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Utilization of Suboptimal Land in the Farming of Soybean and Corn as Local Chicken Feed Source Supports Development of Crop-Livestock Integration, in Papua

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Abstract **– The potential of sub-optimal land in Papua reaches approximately 17,689,174 ha, from which the new area can be optimally utilized around 15-20%. The use of dry land in agricultural farming in Papua is dominated by legume crops (soy, peanut, long beans), corn, and livestock. The method of activity is implemented on-farm research in farmer land through participatory speech. The technology package applied is divided into two technology models namely introduction technology and existing technology. The results showed that the productivity of soybeans (1.10 t/ha) and corn (2.9 t/ha) in the introduction technology were higher compared to the productivity of soybeans (0.80 t/ha) and corn (2.2 t/ha) on existing technology, and give significantly different results. Similarly, local chicken farming gained daily weight gain (13.9 g/tail), final weight (1,490 g/tail) and mortality (6.7%) higher than the existing technology, and give significantly different results. The feasibility analysis of the introduction technology obtained by the RC 1.7 higher than the existing technology, and the value MBCR 3.5. Thereby, sub-optimal land utilization for soybean-corn farming as a local chicken feed source is worth to be developed.**

Keywords **– Sub-Optimal Land, Integrated Soybean-Corn-Chicken, Farming Feasibility.**

I. Introduction

Papua province has a large potential of dry land or sub-optimal land, which is reaching 17,689,174 ha, consisting of the acid dry land of 17,343,250 ha and dry climate dry land of 345,924 ha (Mulyani and Syarwani, 2013). Of this potential, new estimates can be utilized around 15-20%. The constraints of sub-optimal land utilization in Papua, in addition to being due to sub-optimal land characteristics also because of the problem of ownership of Ulayat rights (customary). According to Lakitan and Gofar (2013), sub-optimal land-use constraints can be: (a) Difficulty in providing sufficient water to support the productive and profitable farming, (b) High soil packaging properties (low pH) so that need efforts to neutralize the soil's level, (c) The content of low organic matter and shallow solum, (d) Very poor nutrients so that requires a higher fertilization dose; and/or, (e) Rocky ground so it is difficult to be processed mechanically. This sub-optimal condition can be naturally formed, or because of human activity in and/or around the location concerned, or due to misgovernance in the previous period.

Sub-optimal land utilization efforts as productive land, especially for the development of food crops, plantations and farms are required an appropriate technology that is sustainable and environmentally friendly. According to Haryono, (2013) sub-optimal land development is required of an environment-based and *integrated farming model* (environmentally friendly agriculture) with various *variants* and derivatives. One of the appropriate technologies that can be developed on sub-optimal land is a mutually beneficial integrated farm. The integrated agricultural system that combines the cultivation of food crops, plantations, and farms at the same time and location can streamline the use of natural resources including production inputs, in addition to the sub-optimal land dry acid and dry climate with many limitations (Murtilaksono and Anwar, 2014).

One of the dominant agricultural commodities developed on sub-optimal land in Papua is corn, soy, and corn. These three commodities have the potential to be developed in an integrated sub-optimal land. Soybeans and corn are generally planted in dryland (dry fields) both intercropping and monoculture (Subandiet al., 1988 in Permanasari and Kastono, 2012). The soybean and corn plant allows it to be crushed because the corn plant requires high nitrogen, while soy can fixation nitrogen from the free air so that the lack of nitrogen in corn is fulfilled by excess nitrogen in soybeans (Jumin, 2002).

The development of an integrated farming model of the soybean-corn-chicken range is one of the efforts to support the development of local chicken farming in rural areas. The main problem faced by farmers in local poultry farming in rural areas is the low productivity of local chickens because feeding is only as good as quality and quantity. Besides the high price of feed mill (concentrate) on the market causes the inability of farmers to buy. While the potentially available land has not been utilized optimally. Seeing the potential is very precise if the three commodities (soy, corn, chicken) are developed in an integrated manner. The model of soybean farming-corn-chicken integration, in addition to overcoming the cost and quality of feed, can also improve the quality of the land from the provision of organic fertilizer, thus ultimately impacting the productivity of soybeans and corn.

This study was made to utilize sub-optimal land in soybean and corn farming as a source for local chicken feed to support the development of livestock integration in Papua province.

II. Materials and Methods

The study of suboptimal land utilization in soybean-corn intercropping farming as local chicken feed source has been implemented in two different locations namely Muara Tami District, Jayapura City and Nimbokrang District, Jayapura Regency. Activities carried out one of the centers for the development of food crops (soy, corn, rice) and local poultry farms. This study was conducted for approximately six (6) months. The assessment method is conducted by the participatory approach using farmer's land (*On-Farm Research)* by actively involving farmers during the assessment. This activity is divided into two treatment groups namely introduction technology and existing technology. The number of farmers involved is 24 family heads (fh) and divided into treatment groups, each is an introduction technology as much as 12 family heads and the existing technology as much as 12 family heads. The technology components applied to the introduction of technology and existing technology are presented in Table 1.

Table 1. Technology components applied.

Technology components	Introduction Technology	Existing Technology
1. Cultivation of soybeans and corn:		
- Soybean varieties	Orba	Orba
- Corn varieties	Bisma	Bisma
- Cropping system	Intercropping	Monoculture
- Land area	0.2-0.5 Ha/fh	0.2-0.5 Ha
- Spacing of soybean	40x70 cm	Irregular
- Spacing of corn	20x40 cm	Irregular

Technology components	Introduction Technology	Existing Technology
- Fertilization		
- Organic fertilizer	Compost 2 t/ha	No Compost
- Inorganic fertilizer	Urea 50 kg/ha	100 kg/ha
2. Poultry farming:		
- Local chicken	180 tails	180 tails
- System maintenance	Crated	Removable
- Ration composition:		
- Corn milled	45%	Rendered irregular
- Soybean flour	20%	Not provided
- Rice bran	20%	Rendered irregular
- Fish flour	10%	Not provided
- Gliricidia leaf flour	3%	Not provided
- Lime (CaCO3)	1%	Not provided
- Cooking oil	1%	Not provided

Description: fh (family head).

Soybean and Corn Farming

In the farming of soybean and corn crops, the type of land used island yard belonging to farmers and land belonging to the farmer group that is not utilized. The land area directed by each farmer is very dependent on the level of ownership of farmers is about 0.2-0.5 ha. Components of soybean and corn cultivation technology in the introduction of land-processing technology, spacing and cropping system of soybean-corn. The compost fertilizer application is done at the time after the second land processing was done. While the existing technology is a technology that has been developed by farmers during this time. To calculate the productivity of soybeans and corn is done weighing yields on each farmer involved. Further production result data is converted in tons/ha.

Local Chicken Farming

Activities component of local poultry maintenance technology for introduction technology in the form of perming management, feedstuffs processing raw materials (drying, milling, storage), preparation or manufacture of rations, livestock health, and the technology of the provision of rations (feed). The raw material of rations such as corn and soybeans are used in the stacking of rations obtained from crops after the drying process and milling. Nutritional content of treatment rations are dry ingredients (87.44%), crude protein (19.37%), crude fiber (3.02%), fat crude (7.01), energy metabolism (3,086 Kcal/kg), Ca (1.87%) and P (1.66%).

In the early stages of the trial treatment, the adaptation process was performed for approximately 7 days. This aims to eliminate the stress on the chicken cattle at the time of being paired and fed the treatment. The provision of rations and drinking water during the assessment is done by *adlibitum*. To know the daily weight gain (DWG) is carried out the weighing of poultry chickens every fortnight.

Data Collection

The data collected related to the technical aspects is the production of soybean and corn crops, the increase of local chicken weight, ration consumption, ration conversion, and mortality rates. The economic aspects are the cost of production (soybean, corn, and livestock), labor wages, and the income level of the introduction and existing technology.

Data Analysis

To achieve the expected objectives, the data of the observations that have been collected in the analysis are descriptive. In comparing the results between the introduction technology with the existing technology conducted the statistical analysis of the T-test, using the computer program IBM SPSS statistical version 19. The proposed hypothesis is: H0: $\mu 1 = \mu 2$; Ha: $\mu 1 > \mu 2$

Where:

$\mu 1$ = The average production of an introduction technology;

$\mu 2$ = The average production of existing technology.

The decision-making criteria are:

1. When t_{hitung}> t table then rejects H0 which means the production of the introduction technology is distinct from the existing technology.
2. If t_{hitung}< this then accepts H0 which means the decision taken is not different real.

Analysis of cost and income of farming conducted to know the level of profit (Soekartawi (1984) in the Sarasutha *et al.*, (2004) is as follows: IF = PV – PC and PV = P x Price

Where:

IF = Income for Farming (IDR).

PV = Production Value (IDR).

P = Production (kg).

PP = Production Price (IDR),

PC = Production Cost (variable costs and fixed costs).

To measure the existing technological changes to the introduction technology is conducted using the Marginal Benefit-Cost Ratio (MBCR) (Hendayana, 2006):

$$\text{MBCR} = \frac{\text{Introduction technology revenue - Existing technology revenue}}{\text{Costs of introduced technology - Costs of existing technology}}$$

III. Results and Discussion

Soybean and Corn cultivation

Varieties of soybeans and corn are introduced in the cultivation of soybeans and corn, each is a variety of Or-

-ba and Bisma. Based on the assessment results obtained the average productivity of soy and corn through an intercropping crop on the introduction and monoculture technology in the existing technology is shown in table 2.

Table 2. Soybean and corn productivity rating on the introduction and existing technology.

No. Farmers	Soybeans		Corn	
	IT	ET	IT	ET
	------------------------(t/ha)------------------------			
1	0.85	0.79	3.10	1.50
2	0.95	0.60	2.90	2.70
3	1.25	0.70	1.90	3.00
4	1.10	0.85	3.50	1.90
5	1.15	0.90	1.90	2.00
6	1.30	0.65	3.70	2.00
7	0.98	1.00	2.90	1.80
8	1.12	0.50	2.50	1.85
9	1.10	0.90	2.20	2.50
10	0.90	1.10	3.70	2.90
11	1.20	0.90	3.60	2.30
12	1.30	0.70	2.90	2.00
Average	1.10	0.80	2.90	2.20
STD	0.22		0.67	
T-test	*		*	

Data Source: primary data.is processed. Description:
*(Significant level 5%), STD (Standart Deviation), IT (Introduction Technology), ET (Existing Technology)

Statistical analysis results show that the level of productivity of soy and corn planted with the intercropping system provides significantly different results with the production of soy and corn planted with a monoculture system on existing technology. This indicates that the technological components introduced in the introduction of technology have a significant effect on the existing technology. This means that the high productivity of soy and corn in the introduction of technology is due to the provision of compost fertilizer, planting system, spacing, and improvement in land processing. While the low productivity of soybeans and corn is at the farmer because of the provision of fertilizer generally only urea fertilizer, the processing of land is only done at the time of clearing the land and done as a second, rarely carried out disease control and Weeding.

Based on the results of the study (Table 2) showed that the productivity level of soybean (1.10 t/ha) and corn (2.90 t/ha) planted with the intercropping system of the introduction technology gave higher production yield compared to the production of soybeans (0.80 t/ha) and corn (2.20 t/ha) which is planted with monoculture system in existing technology. The results of Syamsuddin Research (2004) obtained the production of soy and corn, respectively 0.7-1.0 t/ha and 5-6 t/ha. Soybean productivity produced in this assessment, lower than the results of the assessment by AIAT Papua (2013) in some areas production centers in Papua obtained 1.8-2.3 t/ha. Results of the research Rohimah *et al.*, (2014) against the adaptation test New Superior Varieties (NSV)of soy in Papua dry land obtained productivity, each of the Varietals is Kaba 1.15 t/ha, Argomulyo 1.75 t/ha, Burangrang 1.90 t/ha, Grobogan 2.50 t/ha, Galunggung 1.03 t/ha, and Anjasmoro 1.85 t/ha. The occurrence of differences in production result is caused by varieties that can also be caused by climate factors, land processing technology, fertilization and disease control. According to Sunarlin (1994), in Rohimah, (2014), that the rate of soy productivity in dryland is relatively low other than due to the varieties also soil fertility is low, especially C-organic, N, P, and K.

The low yield of soybeans at the farmer level is more because of the superior seed has not been used yet, cultivation techniques are still very simple, relatively low soil fertility, weeds and pests, and diseases, as well as post-harvest, is still simple (Malik, 2006). Soybean productivity Anjasmoro varieties are given inorganic fertilizers in the form of Urea 25 kg/ha, SP36 100 kg/ha, and KCL 75 kg/ha, plus manure 2 t/ha obtained higher yield than non-integration pattern through Urea fertilization 100 kg/ha + ZA 100 kg/ha (Tiro et al., 2014). The average productivity of soybean technology that has been given manure 1.5 t/ha, Urea 10 kg, Phonska 200 kg, and superphosphate 50 kg is 2.08 t/ha, higher than the technology of farmers with local varieties Kripik 0.87 t/ha (Tamburian, 2012).

Similarly, the productivity level of maize varieties produced in this assessment is still very low compared to the potential outcome. The results of Amir and Sariubang research (2013), obtained the productivity of corn varieties Bisma 4.95 t/ha (planting distance 75x40 cm) and 3.82 t/ha (planting distance 75x20 cm). One of the factors causing low levels of corn productivity, in addition to the level of soil fertility is low, also caused by soil processing as a result, the use of fertilizer only one type (urea) and the socio-economic condition of farmers are diverse. The results of the research Kariada (2010) that the provision of organic fertilizer 5 t/ha on corn varieties of Bisma increased productivity 4.7 t/ha. Production of local corn with the provision of manure 5 t/ha obtained productivity 3.5 t/ha, higher and different real by way of farmers Tampa manure reaching 2.8 t/ha (Adijaya, 2010). Cow manure giving 5 t/ha on corn varieties of Bisma reached 4.12 t/ha (Aribawa, 2010). Combination of cow manure and chicken 2 t/ha plus inorganic fertilizer in the form of Urea 200 kg/ha, SP-36 100 kg/ha and KCL 100 kg/ha on dry land in Kalimantan obtained the productivity of Corn 6.5 t/ha (Galib, 2012).

The provision of organic fertilizer in corn plants provides a distinct result in the way farmers to the length of the cob, the diameter of the cob, the number of lines per cob and the number of seeds per line. This is due to the influence of organic fertilizer that can provide more loose soil conditions, able to withstand water, give life to soil microbes as well as macro and micronutrients (Kartini, 2000; Kariada, et al., 2005). The organic material content of mineral soils is generally low, not exceeding 5%, but the influence of organic materials on soil properties and the productivity of the land is very large (Hardjowigeno, 1987). Low fertility of the land is one of the causes of low corn yield (Suastika et al., 2004; Directorate General of Food Crop Production, 2005).

Performance of Local Chickens

The results of the performance of native chicken against initial weight, final weight, weight gain, daily weight gain, ration consumption, ration conversion, the mortality rate during 10 weeks of data retrieval are presented in Table 3.

Table 3. Local chicken performance on the introduction and existing technology.

No.	Initial Weight		Final Weight		IBW		DWG		RC		FCR		Mortality	
	It	Te	It	Te	It	Te	It	Te	It	Te	It	Te	It	Te
1	480.0	422.0	1,275.3	580.2	795.3	158.2	11.4	2.3	3,450.0	ndt	4.3	ndt	13.3	46.7
2	610.0	630.0	1,720.7	820.7	1,110.7	190.7	15.9	2.7	4,745.0	ndt	4.3	ndt	6.7	53.3
3	570.0	600.0	1,250.3	723.3	680.3	123.3	9.7	1.8	3,477.3	ndt	5.1	ndt	6.7	46.7
4	520.0	560.0	1,662.7	633.0	1,142.7	73.0	16.3	1.0	4,733.3	ndt	4.1	ndt	-	66.7
5	590.0	585.0	1,552.2	814.3	962.2	229.3	13.8	3.3	4,116.7	ndt	4.3	ndt	13.3	33.3
6	560.0	560.0	1,782.0	712.2	1,222.0	152.2	17.5	2.2	4,626.7	ndt	3.8	ndt	6.7	40.0
7	440.0	633.0	1,158.1	752.2	718.1	119.2	10.3	1.7	3,220.3	ndt	4.5	ndt	6.7	40.0
8	390.0	420.0	1,458.3	620.4	1,068.3	200.4	15.3	2.9	3,740.0	ndt	3.5	ndt	6.7	73.3
9	460.0	450.0	1,333.3	733.3	873.3	283.3	12.5	4.1	3,610.7	ndt	4.1	ndt	6.7	46.7
10	550.0	620.0	1,722.7	820.3	1,172.7	200.3	16.8	2.9	4,573.3	ndt	3.9	ndt	-	33.3
11	510.0	540.0	1,442.3	730.0	932.3	190.0	13.3	2.7	4,456.7	ndt	4.8	ndt	6.7	46.7
12	560.0	580.0	1,522.0	700.0	962.0	120.0	13.7	1.7	4,450.0	ndt	4.6	ndt	6.7	60.0
Average	520.0	550.0	1,490.0	720.0	970.0	170.0	13.9	2.4	4,100.0	ndt	4.3	ndt	6.7	48.9
T-test	ns		*		*		*		-		-		*	

Data Source: primary data.is processed.

Description: * (Significant Level 5%), NS (Non-Significant), IT (Introduction Technology), ET (existing technology), IBW (increase body weight), DWG (daily weight gain), RC (ration conversion), FCR (feed conversion ratio), ndt (no data).

The results of statistical analysis showed that daily weight gain (DWG), final body weight, and the mortality rate of local chicken cattle in the introduction technology give significantly different results with existing technology. This shows that the technological components applied to the introduction of technology have a real impact on the existing technology. One of the factors affecting the high DWG and the low level of mortality is the quality and quantity of feed given. According to Soeharsono (1976), protein levels provide a distinct effect on growth, high proteins are more beneficial than low protein and apply to any energy content. Scott et al. (1976); Siregaret al. (1980), stated that the balance between energy and protein as well as food substances contained within the ration is instrumental in the speed of growth.

DWG Livestock is a difference in the initial body weight with the final body weight divided by the length of observation. The high DWG of chicken cattle produced is one of the indicators of productivity performance. Increased chicken weight in a given time can be used to assess the quality of the growth process that occurs due to the treatment given (Yemen et al., 2009). Besides, local poultry productivity performance is also influenced by genetic, environmental, gender, and mortality factors. According to Soeparno (1994), gender differences can cause a difference in the rate of growth where the rooster usually grows faster and heavier than the hen at the same age. In line with the opinions of Yemen et al. (2009), generally, the increase in the weight of the rooster is greater than that of the female because of the difference in genetic ability and the ability of the chicken ration consumption is greater than that of the hen. However, the gender factor is determined by the availability of nutritional value in the ration and if in rations there is a good balance of protein and energy, then the growth and development of livestock will increase (Berri et al., 2001).

Ration consumption is the amount of ration eaten by chickens at a certain time interval. The consumption of local chicken rations produced in this assessment is higher than the use of leaf flour 6% (352.08 g/tail and 3.46) and 3% Gliricidia leaf flour (409.31 g/tail and 3.53) in rations (Usman et al., 2005). Some factors that affect ration consumption are temperature, growth rate and large chicken body (Siregar, et al., 1980). In line with Compos (1976 in Usman et al., 2005), that factors that affect the consumption of rations in addition to energy content, also the balance of amino acids, the level of smoothness of rations, the activity of cattle, weight, growth speed and temperature of the environment. Ration technology in local chickens can also increase the consumption of rations, where the wet intake of rations in this assessment is generally more liked by local chickens compared to dry ways.

The value of FCR is a comparison between the number of rations consumed with the production rate achieved (Scott et al. 1976 in Usman et al. 2005). The conversion of ration or FCR is a widely used term to determine the efficiency of food use. FCR shows how much food is converted into bodyweight and the lower the FCR value indicates better food efficiency (Yemen et al., 2009). The local chicken FCR value is produced in this assessment of 4.3. This means that the local chicken weight increase by 1 kg takes 4.3 kg of ration. Attempts to suppress the value of FCR can be carried out with limited feeding, but the restriction of feed can affect the performance of chicken village (Resnawati and Bintang, 2005). According to Aryanti et al. (2013), that the provision of red sugar water 1% in drinking water in broiler chickens, besides can minimize the value of FCR also increases body weight, consumption of food and decrease mortality rates.

The level of local chicken mortality is produced in the introduction of technology by 6.67% and is distinct from the existing technology that reaches 48.9%. The high mortality in existing technology is due to the maintenance system carried out by farmers by way of removal, chicken cattle are left to seek their feed in meeting the needs of everyday life. From the number of livestock deaths in existing technology is the result of disease 42.3%, predator animals 33.2%, disappeared 21.5%, and other causes 3.0%. While in the introduction technology, livestock death caused by disease (lime, snoring, snot) 92.3%, stress due to transport 5.7% and clamped at 2.0%. The results of this study showed that the high mortality rate in existing technology is one of the factors causing low productivity of local chicken cattle at the farmer's level. Therefore, in addition to the importance of prevention of diseases through regular vaccination to suppress mortality rate, also the role of extension workers and paramedics in the field in the field in conducting construction on farmer groups, especially in technology local chicken cultivation is no less important.

Farming Feasibility Analysis

The results of farming feasibility analysis between the introduction technology and existing technology can be seen in table 4. Based on the results of the study (table 4) shows that in the land area 0.35 ha corn and soy plants through an intercropping planting system can be developed local chickens as much as 500 tails per production period (± 180 days) with the composition of rations such as the (Table 1). However, the ability of livestock capacity is determined by the productivity of soy and corn produced. The higher the production, the higher the capacity of the livestock.

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Results of farming analysis obtained the total revenue from the sales of local chickens in the introduction technology of IDR 25,390,900, higher than the existing technology that only obtained revenue from the sale of corn and soy amounting to IDR 4,885,000, while local chicken sales result in a deficit of IDR 10,228,600. So that the total deficit generated on existing technology reaches IDR 5,343,600. One factor of the cause of the deficit (loss) that occurs in existing technology is caused by low DWG chicken cattle and high levels of mortality caused by diseases and wild animals.

The results of farming feasibility analysis showed that in the introduction technology obtained the highest RC 1.7 value compared to existing technology with the value of RC 0.8. This indicates that the introduction of technology is more feasible to develop than the existing technology. The value of RC 1.7 indicates that each production input issued by an introduction technology of IDR 1 will generate an additional income of IDR 0.7. While existing technology suffered the loss of IDR 0.2. The value of MBCR 3.5 indicates that the level of income gained on the introduction technology is 3.5 times higher than the existing technology.

Table 4. Analysis of farming introduction and existing technology.

No.	Description	Introduction Technology				Existing Technology			
		Volume		Unit	Value (IDR)	Volume		Unit	Value (IDR)
I.	Expenses								
1.	Plant farming:								
	-Corn Seed	10.0	kg	7,000.0	70,000.0	10.0	kg	7,000.0	70,000.0
	-Soybean Seed	10.0	kg	13,000.0	130,000.0	10.0	kg	13,000.0	130,000.0
	-Urea Fertilizer	1.0	Sack	95,000.0	95,000.0	2.0	Sack	95,000.0	190,000.0
	-Labour:	28.1	WDP	50,000.0	1,405,000.0	16.9	WDP	50,000.0	845,000.0
	-Medicines	1.0	Package	1,500,000.0	1,500,000.0	1.0	Package	250,000.0	250,000.0
	Total Expenses				3,200,000.0				1,485,000.0
2.	Poultry Farming:								
	-Local chicken seedlings	500.0	tail	50,000.0	25,000,000.0	500.0	tail	50,000.0	25,000,000.0
	-Feed	2,050.0	kg	2,935.0	6,016,750.0	300.0	kg	2,200.0	660,000.0
	-Labor	35.0	WDP	50,000.0	1,750,000.0	17.5	WDP	50,000.0	875,000.0
	-Medicines & Feed Suflement	1.0	Package	1,200,000.0	1,200,000.0	1.0	Package	250,000.0	250,000.0
	Total Expenses				33,966,750.0				26,785,000.0
	Total expenses (1 + 2)				37,166,750.0				28,270,000.0
II.	Acceptance								
1.	Plant farming:	0.35	ha		-	0.35	ha		
	-Production of corn x sale price	1, 015, 0	kg	-	-	770.0	kg	5,000.0	3,850,000.0
	-Soybean production x selling price	385.0	kg	-	-	280.0	kg	9,000.0	2,520,000.0

No.	Description	Introduction Technology					Existing Technology			
		Volume		Unit	Value (IDR)	Volume		Unit	Value (IDR)	
2.	Local Chicken farming:	500.0				500.0				
	-Production x FW x Sale price	695.1	kg	90,000.0	62,557,650.0	184.0	kg	90,000.0	16,556,400.0	
	Total Acceptance				62,557,650.0				22,926,400.0	
III.	Income									
1.	Plant farming								4,885,000.0	
2.	Local chicken farming								-10228600.0	
	Total Revenue				25,390,900.0				-5343600.0	
IV.	R/C ratio				1.7				0.8	
V.	MBCR				3.5					

Data Source: primary data is processed.

Description: FW (final wight), WDP (workday people).

IV. Conclusions and Suggestions

Conclusion:

The productivity of soybean-corn and local chickens developed on sub-optimal land gave thehighestyield to the introduction of technology compared to existing technology.

Sub-optimal Land utilization in soybean-corn farming as a local chicken feed source supports the development of plant-livestock integration in Papua worthy to be developed.

Suggestions:

For local chicken farmers, especially those residing in the rural areas of the region to exploit the potential land owned for the development of corn-soybean farming as a source of local chicken feed, because it will give a higher profitwhen compared tobuying feed in the market.

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