Brown Cane Sugar–cattle Production Integration for Rural Economic Development Prospects in South Sulawesi, Indonesia

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Authors’ contributions

This work was carried out in collaboration between all authors. Authors RD and AMAZ designed the study; produced data gathering instruments and coordinated the data collection. Authors RD and ANT conducted data gathering and analysis, while authors RD and AMAZ wrote the draft. All authors read and approved the final manuscript.

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ABSTRACT

Sugar plays an important role in Indonesian economy; the commodity is one of the major import commodities in recent years. Integration of brown cane sugar (BCS) with cattle production is a potential business opportunity that can be developed for rural economic development. This integration can optimize the use of marginal lands, and facilitate the development of environment friendly organic farming. The research objective was to identify the potential for the development of BCS-cattle production integration based on land resources, technology, culture, labor force, and markets. Data were collected through focus group discussions and interviews of 75 randomly selected farms from three districts (Barru, Wajo, and Bone), all of them in South west Sulawesi, Indonesia. The results showed that there is a huge potential of 302,771 ha’s cultivated farm land, comprising of 10,355 ha’s rice fields, 86,753 ha’s dry land and 205.663 ha’s paddock grazing. Cattle

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raising is part of the farming culture in Sulawesi and a major source of income for most rural households. BCS-cattle production integration can generate employment opportunities, promote sugar and meat import substitution, produce biogas as an alternative energy source, increase the use of organic fertilizer, and promote organic-based farming system. For this system to be successful, government support is needed in establishing pilot projects at various locations which are expected to encourage farmers to adapt and develop the integrated farming system for rural economic development.

Keywords: Integrated farm; appropriate technology; organic farm; rural employment; small scale enterprises.

1. RATIONALE

Indonesia is a tropical agricultural country where most agricultural products can be grown, but it imports almost all foods. Currently a lot of agricultural land is not utilized in the form of concession or controlled individually; there are many landless farmers. These conditions make the countryside less attractive and encourage high urbanization. The unemployment rate in Indonesia has increased drastically from 3.2 percent in 2000 to 8.9 percent in 2009 where the unemployment rate in urban areas is higher than in the country side. In 2009, the urban unemployment rate was 11.4 percent, substantially higher than in the country side with about 7.6 percent in the rural sector. The same thing happened to women unemployment compared to that of men; amounting to 10.7 and 7.8 percent respectively [1]. Potential areas for sugar cane development in South Sulawesi are approximately 91,108 ha’s which consist of 10,355 ha’s paddy fields and 86,753 ha’s dry land. Pasture land can partly be converted into cane fields for the small scale cane sugar industry development and at the same time be integrated with cattle breeding.

Sugar is a strategic commodity in Indonesia’s economy as it belongs to the group of nine-basic needs for daily consumption. In 2010, total national sugar consumption both industrial and household consumption amounted to 4.55 million tons, while domestic production was only 2.44 million tons of sugar, so the shortage was met by imports [2]. Production cannot keep pace with consumption of sugar for several reasons, namely the decline in sugar cane plantations because the land is converted into residential and industrial areas, the decline in yield, continuously declining price of sugar, and decrease in plant efficiency [3].

Cane sugar industry on a household scale is suitable for rural development as it adds several work opportunities for poor farmers including the women. The development of brown cane sugar (BCS) can be integrated with cattle breeding; the shoots and leaves of the sugarcane can be used as feed materials for cattle. Cattle feces and urine waste can be processed to produce organic fertilizer and biogas. Manure as fertilizer is a substitution of chemical fertilizers supporting organic farming. The research objective was to identify potential land resources, technology, farming culture and the market for the development and BCS-cattle production.

Increasing production of BCS serves as import substitution and/or yields an export commodity, which drives regional economic development. It supports an increase in the cattle population by providing feeds for cattle which in turn leads to an increase in animal protein production and meat import substitution. This concept promotes organic fertilizer to substitute chemical fertilizer, encourages organic agriculture and reduces green gas emission. Development of integrated sugar cane with cattle breeding is an appropriate concept for rural economic development because it will generate huge employment opportunities for the rural population, especially for poor households through the use of less productive agricultural land.

2. CONCEPTUAL FRAMEWORK

2.1 Integrated BCS-cattle Development

Markets, natural resources, appropriate technology, and farming culture offer a great potential for the development of BCS and beef cattle production integration. Sugarcane can be developed easily on marginal or unutilized lands. Sugarcane is commonly planted on asphalt sidewalk in both rural and urban areas where it can grow without any further maintenance.