Organic Farming System for Producing Healthy Rice Oleh

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Abstracts:
Introduction of organic rice-based rice cultivation technology package through demplot is done in Subak Sungi 1 using ciherang variety. The number of farmers participating in demonstration plots in organic cultivation of paddy-based rice cultivation were 5 people, with age of farmers aged greater than 55 years occupying the highest percentage (45.45%), with elementary education level (72.75%), followed by high school education (18.25%), and junior high (9%). The average farmland area is 34.63 acres, with self-owned status (55.94%), status as penyakap 41.18% and rent status 2.88%. The farmers' response to the organic rice-based rice planting assessment is quite high, as evidenced by the evaluation that 100% of farmers participating in demonstration plots know and understand about organic rice system cultivation, and they agree to develop this cultivation system in the future. Demplot research results can increase the yield components and weight of dry grain harvest per hectare. Organic rice-based rice cultivation technology EVAGRO able to increase production of dry grain harvest significantly with a value of 6.8 tons / ha. There is a tendency of dry weight value of ciherang varieties of 6.8 tons / ha giving highest but not significantly different with PGPR organic based technology.

Key words: Healthy rice, Organic Farming, Dry Weight, Grain

Introduction:
Entering the 21st century, people are increasingly wise in choosing food that is safe for health and environmentally friendly. Healthy lifestyle with the slogan "Back to Nature" has become a new tendency to leave old lifestyles that use non-natural chemicals, such as fertilizers, synthetic pesticides and growth hormones in agricultural production. Healthy and nutritious food can be produced by a new method known as organic farming.

Talk about organic farming, can not be separated by its sustainability mainly from the economic dimension, in addition to the dimension of the environment and social dimension. Organic farming is not limited to simply eliminating the use of synthetic external input, but also the sustainable use of natural resources, the production of healthy food and energy saving. The economic aspect can be sustainable if the agricultural production is able to meet the needs and provide sufficient income for the sustainability of livelihood. However, economic motivation is often the driving force driving the development of organic agriculture. Because organic agricultural-based farming is still doubted by farmers will be able to increase welfare directly. So in addition to providing organic technology innovation also requires a change of mindset from farmers.

The transition to organic agriculture requires a new mindset as well. All family members involved in land management must be prepared to make
changes in many aspects. The first and foremost is the farmer's own view of organic farming. The economic potential of agricultural land is influenced by a number of factors that play a role in changes in land costs and economic income. Each land has a varied economic potential (production and marketing conditions), because agricultural land has different characteristics that are tailored to the conditions of the land. Then the factors vary from one field to another and from one country to another. In general, the more change and adoption required in agricultural land, the higher the economic risk is borne by the changes.

The economic ability of a land can be measured from the profit earned by farmers in the form of income. This advantage depends on the conditions of production and marketing. Profit is the difference between cost and returns. A land can be considered economically viable if the proceeds exceed the total fixed capital and decrease in the value of fixed capital. The main result is the money received from the sale of the resulting product.

The results and profits depend not only on the amount of harvest but also the price given by the market. However, farmers generally expect to get a premium price for their organic products after their land is organic. However, if premium prices are not met, organic farmers actually benefit because the cost of organic production is lower than non-organic. The problem is when is the farmer's work worth more than the figures in production costs?

Related to the problem, the objectives of this research are;
1. To know the effect of many type of organic fertilizer based on local material
2. To know the improvement of rice yield between the difference treatments.

**Future Research:**

Agricultural issues seem to be endless and well handled, despite the many activities and concerns devoted to improving the lives of farmers. Universities as one of the government and community partners in realizing the development should participate to contribute science and technology for the community. This is also in line with the implementation of Tri Dharma Perguruan Tinggi which requires universities to keep playing a role in research and community service.

Since 2004 Mahasaraswati Denpasar University has been cooperating with the local government of Tabanan both in the field of research and dedication to the community. The cooperation has resulted in some research and community service such as research on flowering of off-season mangosteen (2004-2006), Sibermas program (2007-2009) and Science and Technology for Territory (Ibw year 2010-2012). According to previous research at Subak Lumbung, Tabanan regency, this research observe all organic fertilizer treatment and will be comparize each other. This research was conducted in Subak Sungi I Marga Regency which is the program of healthy rice is already exist.

**Method:**

The approach used in this activity is to make a demonstration plot (demplot) of an area of 1 (one) hectares located in Subak Sungi I. The treatment used is; 1) Evagro 2) Boslem, 3) Cow Compost. At the time the rice plants are 14 days after planting (14 hst.) Sprayed with liquid fertilizer (biourine) 20 liter / ha) to 42 hst.

Observations made included: 1) number of tillers, 2) yield of dry grain harvest (GKP) and 3) rice yield. All of these parameters were compared with control treatment (without using cow dung compost or otherwise known as conventional technology). To find out the advantages obtained by farmers is to conduct a simple farming analysis

**Research Result:**

Observations on the parameters observed are presented in Table 1.

| Treatment      | The Average of tiller | Dry Grain (ton)/ha | Rice Yield per ton |
|----------------|-----------------------|--------------------|--------------------|
| Organik Evagro| 105                   | 8,1                | 620 kg             |
| Boslem         | 67                    | 5,0                | 570 kg             |
| Cow Compost    | 100                   | 6,7                | 600 kg             |
| Biourine       | 90                    | 6,5                | 580 kg             |

From Table 1 it turns out the observed parameters show a significant improvement between each organic-based treatment. The highest result is for
Evagro treatment Followed by Cow compost, Biourine and the lowest is the boslem treatment. These results suggest that the transfer of technology to organic farming is highly relevant and needs to be encouraged. Especially when associated with the vision and mission of Tabanan Regency to Tabanan Serasi and Bali Province with Bali go organic purposes.

Discussion:

The potential market of organic agricultural products in the country is still very small, only limited to upper middle class society. Various obstacles encountered include: 1) there has been no adequate price incentives for producers of organic agricultural products, 2) needing expensive investment at the beginning of development because they have to choose a really sterile land from agrochemical materials, 3) there is no market certainty, so farmers are reluctant to produce these commodities. However, with the impact of the sustainability of organic agriculture leading to the preservation of natural resources, several reasons for organic farming systems are used as instruments to improve the net return of rice farming and the welfare of farmers, ie.

1. The vision and mission of Balinese agriculture is expected to be a sustainable agriculture system, which is able to guarantees a dynamic food security system and advanced agribusiness system, with constant or decreasing social cost level, so as to be able to prosper all stakeholder citizens.

2. Entering the 21st century, the world community began to realize the danger of the use of synthetic chemicals in agriculture. The use of synthetic chemicals has led to a variety of natural and environmental damage, especially in agricultural ecosystems, such as reduced microorganisms in the soil, killing of natural enemies, increasing pest populations and plant diseases, pollution on soil, water and air. Moreover, these synthetic chemical residues in food are very harmful to human health.

3. Changes in consumer preferences of the world that demanded continuous agricultural products of better quality than previous products (demanding demand). Agricultural products in question are no other results of Organic Agriculture, because it has more complete and detailed attributes, concerning aspects of quality, nutritional composition, safety of consumption, and resulting from activities that do not harm the environment, biodiversity, and not violate human rights.

4. Bali as one of the most famous tourist destinations around the world requires various infrastructure to support the development of tourism itself so that its contribution in economic development can be improved. One of the models that is expected to increase the added value of tourism in Bali is if tourism actors such as Hotel and Restaurant are able to serve dishes from local producers with attributes safe to eat, have a high nutrient content and environmentally friendly. It can be fulfilled through the application of organic farming patterns.

5. The metaphysical activity for agricultural life in Bali by the peasants is strongly inspired by the teachings of Ahimsa, Tattwamasi, and Tri Hitha Karana. Philosophical Teachings require always to maintain the balance and fertility of Rwa Bhineda (two things that seem contrary to exist, for life to happen). In this case natural enemies and HPT in agro-ecosystem which is a form of Rwa Bhineda must always be kept balance. The trick is through the re-actualization of organic agriculture.

6. The culture of Balinese farmers is very strong in doing soil and land improvement through fertilization with livestock manure, crop rotation, and conservation efforts. But this time is very less and weak due to the demands of modern agriculture, so it needs revitalization.

7. Social Capital derived from the dynamics of social-religious groups: Subak, Banjar, Desa Adat, and traditional Seke-Seke strongly support the re-actualization of organic agriculture in Bali.

Analysis of organic farming based farming and conventional technology is presented in Table 2. This table shows the differences in net returns obtained by farmers seeking organic farming with farmers who cultivate crops with conventional technology.
Tabel 2. The comparison of organic farming system and conventional system by hectare (Martiningsih, 2010)

| No | Input cost | Organic System | | | | Conventional System | | | | | |
|----|------------|----------------|---|---|---|-------------------|---|---|---|
|    |            | Quantity | Price (Rp) | Value (Rp) | Quantity | Price (Rp) | Value (Rp) | | | |
| 1  | Seed       | 20 kg    | 65.000     | 1.300.000 | 40 Kg    | 10.000      | 400.000     | | | |
| 2  | Basic Fertiliser Organic | | | | | | | | | |
|    | Urea/Starter N | 3.500 kg | 1.000 | 3.500.000 | 180 | 2.500 | 450.000 | | | |
|    | KCl        | -        | -          | -          | 100      | 3.200       | 320.000     | | | |
|    | SP36       | -        | -          | -          | 100      | 2.800       | 280.000     | | | |
| 3  | Second treatmen | 30 liter | 30.000 | 900.000 | - | - | - | | | |
|    | Pupuk organic cair | - | - | - | 50 | 3.200 | 160.000 | | | |
|    | KCl        | -        | -          | -          | 50       | 2.800       | 140.000     | | | |
|    | SP36       | -        | -          | -          | -        | 60.000      | 720.000     | | | |
| 4  | Pesticide  | -        | -          | -          | 12 liter | -          | -          | | | |
|    | Bio pesticide |        | 1.600.000 | - | - | - | | | |
|    | Chemical pesticide | - | - | - | 50 | 2.800 | 140.000 | | | |
| 5  | Employee   | -        | -          | -          | 1.600.000| 1.400.000 | | | |
|    | Land Tilage |         | 1.550.000  | 1.200.000 | 1.200.000| 1.200.000 | | | |
|    | Sowing     |         | 750.000    | 750.000    | 750.000  | 750.000    | | | |
|    | Additional sowing |       | 250.000    | 200.000    | 200.000  | 200.000    | | | |
|    | Wild plant management | | 320.000 | 250.000 | 250.000 | 250.000 | | | |
|    | Fertilizer activities | | 400.000 | 200.000 | 200.000 | 200.000 | | | |
|    | Pest and diseases management | | 330.000 | 150.000 | 150.000 | 150.000 | | | |
|    | Harvest    |         | 1.600.000  | 1.400.000 | 1.400.000| 1.400.000 | | | |
|    | TOTAL COST |         | 12.800.000 | 6.620.000 | | | | | | |
| 6  | PRODUCTION | 8400 kg (gabah) | 4.000 | 33.600.000 | 4600 kg (beras) | 5.000 | 23.000.000 | | | |
| 7  | PROFIT     | 20.800.000 | 16.380.000 | | | | | | | |

From Table 2 it turns out that organic farming will generate RP profits. 20,800,000, while the conventional business earns a profit of Rp. 16,380,000 per hectare. From the analysis there is an increase in profit (net return) of Rp. 4, 420,000 or an increase of 20%. With an increase of 20% per hectare then organic farming practices undertaken by the community can contribute to the development of rural development. Organic agriculture and integrated agriculture represent opportunities at all levels, fostering rural economies through sustainable development. In fact, new job opportunities in agriculture are evidence of the growth of the organic sector. In an effort to embody and utilize the conceptions of eco-friendly agriculture that rests on the biodiversity of agricultural land, it is necessary to apply the science and technology of organic rice that is directly implemented by rural farming communities.

Conclusion:

From the implementation of demplot and farming system analysis on organic farming system in Subak Lumbung, Selemadeg Barat, Tabanan District, it can be concluded several things:

1. Organic farming has advantages in terms of product health and land fertility returns.
2. Organic farm products have higher selling value compared to conventional products.
3. Organic agricultural exploitation gives profit increase of Rp. 4, 420,000 per hectare or an increase of 20% compared with conventional farming.
Implication:
Demonstration of demonstration plots at the community level will provide a role model for the surrounding community, so it is expected that there will be spreading of information in a beacon between farmers in Subak Lumbung. With the awareness of farmers to start organic agriculture, environmental degradation will be able to be controlled and the sustainability of agriculture can be done.
In line with the vision and mission of Tabanan Local Government to make the city of Tabanan as rice granary Bali and Tabanan Serasi, then this activity is an initiation that supports the vision and mission. Increased profits for farmers seeking organic farming will be able to sustainably improve farmers' welfare and encourage sustainable agriculture programs.

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