



पादप कार्यिकी संभाग  
DIVISION OF PLANT PHYSIOLOGY  
भारतीय कृषि अनुसन्धान संस्थान  
ICAR-Indian Agricultural Research Institute  
नई दिल्ली - 110012 भारत  
NEW DELHI - 110 012 (INDIA)



File No: 50-25/GCFID/19-20/NAHEP(71-01)

Date: 12/03/2020

Dear Sir/Madam,

**Sub : INVITATION FOR QUOTATIONS FOR SUPPLY OF  
GC-FID with auto sampler (one)**

1. You are invited to submit your most competitive quotation for the following goods:-

Brief Description of the Goods	Specifications*	Quantity	Delivery Period	Place of Delivery	Installation Requirement if any
GC-FID with auto sampler (one)	Annexure - A	One unit	As per Purchase/Supply Order	Division of Plant Physiology, IARI, Pusa Campus, New Delhi - 110012	As per terms and conditions.

\* Where ISI certification marked goods are available in market, procurement should generally be limited to goods with those or equivalent marking only.

2. Government of India has received a financing from the World Bank towards the cost of the said Equipment/Item **under NAHEP-CAAST (71-01) Project** and intends to apply part of the proceeds of this financing to eligible payments under the contract for which this invitation for quotations is issued.

3. **Bid Price**

- The contract shall be for the full quantity as described above. Corrections, if any, shall be made by crossing out, initialing, dating and re writing.
- All duties, taxes and other levies payable on the raw materials and components shall be included in the total price.
- Sales tax in connection with the sale shall be shown separately.
- The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- The Prices shall be quoted in Indian Rupees only.

4. Each bidder shall submit only one quotation. Bidder shall not contact other Bidders in matters relating to this Quotation.

5. **Validity of Quotation**

Quotation shall remain valid for a period not less than 15 days after the deadline date specified for submission.

6. **Evaluation of Quotations**

The Purchaser will evaluate and compare the quotations determined to be substantially responsive i.e. which

- (a) are properly signed ; and
- (b) conform to the terms and conditions, and specifications.

The Quotations would be evaluated for all the item together/would be evaluated separately for each item. *[Select one of the options]*.

**Sales tax in connection with sale of goods shall not be taken into account in evaluation.**

7. **Award of contract**

The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

7.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.

7.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be incorporated in the supply order.

7.3 **Successful Bidder should submit 10% of Total Cost of Equipment as Performance Guarantee after receiving the Purchase/Supply Order.**

8. Payment shall be made only after the receiving of Good/Equipment, Performance Guarantee and satisfactory installation.

9. Normal commercial warranty/ guarantee shall be applicable to the supplied goods.

10. You are requested to provide your offer/Sealed Quotation latest by **13.00 hours on 18/03/2020**.

11. We look forward to receiving your quotations and thank you for your interest in this project.

(Purchaser)  
Name: Assistant Admn. Officer.  
Address: Division of Plant Physiology,  
IARI, Pusa Campus,  
New Delhi - 110012  
Tel. No. 011 25842815.  
Fax No. ....

## Technical Specifications

### **Name of the Capital item with brief description: GC-FID with auto sampler (one)**

The chromatographic system consists of Flame ionisation detector (FID) with autosampler, capable of doing headspace injection as well as manual injection facility as and when required. The system shall have sensors to control the variation of environmental temperature.

The operation of the system shall have automated microprocessor-controlled software. The system should support one capillary S/SL inlet with EPC or PPC and FID detector.

### **Detailed specifications:**

#### **Column oven**

Operating temperature range: 4 °C to 450 °C or better

Ramps/Plateaus- At least 21/22

Temperature set point resolution – 0.1 °C

Ramp rate: Three-five ramps pressure program or better

Cooling rate: 450 °C to 50°C (less than 5 min; 22 °C ambient)

Safety lock system shall be provided for automatic shutdown of the oven in case of opening of lid or door.

Gas supply shall be shut off automatically in case of any drop down in inlet pressure

Carrier Gas control – 0 to 970 kPa; Split Flow: 0 to 1200 ml per min or better; constant linear velocity; constant pressure, pressure program

Maximum run time of 999.99 min

Oven must have ambient rejection of < 0.01 °C per 1 °C

#### **Electronic or Pneumatic Pressure Control (EPC of PPC)**

Pressure range: 0–145 psi or more; electronic and programmable through inlets to detectors

Split ratio: Up to 7500:1 or more

Carrier and makeup gas settings for He, H<sub>2</sub>, N<sub>2</sub>, Argon/Methane

Pressure units can be operated as psi, kPa or bar.

Pressure set points minimum increments: 0.01 kPa-0.001 psi in all ranges

Flow sensors with specification for accuracy of <5% depending on carrier gas

#### **Injector**

Maximum Operating Temperature: 400 °C or more

Split or splitless capillary injector

Suitable for all capillary columns: 50 µm to 530 µm i.d.

User installable & exchangeable Injector module is preferable

With electronic pneumatic control of carrier, split and septum purge gases, including electronic ON/OFF

EPC Pressure Ranges SSL with total flow range of 0 to 200 ml/min N<sub>2</sub>; 0 to 500 ml/min H<sub>2</sub> or He

#### **Flame Ionization Detector**

Capillary column compatible with 1/8" and 1/16" packed column.

Flameout detection and automatic re-ignition

Minimum Detectable Level (MDL): <1.4 pg C/s or better (Dodecane)

Linearity >10<sup>7</sup>

It must be approx 450 °C maximum operating temperature.

Nozzle should be of inert material preferably quartz.

Date rate up to 100 Hz or better

Pneumatic control of make-up, H<sub>2</sub> and air flows with electronic ON/OFF

#### **Column**

GC column selection from 0.050 to 0.530 µm regardless of sampling conditions.

Multiple Headspace Extraction (MHE) modes.

Multiple Headspace Concentration (MHC) modes.

Method development mode

**GC Analytical Performance**

Retention Time Repeatability of < 0.0008min  
Typical peak area repeatability: < 1 % RSD

**Automated Head Space Sampler**

The headspace auto-sampler shall have three dimensional movement  
Capable to pressurize, puncture, inject and depressurize 1 vial at a time.  
Able to heat at least up to 10 vials at a time.  
Number of Vial capacity 90 or more  
Headspace vials of 20 mL and 22 mL  
Oven capacity 12-place or more electrically driven carousel  
Oven Temperature: upto 300 °C, with 1 °C increments  
Spare 5 µL Syringes for Auto sampler – 5 Nos  
Headspace Crimper & decapper should be quoted with the system  
Along with PC software that controls the autosampler and electronic flow control

**User list**

Performance Certificate- Performance certificate must be furnished for an analytical data of aqueous ethanol of concentration 0.01 %

**Computer**

4th generation Intel® Core i7 processor; Genuine Windows® 10 (English); 16 GB RAM, 2 TB hard disk; 4GB Graphic Card, 20 inches LED Monitor; DVD – RW; Wireless Key board and Mouse;

Minimum 3 Years warranty; High quality Antivirus (1 Year) and a colour laser printer with two sets of cartridges

**Other requirements**

Installation, commissioning and demonstration of the instrument at the cost of supplier at the purchaser's site

On-site training should be given after installation at ICAR-IARI, New Delhi.

A set of operational & service manuals (with circuit diagrams) for the instrument and the list of spare parts along with the software and fault diagnosis and maintenance should be supplied with the instrument

System should also be quoted with five syringes of 10,20,100 micro liter each , Hydrogen, Nitrogen, Zero Air & Hélium gas cylinders with regulators and Gas Purification Panel including accessories like pipes, clips, nozzles, gauze and others.

Provision of interfacing of hyphenated techniques (like Mass spectrometer etc.,)

The supplier must guarantee trouble free operation of the instrument for a period of two years

Spares that would be required for trouble free operation of the equipment for a period of 5 years may be quoted separately

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**FORMAT OF QUOTATION \***

Sl. No.	Description Goods	Specifications	Qty.	Unit	Quoted Unit Rate in Rs.	Total Amount	
						In Figures	In Words
1.							
	<b>TOTAL</b>						
	<b>Sales Tax</b>						

**Gross Total Cost : Rs. ....**

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. ....(amount in figures ) (Rs. .... amount in words) within the period specified in the Invitation for Quotations.

We also confirm that the normal commercial warrantee/guarantee of ..... months shall apply to the offered goods.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf has engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices (as defined in the prevailing World Bank's sanctions procedures) in competing for or in performing the Contract.

**Signature of Supplier**

\* *Applicable while the bids are being invited for more than one item and would be evaluated for all the items together.*

*Modify where evaluation would be made for each item separately.*