Accreditation No: LAB 146

Awarded to

SOIL AND WATER TESTING LABORATORY,
GULBURG ROAD, MODAL TOWN-A, BAHAWALPUR, PAKISTAN

The scope of accreditation is in accordance with the standard specifications outlined in the following page(s) of this document. The accredited scope shall be visible and legible in areas such as customer service, sample-receiving section etc and shall not mislead its users.

The accreditation was first time granted on **29-06-2018** by Pakistan National Accreditation Council.

The laboratory complies with the requirements of **ISO 17025:2017.**

The accreditation requires regular surveillance, and is valid until **28-06-2024.**

The decision of accreditation made by Pakistan National Accreditation Council implies that the organization has been found to fulfill the requirements for accreditation within the scope.

The organization however, itself is responsible for the results of performed measurements/tests.

PAKISTAN NATIONAL ACCREDITATION COUNCIL

07-08-2023
Date

SD
Director General

Testing Laboratory.

Accreditation Scope **SOIL AND WATER TESTING LABORATORY, GULBURG ROAD, MODAL TOWN-A, BAHAWALPUR, PAKISTAN**

Permanent laboratory premises [X]

Materials/Products tested	Testing field (e.g. environmental testing or mechanical testing)	Types of test/ Properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/ Internal method reference
Nitrogen Fertilizer	**Chemical testing**	**Ammonical Nitrogen (Single/ Mixture/ Solid / Liquid)**	**i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development Organization, New Delhi Pp 161-162 ii. Official methods of Analysis of AOAC International, 20th Edition, 2016, Method No.2.4.10 (AOAC Official Method 892.01), Fertilizer Chapter 2 Page 15. (SWTBWL/SOP/L3/01)**
Nitrogen Fertilizer	**Chemical testing**	**Nitrate Nitrogen (Single/ Mixture/ Solid / Liquid)**	**i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development Organization, New Delhi Pp 161-162 ii. Official methods of Analysis of AOAC International, 20th Edition, 2016, . Method No.2.4.10 (AOAC Official Method 892.01), Fertilizer Chapter 2 Page 15.**

07-08-2023
Date

Sd
Director

			(SWTBWL/SOP/L3/01)
Nitrogen Fertilizer	**Chemical testing**	**Total Nitrogen (Single/ Mixture/ Solid / Liquid)**	**i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development Organization, New Delhi Pp 161-162 ii. Official methods of Analysis of AOAC International, 20th Edition, 2016, . Method No.2.4.10 (AOAC Official Method 892.01), Fertilizer Chapter 2 Page 15. (SWTBWL/SOP/L3/01)**
Nitrogen Fertilizer	**Chemical testing**	**Ureic Nitrogen (Single/ Mixture/ Solid / Liquid)**	**i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development Organization, New Delhi Pp 161-162 ii. Official methods of Analysis of AOAC International, 20th Edition, 2016, . Method No.2.4.10 (AOAC Official Method 892.01), Fertilizer Chapter 2 Page 15/ (SWTBWL/SOP/L3/01)**
Phosphate Fertilizer	**Chemical testing**	**Citrate Soluble Phosphorus Estimation (Single/ Mixture/ Solid / Liquid)**	**Pakistan standard for Single Super phosphate (2ndedition) PS: 67-1996. PSQCA. Karachi. (SWTBWL/SOP/L3/02)**
Potassium fertilizer	**Chemical testing**	**Water Soluble Potassium (Single/ Mixture/ Solid / Liquid)**	**Pakistan Standard Specification for potassium Sulphate PS: 1501/2011 (2nd Revision) ICS: 65.080 PSQCA Karachi. Flamephotometer (SWTBWL/SOP/L3/03)**

Zinc Fertilizer	**Chemical testing**	**Water Soluble Zinc (Single/ Mixture/ Solid / Liquid)**	**Official Method of Analysis of AOAC International, 20th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30. (Atomic Absorption Spectrophotometry) (SWTBWL/SOP/L3/05)**
Zinc Fertilizer	**Chemical testing**	**Acid Soluble Zinc (Single/ Mixture/ Solid / Liquid)**	**Official Method of Analysis of AOAC International, 20th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30. (Atomic Absorption Spectrophotometry) (SWTBWL/SOP/L3/06)**
Iron Fertilizer	**Chemical testing**	**Acid Soluble Iron (Single/ Mixture/ Solid / Liquid)**	**Official Method of Analysis of AOAC International, 20th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30. (Atomic Absorption Spectrophotometry) (SWTBWL/SOP/L3/06)**
Copper Fertilizer	**Chemical testing**	**Acid Soluble Copper (Single/ Mixture/ Solid / Liquid)**	**Official Method of Analysis of AOAC International, 20th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30. (Atomic Absorption Spectrophotometry) (SWTBWL/SOP/L3/06)**
Manganese Fertilizer	**Chemical testing**	**Acid Soluble Manganese (Single/ Mixture/ Solid**	**Official Method of Analysis of AOAC International, 20th Edition, 2016 Method**

		/ Liquid)	**No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/(Atomic Absorption Spectrophotometry) (SWTBWL/SOP/L3/06)**
Boron Fertilizer	**Chemical testing**	**Water Soluble Boron (Single/ Mixture/ Solid / Liquid)**	**Official Methods of Analysis of AOAC International, 20th Edition, 2016, Method No 2.6.04 (AOAC Official method 982.01), Fertilizer Chapter 2, Subchapter 6, Page 31. (SWT BWL/SOP/L3/04)**
Chelated Zinc	**Chemical testing**	**Chelated Zinc (Single/ Mixture/ Solid / Liquid)**	**1. Vogel's Textbook of Quantitative Chemical Analysis, 6th Edition, J Mendham, R c Denney, J D Barnes, M J K Thomas 2. Official Methods of Analysis of AOAC International, 20th Edition, 2016, Method No 2.6.01 (AOAC Official method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30. (SWT BWL/SOP/L3/10)**
Organic Matter	**Chemical testing**	**Organic Matter (Single/ Mixture/ Solid)**	**i. AOAC International, 20th Edition, 2016, Method No 2.7.08 (AOAC Official method 967.05), Fertilizer Chapter 2, Subchapter 7, Page 54 ii. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development Organization,**

			New Delhi Pp 161-162.
Humic Acid	**Chemical testing**	**Humic Acid (Solid / Liquid)**	**ISO 19822:2018 https://www.iso.org/standard/66271.html.** **(SWTBWL/SOP/L3/08)**
Organic Matter	**Chemical testing**	**Cation exchange capacity (Single/ Mixture/ Solid)**	**Official Methods of Analysis of AOAC International, 20th Edition, 2016, Method No. 2.7.13 (AOAC Official Method 973.09), Fertilizers Chapter 2, Subchapter 7 Page 56.** **(SWTBWL/SOP/L3/09)**
Sulphur	**Chemical testing**	**Sulphur (Single/ Mixture/ Solid / Liquid)**	**i.Diagnosis and Improvement of Saline and Alkali Soils, USDA, Handbook Book No. 60 pp 146** **ii.Official Method of Analysis of AOAC International, 20th Edition, 2016 AOAC Official Method 980.02 Method No. 2.6.28 Page 39** **iii.Pakistan Standard Specification for SOP Fertilizer Grade PS:1501-2011 ® ICS:65.080 Pakistan Standards and Quality Control Authority, Karachi.** **(SWTBWL/SOP/L3/12)**
Chloride	**Chemical testing**	**Total Chlorides (Single/ Mixture/ Solid / Liquid)**	**i.Diagnosis and Improvement of Saline and Alkali Soils, USDA, Handbook Book No. 60 pp 146** **ii.Official Method of Analysis of AOAC**

			International, 20th Edition, 2016 AOAC Official Method 928.02 Method No. 2.6.09 page 33 iii.Pakistan Standard Specification for SOP Fertilizer Grade PS:1501-2011 ® ICS:65.080 Pakistan Standards and Quality Control Authority, Karachi (SWTBWL/SOP/L3/13)
Amino Acid in fertilizer	**Chemical testing**	**Total amino-acid (protein base) (Single/ Mixture/ Solid / Liquid)**	**Official Methods of Analysis of AOAC International, 20th Edition, 2016, Method No. 2.4.10 (AOAC Official Method 892.01), Fertilizers Chapter 2 Page 15 ii. FAO nutritional studies no 24(1970). iii. Pellet, L P and Young (1980). iv. Theymoli Balasubramanian, Sadasivam (1987). v. www.eplantsceinece.com**
Total P in BOP	**Chemical test method**	**Total P (Single/ Mixture/ Solid / Liquid)**	**Pakistan standard for BOP.PS:5295/2017 (2ndRev.), PSQCA. Karachi.**
Zn in Urea Zn	**Chemical/ashed method**	**Zinc in Urea (Single/ Mixture/ Solid / Liquid)**	**Bioactive Zinc in BNFF urea Zn PSQCA 5336/2015**

07-08-2023
Date

Sd
Director