



Bidhan Chandra Krishi Viswavidyalaya
Directorate of Research, Kalyani - 741 235, Nadia, West Bengal
AICRP on Soil Test Crop Response Correlation
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PI, RIDF project on "Farmers' Service
Centre for Soil Testing and fertilizer.."

Date- 23.09.17

Ref. No. BCKV/RIDF/FSC/01.

Notice Inviting E-Tender

The Principal Investigator, RIDF project "**Farmers' Service Center for Soil Testing and Fertilizer Recommendation-referral laboratory**", AICRP on Soil Test Crop Response Correlation, Directorate of Research, Bidhan Chandra Krishi Viswavidyalaya, Kalyani is inviting e-tender from competent and bonafide manufacturers/ authorized distributors/ dealers/ agents for supply of following scientific equipment to University as per specifications appended against each item.

(i) Preparation of Bids: - The tenders should be submitted under two-bid system (i.e. Technical bid and Financial bid) with validity for a period of six month or more.

(ii) Submission of e-tender: - The tender shall be submitted on line within 16.10.2017. Technical Quotations may also be submitted separately for each item by sealed envelope mentioning name of the item on top of the envelope to the below-mentioned addresses.

For on line submission of Tender please visit <https://wbenders.gov.in>

(iii) Opening of the tender: - The technical bid will be opened on 18th October, 2017 by the Central Purchase Committee, BCKV duly constituted for this purpose. After scrutinizing, the financial offer/bid of technically qualified vendors will be opened.

(iv) Prices: - The prices of all the equipment and items, including imported ones, should be quoted in net per unit (including all taxes and duties, etc.). However, University will provide valid DSIR and authorization certificate to the clearing agent, if required. Quotation must include essential accessories like, gas cylinder, regulator, computer, etc. (as mentioned for each equipment) from branded company, in Indian Rupees only, even

if the main equipment is quoted in foreign currency. Without essential accessories tender will be considered as incomplete. Quoted rates must be FOR DESTINATION (including packing, insurance and delivery charges up to the laboratory at BCKV, Mohanpur) with satisfactory installation and demonstration.

(v) EMD: - Vendors are required to pay the requisite amount (in INR) as EMD in draft as specified against each equipment/goods individually. Scan copy of the requisite draft must be uploaded as the supporting document for each equipment during submission of e-tender. **Without EMD quotations will not be considered for technical or financial comparison.** Draft must be in favour of 'Bidhan Chandra Krishi Viswavidyalaya' payable at Kalyani (IFSC: SBIN0001082).

(vi) **Supporting documents:-**

(a) Bid papers should accompany authorization certificate from original manufacturer, trade license, GST registration, etc;

(b) Scan copy (self attested) of the original supporting document in favour of the specification-claim for each item must have to be uploaded separately;

(c) User list along with certificate from reputed users also need to be uploaded for each item;

(d) Scan copy of supporting document of assured after sales services in Eastern India and availability of spare parts need to be uploaded.

Price bid of the vendors will be compared only if technical specificity as appended against each item is fulfilled. The Viswavidyalaya authority reserves the right to accept or reject any tender without showing any reason.

Dr. N. Saha, Associate Professor,

Officer-in-Charge,

AICRP on Soil Test Crop Response Correlation

Directorate of Research,

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and

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List of Scientific Equipment with specifications:

- FSC/01 : Atomic absorption spectrophotometer with hydride generator
- FSC/02 : Nitrogen digestion and distillation set.
- FSC/03 : Research Centrifuge
- FSC/04 : Double Beam Spectrophotometer
- FSC/05 : Power Back Up system
- FSC/06 : Balance
- FSC/07 : Top loading electronic balance
- FSC/08 : Horizontal shaker
- FSC/09 : BOD Incubators
- FSC/10 : Refrigerator
- FSC/11 : Digital Magnetic Hot Plate Stirrer
- FSC/12 : Hot Air Oven and Driers
- FSC/13 : Chest freezer
- FSC/14 : (2No.)
Revolutionary Table Top high speed centrifuge with Rotor Head
- FSC/15 : Mono quartz double distillation set
- FSC/16 : Steel distillation set
- FSC/17 : Rotary shaker
- FSC/18 : Muffel Furnace
- FSC/19 : pH/ISE Benchtop meter kit with all accessories
- FSC/20 : Willy Mill Grinder
- FSC/21 : AC machine
- FSC/22 : Desktop computer
- FSC/23 : LAPTOP
- FSC/24 : Turbidity Meter
- FSC/25 : Conductivity Meter
- FSC/26 : PH-Meter
- FSC/27 : Flame Photometer
- FSC/28 : Nikon SLR Camera
- FSC/29 : Fume Hood
- FSC/30 : Electrical Sand Bath
- FSC/31 : GPS/GIS
- FSC/32 : Soil Hydrometer
- FSC/33 : Tensiometer

Equipment with detailed specifications

Sl. No.	Name of the Equipment	Specifications	No. / Unit required
1.	Atomic absorption spectrophotometer with hydride generator	<p>1.01. Flame atomizer: True double beam spectrophotometer design</p> <p>1.02. Monochromator/optics: Littrow or better design with motorized drive for automatic wavelength selection and peaking.</p> <p>Mirror free fiber optics light transmission for maximum light transmission for maximum light throughout for best detection limit, preferred.</p> <p>1.03. Wavelength Range: 185-900 nm, preferred</p> <p>Diffraction grating: 1800 lines/mm dual blazed at 236 nm and 597 nm</p> <p>Reciprocal Linear Dispersion: 1.6 nm/mm or better</p> <p>1.04. Background Correction: Double-beam background correction using high intensity D2 lamp</p> <p>1.05. Spectral Bandwidths: User automatic slit widths of 0.2, 0.7 and 2.0 nm at their optimized slit height.</p> <p>1.06. Detector: Wide range segmented solid-state detector, including a built-in-low-noise CMOS charge amplifier array, preferred.</p> <p>1.07. Automatic Lamp Selection: 8-lamp turret with built-in power supplies with slot for use of high intensity hollow cathode lamp, preferred</p> <p>1.08. Required Hollow cathode lamps are - i. Fe ii. Mn iii. Cu iv. Zn v. Ni vi. Cr vii. Cd viii. Ca ix. Mg x. K xi. Al xii. B xiii. Na xiv. P xv. Si (quote cost of each type (single) should be separate)</p> <p>1.09. Required High Intensity Hollow cathode lamps are- i. As ii. Hg iii. Pb iv. Cd (quote cost of each type (single) should be separate)</p> <p>1.10. Required multi element Hollow cathode lamps are – i. Cu-Fe-Mn-Zn ii. Na-K iii. Al-Ca-Mg</p> <p>1.11. Gas Controls: Fully computer-controlled with oxidant and fuel monitoring</p> <p>1.12. Safety Functions: Built-in interlocks to prevent ignition in absence of proper burner head, the nebulizer/end cap, or the burner drain system</p> <p>1.13. Sample Introduction System: Modular sample introduction system</p> <p>1.14. Automated flow injection Hydride system for hydride forming elements: Continuous flow injection atomic spectroscopy system with</p>	1

		<p>stepper-motor driven peristaltic pump for hydride/vapour generation system. The system should have following features: i. Automatic sequential element analysis capacities. ii. Direct analysis of high matrix-content solutions without burner or nebulizer clogging.iii. Low sample consumption (less than 1 ml required per determination). iv. On-line analyte pre-concentration v. On-line reagent addition.</p> <p>1.15. Data control system: Complete PC control using windows based software operating under the Microsoft Windows 10 with complete control of the instrument and its major accessories plus data handling and storage should be quoted</p> <p>1.16. Local/Imported Items required: -</p> <p>i. Suitable exhaust hood ii. Suitable online UPS for instrument operation-1 hour back up iii. Multistage gas regulators for acetylene, nitrous oxide & Argon. iv. Quotation for supply of Acetylene, Nitrous Oxide & Argon gas is also sought. v. Imported regulator for nitrous oxide gas to be quoted vi. PC workstation with printer</p> <p>1.17. Warranty/CMC: should quoted for 5 years Comprehensive warranty/CMC which should include labour charges, spares and services during the warranty period.</p> <p>1.18. Installation, Demonstration and Training should be provided by the vendor. Items like tables for setting up the AAS and the data recording systems, etc for delivery on ready to use basis.</p> <p>Bid should include both FCA or CIP Kolkata prices. Transportation cost with insurance from port of destination to Mohanpur, Nadia, WB, should also be clearly mentioned in the quote. Submit Electronic copy (in CD) of the Technical specifications/bid also along with the signed copy of the bids in sealed envelope. The optional and preferred items are not essential.</p>	
2.	Nitrogen digestion and distillation set.	<p>KEL PLUS Automatic Macro Twenty Sample System (250 ml capacity, Model KES 20) Macro Block Digestion/ microwave digester (each price should be quoted separately) and distillation and titration system (digital burette) with automatic scrubber system with other accessories. price should be quoted with 5 years warranty/AMC</p> <p>Separate quotations are also invited for auto lift digestion block of 20 tube digestion capacity</p>	2
3.	Research Centrifuge	Microprocessor table top high speed cooling centrifuge, Speed Range 500 to 15,000 rpm, Maximum RCF 21,200 x g, Timer 0.5 to 99 minutes, Temperature Range -5 to -20°C.	1
4.	Double Beam	Sub type: UV-VIS, Wavelength range 190-1100 nm, Temperature:	1

	Spectrophotometer	15- 70° C, Wavelength accuracy , ± 0.5 nm 0.5-second scan; free software capable for standard tasks for fixed wavelengths,spectra/peaks, ration/ equations and single component quantification, verification and diagnostics for self test, performance verification of instruments, diagnostic, sample size varied from <1ml-3ml. Equipment must be accompanied by two compatible quartz cubes with 1ml and 3 ml volume, 5 KVA UPS with 30 minutes battery backup. Branded PC with 8GB, 1 TB HDD, Flat Screen Monitor, Optical Mouse, pre-loaded Windows and LaserJet Printer should be quoted along with system. Warranty period/AMC: five year Available Power supply: 220/230V, 50/60 Hz	
5.	Power Back Up system	APC make SRC 6000 UXI Capacity 6KVA, Battery bank consists of 16 Nos 100 Ah VRLA battery Exide	1
6.	Balance	Capacity: 0.01 to 10g or more than that, Readability: 0.1mg , Repeatability (sd):0.1mg, Linearity (+/):0.2mg, Pan Size (mm):Around 90 x 90 mm, Rust resistant pan, Response Time:2 -3 Seconds, Bubble Level at front, Minimum weight: 0.2 –0.4 mg, Display: LCD/LED, Internal Units of measure :g, mg, Tare Range: Full, Operating Temp.:5°C to 50°C, Sensitivity Drift: 2ppm(2x10 ⁻⁶ /°C), calibration: Automatic external calibration, Compliance: ISO, GLP / GMP / USP	1
7.	Top loading electronic balance	Digital, LCD Display, Di-Metal, Stainless Steel, capacity 220gm, accuracy 0.01gm	1
8.	Horizontal shaker	Cabinet Internal: Coated Steel, Cabinet External: White painted steel, Speed range: 50 -300 rpm, Speed Drive: AC, Workable on 220 V AC., Provided with M.S. /S.S., Top sizes: 45 cm x 45 cm, flask capacity – 25 ml -36, 50 ml – 36, 100 ml- 25, 250 ml-16, 500 ml – 16 & 1000 ml – 9. (Preferred) Vortex Shaker: Speed should be upto 3000rpm,Should be able to operate in both Touch mode & continuous mode, Should be provided with multitube attachments, Plate attachment & cup-attachment,MS powder coated cabinet to avoid decay of body.	1
9.	BOD Incubators	compressor. Capacity: 170-200 Ltrs Inner dimensions, mm: (WDXH) 505X415X830 Temperature Range: 5-60°C Temperature Resolution: 0.1°C Temperature Uniformity : ± 0.5 °C Stainless steel inner chamber No. of Shelves: 02 Microprocessor digital temperature controller with LCD display Interior illumination arrangement Air Circulation system for keeping uniform temperature throughout the cahmber. CFC free refrigeration Automatic Voltage stabilizer for equipment, Capacity 2 KVA, Warranty: 2 years 6 cft, volume 170 L, double walled cabinate	1

10.	Refrigerator	Godrej make Frost free refrigerator with a capacity of 250 litres, Double Door, with multi storage basket with an energy rating of 4 stars or better.	2
11.	Digital Magnetic Hot Plate Stirrer	Max. stirring quantity : more than 3 Ltr , Size: 200 x 225 x 185 mm or similar	1
12.	Hot Air Oven and Driers	Size: 18''X18''X24, Inner chamber. SS and outer body MS, control temperature and power	2
13.	Chest freezer	minimum 500 lit capacity, Blue Star, temperature range -22 to -25°C	1
14.	Revolutionary Table Top high speed centrifuge with Rotor Head (2No.)	Microprocessor control with LED display, menu driven ten progasmme memory, choice of high brake, low brake and coasting. Max. Capacity : 1200 ml, Max speed :7000 rpm, tube size: 50 ml and 100 ml should be compatible, W*D*H = 400*500*400, 0-99 minutes digital countdown timer. Two angular, plastic Rotor Heads one each for 50ml (50 ml*12) and 100 ml(100 ml*8) tube size should be quoted separately with centrifuge.	1
15.	Mono quartz double distillation set	1.5/2.5 Lit/hr output Capacity, Borosil make model-3365 with electric relay, Distillation Appartus Power Supply and full installation with all Spares for Distillation unit (Separate quote needed for both 1.5/2.5 Lit/hr and their accessories)	1
16.	Steel distillation set	All Steel Single Distillation Unit, Table Top Model, Capacity- 4/5 Lt/hour, Stainless Steel Made, Heater (2000 watts) with condenser & iron guard, silicone tubing and electrical plug & wire	1
17.	Rotary shaker	RPM 5-50 RPM , Timer 0-99 hrs/1-59 min, Rotating bars for tube dia from 10-30mm Plastic coated spring clips, Serial rotation of tubes for extraction ,diffusion Flask Capacity 20 pcX250ml, speed control	1
18.	Muffel Furnace	Temperature Accuracy: $\pm 2^{\circ}$ C or better Temperature Control: Through microprocessor based PID controller with minimum 30 steps Furnace Insulation: Ceramic wool Temperature settings & Display: Digital and double display Power source: 220 V, 50Hz single phase Out body and inner body: Stainless Steel Accessories required: Control voltage 220-250°C, size	1
19.	pH/ISE Benchtop meter kit with all accessories	1. pH/ISE Benchtop meter with stand and other accessories (Orion Research Inc, 5 star series Model No. Orion star A 2145) 2. Fluoride (model no.- 9609BNWP/960900 combination	1

		electrode)/Ammonia electrode (Orion Research Inc.,) which are compatible with the meter (price should be quoted separately for each type electrode) 2. TISAB Buffer solution (ORION 940911) - 4 bottle 3. Magnetic stirrer or Orion stirrer probe, (Cat. No. 096019) 4. Fluoride electrode filling solution (Cat. No. 900061)	
20.	Willy Mill Grinder	¼ HP, chamber size 40mmX25mm(cast steel chamber)	1
21.	AC machine	Split type Capacity of AC units in Tonnage 1.5 with 5 star rating.,	3
22.	Desktop computer	Memory, standard: 4 GB 1600 MHz DDR3 SDRAM (1 x 4 GB) Operating system: HP Model 110-216ix, Processor: Intel® Core™ i3-4130 with Intel HD Graphics 4400 (3.4 GHz, 3 MB cache, 2 cores) , 500GB HDD, LED Monitor with APC 600VA UPS Window 7 or higher, Ports: 2 USB 3.0; 4 USB 2.0; 2 PS/2 (keyboard and mouse);	3
23.	LAPTOP	5-r063tu Notebook, Intel Core i3 (4 th Gen), RAM-4GB, HDD-500GB, screen-15.6 inch, original window-8.1 or higher version, Ports: 2 USB 3.0; 4 USB 2.0, 1 mouse, 2 pendrive (8 G.B)	2
24.	Turbidity Meter	Micro controller based Range : 0 – 1000 NTU (Automatic) Readout : 2 Line 16 Character LCD Data storage : Calibration & Data Stored in Memory Printer interface for 80 Column D.M. Printer	1
25.	Conductivity Meter	Micro controller based Range : 0.1 µS – 100 mS Resolution : 0.001 µS Temperature : 00 C – 1000 C (Auto / Manual) Readout : 7 digits LED (3 digits for Temp. and 4 digits for Cond.) Printer interface for 80 Column D.M. Printer	1
26.	PH-Meter	Micro controller based 2/3 point calibration for pH pH Range : 0 – 14 0.01 pH Resolution mV Range : 0 - +1999 1 mV Resolution Temperature compensation : Auto / Manual Readout : 7 digits LED (3 digits for Temp. and 4 digits for pH) Printer interface for 80 Column D.M. Printer	2
27.	Flame Photometer	Microprocessor-based Flame Photometer for measurement of sodium, potassium and calcium in compost/soil/plant samples and	1

		comprising of an Aspirator unit, oil free compressor, burner unit, filter etc. and Rs 232 interface printer attachment facility. Sensitivity: Na-2ppm, K-1ppm, Ca-30ppm, Range: Na-1-100ppm, K-1-100ppm, Ca-15-100ppm, Accuracy and reproducibility: $\pm 2\%$, Detector: Photodiode, Filters: Na, K, and Ca	
28.	Nikon SLR Camera	Nikon D5200 24.1MP Digital SLR Camera (Black) with AF-S 18-55 mm VR II Kit Lens, Memory Card, Camera Bag	1
29.	Fume Hood	For digestion of different types of sample for analysis, including water, wastewater, food products, plant tissue, feed stuffs, oil, coal, organic & mineral samples for analysis of Kjeldahl nitrogen, protein, phosphorus, calcium, potassium, lead, cadmium etc in solid and liquid samples. Fume Chamber must withstand tri-acid fume constantly System . This should be alternate to conventional digestion eliminating the need for a mercury or metal catalyst. -The apparatus set should have a heater assembly heat shield, fractionating column, capillary funnel, digestion flasks and a water aspirator and Should have a thermostatically controlled 250 watt heating element and should provide even heating throughout the digestion process and have variable temperature control from 100 to 480 deg C with LED digital display for temperature. It Should be corrosion resistant, plastic and polyurethane painted metal. -Should digest samples for heavy metal analysis also -Power requirements : 230 VAC -Temperature Control : Variable from 100 to 480 deg C -Aspirator : 11.5 L/min at a water flow rate of 6.5 l/min -Water Pressure : 51.7 kPa (7.5 psi) minimum, drain required -Compliance : CE certification and EMC	1
30.	Electrical Sand Bath	<ul style="list-style-type: none"> • Temperature: +370°C • Weight (kg): 13 ~ 27 • 240 Volt • Size: W x H x D (mm) - 360 x 220 x 510 • Watt : more than 2500 	2
31.	GPS/GIS	Receiver 12 channel, Interface NMEA 0183, RTCM SC-104 DGPS, serial, SBAS: WAAS, DGPS: DGPS ready, Grids Lat/Lon, Loran TDs, MGRS, Maidenhead, UPS, UTM, User, Accuracy: Position - 49 ft, Position - 10 ft - 16 ft (with DGPS), Position - 10 ft (with WAAS), Velocity - 0.16 ft/sec, Update Rate: 1/second, Antenna: built-in Compatible Software: MapSource Points of Interest, Internal Memory: 1 MB, Resolution: 120 x 160, Display, Illumination: Yes, Included Accessories: car power adapter,	2

		carrying case, mounting bracket, wrist strap, Protection: waterproof Waterproof Standard: IPX7, Waypoints: 500, Routes: 50 Trip Computer: TracBack, average speed, maximum speed, sun/moon positions, trip timer, Tracks: 10, Waypoints per route: 50	
32	Soil Hydrometer	ASTM No. 152H; Soil Colloid Range -5 to 60g, Subdivision 1.0, Length 280 mm	1
33	Tensiometer	Measurement range +100 to -85 kPa, Accuracy ± 0.5 kPa, Salinity range No significant effect, Temperature range 0 to 50°C, Output 1Mv / kPa, Power requirement Precision 10.6V, ~1.3mA, Dimensions and weight Ceramic : \varnothing 5 mm Shaft : length 2-20cm, Logger/Meter compatibility	1
	Total		