

**Permission to invite tender for purchase of following equipments in the Deptt. of Plant Mol. Bio. & Gen. Engg., NDUAT, Faizabad**

- A. Two dimensional gel electrophoresis (2 D Gel)
- B. PCR Machine (A)
- C. Trans Blot apparatus
- D. Micro Pipette
- E. Water purification system Milli Q
- F. Stero Microscope
- G. Table-Top Refrigerated centrifuge
- H. PCR Machine (B)
- I. Gel documentation system
- J. Florescence microscope
- K. Double beam UV-VIS spectrophotometer with data store
- L. Electronic balance
- M. Deep freezer
- N. Computer table & Chair

The specification of above mentioned equipments are attached in the File (A to M). S.No. A to D will be purchased from the DBT funded project entitled “Controlling yellow stem borer in rice using cysteine protease inhibitor from seed of Jackfruit- an alternative to Bt-approach” for smooth function of research work of the project. Necessary funds are available to purchase the above items in DBT project under non-recurring budget head of the project (copy enclosed).

The equipment mentioned on S. No. D (also for Tissue culture) to F will be purchased from the Tissue culture project entitled “Development and strengthening of infrastructure facilities for production of Elite plantlates Jackfruit on commercial scale of Banana and tissue culture from Non-Recurring budget head of the project (copy enclosed). The equipment from G to M will be purchased from the DBT Teaching project from non recurring head (a copy of project enclosed). The equipment S.No. N will be purchased from Bioinformatics project, supported by DBT, Govt. of Indian (a copy enclosed) from contingencies head.

I, therefore request you to invite the Tender from global firm at the earliest.

(K.N.Singh)

### **A. Specification for 2 D Gels:**

Temperature control with operating range: 10-25 °C

- Voltage range : 0-10000 Volts
- Current : 0-2.4 mA
- Power : 24 Watts
- Running Platform that accommodates up to 24 (7cm), 12 (11 cm), 12 (17,18 & 24 cm) 1 PG strips
- 10 wells, 0.75 mm thickness complete system
- 5 sets of glass plates
- Protein 11 x L Cell, wide format, 1.0 mm
- Central cooling core
- Glass plates 20 x 20 cm
- Power pack supply : 220-240 V
- Current : 4-400 mA
- Power 75 Watts
- Timer : 1-999 Minutes

## **B. Specification for PCR Machine (A)**

- Temperature Range – 4 to 100 °C
- Accuracy +/-0.5 °C
- Uniformity - +/-0.5 °C
- Overshoot Maximum – 0.8 °C
- Heated Lid-upto 110 °C
- Ramping Speed- up to 2.5 °C/s
- Sample Capacity/Sample Size: 96 wells x 0.2 ml

### Reaction module

- Display: 4.7" (12cm) high resolution screen
- Licenced PCR: Yes
- Operating temp: 18-28 °C ambient
- Communication: USB
- Electrical Approvals: IEC, CE
- Dimentions: 23.6x44.3x20.5 cm (WxDxH)
- Weight: 10 Kg
- Programming:
- Max No. of Programs: 99 on board
- Cycle per protocol: up to 9
- Segments per cycle: up to 9
- Repeats per cycle: up to 99
- Segment time range: 00.01-99.59 min
- Pause: yes
- Battery Backed RAM: YES

### **C. Specification for Trans Blot apparatus**

Transblot Semi Dry Electrophoretic transfer cell includes

Transblot SD transfer cell, Transblot SD agarose gel

support frameextra thick blot paper 7 x 8.4 cm

(sheets) 8 x13.5 cm (60 sheets), 14 x16 cm

(30 Sheets), 18 x 18.5 cm (30 sheets), instructions

Fast and efficient transfer in as little as 15-60 min

Max size : 24 x 16 cm

Buffer Requirement : 200 ml

Dimension: 37 x 24 x 11cm

Can transfer protein, DNA and RNA

Power Pac HC High Current

250 V, 3A, 300W

Constant Voltage, Constant current or constant power

Timer: 1 min-99 hr, 59 min

No. of output Jacks: 4 sets in parallel

Programmable: 1 method up to 3 steps

Pause/Resume Function: yes

Safety Features: No-load detection, sudden load change  
detection, over voltage protection

#### **D. Specification for Micro Pipette**

- Fully Autoclavable, digital adjustable
- 0.1- $\mu$ l (0.2% Accuracy)
- 0.5- 10 $\mu$ l (1% Accuracy)
- 2- 20 $\mu$ l (0.8% Accuracy)
- 20-200  $\mu$ l (0.6% Accuracy)
- 100-1000  $\mu$ l (0.6% Accuracy)
- Coefficient range : 0.2 to 1.5%

## **E. Specification for Water purification system Milli Q**

1. Should produce Type I water at 1.2 L/min, with 2 step purification involving Primary purification – customized feed water specific cartridge, secondary stage should involve 0.22 micron high flow PolyEtherSulphone express membrane filter
2. The system should have a dual wavelength UV lamp to produce water with low levels of organic contaminants ie TOC<5ppb.
3. The system should include an automatic re-circulation feature to prevent deterioration of water quality during periods of non use should have a builtin timer which allows operator to deliver water for a fixed period of time.
4. The system should produce the water of the following quality: Resistivity: 18.2 MegaOhm-cm, TOC<5ppb, Nacteria < 1dfu/ml, Flow rate 1.2 Litres/min.
5. The system should have deliver the pyrogh/RNapDovafuset delivery at Kumarganj/NDUAT including complete installation.

## **F. Specification for Stereo Microscope**

1. Zoom ratio 4.4:1 and magnification 8x-35x
2. Transmitted and incident light LED illuminator
3. 5 LED for incident light
4. Light Emitting Diode)
5. LED transmitted light
6. All LED should be brightness adjustable
7. Water & Dust proof design.

## **G. SPECIFICATION TABLE-TOP REFRIGERATED CENTRIFUGE**

- Max speed : 15,300 rpm or more; Max RCF: 21, 984 x g or more
- Max Volume : 1000 ml with 4 x 250 ml swing out rotor
- Temp. range – 10 to 40<sup>0</sup>C & CFC free refrigeration
- Maintenance Free, noiseless, brushless motor drive
- Preselection of run parameter in terms of rpm, rcf & time
- Short run function with display of run time in seconds
- Magnetic rotor identification prevents rotors from over speeding
- Preselection upto 30 min or continuous run
- Soft stop facility to avoid mixing of sedimentation
- Two knob operation (no complicated keypad)
- Double lid locking device with latches according to VBG 7z
- **Facility for Microtiter plate swingout rotor.**

### **Rotors:**

- Angle rotor 6x30ml tube Max. Speed 15,300 rpm; Max. rcf 20,675xg
- Swing out rotor 4 place with buckets and adapter for 12 x 50ml Falcon tube. Max. Speed 4,500rpm; rcf 3,894xg



## **H. Specification for PCR Machine (B) (DBT, Teaching)**

Includes Mycycler Thermal cycler, power cord, quick reference guide and instruction manual

Method of heating and cooling-Peltier

### **Method of temp monitoring-block & algorithm**

- Temperature Range – 4 to 100 °C
- Accuracy +/-0.5 °C
- Uniformity +/-0.5 °C
- Overshoot Maximum -0.8°C
- Heated Lid-upto 110°C
- Ramping Speed-up to 2.5°C/s
- Sample Capacity/Sample size: 96 wells x 0.2 ml
- Reaction module
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- Pause: Yes
- Battery Backed RAM: YES

## I. Specification for Gel Documentation System

<b>1. High resolution CCD camera</b>	1.4 Mega pixel interline CCD
Firewire connectivity 12-bit data acquisition	Rapid data transfer for real time imaging. Quantitative, 3.0 orders of dynamic range.
<b>Upgradability</b>	Should be upgradeable for chemi application in future
<b>2. Resolution</b>	1360x1024 with 4.6x4.6 micron Pixel Size.
<b>3. Motorized Zoom Lens</b>	Resolution should be 47.8 $\mu\text{m}/\text{pixel}$ at max zoom C-mount lens to collect more light to hit CCD, f/1.2;Zoom 8-51mm
<b>4. Universal Hood</b>	Should be light tight with light baffling option. Touch pad controls for iris, zoom, and focus of the lens and for on/off control of epi and transillumination
<b>5. Large Sample Plate</b>	UV illumination imaging area should be 26 x 25cm.
<b>6. White Light Epi Illumination</b>	For imaging of colorimetric blots and colonies.
<b>7. UV Transillumination</b>	302nm UV-B
<b>8. Filter Slider</b>	Should be Compatible with a wide range of applications including ethidium bromide, SYBR green, SYBR gold, SYPRO orange, Fluorescein, Radiant Red, Texas Red, SYPRO Red, GelStar, CY3, Rhodamine, Hoechst, Coumarin. Option for easy conversion of system set-up for either fluorescence and colorimetric samples. Three-position filter slider - two positions for emission filters (fluorescence/colorimetric samples) and one open position for chemiluminescence for future upgradation .
<b>Filters</b>	Amber Filter with spectral range of 548-630nm for following application: EtBr, SYBR Green/GFP/SYBR Gold/Fluorescein/ CY3/Rhodamine/ SYPRO Ruby/Texas Red, Hoechst/Coumarin.
<b>11. UV and White Lamp Auto Shut-off</b>	To preserve lamp life, system should automatically shuts off UV and white light lamps after approximately 5 minutes.
<b>12. Data processor</b>	Latest Branded data processor(PIV 512 mb RAM 60 G B HDD,17 “ colour monitor Windows XP Pro) with suitable inkjet printer
<b>15. Software with networking capabilities and FDA 21 CFR part 11 compliance for 1 Dimensional application</b>	Software should analyze variety of data based on application including radioactive ,chemiluminescent, fluorescent,color stained sample, Automatic lane and band detection,Rapid molecular weight detection with multiple regression models,band lane matching analysis,background subtraction correction of gradient gels,Accurate concentration analysis using volume tools,recall of lane and sample layouts,molecular weight determination, colony counting,array tools for slot blot,dot blot and other medium density array, <b>Differential display</b> option for study of Gene expression study using mRNA and PCR amplification, Ready agarose 96 plus option, <b>3 D viewer</b> for discriminating two nearby band or spots ,Variable number tandem repeats ( <b>VNTR</b> ) for microsattalite Study.

## **J. Specification for fluorescence Microscope (DBT, Teaching)**

3-step focusing (coarse/medium/fine), torque adjustment, adj. focus stop  
6-fold nosepiece  
Ergo stage with ceramic stage plate (left/right adaptation possib.)  
Slide holder one hand slide exchange  
XY-stage control standard,  
Standard focus knobs  
with Flip out true color blue filter  
Binocular pol phototube viewing angle 30,  
beamsplitter to vertical port:0/100%, 50/50%, 100/0% (HCL3TP 4/5/7)  
Lamp housing 106z with Hg 50W, with power supply for mains 220-240 V  
Transmitted light bright field (BF)  
Without pol/without interference contrast  
Standard condenser type, color coded, with aperture diaphragm  
Filter systems for standard fluorescence applications for 220V

Leica DM2000 stand for Biology and Medicine for transmitted light 30 W  
Illumination, with height adjustability of focus knobs, integrated  
Halogen lamp 12V 30W and stage carrier, with centrable condenser holder  
For vertical adjustment, right- and left-hand operation and clamp screw,  
with adjustable height stop, Mains 90-250V, commutable 50/60Hz.  
3-step focus drive for DM2000/2500 for coarse, medium and fine  
Focusing, focus torque adjustment and adjustable focus stop, with focus knobs coarse

## **Specification fluorescence Microscope**

ErgoStage for DM2000/2500/3000 for right-or left- hand operation. Stage plate with ultrahard ceramic surface, travel range 76mm x 25mm, with vernier reading.  
Condenser lens CL/LS  
Slideholder for ergostages  
DM1000/DM2000/DM2500/DM3000 for one hand slide exchange  
X/Y stage control standard for ergostages  
DM1000/DM2000/DM2500/DM3000 with removable rubber covers  
Set of focus knobs fine with standard surface for DM2000/DM2500/DM3000  
True color blue filter DM1000/2000/3000  
Binocular Pol Phototube HC L 3 TP 4/5/7, with tubelens 00/1x, with 30° viewing angle, with interpupillary adjustment 55-75mm, with constant focus and automatic adjustment of right eyepiece/graticule.3 beamsplitter positions vis/phot:0/100%, 50/50%, 100/0%  
  
Lamp housing 106z for reflected light, with centrable lamp mount for Hg 50W, with focusable 4-lens collector and heat protection filter, w/o ignitor, mains cable 1.5m

Ultra-high-pressure Hg-lamp HG 50w  
Mains unit for Hg- 50W lamp for 220V  
Condenser CL/PH 0.90/1.25 Oil, S1,CC  
EYEPIECE HC PLAN 10X.20BR.  
EYEPIECE HC PLAN 10X.20BR. M  
Obj. HI PLAN 4x/0.10 -,18  
Obj. HI PLAN 10x/0.25 -, 12,1  
Obj. HI PLAN 4x/0.65 0.17/,0.36  
Obj. HI PLAN 100x/1.25 oil-/, 0.1  
Dust cover for DM LB with fluorescence or photography/TV  
Filter system 13 for blue excitation, excitation filter: BP 450/490,  
dichromatic mirror: 510, suppression filter: LP 515; size 'k'  
Filter system N2.1 for green excitation, excitation filter: BP 515-560, dichromatic  
mirror: 580, suppression filter:LP 590; size 'k'  
Filter system N2.1 for green excitation, excitation filter:BP 515-560, dichromatic mirror:  
580, suppression filter:LP 590; size 'k'  
Fluo illuminator L4/23  
C-mount adapter HC 1x for 1"-TV-cameras.

## **K. Specification for Double beam UV VIS spectrophotometer with date store**

### **SALIENT FEATURES**

#### **Measuring model :**

- Absorbance
- % transmittance
- Concentration (K factor, multi-standard)
- Multi component Analysis (Max. 10 components)

#### **Operating modes:**

- Single Wavelength
- Multi wavelength (Max. 15 wavelengths)
- Scan (with multi Scan facility) Max. 5 Scans
- Time Scan (with derivative facility)/Kinetic

The PC and the specially developed application software enhance the data processing ability and offer:

- Peak Pick/Point Pick/Valley Pick
- Expansion/Compression of Spectra
- 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> derivative
- Averaging of scans
- Subtraction of two scans
- Three levels of smoothening of spectra
- Ratio, Corrected ratio, two point and three point  
Net Absorbance useful for analysis of DNA/Protein.  
Recent Pentium PC's with SVGA card.

#### **Self-dignostic and Auto Wavelength Calibration (Auto Validation):**

**L. Specification for Electronic balance:**

- Accuracy (Readability) 0.0001g
- Maximum 220g
- Monolithic weighing technology
- Slide door provision
- Sartorius make

### **M. Specification for Deep freezer**

- Low Temperature upto - 40 °C
- Constructed of double wall, the exterior is made of sheet steel while the interior of stainless steel having PUF insulation
- Inside dimension 58x50x99 cm
- External dimension 70x66x159 cm
- Digital indicator cum controller
- Outer body of stainless steel with 1Q, OQ& PQ documentation
- Microprocessor base temp. central system with centromics interface for keeping hard copy of temp., time and date
- With servo voltage stabilizer 5 KVA ( one piece)

## **N. Specification for Computer table & chair**

Computer table - (Godrej make)

Model No. - Companion 9 (C9)

Dimensions (W) 900 mm x (D) 500mm x (H) 750 mm

Revolving Chairs with Arm – (Godrej make)

Model No. – 7202 R