

DIVISION OF GENETICS  
ICAR-INDIAN AGRICULTURAL RESEARCH INSTITUTE NEW DELHI-110012

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File No. ICAR/IARI/Gen/28/2022-23/

Dated: 05/01/23

E-PROCUREMENT THROUGH GEM TENDER NOTICE

On behalf of Secretary, ICAR/Director, ICAR-IARI, PD/Head/In—Charge, Division of Genetics invites online e-tenders through Gem Portal under custom bid system for purchase of the Climate controlled walk-in growth chambers AT THE DIVISION OF GENETICS , I.A.R.I., NEW DELHI-110012 , if necessary as per requirement in the interest of ICAR-IARI, subject to satisfactory performance of the Vendor and its willingness to continue on existing terms and conditions, as per requirements.

1. Tender Schedule:

Tender No.	GEM/2024/B/4438851
Date of release of tender through Gem portal	05/01/2024
Bid submission start date & time	05/01/2024 11:30PM
Last date & time for submission of bid	29/01/2024 12:00 P.M
Date & time for opening of technical bid	29/01/2024 12:30 PM
Pre-bid meeting date & Time	12/01/2023 11.00 AM
Address for Communication	Asstt.Admn.Officer, Division of Genetics, IARI, Pusa, New Delhi.12

1702761/2023/Gen-IA. Technical Specification of Climate Controlled Walk-In Growth Chamber

S. No.	Category	Specification details
1.	Type	Walk-in Type Plant Growth Chamber
2.	Tiers / No. of shelves included	1 tier, easily removable and height adjustable, 4 growth shelves (2 each side) with 1200 mm x 1200mm each or equivalent.
3.	Total Internal Area	Not less than 3200mm width x 2800 mm depth x 1990 mm height
4.	Total Growth Area	≥ 5.75 m <sup>2</sup> .
5.	Maximum Growth Height	Adjustable, upto 1700mm, chamber equipped with fixed & stable light module with multi step adjustable shelves to decrease/increase the growth height OR multi step adjustable counter balanced light module/ canopy to decrease/increase the growth height according to the experiment demands.
6.	Door	Light tight solid doors with magnetic gasket providing tight seal on door frame, should be scratch and alcohol resistance, condensation free.
7.	Other Door Facility Required	Door with interior safety latch and observation window with cover lid 400mm x 400mm
8.	Outer material	Galvanized steel in light gray plastic powder coated (long lasting) finish or better
9.	Exterior Dimensions	Not more than 3800 mm Width x 3200mm Depth x 2650 mm Height
10.	Interior material	Rust Free durable white Reflective coated / highly resistant steel Interior with white epoxy paint (SS 304 / SS316 or better) with drainage facility, with stainless steel slip resistant insulated floor for uniform humidity control, for sensitive plants like rice.
11.	Insulation	Panels with 80 mm thick, modular, EN 14509 high density injected polyurethane foam (PUF). CFC-free with air tight seal between panels.
12.	Temperature range	5°C to 45°C lights ON ; 0°C to 45°C lights OFF
13.	Temperature control	0.1°C increments at the controller
14.	Temp. Uniformity	+/- 1°C, uniformity in Space
15.	Temp. Accuracy	+/- 1°C
16.	Humidity range	40% to 80% rH lights ON ; 40% to 95% rH lights OFF Humidification with ultrasonic/centrifugal/air-microspray Humidifier. Dehumidification & Drying by condensation effect on the cooling evaporator. Should have configurable Humidity Safety Alarms, Independent thermostats for maximum and minimum humidity limits, Configurable maximum and minimum humidity limits, visual and audible alarms.
17.	Humidity Uniformity	+/- 2%, uniformity in space
18.	Humidity Accuracy	+/- 1% increments on the controller
19.	Air circulation	Vertical laminar flow in the room to be recirculated continuously by ceiling plenum. Conditioned air to be directed across the plant growth modules from side walls and returned to the conditioning plenum through the center aisle upwards or visa versa direction. Air treatment tunnel (conditioning plenum) to be located in the ceiling. User specific control via the HMI, of air speed of the circulating air, from 50-100% with variable speed fans is required for different timelines in growth cycle of plants, this has direct bearing on water retention in plants under study.
20.	Light period control	Required, programmable on controller with LCD / TFT display
21.	Total PAR light intensity required (PPFD)	950µmol/m <sup>2</sup> s@1500 mm, 1150µmol/m <sup>2</sup> s @1000 mm , 1450µmol/m <sup>2</sup> s @500 mm; Intensity controllable 10-100% at the HMI controller
22.	Type of & quantity of light source	Balanced broad spectrum (covering all spectrum of PAR optimized white (warm) LED Light (covering all light spectrum for plant growth). The light source used should be patented/trade mark technology of the PGC manufacture like scibrite/gBrite/8IIA etc. or from a global LED manufacture firm specialized in making plant grow and research lights like Phillips / Osram / Valoya / Heliospectra / Fluence etc. ( exact make, model & spectra to be provided with full details and description in the quote).
23.	Type and Number of light Fixtures (Module/panel)	LED module/tubes lighting focused downwards, top mounted inside the chamber covering the total growth area not less than 5.75 m <sup>2</sup> . Light fixture / module / panel should be configured for extreme uniform light throughout the growth area / shelves with high degree of scattering (preferably 120°); Independent control of different light intensities in the tier) through the HMI controller.

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24.	Lights module/canopy requirement	Minimum 6 LED modules should be available. They should be easily detachable without any tools to increase/decrease growth heights and/or change light types. LED light modules to have long life upto 65000 Hrs.
25.	LED light colors/wavelength Requirement	Spectral data / catalogue for light type to be provided with quote.
26.	Intensity Regulator	Facility to independently regulate each color light intensity (separately in each canopy / tier); range of intensity control for each color light should be at least between 10-100%. The intensity regulation shall be through microprocessor-based controller applicable to all fixtures of light modules.
27.	Refrigeration system	Self-contained air-cooled condensing unit with hot gas bypass system, extended life and close temperature control; Solenoid valves for quiet and long-life operation; heating and cooling system adapted to temperature control range; refrigeration system has to be on top/side of the machine for good heat dissipation and easy service access.
28.	Refrigerant	CFC/HCFC – Free
29.	Carbon Dioxide Control	Control addition & removal system with sensor & monitoring unit range upto 3000 ppm, accuracy $\pm 45$ ppm. Co2 Cylinder & regulator should be provided.
30.	Controller Type	Microprocessor based programmable logic or PID controller with Touch screen HMI LCD / TFT display; controller fitted near door of chamber with 3 level password protection facility; with audio-visual alarm for high and low value display set; with facility to regulate light and day/night manner; with variable scheduling for day and night timings; with battery back-up of controller & logging all functions for $\geq 30$ minutes, during power failure. Controller to have latest maintenance service overview function with visibility of all internal machine parameters (suction and discharge pressure & temps. of refrigeration unit, condenser & evaporator temps. etc.) on control panel of chamber. A 6 month log of all machine parameters to be available for quick analysis and fast rectification of machine faults.
31.	Data Handling Unit for Remote Access	Branded Laptop 14/15 inch screen, latest i9 Processor, 64 Gb RAM, 1TB SSD, Graphics Card, installed latest Version of Windows OS & MS Office. Should provide the communication Software for remote monitoring via local Network.
32.	Safety Feature Required	Over temperature alarm and protection device; compressor over temperature; over pressure protection; Over current protection; Compressor delay start protection.
33.	Electrical Operation	The equipment should be functional under standard Indian electricity supply condition (i.e., 3/N/PE AC 400V $\pm 10\%$ ; 50Hz); with auto-restart facility after power failure. Machine supplied to be as per international norms and with UL/CE certification of unit and all electrical & mechanical components. Certificates to be enclosed with bid.
34.	Warranty	Minimum 3 Years (comprehensive)
35.	Other Mandatory Requirements	The plant growth chamber must be supplied with a suitable UPS for the controller which should monitor and log all the data irrespective of the power supply.
36.	Other Mandatory conditions	<ul style="list-style-type: none"> <li>• Fitting of all accessories to fulfill the requirements as mentioned in above points or other mandatory requirement should not reduce the required internal growth space.</li> <li>• A letter/certificate from the OEM manufacturing company declaring that the quoted model does not belong to obsolete or going to be obsolete category (within one year)</li> <li>• Assurance for availability of all spares for at least 10 years after procurement.</li> <li>• ICAR-IARI reserves the right to contact and clarify all specs of offered equipment directly with OEM.</li> <li>• Major machineries should be not occupying bottom space of the growth chamber and should be top/side mounted to make plant samples easily accessible to researches with short height and for small footprint of the chamber, as per illustration at end of specification list; an actual image of quoted PGC model is required in/with provided documents.</li> <li>• Exact specification and detailed description of various system/ accessories that will be provided in the model need to started clearly which must include (but not limited to) the following:             <ol style="list-style-type: none"> <li>a) Exact working area (per tier and total)</li> <li>b) Exact working height (for all the tier separately);</li> <li>c) Exact description of heating and cooling system;</li> <li>d) Exact humidity range/uniformity /accuracy and humidifier type/ model and description;</li> </ol> </li> </ul>

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		<p>e) Exact model and supplier of light module with specific and exact description of provided colors, wavelength, (w/exact intensity and each color), light regulation etc. Without exact mentioned specification details and description of all points and exact image &amp; data sheet of the model (being proposed) the presented model will be liable for disqualification in technical verification round.</p> <p>If they are not part of standard configuration and if not depicted on the website of OEM, the specifications &amp; offered equipment in the tender must be confirmed by a confirmation statement of all specs. by the OEM. Mere statement by local dealer will not qualify the offer technically and is subject to verification.</p>
37.	Manufacture, Availability Assembly and Testing	<ul style="list-style-type: none"> <li>The model, its specification and its available modification/ accessories must be presented in the manufacturers catalogue on day before the first day of public display of the tender call. The product must be part of serial production of the OEM and not a one-off model.</li> <li>A certificate from manufacture certifying that the quoted/ proposed model/unit has already been pretested with all the accessories/fitting as per the claim and required specification needs to be provided while responding to the tender call.</li> <li>Mere copy-pasting from the asked specification list (completely or partially) will lead to disqualification in technical verification round.</li> <li>Provide user list (with contact details) where same units have been delivered.</li> <li>To provide atleast copies of 3 POs and installation certificates in past 3 years of similar size and models.</li> </ul>
38.	Required Accessories	<p>The supplier must quote the following accessories as standard :</p> <p>Light Quantum Meter for precise light intensity control at the top of each plant layer, in micromoles/m<sup>2</sup>/s</p> <p>Compatible Industrial grade water demineralization/reverse osmosis system for humidification water supply to chamber, including tank.</p> <p>All quoted price must be inclusive of all accessories/requirements.</p>
39.	ICAR-IARI reserves the right to accept or discard if any specification other than what has been mentioned is presented and also the validity of the document presented in support of claim or exact specification/desired specification.	
40.	All documents / catalogue to prove the claim and description needs to be furnished without which claim will not be acceptable.	
41.	Vendors must provide exclusive authorization documents of distributor/dealership from the OEM for selling & service support for the specific equipment in ICAR-IARI New Delhi.	
42.	Assurance from OEM for on-site service support by authorized & factory trained personnel within 3-4 working days, in case of equipment malfunction.	
43.	If required, bidder should arrange a demonstration of the equipment during technical evaluation and committee will verify all the asked technical specification during demonstration.	

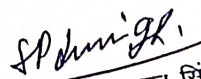


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