



ACCREDITATION DOCUMENT

F-06/02
Issue Date: 18/08/2020
Rev. No: 09
LAB 151

Accreditation No: LAB 151

Awarded to

**Soil & Water Testing Laboratory, For Research, Near Darul Aman,
Dera Ghazi Khan, 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 **09-07-2018** 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 **08-07-2024**.

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

22-09-2021
Date

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Director General

	ACCREDITATION DOCUMENT	F-06/02 Issue Date: 18/08/2020 Rev. No: 09 LAB 151
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Testing Laboratory.

Accreditation Scope of **Soil & Water Testing Laboratory, For Research,** Near Darul Aman, Dera Ghazi Khan, 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
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, 20 th Edition, 2016, . Method No.2.4.10 (AOAC Official Method 892.01), Fertilizer Chapter 2 Page 15/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 6.1 to 6.6
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, 20 th Edition, 2016, . Method No.2.4.10 (AOAC Official Method 892.01), Fertilizer Chapter 2 Page 15/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 6.1 to 6.6

22-09-2021

Date

-Sd-

Director

Nitrogen Fertilizer	Chemical testing	Total Nitrogen (Single/ Mixture/ Solid / Liquid)	<p>i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development Organization, New Delhi Pp 161-162</p> <p>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/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 6.1 to 6.6</p>
Nitrogen Fertilizer	Chemical testing	Ureic Nitrogen (Single/ Mixture/ Solid / Liquid)	<p>i. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development Organization, New Delhi Pp 161-162</p> <p>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/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 6.1 to 6.6</p>
Phosphate Fertilizer	Chemical testing	Citrate Soluble Phosphorus Estimation (Single/ Mixture/ Solid / Liquid)	<p>Pakistan standard for Single Super phosphate (2ndedition) PS: 67-1996. PSQCA. Karachi/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 7.1 to 7.8</p>
Phosphate Fertilizer	Chemical testing	Total Phosphorus (Single/ Mixture/ Solid / Liquid)	<p>Pakistan standard for Bio Organo phosphate fertilizer (2ndedition) PS: 5295/2017. PSQCA. Karachi/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 7.1 to 7.8</p>

	ACCREDITATION DOCUMENT	F-06/02 Issue Date: 18/08/2020 Rev. No: 09 LAB 151
---	-------------------------------	---

Potassium fertilizer	Chemical testing	Water Soluble Potassium (Single/ Mixture/ Solid / Liquid)	Pakistan Standard Specification for potassium Sulphate PS:1501/2011 (2 nd Revision) ICS: 65.080 PSQCA Karachi/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 8.1 to 8.6
Boron Fertilizer	Chemical testing	Water Soluble Boron (Single/ Mixture/ Solid / Liquid)	Official Methods of Analysis of AOAC International, 20 th Edition, 2016, Method No 2.6.04 (AOAC Official method 982.01), Fertilizer Chapter 2, Subchapter 6, Page 31/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 16.1 to 16.6
Humic Acid	Chemical testing	Humic Acid (Solid / Liquid)	ISO 19822:2018 https://www.iso.org/standard/66271.html / SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 9.1 to 9.6
Organic Matter	Chemical testing	Cation exchange capacity (Single/ Mixture/ Solid)	Official Methods of Analysis of AOAC International, 20 th Edition, 2016, Method No. 2.7.13 (AOAC Official Method 973.09), Fertilizers Chapter 2, Subchapter 7 Page 56/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 17.1 to 17.6
Organic Matter Solid	Chemical testing	C:N ratio (Single/ Mixture/ Solid)	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, 20 th Edition, 2016, . Method No.2.4.10 (AOAC Official Method 892.01), Fertilizer Chapter 2 Page 15/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 18.1 to 18.6

22-09-2021

Date

-Sd-

Director



ACCREDITATION DOCUMENT

F-06/02
Issue Date: 18/08/2020
Rev. No: 09
LAB 151

Organic Matter	Chemical testing	Organic Matter (Single/ Mixture/ Solid)	<p>i. AOAC International, 20th Edition, 2016, Method No 2.7.08 (AOAC Official method 967.05), Fertilizer Chapter 2, Subchapter 7, Page 54</p> <p>ii. Tandon HLS (Ed.) 2009. Methods of Analysis of Soils, Plants, Waters, Fertilizer and Organic Manures Fertilizer Development Organization, New Delhi Pp 161-162/ SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 11.1 to 11.6</p>
Zinc Fertilizer	Chemical testing	Water Soluble Zinc (Single/ Mixture/ Solid / Liquid)	Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 6.1 to 6.6
Zinc Fertilizer	Chemical testing	Acid Soluble Zinc (Single/ Mixture/ Solid / Liquid)	Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 7.1 to 7.6
Iron Fertilizer	Chemical testing	Water Soluble Iron (Single/ Mixture/ Solid / Liquid)	Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 8.1 to 8.6
Iron Fertilizer	Chemical testing	Acid Soluble Iron (Single/ Mixture/ Solid / Liquid)	Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-

22-09-2021

Date

-Sd-

Director

	ACCREDITATION DOCUMENT	F-06/02 Issue Date: 18/08/2020 Rev. No: 09 LAB 151
---	-------------------------------	---

			DGK/SOP-MACRO/02) 9.1 to 9.6
Copper Fertilizer	Chemical testing	Water Soluble Copper (Single/ Mixture/ Solid / Liquid)	Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 10.1 to 10.6
Copper Fertilizer	Chemical testing	Acid Soluble Copper (Single/ Mixture/ Solid / Liquid)	Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 11.1 to 11.6
Manganese Fertilizer	Chemical testing	Water Soluble Manganese (Single/ Mixture/ Solid / Liquid)	Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 12.1 to 12.6
Manganese Fertilizer	Chemical testing	Acid Soluble Manganese (Single/ Mixture/ Solid / Liquid)	Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 13.1 to 13.6
Chelated Zinc	Chemical testing	Chelated Zinc (Single/ Mixture/ Solid / Liquid)	i. Vogel's Textbook of Quantitative Chemical Analysis, 6 th Edition, J Mendham, R c Denney, J D Barnes, M J K Thomas ii. Official Methods of Analysis

22-09-2021

Date

-Sd-

Director

	ACCREDITATION DOCUMENT	F-06/02 Issue Date: 18/08/2020 Rev. No: 09 LAB 151
---	-------------------------------	---

			of AOAC International, 20 th Edition, 2016, Method No 2.6.01 (AOAC Official method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 17.1 to 17.6
Chelated Iron	Chemical testing	Chelated Iron (Single/ Mixture/ Solid / Liquid)	Official Methods of Analysis of AOAC International, 20 th Edition, 2016, Method No 2.6.16 (AOAC Official method 983.03), Fertilizer Chapter 2, Subchapter 6, Page 35/ SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 18.1 to 18.6
Amino Acid	Chemical testing	Total Amino Acid (Protein Base) (Solid / Liquid)	i. Official Methods of Analysis of AOAC International, 20 th Edition, 2016, Method No 2.4.10 (AOAC Official method 892.01), Fertilizer 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 / SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 16.1 to 16.6
Chelated Copper	Chemical testing	Chelated Copper (Single/ Mixture/ Solid / Liquid)	i. Vogel's Textbook of Quantitative Chemical Analysis, 6 th Edition, J Mendham, R c Denney, J D Barnes, M J K Thomas ii. Official Method of Analysis of AOAC International, 20 th Edition, 2016 Method No.2.6.01 (AOAC Official Method 965.09), Fertilizer Chapter 2, Subchapter 6, Page 29-30 / SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 19.1 to 19.6

22-09-2021

Date

-Sd-

Director

Chelated Manganese	Chemical testing	Chelated Manganese (Single/ Mixture/ Solid / Liquid)	<p>i.Vogel’s Textbook of Quantitative Chemical Analysis, 6th Edition, J Mendham, R c Denney, J D Barnes, M J K Thomas</p> <p>ii.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 / SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 20.1 to 20.6</p>
Magnesium Fertilizer	Chemical testing	Water Soluble Magnesium (Single/ Mixture/ Solid / Liquid)	<p>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/ SOPs Micronutrients SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 21.1 to 21.6</p>
Magnesium Fertilizer	Chemical testing	Acid Soluble Magnesium (Single/ Mixture/ Solid / Liquid)	<p>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/ SOPs Micronutrients SOPs Micronutrients (SWT-DGK/SOP-MACRO/02) 22.1 to 22.6</p>
Sulphur	Chemical testing	Sulphur (Single/ Mixture/ Solid / Liquid)	<p>i.Diagnosis and Improvement of Saline and Alkali Soils, USDA, Handbook Book No. 60 pp 146</p> <p>ii.Official Method of Analysis of AOAC International, 20th Edition, 2016 AOAC Official Method 980.02 Method No. 2.6.28 Page 39</p> <p>iii.Pakistan Standard Specification for SOP Fertilizer Grade PS:1501-2011 @ ICS:65.080 Pakistan</p>

22-09-2021

Date

-Sd-

Director

	ACCREDITATION DOCUMENT	F-06/02 Issue Date: 18/08/2020 Rev. No: 09 LAB 151
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			Standards and Quality Control Authority, Karachi / SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 14.1 to 14.5
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, 20 th 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 / SOPs Macronutrients (SWT-DGK/SOP-MACRO/01) 15.1 to 15.5

22-09-2021

Date

-Sd-

Director