

Cultivation of Banana Plant From Agriculture Waste, Goat Manure & Organic Fertilizer

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ABSTRACT

The experiment was conducted in farm of Nagansur, Taluka- Akkalkot, District Solapur during 25 July 2015 to 25 May 2016 to study effect of Agriculture Waste, Goat Manure & Organic Fertilizer on Banana plant growth, fruit yield. The experiment was laid out by pit formation in the farm. The observation was recorded periodically on growth of plant in all three pits named A, B, and C. The height of plant A after 120 day it measure 88 cm. The height of plant B after 120 day measure 143 cm. The height of plant C after 120 day measure 107 cm. From this it was conclude that the organic fertilizer is more effective than the chemical fertilizer. The Banana plants receiving the recommended dose of fertilizers along with bio-fertilizers recorded plants were superior in growth; fruit was more than other plants. The treatments with bio-fertilizers recorded higher values compare to without bio-fertilizers and the organic fertilizer gives more amount of product yield. And also increase the soil fertility for long time the chemical fertilizer casus various disease

Keywords : Agriculture waste, Goat manure, Bio-fertilizer, Nagansur, Banana

I. INTRODUCTION

The banana plant is the largest herbaceous flowering plant. All the above-ground parts of a banana plant grow from a structure usually called a corm. Plants are normally tall and fairly sturdy, and are often mistaken for trees, but what appears to be a trunk is actually a false stem or pseudo stem. Bananas grow in a wide variety of soils, as long as the soil is at least 60 cm deep, has good drainage and is not compacted. The leaves of banana plants are composed of a stalk (petiole) and a blade (lamina). The base of the petiole widens to form a sheath the tightly packed sheaths make up the pseudo stem, which is all that supports the plant. The edges of the sheath meet when it is first produced, making it tubular. As new growth occurs in the centre of the pseudostem the edges are forced apart. Cultivated banana plants vary in height depending on the variety and growing conditions. Most are around 5 m (16 ft) tall, with a range from 'Dwarf Cavendish'

plants at around 3 m (10 ft) to 'Gross Michel' at 7 m (23 ft) or more. Leaves are spirally arranged and may grow 2.7 meters (8.9 ft) long and 60 cm (2.0 ft) wide. They are easily torn by the wind, resulting in the familiar frond look.

Organic fertilizers are derived from animal matter, animal excreta (manure), human excreta, and vegetable matter (e.g. compost and crop residues). Naturally occurring organic fertilizers include animal wastes from meat processing, peat, manure, slurry, and guano. In contrast, the majority of fertilizers used in commercial farming is extracted from minerals (e.g., phosphate rock) or produced industrially (e.g., ammonia). Organic agriculture, a system of farming, allows for certain fertilizers and amendments and disallows others; that is also distinct from this topic.

A Bio fertilizer is a substance which contains living microorganisms which, if applied to seeds, plant

surfaces, or soil, colonize the rhizosphere or the interior of the plant and promotes growth by increasing the supply or availability of primary nutrients to the host plant. Bio-fertilizers add nutrients through the natural processes of nitrogen fixation, soluble phosphorus, and stimulating plant growth through the synthesis of growth-promoting substances. Bio-fertilizers can be expected to reduce the use of chemical fertilizers and pesticides. The microorganisms in bio-fertilizers restore the soil's natural nutrient cycle and build soil organic matter. Through the use of bio-fertilizers, healthy plants can be grown, while enhancing the sustainability and the health of the soil. Since they play several roles, a preferred scientific term for such beneficial bacteria is "plant-growth promoting rhizobacteria" (PGPR). Therefore, they are extremely advantageous in enriching soil fertility and fulfilling plant nutrient requirements by supplying the organic nutrients through microorganism and their byproducts. Hence, bio-fertilizers do not contain any chemicals which are harmful to the living soil.

Present study was done to improve method of cultivation of banana crop by using agriculture waste, Goat manure and organic fertilizer. In India, about 80% of the farmers are using chemical fertilizers for production of any crop. Chemical fertilizers affect human health. The organic fertilizers are cheap in rate, easily available and these fertilizers improve soil fertility for long time and also do not affect human health. India is the agriculture country. We produce more quantities product yield with using chemical fertilizer but it is not healthy to human health. Chemical fertilizer is affects on our health and also causes many disease including hereditary disorders. This work can promote our Indian farmers to use bio fertilizer and organic fertilizer.

Study area:

The study was done in the Nagansur, Taluka-Akkalkot, District-Solapur. Nagansur is a village at south of Akkalkot Taluka with population of 15000. The main source of economy of the village is agriculture, that to grapes farming is the main occupation, it had 500 acres of grape farm. The geographical coordinates i.e. latitude and longitude of Nagansur is 17.392994 and 76.165217 respectively

II. METHODS AND MATERIAL

Formation of Pits:

This work is on field work, it was done from date 25 July 2015 to 25 May 2016 for whole study. In this first three months were for collection of a soil sample and analysis of soil parameters as like N, P, K, pH of soli sample. After that prepared 3 pits which were named as pit A, pit B, pit C. The width and depth of pit's are 1.5 feet by 1.5 feet respectively. Then each pit was filled with about 2 kg black soil and Pit B filled with addition of agriculture waste & goat manure. The pit C has contains only black soil. Observation was taken for minimum and maximum temperature. After the observation of temperature each Pit contains following matter. Pit A contains: only black soil

Pit B contains: agriculture waste + goat manure + organic fertilizer

Pit C contains: only black soil

After that the decomposing culture is mix in the pit B for decomposition of agriculture waste & organic matter. In 4-5 day gap continuous supply the water for well mix of decomposing Culture. After 30 day complete agriculture waste is decomposed now it is ready to plantation.

How to prepare decomposing culture solution:

Take 200 gram of decomposing bacteria and dissolve 20 liter of water this solution is kept 20 hour for totally dissolve of decomposing bacteria After 20 hour totally dissolve and it is ready to use. In this way prepare of decomposing solution in pit B of plant were kept approx 5-7 kg of goat manure & cow dung in Pit C of plant were kept about half kg of chemical fertilizer it include DAP, Urea & some micro nutrient in pit A nothing of fertilizer are use either chemical fertilizer or organic fertilizer.

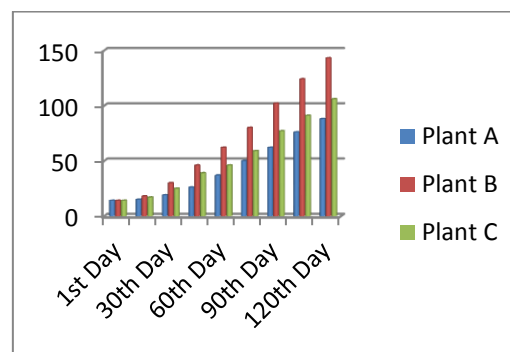
Plantation:

The plantation was done on 29 August 2015, with each plants are equal in height 14 cm and each plant having 4 green leaves. The height and width of each plant was equal. As the plantation day 10 liter of water supplied to each plants, after the plantation the continue observation of plants were done periodically and regularly after 2 day interval 15 liter water is supply of each plant. For plant B after the 60 day re-again supplied of bio-fertilizer. And also taken care of plants for any fungal or bacterial infection and any other injury.

Observation of Growth of the Plant:

Day	Plant A (cm)	Plant B (cm)	Plant C (cm)
1 st Day	14	14	14
15 th Day	15	18	17
30 th Day	19	30	25
45 th Day	26	46	39
60 th Day	37	62	46
75 th Day	50	80	59
90 th Day	62	102	77
105 th Day	76	124	91
120 th Day	88	143	107

Graphical Representations Growth of Plant A,B,C.



III. RESULT & DISCUSSION

The height of plant A after 120 day it measure 88 cm. The height of plant B after 120 day measure 143 cm. The height of plant C after 120 day measure 107 cm. So I observed that the variation of height of plant. The height of plant B is measured longer than plant C than plant A. And the plant B having more green leaf. For the plant B I supply only organic fertilizer & plant growth is very fast.

IV. CONCLUSION

On the basis of plant growth in the present investigation, it was conclude that the organic fertilizer is more effective than the chemical fertilizer. We used more amount of bio fertilizer, organic fertilizer for plant growth. The Banana plants receiving the recommended dose of fertilizers along with bio-fertilizes recorded plants were superior in growth, fruit was more than other plants. The treatments with bio-fertilizers recorded higher values compare to without bio-fertilizers and the organic fertilizer gives more amount of product yield. And also increase the soil fertility for long time the chemical fertilizer casus various disease.

V. REFERENCES

1. Suresh Patidar, Himanshu Patidar. A Study of Perception of Farmers towards Organic Farming. Volume 4, Issue 3, March 2015. page no 2319 – 4847.
2. Baiea, M.H.M. and EL-Gioushy, S. F. Effect of some Different Sources of Organic Fertilizers in Presence of Bio-fertilizer on Growth and Yield of Banana cv. Grande Naine plants. Volume: 04 Issue : 04 Oct.-Dec. 2015. Pages: 745-753.
3. Hema Rajulapudi. effect of organic manures and biofertilizers on growth, yield and fruit quality of banana cv. grand naine (aaa). september, 2013. vhm/11-04.
4. Yohannes, Ogbalidet and Anthony Keith Thompson. Challenges for certified organic Banana production in Eritrea.2010.tree and forestry science and biotechnology.special issue 2.page no1-6
5. Balachandran. V. research center of kerala a study of organic forming .paper no 82.