

Development Of Granule Form Making Fertilizers In Muhammadiyah 3 Morowudi Gresik Vocational School

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ABSTAK

Pupuk merupakan hal terpenting dalam hal merawat pertumbuhan tanaman. Hal tersebut diidentifikasi karena pupuk memiliki unsur mineral hara yang memang sangat dibutuhkan oleh tanaman sendiri. Pupuk sendiri dibedakan menjadi pupuk organik dan anorganik. Masih terkait dengan jenis pupuk sendiri, demi mendapatkan tanaman dengan kualitas dan budidaya yang baik, maka pupuk yang diberikan haruslah seimbang karena seiring dengan kandungan yang ada di masing-masing jenis pupuk yang ada. Pupuk anorganik atau lebih dikenal dengan nama pupuk kimia lebih digemari banyak masyarakat karena kepraktisannya, tapi perlu diingat bahwa penggunaan pupuk kimia yang berlebihan juga memberikan dampak buruk pada kadar kesuburan tanah. Oleh sebab pupuk organik masih berperan dalam bland pupuk anorganik agar dapat mengimbangi kebutuhan akan tanah itu sendiri. Paham akan pentingnya keseimbangan antara pupuk organik dan anorganik, maka pengabdian masyarakat yang dilakukan dengan pemberian pelatihan pembuatan pupuk Guano di SMK Muhammadiyah 3 Morowudi Gresik dipilih diterapkan. Pupuk guano dipilih menjadi alternative dari penambahan formula pedamping daripada pupuk anorganik karena kandungannya yang kaya akan nitrogen, fosfor, potasium yang sangat dibutuhkan oleh tanaman. Upaya pemberian pelatihan kepada siswa-siswi SMK Muhammadiyah 3 Morowudi Gresik ini juga diharapkan mampu mendongkrak kerjasama daripada siswa-siswi itu sendiri dalam mengembangkan potensinya untuk disumbangsikan kepada masyarakat dan sekolah.

Kata Kunci : Pupuk Guano, Granule, Unsur Hara, Pupuk Organik.

ABSTRACT

Fertilizer is the most important thing in terms of caring for plant growth. This was identified because fertilizer has nutrient mineral elements which are really needed by the plants themselves. Fertilizer itself is divided into organic and inorganic fertilizers. Still related to the type of fertilizer itself, in order to get plants with good quality and cultivation, the fertilizer given must be balanced because it is in line with the contents that exist in each type of fertilizer. Inorganic fertilizer or better known as chemical fertilizer is more popular with many people because of its practicality, but it should be remembered that excessive use of chemical fertilizers also have a negative impact on soil fertility. Therefore organic fertilizer still plays a role in the field of inorganic fertilizer in order to offset the need for soil itself. Understanding the importance of a balance between organic and inorganic fertilizers, the community service conducted by providing training in making Guano fertilizer at SMK Muhammadiyah 3 Morowudi Gresik was chosen to be applied. Guano fertilizer was chosen as an alternative to the addition of a companion formula rather than inorganic fertilizer because of its content which is rich in nitrogen, phosphorus, potassium which is needed by plants. Efforts to provide training to students of SMK Muhammadiyah 3 Morowudi Gresik are also expected to be able to boost cooperation than the students themselves in developing their potential to contribute to the community and schools

Keywords: Guano Fertilizer, Granule, Nutrient, Organic Fertilizer.

INTRODUCTION

It is no longer a public secret that

Indonesia is known as a country that is lively with ripah loh jinawi. The term is a term commonly known by the public, the article Indonesia has abundant natural wealth coupled with the geographical existence of Indonesia which is considered very strategic. Indonesia is located in a tropical region that has high rainfall so that plant species can live and grow fast.

Not only is the geographical location in the tropics, but also the geological location where Indonesia is located at the point of tectonic plate movement so that many mountains are rich in minerals. Indonesian waters are also rich in food for many types of plants, fish and marine animals, and also contain a variety of mineral sources.

The famous of Indonesia as an agrarian country is also due to the fact that most of Indonesia's population has a livelihood in agriculture. But unfortunately, the development of agriculture in Indonesia is considered less competitive when compared to developed countries that have more promising prospects for the agricultural industry. The high cost of agricultural tools and agricultural knowledge for Indonesian farmers is very minimal. Indonesian farmers do not really understand agriculture in the modern world, so they still choose to manage agricultural land in the traditional way. This has an impact on agricultural products that are less satisfying and quality that is less attractive to consumers so that the income of Indonesian farmers themselves tends to be small. This is the reason that makes the younger generation, less interested in the Agricultural Industry, and prefers other jobs that promise the prospect of higher salaries. big salary, rather than plunging in the agricultural industry is no exception to the children of farmers themselves. Regarding the problems faced by the Agricultural Industry so that it reduces the interest of the younger generation to get involved in agriculture, Muhammadiyah Gresik University in particular the

Industrial Engineering Study Program was moved to make a small contribution to the Agricultural Industry. The object of service chosen was about the development of the manufacture of granule fertilizer in the form of students of SMK Muhammadiyah 3 Morowudi Gresik. Although it does not go directly to its agricultural land, UMG Industrial Engineering hopes that the young generation at SMK Muhammadiyah 3 Morowudi Gresik will be able to contribute in making good fertilizer, so that agricultural products in Indonesia can be more fertile.

Guano fertilizer is a type of bat fertilizer that has been deposited in the cave for quite a long time until it is mixed with soil and decomposing bacteria. The advantage of guano fertilizer is the content of nitrogen phosphorus and potassium which is believed to be very good for plants because of its function which can stimulate the roots and the strength of the plant itself. Research conducted at Cornell University in New York-USA states that guano as an organic fertilizer made from basic ingredients of bat droppings has high levels of nitrogen, not only that, this fertilizer also has the highest levels of phosphate elements and high levels of potassium as well.

Almost all micro elements or minerals needed by plants are found in guano fertilizer. Compared to chemical fertilizer, guano fertilizer does not contain fillers. If placed long in the soil tissue, guano fertilizer can increase soil productivity and can provide food for plants longer than artificial chemical fertilizers. This natural fertilizer is actually safe for plants, because it is more environmentally friendly and does not cause many side effects that can be caused.

Guano fertilizer has 2 variants namely Granule Phosphate and Fresh Bat Guano which are able to provide nutrients high enough to meet the natural needs of plants. Granule phosphate from guano fertilizer has the form of small granules measuring 2-5 mm after fermentation. Whereas fresh bat guano fertilizer is powder-like because it is

only mashed.



Pic 1. Guano Granule Pospate Fertilizer

PURPOSE OF THE ACTIVITY

The purpose of the activities of this internal service are:

1. Give contribution to the community through students of SMK 3 Muhammadiyah Morowudi Gresik so that the agricultural industry can develop properly.
2. Give encouragement to students of SMK 3 Muhamamdiyah Morowudi Gresik to care more for the community.
3. Providing insights and training in making guano fertilizer to students of SMK 3 Muhammadiyah Gresik
4. Providing new opportunities to vocational schools in developing school businesses in the form of guano fertilizer.

METHOD OF IMPLEMENTATION

The method of implementation of this internal service is as follows:

1. Presentation by giving a presentation about the ins and outs of fertilizer in general
2. Presentation of nutrients needed by the soil
3. Presentation on the importance of using organic fertilizer as a companion to inorganic fertilizer.
4. Presentation of what is guano fertilizer, its function and method of

manufacture.

5. Deeper exposure to the elements of guano fertilizer compared to other organic fertilizers.
6. Practices for making fertilizers.

Location of Community Service by Morowudi Gresik 3 Vocational School is located in the University of Muhammadiyah Gresik by Industrial Engineering Study Program, precisely in the Hall of Muhammadiyah University Gresik and the practice of making fertilizer in the manufacturing process laboratory on February 25, 2020.

The equipment and supporting materials for community service for students of SMK 3 Muhammadiyah Morowudi can be described as follows.

- Hall room for the seminar laboratories for the practice of making fertilizers
- LCD
- Laptops
- Mixing machine mixtures of fertilizer ingredients
- Fertilizer molding machine
- Bat poop o EM4 liquid
- water
- Place fertilizer so (tarpaulin).

RESULTS AND DISCUSSION

The results and discussion here are intended to explain more clearly about the stages of the process of activities that have been carried out in fostering and providing supervision about guano fertilizer.

FERTILIZER EDUCATION

Fertilizer education here is a more detailed direction and concept about the fertilizer itself, the types of fertilizer, its uses and measurements. Which in fact we find that the use of inorganic fertilizers must coexist with organic fertilizer in an effort to maintain nutrients in the soil. More precisely the balance between organic and inorganic fertilizers is 40% inorganic and

60% organic.



Pic 2. Directing Fertilizer Making Practices



Pic 3. Question and Answer Participant



Pic 4. Symbolic Giving

PROCEDURE

The practice of making guano fertilizer in the form of granules with the basic ingredients of bat animal waste is by mixing the basic ingredients of fertilizer in the form of water, soil, bat droppings and EM4 liquid that has been prepared previously. The next step is stirring which is carried out in a stirring vessel with the

provision of water slowly so that the resulting granule granules can form a small sphere that is good. The shape of the granules can be created perfectly if the composition of the material used is calculated in sufficient quantities, especially giving water, not less or more. The function of the water itself is as an adhesive mixture of ingredients in the blend machine.



Pic 5. The Stirring Process And The Process of Giving Water To The Mixer Machine

The blend process on the mixer will produce granule granules, to get a neat texture on each grain, then the next step is to do filtering as a size selection on the filter machine. The filtering process of the filter engine makes the engine rotate 3600.



Pic 6. The Guano Fertilizer Filtering Process

RESULT

The final result of making guano fertilizer is guano granules. Guano granules that have passed the filter stage, the next process is drying. Drying can be done with the help of sunlight. This is so that the guano granules dry out so that they are stronger and more durable. But if you want to use it right after filtering it is allowed without going through the drying process.

CONCLUSION

The results of Community Service activities where the target is for students of SMK 3 Muhammadiyah Morowudi, it is found that the students are quite responsive and have new insights about guano fertilizer. Knowledge of fertilizer, and the insignificance of inorganic fertilizers without organic fertilizer as soil nutrient support. Students also understand how much is appropriate when applying fertilizer mixture to the soil. Students are also required to develop knowledge about this guano to the community, through training in the village of lewawt schools or directly developed by schools for businesses whose products are sold cheaply by farmers. Muhammadiyah Morowudi Vocational School 3 which actually already has a school service program called Mbangun Desa is also quite enthusiastic about this new insight. This new insight was also considered by them to be productive to be applied directly as Mbangun Desa's continued agenda.

Advice that can be given for this devotion is

1. Suggestion for study programs is the development of fertilizer products can cooperate with agricultural study programs for the development of guano fertilizer products with other mixtures that might be more efficient, cheaper or have better quality.
2. If phase one has passed, the KWU study team can work together to develop products as campus

products that are traded for the community.

3. Suggestions for students or vocational schools are, insights about guano fertilizer should not be made merely insight. But it can be developed into a business prospect or service to farmers by vocational students. That way there will be integration from the campus for schools, and from schools for the community. Indirectly, UMG has contributed broadly to the community especially farmers through the hands of vocational middle school students.

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