**Productive task**:

1. Survey of Village/Town.
2. Collection of different soil samples from your area.
3. Determination of moisture content of soil sample.
4. Identifying physical and chemical properties of collected soil samples.
5. Testing collected soil samples for
	1. Physical property
	2. Chemical property

**Concept**:

**Dear students,** we are going to start this topic directly through one simple assignment (Productive task). In this assignment you are suppose to do one simple survey in your village and visit some nearby farmers. Your survey report, you need submit to us in following given format. While doing assignment you need to refer supportive information given in this template as external links. Before you start your assignment, let’s first see guidelines for completing it!

**Tools**:

Plastic bags, khurpi, tags, spade and bucket (Avoid brass, bronze, or galvanized tools), soil sample in aluminium box, balance, drying oven, scrap papers, pen, data recording notebook and blank pages.

**Class-Age Group**: 14 and above.



*Open Education Resource*

**Virtual Open Schooling (VOS)**

*MODULE: AGRICULTURE &ANIMAL HUSBANDARY*

* *TOPIC- 1. SOIL*
* *Mrs. Pallavi R Shanbhag*

**Productive Task 1 & 2: Survey of village and collection of soil sample.**

Collect Soil Samples from five different fields (from your village) and submit it in following format.

(Task to be done in-house with study material provided in lesson plan)

**Objective:**

* Learner will be able to identify the type of his/her soil for selection proper crop as per soil type.
* Learner will able to do ‘soil testing’ for its physical property by using simple methods.
* Also understanding the Physical Properties
* Learner will able to do ‘soil testing’ for its chemical property by using simple methods.
* Study of effect of soil on growth of selected crop.

**Guidelines for completing assignment:**

* Collection of soil samples from 5 different fields from six different locations in same field.
* Taking photographs of each sample along with Farmer.
* Labeling soil samples for sending Soil Testing Laboratory
* Upload the Soil Testing Report Separately of Each Sample.
* Study the Crop Suitability for each field.
* Selection of one crop according to soil type.

Don’t get confuse with task, let’s see how to collect soil sample from crop field.

* Information required to collect soil sample is given in following document: for that please refer in the resource documents.

[Soil sample collection.docx](Soil%20sample%20collection.docx)

* **Ask the farmers about previous 3 crops grown in their respective fields.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Fields | Field 1 | Field 2 | Field 3 | Field 4 | Field 5 |
| Crops | **1** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |

Also collect some basic information (farmer’s point of view) about his soil – (Sample questions are given below) –

Interview Questionnaire:

1. Details of Farmer and Field

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Age: \_\_\_\_\_\_\_Years

Total Area owned: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_acres

Sample Collection Time: \_\_\_\_\_\_\_\_\_\_\_

Date of Collection: \_\_\_\_/\_\_\_\_/\_\_\_\_\_\_\_\_\_

1. Crops Grown in Field:
	1. Major Crops : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Minor Crops : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Opinion about Soil:
	1. Soil Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Soil Deficiency: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Soli Enriched with: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Previously Soil Testing done or not\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(If yes then check previous Report.)

1. If yes then external application of soil nutrients is given or not according to requirement?
	1. Organic Fertilizers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Inorganic Fertilizers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 If any other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Which external Application is given? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How will you describe your soil? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Upload the Photograph along with Farmer.

**Please note:**

* You are free to ask any other type of questions to farmers related to soil ……..
* Upload all 5 interview questionnaires with answers.
* Also take photograph along with farmer while conducting interview.

**Productive Task 3:**

Determine of moisture content of given soil sample by following formula and record the observation.

Material Required:

Soil sample in aluminium box, balance, drying oven

Formula:

$$Pw = W1 -W2÷W2×100$$

Pw: moisture % over dry basis or air dry basis

W1: Fresh or initial weight of sample

W2: oven dried final weight of sample have

* Calculate moisture content for each soil sample (which you have collected from 5 different fields) by using the above formula.

**Productive Task 4:**

Now, Identify the type of soil: \_\_\_\_\_\_\_\_\_\_\_\_\_\_and fill following table (for this you will need to do some simple soil tests in-house for which guidelines are given in lesson plan, given in following documents: for these, please refer in the resource documents).

[**Physical Properties of soil.docx**](Physical%20Properties%20of%20soil.docx)

[**Physical properties of soil.pptx**](Physical%20properties%20of%20soil.pptx)

|  |  |  |  |
| --- | --- | --- | --- |
| Physical Properties | Soil Texture | Soil Colour | Water Holding Capacity |
| Sample No. |
| 1 |  |  |  |
|  2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |

Analyze your collected sample for

* Soil texture as per flow diagram method (Use following external links for more information)- <http://www.ksre.ksu.edu/bookstore/pubs/MF2852.pdf>

<http://www.youtube.com/watch?v=IOyaBxj767s>

<http://www.landjudging.com/stieglerbook.htm>

Soil water holding capacity as per field capacity estimation method (Use following links for more information) - <http://www.youtube.com/watch?v=Xfx3bhDd7YY>

* **To get to know about chemical properties click on the link below:** information is given in following document: for that please refer in the resource documents.

[Chemical properties of soil.docx](Chemical%20properties%20of%20soil.docx)\*Solve all questions from link and upload the answers.

(To be done with help of soil testing lab/ KVK etc)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Chemical Properties | Soil pH | Organic Matter Content | Soil Salinity | Nutrient Availability | Water Content |
| Sample No. |  |  |  |  |  |
| 1 |  |  |  |  |  |
|  2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |

Before you go for actual soil testing (identifying its type, colour, water holding capacity)

* Let’s see some basic fundamentals of soil: Information is given in following document: for that please refer in the resource documents.

[Basic information about soil formation.docx](Basic%20information%20about%20soil%20formation.docx)

Can you tell me why soil is considered as main component for crop production?

To get to know all please read more on-

**Importance of soil in plant growth (Role/functions of soil in crop production)-**

* Soil provides necessary nutrients\* to plants.
* Soil provides support to plant roots.
* Soil provide necessary environment to different micro-organisms which helps in decomposition of organic matter and soil nutrient. (Due to microbial action nutrients converted in available form so plants)
* Soil holds water which is required for plant growth.
* Soil holds air which is necessary for plants and soil microbial activity.
* Soil helps in maintaining proper temperature for plant growth.

Note \* - Necessary nutrients for plant growth:

Plants need 16 essential nutrients for healthy growth and development. Most of these nutrients are provided by soil.

|  |  |  |
| --- | --- | --- |
| Main Nutrients | Secondary Nutrients | Micro Nutrients |
| Carbon (C), hydrogen (H), Oxygen (O) (available from air & water) Nitrogen (N), Phosphorus (P), Potassium(K) | Calcium (Ca), Magnesium (Mg), Sulphur (S) | Iron (I), Boron (B), Zinc (Zn), Copper (Cu), Molybdenum (Mo), Chlorine(Cl), Manganese (Mn) |

* To know more about Plant nutrients and its role and deficiencies click on the link below: information is given in following document: for that please refer in the resource documents.

[Plant nutrients & its role.ppt](Plant%20nutrients%20%26%20its%20role.ppt)

**Other Session:**

After conducting interviews tally all 5 reports and interview questionnaires.

Can you find out relation between soil and crop production?

Can you read report and analyze them?

**All the Best**