

Ability of Farmers in Mobilizing the Development of Rice Straw Industry in MADA Region

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Abstract. Encouragement of growth in the agricultural industry in both upstream and downstream through the use of primary product and by-products to the optimum, a superior agricultural region based on sustainable agriculture can be created. In reality, it is difficult to succeed without the full involvement of the key participants (the farmers). Nevertheless, the ability of farmers is limited and is also threatened by other external factors. This limitation causes the rice sub-sector which is frequently seen as the environmental pollution by agricultural open burning, the incidental agricultural activity, the use of chemical fertilizers, the high amount of pesticides used as well as high rates of poverty among farmers. This is a loss because rice straw has the potential and high economic value in generating income and national economy besides reducing the pollution within the agricultural environment. Therefore, this article aims to analyze the factors that influence and affect the efforts of farmers to develop a competitive and progressive straw industry in the MADA Agricultural Region.

Keywords: Agricultural environment, Agricultural industry, Agricultural region, Downstream, Rice straw, Upstream.

1. Introduction

Rice industry is a strategic industry for many countries in the world because it is a staple food and a major economic resource for the rural population. Along with progress in the rice industry, the amount of straw will also increase. Diversity of its potential in creating new revenue sources could be one of the pillars of growth regions such as the Colusa Region, California. This is evident since the 1970s, straw (fodder) development has successfully become one of the economic catalysts of some countries and the change in socio-economic development of rural population. High potential as a source of energy, materials and production inputs in the upstream sector such as compost and animal feed have overcome the insufficiency of supply of electrical energy, building materials and agricultural inputs in the highly populated country [1].

Almost all countries in Asia use straw as animal feed, such as Korea (15.0%), Thailand (15.0%) and Japan (11.6%). This is because most farmers in Asia are involved in mixed farming i.e. agricultural crops, mainly cereals of rice, wheat or corn combined with livestock. This cuts the cost of providing animal feed. Use of straw as compost are highly developed in Taiwan (56.9%) and Korea (46.0%). Potential of straw as a source of electrical energy and biogas is actively developed in countries such as China, India and Bangladesh where rural regions are densely populated and where poverty is also high. This can be seen in the use of straw as a source of electricity in China by 53.6% and biogas in India by 28.0% [2-5].

This situation is in contrast to the trend of the use of rice straw in Malaysia which is very small just only 1%. The focus is on the production of straw as animal feed, compost, craft and retaining material from erosion while the straw are burned openly. The question here is why sub-sectors that have long been developed with the natural advantages of their location in the region are not translated into a strategic project through the development of the rice industry and its basic agricultural industry that is the straw industry. As a leading rice farming region and intact in Malaysia, the region must have available a variety of physical infrastructure and the expertise for the development of the rice industry. It is not economically viable if the

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main product (rice) only to be developed while the by-product that is the straw, which is naturally exist, highly and continuously produced, can be industrialize is put to waste intentionally.

Therefore, this study will try to analyze the factors that influence and affect the efforts of the farmers to develop the straw industry as a whole in MADA Region. This is in view that MADA region is the largest rice producer in Malaysia which contributes about 40% of the country's rice supply. Thus, the straw yield potential is high compared to other areas even though only 1% straw is successfully developed.

2. Research Methodology

The context of the farmers is taken into consideration because the farmers are the major producers of the raw material i.e. rice straw, after harvesting and will experience the impact due to the straw industry development. Therefore, studies on the ability of the agricultural community in developing the straw project should be evaluated because they are the main subject that will determine the survival of the development and management of the environmentally straw industry were implemented in the Region of MADA. The population of farmers involved in the development project during the study was 267. Based on the determination of sample size [6], a total of 160 respondents were interviewed. Purposive sampling method used to determine the subjects of the study was based on certain features which involved farmers that did not do straw burning by allowing selected groups to collect straw in the rice fields and farmers who re-use the straw as a downstream activity.

3. Discussion

3.1. Changes in the Weather (Rain) Prevented the Process of Gathering Rice Straw on the Farm

Crop management schedule is especially important in determining the time of planting and harvesting process because the rain must be avoided during harvest. Based on the results of the study (Table 1), the harvest of rice during the rainy season is a key factor to the degradation of straw development industry of MADA Region. It was agreed by 153 respondents (95.6%) while only five respondents (3.1%) stated affecting less degradation during the rainy season. Based on R&D and the use of the existing baler machine technology, rice straw can only be collected and use when everything is dry. Furthermore, the imported baler machine cannot be operated in wet soil conditions. This negated the efforts of farmers to develop the straw industry in the MADA Region.

3.2. Unattractive Incentives Given to Farmers

More than half of the respondents (85.6%) who participated in the straw development projects in the MADA Region stated that the incentives provided by the MADA are not attractive. Farmers were rewarded by MADA at RM16 (Ringgit Malaysia) per niche for collecting rice straw. From the interviews, the incentive payments are too low compared to the difficulties the farmers have to cultivate rice. Furthermore, when straw were removed from the farm, the remains of the rice stumps left were almost close to the ground and thus were difficult to ignite or burn. These difficulties deserve higher incentive and attractive payments. These will attract more farmers to participate in straw development projects. Only 16 respondents (10.0%) and seven respondents (5.5%) respectively stated incentives by the government were less attractive and did not affect their efforts to develop the straw collection project. For a small group of farmers the incentives were satisfactory as the straw were burned away before this project. At least through this project, they get an extra income of RM16 per lot or free rotation stubble through the incentives provided by the MADA. This cuts the cost of land management for the next crop.

3.3. Inefficient Technology of Straw Collection

Farmers were open-minded to a new technology when introduced to them [7]. However, the technology must be compatible with the capabilities with the environment and the farming systems that they were running. Based on the results of the study (Table 1), a total of 136 respondents (85.0%) stated that the technology of straw collection is less efficient and that became stagnant to the development of straw industry in the MADA Region, while only 25 respondents (15.0%) expressed this factor is less affecting the

development of the straw industry. From the interview result it was found also that baler machine used to collect straw on farms is not appropriate to local conditions. The tires easily come stuck and unoperational in watery rice fields. Hence, it can only operate during the dry season that is during the months of February and March.

3.4. Crop Diseases and Pests Necessitate Open Straw Burning

The use of chemical inputs on crop causes insects and pest resistant to the pesticides used. The farmers resorted to straw burning to eliminate the threat of the larvae and eggs of insects and pests for the next rice crop. This was stated by 126 respondents (78.7%) that this factor also significantly influenced the stagnation in the development of the straw. The remaining four respondents (2.5%) stated this factor contributed to the occurrence of less stagnation in the development of the straw (Table 1).

3.5. Inadequate Provision of Logistical Facilities

From the interviews result it is found also the insufficient number of baler machines causes the straw collection could not be fully collected in all MADA Region. A total of 103 respondents (65.5%) stated that the lack of baler machine caused the demand of farmers to participate in development projects in each straw harvesting season cannot be met. This problem was felt particularly for farmers whose farm locations were far away from the central straw storage provided by MADA. This led to the burning of straw as a short term measure to prevent the next crop farmers from waiting for too long to get services to collect straw from MADA.

Proper storage of straw that is properly roofed and with sufficiently sized area is an essential requirement for developing the straw industry. The results show that 96 farmers (60.0%) state the lack of storage facilities prevent the development of straw industry. Without the existence of proper storage of straw, it will cause the straw can be easily damaged by humid atmosphere. The interviews also found that farmers who take the initiative to collect their own straw face difficulties to store the straw because they do not have sufficient area of building suitable straw stores around the residential areas. This is because the straw bale is too big and very heavy (450kg). Further, transportation costs are also high for the farmers to send to the central MADA straw stores. This situation also affected the development of straw industry in MADA Region. However, each of the 60 respondents (37.5%) and five respondents (2.5%) express the insufficient of straw storage and straw did not affect the straw development in the MADA Region. In their opinion, the straw storage is not a very important factor because their task is just to manage the straw and the rest of the responsibilities to MADA and as long as they get the incentive payments.

The inefficient transport system includes the lack of trucks to bring out the straw from the field; the small trucks cannot accommodate that many, big and heavy straw prevent the straw development in MADA Region. This fact was recognized by 82 respondents (51.3%). These constraints lead to the straw that has been collected, has to be burned away as a result of delays in the process of land management or damage due to the exposure to rain and moisture. Meanwhile, a total of 73 respondents (55.6%) expressed this factor was less affected to their efforts in the straw development (Table 1).

3.6. Insufficient Knowledge and Skill of Farmers

To create a progressive straw industry, the farmers must have a high level of skills in various stages of production process, especially at harvesting and post harvest handling. The level of knowledge is also important to plan equipment and to schedule collection of straw (Summers et al., 2003). Study shows that 91 respondents (56.9%) stated that lack of relevant skills and knowledge of straw management on the farm led to unsatisfactory or failures of the straw development in the Region MADA. Interviews found that farmers are in need of further training in the field, continuing advice from the relevant officials and held a series of successful visits to efficient straw projects. The farmers will gain more knowledge, skills and confidence to continue industrial development projects in the field of straw themselves with little help and support from the MADA.

3.7. The Limited Time Frame to the Following Crop Management

A total of 32 respondents (20.0%) expressed limited period for land management for the planting of next crop affect less the development of collection straw activities. While the other 82 respondents (51.3%) state these factors are affecting the process of development of straw industry in the MADA Region (Table 1). From the interviews found also that short period of time about a month and a half farmers were forced to burn the straw immediately to clear the field. If the farmers slow to clean straw from the field, many difficulties would arise over the next agricultural management from cultivation, harvesting and post harvest handling. This is because the water will be discharged into the field on schedule while the farmers can no longer follow the schedule set by the crop agriculture agencies.

3.8. Inefficiency of Straw Management by the Institution

From interviews it is also found that farmers are dissatisfied with the institutional managements for not giving enough attention after series of plot demonstration of straw development were carried out in the field. This is because the institution had to give priority to projects that are more profitable crops. Farmers are really in need of continuous advisory services from the institution because the farmers are still lacking in skill and confidence and these levels have not been established, but often face the problem of the ever-changing field. This is the situation that causes the farmers to finally get back to the traditional farm management. These constraints have failed the efforts to increase the use of straw in the working of agricultural activities.

3.9. Farmers' Lack of Capital for Straw Projects Development

The managerial inefficiency by the institutions engages farmers to initiate their own straw projects development in the Region MADA Region. Thus, capital is very important in this project, especially for the rental of baler machines, trucks and straw storage buildings. The study results (Table 1) found only a few farmers (6.3%) is very keen to operate their own straw project by stating limited capital constrict their development. The other 52 respondents (32.5%) have the view that capital affects less on the straw development project, while 98 respondents (61.2%) stated capital is not a problem to them. This is because they do not wish to operate their own straw collection project instead they only require MADA and private contractors to manage it. These groups of farmers expect better incentives for their efforts for not burning straw and the material to be developed.

Table1: Factors affecting the efforts of the farmers to develop the rice straw industry in MADA Region

Factors	Yes, affected		Less affected		Not affected	
	No.	%	No.	%	No.	%
Weather (rain)	153	95.6	5	3.1	2	1.3
Incentive (Unattractive)	137	85.6	16	10.0	7	5.5
Straw Collection Technology	136	85.0	25	15.0	-	-
Diseases and Pests (Causes)	126	78.7	30	18.8	5	2.5
Logistic (facility)						
-Baler Machine	103	65.5	57	35.6	-	-
-Straw Storage	96	60.0	60	37.5	5	2.5
-Transportation System	82	51.3	73	55.6	5	2.5
Skill and Knowledge (Farmers)	91	56.9	69	53.1	-	-
Short Term for field management	82	51.3	32	20.0	56	28.7
Institutional Management	12	7.5	99	61.9	59	30.6
Limited Capital	10	6.3	52	32.5	98	61.2

Source: Survey 2010

4. Conclusion

The poor development of rice straw in the MADA Region is a clear evident from the abound of straw burning activities, total imports of chemical fertilizers, high consumption of animal feed, the limited rate of farmers participation in the straw collection project and by limited number of the number of operators and entrepreneurs in the rice straw industry. Capabilities and potential of rice straw are doubtless, especially in

industrial development in the upstream and downstream stages. The development of rice by-product is not intended purely commercial, but more geared towards sustainable agriculture development. It involves optimization of the development of the main product (rice) and its by-products (straw and husk). Therefore, farmers as producers of raw materials should be geared in an integrated and comprehensive manner. Government should be aware that farmers are often passive toward new projects if they are not shown on the profits due to their involvement in a project. In addition, there are existence of other factors hinder their efforts to develop a straw project. Extensive participation of farmers coupled with the provision of adequate logistics, research and development at the local level, a good crop management practices and help, support and an efficient and integrated planning from the government could create a competitive and advanced straw industry the MADA Region.

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