

# Greenthumb Guide: Farming Tips

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**ABSTRACT:** Farming is a crucial aspect in our world. Farmers play an essential role in our country by providing food to others. Ancient civilizations such as the Indus Valley practiced agriculture between 3300 and 1300 BCE. India is a greenhouse country. Farmers are provided with a variety of benefits by the government, including an insurance plan, housing, and so on. Although agriculture has played the most important role in the Indian economy.

## I. INTRODUCTION

Green Thumb Guide is a website. It offers comprehensive information on crop production, crop protection, smart farming with agriculture, and other related services. Green thumb guide is fueled by dedicated specialists that dream of making agriculture more sustainable, both ecologically and economically, in a short period of time using technology. This is an agriculture website for farmers that will be extremely useful to the farming community. Agriculture is the practice of cultivating plants and livestock in order to provide facilities the human beings. In the rise of the sedentary human lifestyle agriculture was the key development. The cultivation of plant and food grains began years ago in order to provide food to the city population. Agriculture is the main need for the people to live in the society. Agriculture is the main source of livelihood, it provides a source for the people to earn. Most of the population in the rural areas is dependent on agriculture as their main source of income. Agriculture contributes significantly to a country's GDP that is the Gross Domestic Production of a country. By the passing of time, there are a number of revolutions that take place in order to improve agriculture throughout the world or a country. If we talk about agriculture, India has witnessed a number of revolutions, that is, the green revolution, yellow revolution, blue revolution, agriculture. Agriculture affects the biodiversity of a country depending upon agricultural activities. The major agricultural

products can be widely grouped into categories of food grains, fibers and raw materials. Food grains included the grains or cereals that have been used for eating.

### • Important process for better farming

- I) soil preparation
- II) crop selection
- III) fertilization
- IV) crop rotation
- V) record - keeping

### i) soil preparation:

Soil preparation is the most important process in farming when we choose better soil then we get better product. So always chose better soil.

### ii) Crop selection :

Choose according to the environment. What kind of plants should be grown in what environment?

### iii) fertilization:

Fertilization is a valuable resource. Pesticides have been created from fertilizers. If we utilize manure, the crop develops well and the larvae do not become dormant.

### iv) crop rotation:

Change according to the weather. Grow crops by looking at the soil .

### v) Record - keeping:

Always keep a record of your crops. The government provides different facilities.

### • 3.soil:

Soil is an important. The word soil is derived from Latin word "solum" meaning floor. To the farmer soil is that portion of the earth's surface, which he can plough and grow crops on, to provide him food and fibre for his own needs and that of his animals. Soil is a complex system made up of mineral matter, organic matter, soil water and

soil air. Therefore, it contains not only solid and liquid phases but also the gaseous phase.

#### **I) soil formation:**

Soil formed from rock is primarily the result of the combined action of climatic elements and living organisms on the parent rock over long period of time.

#### **II) Definition of weathering:**

It is mechanical process in which rocks disintegrate slowly and break up into small pieces, often into the constituent mineral grains without any change in chemical nature. Temperature and water are the most important climatic agents of physical weathering. Heating and cooling, wetting and drying tend to weaken rock structure. The minerals in rocks reacts with water and air that enter through small cracks. Changes in the minerals then set up stresses and strains. Which further weaken the rock structure. Thus gradually the rocks disintegrate and decay.

#### **i) Chemical weathering:**

It is responsible for changing the nature and composition of rocks and minerals. In this process, some minerals may disappear while other get changed into secondary products. The principle agents of chemical weathering are as under.

- a) Solution
- b) Hydration
- c) Carbonation
- d) oxidation

#### **ii) solution:**

Water is universal solvent and most of the rocks and minerals e.g. gypsum get dissolved in it and are lost. Similarly soluble minerals, compounds of potassium, sodium etc. are readily removed in solution.

#### **a) Hydration:**

Hydration means a chemical combination of water molecules with particular mineral. Minerals like feldspar, mica become hydrated, their volume increases and they become soft and easily weatherable.

#### **b) Carbonation:**

Carbonic acid is weak acid. It is important agent of chemical weathering. Conversion of calcite into calcium.

#### **c) Oxidation:**

In this process either there is an addition or removal of  $O_2$  from the mineral e.g. Change of ferrous to ferric oxide is an example of oxidation while the reverse action is reduction. Reduction takes place under anaerobic conditions.

#### **iii) Factors of soil formation:**

Weathering of rocks after gone through considerable changes from soil. Such transformation of rocks into agricultural soil may be termed as soil formation. Soil formation is a constructive process resulting in a soil profile. Soil is the result of the combined activity and reciprocal influence of parent material, climate, plant and animal, age of land and topography. These are termed as soil formers.

- a) climate
- b) parent material
- c) plant and animal
- d) topography

#### **iv) climate:**

Climate influence soil formation largely through rainfall and temperature. Rainfall through its erosive action directly affects on soil formation.

#### **a) parent material:**

The parent materials being the residual products of weathering contribute to minerals and other materials in soil formation.

#### **b) plant & animals:**

Vegetation exerts its main influence on soil formation through the amount and nature of organic matter.

#### **c) topography:**

Topography determines the extent of run off and drainage. Run off is large on steep slopes and small in level ones.



**Types of soil**

• **Fertilization:**

fertilizers are When a fertilizers contain and used for supplying a single nutrient, it is called as straight fertilizers. These are classified as:

used for the crop production as farm yard manure and other organic manures are not available in sufficient amount.fertilizers are inorganic material applied mainly to soil for supply of essential element.



**Classification:**

Fertilizers supplies a single or more than one nutrient. Based on fertilizers composition of nutrient, their chemical nature and commercial mode of supply, fertilizers are classified as straight, complex, and mixed fertilizers.

- i) straight fertilization :
  - a) Nitrogenous
  - b) Phosphatic
  - c) Potassic

**II) Nitrate fertilizer:**

Nitrogen is in oxidised form i.e.  $\text{NO}_3$

- a) Sodium nitrate ( $\text{NaNO}_3$ ) - 16% N.
- b) Calcium nitrate ( $\text{Ca}(\text{NO}_3)_2$ ) - 15.5%

ii) Fertilizers mixture (FM):

A mixture of two more straight fertilizer materials is referred to as fertilizer mixture. Sometimes, complex fertilizers containing two plant nutrients are also used in formulating fertilizing mixtures.

iii) Types of fertilizer mixture:

- a) open formula fertilizer mixture
- b) closed formula fertilizer mixture

iii) Open formula fertilizer mixture:

The formulae of such fertilizers in terms of kinds and quantity of the ingredients mixed are disclosed by the manufactures.

a) closed formula fertilizer mixture:

The ingredients of straight fertilizers used in such mixtures are not disclosed by the manufactures.

iv) Materials used in fertilizer mixture:

- a) Suppliers of plant nutrients.
- b)Conditioners.
- c)Neutralizers of residual acidity.
- d) filler.
- v) Suppliers of plant nutrients

These are the straight fertilizer added to supply the plant nutrients mentioned in the grade, thus are the primary materials most essential for preparing mixed fertilizerA mixture of two more

straight fertilizer material is referred to as fertilizers. Sometimes, complex fertilizers containing two plant complete nutrients are also used in formulating fertilizing mixtures.

a) Conditioners:

These are the organic substances which prepare the fertilizer mixture in good drilling condition and reduce caking eg. Tobacco.

b) Neutralizers of residual acidity

The substances used to neutralise the residual effects are known as neutralizers. For example, if the Nous fertilizers are used acidic in nature like Amm.

c) filler

A filler is the make weight material added to a fertilizer mixture. It is added to make up difference between the weight of the added fertilizers required to supply the plant nutrients and desired quantity of fertilizer mixture, such as sand, oil, ground coal, ashes, sawdust and other waste products.

- **Crop rotation:-**

Crop rotation is the practice of growing a series of different types of crops in the same area across a sequence of growing seasons. It reduces reliance on one set of nutrients, pest and weed pressure, and the probability of developing resistant pests and weeds. Growing the same crop in the same place for many years in a row, known as monocropping, gradually depletes the soil of certain nutrients and selects for a highly competitive pest and weed community. Without balancing nutrients and diversifying pest and weed communities, the productivity of monocultures is highly dependent on external inputs. Conversely, a well-designed crop rotation can reduce the need for synthetic fertilizers and herbicides using better ecosystem services from a diverse set of crops. Additionally, crop rotations can improve soil structure and organic matter, which reduces erosion and increases farm system. The practice also works to interrupt pest and disease cycles, improve soil health by increasing biomass from different crops' root structures, and increase biodiversity on the farm. Life in the soil thrives on variety, and beneficial insects and pollinators are attracted to the variety above ground, too. Crop choice is often related to the goal the farmer is looking to achieve with the rotation, which could be weed management, increasing available nitrogen in the soil, controlling for erosion, or increasing soil structure and biomass, to name a few.

a) Types of agriculture practice:

A man without food for three days will quarrel, for a week will fight and for a month or so will die. Agriculture is a branch of applied science. Agriculture is the science and art of farming including cultivating the soil, producing crops and raising livestock. It is the most important enterprise in the world. Over the years, agricultural practices have been carried out by small-holders cultivating between 2 to 3 hectare, using human labor and traditional tools such as wooden plough, yoke, leveler, harrow, mattock, spade, big sickle etc. These tools are used in land preparation, for sowing of seeds, weeding and harvesting. Modern agricultural techniques and equipments are not used by small land holders because these equipments are too expensive and difficult to acquire. By adopting scientific farming methods we can get maximum yield and good quality crops which can save a farmer from going bankrupt but majority of farmers still use primitive method of farming techniques due to lack of knowledge or lack of investment for utilizing modern equipment. The use of hand tools for land cultivation is still predominant in India because tractors require resources that many Indian farmers do not have easy access to. The need for agricultural mechanization in India must therefore be assessed with a deeper understanding of the small holder farmer's activities. There is a huge gap in technology adoption and implementation used with small and marginal farmers. Sustainable improvement in the livelihoods of poor farmers in developing countries depends largely on the adoption of improved resource conserving cropping systems. While most of the necessary components already exist, information on the availability and performance of equipment is lacking and effective communication between farmers and agricultural research and development department is unsuccessful.

### 1.2 Main Features of Indian Agriculture

(i) Source of livelihood: Agriculture is the main occupation. It provides employment to nearly 61% persons of total population. It contributes 25% to national income.

(ii) Dependence on monsoon: Agriculture in India mainly depends on monsoon. If monsoon is good, the production will be more and if monsoon is less than average then the crops fail

- **Irrigation :**

Agricultural, maintain landscapes and revegetate disturbed soils in dry areas and during periods of less than average rainfall. Irrigation also has other uses in crop production, including frost protection, suppressing weed growth in grain fields

and preventing soil consolidation. In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed or dry land farming. Irrigation Systems are also used for cooking livestock, dust suppression, disposal of sewage, and in mining. Irrigation is often studied together with drainage, which is the removal of surface and sub-surface water from a given area. Water is very important for plant life. It is an important ingredient in photosynthesis and translocation of nutrients. Irrigation is the artificial application of water to soil. Amongst the water resources 97% of water is in the oceans which is not useful for irrigation. The water holding capacity of soil is dependent on texture, structure and depth of soil. A soil requires irrigation when about 50% of available water has been used up by plant. Sandy soil has less water holding capacity. Hence irrigated highly but more frequently. Water content of soil at saturation is approximately double that of field capacity. The growth stages at which moisture stress, leads to higher yield losses is known as critical growth stage. Under limited water supply conditions irrigation is scheduled at critical growth stage only. Cotton has three sensitive growth stages i.e. square initiation, flowering, ball formation. Sowing speed rate, feel and appearance method, tensiometer, remote sensing are the methods for irrigation scheduling. Frequency of irrigation is affected by soil type, season and humidity, effective rainfall, stage of crop growth and crop. Flooding, basin, furrow, border, irrigation are the surface irrigation methods. Drip irrigation is subsurface irrigation method, sprinkler irrigation is overhead irrigation method.

#### i) IRRIGATION NECESSITIES:

The following are the factors that govern the requirement of irrigation. When the rainfall is less than the minimum requirement for the satisfactory growth of crops, the irrigation system is essential. When the rainfall is not evenly distributed during the crop period or throughout the cultivable area, the irrigation is extremely necessary. Some perennial crops like sugarcane, cotton, etc. require water throughout the major part of the year. But the rainfall may fulfill the water requirement in rainy season only. So, for the remaining part of the year, irrigation becomes necessary. In desert areas where rainfall is very scanty, irrigation is required for the development of agriculture.

#### ii) IRRIGATION REQUIREMENTS:

The economy of Assam is predominantly agricultural based, as about 85% of the population lives on agricultural activities for their livelihood.

The total geographical area of the state is 78,483 lakh hectares. Gross cropped area of the state is 41,59,977 hectares out of which net area shown is 28,10,597 hectare. In order to cope up with the food deficit caused by growth in population and to ensure food security, multiple cropping with irrigation support is highly necessary. Moreover due to vagaries of nature, global warming, ecological imbalance and erratic monsoon, the rainfall is not taking place at the right time

#### • **Location farming:-Housing :**

To consider proper environment situation is very important to farming pig successfully.

To farm pig farmers should make a pollution free environment. The pig industry needs a particular location. Without careful management of waste products, it may be a very dangerous problem for child pig. It is a great and profitable process to make manure from the disposal of the pigs. It is very useful for agriculture. The environment of the outside and inside should protect all times because it is very essential for farming pigs. Inside environment is important for their health. The farming area should be made clean and dry. During the cold month, a heat lamp must be put and kept out of the north wind and south winds. Farmers should use straw as bedding during the winter. During summer season, it is very need that the pig has a place to lay in mud in the pen. So, always farmers should be conscious about the pig's health and always try not to sweat them.

#### Feed & Fodder:- cultivation

As the major feeding ingredients for pig are by-products of rice processing units, our state has an advantage with regard to availability of raw materials for formulation of feed. Rice bran, rice polish, waste from chuda processing units, cashew processing units are utilised locally to make low-cost feed for pigs. Similarly, Vegetable waste will also be explored to collect unsold and rejected vegetable waste to convert them into pig feed. Farm will also cultivate azolla for incorporation in pig feed. In addition to this, concentrate feed will be procured from the market.

#### • **Seed :**

Seed fodder, fibre vegetable crops or seedling, tubers, bulbs, rhizomes, roots, cuttings, grafts, or other vegetatively propagated material. Good quality seed is of prime importance in agriculture. Seed should maintain their quality. Reap as you sow is an age old saying, which is true in scientific farming.

#### i) Parts of seed:

- a . The embryo: from it root and shoot of plant formed .
- b. Endosperm : storage portion of the seed which supplies the sprouting embryo with food in the period before the root and leaf begin to function.
- c. The bran : which forms the covering or protecting layers. Embryo is small and is attached to the base of the seed while endosperm make up the major portion of the seed. The seed coats are composed of a variable number of layers of cells composition .

#### I) How to identify a good quality seeds:

- a. Seed should have a very high and assured germination percentage and give vigorous seedling.
- b. it should be healthy, well developed and uniform in size .
- c. It should be dry and not mouldy and should contain 12-14% moisture.
- d. Seed should be free from admixture of seeds of other strains of same crop or other crop , weeds, dirt and inert material .

#### II) Treatment for seed:

Seed treatment refers to the application of fungicides, insecticides or any protectants to seed. So as to disinfect or prevent the carriage of insect on the seed .

Seeds are treated with some specific objectives before sowing. It is done to achieve the following benefits.

- a. To control disease: The disease may be seed borne or soil borne . Seeds are treated with fungicides or organo mercurial compounds like captan, agrosan, cerasan to control disease.
- b. To have convenience in sowing: special characteristics of seed like fuzz of cotton sowing is difficult . In some seed due to small size there is no even sowing such seeds are treated with cow dung to remove fuzz or mixed with fine sand or soil before sowing.
- c. To improve germination: seed treatment often improves the standard of germination through the control of seed surface mould.
- d. To increase nitrogen fixation in legumes .
- e. To break dormancy.

#### • Weather and climatic:

Climate is the most dominating factor deciding the suitability of crop to particular region. The yield potential of crop mainly depends on

climate. The success or failure of crops is closely related to weather.

i) Atmosphere: The gaseous envelope of invisible film of air surrounding the earth is called atmosphere. It is colorless , tasteless and odorless mixture of gases that surround the earth. A sample of pure air on average consists of 78% nitrogen, 21% oxygen, 0.9% argon and 0.03% CO<sub>2</sub> by volume. The lower part of atmosphere contains water vapour ranging from 0-5% by volume . It extends upto height of about 1600 km, but 99 percent of total mass of it is within 40 km from the earth . It become slowly thin or less dense with increasing altitude. The Mechanical mixture of gases in the atmosphere do not react with each other . Through the CO<sub>2</sub> content is less, it is important constituent of using part on the earth. Atmosphere is divided into four major layers.

ii) Troposphere :

8-18 km, All weather occurs in this layer form earth. It is thicker at the equator than at poles. It is denser part of atmosphere and contain 85% of its mass . All weather phenomena like clouds , fog, dew, rain occur in this layer. Main feature of troposphere here is that the temperature decreases with increases in altitude.

a) stratosphere: 19-50 km, it absorb heat from the sun in the form of ultraviolet radiation.

b) mesosphere : mesosphere 51-80 km, decrease in temperature with increasing altitude.

c) thermosphere : above 80km.

## II. CONCLUSION

Looking back on this project, the overall outcome of results to be observed. This can be evaluated by looking at how well our objectives were met. Our first objective is to create greenthum guide website for easy to understanding about farming and giving specially useful for all generations specially useful for who excited to farming. We will provide infomation about the crops in which we can irrigate the crops. this is website for farmeres that will be greatly beneficial to the farming community.

## REFERENCES

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