

# The Study on the sustainable development of Agro tourism (The Case in Agrowisata Bina Darma in the District of Ogan Ilir, South Sumatera)

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**Abstract**—Tourism is one of the sources of economy development which is growing so fast now. The kind of tourism which has the big potential to develop is agro tourism. One of them is an Agro Wisata Bina Darma. Yet, it has not been developed fully and utilised optimally up to now, so we need to do the study about the study on the sustainable development of agrotourism, the case is taken in Agrowisata Bina Darma. The purpose of the research is to estimate the carrying capacity, prefeasibility on economy in the developing in Agrowisata Bina Darma. The carrying capacity to develop Agro Wisata Bina Darma is still good. The recommendation which is proposed that the organiser can increase an extra hour visit for each guest for tourist objects which have limited hour if there is an increase significantly on visitors.

**Keywords**— Agrotourism, carrying capacity, sustainable, development.

## I. INTRODUCTION

AGRO tourism is part of the attraction that utilize Agriculture (agro) as a tourist attraction. The aim is to broaden the knowledge, experience leisure, and business relationships in agriculture. Through the development of agro-tourism that highlight local culture in the use of land, we can increase farmers' income while conserving land resources, and preserve local culture and technology (indigenous knowledge) are generally in line with the conditions of their natural environment (Ministry of Agriculture, 2010). One question is the location of agro tourism Agro Bina Darma. Agro Bina Darma apply the concept of environmentally friendly agro-tourism with panoramic natural beauty and various recreational facilities. Through agro tourism educate and entertain, give recognition and knowledge of agriculture and recreation for the community and visitors provide economic added value for its owners. As one of the agro tourism which has become a popular community, being essential for Agro Bina Darma to apply the principles of sustainable management of agro tourism. To anticipate the negative impacts of tourism, need to approach carrying capacity in the management of agro-tourism in accordance with the limits of

the acceptable. Carrying capacity of agro tourism and tourist motivation is influenced by environmental factors biophysical tourism locations. Perspective of tourism carrying capacity is not only limited to the number of visits, but also covers other aspects such as ecological capacity (the ability of the natural environment to meet the needs of tourists), physical capacity (the ability of facilities and infrastructure to meet the needs of tourists), social capacity (ability destination to absorb tourism without causing a negative impact on the local community), and economic capacity (the ability to absorb the goal area commercial ventures while still accommodating the interests of the local economy). In particular, the purpose of this study is to estimate the carrying capacity of the environment in the development of sustainable agro tourism in Agro Bina Darma.

## II. METHOD

This study was conducted in May-June 2011 at the Agro Bina Darma. Respondents to determine the carrying capacity of the environment / Carrying Capacity (CC) on the use of agro-tourism Bina Darma, consisting of the manager of Agro Bina Darma and domestic tourists as many as 150 people as well as related literature. To calculate the capacity of the environment used approach CC (Carrying Capacity) with the following formula (Libosada, 1998):

$$\text{Carrying Capacity (CC)} = \frac{\text{Tourists in the area used ABD}}{\text{Average area per individual requirements}}$$

Tourist capacity in ABD per day = CC X rotation coefficient

Where the rotation coefficients obtained from:

$$\text{rotation coefficients} = \frac{\text{No. of hours open to tourists in the area ABD}}{\text{The average time of the visit.}}$$

## III. RESULT AND DISCUSSION

### A. Carrying Capacity of Agro Bina Darma

Useful information carrying capacity of the environment to determine the optimal capacity or ability in the area of Agro

Bina Darma gave agro-tourism services in the long term. Information carrying capacity is also useful for managers in regulating the pattern of utilization of tourist areas especially related to the maximum number of visitors / tourists without changing the physical state or degrade the quality of the surrounding environment. According Libosada (1998) and Hadi (2005), carrying capacity (carrying capacity) is the ratio between the area of the region is used by tourists / visitors with an average area per individual needs of tourists / visitors.

### B. Result Area Needs Analysis and Time Traveler Visits

In addition to gardens and animal parks, there are 19 attractions that can be used by tourists when visiting the area Agro Bina Darma, and are mostly found in the primary vehicle with special tickets (before May 2011). Analysis results related area requirement per individual visitors and the average time of the visit for every tourist attraction in the region the Agro Bina Darma is presented in Table I.

TABLE I  
RESULTS OF THE ANALYSIS THE AVERAGE AREA PER INDIVIDUAL NEEDS AND THE AVERAGE TIME PER VISIT

Tourism activities	Area (m <sup>2</sup> )	Average Area Per Individual Needs (m <sup>2</sup> /person)	Open Time to Visit (hour/day)	Average Time One Visits (hour/day)
(a)	(b)	(c)	(d)	(e)
Visit Agro Gardens	5000	25	9	0,5
Mushroom house	800	40	9	0,5
Visit Garden Seeds Fruits *)	5000	70	9	0,5
Animal Park **)	4800	84	9	0,5
Flying Fox (Outbound)	1000	18	0,5	0,5
Swimming Pool ***)	3000	40	9	2
Family Fishing pond	2000	40	3	3
Entertainment Catch Fish	150	7,5	0,17	0,17
Dragon Boat rides	16400	450	0,25	0,25
Horse rides	1000	200	0,17	0,17
roller Ball	50	17	0,5	0,5
Water bike ****)	4800	125	0,25	0,25
motorcycle ATV	200	7	0,17	0,17
Aqua Taddler Boat (Boat Hand)	200	6	0,17	0,17
Target shooting	40	20	0,17	0,17
Paintball	1500	150	0,42	0,42
BMX bikes	2500	312.5	0,25	0,25
elephant riding	150	25	0,25	0,25
Delman *****)	300	150	0,33	0,33
Spider Game	600	60	9	0,5
Carousel	100	16.67	0,08	0,08
train Agro	1000	50	0,33	0,33
mini train	50	8.33	0,08	0,08

Source: Results of analysis of field data (2011)

\*) Includes bonsai plants / small growing where visitors should not be too dense to not stress plants (Libosada, 1998)

\*\*\*) Most of the unique biota / protected / limited reproduction, where visitors should not be too dense so that the animal is not stressed (Libosada, 1998)

\*\*\*\*) Swimming is an activity that mobile / sedentary, comfort needed for large areas (Calimag, P.1994)

\*\*\*\*\*) As a mobile, cruising can be higher than outdoor activities, but under mobile activities in mainland (Calimag, P. 1994)

\*\*\*\*\*) As a mobile, roaming can be higher than the activities in the water, (Calimag, P. 1994)

Each will use the area attractions or the trajectories specialized in giving services to tourists / visitors. Existing area, area per individual needs, time open for visits provided by Agro manager will affect the average time a visitor visits / tourists. Furthermore the average time of the visit will affect the dynamics of agro tourism activities contained in the Agro Bina Darma. Agro garden, mushroom house, fruit nurseries, swimming pool, garden animals and spiders game open for 9 hours per visit per day. For a family fishing pond open for 3 hours per visit perwisatawan every day, while other attractions (the game and the like) is shorter, ie less than 1 hour for each visit. Although the time open to the garden and wildlife park

long enough, but tourists only use an average of 0.5 hours. As for the kind of game points used in accordance with the time open for visits.

### C. Results Analysis of Environmental Carrying Capacity, and Capacity Rotation Coefficient Travelers

Rotation coefficient is useful to look at the velocity of tourists / visitors on the carrying capacity of the existing conditions. Results related analysis of environmental carrying capacity (carrying capacity), the coefficient of rotation, tourist capacity, the maximum number of tourists, as well as the ratio in the Agro Bina Darma is presented in Table II.

TABLE II  
ENVIRONMENTAL CARRYING CAPACITY, AND THE CAPACITY OF THE ROTATION COEFFICIENTS TRAVELERS, AS WELL  
AS THE RATIO OF THE MAXIMUM NUMBER OF TOURISTS VISIT

Tourism activities	Carrying capacity (person/day) (b/c)	Rotation coefficient (per day) (d/e)	Capacity Travelers (person/day) (b/c)x(d/e)	Maximum Number of Travelers	Ratio (4):(5)
(1)	(2)	(3)	(4)	(5)	(6)
Visit Agro Gardens	200	18	3600	60	60:1
Mushroom house	20	18	360	8	45:1
Visit Garden Seeds Fruits *)	71	18	1286	60	21:1
Animal Park **)	57	18	1029	8	129:1
Flying Fox (Outbound)	56	1	56	6	9:1
Swimming Pool ***)	75	4,5	338	8	42:1
Family Fishing pond	50	1	50	8	6:1
Entertainment Catch Fish	20	1	20	6	3:1
Dragon Boat rides	36	1	36	6	6:1
Horse rides	5	1	5	2	3:1
roller Ball	3	1	3	2	2:1
Water bike ****)	38	1	38	8	5:1
motorcycle ATV	29	1	29	8	4:1
Aqua Taddler Boat (Boat Hand)	33	1	33	8	4:1
Target shooting	2	1	2	2	1:1
Paintball	10	1	10	10	1:1
BMX bikes	8	1	8	6	1:1
elephant riding	6	1	6	6	1:1
Delman *****)	2	1	2	2	1:1
Spider Game	10	18	180	8	23:1
Carousel	6	1	6	6	1:1
train Agro	20	1	20	7	3:1
mini train	6	1	6	6	1:1
Total	764		7122		

Source: Results of analysis of field data (2011)

Based on Table 6.2, the maximum number of tourists who can use Agro Bina Darma without changing the physical state or degrade the quality of the surrounding environment is 764 people every day. Carrying capacity of the environment is low when compared with the carrying capacity of tourist parks, coastal ecotourism, and others. Existing attractions, the highest environmental capacity owned by tourist activities such as agro garden visits (vegetables) of 200 people. Relatively high carrying capacity because the garden is more agro plantation crops such as wide area (5000 m<sup>2</sup>) and predominantly covered with vegetables, giving ample space for visitors. Wildlife park has a lower carrying capacity (57 people) than agro gardens though, the area is (4800 m<sup>2</sup>) is almost the same as agro garden. This occurs because the vast wildlife park area per individual takes visitors higher (84 m<sup>2</sup>/org). According Libosada (1998), area requirement per individual visitor is determined by characteristics tourist attraction and visitors. Wildlife parks are generally inhabited by rare and unique wildlife that rarely interact with humans, such as the orang-utan, eagle, gibbons, bears, marsh crocodiles, which will therefore easily stressed when too many visitors, and is slightly

different from the other objects that are not much disturbed by the density of visitors. The pool has a carrying capacity of 75 people were in the area of 3000 m<sup>2</sup>, where each individual visitor takes an average area of about 40 m<sup>2</sup>. At first glance the area of 3000 m<sup>2</sup> which can only accommodate a maximum of 75 people is quite redundant. Field survey results indicate that the pool area is divided into two parts, namely the pool area for children and a pool area for adults. This arrangement was to provide comforts to the visitors well in the swim and mingle with other visitors, especially from family. Visitors pool in the Agro Bina Darma much a family group or friends vacationing with work that deliberately swim together. With service like this, visitors will feel more at home swimming pool so it gives an opportunity to repeat it again at a later date. The highest rotation coefficient on tourism activities visit the vegetable garden, mushroom house, visit a nursery of fruit, animal parks and spider games, ie each 18 times. This happens because the average tourist only use 0.5 hours of open time allocation (9 hours) to visit.

In Table II. also shows travelers capacity or the number of visitors that can be accommodated in the Agro Bina Darma. In general, travelers capacity at Bina Darma Agro region without

changing the physical state or degrade the quality of the surrounding neighborhood is 7122 people per day. Capacity rating is derived from the multiplication of the carrying capacity of the environment to the rotation coefficients. Highest rating capacity owned by agro garden that reaches 3600 people per day. Fruit nurseries and wildlife parks have capacity rating which is also high, ie each 1,286 people per day and 1,029 people per day.

#### IV. CONCLUSION

Carrying capacity for the development of agro-tourism Bina Darma without changing the physical state or degrade the quality of the surrounding environment is 764 people. Most (17 of 23) attractions are still open to receive additional visitors / tourists recently, especially wildlife park (ratio = 129: 1) and agro garden (ratio = 60: 1). Is expected to increase the open time for a visit to the agro tourist attraction, which opened in a short time. When the current agro tourism is only open from 0.17 to 0.5 hours per day perwisatawan, it can gradually be increased to 2, 3 or 4 hours per day perwisatawan. Existing capacity, currently at 7122 people per day can be optimized utilization mainly by promoting agro tourism with high ratios (such as agro-animal parks and gardens).

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