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Research Paper

The unscientific practice of cultivation and the degradation of soil productivity: appropriate procedure for cultivation of miscellaneous cropping on various types of soil

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ABSTRACT

Unscientific cultivation practices and the excessive use of chemical fertilizers have gradually reduced soil productivity across many agricultural regions. In developing and underdeveloped countries, many farmers have limited education and lack proper knowledge regarding the balanced application of fertilizers, pesticides, and bio-fertilizers. Consequently, crops often receive either excessive or insufficient nutrients, which negatively affects soil fertility and crop production. In addition, different crops require different soil types for proper growth. Sandy loam soil is suitable for crops such as potatoes, onions, and carrots because these crops grow beneath the soil surface. In contrast, clay loam soil is ideal for paddy and jute cultivation because it can retain sufficient water and provide strong support to crop roots. Experimental studies have shown that crop production can be significantly improved by adopting proper agricultural practices. One important method is repeated tillage of cultivation land before sowing. The land should be tilled two to five times and left exposed for 10–20 days, allowing atmospheric air and sunlight to penetrate the soil. This process improves soil fertility, moisture balance, and productivity. Another essential practice is the application of bio-fertilizers such as cattle dung before planting. Bio-fertilizers naturally enrich the soil, maintain ecological balance, and restore soil productivity that may decline due to excessive chemical fertilizer use. Furthermore, chemical fertilizers such as urea should be applied in small quantities at regular intervals instead of a large amount at one time, as crops cannot tolerate excessive doses simultaneously. Proper irrigation, regular weed removal, and timely soil management also play important roles in enhancing crop growth and increasing agricultural productivity.

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1. INTRODUCTION

Each country's economic growth depends on agricultural productivity since the fundamental demand of citizens is food which gets served from the cultivators. Agricultural growth depends on a lot of factors such as topography, depth of soil profile, fertility of soil, industrial growth, literacy rate and skill of cultivators, total and per capita land, irrigation facility, climate type, per capita income of cultivators etc. A country never progresses based on Industrial production because humans primarily need food. For instance, the UK and Japan are developed in technology and Industry. Nevertheless, these countries are deficient in agricultural productivity consequently these countries imported massive food grain from the neighbouring countries which resulted in millions of dollars of wealth escaping from the country each year. Henceforth, sufficient agricultural production increases self-reliance and surplus agricultural productivity acquires millions of foreign currencies.

1.1 Research Elaboration

In the developed, developing, and underdeveloped countries found exceedingly low productivity from the cultivation land. The per hectare production rate is extremely low. The miscellaneous type of soil is omnipresent in the enhancement of the fertility and productivity of soil. The fertility of soil is enhanced by several processes such as repeated tillage (above three to seven types) of the cultivation land. The atmospheric air especially nitrogen, oxygen & carbon-di-oxide and sun rays effortlessly penetrate within soil which is a fundamental element for enhancing productivity of soils. Due to repeated tillage of cultivation land, the larger soils fragment into smaller pieces consequently, the root of vegetables & plants easily enters within soils elements and absorbs requirement elements from the soils. Else, due to repeated (tillage again and again when all larger portions of soils fragment into smaller pieces) tillage interior soil lost moisture by sun rays which reduce the soil acidity.

All types of soils are not perfect for production of all types of crops. For instance, the black soil is perfect for the productivity of cotton but it is not perfect for jute or paddy crops. For cultivation of jute crops & paddy crops need loamy clay type soil or which soils appeared more than clay. The jute & paddy crop grows in wet cultivation land and the loamy clay type soils tackle the roots of paddy & jute crops. Moreover, this type of soil holds the water on the surface and the plants get sufficient nutrition from the soils.

In India and other developing & underdeveloped countries have seen extremely low production per hectare however the costs of cultivation are exceeding high. Consequently, the cultivators obtained extremely low profit from the farming and infrequently, they suffered loss from the cultivation. The more than cultivators unknown about accurate and appropriate procedure and method of cultivation. By observation and experience, it is known that India has great potential to increase huge production in agricultural sectors. We can increase productivity through several procedures and all types of soil are fertile if appropriate to the crop plant.

2. RESULTS AND DISSCUSION

The main parameters of the increase in production are timely utilized the chemical fertilizer especially Urea. Ordinarily, the Urea has a huge nitrogen consequently the crops & vegetables cannot tolerate more Urea. The major reason for low production of agriculture is huge concentratedly applied manure and [1]. Chemical fertilizer at one time. The vegetables and cropping plants never tolerate massive chemical fertilizer. By experiment and experience it is known that for sufficient growth plants need little

amount of chemical fertilizer and it needs to be applied five to ten times in a seven to fifteen days interval. It will sufficiently grow the crops and vegetables. As well as the grasses are harmful for crops and vegetables which need timely withdrawal from the farming land.

2.1 Several Processes Given Below for Paddy Crops

1. Before tillage the cultivation land applied adequate manure and cattle dung on cultivation land. The wet manure and cattle dung are more effective than the dry manure for increasing the fertility of soils.
2. Before planting of the paddy crops, the farming land is four to five times tillage and it is kept above five to seven days with sufficient water. It will decompose the manure & cattle dung with water and it merges with the soil elements. And before planting the paddy crops tillage again one time applied chemical fertilizers and then planting the paddy crop [2].
3. After twenty days of planting the paddy crops timely utilize a little amount of Urea (ten kg per hectare) and it applies in a ten to fifteen days interval above seven to ten times.
4. The regularly withdrawal the grasses from the farming land.

If these processes are accurately followed then double to triple time increases per hectare production of paddy crops [3].

The process of tomato cultivation: The tomatoes grow in low temperatures especially five degrees Celsius to twenty degrees Celsius. Although, for sufficient growth of tomato cultivation it needs ten degrees Celsius to fifteen degrees Celsius which is appropriate temperature for the growth of tomato crops.

The low to moderate precipitation, especially 25 cm to 40 cm rainfall is suitable for the growth of tomato crops. In the modern era, it grows based on irrigation where precipitation is exceedingly low. Several procedures are given below for rapid growth of tomato crops and huge production of tomatoes.

1. The tomato crops grow commonly in moderate acidic soils. The alkaline soils are not suitable for growing tomato crops.
2. Before planting the tomato crops need again and again tillage the cultivation land. The tillage needs above minimum three times to five times and it needs tillage five to seven days interval. Since concentration five times tillage the cultivation land in a one day is not appropriate to enhance the fertility of soils. Notwithstanding, after five to seven days interval of tillage of the cultivation land is exceedingly effective to enhance the productivity of soil. Since all portions of the soils can absorb the sun rays and others, the atmospheric air (Nitrogen, Carbon-di-oxides, Oxygen etc) effortlessly penetrate each place of soil elements which are essential elements for the growth of crops. Moreover, the larger soils fragment into various parts by again and again tillage consequently the biofertilizer (cattle's dung, manure etc.) merge with each element of soil and the numerous roots of crops extends in the depth of soils.
3. Chemical fertilizers, especially urea, need application of a minimal amount (two to three grams per crop and it give one to two inches far from the plant since it can harm the plant)) within a five to seven days interval and the concentration one time utilization of urea is harmful for crops. Since more application of urea can't tolerate the crops and it invert the crops. Henceforward, it needs ten to fifteen times application after a seven to ten days interval. Urea is exceedingly effective for sufficient growth of the crops but more application of urea can't tolerate the crops. To mention that urea is utilized after ten to fifteen days of planting the crops.
4. All grasses withdraw from the cultivation land through tillage after twenty days of planting the crops. Two times withdrawal all grasses from the cultivation land by tillage process since it loses the soils consequently sun ray and atmospheric air penetrate within the soils.
5. The irrigation needs to be sufficient and regular.

If these procedures are followed accurately and appropriately then tomato production will increase three to seven times.

Several Processes for cultivation of carrots, potatoes and onions: Which crops grow beneath soils, several procedures and methods are given below.

1. The sandy loamy, sandy silty and sandy clay type soils are suitable for these crops. Although, other types of soils are perfect if we tillage again and again which break the soil into minimal parts. The depth of tillage soils needs above 1-2 feet.
2. Before tillage the land needs huge bio-fertilizer such as cattle dung, decomposed plant etc on cultivation land. If the cultivation land is situated at riverine areas or wet land areas, then it needs a few days interval tillage since it absorbs the internal moisture by the sunrays from each portion of the soils which reduces the acidity of soils.
3. Before planting crops need application of chemical fertilizer except Uria and after planting the crops need irrigation.
4. After fifteen to twenty days of planting the crops need to be withdrawn all grasses by hand machine or other. Cultivators can apply Uria ten kg to fifteen kg per hectare which is three to four times needed after a fifteen-day interval.
5. Insecticide or poison apply, if it is required.

2.2 Several Processes of Wheat Cultivation

1. Before planting the crops need three to five times again and again tillage after a four days interval. Since each part of the soils are fragmented into miscellaneous parts and the atmospheric air & sun rays enter each portion of soils which comprehensively enriches the soil.
2. Before tillage of the cultivation land, it needs to sufficiently apply bio-fertilizer and chemical fertilizer except urea.
3. After fifteen to twenty days, Cultivators need to apply urea during the irrigation period. It needs 8-12 kg per hectare. After fifteen to twenty days, the interval again needs to apply urea during the irrigation period at the same amount 8-12 kg per hectare. After fifteen to twenty days, the interval again needs to apply urea during the irrigation period at the same amount 8-12 kg per hectare. It needs a total of four to six times to apply to urea during the irrigation period and it needs the interval fifteen to twenty days.

2.3 To Mention Two Things Here

1. Any crops can't tolerate more Urea and if anyone applies more urea on crops then all crops gradually die. However, the little amount of urea again and again applied after a few days' interval is exceedingly effective to grow any crops.
2. If any cultivation land appears adequate bio-fertilizer, the Urea is more effective for the growth of crops.
3. Wheat crops can tolerate up to 4-degree Celsius temperature notwithstanding this crop can't tolerate more rainwater or irrigation water. But it needs minimum four times irrigation and maximum six-time irrigation where there has not occurred any rainfall. And after 80 days or before flowering of Paddy crops need irrigation since this irrigation is extremely precious for increased production of paddy crops.

3. CONCLUSION

If this process and suggestion applies to other crops, then it increases the production rate of each crop. If cultivators follow this procedure appropriately and accurately then two times increase paddy production and three to seven times increase tomato production and else, two times increase wheat production. These processes are favourable to the environment and it isn't negatively harmful for human health.

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Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Zamsuddin SK	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓		✓

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article.

Informed Consent

All participants were informed about the purpose of the study, and their voluntary consent was obtained prior to data collection.

Ethical Approval

The study was conducted in compliance with the ethical principles outlined in the Declaration of Helsinki and approved by the relevant institutional authorities.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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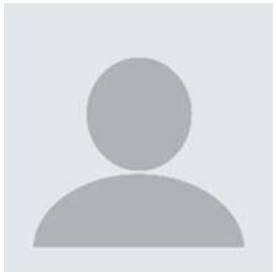

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