

Effect of growth on medicinal plants in different types of soil

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Abstract:

In the experiment conducted to observe the effect of growth of medicinal plants, five different types of soil were taken up. Five different types of seeds of medicinal plants were each planted in all these soils and their respective growths were observed for a period of one month. The observed results and conclusions were drawn and are presented herein. The experiment thus led us to an important aspect of environmental benefit that is selecting the proper soil for the proper growth of a plant. It also helped us to draw many more important conclusions which can be a boon to mankind. According to Ayurvedic text soil is one of the most important factors responsible for the growth of medicinal plants.

Introduction:

As per the need of the day and growing popularity of use of medicinal plants globally, requirement of medicinal plants is found to fall short to cultivation. We require quality and quantity of medicinal plants coming to the market. The market value of authentic medicinal plants is growing day by day. Keeping this in mind, and to make the medicinal plants cost effective and a business to farmers, this subject has been taken into mind. The research project can be developed state wise, country wise, etc.

According to Ayurveda, properties of medicinal plants depend on Desh ,Bhumi Rutu Kala etc. Buhmi (soil) is one of the most important factors responsible for the growth of plant. Properties of medicinal

plants mentioned in ayurveda as Rasa, Virya ,Vipaka, Guna depends on the soil in which the plant grows. The soil & water are responsible for the formation of rasa. (*su.su 37/12*)

Six rasa are found in the plant kingdom. On this analogy the Bhumi or land or soil should be of six types according to no. of rasa. (*su su 37/12*)

In this research project we have selected five types of soil to observe growth of selected five seeds.

Soil is having dominance of panchmahabhutas .Rasa of the dravyas also has contribution in their formation eg. Madhura rasa is a combination of prithvi & jala mahabhuta dominance.

Aims:

To observe the growth of medicinal plants in different type of soil

Objectives:

To see the effect of growth of medicinal plants in different types of soils.

To observe ph value of selected five types of soil.

To observe best type of soil for the growth of particular plant

Materials:

1. Five different types of soil (Murmad Mati ,Kali Mati ,Tamdi Mati ,Ksharyukta Mati ,Poyta Mati) were collected manually and filled in plastic gardening bags of similar size.
2. Five different type of seeds of medicinal plants were collected and planted.

A) Kshupa/shrub-Esabgole(*Plantago ovata*)

B) Herb-Ashwagandha(*Withania somnifera*)

C) Lata/Creeper-Kapikachhu(*Mucuna pruriens*)

D) Vruksha (soft seed)- Agasthi(*Sesbenia grandiflora*)

E) Vruksha(hardseed)- Arjuna(*Terminalia arjuna*)

Methods:

- Each soil sample was been labeled with date and name of the place.
- All the sample seeds were self collected. They were cultivated at the same time, at one place under similar conditions like sunlight, water supply etc.
- Growth of seeds were observed up to 30 days..

Observations:

Firstly the PH of all soil samples was carried out in the laboratory of S.S.A.M.& H. NASIK

It was observed that Ksharyukta and poyta Mati are basic in nature. While Murmad, Kali, Tamdi Mati are acidic in nature.

NO.	Type of soil	PH. value
1	Murmad Mati (Sandy soil)	6.48
2	Kali Mati (Black soil)	5.65
3	Tamdi Mati (Brown soil)	6.80
4	Ksharyukta Mati (Alkaline soil)	7.20
5	Poyta Mati (Alluvial soil)	7.99

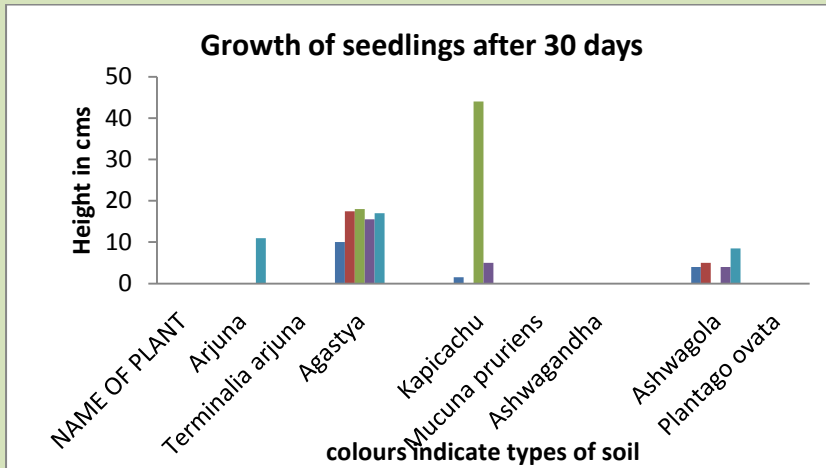
Growth of all samples was observed after 15 & 30 days

Observations after 15 days:

Name of plant	Murmad Mati/Sandy soil	Kali Mati (Black soil)	Tamdi Mati (Brown soil)	Ksharyukta Mati (Alkaline soil)	Poyta Mati (Alluvial soil)
Arjuna (<i>Terminalia arjuna</i>)	No Growth	No Growth	Best	Only Sprouting	Only Sprouting
Agastya (<i>Sesbania grandiflora</i>)	Not satisfactory	Best	Best	Best	Best
Kapicachu (<i>Mucuna pruriens</i>)	No Growth	No Growth	Best	No Growth	No Growth
Ashwagandha (<i>Withania somnifera</i>)	Best	Not satisfactory	Best	No Growth	No Growth
Ashwagola (<i>Plantago ovata</i>)	No Growth	Not satisfactory	Only Sprouting	No Growth	Best

Observations after 30 days:
Lengths of plants in cms after 30 days:

NAME OF PLANT	Murmad Mati/ Sandy soil	Kali Mati/ Black soil	Tamdi Mati/ Brown soil	Ksharyukta Mati/ Alkaline soil	Poyta Mati/ Alluvial soil
Arjuna <i>Terminalia arjuna</i>	No growth	No growth	No growth	No growth	11
Agastya <i>Sesbania grandiflora</i>	10	17.5	18	15.5	17
Kapicachu <i>Mucuna pruriens</i>	1.5	No growth	44	5	No growth
Ashwagandha <i>Withania somnifera</i>	No growth	No growth	No growth	No growth	No growth
Ashwagola <i>Plantago ovata</i>	4	5	No growth	4	8.5



Photographs showing growth of plant after 30 days



Results:

- 1) Plants that showed growth in 15 days was not proportionate to the growth in 30 days.
- 2) Aswagandha which grew initially in sandy soil and Brown soil died later and there was no growth on the 30th day.
- 3) Kapikachhu grew best on the 30th day in Brown soil, to the length of 44 cm
- 4) It was seen that, it is not necessary that a plant may grow to its full growth in the same soil.

5) When the seedling grows, it can be shifted to a proper soil.

Discussions and conclusions:

Some plants are particularly sensitive to acidity or alkalinity of the soil & will grow poorly if given the wrong condition. Murmad, Kali, Tambadi mati were found acidic & ksharyukta, poyta mati were found basic in nature.

Arjuna was found to grow only in alluvial soil after 30 days, this shows that Arjuna grew best in poyta mati (Alluvial soil)

11cms. We may conclude that, Arjuna is kashay rasa pradhan and kashay rasa has dominance of pruthavi and vayu mahabhuta, which is basic in nature, hence its growth was best observed in alluvial soil ,which is also basic in nature.

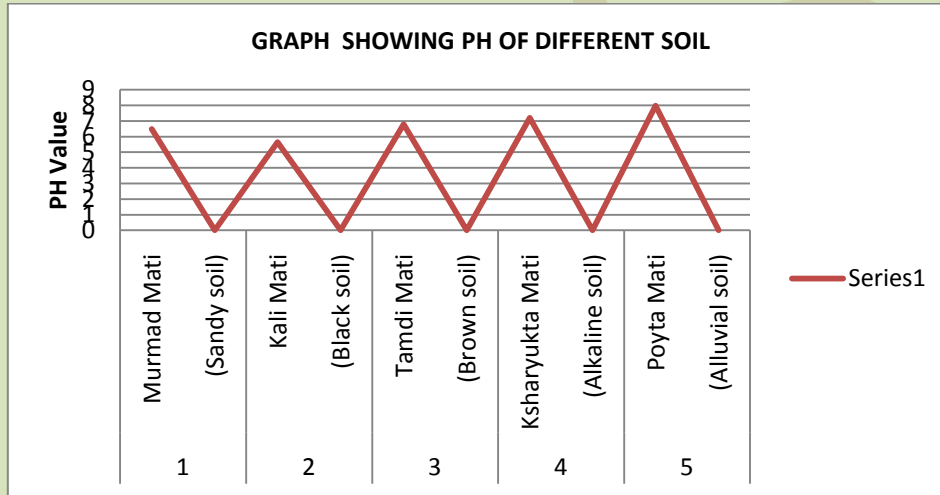
Agasthi was found to grown in all types of soil but it grew best in brown soil (Acidic soil) (18cms).

Kapikachhu was found to grow best in Brown soil (Acidic soil) (44 cms) and

grew a little in Sandy soil (1.5cms) and in Alkaline soil (5cms).

Ashwagandha was not able to grow in any type of soil.

Ashwagola was found to grow in all types of soil except Brown soil and best in poyta mati Alluvial soil i.e. . Basic in nature. (8.5cms)



As per Ayurvedic references Bhumi (soil) plays important role in the formation of properties like rasa, which plays an important role in therapeutic use.

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