

CULTIVATION ON BARREN LAND

Arpit Sah¹, Divya Potkule², Aniket Nake³, Ashish Biswal⁴, Maithili Jayale⁵,
Srushti Dindokar⁶, Prof. Manasi Ghamande⁷

^{1,2,3,4,5,6,7} Department of Science and Humanities,
Vishwakarma Institute of Technology, SPPU-Pune (India)

ABSTRACT

Healthy soil is the foundation upon which sustainable agriculture is built. Farming practices differ mainly based on soil inputs and crop protection measures. In conventional chemical farming practice, indiscriminate use of chemical fertilizers like Vermi compost, Madep and pesticides destroy the beneficial soil micro flora change the soil nature and also contribute to the high crop production cost. This papers comprise of the observation of growing plants with the help of natural fertilizer. We have used Mimosa Pudica (Shameplant), Azadirachta indica (Neem) and Barbadensis (Aloe vera) plant. We tried various experiments which mostly showed positive effect and some drawbacks have also been observed. By the end of the Thesis we will come to know about the pros and cons of natural fertilizer used on plants.

Keywords: Azadirachta indica, Barbadensis, Healthy soil, Mimosa Pudica,

I.INTRODUCTION

Conventional Chemical farming is facing either reduced production or increased costs, or both. pollution by chemical fertilizers and pesticides is posing a serious threat worldwide. Their continuous usage may destroy the beneficial soil micro flora. Intensive use of inorganic chemical fertilizers and pesticides resulted in the contamination of soil, surface and ground water with harmful chemicals and accumulation of heavy metals Cadmium and lead are the elements of major concern due to their accumulation potential and toxic effects in the plants and animals The plant growth promoting rhizobacteria (PGPR), mycorhyza and cyanobacteria promote plant growth and also protect them against pathogens. Natural fertilizers help in proper nourishment of the plant which also keeps the plant pure.

II.PRACTICE

Soil microorganisms play an active role in soil fertility as they involve in the cycle of nutrients like carbon and nitrogen, which are required for plant growth. They are responsible for the decomposition of the organic matter entering the soil and therefore in the recycling of nutrients in soil. PGPR, cyanobacteria and mycorrhiza constitute soil microorganisms. They participate in decomposition, mineralization and nutrient supply to the plants. Phosphate Solubilizing Bacteria (PSB) and mycorrhizal fungi can also increase the availability of mineral nutrients (phosphorus) to plants. Nitrogen-fixing bacteria can transform nitrogen in the atmosphere into

soluble nitrogenous compounds useful for plant growth. These microorganisms, which improve the fertility status of the soil and contribute to plant growth. They may also show antagonism (biological control) to pathogens. Soil is saturated with all the nutrients, but these are in the non-available form to the roots of the plants. Beneficial micro-organisms in Jeewamruth convert the nutrients in non-available form into dissolved form, when it is inoculated to the soil. Jeewamruth is either sprayed/sprinkled on the crop field or added to the irrigation tank in regular interval of 15 days until the soil is enriched.

Water 20 litre, cow dung 1 kg., cow urine 2-3 litre, Jaggary, a handful of soil. This mixture is well stirred for few days and sprayed on crop for every fortnight. It is shown that this mixture facilitates the growth of beneficial microorganisms. Application of Jeevamruth facilitated the growth of beneficial soil microorganisms and improved crop yield.

C:N ratio in Cow dung manure is an indication that it could be a good source of protein for the microbes which involved in decomposition of organic matter. Manure and urine raise the pH level and accelerate the decomposition of organic matter and termite activity. Dung increases pH, CEC, total N, organic C, loss on ignition, and exchangeable Mg and Ca. It decreased sulphate sorption. Moreover, cowdung manure plays a significant role in maintaining the nutrient status of the plant.



Azadirachta indica (Neem) planted on a barren land.



After a month, this is the progress of the plant.

III.OBSERVATION

To check the effect of natural fertilizers we planted 2 saplings. In first 15 days it was observed that fertilizer in prepared. After planting the saplings, it had steady growth. Ample of water and sun helped the plant grow fast. In the experiment of playing music on plants like Mimosa pudica it was observed that plants grow rapidly while hearing classical songs and slowly while hearing rock type music. Caffeine also has a good effect on the plant in fast growth. Grounded coffee helps in fast nourishment of plant with no chemical effect.

IV. CONCLUSION

Indiscriminate use of chemical fertilizers and pesticides posed a threat to the soil and environment. Many investigations have shown their adverse effects of change in soil nature, soil contamination, ground water pollution and decrease in soil micro flora etc. natural farming, with the minimum external inputs and by application of supplements like Jeevamruth, improves the soil fertility by increasing the soil micro flora and available nutrients.

Cow dung is very effective manure for reducing the bacterial and fungal pathogenic disease. It shows positive response in separation of mycelial growth of plant pathogenic fungi like Fusarium solani, etc. Cow dung as organic manure increase vigour of plants and reduce the disease incidence of root, rots in cotton. Thus application of cow dung in proper and sustainable way can enhance not only productivity of yield, but also minimizes the chances of disease.

V. ACKNOWLEDGEMENTS

We thank Hon. Director Dr. Rajesh Jalnekar, he has been an inspiration for the college and has motivated all of us in working hard for this project. Also we thank HOD Dr. C.M. Mahajan and our mentor and guide Prof. Manasi Ghamande, she guided us in the right direction and fed us with important knowledge. And everyone one else associated with this project.

REFERENCES

- [1.] THE ORGANIC FARMING MANUAL
- [2.] SEPP HOLZER'S PERMACULTURE
- [3.] THE NEW ORGANIC GROWER