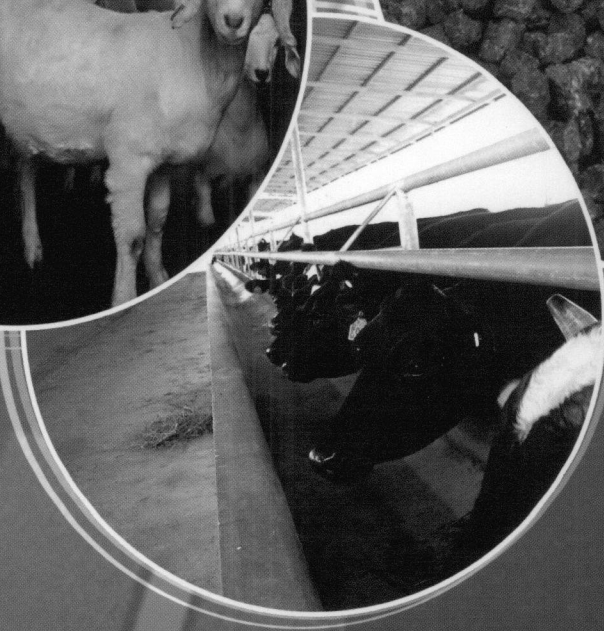




Feed Safety and Security



**Proceedings of the
Malaysian Society of Animal Production
31st ANNUAL CONFERENCE**

6 - 8 JUNE 2010 | RENAISSANCE HOTEL KOTA BHARU
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AVAILABILITY AND UTILISATION OF OIL PALM BY-PRODUCTS AND WASTE AS BALI CATTLE FEED IN RIAU PROVINCE

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Abstract

It had been reported that the oil palm by-products and waste have potential to be used as cattle feed. There are about 1.4 million hectares of oil palm plantation and about 109,641 cattle and 1.29 million farmers involved in oil palm industry in Riau Province. However, the oil palm by-products and waste have not yet been commonly used as cattle feed. Therefore, the bionomic, socio-culture and annual reports of 8 regencies of Riau Province were examined to study the cause of low implementation in using the oil palm by-products and waste as Bali cattle feed in Riau Province. The results indicated that the oil palm by-products and waste had not been commonly used as cattle feed due to the technical-economical problems in collecting, processing and distributing the products. This leads to the use of oil palm by-products and waste for non-feed purposes or to be exported out of Riau Province. Therefore, the availability of the oil palm by-products and waste as Bali cattle feed in Riau is still considered unstable.

Key words: Oil Palm by-products-waste, Bali cattle, feed, Riau

Introduction

Oil palm by-product and waste, such as its leaves, frond, bunch trash, palm oil sludge, palm pressed fiber, and palm kernel cake have potential to be used as cattle feed (1). Nutritive value of these products as cattle feed have been reported by many (2, 3, 4, 5, 6, 7, 8).

Some of those products contain anti-nutritive factors that have to be eliminated or treated before they can be used as cattle feed. It has been reported that feeding excess palm kernel cake (PKC) damaged liver and kidney due to the high Cu content of the product (11-55 μg per gram dry matter) (9). This could be prevented by adding Zn (in the form of Zn sulfate) at 500 $\mu\text{g/g}$ PKC (10).

There are about 1.4 million hectares of oil palm plantations, 109,946 cattle and 1.29 million farmers involved in oil palm industry in Riau Province (11). Theoretically, there should be abundant of oil palm by-products and waste that could be used as cattle feed. However, so far, oil palm by-products and waste had not yet been commonly used as cattle feed. Most of the Riau cattle farmers still depend on natural grass to feed their cattle. Therefore, there is low implementation of using oil palm by-product and waste as cattle feed in Riau Province. This is in contrary with the opinion of animal nutritionists and leads to the instability in securing of oil palm by-product and waste as cattle feed in Riau Province.

Based on this information, a research on the bionomics and socio-culture of cattle farming in the Riau Province was conducted to study the cause of the low usage of oil palm by-products and waste as cattle feed. The results of this research were expected to form the basis of the recommendation for a better utilisation of oil palm by-products and waste as cattle feed in Riau Province.

AVAILABILITY AND UTILISATION OF OIL PALM BY-PRODUCTS AND WASTE AS BULL CATTLE FEED IN RIAU PROVINCE

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Abstract

It had been reported that the oil palm by-products and waste have potential to be used as cattle feed. There are about 1.4 million hectares of oil palm plantation and about 109,641 cattle and 1.29 million farmers involved in oil palm industry in Riau Province. However, the oil palm by-products and waste have not yet been commonly used as cattle feed. Therefore, the economic, socio-cultural and annual reports of 8 regencies of Riau Province were examined to study the cause of low implementation in using the oil palm by-products and waste as Bull cattle feed in Riau Province. The results indicated that the oil palm by-products and waste had not been commonly used as cattle feed due to the technical, economical problems in collecting, processing and distributing the products. This leads to the use of oil palm by-products and waste for non-feed purposes or to be exported out of Riau Province. Therefore, the availability of the oil palm by-products and waste as Bull cattle feed in Riau is still considered unstable.

Key words: Oil Palm by-products-waste, Bull cattle, feed, Riau

Introduction

Oil palm by-product and waste, such as its leaves, frond, bunch trash, palm oil sludge, palm pressed fiber and palm kernel cake have potential to be used as cattle feed (1). Nutritive value of these products as cattle feed have been reported by many (2, 3, 4, 5, 6, 7, 8).

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Based on this information, a research on the economics and socio-culture of cattle farming in the Riau Province was conducted to study the cause of the low usage of oil palm by-products and waste as cattle feed. The results of this research were expected to form the basis of the recommendation for a better utilization of oil palm by-products and waste as cattle feed in Riau Province.

Method

The research was conducted between August and November 2009 by examining primary and secondary data/information of bionomics and socio-culture of cattle farming in the Riau Province. Eight regencies were selected in this study; they were the regency of Pelalawan, Bengkalis, Rokan Hilir (Rohil), Kampar, Siak, Rokan Hulu (Rohul), Indragiri Hulu, and Kuantan Singingi. The data/information obtained were subjected to descriptive analysis. The configuration among the data/informatin was also studied.

In this study, the standard of "Animal Unit (AU)" was based on the report of Ishak Manti *et al.* (12), which was 1 Animal Unit of Bali cattle was similar to the Bali cattle body weight of 250 kg. Then, the digested dry matter requirement was set to be about 3% body weight (about 7.5 kg per AU of Bali cattle).

Data on the production level (in Ton), expected digested dry matter content (Ton), and Feed Potential of oil palm by-product were calculated and recorded. It was assumed that 60% on the oil palm by-products and waste produced was used as Bali cattle feed.

Results and Dicussion

Data on the oil palm plantations and cattle populations in the eight regencies is presented in Table 1. There were no correlation between the area under oil palm plantation, oil palm production level, and cattle population among the 8 regensies. The largest area of oil palm plantation is at Pelalawan regency (181.836 ha); the highest oil palm production (2 514 061 Ton/year) and the most dense population of cattle are at Kuantan Singingi regency (20 245 ekor).

Diwyanto *et al* (1) reported that the weight ratio among oil palm frond (9 292 kg), palm sludge (4 704 kg), bunch trash (3 680 kg), pressed fiber (2 880 kg), palm leaves (1 430 kg), and palm kernel cake (560 kg) produced per hectare of oil palm plantation. Liwang (13) reported the composition per 1000 kg (1 ton) of fresh fruit bunch as 250 kg palm oil, 294 kg palm sludge, 35 kg palm kernel cake, 180 kg palm pressed fiber, and 241 kg of other materials. Dry matter content of oil palm byproduct and waste were reported by Mathius *et al.* (14): 91,20% (bunch trash), 24,08% (palm solid), 91,83% (palm kernel cake), 93,11% (palm pressed fiber), 26,07% (palm frond), and 46,18% (palm leaves). It has been reported that dry matter digestibility of palm sludge was 70%, palm kernel cake was 70%, palm pressed fiber was 40%, palm frond was 60%, and palm leaves was 62% (15, 16, 17).

Based on the findings of these researchers, the production levels of the oil palm by-product and wasted at the 8 regencies were predicted. The results are presented in Table 2.

Table 2 shows that there were a tremendous amount of palm frond, palm solid, bunch trash, palm pressed fiber, palm leaves, and palm kernel cake produced every day. To be utilised as cattle feed, these products still need to be processed with either physical, chemical or biological treatment to ensure elimination of their anti nutritive factors or to be supplemented with additional nutrients. To be treated, these products have to be collected and transported to the treatment center. Extra effort and infrastructure that are suitable for the Riau Province condition (which is mainly peat soil) are needed. The oil palm by-products and waste must arrived at the treatment centers at quantity and quality that is suitable and economical to be processed.

Table 1. Profile of the 8 regencies of Riau Province

No	Regency	Area (km ²)	Population	Area of Oil Palm Plantation (ha)	Oil Palm Production (Ton/year)	Cattle Population
1	Pelalawan	12,490	276,353	181,836	328,392	2,521
2	Bengkalis	12,044	738,996	110,006	680,231	7,395
3	Rokan Hilir	8,961	510,857	80,764	94,823	7,419
4	Kampar	10,928	615,517	54,275	114,117	11,234
5	Siak	8,556	318,585	131,876	2,490,582	12,765
6	Rokan Hulu	7,450		127,808	1,394,134	15,820
7	Indragiri Hulu	7,676	328,003	17,238	208,482	18,928
8	Kuantan Singingi	5,295	314,040	174,130	2,514,061	20,245
	Total	73,402		877,933	7,824,822	96,327
	Riau Province	111,229	5,070,952	1,340,000	13,547,250	106,941

Source : BPS Kabupaten Pelalawan (2008); BPS Kabupaten Rokan Hulu (2007); BPS Kabupaten Siak (2008); BPS Kabupaten Kuantan Singingi (2007); BPS Kabupaten Bengkalis (2008); BPS Kabupaten Indragiri Hulu (2007/2008); BPS Kabupaten Rokan Hilir (2008).

Table 2. The production level of oil palm by-products and waste

No	Regency profile	Palm fruit and oil palm by-product and waste						
		Palm fruit	Palm frond	Palm sludge	Bunch trash	Palm fiber	Palm leaves	Palm kernel cake
Production level (Ton)								
1	Per year	7,824,82	4,544,265	2,300,498	1,799,709	1,408,468	699,343	273,869
2	Per day	21,438	12,450	6,303	4,931	3,859	1,916	750
Digestible dry matter production (Ton)								
3	Per year		710,814	387,772	656,534	524,570	200,233	176,046
4	Per day		1,947	1,062	1,799	1,437	549	482
Feeding Capacity (AU=Animal Unit)								
5	Cattle carrying capacity		155,795	84,991	143,898	114,974	4,389	38,585
6	Total		542,632 (5.07 times recent population)					

This processed oil palm by-product and waste that were suitable for cattle feed, then have to be distributed to the consumers (cattle farmers) who live all over the Riau Province (over 111,229 km²). So far, no person or company has applied to be involved in this activity.

Total of expected feeding capacity of oil palm by-product and waste was 542,632 AU; which is about 5 times or 500% of the present cattle population (106,941 cattle). Therefore, the cattle population in Riau Province may still be increased.

Most of the palm oil factory are located near to the prime transportation facilities (the Provincial road or the river). Based on the data in Table 2, these factories produced about 18,000 Tons of oil palm by-product and waste every day. The accumulation of the oil palm by-product and waste could create environmental problem (1). To avoid this, the palm oil factories use the oil palm by-product or waste as source of energy to operate their turbine and boiler, or export them outside of Riau Province. About 70% of the oil palm plantation products was exported as CPO (11).

Oil Palm plantation in Riau Province is a monoculture plantation. Therefore, the maintenance of the arability of the land is the responsibility of the operator of the plantation (not naturally). The advantage of this system is that the operation can regulate it according to his need or agenda. The disadvantage of this system is that it requires high operational cost.

Oil palm plantations in Riau province comprise of state, private, and farmer plantations. The state and private plantation, which have sufficient capital, can bear the fertilization cost. However, most of the farmer plantations are not able to pay the cost due to their limited capital. This condition leads to poor production performance and the plantations being more susceptible to plant diseases. This in turn leads to unreliable availability of oil palm by-products and waste as cattle feed in Riau province.

Conclusion

It can be conclude that the oil palm by-products and waste have potential to be used as Bali cattle feed in Riau province. However, due to the technical and economical problems in collecting, processing and distributing the by-products, most of the cattle farmers had not yet used them as cattle feed. Most of the by-products were used either as fertilizer, or as source of energy for operating the turbine and boiler in the palm oil factory, or were exported outside the Riau province. Therefore, the availability of oil palm by-products and waste as Bali cattle feed in the Riau province is considered unstable.

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