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Accreditation No: LAB 153

Awarded to

**Soil and Water Testing Laboratory for Research,
Thoker Niaz Baig, Multan Road,
Lahore, 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 **02-07-2018** by Pakistan National Accreditation Council.

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

The accreditation requires regular surveillance, and is valid until **01-07-2024**.

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

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Director General

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Testing Laboratory.

Accreditation Scope of **Soil and water Testing Lab. for Research, Lahore, Pakistan.**

Permanent laboratory premises

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
Phosphate Fertilizer (Solid/ Liquid/ Mixed Solid/ mixed Liquid)	Chemical testing	Citrate soluble phosphorus estimation	Pakistan standard for Single Super Phosphate (2 nd edition) PS: 67-1996. PSQCA. Karachi
Bio Organic Phosphate (BOP) Fertilizer (Solid)	Chemical testing	Total phosphorus estimation	i. Pakistan standard Specifications for Potassium Nitrate, PS: 5341/2016. ii. Pakistan standard for Single Super Phosphate (2 nd edition) PS: 67-1996. PSQCA. Karachi
Potassium Fertilizer (Solid/ Liquid/ Mixed Solid/ mixed Liquid)	Chemical testing	Water soluble potassium estimation	i. Pakistan standard Specifications for Potassium Nitrate, PS: 5341/2016. PSQCA. Karachi ii. Testing Methods for Fertilizers (2013). Incorporated Administrative Agency. Food and Agricultural Materials Inspection Center. Japan.
Ammonical Nitrogen Fertilizers (Solid/ Liquid/ Mixed Solid/ mixed Liquid)	Chemical testing	Ammonical nitrogen estimation	i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development and Consultation Organization, New Delhi. Pp 161-162 ii. Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current through Revision, 4, 2011. Method No. 2.4.10 (AOAC Official Method 892.01), Fertilizers Chapter 2 Page 16
Nitrate Nitrogen Fertilizers (Solid/ Liquid/ Mixed Solid/ mixed Liquid)	Chemical testing	Nitrate nitrogen estimation	i. Pakistan standard Specifications for Potassium Nitrate, PS: 5341/2016. PSQCA. Karachi ii. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development and Consultation Organization, New Delhi. Pp 161-162 iii. Official Methods of Analysis of

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			AOAC International, 18 th Edition, 2005, Current through Revision, 4, 2011. Method No. 2.4.10 (AOAC Official Method 892.01), Fertilizers Chapter 2 Page 16.
Ureic Nitrogen Fertilizers (Solid/ Liquid/ Mixed Solid/ mixed Liquid)	Chemical testing	Ureic nitrogen estimation	<p>i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development and Consultation Organization, New Delhi. Pp 161-162</p> <p>ii. Official Methods of Analysis of AOAC International, 18th Edition, 2005, Current through Revision, 4, 2011. Method No. 2.4.10 (AOAC Official Method 892.01), Fertilizers Chapter 2 Page 16.</p>
Total Nitrogen Fertilizers (Solid/ Liquid/ Mixed Solid/ mixed Liquid)	Chemical testing	Total nitrogen estimation	<p>i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development and Consultation Organization, New Delhi. Pp 161-162</p> <p>ii. Official Methods of Analysis of AOAC International, 18th Edition, 2005, Current through Revision, 4, 2011. Method No. 2.4.10 (AOAC Official Method 892.01), Fertilizers Chapter 2 Page 16.</p> <p>iii. Pakistan standard Specifications for Potassium Nitrate, PS: 5341/2016. PSQCA. Karachi</p>
Water soluble Zinc Fertilizer (Solid/ Liquid)	Chemical testing	Water soluble zinc estimation	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current Through Revision, 4, 2011. Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Subchapter 6, Page 29-30
Acid soluble Zinc Fertilizer (Solid Mixed/ Liquid Mixed)	Chemical testing	Acid soluble zinc estimation	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current Through Revision, 4, 2011. Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Subchapter 6, Page 29-30
Water soluble Iron Fertilizer (Solid/ Liquid)	Chemical testing	Water soluble iron estimation	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current Through Revision, 4, 2011. Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Subchapter 6, Page 29-30

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Acid soluble Iron Fertilizer (Solid Mixed/ Liquid Mixed)	Chemical testing	Acid soluble iron estimation	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current Through Revision, 4, 2011. Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Subchapter 6, Page 29-30
Water soluble Copper Fertilizer (Solid/ Liquid)	Chemical testing	Water soluble copper estimation	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current Through Revision, 4, 2011. Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Subchapter 6, Page 29-30
Acid soluble Copper Fertilizer (Solid Mixed/ Liquid Mixed)	Chemical testing	Acid soluble copper estimation	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current Through Revision, 4, 2011. Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Subchapter 6, Page 29-30
Water soluble Manganese Fertilizer (Solid/ liquid)	Chemical testing	Water soluble manganese estimation	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current Through Revision, 4, 2011. Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Subchapter 6, Page 29-30
Acid soluble Manganese Fertilizer (Solid Mixed/ Liquid Mixed)	Chemical testing	Acid soluble manganese estimation	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current Through Revision, 4, 2011. Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Subchapter 6, Page 29-30
Amino acid in Solid, Liquid Fertilizer sample	Chemical testing	A.A in fertilizer(solid& liquid)	FAO nutritional studies no.24(1970) amino acid content of food and biological data on protein FAO Rome Pellet, L P and Young, V R 91980). Nutritional evaluation of protein foods UN Unvi Publ. Theymoli Balasubramanian and Sadasivam, S (1987) plant foods Hum Nutr 37 41 www. Eplantscience.com. nitrogen analysis by micro kjeldhal,s method amino acid & protein
Humic Acid in Potassium Humate Solid, Liquid Fertilizer sample	Chemical testing	Humic Acid Solid, Liquid Fertilizer	F.J. Stevenson, J. Environ. Quality, 1972, 1, 333. A.K. Fataftah, PhD Thesis, Northeastern University, Boston, 1997. T. L. Senn and A. R. Kingman, A Review of Humus and Humic Acid Research,

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Organic matter in Solid waste Compost	Chemical testing	O.M in fertilizer	Official Methods of Analysis of AOAC International, 18 th Edition, 2005, Current through Revision, 4, 2011. Method No. 2.7.08 (AOAC Official Method 967.05), Fertilizers Chapter 2, Subchapter 6, Page 54 Standard operating manual of oven/furnace.
Chelated Zinc in Solid, Liquid Fertilizer samples	Chemical testing	Ch-Zn in fertilizer	Official Methods of Analysis of AOAC International, 20 th Edition, 2016, Method No. 2.6.01 (AOAC Official Method 965.09), Fertilizers Chapter 2, Page 29-30
Boron liquid	Chemical testing	B in fertilizer	1. Testing method: Official Methods of Analysis of AOAC International, 20 th Edition, 2016, Method No. 2.6.04 (AOAC Official Method 982.01), Fertilizers Chapter 2, Subchapter 6, Page 31 2. Instrument required i. Spectrophotometer ii. Hot plate
Boron mixed micronutrient solid	Chemical testing		-do-
Boron mixed micronutrient liquid	Chemical testing		-do-
Chelated Iron in Single/Mixed fertilizer (Solid and Liquid)	Chemical testing	Chelated Iron in fertilizer	Vogel's Textbook of Quantitative Chemical Analysis, 6th Edition, J Mendham, R c Denney, J D Barnes, M J K Thomas Official Methods of Analysis of AOAC International, 20th Edition, 2016, Method No 2.6.16 (AOAC Official method 983.03), Fertilizer Chapter 2, Subchapter 6, Page 35
Chelated Copper in Single/Mixed fertilizer (Solid and Liquid)	Chemical testing	Chelated Copper in fertilizer	Vogel's Textbook of Quantitative Chemical Analysis, 6th Edition, J Mendham, R c Denney, J D Barnes, M J K Thomas .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
Chelated Manganese in Single/Mixed fertilizer (Solid and Liquid)	Chemical testing	Chelated Manganese in fertilizer	Vogel's Textbook of Quantitative Chemical Analysis, 6th Edition, J Mendham, R c Denney, J D Barnes, M J K Thomas

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			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
Magnesium in Fertilizer	Chemical testing	Magnesium in Fertilizer	Official Method of Analysis of AOAC International, 20th Edition, 2016 Method No.2.6.21 (AOAC Official Method 937.02), Fertilizer Chapter 2, Subchapter 6, Page -37 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/
Magnesium in Fertilizer	Chemical testing		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
Sulphur fertilizer solid, solid mixed, liquid and liquid mixed	Chemical testing	Sulphate in fertilizer	Diagnosis and Improvement of Saline and Alkali Soils, USDA, Handbook Book No. 60 pp 146 Official Method of Analysis of AOAC International, 20th Edition, 2016 AOAC Official Method 980.02 Method No. 2.6.28 Page 39 Pakistan Standard Specification for SOP Fertilizer Grade PS:1501-2011 ® ICS:65.080 Pakistan Standards and Quality Control Authority, Karachi

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