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by

Submission date: 10-Jan-2020 11:42AM (UTC+0700)
Submission ID: 1240547901
File name: farm_analysis_of_Jamilah_et_al_2016.pdf (287.52K)
Word count: 4203
Character count: 20801

International conference on Sosial, Humanities and Government Science (ICSHGS) 2017

FARM ANALYSIS OF RICE CROP TRIMMED PERIODICALLY IN THE TROPICAL WET

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Abstract

The habits farmers in western Sumatra in addition to rice farming also maintain cattle or ruminant. The aimed was to assess farm analysis of rice crop in two periods cultivation that trimmed periodically applied some type of liquid organic manure to increase incomes in the tropical wet. The experiment was conducted in the sampling method technique is purposive sampling, in the field, by growing rice Cisokan. Crop planting in paddy fields in the village of Ikur Lubuk, Eastern District of Padang Panjang, Kota Padang Panjang, a height of 720 m above sea level. Planted rice crop began growing season (MT) 1 then ratooned into MT 2, liquid organic manure (LOM) with a concentration of 4% every 2 weeks, for the MT 1, and the concentration of 10% for the MT 2. Experiments were carried out in the form of a split plot with three forms of trimming; not trimmed (P0); trimmed before coming primordial age (MT) 1 and not trimmed on MT2 (P1); trimmed at MT1 and also trimmed at MT 2 (P3). Subplot gave three types of liquid organic manure (LOM) was Crocober (F1); Unitas Super (F2) and K-Getz Commercial (11). The experiment was repeated 3 times, thus obtained 27 experimental plot. Analysis indicator used is the R/C Ratio (Return Cost Ratio). The result indicated that the cultivation of paddy rice in the tropical wet in ratoon, can produce forage and grain dry rice profitable with R/C reaches 2.82. Crocober as LOM is better than others to increase the production both forage and grain of rice yield.

Key words: farm analysis, rice, forage, trimming, tropical wet, liquid organic manure

BACKGROUND

The tropical wet climate is only found along the equator, usually within 25 degrees of the equator because. Large areas of Tropical Wet are found in Brazil, the Democratic Republic of Congo, Indonesia, and the Philippines. Seasons don't change in Tropical Wet, so there is only 1 season. As our, Earth revolves around the sun the equator always receives direct sunlight and warmth throughout the entire year. Direct sunlight is different than indirect sunlight. Indirect sunlight may not deliver warmth-similar to the light that hits the polar areas, but direct sunlight means light and warmth. Temperatures stay the same throughout most of the year because these areas are found along the equator and receive constant direct sunlight. Tropical Wet gets it name from the regular rainfall it receives throughout the year. It sometimes rains every day--usually in the morning or early afternoon. The reason it rains so much here is because of the regular warm temperatures, which evaporate water and keep the humidity high. Most areas of Tropical Wet receive over 100 inches of rain per year, although some receive nearly 300 inches per year. The constant rain and direct sunlight at the equator allow tropical rainforests to develop. This is the only climate that can support true rainforests.

Indonesia is one country that has a rice paddy field green. Indonesian farmers plant rice throughout the year, it is supported by its wet tropical climate. Rice crops require flooding throughout the year. The availability of water throughout the year is also determined by the climate. Almost all of the territory within the State of Indonesia has a wet tropical climate, except for several islands in the eastern part of Indonesia. Special districts of West Sumatra, the main livelihood of the farmers here are paddy rice farmers (Jamilah, 2012); (Jamilah, Ediwirman, & Ernita, 2015). Habits farmers in western Sumatra in addition to rice farming also maintain cattle or ruminant. Livestock is reared and fed forage-called forage fodder (HMT) that comes from the grass. Some types of grass deliberately developed and cultivated properly, but there are also farmers pick it up from the field. Conversion of agricultural land for allotment of housing, factories and other function, resulting in dry land is used as the cultivation area of grass on the wane. Therefore, the provision of animal feed forage is on the wane. As a result of these conditions will have an impact on the number of cows that can be maintained.

Indonesia Import condition until today still import rice and beef, both living and beef. The value of imports of meat and live cattle sapid Indonesia as much US $ 596.9 million equivalent to Rp 7.88 trillion (13.200 per US dollar exchange rate) (Aryanti, 2016). In addition, Indonesia imported rice as much as 3-4% of national rice requirement. Based on BPS data diterimaLiputan6.com, Jakarta, Wednesday (16/11/2016), the value of imports of rice in October 2016 was US $ 7.79 million with a weight of 17.19 million kilograms (kg).

This realization is down from the previous month at US $ 8.35 million weighing 17.78 million kg. While in October 2015, the import value of US $ 10.51 million rice weighing 21.09 million kg. Rice imports in January-October 2016 reached US $ 480.33 million. This value increased significantly from the same period last year worth US $ 110.39 million. Most large supply of rice comes from Thailand to Indonesia worth US $ 218.83 million, Vietnam and Pakistan respectively imported the US $ 212.52 million and US $ 26.38 million. Imports of rice from India US $ 12.90 million, from the US $ 5.48 million Myanmar, and from the country US $ 4.21 million. If calculated in rupiah, a figure of US $ 596.9 million equivalent to Rp 7.88 trillion (13.200 per US dollar exchange rate).

If seen from the above data shows that Indonesia has not been sovereign to food and meat. Therefore, look for a solution to the increased production of rice and meat in Indonesia. Rice cultivation techniques are efficient and optimal expected to be the right solution in an effort to increase the yield of rice and cattle are kept. Rice cultivation techniques with periodic pruning system on the same land until 2 or 3 times a growing season by constantly multiplying the ratoon crop, in addition to more economically advantageous as well. Many costs can eventually be saved, among others; seed, tillage and a shorter time to reach 1 to 2 times a month growing season. Use and choice of homemade liquid organic fertilizers such as Unitas Super, Crocober and will be compared with factory-made that has been commercialized with a high enough price reached Rp 70,000 / liter. Forage is cut from the rice plant can meet the needs of cattle feed. If the cow weight 500 kg, the forage needs to reach 10% of their body weight per day is 50 kg per day.

The aimed was to assess farm analysis of rice crop in two periods cultivation that trimmed periodically applied some type of liquid fertilizer to increase incomes in the tropical wet.

METHODOLOGY

The experiments were conducted in the field, by growing rice Cisokan. Crop planting in paddy fields in the village of Ikur Lubuk, Eastern District of Padang Panjang, Kota Padang Panjang, a height of 720 m above sea level. Planted rice crop began growing season (MT) 1 then ratooned into MT 2, organic liquid fertilizers with a concentration of 20% every 2 weeks, for the MT 1, and the concentration of 10% for the MT 2. The sampling method technique is purposive sampling (Suhaini, Yusri, & Sayamar, 2013).

Experiments were carried out in the form of a split plot (Jones & Nachtsheim, 2009) with three forms of trimming; not trimmed (P0); trimmed before coming primordial age (MT) 1 and not trimmed on MT2 (P1); trimmed at MT1 and also trimmed at MT 2 (P3). Subplot gave three types of Liquid Organic Manure (LOM) given consisted of Crocober (F1); Unitas Super (F2) and Commercial K-Getz (F3). The experiment was repeated 3 times, thus obtained 27 experimental plots. The parameters were forage production, grain and farm analysis. Data analyzed statistically by using F 5% significance level. Rice crop was trimmed when coming to the primordial age, performed on MT 1 and MT 2 crop growing season results in 1 maintained until harvest, then ratooned, maintained to get next generation of rice crop by vegetative propagation MT 2. Therefore, forage can be harvested up to two times.

According to (Nurasa & Purwoto, 2012) the analysis of farming can be done by using the data collection was done in two ways, namely data collection conducted direct interviews with respondents in the form of a structured questionnaire. While secondary data obtained from the compilation of the library or related information. Data analyzed, using descriptive statistical analysis with cross tabulation and time series. Farm profitability in this study is defined as the difference between the reception of farming and farm cash costs or expenses actually incurred by farmers. Costs of farming are taken into account include the cost of fertilizer, labor costs, the cost of seed, pesticide costs, the cost of irrigation, land tax, the cost of post-harvest handling / processing, transportation cost and other related costs. Analyses were performed using partial budget analysis. Analysis indicator used is the R/C Ratio (Return Cost Ratio). Soekartawi (2002) states that R/C Ratio is the ratio (ratio) between revenues and costs. Mathematically, this can be written as follows:

1. The formula for revenue analysis: Pd = TR – TC; TR = Y. Py TC = FC + VC

   Explanation: Pd = farm revenue TR = total revenue TC = total cost FC = fixed cost VC = variable cost Y = Yield; Py = Price of Yield.

2. Feasibility analysis formula = R/C ratio R = revenue C = cost

   Decision criteria: R/C >1, farming profitable (supplementary benefits/reception is greater than the additional cost), R/C<1, farm income (extra cost is greater than the additional revenue), R/C = 1, farming breakeven (extra income is equal to the extra cost).

3. Analysis description

Description analysis is an analysis that describes the systematic, accurate facts and characteristics of the population/activity undertaken in a particular field that make the subject of research based on data from variables derived from a group of subjects studied and the facts that occurred in the field (Nasir, 2003).

The implementation, in the first growing season, beginning with the nursery rice seed. rice seeds sowing on seedling media, then after 14 days carried out to move the plants into the fields. Experimental plot size is 2 x 2 m and made as many as 27 experimental plots. Rice crop planted with a spacing of 25 x 25 cm, with

two chicks at each point of planting. Plants are maintained after reaching 45 days after planting, the forage trimmed 15 cm from the surface of plants. To compare the effect of trimming, then there is the control treatment of rice crops are not trimmed, so they will know the effect, the pruning of the production of the dry grain harvest. After 100 days of the rice crop is harvested and weighed all the grain and straw produced.

In the second planting season, rice stubble crop planting season 1, reared back, this system is referred to as ratoon. Ratoon maintained by entering the water to terraced rice fields. After 1 week of the ratoon, crop evenly trimmed 5 cm from the surface of the plant, to get the height of ratoon uniform. If the ratoon is not growing then embroidered by using divide the clumps of rice around it, so that every point is still available ratoon crops are grown. Ratoon and then kept as normal as rice plants, at 30 days after planting is done trimming the forage again, to get the production of fodder. No experiments are only harvested at MT1, but not on the MT2, and there is a treatment that is harvested forage both at MT1 and the MT2. After reaching physiologically mature, the rice crop is harvested, to get dry grain harvest. Physiologically mature age at MT2, shorter than MT1. The production of the rice grain is then calculated as economic value. This study to prove whether the economics of rice cultivation are pruned periodically to provide an advantage for farmers and ranchers.

RESULT AND DISCUSSION

The table 1 is presented the production of green fodder (forage), hay and grain yield of Cisokan rice harvested dry both at 9the first planting (MT1) and the second planting as ratoon system (MT 2). In general, the results of forage increased in MT 1 MT 2, as well as over the straw that result.

Tabel 1. Forage production trimmed at primordia age phase and dry grain harvest production at 1 and 2 planting rice plants in one hectare

	MT 1			MT 2		
	delivering organic liquid manure					
Varieties	F1	F2	F3	F1	F2	F3
Treatment	---------- Mg ----------					
1						
Forage production	7,95	5,67	6,25	7,71	7,42	7,50
Grain yield	6,58	4,55	3,44	6.13	6.33	6.05
Straw production	6,13	8,69	8,92	14.54	14.15	13.62
2						
Forage production	0	0	0	0	0	0
Grain yield without forage production	7,50	8,18	7,85	6.81	7.17	6.69
Straw production	19,96	19,92	18,48	16.87	16.61	16.86
3						
Forage production	7,95	5,67	6,25	0	0	0
Grain yield	6,58	4,55	3,44	6.54	4.60	6.37
Straw production	6,13	8,69	8,92	13.43	12.84	14.78

Figures followed by the same small letters on the same line and the same capitalization in the same column are not significantly different according to HSD 5% significance level.
Explanation: F1= crocober; F2= unitas Super; F3= K-Getz

In general the first growing season, proving that the plant is not harvested the forage before entering the phase of primordial age, will produce more grain than the trimmed. trimming rice crop at MT 2 phase, is no longer lower the rice grain production. This proves that the rice crop becomes more profitable if the plant ratooned into the MT 2. The forage production also not decreased, even increased from an average forage production in one planting season as much as 6.62 Mg /ha, and earn forage on the MT 2, reached 7.54 Mg/ha, means there is an increase of 14%. Jamilah, Adrinal, Khatib, & Nusyirwan, (2011); (Jamilah & Juniarti, 2015); (Jamilah, Juniarti, & Mulyani, 2016) reported that the rice crop forage quality is better than the usually recommended forage grass for fodder (Kaderi, 2004); (Lani, Abdullah, & Priyanto, 2015); (Mareza, Djafar, Suwignyo, & Wijaya, 2016) effect of liquid organic manure F1 (Crocober), increase the yield higher than the Unitas Super and commercial fertilizers K-Getz. Similarly, the MT 2, LOM Crocober effect on grain production of rice was higher than the result of the effect of LOM Unitas Super and KGetz.

Analysis of rice crop farm incomes is trimmed periodically. In Table 2 presented the results of the income or proceeds from rice cultivation were trimmed both on MT1 and 2, which trimmed the MT1 and not trimmed, but all plants in ratoon.

Table 2. Farm analysis of Rice cultivation trimmed periodically at MT 1 and MT 2

No	Description of materials and activities	The treatment is not trimmed at MT 1 and MT 2 (Rp x 1000)			Trimmed at MT1 and not trimmed at MT 2 (Rp x 1000)			Trimmed at MT 1 and MT 2 (Rp x 1000)		
	Various of liquid organic fertilizer	F1	F2	F3	F1	F2	F3	F1	F2	F3
1	Revenue from grain rice (Rp. 5.794/kg)	82912	88938	84245	76017	53015	56839	73642	63039	54985
2	Revenue from forage (Rp 10.000,-/25 kg HMT)	-	-	-	3180	2268	2500	6264	5236	5500
3	Revenue from straw (Rp. 2000/25 kg	2946	2922	2827	1565	1722	1896	1654	1827	1803
	Total Revenue (R)	85858	91860	87072	80762	57005	61235	81560	70102	62288
4	Production cost (C)									
	Fix Cost (FC)									
	Land lease	1400	1400	1400	1400	1400	1400	1400	1400	1400
	depreciation expense tool	500	500	500	500	500	500	500	500	500
	irrigation costs	250	250	250	250	250	250	250	250	250
	Total Fix Cost FC	2150	2150	2150	2150	2150	2150	2150	2150	2150
5	Variable Cost (VC)									
	seed (kg/ha)	200	200	200	200	200	200	200	200	200
	Fertilizer KCl 100 kg/ha	800	800	800	800	800	800	800	800	800
	urea (100 kg/ha) @ Rp 1400	2800	2800	2800	2800	2800	2800	2800	2800	2800
	150 kg/ha SP36	450	450	450	450	450	450	450	450	450
	50 kg/ha Za @ Rp. 1500	150	150	150	150	150	150	150	150	150
	7,5 Mg/ha compost	7500	7500	7500	7500	7500	7500	7500	7500	7500
	Organic liquid fertilizer 40 liters	1000	1000	2800	1000	1000	2800	1000	1000	2800
	Integrated pest and disease control	400	400	400	400	400	400	400	400	400
	Labour									
	Land preparation	250	250	250	250	250	250	250	250	250
	plow	1500	1500	1500	1500	1500	1500	1500	1500	1500
	planting	1000	1000	1000	1000	1000	1000	1000	1000	1000
	fertilizing	400	400	400	400	400	400	400	400	400
	Weeding for 4 times	1600	1600	1600	1600	1600	1600	1600	1600	1600
	Trimmed	-	-	-	200	200	200	400	400	400
	Harvest	4000	4000	4000	4000	4000	4000	4000	4000	4000
	transportation	200	200	200	200	200	200	200	200	200
	Total VC	22250	22250	24050	22450	22450	24250	22650	22650	24450
6	Total cost of production C = (TVC+TFC))	24400	24400	26200	24600	24600	26400	24800	24800	26600
7	Profit for 7 months	61458	67460	60872	56162	32405	34835	56760	45302	35688
8	Revenue per month	8,78	9,64	8,69	8,02	4,63	4,98	8,11	6,47	5,09
9	After taxes PPn and PPh (12,5%),	7,68	8,43	7,61	7,02	4,05	4,35	7,09	5,66	4,46

Source : The results of the analysis of primary data, 2016

The Table 2 shows the highest profit earned on the cultivation of which is not harvested forage both at MT1 and MT2. Farmers' incomes could reach 8.43 million rupiahs per month if the rice was given liquid organic manure (LOM) Unitas Super, followed by LOM Crocober and commercial fertilizers. But in this pattern, farmers can not raise cattle optimally, because of no forage available for livestock. If the rice crop

harvested forage harvested at MT1 and MT2 forage on, then the highest revenue of farmers if the plant with LOM Crocober, reached 7.02 million rupiah per month. But in this pattern, the cattle would have difficulty getting forage when entering MT2, because no forage produced. Furthermore, if the rice crop is harvested the forage both at MT1 and MT2, income per month reached 7.09 million rupiahs, if the plants are given LOM Crocober. When compared with the cultivated rice farming as usual with no cut and no ratoon, as reported by ((Lumintang, 2013); (Suhaini et al., 2013); (Supartama, Antara, Rauf, Kabupaten, & Moutong, 2013b); (Abdul Azis, 2015), rice trimmed activities and ratooning much benefit farmers.

Table 3. Value R/C of paddy farming trimmed periodically

No	Description of materials and activities	The treatment is not trimmed and ratoon			Trimmed at MT1 and ratoon not trimmed at MT2			Trimmed at MT 1 and ratoon was trimmed at MT2		
	Jenis LOM	F1	F2	F3	F1	F2	F3	F1	F2	F3
1	(Revenue) and (Cost) (R/C)	3,52	3,76	3,32	3,28	2,32	2,32	3,29	2,83	2,34
	Averages		3,53			2,64			2,82	
2	Analysis result	Advantage	Advantage	Advantage	Advantage	Advantage	Advantage	Advantage	Advantage	Advantage

Source : The results of the analysis of primary data, 2016

If seen from Table 3 can be explained that the trimming is done on rice plants at the MT1 and MT 2 is performed by maintaining cultivation in ratoon, still profitable. In general, the ratio of Revenue and Cost> 1, which shows the benefit of farming conditions. The same thing is explained by (Supartama, Antara, Rauf, Kabupaten, & Moutong, 2013a) that the return value cost ratio of 2.28 to 3.76> 1, indicating the business is profitable (additional benefits or acceptance> of additional financing).

CONCLUSION

The cultivation of paddy rice in the tropical wet in ratoon type, can produce forage and grain dry rice profitable with R/C reaches 2.82. Crocober as LOM is better than others to increase the production both forage and grain of rice yield.

SUGGESTION

Suggested rice crops in the humid tropics, trimmed periodically to help provide forage and grain yield of rice. If the rice planting is not simultaneously carried out will provide the fodder that does not stop and the farmers do not need to replant.

Acknowledgment

Further thanks to the director general of research and technology, higher education, which has funded this experiment skim through the National Strategic research by contract number 01 / Contract-Research / 010 / KM / 2016, dated February 22, 2016.

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