

## Integration of Duck – Paddy Farming for Supporting Food Consumption in Minahasa Regency, North Sulawesi, Indonesia

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### Abstract

Duck farming in research area developed integrated with paddy plant. The problem is how far the ducks in supporting food consumption in Minahasa Regency not yet known. This research has been conducted with the aim to know the potential of duck-paddy farming development seen from available resources and how far the consumption of duck meat in Minahasa Regency. This research was conducted by using survey method. The research material is duck farming integrated with paddy crop. The location of the research is determined by purposive sampling that is the location that conducts the development of duck-paddy integration that is Remboken District. Respondents are farmers and households who consume duck meat. Duck farming in Remboken District is generally traditional. Ducks are released or shepherded to paddy fields. The results showed that the farmer's livestock was the lowest total of 50 ducks and the most was 500 ducks. The type of duck that is kept in District of Remboken is a kind of Javanese ducks. In addition to rice waste, snail species ("renga") is one of the preferred feed types by ducks. For farmers, this type of feed is considered very good and suitable for laying ducks for high egg production. Ducks are sold around research sites, especially for duck meat restaurant entrepreneurs in the Minahasa Regency. The people of Minahasa Regency tend to consume duck meat because it has a good taste. The cuisine of duck meat is in accordance with the tastes of the people in the research area. Based on the result of the research, it can be concluded that duck livestock business integrated with rice plant gives benefit for farmer with R / C ratio is bigger one and consumption of duck meat tends to increase.

**Keywords:** Consumption, Food, Duck.

### Introduction

Duck farming in Minahasa Regency is generally traditional (Elly, 2011) [1]. Ducks, during the day, are mostly grazed in the rice fields. Prasetyo et al (2010) suggests that duck farms are increasingly in demand as an alternative source of income for rural and urban communities [2]. This is caused by some strategic environmental conditions that are more favorable to the duck business, among others is the decline of small-scale chicken business, and the emergence of outbreaks of bird flu diseases that are very detrimental to the farming of chicken or local chicken. In addition, the more open market of duck products, helped encourage the development of duck farms in Indonesia. Duck egg market that has been formed is still very open for increased production because the existing demand can not be fulfilled for everything. While the duck meat market that has been only limited by the Peking duck meat causes imports to slowly begin to open.

Duck farming in research areas was developed integrated with rice plants. The problem is how far the duck in supporting the food consumption in Minahasa Regency not yet known. This research has been conducted with the aim to know the potential of duck

farming development seen from available resources and how far the consumption of duck meat in Minahasa Regency, North Sulawesi, Indonesia.

### Materials and Methods

This research was conducted by using survey method. The research material is duck livestock integrated with rice plant. The location of the research is determined by purposive sampling that is the location that conducts the development of duck and rice crops that is Remboken District. Respondents are farmers and households who consume duck meat.

### Results and Discussion

Minahasa is one of the regency in North Sulawesi Province. This regency as an agricultural development area among rice crops, because most of its territory is in the coast of Lake Tondano, better known as Tondano Watershed (DAS Tondano) (Figure 1). The upstream part of DAS Tondano is located in the Minahasa Regency area covering 10 (ten) districts. While the downstream is located in Manado City which includes 4 (four) districts. The DAS Tondano is located at 1° and 2° LU with its topography of the mountains, and the area of ± 54142 ha (Kumurur, 2002) [3].



**Figure 1:** Coastal Area of Tondano Lake

In the coastal area of Tondano Lake is generally a swamp with an area of  $\pm 9487,937$  ha, mostly used for the development of rice farming, horticulture, livestock, and fisheries. Development of livestock at DAS Tondano outlets including ducks. Duck livestock in the DAS Tondano area was developed with a system of integration with rice plants.

One of the districts in Minahasa Regency that develop duck-rice farming is Remboken District. Area of rice field of Remboken District according to Minahasa BPS data (2010) for 616 ha of paddy rice with production of 3108 tons [4].

The results showed that duck farming in Remboken District is generally traditional. Ducks are mostly cultivated in rice fields (Figure 2).



**Figure 2:** Cultivated Duck Farming Conditions on Rice Fields

The results showed that the ownership of ducks is the lowest 50 and the most is 500 head. The type of duck that is kept in District of Remboken is a kind of Javanese ducks. In addition to rice waste, the type of snail ('renga') is one type of feed, favored by ducks (Figure 3), which is considered to be very good and suitable for ducks in the egg-laying period for high egg production.



**Figure 3:** "Renga" Ducks Consumed

The prospect of duck farming development in North Sulawesi, Indonesia according to Polakitan et al (2011) is very big in terms of North Sulawesi population of 2,154,235 people. Program of food expectation pattern (PPH) according to animal protein consumption target is 6 g / capita / day, which is fulfilled about 4.57 g. Egg consumption reached about 6,680,010 kg of requirement 8,881,910 kg. Fulfillment of nutritional intake is still needed supply 2,201,900.9 kg eggs to the market (Polakitan et al, 2011) [5]. This condition shows that duck farming has a chance to be developed. Development opportunities for duck farming in North Sulawesi can be cultivated on the coastal lakes and rice paddies as in Minahasa District.

The results showed that the value of RC ratio of paddy duck integration of 1.24, it shows that duck farming integrated with rice plant is feasible to be developed. There are some advantages obtained when duck is integrated with rice plants (Adiyoga, 2008; Risdiono, 2010 and Saenab, 2010) [6-8]. Duck farming has several roles as follows: (a) is a side farm to increase income; (b) using free time in addition to basic work; (c) as savings or fees for a child's school; (d) As a source of income farmers. The contribution of duck farming to family income is 35, 9% (Fauzi, 2011) [9]. The income level of duck farming according to Ekowati et al (2005) amounted to Rp 1,056,989 / month for the ownership of 533 tails [10]. Income for ownership of 231 tails according to Budiraharjo (2007) is higher that is Rp 1, 744, 348, 78 / month. Duck farming as a community farm is expected to increase food security (in terms of provision of animal food from livestock) and able to play a role in the absorption of labor (Prasetyo et al, 2005) [11].

The low population of ducks makes meat and duck production also low. This causes the consumption of duck meat is still low. Increased population needs to be done through the development of ducks that are integrated with rice crops and agribusiness oriented. According to Elly et al (2012) that based on the potential of duck farming development should be oriented agribusiness [12]. The development of ducks integrated with rice plants is an approach to produce organic duck products. Organic duck meat is preferred by consumers because the taste is different from the meat of the broiler type. Consumers are turning to duck meat products, whereas duck eggs are mostly used as cake ingredients ("malabar"). The last few years in Kabupaten Minahasa in particular and North Sulawesi in general began to develop restaurants with local duck meat raw materials and stalls selling "malabar". These conditions have an impact on increasing demand for local duck products. Efforts are made to increase the population of local ducks. Duck population data in North Sulawesi, Indonesia are listed in Table 1.

**Table 1: Population of Duck in North Sulawesi, Indonesia**

No.	Year	Population of Duck (Head/Year)	Percentage (%)
1.	2012	137,703	
2.	2013	153,344	11.36
3.	2014	153,910	0.37
4.	2015	145,888	-5.21
5.	2016	150,691	3.29

Source: Processed Data (2018)

The data in Table 1 shows an increase in duck populations slowly, even in 2015 the population declines. In this case, the increase in local duck population has an impact on the production of duck meat

and eggs. Meat and egg products from duck are very important in an effort to increase the adequacy of food and nutritional needs for the community. Meat and egg production from local ducks, as stated in Table 2.

**Table 2: Meat and Egg Production from Local Ducks in North Sulawesi, Indonesia**

No.	Year	Production of Duck Product (Tons/Year)			
		Meat	%	Eggs	%
1.	2012	86		886	
2.	2013	96	11.63	987	11.40
3.	2014	97	1.04	901	-8.71
4.	2015	91	-6.19	853	-5.33
5.	2016	94	3.30	882	3.40

Source: Processed Data (2018) (2018)

Duck farming is important to be developed in the Regency of Minahasa Indonesia since most of the area is located in DAS Tondano so it has the potential of feed ingredients especially “renga”. The development as an effort to increase the availability of food and household food consumption (as stated by Rachman and Supriyati, 2011) comes from duck products [13]. According to Amaludin et al (2013) and Muzayyanah et al (2017) that rural households tend to increase food consumption of livestock products as a source of animal protein [14,15]. Increased consumption of duck livestock products further impact on improving the quality of human resources.

Ducks are sold around research sites, especially for duck meat restaurant entrepreneurs in the Minahasa Regency, North Sulawesi, Indonesia. The people of Regency of Minahasa tend to consume duck meat because it has a good taste. Duck meat based cuisine in accordance with the tastes of the community in the study area (Figure 4).



**Figure 4:** Duck Meat Cuisines: “Rica-Rica Duck”

### Conclusions and Suggestions

Based on the result of the research, it can be concluded that duck livestock business integrated with rice plant gives benefit for farmer with R / C ratio is bigger one and consumption of duck meat tends to increase.

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