

Soil & Water Testing Lab Analyst

(Registered under Agriculture Skill Council of India)

(ASCI Code AGR/Q8103)

Important Information

Date of the Skill Development Programme	Coming soon	
Minimum Educational Qualification	Graduate in Agriculture/ Science (Preference shall be given to agriculture graduate candidate)	
Minimum Age	18 Years	
Period	30 working days (240 hours)	
No. of Seats	20	
Course Fee	Rs.5,000 (Rs. 20,000 for sponsored)	
Course Fee Transfer details	Account Holder Name	Director, National Botanical Research Institute, Lucknow
	Branch name and Address	State Bank of India, NBRI, Lucknow
	Account number	30267652846
	IFS Code	SBIN0010173
Address for Sending Application Form	Dr. Lal Bahadur, Scientist (Soil Science), Botanic Garden, CSIR-National Botanical Research Institute, Rana Pratap Marg, Lucknow-226001, 0522-2297915, 9795875336, Email Id.- lb.yadav@nbri.res.in, lbyadav_2007@rediffmail.com	
Residential/ Non-residential	Non-residential	
Courses	<ol style="list-style-type: none">1. AGR/N8101 Adhere to Sanitation & Safety guidelines of the Lab2. AGR/N8108 Conduct Soil Physical & Chemical Analysis3. AGR/N8109 Conduct Water Sample Analysis4. AGR/N8110 Prepare Soil & Water Health Card5. AGR/N8111 Supervise & Train Lab Assistant in Good Lab Practices	

Soil is the most important input for human being. It's providing food, nutrition, environment and ecosystem services for the living organisms. Soil health is deteriorated due to continuous exhausting the nutrients from the soil through different crops without adding in balance proportion. Soil organic carbon is very essential for the microbial activities and nutrient transformations. It is also decreased very fast after green revolution and reached up to 0.4 per cent in the Indo-Gangetic Plains which is the alarming stage for the management immediately for our sustainable food production system. Total seventeen (17) essential elements are required for plant growth and also identify some nutrients which considered as beneficial for some plants. Supply of the nutrients in balance proportion on site specific by soil testing is essential for proper growth and quality of the plant through Soil Health Cards (SHC's). Keeping the importance of the soil health, United Nations declared the 'International Year of Soils' for the Year 2015 and International Union of Soil Science declared the International Decades of Soils '2015-2024'. It's urgent need to maintain soil health for the sustainable food production and ecosystem management. Some other factors

like salinity-sodicity is also affect the soils and ultimately the crops. Management of saline and sodic soil is also included in this course.

This course will be focused on the laboratory exercise on physico-chemical analysis, sodic soil management, soil fertility evaluation, water analysis, soil and water management, soil health cards etc.

Brief Job Description: The individual is responsible for conducting soil & water test and interpreting the soil analysis results in relation to the soil fertility management. S/he will prepare the 'Soil & Water Health Card' illustrating the desired cropping pattern, soil amendments & integrated nutrient management, irrigation & water management to be undertaken.

Personal Attributes: This job requires the individual to work specifically as per the Lab's protocol. Requires clarity and should be detail oriented. The individual should be laborious and should have inclination to new learnings, perform multiple tasks simultaneously, keep accurate records and comply with organization's policies.

Organizational Context

The individual on the job needs to know and understand:

1. Effective working relationships and how to work effectively with co workers, customers and seniors
2. Organizational needs and time management

Details of the Course:

1. AGR/N8101 Adhere to Sanitation & Safety guidelines of the lab

This unit is about understanding Lab layout and ensuring hygiene & safety at the lab.
National Occupational Standard

2. AGR/N8108 Conduct Soil Physical & Chemical Analysis

This unit is about conducting physical and chemical test of soil samples.

Soil Physical Analysis

Determine soil texture, Soil moisture percentage (water holding capacity), Bulk Density, Hydraulic conductivity of soil, Determine soil moisture content

Soil Chemical Analysis

Determine soil pH, EC, Organic Carbon, Calcium Carbonate (CaCO_3), Available Nitrogen, Available Phosphorus, Available Potassium, Sodium, Calcium, Magnesium, Boron, Sulphur, Determine Zinc, Copper, Iron, Manganese- DTPA method (AAS), Cation Exchange Capacity (CEC), Use mini-soil kits for analysis of macro & micronutrients
Determine gypsum requirement of soil

3. AGR/N8109 Conduct Water Sample Analysis

Determine water pH, EC, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Carbonates & Bicarbonates, Calcium, Magnesium, Sodium, Potassium, phosphorus, Nitrogen, Boron, Chloride, Sulphate

4. AGR/N8110 Prepare Soil & Water Health Card

This unit is about preparing soil & water health card detailing the cropping pattern, nutrient & fertilizer requirement for that particular soil.

Calculation of requirement of different elements

To be competent, the user / individual on the job must be able to:

1. Calculate the quantity of elements present post conducting various chemical test
2. Interpret the analytical results- the units of measurement should reliably indicate if a nutrient is deficient, adequate, or in excess (in some cases toxic to plants)
3. Calculate the nutrient required for soil fertility management Preparation of Soil & Water Health cards

To be competent, the user / individual on the job must be able to:

4. Recommend the fertilizer and micro-nutrients doses (kg/ha) based upon the soil & water test basis
5. Recommend the use of organic manure & green manure crops
6. Recommend any amendment (Gypsum/Pyrite/Lime), if required
7. Recommend integrated nutrient management practices to be adopted
8. Upload the Soil & Water Health card on the portal
9. Prepare Soil fertility map using GIS

5. AGR/N8111 Supervise & Train Lab Assistant in Good Lab Practices

This unit is about overseeing activities of the lab assistant and training him/her in good lab practices.

Supervise the activities of the Lab Assistant

To be competent, the user / individual on the job must be able to:

1. Guide the Lab Assistant to adhere to safety & sanitation guidelines of the lab
2. Oversee the data entry work undertaken by the assistant
3. Oversee smooth execution of sample registration and timely dispatch of soil & water health card

Train Lab Assistant in good lab practices

To be competent, the user / individual on the job must be able to train lab assistant to:

4. Calibrate equipments in accordance with written instructions
5. Prepare 1000 ppm solutions of different elements
6. Prepare standard solutions
7. Upload the Soil & Water Health card on the portal

Technical Knowledge

The individual on the job needs to know and understand:

1. Basic Terminologies: Standard Solution, Normal Solution and Normality, Molar Solution and Molarity, Molal Solution, Percentage composition by weight, Percentage composition by volume, Parts per million (ppm), Milli equivalent per litre, Titration
2. Method of preparation of standard solutions
3. Different types of chemicals/reagent, their use & safe handling
4. Different types of lab equipments and labwares & their working
5. Uses of different types of lab equipments and labwares
6. Safe Lab Operation Procedure
7. Different types of register to be maintained in the lab
8. Operation and maintenance of various lab equipment/instrument
9. Computer Knowledge
10. Information provided in the Soil & Water Health Card
11. Importance of Soil & Water Health Card

The details of the Skill Development Programme (SDP) is available on the CSIR-National Botanical Research Institute, Lucknow Website-<http://nbri.res.in/en/>



CSIR- National Botanical Research Institute
Rana Pratap Marg, Lucknow-226001



Title of the Course: Soil & Water Testing Lab Analyst (ASCI Code AGR/Q8103)

NSDC-REGNo-16408

Centre ID. - 103458

Trainer Id. - 69045

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Photograph
here

	Salutation (Mr. / Mrs. / Miss / Shri / Smt. Etc.)	First Name	Middle Name	Last Name
Candidate name				
Father's Name				
Mother's name				
Marital Status (Married/ Single)				
Date of Birth		Place of Birth (District)		
Aadhar Number				
Gender (M/F)				
Caste Category (SC/ST/OBC/General)				
Religion				
Permanent Address				
State		Pin Code		
Correspondence Address				
State		Pin Code		
Contact No.				
E-mail ID.				

Pre training Status	
Previous Experience Years..... Month
Course Fee (Rs. 5,000/ 20,000)	
Fee Paid by Self/ Govt.Organization/ Others	
NEFT Receipt Number and Date	
Candidate Bank Name	
Candidate Bank Account Number	
Candidate Bank Branch Address	
Candidate Bank IFS Code	
Disability type, If applicable	
Annual Household Income	

Educational Qualification (10th onwards):

Exam. Passed	Board/University	Year	Div/%	Subject

*The copy of receipt of fee paid and qualifying education certificate must be enclosed in the application form

Experience (if

any):.....

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Declaration:

I hereby declare that all the information's given above are true to the best of my knowledge and belief.

Place:

Date:

Signature of the candidate

