

Effects of Organoseep (organic fertilizer) on growth performance of tree and green agriculture product

Md Zakir Md Salleh¹, Maryati Mohamed², Seow Ta Wee³

¹Faculty of Technology Management and Business
Universiti Tun Hussein Onn Malaysia
Johor, Malaysia
email: bard.zakir@gmail.com

²Faculty of Science, Technology and Human Development
Universiti Tun Hussein Onn Malaysia
Johor, Malaysia
email: maryati@uthm.edu.my

³Faculty of Technology Management and Business
Universiti Tun Hussein Onn Malaysia
Johor, Malaysia
email: tawee@uthm.edu.my

Abstract - The agriculture product must be free of toxins and chemical elements, affordable, quality and reliable. The demand for green food products is on the rise due to increasing consumer awareness of health and environmental protection requirements. As a common practice, the use of chemical fertilizers is to provide nutrients to the plants, but this method has resulted in contamination of the soil. The soil becomes compacted, loss of water and nutrient holding capacity, vulnerable to leaching process. The objective of this study is by using of Organoseep (organic fertilizer) in replacement the ever dependence of chemical fertilizers to provide the entire nutrient to the plants. Organoseep is a produce of a combined fermentation of waste plants, animals and minerals (as a fertilizer booster) with the use of new generation of effective microorganism's technology. It was specially processed using the new formulas and new methods in the production of organic fertilizer in order to produce green agriculture products on the market that are safe on the health of consumers and protect the environment. The result of this study is to proving the

performances of plants growth are positive and using Organoseep in replacement of chemical fertilizer would be adaptable.

Key words - Organic fertilizer, Organoseep, green agriculture product, health, environment

I. Introduction

Increasing demand for green food products became more apparent with the growing public awareness of health and the need to protect the environment (KeTTHA, 2013). The influence of conventional agricultural production and an increase in the use of external input factors such as fertilizers and pesticides, has led to a significant increase in productivity, but at the same time put pressure on the ecosystem and the environment is higher (Mondelaers, 2009). The concept of organic farming is an effort to minimize disruption to the balance of nature and at the same time producing a high quality product with nonhazardous waste to health such as the use of chemical fertilizers, pesticides and genetically modified (Mondelaers, 2009). An effort should be made to foster the community

towards the use of natural elements to produce green agriculture products.

Since agriculture involving the environment, the pressure is certainly will effected on human well-being, ecosystem and economy. Finally due to the undesirable effects or stress this has sparked a phenomenon to the society that provides a comparison of organic and conventional farming (Mondelaers, 2009). This discussion eventually is able to give a complete picture of the sustainability created the green agriculture products to fulfill the objective of this study is in using of Organoseep (organic fertilizer) in replacement the ever dependence of chemical fertilizers to provide the entire nutrient to the plants.

II. Conventional farming methods

Agricultural products are no longer user friendly. The conventional agricultural production systems typically do not take into account the needs to protect the environment against the economic benefits obtained and these facts usually produce negative effects on the environment and the difficulty of treating the amount of waste created by the process (Soliva *et al.*, 2007). The relationship between agriculture and environmental systems are complex. As an example of a causal relationship agricultural activities on the environment of the community activities in agriculture are a driving environmental disruption (Mondelaers, 2009). Therefore, it is necessary to take into account certain aspects relating to the conservation of soil and crop requirements for these important issues will preserve the natural resources and the earth 's ability is limited (Soliva *et al.*, 2007).

Soil conservation is very important to prevent loss of nutrients and organic matter are very valuable addition to the management of land and good water to reduce erosion, maintain soil moisture and increase the efficiency of nutrient uptake by plants (Nelson, 2003). Fertilizer selection is

dependent on the efficiency of fertilizer in supplying nutrients to the tree and it is easily available from chemical fertilizers (Parker, 2010). Chemical fertilizers are largely used in farming and the price also depends on the percentage of nutrients and the nutrients contained in the fertilizer as well as the growing trend of price fluctuation (Mohammed, 2010).

• Fertilizer

According to Mohammed (2010), fertilization is the process in a balanced supply of nutrients to crops for growth and yield. The primary nutrients required by plants for production growth are nitrogen (N), phosphate (P) and potassium (K), secondary nutrients magnesium (Mg) and trace elements of boron (B), zinc (Zn) and copper (Cu).

Fertilizers can be divided into two groups, organic fertilizer processing of plants and animals and inorganic fertilizers of metal processing minerals or produce a chemical process (Ahmad & Abdullah, 1994). Basically fertilizer should be divided into two groups, organic fertilizer, semi-organic fertilizer and non-organic fertilizers (Zaharah & Vimala, 1993).

i. Organic fertilizer

Organic fertilizers are made from animal and plant waste materials that are processed have high quality and content prior to its use ensure sufficient nutrients to crop needs (Mohammed, 2010).

ii. Semi-organic Fertilizer

Fertilizer specially processed to overcome the shortage of one or two ingredients in conventional fertilizer. For example, a mixture of humus, amino acids and chemical fertilizers (Zaharah & Vimala, 1993).

iii. Non-organic fertilizers

Non-organic fertilizers can be divided into the three cases pure fertilizer, mixed fertilizer and compound fertilizer Lanham, (2010). All ingredients are

milled through a chemical process with granular fertilizer situation (Ahmad & Abdullah, 1994).

- **Factors Of Nutrient Loss**

According to Mohammed (2010) accurate estimates of the loss of nutrients and nutrient availability through soil characteristics will improve the accuracy of estimated of fertilizer recommendations and crop production as well as good farming practices. Mohammed (2010) furthermore, among them are;

- i. Unconditional early land preparation
Occur extensively in the field due to erosion causing much loss of topsoil (Mohammed, 2010)
- ii. Vaporization (volatilization)
Especially the element of N if urea was used. Can be reduced through the application method of fertilizers such as damp pockets (sub-soiling) or split into several rounds (Mohammed, 2010).
- iii. Leachate (leaching)
Common in the sandy soil and high rainfall area. Elements of N, K and Mg are key nutrients that can be lost through leaching Mohammed (2010) and Nelson (2011).
- iv. Erosion
Happen when natural surface cover were removed and involved the loss of topsoil and nutrients containing in the soil (Mohammed, 2010)
- v. In nutrient substances tied by soil (fixation)
Nitrogen (N) is bound by leguminous plants or microbes to the decomposition of organic matter. Phosphorus (P) is bound by soil rich in elements Fe and Al (Mohammed, 2010)

III. Organoseep

Organoseep was made from a combination fermentation of waste plants, animals and minerals (fertilizer booster) with the used of new generation of effective microorganism's technology. It was specially processed using the new formulas and new

methods in the production of organic fertilizer Organoseep has been filed for patenting through the Office for Research, Innovation, Commercialization and Consultancy Management (ORICC) UTHM. Is an appropriately balanced fertilizing mix that can be made entirely of natural substances. It is better for soil compared to tough synthetic chemical mixes. It is easy, economical and environmentally sound. Organoseep is an organic fertilizer adds significant organic matter to the soil which improves soil structure, the ability to hold water through dry spells, and prevent unwanted drainage. It also becomes a host to the many microorganisms and worms, which lead to a health soil.

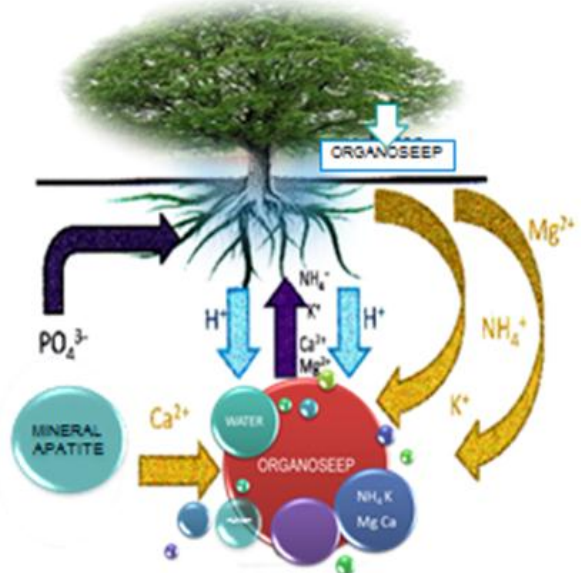


Figure 1: Figure of Organoseep method works

Benefit using Organoseep in soil

- i. Will cut fertilizer and water cost by holding the nutrients and water in the root zone until the plant is ready to utilize them. Therefore the plants require less fertilizer and water application. This promotes good stewardship of the land by reducing pollution brought on by fertilizer leaching to the groundwater or running off into surface water sources.
- ii. Used properly can yield some impressive results with regards to faster germination

times, faster growth rates, larger plants, increase crop yield and reduced fertilizer and water applications. Also reduces water requirements during irrigation as it holds moisture in the growth zone.

- iii. Has a high cation exchange capacity CEC that enables a greater loading of plant nutrients such as nitrogen and micronutrients. The nutrients are held in the growth zone and are plant accessible but not water soluble. Using Organoseep also can reduce nitrogen fertilizer requirement as a large portion of nitrogen fertilizer leach through the growth zone and into the aquifer. It will hold nitrogen and prevent the pollution of the water table by nitrates and nitrites.
- iv. It is natural for organic operations and it also prevents compaction, increases infiltration and helps the aeration of deep root systems due to its high surface area and porosity giving positive impact on crop yields and management cultivation

IV. Green Products

According to Glenn (2009) green products are products whose production and use or the services provided to meet the basic needs of human beings as well as enabling live a good quality of life and safe. At the same time in the manufacturing of such products to reduce the use of natural resources and toxic materials and reducing waste and pollutants over the life cycle of the product so as not to affect the future needs of future generations (Smith & Hadley, 1992). Products and services can have an impact on the environment either before or after the use and production of environmentally friendly products is important for the survival and sustainability of life (Glenn, 2009).

V. Contamination of agriculture industry

According to Hussein (2004) pollution occurs when there are materials that are not required

to be in the environment and can be harmful to health. Pollution can be categorized into several parts such as water pollution, air pollution, noise pollution and radioactive pollution.

We all know that the environment is for us to obtain economic resources. Therefore, efforts to devise a development project should take into account environmental factors. In order to improve the quality of the environment, measures and more effective approach is needed at every level, especially the level of the public up to the state and national level (Rahman & Hashim, 2010).

VI. Discussion and conclusion

Concerning the impact of the organic farming system in order to produce green agricultural products on the market that are safe on the health of consumers and protect the environment because it's can develop the concept of green business in Malaysia. The results produced are conceived to meet the characteristics of green products and encourage public acceptance of green products. The standard of Organic Agriculture for Skim Organik Malaysia (SOM) is based on the Malaysian Standard MS 1529:2001 (The production, processing, labeling and marketing of plant based organically produced foods. In addition to this, the SOM Standard also encompasses rules or criteria which are derived from specific legal provisions of national laws to control hazards that impact the environment, food safety and workers, health and safety (Jabatan Pertanian Malaysia, 2013)

Acknowledgements

We would like to thank all the staff of Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia (UTHM), Faculty of Science, Technology and Human Development, Universiti Tun Hussein Onn Malaysia (UTHM) and everyone involved for their fully supported and comments on this manuscript.

References

- Ahmad, A.B.H. & Abdullah, R. (1994). *Teknologi perladangan dan pemprosesan getah*. Kuala Lumpur: Institut Penyelidikan Getah Malaysia.
- Glenn, C. (2009) *Starting Green From Business Plan To Profit*. Canada: Entrepreneur Media Inc.
- Hussin, W.W.S. (2004) *Etika Dan Amalan Perniagaan*, Kuala Lumpur: Utusan Publications & Distributors Sdn Bhd
- Jabatan Pertanian Malaysia. (2013, November). *Persijilan Skim Organik Malaysia (SOM)*. Dicapai pada September 08, 2013, dari Jabatan Pertanian Malaysia:
<http://www.doa.gov.my/documents/10157/4f8d91db-9eb4-499b-941e-9a21ef346b7c>
- KeTTHA. (2013, November) *Kepentingan Teknologi Hijau*. Dicapai pada November 8, 2013 dari <http://dev.kettha.gov.my/content/kepentingan-teknologi-hijau>
- Lanham, H. (2010). *Garden Farming*. United Kingdom: Crowood Press.
- Mohammed, A.T. (2010). *Pembajaan sawit*. Dlm. Ghani, E.A. & Omar, I. (Ed). *Perusahaan sawit di Malaysia - Satu panduan*. Kuala Lumpur: Lembaga Minyak Sawit Malaysia (MPOB).
- Mondelaers, K., Aertsens, J. & Huylenbroeck, G.V. (2009). *A meta-analysis of the differences in environmental impacts between organic and conventional farming*.
<http://www.emeraldinsight.com.ezproxy.uthm.edu.my/search.htm?st1=organic+farming&ct=all&ec=1&bf=1&go=G>
- Soliva, M., Bernat, C., Gil, E., Marti'nez, X., Pujol, M., Sabate', J. & Valero, J. (2007). *Education and research related to organic waste management at agricultural engineering schools*
<http://www.emeraldinsight.com.ezproxy.uthm.edu.my/search.htm?st1=organic+agriculture&ec=1&bf=1&ct=jnl&nolog=500912&page=2>
- Nelson, P. V. (2003). *Greenhouse operation & management*. New Jersey USA: Prentice Hall
- Nelson, P. V. (2011). *Greenhouse operation & management*. New Jersey USA: Prentice Hall
- Parker, R. (2010). *Plant & Soil Science*. New York USA: Delmar.
- Rahman, H.A. & Hashim, R. (Ed). (2010). *Pemeliharaan dan Pemuliharaan Alam Sekitar di Malaysia*. Pulau Pinang: Universiti Sains Malaysia
- Smith, S. R. & Hadley, P. (1992). Nitrogen fertilizer value of activated sewage derived protein: Effect of environment and nitrification inhibitor on NO_3^- release, soil microbial activity and yield of summer cabbage. *E-Journal Fertilizer research*, Volume 33, Issue 1, pp 47-57. Dicapai pada September 8, 2013, from <http://link.springer.com/article/10.1007%2F01058009>