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Nomor : 107/SP.HCP/LPPM/UNIJA/XI/2019

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Jabatan : Ketua LPPM

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Submission date: 21-Nov-2019 10:01AM (UTC+0700)

Submission ID: 1218364528

File name: MADURESE_FARMER_LOCAL_WISDOM_UTILIZATION_OF_RICE_STRAW.docx (35.53K)

Word count: 2488

Character count: 13447

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MADURESE FARMER LOCAL WISDOM: UTILIZATION OF RICE STRAW AS ORGANIC MATTER INPUT IN RICE CULTIVATION

Ida Ekawati, Isdiantoni, Zasli Purwanto
Wiraraja University Sumenep

Abstract: Agriculture farm in Madura island are generally less fertile. One of its indicator is the organic matter content less than one percent. This condition causes the low productivity of paddy, which in turn affects the level of welfare of farmers. Various efforts have been done by farmers to improve soil fertility, one of them is the return of rice straw to the soil as organic matter are carried out in "unique" way by farmers in Paberasan village in Sumenep regency. Seeing this phenomenon, this study aimed to explore the forms of local knowledge of farmers in the utilization of straw as the organic material in rice farming. To achieve these objectives, a case study was conducted to get a detailed process or sequence of events from the emergence of local knowledge that is formed in improving soil fertility. The peculiarity of farmers in the utilization of rice straw is to restore the straw in conjunction with the second weeding (35 days after planting) by immersing the incompletely finished compost of rice straw among rice plants row. Theoretically, this application allowing the synchronization of nutrient mineralisation and plant nutrient demand. Based on the farmers' information, this application can provide three advantages, namely (1) the cost of immersing rice straw compost can be suppressed because the composting of rice straw is placed in the middle of rice fields and immersing rice straw done at the same time with weeding, (2) weed growth becomes stunted, and (3) improving the soil structure and the production can increase.

Keywords: local wisdom, rice straw, organic matter

INTRODUCTION

Madurese communities largely depend on agriculture, although the condition of agricultural land is less fertile and lack of water becomes an obstacle in cultivation. The residents of Sumenep Regency, as an illustration, who work as farmers and farm workers nearly reaches 75% (Progress Report, Disperta Sumenep). Dryland farming in the Sumenep regency is more dominant than the agricultural wetland that only reaches 11.62% of total agricultural land area.

Considering of the intensity of cultivation, it is rising from year to year. Agricultural land is planted throughout the year without a break, but only a few times when waiting for rain. It results in the less fertile agricultural land. Moreover it is supported by the green revolution movement which causes farmers to be dependent on chemical fertilizers and pesticides. Even they use excessive doses so that fertilizer and pesticide residues in agricultural land increases. This condition causes decreasing soil fertility.

Another impact of green revolution for Madurese farmers is that they forget their old habit of using organic matter in crop cultivation, which basically is a form of wisdom in maintaining soil fertility. According Kuntowijoyo (2002) Madurese farmers at 1850 to 1940 were more familiar with natural fertilizer compared with Javanese farmers. It is possible because a large number of cattles in Madura. The research results of Central Assessment of Agricultural Technology (BPTP), East Java in 2005 showed that organic matter content in

agricultural land in Sumenep generally is less than 1 (one) percent, including wetland. Condition of diminishing fertility of the land should be prevented and even repaired in order that food production can be sustained. One way is to intensify the use of organic matter in crop cultivation.

Furthermore in the wetland, organic matter source that is easily available and contain sufficient macro and micro nutrients are straw. When straw is applied to the soil in each growing season, the straw play ³ an important role in the formation of soil organic matter and in the long term to maintain soil fertility, which in turn will increase production. To make consciousness, so that farmers are willing and able to apply straw into the rice field needs a ¹ certain approach to the concept derived from the ideas of local which is full of wisdom, good value. Also it can be embedded and followed by the farmers. Therefore, exploring local knowledge of farmers in crop cultivation becomes a vital issue. This local knowledge needs to be developed by hoping of indigenous farmers who own a source of innovation and inspiration in coloring of crop cultivation technology especially wisdom in addressing declining soil fertility problems.

RESEARCH METHODS

Exploration research was conducted to provide basic data of the case of local wisdom in the Farmers Group in Paberasan Village in Sumenep Regency. To meet these objectives, the research method used is a case studies, with the hope that recsearchers get detailed information of the overall situation regarding the process or sequence of events that forms local wisdom on rice farmers in improving soil fertility.

Location Determination Method

Location of the study determined in purpose, at farmers group namely *Sumber Hasil* in Paberasan Village in Sumenep Regency, with consideration of local knowledge cases occur and difficult found in other areas.

Data Collection Method

The main data required in this research is a form of qualitative primary data and derived from rice farmers in the village of Paberasan. The methods used to collect data was Focus Group Discussion (FGD). Mardikanto (2009), stated that as a method of data collection, FGD is the interaction of individuals (about 10 persons) which is directed by a guide to discuss the understanding and their experiences wich must be followed.

² Data Analysis Method

Data analysis of this research is descriptive analysis. This method tries to provide a complete picture of the phenomenon (local knowledge) systematically that occurs at *Sumber*

Hasil farmers group in Paberasan village in Sumenep Regency, by conducting data processing and then analyzed to create a new concept.

RESULTS AND DISCUSSION

Establishment Process of Rice Straw Utilization Local Wisdom

Local wisdom has a social dimension and a strong culture because it was born from the treatment patterns of human activity in human life. Local wisdom can manifest in various forms such as ideas, values, norms, and rules in the realm of culture (Koentjaraningrat, 1962).

One form of indigenous knowledge by Madurese farmers is the use of rice straw as organic matter in rice cultivation is done by local people, members of farmer groups in the Peberasan village in Sumenep Regency. Utilization of rice straw as organic matter is a life strategy in answering many problems in rice cultivation activities.

The idea was formed because of the emergence of consciousness of farmers member groups towards less fertile land conditions. The problem was discussed at a meeting of farmer groups that produced a decision that they would invite the Field Extension Officers (PPL) Agriculture to be able to help in solving the problems of soil fertility. Field Extension Officers (PPL) Agriculture recommended that to improve soil fertility can be done by applying the organic matter to agricultural land that was to restore the rice straw.

The recommended way of PPL is by distributing straw evenly on the fields, then the straw were sprayed with a solution Effektive Microorganisms (EM) and plowed. After doing the recommendation of PPL, farmers had difficulties due to straw hamper the course of hand tractor, so it became less effective. Although this method is considered less effective, awareness of farmers to apply the straw on agricultural land remains strong and they look for other ways which are more practical.

Based on discussion of member of farmer group obtained some alternative ways of applying straw:

1. Fresh straw spreaded out before planting
 - a. Applied straw after cultivation process

Applied straw after cultivation process is done by spreading on fields, and then trampled the straw to set the next planting. From the observation of farmers, indicating that the impact is the rice plant looks yellow in the early growth up to age \pm 15 days after planting. This is caused by very high microbial activity in decomposing straw, resulting heat (Alexander, 1977) which resulted the disruption of root growth of rice and the immobilization of available nitrogen in the soil. In

addition, this method requires many labor, so it is less efficient and increasing production costs.

b. Applied of straw to follow the plow line

Applied straw conducted simultaneously with the plow process in a way buried in the ground to follow the plow line. It was intended not inhibit the process of plowing. However, this method required additional manpower that quite a lot because in the process of embedding the straw had to balance the speed of the tractor. In addition, according to farmers these observations have not provided direct impact on growth and crop production, but could be seen in the next rice planting season.

2. Straw immersing among rice plants rows

Applying of straw in this way began with the composting straw naturally in the middle of rice fields. Applied straw conducted simultaneously with the first weeding (\pm 35 days after planting) by immersing the incompletely finished compost among rice plants rows. The field is then flooded for 2-3 days, and thereafter carried out fertilization. According to the observations of farmers, this way relatively required less labors than both of the above so that additional production costs can be reduced. In addition, this way seemed the crop growth better and weed growth becomes stunted also can produce 9.92 ton/acre compared with other way that only produce 8.64 ton/acre.

Of the three farmers' experiences in applying straw into the paddy fields, farmers preferred to more elaborate the third idea, that is immersing incompletely finished straw compost among rice plant rows in conjunction with the first weeding time. Finally this way is developed and followed by members of farmer group *Sumber Hasil* because considered most profitable, full of wisdom, and good value.

"The uniqueness of" Applying of Rice Straw Rice bolt

The uniqueness found in the utilization of rice straw as organic matter in rice cultivation was the application of straw incompletely finished compost among rice plants rows. The uniqueness was a form of peasant wisdom of ideas that included:

1. Composting rice straw naturally in the middle of rice field

Composting rice straw in the middle of field gives the advantages that: a) straw is always moist. Cellulose component of rice straw absorb water molecules (Nevell and Zeronian, 1985) consequently becomes soft straw. It will accelerate the decomposition of straw; b). Nutrients released through decomposition process remain on the rice fields that can be utilized by plants; c). Applying rice straw easier and faster because straw was in the middle of rice fields and needed not many labors.

2. The application of straw incompletely finished compost

The application of rice straw into the soil would be better if composted first. Farmers in general apply the organic matter in the form of mature compost (have decomposed by C/N ratio 12). Yet members of farmers group of Sumber Hasil perform a new innovation by applying straw in the form of incompletely finished compost, followed by giving urea and other fertilizers. Immobilization of nitrogen that should occur at the beginning of applying organic matter to the soil (Subba Rao, 1994) can be avoided because it is followed by urea fertilizing as nitrogen source. This phenomenon is also supported by the results of Ekawati's research (1999) which indicates that application of rice straw incompletely finished compost (C/N ratio of 17.5) improved the synchronization between N mineralization and demand of N of corn.

The result of field observation of researchers indicate that rice plants look sturdy and do not show symptoms of a yellowish except on non-productive tillers. The presence of yellowish symptoms in non productive tiller and ultimately die. According to farmers, it is because tillers are still "young" so that is less resistant towards increasing temperatures due to the decomposition process of straw that is still ongoing.

Besides that immersing straw compost can reduce the stress of drought for the compost can absorb water two to 10 times its weight and can reduce the loss of nitrogen through leaching of nutrients (Evans, 2007). Excess fertilizer will be bound by the compost to be stored as reserves of nutrients that will be released back into the soil solution and available for plants.

3. Straw simultaneously embedding between the rice rows at the first weeding

Wisdom knowledge of farmers in applying straw to the land simultaneously with weeding based on simple considerations, namely at the time of first weeding (age \pm 35 days after planting) rice plants are considered strong enough to receive the physical pressure due to immersion of incompletely finished straw compost. Theoretically, the rice plant at that age already have a strong enough root system to adapt the chemical changes that occur due to embedding straw compost such as temporary nitrogen immobilization, and the formation of organic acids.

According to the observations of farmers with straw compost embedding between rice rows can inhibit the growth of weeds, so farmers no longer have to second weeding. These conditions provide benefits to farmers, which can reduce the cost of production.

CONCLUSION

Wetland fertility problems, experienced by farmers' group members bring a source of local knowledge results in the form of ideas well worth it as an accumulation of collective

experience of its members, which need to be developed in enriching and completing the assembly of technological innovation of straw application to the wetland. Learning and excavation of local wisdom found in farmers' group *Sumber Hasil* include:

1. The peculiarity of farmers in the use of rice straw is applying along with the first weeding (\pm 35 days after planting) by immersing the straw incompletely finished compost among rice plants rows.
2. To produce incompletely finished straw compost, composting was done in the middle of the rice fields.
3. The application of straw as the organic matter between the rice rows has three advantages: (a) the cost of applying straw can be suppressed and the immersing done with weeding, (b) inhibited weed growth, (c) improve soil structure that can increase production.

REFERENCES

- Alexander, M. 1977. *Introduction to Soil Microbiology*. John Wiley and Sons. New York.
- Dinas Pertanian Kabupaten Sumenep. 2005. *Laporan Akhir Inventarisasi dan Karakteristik Lahan di Kabupaten Sumenep*. Kerjasama Dinas Pertanian Kabupaten Sumenep dan Balai Pengkajian Teknologi Pertanian Jawa Timur.
- Ekawati, Ida. 1999. *Peningkatan Kecepatan Dekomposisi Jerami Limbah Panen: Suatu Upaya Mengatasi Masalah Kesuburan Lahan Pertanian*. Disertasi. Pascasarjana Universitas Airlangga. Surabaya.
- Evans, G. N. 2007. The Practical Uses of Compost. <http://www.michiganorganic.msu.edu/uploads/files/31/The%20Practical%20Uses%20of%20Compost.pdf>
- Funcs, J.G. 2002. *Practical Use of Quality Compost for Plant Health and Vitality Improvement*. In. Insam, N., Riddech, S. Klammer (Eds). *Microbiology of Composting*. Springer Verlag. Berlin.
- Koentjaraningrat. 1962. *Masyarakat Desa Masa Kini*. Balai Penerbitan Fakultas Ekonomi UI. Jakarta.
- Kuntowijoyo. 2002. *Perubahan Sosial dalam Masyarakat Agraris Madura 1850 – 1940*. Matabangsa. Yogyakarta.
- Mardikanto, T. 2009. *Sistem Penyuluhan Pertanian*. Lembaga Pengembangan Pendidikan Universitas Negeri Surakarta dan UNS Press. Surakarta.
- Nevell, T. P. and S. H. Zeronian. 1985. *Cellulose Chemistry Fundamentals*. In *Cellulose Chemistry and Its Applications*. Ellis Horwood Limited and John Willy & Sons. New York.
- Subba Rao, N. S. 1994. *Mikroorganisme Tanah dan Pertumbuhan Tanaman*. UI Press. Jakarta.

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