

## DETAILS OF THE INSTRUMENTS AVAILABLE AT CENTRAL LABORATORY FACILITY OF ICAR-MGIFRI, MOTIHARI, BIHAR

Central Laboratory Facility of MGIFRI having five major sections as follows:

1. Section A: Animal Science
2. Section B: Fisheries Science
3. Section C: Soil-Plant-Water Analysis
4. Section D: Post-Harvest & Value Addition
5. Section E: Weather Observatory

**Section-wise list of available equipment is mentioned hereunder.**

| Section A: Animal Science |                                          |                                    |                                                             |
|---------------------------|------------------------------------------|------------------------------------|-------------------------------------------------------------|
| SN                        | Name of the instrument                   | Model No                           | Use of the instrument                                       |
| 1.                        | Refrigerator (Whirlpool, 300-liter cap.) | FF2D305D                           | Storage of samples, media, and reagents at low temperature. |
| 2.                        | IR Thermometer (Fluke)                   | -                                  | Non-contact temperature measurement.                        |
| 3.                        | Colony Counter-Digital (Hi media)        | LA660/621/0923                     | Counting microbial colonies on agar plates.                 |
| 4.                        | Handheld Digital colony counter          | LA663/533/05580                    | Manual counting of bacterial colonies.                      |
| 5.                        | Digital SPINOT (Tarson)                  | Model MC02                         | Micro-centrifuge for sample separation.                     |
| 6.                        | Spinwin (Tarson)                         | MC 01 CAT1020                      | Centrifugation of laboratory samples.                       |
| 7.                        | Loop sterilizer (Hi media)               | LA001/631/2306                     | Sterilization of inoculating loops.                         |
| 8.                        | Digital HOTOP (Tarson)                   | MC02 CAT No: 5040<br>S.N. D1601108 | Heating and mixing of samples.                              |
| 9.                        | Quartz distillation Unit                 | CAT No: 3365                       | Preparation of distilled/pure water.                        |

|                                     |                                           |                               |                                                                                                        |
|-------------------------------------|-------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------|
| 10.                                 | Hotplate (Genexy)                         | S.N. 03201579 CAT No: 1110/10 | Heating laboratory solutions and samples.                                                              |
| 11.                                 | Spinix (Tarson)-Vortex Shaker             | CAT No: 3020 Sl.No. 1801948   | Rapid mixing of liquid samples.                                                                        |
| 12.                                 | Deep freezer (Voltas) 500 lit cap.        | CVFHT500                      | Long-term storage of samples at very low temperatures.                                                 |
| 13.                                 | Trinocular Microscope                     | S.N. 10125465 iox-NE-620      | Microscopic examination and image capture.                                                             |
| 14.                                 | Electronic Milk Analyzer                  | S.N. HT22110541               | Analysis of milk composition and quality.                                                              |
| 15.                                 | Biochemistry Analyzer                     | EM 200<br>S.N. V2002468       | Estimation of biochemical parameters in samples.                                                       |
| 16.                                 | Laminar Flow                              | MAC-HLAF-4x2x2-JGJ            | Aseptic handling of cultures and samples.                                                              |
| 17.                                 | Elisa Reader                              | BL 580<br>S.N. CE12403001     | Measurement of ELISA assay absorbance values.                                                          |
| 18.                                 | Egg Incubator                             | -                             | Controlled incubation of eggs and microbial cultures.                                                  |
| 19.                                 | Automatic Fat Analyzer                    | Sox-6                         | Estimation of fat content in feed, fodder, food samples                                                |
| 20.                                 | Automatic Fiber Analyzer                  | FRB 6                         | Estimation of crude fiber, acid detergent fiber, neutral detergent fiber of feed, fodder, food samples |
| <b>Section B: Fisheries Science</b> |                                           |                               |                                                                                                        |
| 21.                                 | Samsung 324 lit. double door refrigerator | RT34M5538S8                   | To preserve and store samples and chemicals                                                            |

|            |                                            |                                             |                                                                                                                                                                                               |
|------------|--------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>22.</b> | Water multi-parameter analyser             | HANNA - 98194                               | To analyze water pH, temperature, dissolved oxygen, TDS, EC, salinity etc.                                                                                                                    |
| <b>23.</b> | Hot air oven                               | ESTO-110                                    | Drying of samples, moisture content analysis                                                                                                                                                  |
| <b>24.</b> | Deep freezer (-20 <sup>0</sup> C)          | Blue star CHFDD300D                         | Long term storage of fish, tissues samples etc.                                                                                                                                               |
| <b>25.</b> | Precision weighing balance (0.1 mg - 220g) | ACZET- CY204C & SHIMADZU – ATX224           | Precision weighing of samples and chemicals etc.                                                                                                                                              |
| <b>26.</b> | Spectrophotometer                          | Shimadzu UV VIS-1900                        | Analysis of water/ waste water/ food/ beverage/ chemicals/ biological samples etc. (quantitative determination of NO <sub>3</sub> , NO <sub>2</sub> , NH <sub>3</sub> & PO <sub>4</sub> etc.) |
| <b>27.</b> | Refrigerated centrifuge                    | WT-70BL                                     | To separate/ extract fluids, liquids based on density, settling suspended solids from liquid solutions and extracting soil or wastewater components for analysis                              |
| <b>28.</b> | BOD incubator                              | ET- B08                                     | To maintain a stable, fixed-temperature environment for water pollution testing and microbial culturing, etc.                                                                                 |
| <b>29.</b> | Trinocular microscope                      | Carl Zeiss, Primostar-3,<br>415500-0057-000 | Microscopic examination of microorganisms, plankton, gut contents, tissues etc.                                                                                                               |
| <b>30.</b> | Water parameter analyzer                   | HANNA HI- 9829                              | For the analysis of chlorides, ammonium combinations, pH, temperature, etc., of water/ wastewater samples.                                                                                    |

|     |                                                        |                                |                                                                                                        |
|-----|--------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------|
| 31. | Kjeldahl digestion cum distillation unit with fumehood | Borosil: BLFADI04KSC01OKBD 061 | For the analysis of nitrogen, crude protein in various samples (plants/ fish/ soil/ food grains etc.)  |
| 32. | Double-stage water distillation unit single phase      | Borosil: DDU4000               | Making reagent-grade distilled water                                                                   |
| 33. | Chemical Oxygen Demand (COD) digester                  | Borosil COD082                 | For the continuous & uniform heat to chemically break down organic matter in water or wastewater, soil |
| 34. | Gel documentation system                               | Imagene Innolab<br>Gel.PRIME   | To image and analyze nucleic acids (DNA/ RNA) and proteins suspended in polyacrylamide or agarose gels |

### Section C: Soil-Plant-Water Analysis

|     |                          |                          |                                                                                                                           |
|-----|--------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 35. | Double-distillation unit | GLASSCO<br>GLDD50AQ      | To produce ultra-pure, pyrogen free water                                                                                 |
| 36. | Single distillation unit | GLASSCO GLSD50AQ         | to produce high-purity distilled water                                                                                    |
| 37. | Digital burette          | Microlit E-burette TI-50 | precise liquid dispensing and manual titration                                                                            |
| 38. | Hot Air Oven             | DS-HAO-224               | dry heat sterilization and thermal processing of soil samples                                                             |
| 39. | BOD Incubator            | SDSI BOD Incubator       | to maintain a constant cool temperature (typically 20°C) required for environmental water testing and biological cultures |

|     |                                               |                                                  |                                                                                                      |
|-----|-----------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 40. | Digital Hot Water Bath                        | Water Bath SE133                                 | to indirectly warm samples at a constant, uniform temperature                                        |
| 41. | pH Meter                                      | NM-PH12                                          | Measuring pH of soil and water samples                                                               |
| 42. | EC Meter                                      | TDS meter LMCM20                                 | Measuring EC of soil and water samples                                                               |
| 43. | Orbital Shaker                                |                                                  | To <b>mix, blend, or agitate chemical and biological samples</b> inside vessels                      |
| 44. | Desiccator with vacuum pump set               | Pump- Value VE115N                               | Fumigation of samples for estimation of MBC, MBN, MBP etc                                            |
| 45. | Yoder Apparatus / Wet-sieve shaker            | YODER-8Y                                         | Soil aggregate analysis                                                                              |
| 46. | Mechanical Stirrer                            | KSI LS3258                                       | Mixing high-viscosity liquids, large volumes, and thick suspensions                                  |
| 47. | Digital Cone-penetrometer                     | DIK-5532                                         | Measurement of penetration resistance of soil in-situ                                                |
| 48. | Bouyoucos Hydrometer                          | ST-152H                                          | Soil texture analysis                                                                                |
| 49. | Refrigerated Centrifuge                       | BI-HSC-16K                                       | <b>Separate heterogeneous mixtures based on density while maintaining a strict, low temperature.</b> |
| 50. | Kjeldahl distillation set with digestion unit | KES 20L +KEL VAC (4) + CLASSIC DX VA TS (B) + DB | Measurement of N content in soil and plant samples                                                   |
| 51. | LINE QUANTUM Sensor                           | MQ-301X AND SQ-301X                              | Measuring spatial average of PAR                                                                     |
| 52. | GeoNDVI Sensor-Greenseekr                     | Make: Trimble                                    | Used for measuring crop vigor in terms of greenness                                                  |

**Section D: Post-Harvest & Value Addition**

|            |                                          |                                        |                                                                                                                                      |
|------------|------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>53.</b> | Double-Beam UV-Visible Spectrophotometer | Thermo Scientific, Genesys 180         | Used for estimation of phosphorus (P), sulphur (S), enzyme activities, and other analytical parameters.                              |
| <b>54.</b> | Micro Weighing Balance                   | Apolo Scales, WENSAR MAB-220T          | Used for precise weighing of soil, plant, and chemical samples for laboratory analysis.                                              |
| <b>55.</b> | Flame Photometer                         | Gentek India, FPM 128                  | Used for estimation of potassium (K), sodium (Na), and other alkali metals in samples.                                               |
| <b>56.</b> | Hot Air Oven                             | Jiotech<br>ON4-105                     | Used for drying, thermal processing, moisture determination, and sterilization of laboratory samples and equipment.                  |
| <b>57.</b> | Multiparameter Bench Meter               | Thermo Scientific Eutech, ECPC70043S   | Used for measuring pH, electrical conductivity (EC), total dissolved solids (TDS), and related parameters in soil and water samples. |
| <b>58.</b> | Rotary Shaker                            | Scitron, IS/SCI/RS/455×455/B DA/2/0011 | Used for mixing, blending, and agitation of chemical and biological samples in flasks and containers.                                |
| <b>59.</b> | Magnetic Stirrer cum Hot Plate           | Borosil, HLS200P                       | Used for simultaneous heating and stirring of solutions, including high-viscosity liquids and suspensions.                           |
| <b>60.</b> | Conductivity/ TDS Meter                  | Toshniwal, Toshcon TCM 15+             | Measuring EC and TDS in soil and water samples.                                                                                      |
| <b>61.</b> | Bench Refractometer                      | Hanna Instruments, HI96801             | Used for measuring Total Soluble Solids (TSS) in fruit juice and other liquid samples.                                               |

## Section E: Weather Observatory

|     |                              |                                                                                                                                                                                                   |                                  |
|-----|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 62. | Standard Weather Observatory | IS standard instrument, approved by IMD- Stevenson screens, USWB Pan evaporimeter, CS sunshine recorder, 3 depth soil thermometers, ordinary and self-recording rain gauge, Anemometer, Windvane, | For measuring weather parameters |
| 63. | ArcGIS                       | V 10.8.2                                                                                                                                                                                          | For spatial analysis of data     |