

Aplikasi teknologi pertanian organik: penerapan pertanian organik oleh petani padi sawah Desa Sukorejo Kabupaten Sragen, Jawa Tengah

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Abstrak

Application of Organic Farming Technology (Application of Organic Farming by Rice Field Farmers in Sukorejo Village, Sragen Regency, Central Java) Entering the 21st century, the world has adopted a new trend of healthy lifestyle and Back to Nature slogan. People are more aware that the usage of unnatural chemical substances, such as, chemical fertilizer and pesticide in agriculture products can cause negative effects to human health and the environment. This kind of lifestyle has been recognized internationally through global trade regulations, requiring that agricultural products have attributes that are safe to consume, have high nutritional contents, and are environmentally friendly.

Today the agricultural concept does not only focus on large output of production in a short period, but is more oriented in a sustained increase of production while maintaining - if possible, improving - the quality of land soil and the environment that is known as organic farming.

Organic farming is a farming system that attempts to make an environmental balance, that is, by maintaining soil fertility using the biological nutrient recycle principle, reducing or not using artificial fertilizer and chemical pesticide, and controlling pests and diseases by improving the surrounding environment to give optimum result which is a natural alternative farming practice. In this concept, efforts to increase and maintain land productivity focus on using organic fertilizer technology (compost, manure, agriculture waste recycling), and integrated pest and disease control and biological methods.

The rice harvesting area in the Sragen regency in 2001 was 91,220 hectares with a total rice production of 301,119.3 tons. Rice consumption was 124,270.3 tons; therefore, rice surplus in 2001 was 176,929 tons (Regional Government of Sragen 2002). The rice surplus production has not increased the income of farmers because the production cost, especially of inorganic fertilizer and chemical pesticide, increased in line with the free market system. The Sragen regency is making efforts as its long term program to be the center of organic rice production with the aim to conserve the farm land as part of the production factor, reduce the dependency on artificial fertilizer and pesticide, reduce farming costs and protect health from the exposure of fertilizer/ pesticide chemical residue.

The Sukorejo village of the Sambirejo district in the Sragen regency is a village that has applied the organic rice farming because this village has a large rice production, that is, 3,759 tons/ year and the majority, 90.55%, of the population's occupation is in farming. According to Renstra 2002 - 2007 the extension of organic rice farming will cover 10,000 hectares so that the Sragen regency mission of health for everyone in the year 2010 will be achieved.

Therefore, the main issues that will be studied are: (a) To identify how far the rice farmers in the Sukorejo village have applied the organic farming technology in order to identify the factors that play in application of organic rice technology; (b) To analyze the application of the technology in increasing income from rice production; and (c) To analyze the quality of organic fertilizer technology applied by the farmers.

The objectives of the study are: (a) To identify organic rice cultivation and the factors that play in the application of organic rice technology; (b) To analyze the effects of the application of organic farming technology on rice production and farmer income; and (c) To analyze the quality of fertilizer from cow manure and hay that use activator additive.

The hypotheses of this study are: (a) Application of organic farming technology that comprises of using fertilizer, land cultivation, biological pest and disease control, and using local seed will affect rice production and farmer income; and (b) Organic fertilizer from cow manure and hay that use activator additive affects the quality of compost.

The study was conducted in the Sukorejo village from April to July 2004 using two research methods:

a) Survey method: this method uses questionnaires distributed to 53 farmers as subjects to obtain information on organic rice cultivation and on the factors affecting the application of organic rice technology. The independent variable measured was the amount of production/ income as the fixed variable. The dependent variables consisted of fertilizing, land cultivation, biological pest and disease control, and using local seeds. Data analysis was done using qualitative descriptive analysis and data processing was done using Microsoft Excel and Minitab 13.0 for Windows computer software.

b) Trial method: composting of cow manure and rice hay using Complete Random Design that comprises of three treatments and three repetitions so that there were nine trial units. The three treatments were: first, composting without activator additive; second, composting with EM4 additive; and third, composting with Primadec additive. The variable measured in this experiment were the compost chemical properties: pH 1-120, organic carbon, total nitrogen, phosphor, interchangeable base (calcium, magnesium, sodium, and potassium) , micro nutrient (iron, copper, zinc, manganese), C/N ratio and KTK. The results of measurement of the variables being studied were further analyzed with various analysis in the actual range of 1% and 5%. If there are differences, the test will be followed by the Duncan test.

The result of the study showed: 1) organic rice cultivation in the Sukorejo village has applied organic rice technology consisting of mild land cultivation (90°Io used mattocks and tractors, 6% mattocks, and 4010 cows), used fertilizer (3-4 tons of organic fertilizer /hectare and 50-100 kg inorganic fertilizer/ hectare), used local seeds (87% local seeds and 13% hybrid seeds) and integratedly and biologically (100% natural substance) controlled pest and disease. The application of the technology is in line with the objective, principle, and characteristic of organic farming.

The factors that play in the application of organic rice technology by farmers are: a) The motivation of farmers; b) Perception of farmers on profit, cultivation method, adaptation to local culture, facility in application, and observability of organic rice farming; c) The interest and concern of the regional government and marketing institution (PD PAL Sragen), a better rice production of organic rice than that of the non organic rice, cheaper production of organic rice farming than that of non organic farming, better availability of materials from the local environment for producing biological control substance and organic fertilizer, and the increasing cost of chemical fertilizer and pesticide; and the positive impact as the result of organic rice cultivation for the sustainability of the environment.

2) Application of technology affects income through the amount of production achieved. Statistical tests show that the technological factors that had. the effect are: the application of organic fertilizer (X1), biological pest and disease control (X2), land cultivation (X3) and local seeds (X4). The regression equation is as follows:

$$Y=2514133+2.48X_1-19X_2+3.10 X_3 + 0.16 X_4$$

The percentage of contribution of the value of the free variabel (x) to the increase or decrease of the value of the fixed variable (y) is 27% (R²).

3) Giving an activator additive affects greatly the compost quality. The result of variability investigation showed that compost water level, compost fiber, and the nutrient levels of P, K, and Ca were not significantly different. The nutrient levels of Fe and Mn, pH, C/N ratio, and KTK of the compost showed a significant difference (P < 0.01). The nutrient levels of the organic carbon, N, Mg, Cu, and Zn also were significantly different (P < 0.05). Compost with EM4 activator additive produces compost with the best quality. The second best quality was with Primadec activator additive. Compost with EM4 activator additive produces the best quality with the nutrient levels of Mn 555.2 ppm (being the highest level of nutrient), Mg 0.63 %, Cu 4.93 ppm; decreases pH (7.97) and the levels of Fe 1481.47 ppm, Zn 23.3 ppm when compared to using other activators. The second best quality, compost with Primadec activator additive, has the best C/N ratio 25.981, N 0.89% , and highest KTK 35.33 meq/ 100 g.

From the study, it can be concluded that:

1) Organic rice cultivation in the Sukorejo village of the Sragen regency applies organic rice technology that consisted of mild soil cultivation, fertilizing, using local seeds, and biological integrated pest/ disease control. The application of the technology is in tine with the objective, principle, and characteristic of organic farming. The factors that play in the application of organic rice technology by the farmers are: a) Motivation of farmers; b) Farmer perception of profit, cultivation method, adaptation to local culture, facility of application c) Interest and concern of the regional government

2) Application of organic farming obviously affects production and farmer income; and

3) Activator additive greatly affects the quality of compost.

As a result of this study, it is recommended that; a) Farm education on application of organic farming technology should be done to intensify farming especially for production of organic fertilizer (compost) that is of better quality and development, usage of organic fertilizer, usage of local seeds, and land cultivation that pays attention to the environment; and b) There must be a policy from the central government that motivates the farmers to apply organic farming so that sustainable farming development will be achieved. Technical policies that can be recommended are, among others, basic material (organic fertilizer) subsidy and market access. c) The regional government must provide capital to the farmers so that they are able to mill and pack rice independently on their own and thus raise their welfare.

References: 31 (1986 -2004)

