms who are exempted from payment of EMD should furnish copy of the currently valid certificate from the Store Purchase Department, Govt. of Kerala.
7. Selected firms will have to furnish a security deposit of 5% of the order value and execute another agreement in Kerala stamp paper worth Rs. 200/-. Security deposit will be accepted in the form of DD, Term Deposit Receipt or Bank Guarantee favouring **the Professor & Head, CPBMB, College of Agriculture, Vellanikkara**.
8. The cost of the item, tax and other charges should be separately stated for each item. The items should be supplied at our premises.
9. Offers shall be made CIF Kochi by airfreight for imported instruments and FOR destination for indigenous items. For imported items, charges for insuring up to final inland destination against all risks including total loss for CIF value plus 10% should be included in the insurance charge. Installation and demonstration charges may be indicated separately where applicable.
10. We are exempted (regd. with DSIR) from payment of customs and excise duty for our procurements and hence prices quoted should be exclusive of these. Prices inclusive of taxes and installation charges, if any, may be indicated. We shall provide the necessary forms and certificates as required.
11. The exact specifications, details of make, model number, name of manufacturer etc., of the equipment offered must be clearly specified. Copies of detailed technical literature and illustrated brochures of the units quoted are to be included along with the offer. Offers without these are liable to be rejected. List of users giving the exact address of the contact persons and the model number of the units available at these locations have to be provided.

12. Instrument operating manuals have to be provided along with the supply.
13. Details of warranty offered should be clearly stated in the tender. Details of maintenance service contract offered after expiry of normal warranty and after-sales-service facilities available should be indicated.
14. Evidence of exclusive/authorized distributorship from foreign principals should be provided along with the offers for overseas products.
15. If any unexpected holiday occurs on the date of opening of tender, the tender will be opened at the same time on the next working day.
16. Period of firmness of the quoted prices should be clearly stated in the offer.
17. The undersigned reserves the authority to accept or reject any or all of the offers for any particular item without assigning any reason whatsoever.

All the rules and regulation applicable to Government Tenders will be applicable to this tender also.

Sd/-

Professor & Head
CPBMB, IT-BT Complex
College of Agriculture
Kerala Agricultural University