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Study of Development Planning and Development Agrosilvopastoral for the Improvement of Village Economy in West Sumatra: (Case of Sumanik Village in Tanah Datar District)

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ABSTRACT

West Sumatera has a cultivated area of 2,340,111,73 ha, that is a very potential land for the development of the agricultural sector: Food crops, woody plants, and livestock. The purpose of this research is to analyze perception, motivation, and readiness of farmer community of Sumanik Village to agrosilvopastura. As well as their preferences in choosing agricultural systems, to know the potential and existing problems in Sumanik Village to support agrosilvopastura, to analyze the impact of Agrosilvopastoral activities on the economics of Village farmers community in Sumanik ; And elaborate the most appropriate Agrosilvopastoral model that was applied in Sumanik Village while maintaining ecological, social and economic sustainability. The research was conducted in Sumanik Village in Tanah Datar District with descriptive method. Survey in February 2015 to December 2016, The results showed that the farmers of respondents in Sumanik village, positively perceptive to agrosilvpastura farming system, and motivated to do Agrosilvopastoral farming system, they tend to do Agrosilvopastoral in demonstration plot for learning.There are two problems in Sumanik Village, the first area of Sumanik is a dry area, so the right technology to develop the farm is needed. The second problem is, the communities in Sumanik do not have the capital to buy cattle. The result of financial analysis that was done was Agrosilvopastoral farming system have positive impact to farmer community economics in Sumanik Village which showed by business feasibility that is run NPV value Rp 92,193.13, IRR value 39,94%, ROI value 39.94, RC ratio 1.82, PBP 2.13 year, BEP every year is 9 head of cattle. From the research result formulated that Agrosilvopastoral model that most appropriately applied in Sumanik Village is in the form of Agrosilvopastoral communal farm.

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1. Introduction

The development of agriculture is a process of social change, its application is not only aimed to improve the status and welfare of the farmers. But also intended to develop the potential of human resources both economically, socially, politically, culturally, environmentally or through improvements and changes (Iqbal and Sudaryanto, 2008). Currently the problems that occur in agricultural development are; 1) Decreasing the quality of agricultural land due to the high use of chemical fertilizers, 2) the lack of skilled people in doing the work in the agricultural sector, 3) the low level of rural community education.

One of the opportunities to increase the benefits of agriculture and forestry sustainably can be done by establishing an Agrosilvopastoral system, where the system is a land use that combines woody plants with non-timber plants such as food crops, pastures and livestock, on the same land to form Ecological and economic interactions between woody plants and other components. In this system, the production component of each sector will be optimally utilized because the waste production of each sector will be useful for the production of other sectors. Another advantage, with the existence of this system, the completeness of the ecosystem area will be maintained, because the failure of one component will be covered by other components. On the economic front, this system is also very profitable because it minimizes the expenditure of fixed costs and also makes the potential source of income more diverse and higher. The result of Rauf's (2004) study of the potential of carbon biomass on Agrosilvopastoral farming system in the buffer zone of Guniung Leuser National Park is about 16.4 times greater than the biomass and carbon stand potential found in monoculture farming systems.

One area located in West Sumatra potential to be Agrosilvopastoral region is Sumanik Village located in Tanah Datar Sumanik Village is a Village is located in Salimpauang Subdistrict Tanah Datar Regency. This Village has the greatest potential for the development of Agrosilvopastoral compared with other villages. This is seen from (1) village climatic conditions that are included in the rain shadow area at an altitude of 550-650 masl, (2) fertile soil conditions and land use for agriculture which reaches 60% of the village area, (3) social condition of the community Which as a major has been involved in agriculture, and (4) the historical value of the village as one of the oldest villages in Tanah Datar.

This study aims to: (1) Analyze the assessment of the existing condition of farming communities in Sumanik village; (2) Analyzing perception, motivation, and readiness of farmer community of Sumanik Village to agrosilvopastura, and its preferences in choosing agricultural system; (3) Analyze the impact of Agrosilvopastoral activities on the economics of farmers of Sumanik village; (4) Elaborating the most appropriate Agrosilvopastoral model applied in Sumanik Village while maintaining the ecological, social and economic sustainability.

2. Research Methods

Location and Time

This research will be conducted in Sumanik Village, Salimpaung Subdistrict, Tanah Datar Regency. The research location will be focused on the farmers' private farmland in Sumanik Village. Field data collection will be conducted for 2 years, ie January 2013 to December 2015.

Data Collection Method

Primary data collection is done in 4 ways, namely: 1. Survey, directly using questionnaire. The value used in the questionnaire refers to the result of the Likert Scale, which changes the initial value from range 1 to 5, ranging from 1 to 7 (Avenzora 2008). 2. Observation, 3. In-depth interview 4. Documentation study. Primary data include 1). Condition and acceptance of farmer community that is kateristik, perception, motivation, and initial preference introduction of program, and after program implementation. 2). Stakeholder support includes perception, motivation, and preference, stakeholder preparedness.

Data Analysis Method

The data analysis used to look at people's perceptions, motivations and preferences is One Score-One Criteria (Avenzora, 2008). Analysis of revenue and expenditure to see the feasibility of etawa goat breeding business as one component of agrosivopastura.

Research Procedures

This research is applied research with aim to introduce Agrosilvopastoral agriculture system to Sumanik Village. The research is phenomological and oriented to find the best planning option in implementing Agrosilvopastoral agriculture system on agricultural area in Sumanik Village. In this study there are 3 stages to be passed, as for the stages are as follows;

Phase I - Assessment of Existing Conditions

Collecting data on the general condition of the community to serve as justification for logic / fairness in applying Agrosilvopastoral agriculture system as an option to improve the welfare of Sumanik Village community. Analyzing the huge potential of agrarian resources of Sumanik Village, judging from the area of land suitable for agricultural activities (crops, forestry crops, and livestock) and off-farm real estate that has been utilized for such activities. Analyzing the welfare condition of Sumanik Village community, seen from the large of society's income, public consumption, people's livelihood, and the number of productive age society and the status of their employment.

Phase II - Trial of Agrosilvopastoral Agricultural System

At this stage the program is implemented for 1 year, by giving capital rolling to 5 selected respondents, directed to make the demonstration plot as a trial, in the first 3 months of accompaniment. Then do the monitoring 2 times a month to see the development of demonstration plot agrosilvopastura. Then evaluated the program, and distributed the questionnaire again, to see the perception, motivation, and preference of the community on the Agrosilvopastoral farming system after the pilot phase.

Phase III - Synthesis and Process of Agrosilvopastoral Agricultural System Planning

Analysis is done by projection, either to the acceptance or to the cost that will occur. Projected costs are based on costs during maintenance including, fixed costs, variable costs, revenue projections derived from the sale of milk and male goats. The cost of feed is converted to labor costs because forage is not purchased. In addition to the analysis of financial aspects of the program to assess the success of the business through the calculation of expected costs and benefits, which include: 1)Net Revenue, 2)R/C Ratio , 3)Net Present Value , 3)Internal Rate of Return , 3)Payback period

To look at the situation and make a strategy of development planning and development of Agrosilvopastoral resources used SWOT analysis (Strenght / strength, Weakness / weakness, Opportunity / Threat, Threat / threat). Planning Agrosilvopastoral program in Sumanik Village begins with determining Vision, Mission and Purpose. The purpose of the Vision and Mission is to know where the direction of Agrosilvopastoral agribusiness is developed. Therefore it is necessary to build a shared expectation of the desired expectations. Because without the expectations to be achieved, nothing will be done. The techniques used in this activity are techniques for creating scenarios in the future (future scenario).

3. Results

3.1. Assessment of Existing Conditions

Sumanik Village, is part of Tanah Datar regency. This area is 650 -750 m above sea level, with an area of 2000 ha. The total population is 5442 people, with details: 2647 people for men and women 2795 people and population density 272 people per km. The main occupation of the population is farming and the farming is mostly done by female laborers. The number of people who live Sumanik wander estimated 15000 people

(Profile Village, 2012). Located at hillside of Merapi Mountain, the condition of the area is generally in the form of hills, the average temperature is 29˚C. Corrugated topography with 10-30% land slope is a potential area for agricultural sector development.

Sumanik Village, is a rain shadow area with rainfall ranging from min ≤ 100 mm / month and max ≥ 200 mm / month, this makes Village Sumaniak become dry area, because it is very rare rain. The land located in Sumanik Village consists of rice field of600 ha, dry land (ladang) of 700 ha, and settlement area of 450 ha. The area of agricultural land that has been utilized significantly is about 500 ha (Profile Village and Village, 2012). Irrigation of rice fields found in Sumanik Village is very simple, which is limited to watering the village that only works in the rainy season. Rice cultivation is usually done only 1-2 times in 1-1.5 years, the average land owned by the farmers is relatively narrow of 0.38 ha / KK.

Farming activities undertaken by the community in Sumanik Village are in the form of food crop agriculture, forest / tree crops, and raising livestock. Food crops contained in Sumanik are rice paddy and various kinds of crops such as: corn, beans, chillies, peanuts, green beans, soybeans, cassava, long beans, taro aubs, ground kale, and spinach. Some of the forestry crops found in Sumanik Village are avocado, durian, jackfruit, jengkol, petai, gamal tree, banana, chocolate, surian wood, rain wood, and cinnamon. Currently, people in Sumanik Village are very interested in planting chocolate trees. Feed plants contained in Sumanik Village are elephant grass and mexican grass grown on roadsides, rice terraces, in front of the houses, and in vacant land that grows irregularly.

In general, there are two characteristics of farmers' livelihood level in Sumanik Village, namely: 1) the advanced category farmers who control large land, either in the form of their own land and other land with the system of holding the pledge so that they have a good level of prosperity; And 2) low category farmers with relatively small land tenure and low welfare, so that in addition to farming on their own land they also use other people's land with a land contract system or a profit-sharing system (even) Sumanik Village, and outside Sumanik.

The result of the study also shows that the whole community of respondent farmers is in productive working age according to the criteria of BPS (2010), which is 15-64 years old. The percentage of older farmers is the highest (46.66%). Therefore, in forming farmer groups, in Sumanik Village, need to be recruited young farmers because true young farmers are stronger and more eager to know new things (Sukartawi, 2002).

Table 1: Livelihoods of Farmers Community Respondents in Nagari Sumanik

Livelihood	Percentage	Number of Household
- Farmers who own their land - farming	3,33	1
- Farmers own land - Livestock - Peasants	83,33	25
- Farming - Livestock - Trade	13,33	4

The total income received by the farmers of the respondents in Sumanik is obtained from farming plus the income from the side business both in the agricultural sector and outside the agricultural sector. There are still farmers who earn below the minimum wage (6.70%), from field observations the low income level of the farmers' community is not resolved from the problem of low control of production assets, such as the relatively narrow farmland.

3.2. Introduction of Agrosilvopastoral Agricultural System

At this stage of the research, the introduction of Agrosilvopastoral system in the farming community in Sumanik Village. In addition, interviews and questionnaires were distributed to farmers and stakeholders regarding Agrosilvopastoral farming system.

Most agricultural systems adopted by the community in Sumanik Village are monocultures and the average chemical fertilizer use is for urea fertilizer of 175 kg/ha, for SP-36 100 kg / ha and KCL 50 kg/ha. Agrosivopastura has advantages that monoculture farms do not have in the form of higher diversity so it is expected to meet the basic needs of the community and small farmers as well as release it from dependence on imported products, such as inorganic fertilizers and pesticides that affect the independence of the nation. (Yuwariah, 2015).

The result of the interview shows that the people in Sumanik Village are not familiar with Agrosilvopastoral farming system. In addition, the community has never received technical counseling from the local government on a regular basis on the management of agricultural land and plantations on an ongoing basis without damaging the land for future generations.

Perception of Respondents

One's perception is influenced by personal factors and situational factors and an innovation will be adopted by the farmer if the farmer has a good perception of the innovation.

a. Perceptions of Respondents to Agricultural Skills

The results of the study showed that most of the respondents perceived that farming skills that they control most are monoculture farming, followed by farming and farming of forest crops. The high positive perceptions of respondents on skills in monoculture farming system, because the community has not known and realized the benefits of Agrosilvopastoral farming system. The results of the AIAT study of South Sulawesi (2002), indicate that in the long term intensive and continuous rice monoculture resulted in the degradation of soil fertility, thus decreasing the productivity of paddy fields. Therefore, it is necessary to assist the experts in the field of agriculture and the government to give new methods to the farmers and change the way they think more complex so as to be able to increase agricultural production in Sumanik Village.

b. Perceptions of Respondents to the Benefits of Agricultural Activities

Basically, all agricultural business is an economic activity that requires the same basic knowledge of business place management, seed selection, cultivation method, yield collection, product distribution, product processing and packaging and marketing.

c. Perception of Respondents to the Benefits of Livestock Activities

The result of the study shows that most of the farmers in Sumanik Village responded positively to the benefits of farming activities. People really realize that breeding provides many benefits for their survival.

d. Respondents' Perceptions of Forest Agriculture Activities

Forests play an important role in supporting human life, because it produces a variety of products that can be classified into three groups: wood, non-timber forest products (NTFPs) and environmental services. Forests also produce three groups of environmental, social, and economic benefits.

Table 2: Perception of farmer community of respondents in Nagari Sumanik to his skills in agriculture

Component	Percentage of Perceptual Value (%)						
	1	2	3	4	5	6	7
Monoculture farming						96.67	3.33
Polyculture farming				73.34	20.00	3.33	3.33
Forestry agriculture			13.33	23.33	26.67	36.67	-
Livestock	3.33			30.01	3.33	40.00	23.33

Description: 1 = very unskilled, 2 = unskilled,
3 = somewhat unskilled, 4 = ordinary,
5 = somewhat skilled, 6 = skilled, 7 = highly skilled

Table 3: Public Perceptions of Respondent Farmers Against the Benefits of Agriculture

Benefit	Value of perception (%)						
	1	2	3	4	5	6	7
Employment provider							100.00
Economic improvement						26.67	73.33
Food supplier							100.00
Food supplier						16.66	83.44
Industrial raw material supplier						30.00	70.00
Ecotourism industry and spiritual health		6.67				23.33	70.00
Social politic tools		3.33				6.67	90.00

Description: 1 = Very unhelpful 2 = Not useful
3 = Somewhat unhelpful 4 = Indifferent
5 = Somewhat helpful 6 = Useful 7 = Very useful

e. Perceptions of Respondents Against Land Condition in Sumanik Village

The community of farmers of Sumanik Village respondents predominantly perceive that their land condition is very fertile and suitable both for crops, forestry, and for raising livestock.

f. Respondent's Perceptions of Land in Sumanik Village

Almost a part of the community of farmers respondents in Sumanik Village perceived that the availability of agricultural resources in Sumanik Village quite good.

Motivation of Respondents

The results of the study show that the farmers of respondents in Sumanik are highly motivated to perform Agrosilvopastoral farming system.

Preferences of respondents

The community of respondents tends to prefer the Agrosilvopastoral farming system to be implemented in Sumanik Village first as a pilot project / demonstration plot. This is because they want to learn first before practicing Agrosilvopastoral farming system on their own land.

Stakeholder Readiness

Seen as a whole Stakeholders in Sumanik Village stated they are ready to implement Agrosilvopastoral system, because they want added value from agriculture system which done through agriculture system Agrosilvopastoral which will be done.

Table 4: Preference of farmer community of respondent to form of agrosilvopastura application in Nagari Sumanik

App implementation option	Level of interest (%)						
	1	2	3	4	5	6	7
Agrosilvopastura is carried out independently with local farming community of Sumanik village						20.00	80.00
Agrosilvopastura is done semi-independently assisted by relevant stakeholders							
Agrosilvopastura is done as a pilot project						13.34	86.66

Description:
1 = very uninterested, 2 = not interested,
3 = somewhat interested, 4 = normal,
5 = somewhat interested, 6 = interested,
7 = very interested

Agrosilvopastoral Agricultural System Testing

The Agrosilvopastoral demonstration plot was commenced on 20 June 2015, on the land belonging to the family of the head of Nanyo Saiyo Farmer Group located in Jorong Guguak Manih, Sumanik Village with a land area of ± 1.5 ha. Integration between food crops, woody crops and Etawa goats in one farming unit leads to sustainability between production and land allocation and other resources. Sarjono et al (2003), said that there is an interaction between the cultivation of food crops, tree crops and livestock

because plants produce biomass that can be used as animal feed. While cattle produce manure that can be restored to improve and maintain soil fertility.

The respondents selected in this research implementation program were 5 respondents, including the chairman of Nanyo Saiyo Farmer Group. Each selected respondent was trained to take responsibility for maintaining two goats in the demonstration plot for one year with Agrosilvopastoral farming system. After the demonstration plot program ends, the tillers produced from each goats that are kept in the demonstration plot will belong to the farmers, then Agrosilvopastoral farming system will be done on their respective land. Here are some of the responsibilities that must be undertaken by the farmers of respondents during the demonstration plot program:

Against food crops (agro). Respondent farmers working together plant crops on the land that has been provided, using manure produced by goat cattle. Food crops grown in demonstration plots are adjusted to market demand and respondents' wishes. Selected namely; Sweet potatoes, vegetables spinach, vegetables kale. Planting of new food crops can be done in November (when it starts the rainy season) because in June when the entry of goats is the dry season.

Against woody plants (silvo). Respondent farmers working together must maintain the existing woody plants, and fertilize with organic fertilizer produced by goats that are kept.

Against animal feed (pastura). Respondent farmers work together to grow elephant grass and gamal (rain) trees in the fields around the demonstration plot as well as on their respective homes for Etawa Peranakan feed which is maintained in the demonstration plot. The cultivation of leguminosa used is Gamal pohom (Sumanik: rainwood) done on the edge of the land around the demonstration plot, this plant is very helpful in the dry season.

Goats on demonstration plot should be maintained intensively. Respondent farmers are obliged to carry out activities in the form of: a) mowing grass and feeding and drinking goats in the morning and evening, b) cleaning the cage and collecting goat droppings into sacks, c) bathing goats once a week, d) pay attention to the livestock goat for Lust is not overlooked, e) marries the leprous goat, and f) helps the birth of a goat.

3.3 Evaluation of respondent's orientation to Agrosilvopastoral Agricultural Trial System

Evaluation is a regular and systematic process in comparing the results achieved with the benchmarks or predefined criteria and then made a conclusion and the formulation of suggestions at each stage of the program (Azwar, 1996).

The result of the study shows that gradually change of perception, motivation, and preference of farmer community of farmer toward Agrosilvopastoral farming system after Agrosilvopastoral demonstration plot. These changes are described in the following description.

a. Respondents' perceptions of their agricultural skills

Almost all respondent farmers (83.33%) perceived to have better skills in doing polyculture (agrosivopastura) after attending demonstration plot program than before From this it can be concluded that the farmers have experienced the learning process; Called Van den Ban and Hawkins (2000) as acquiring and improving the ability to execute an attitude pattern through experience and practice.

b. Perceptions of respondents to the benefits of agricultural activities

The results showed that respondents' perceptions of the benefits of agriculture became relatively higher in all aspects after participating in the Agrosilvopastoral agribusiness demonstration plot program. This is understandable because the farming community of respondents has benefited directly from the existence of demonstration plots. The increased knowledge of respondents reflects the awareness of respondents to seek and accept ideas and practices that can be perceived as something new by individuals (Makruf, 2014).

c. Perception of respondents to the benefits of livestock activities.

The result of the study shows that positive perception of farmers of respondents to farming activities in Sumanik Village increased after the demonstration demonstration plot This is supposedly derived from the influence of social environment encouragement obtained by respondents due to incorporated in the group of demonstration plot farmers or in line with Leavit (1978) statement that the perspective of individuals Comes from his group and his membership in the community.

d. Respondents' perceptions of forest agriculture activities.

The result of the study shows that the positive perception of farmers of respondents to forest agriculture activities in Sumanik Village increased after the demonstration plot. This is a good sign because perception will affect the formation of the mindset and attitude of the farmer. In line with what Walgito (1981) said, perception is the first impression to achieve success.

e. Respondent's perception of land condition.

The result of the study shows that positive perception of farmers of respondents about the condition of land in Sumanik Village increased after participating in the demonstration plot program, partly because the community is increasingly aware that Agrosilvopastoral agribusiness system is beneficial to increase the fertility of the land. This is in line with the study of Bagella et al. (2014) in the Mediterranean region that the maintenance of the land using the Agrosilvopastoral system can ensure the conservation of biodiversity for vines and underground microorganisms so as to affect the fertility of the land.

3.4. Respondents' perceptions of agricultural resources

Most of the farmers respondents positively respond to the four components of agricultural resources in Sumanik Village. This may be due to the fact that many Sumanik people are wandering, so their land is used by the people who live in the village. It is necessary to establish a grand strategy of agricultural development in Sumanik Village through the empowerment of small farmers, such as developing commodities and agribusiness activities in accordance with the potential of land and residents in Nagarai Sumanik, so that the concept is expected to grow the agricultural sector so that in turn can be a source of new growth For the people's economy in Sumanik Village.

Synthesis and Process of Agrosilvopastoral Agricultural System Planning

Agrosilvopastoral agriculture system has high economic value and is beneficial socially and environmentally. Thus Agrosilvopastoral agriculture has excellent prospects for development as it is useful to increase the likelihood of remaining important forest and tree resources for future generations and to improve the welfare of rural communities whose livelihoods depend on the agricultural sector.

Economic benefits of Agrosilvopastoral agricultural system

Optimalization of economic benefits in Agrosilvopastoral system in principle is done through production activities that utilize all the potential energy that can be harvested in a balanced because it is in one area so that the utilization can occur efficiently and effectively. The following describes the economic performance of some components of the Agrosilvopastoral system in Sumanik Village.

Diversity of Food Crops

Food crops grown in demonstration plot as one component of Agrosilvopastoral tailored to the wishes of respondent farmers community, which consists of sweet potato, vegetables kale, and spinach. Cultivation of food crops in Agrosilvopastoral demonstration plot done by working together by several families of farmers of respondents in turn. All family members are involved. The activities of food crop farming in demonstration plot Agrosilvopastoral begins with land preparation. The need for production inputs for

food crops planted in demonstration plot in Agrosilvopastoral activities include seeds, labor and fertilizer.

Table 5: Input and Production Cost Requirement on Food Crop Activity in agrosilvopastura

Components	The cost of any Food crop activity (Rp)		
	Kangkung	Spinach	Sweet potatoes
Seeds	50	60	700,000
Manure	100,000	100,000	300,000
Wage of labor	150,000	150,000	600,000

The results of the analysis indicate that the crops business as a component of Agrosilvopastoral is feasible (profitable) to be done in Sumanik Village. The R / C ratio of 3.30 means that every Rp 1,000 the cost incurred will generate income of Rp 3,300.

Table 6 : Analysis of component food plant business in demplot agrosilvopastura in Nagari Sumani

Components	Value (Rp)
Total revenue	15,600,000
Total cost	4,728,566
Net income	10,871,433
R/C ratio	3.30

Woody Plants

Tree / woody plants contained in the demonstration plot are durian, surian wood, petai, jengkol, jackfruit, and coconut. The results of interviews with respondent farmers for durian, petai, and jengkol crops can be harvested once a year, while coconut and jackfruit once 3 months.

The results of the study indicate that tree crops that provide the largest income per year are durian crops. The surian woods have never been sold because they are not old enough.

Table 7: Revenue of tree plant component of agrosilvopastura demonstration plot in Nagari Sumanik

Tree type	Number of trees	Annual revenue (Rp)
Durian	3	2,500,000
Petai	2	300,000
Jengkol	1	200,000
Jackfuit	1	100,000
Coconut	1	50,000
Surian woods	3	150,000
Total		3,300,000

The surian or suren tree (Toona sureni) is a fast-growing plant species and at 12-15 years old it can produce wood (Jayusman, 2006).

Etawa Goat(PE)

Livestock breeding of etawa, which produces meat, milk, and fertilizer is financially analyzed as one of the components in the demonstration plot of Agrosilvopastoral agribusiness done in Sumanik. According to Livestock Training Center (2003), goat livestock waste is potential as a source of organic fertilizer, this is because faeses and urine goats containing N and K kites twice as big as cow dung. Analysis is done by projection, either to the acceptance or to the cost that will happen. Goat mothers are estimated to give birth to children on average each time one child per period with a mortality of 10%. Projected costs are based on costs during maintenance that include fixed costs, variable costs, projected revenue earned from the sale of milk, goat and organic fertilizer.

a. Projection of population development of etawa goat (PE).

Projection of PE goat population development is done to know the development of goat livestock PE in demonstration plot 5 years the female parent will be replaced. Projection results made based on the development of PE goats in demonstration plot during the 1 year record shows that the population of goat cattle increasingly years. It is known that

the number of female mothers up to 10 years is 409; 4-6-year-old goats aged 4-6 months while the age of 6-8 months amounted to 74 tails; Young goats aged 4-6 months aged 4-6 months, while young males aged 6-8 months 74 tails, so the total number of goats peranakan etawa until the end of the tenth year on the demonstration plot is 1,221 tails.

b. Etharian analysis of etawa cattle as one component of agrosilvopastura

The instrument used to measure the efficiency of etawa goat breeds in Agrosilvopastoral demonstration plot is financial analysis which includes Net Present Value analysis, Internal Rate of Return. The results obtained can illustrate the financial condition of the company, which can then be used as a guide in the development of business in the future. Agrosilvopastoral farming system is very feasible to be applied in Sumanik Village and generate big profit for business actor. Thus, it is time for the Sumanik Village community to integrate the activities of monoculture food crops, tree / forest plantation, and animal husbandry which they have done partially into one integrated Agrosilvopastoral system. Moreover, in the results of other studies conducted by Bukhari and Indra (2010) it is also proven that Agrosilvopastoral has the greatest / most favorable NPV, BCR and IRR values among all forms of agroforestry / agroforestry systems.

Thus, it is time for the Sumanik Nagari community to integrate the activities of monoculture food crops, tree / forest plantation, and animal husbandry which they have done partially into one integrated agrosilvopastura system. Moreover, in the results of other studies conducted by Bukhari and Indra (2010) it is also proven that agrosilvopastura has the greatest / most favorable NPV, BCR and IRR values among all forms of agroforestry.

Table 8 : Financial analysis of Etawa goat farming business in demplot agrosilvopastura Nagari Sumanik

	Description	Value (x Rp.1000)
A	Investment cost	
	Cage	20,000
	Preparation of wells	-
	Parent (male and female)	44,500
	Equipment for cages and feed	500
	Electrical installation	1,000
	Total Invests	66,000
B	Operating costs	37,098
C	Total cost requirements	103,098
D	Net profit per yea	40,562
E	NPV (i=20%/th), 10 year	92,193.13
F	RC ratio	1.82
G	IRR	40.96%
H	ROI (%)	39.94
I	PBP (years)	2.14
J	BEP (amount of livestock)	56
K	BEP (amount of livestock/ year)	9

4. Conclusion

The result of the study shows that the Sumanik Village community has a positive perception and high motivation in applying Agrosilvopastoral farming system after the introduction process and direct learning through the pilot project / demonstration plot agrosilvopastura. This step can be used as a reference for related parties in order to enrich the knowledge and mastery of farming skills among the community, in order to improve their habits that tend to prefer to apply monoculture farming system that is proven to have negative impact on the environment and less optimal economic benefits for the welfare of farmers.

Sumanik has great potential for the development and development of Agrosilvopastoral agriculture in the form of wide availability of land, adequate amount of productive labor, and positive perception of various stakeholders (wali Village,

sub-district, college, related offices, regents) to Agrosilvopastoral. Nevertheless, the application of Agrosilvopastoral agriculture in Sumanik Village is inseparable from several major obstacles, among others: (1) limited land ownership and venture capital among farmers; (2) limited technological mastery and Agrosilvopastoral business management skills; And (3) lack of support for infrastructure and supporting facilities.

The implementation of integrated Agrosilvopastoral agriculture system integrated ecotourism in Sumanik Village will be able to improve the quality of management of various potentials and resources in the region become more sustainable; Both economically, ecologically, and socio-culturally. This is possible because the implementation of Agrosilvopastoral agriculture system is at least able to provide three essential needs for agricultural development in Sumanik Village namely: (1) the use of appropriate agricultural technology for natural conditions Sumanik Village which is a dry area; (2) the creation and development of markets for a range of goods and services produced; And (3) the application of communal patterned agricultural business mechanisms that can improve the welfare of farmers in general and realize social justice for farm households in Sumanik Village with limited capital.

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