

**TEA RESEARCH ASSOCIATION**  
**Tocklai Experimental Station**  
**Cinnamara, Jorhat-785 008, Assam, India.**  
**Centenary Equipment for Tocklai and Nagrakata**  
**Dated 17<sup>th</sup> January, 2012**  
**Tender Document:**  
**TRA-CE/11-12/T-01**

Sealed tenders in two parts (Technical bid & Price bid) are invited by the Director, Tea Research Association from reputed manufacturers/authorized dealers/importers for supply of Instruments/Equipments. Both the bid documents are to put in sealed envelopes separately super scribing the words “**Technical Bid** “ & “ **Price Bid**” which are to be put together in the sealed envelope super scribing the Tender No. The details of instruments/equipments are shown in ‘**Annexure – A**’ enclosed herewith.

Issue of tenders: Monday - Friday (8.30 am -5.00 pm)  
Last date of receipt of tenders : 8.02.2012  
Date and time of opening tender : 10.02.2012 at 2.00 pm

**Terms and Conditions:**

- 1) The tenderer should submit the following documents along with the tender:
  - a) Dealership certificate/authorization certificate
  - b) List of users
  - c) Up-to-date sales tax /income tax clearance certificate
- 2) Earnest money 2% of the quoted amount is to be deposited by the tenderer in the form of Bank draft/Bankers certificate in favour of the Director, Tea Research Association payable at Jorhat.
- 3) Tenders must accompany with the product catalogues/ specification
- 4) Tenderers must quote the warranty period of the product.
- 5) Tenderers must quote the year-wise rate for AMC & CMC separately for a minimum period of 5 years beyond the warranty period.

TRA reserves the right to accept or reject the bids without assigning any reason thereof.

The tender document can be obtained from the office of the undersigned during working days from Monday to Friday (8-30 a.m to 5.00 p.m.) or **may be down loaded from the website –[www.tocklai.net](http://www.tocklai.net)**.

Tender should be accompanied by separate Bank draft of Rs.300/- as tender cost (non refundable) and Earnest Money 2% of the quoted amount. Both the drafts should be drawn in favour of the Director, Tea Research Association payable at Jorhat. **The drafts for EMD and Tender Cost should be enclosed with “Price Bid” only.** All tenders should be sent to the following address:

The Director,  
Tea Research Association  
Tocklai Experimental Station,  
Cinnamara, Jorhat-785008.

**DIRECTOR**

## ANNEXURE-A

### Equipment and Specifications for Tocklai

Sl No.	Equipment/Instrument	Requirement	Specifications
1	<b>Gas Chromatograph</b>	2 Nos.	1) Dedicated GC with Two FID detectors and Two split/splitless capillary injectors. EPC. Column: capillary 2) Reputed company make with assured service backup, Capillary column GC with FID and ECD detectors, Two split/splitless capillary injectors, EPC, multiple ramping facility, latest software, columns: DB5 and DB17 equivalent capillary columns
2	<b>NIR Analyzer</b>	1 No.	Wavelength range: 200 -3000 nm
3	<b>SCFE software up gradation</b>	1 No.	Up-gradation of the SCFE software with computer
4	<b>Balance</b>	1 No.	Precision analytical balance with readability of 0.00001g
5	<b>Turbidity meter</b>	1 No.	Principle of Operation: Nephelometric Range: 0 - 10,000 NTU; Resolution: 0.0001 NTU on Lowest Range; Accuracy: $\pm 2\%$ of reading plus 0.01 NTU (0 to 1000 NTU), $\pm 5\%$ of reading (1000 to 4000 NTU), $\pm 10\%$ of reading (4000 to 10,000 NTU); Response Time: less than 6 seconds
6	<b>Flame photometer</b>	2 Nos.	1) Range: 0 to 199.9ppm; Limits of detection: 0.2ppm; Reproducibility: <1% coefficient of variation for 20 consecutive samples using 10ppm Na set to read 50, Linearity: < 2% error when 3ppm Na/K and 5ppm Li are set to read 100 2) K, Na and Ca filters
7	<b>Spectrophotometer</b>	3 Nos.	1) Visible range single beam spectrophotometer Wavelength range: 320 to 1000nm; Wavelength resolution: 1nm Transmittance: 0 to 199.9%T; Absorbance: -0.300 to 1.999A; Resolution: 0.1%T, 0.001A; Outputs: Analogue and RS232 2) UV/VIS spectrophotometer 3) UV/VIS spectrophotometer
8	<b>Block Digesting unit</b>	1 No.	Stainless steel body with chemical resistant coating; Number of samples: 6 samples in 100 ml tubes with $\varnothing$ 26 mm Temperature range: Ambient to 450 °C ; Selectable ramps:

			4 ramps per program; Digestion time range: 1 to 999 minutes
9	<b>Homogenizer</b>	1 No.	Vertical blender/homogenizer Speed: 2000 – 10000 RPM electronically controlled Blade size: 1 to 2 inch diameter Stirrer rod length: 8 to 10 inch
10	<b>Laboratory balance</b>	1 No.	Precision balance 0.001g readability (imported)
11	<b>Water purification system</b>	1 No.	Ultrapure Water Systems Produce Type 1 ultrapure water (18.2 $\Omega$ -cm resistivity at 25 °C and < 10 ppb Total Organic Carbon) on demand directly from potable tap water. Alarm warning in case of a sudden drop in the quality of the product water. Dispensing adapted to different size laboratory glassware. Time-saving fixed volume dispense.
12	<b>Green House</b>	1 No.	Photosynthetically Active Radiation Lamps with photosimulators (PACRaTM lamp system) and High Pressure Sodium lamps.  Photosynthesis monitor panel (Microclimate temperature controller, Microclimate humidity controller, Microclimate Photoperiodism Controller)  RHQ system: temperature 27 $\pm$ 2°C all around the year; RH-85 $\pm$ 8%. RSL3 system  Cooling facility with precooling system with PQ2IT technology  Air Breather automatic operation  Polycarbonate shield multiwalled, UV stabilized with geignet gaskets for sides and roof.
13	<b>Vertical Electrophoresis system with Power Pack</b>	1 No.	Number of gels – 1-4, Gel dimension – 18x16 cm. , Glass plate size - 18x16 cm , Spacer length 16 cm Minimum upper buffer volume – 0.5 litres Minimum lower buffer volume – 1.4 litres Four 16 cm clamp assembly, Six clamps Buffer dam Spacer-mate alignment template and wedge plate separation tool  Power Pack: Microprocessor controlled compatible with the

			<p>above described electrophoresis unit with LED Display</p> <ul style="list-style-type: none"> <li>• Output voltage – 5-300 V</li> <li>• Output current - 10-3000 mA</li> <li>• wattage – 300 W</li> <li>• Output terminals- 4 pairs</li> <li>• Input voltage – 100-240 V</li> <li>• Timer – 1-9999 min.</li> </ul>
14	<b>Gel Doc system</b>	1 No.	<p>Closed dark hood with UV transilluminator and white top light.</p> <p>Digital camera with zoom lenses</p> <p>PC with image acquisition software</p>
15	<b>Hybridization Chamber</b>	1 No.	<p>Effective and efficient crosslinking and hybridization at one location with each section able to operate at the same time</p> <p>Precise temperature control, ambient to 99.9C and variable speed control 10 to 18 rpm</p>
16	<b>Centrifuge</b>	1 No.	<p>Max speed : 20,000 RPM, non refrigerated unit with tube holders for 50ml and 100ml capacity</p>
17	<b>Hot Air Oven</b>	1 No.	<p>Standard make for laboratory use</p>
18	<b>CNS Analyzer</b>	1 No.	<p>Carbon Nitrogen and Sulphur analyser for soil sample analysis</p>
19	<b>HPLC</b>	1 No.	<p>Application : Plant hormone analysis in tea</p> <p>Quaternary Gradient Pump with flow rate range 0.001 – 10ml/min, accuracy <math>\pm</math> 0.1% or better. Pressure range 8500 psi or higher. 4 channel built in vacuum degasser. Manual injector with 10. 20. 50 &amp; 100 micro L loop and syringes</p> <p>Detector: UV-VIS with D<sub>2</sub> and Tungsten Lamp. Wave length range 190-900 nm or higher with analytical flow cell.</p> <p>Fluorescent detector : Dual PMT, Excitation emission range 200-800 nm or higher with analytical flow cell.</p> <p>Column oven: temp. range 10°C to 80°C or higher. Minimum 6 columns with automated column selection</p> <p>Column: C18 , 4.6 X 250 mm, 5 u with guard column.</p> <p>Appropriate column for plant hormone analysis</p> <p>Chromatography Software for above system with all standard features along with latest version computer and printer.</p> <p>Sample preparation accessories also to be quoted. Individual price to be shown for all above items</p>
20	<b>Infrared Gas Analyzer</b>	1 No.	<p>Equipped to use as on line photosynthetic measuring equipment</p>
21		1 No.	<p>Andersen Six Stage Sampler for aerobic bacteria and fungi.</p>

	<b>Andersen Sampler</b>		Impactor: 4 ½" dia X 7 ¾" high 2 lbs, 12 oz Flow rate: 28.3 lps (1ACFM) With vacuum pump and carrying case including full accessories
--	-------------------------	--	---

## Equipment and Specifications (Nagrakata laboratory)

Sl No.	Equipment/Instrument	Specifications
1	<b>Gas Chromatograph</b>	Reputed company make with assured service backup Capillary column GC with ECD, <b>NPD</b> and PFPD detectors, Two split/splitless capillary injectors, EPC, multiple ramping facility, latest software, columns: DB5 and DB17 equivalent capillary columns <b>and autosampler</b>
2	<b>UHPLC</b>	Application : Catechin analysis in tea Quaternary Gradient Pump with flow rate range 0.001 – 5ml/min or higher, accuracy $\pm$ 0.1% or better. Pressure range 15000 psi or higher for all flow rates. 4 channel built in vacuum degasser. Auto injector with injection volume range 0.01-100 uL or higher. Carry over <0.005%. Automatic needle wash. Detector: UV-VIS with D <sub>2</sub> and Tungsten Lamp. Wave length range 190-900 nm or higher with both micro and analytical flow cell. PDA detector: wave length range 190-800 nm with 1024 diodes or higher with D <sub>2</sub> and Tungsten Lamp. Pixel resolution : < 1nm. 3D software to be quoted with the detector. Column oven: temp. range 10°C to 80°C or higher. Minimum 6 columns with automated column selection Column: C18 , 4.6 X 250 mm, 3 u with guard column. Appropriate column for catechin analysis Chromatography Software for above system with all standard features along with latest version computer and printer. Sample preparation accessories also to be quoted. Individual price to be shown for all above items
3	<b>Atomic Absorption Spectrophotometer</b>	Reputed company make with flame excitation, lamp turret with auto energy adjust. Cathod lamps for Fe, Cu, Mn, Zn, Pb, Cd, Hg, Ni, Cr. <b>(The AAS should have all three modes, Flame, Flow Injection and Graphite Furnace).</b>
4	<b>Muffle Furnace</b>	Branded Laboratory Furnace with minimum effective volume of 6"X6"X12" Temp: Max 1200 oC Digital temperature indicator with control device
5	<b>UPS (Two Numbers)</b>	Branded UPS with MF Batteries and assured after sells service 7.5 KVA output Back up time : Min. One Hour
6	<b>pH meter</b>	Reputed Company make with combined electrode to be used for soil pH measurement
7	<b>Colorimeter</b>	Reputed Company make with filters and cuvettes Preferably digital display with 100% transmittance and corresponding

		absorption reading facility
8	<b>Hot Air Oven</b>	Branded Laboratory Oven with circulated hot air and digital temperature control device
9	<b>Flame Photometer</b>	Reputed Company Make with Oil free air pump Filters for Na, K and Ca
10	<b>Digestion and Distillation System</b>	Block digestion system with minimum 6 tubes of 100 ml capacity with scrubber unit and temperature ramping facility Distillation Unit for Nitrogen analysis with auto alkali dispenser
11	<b>Spot Humidifier</b>	Standard humidifier to be used in fermentation room of miniature tea manufacturing factory
12	<b>Cold water circulator</b>	Standard cold water circulator to be used in miniature tea manufacturing factory
13	<b>Centrifuge</b>	Reputed Company Make Refrigerated High Speed Centrifuge with replaceable rotating heads of different capacity Speed : 20,000 RPM
14	<b>Gradient Thermal Cycler</b>	Reputed make thermal cycler with 96 well PCR plate Gradient range (20 ° C -70° C) with gradient calculator