IMPROVED PROFITS AND WETLAND PADDY FARMING SCALE AS THE LEADING COMMODITY IN AGROECOLOGICAL ZONES

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Abstract

This study aims to analyze the farming feasibility, the increase in net profit and the scale of farming of wetland paddy as a leading commodity according to agro ecological zones (AEZ). The study was conducted at the location of the wetland paddy as a leading commodity and non leading commodity Bantul Regency in 2015. The feasibility of farming is analyzed using revenue and cost ratio (R/C), the increase in profits is analyzed by an increase in net profit (NKB) and the scale of farming is analyzed by determining the break even point of production (TIP) or break even point of price (TIH). The results showed that wetland paddy farming as a leading commodity according to agro ecological zones in Bantul is feasible and more optimal (R/C 2.17) than the non leading commodity (R/C 1.99). Wetland paddy farming as a leading commodity according to agro ecological zones can raise the net profit (NKB 1.13). Wetland paddy farming as a leading commodity according to agro ecological zones can be profitable if the production is at least 2,729 kg/ha or the price is at least Rp. 1,643/kg.

Keywords: profit, wetland paddy farming, leading commodity, agro-ecological zone
JEL Classification: D51, E23

1. Introduction

Wetland area in Bantul Regency was 15,471 ha (30.52%), non wetland area was 14,125 ha (27.9%) and non-agricultural area was 21,089 (41.6%). The total area of Bantul Regency was 50,685 ha (BPS Bantul Regency, 2014). In Province of Yogyakarta, Bantul Regency was the second rank acreage for wetland area after Sleman (22,642 ha). Wetland paddy harvested field area in 2013 amounted to 32,621 ha with a productivity of 6.41 tonnes/ha and it's production reached 209,149 tonnes. Wetland paddy harvested field area tend to increase 3.44%, the production tends to increase 2.88%, but productivity tends to decline 0.63%. The development of the harvested area, production and productivity of food crops sub-sector (2011-2013) are presented in Table 1.

In doing farming activities, farmers rarely paid attention to whether the commodity that cultivated was a commodity that has a comparative advantage, competitive advantages and in accordance with agro-ecological zones (AEZ), so the productivity was low. Commodities that have comparative advantages indicates the commodity is produced through the dominance of natural resource support, where other areas are not able to produce. Commodities that have a competitive advantages indicates the commodity is produced in a way that is efficient and effective, so have a good competitiveness of the aspects of quality, quantity, continuity and price. Rusastra,

Rachman and Friyantno (2004) revealed that financial gain indicates competitive advantage of a commodity, while the economic benefits of a commodity indicates a comparative advantage in resource utilization. Leading commodity means a commodity that has a strategic position to be developed in a region are decided based on various considerations, both technically (soil and climate) social and economic as well as having comparative and competitive advantages (IAARD, 2003). According Setiyanto (2013), a leading commodity is a commodity that is in accordance with the local agro-ecological and competitive advantage, good market in the region itself, in other areas in the national scope, as well as in international markets.

Table 1. Harvested Area, Production and Productivity Food Crops Sub Sector
by Type of Plants (2011-2013)

Type of crop	Year								
	2011			2012			2013		
	Harvested Area (ha)	Production (ton)	Productivity (ton/ha)	Harvested Area (ha)	Production (ton)	Productivity (ton/ha)	Harvested Area (ha)	Production (ton)	Productivity (ton/ha)
Wetland Paddy	30,559	197,618	6.5	30,064	204,959	6.8	32,621	209,149	6.4
Dryland Paddy	140	386	2.8	141	396	2.8	71	215	3.0
Maize	3,892	23,081	5.9	4,244	23,304	5.5	3,371	19,077	5.7
Soybean	3,074	4,355	1.4	2,415	3,987	1.7	1,412	2,203	1.6
Peanut	3,205	3,470	1.1	3,226	4,082	1.3	2,451	3,335	1.4
Cassava	2,307	44,033	19.1	2,237	35,236	15.8	1,925	34,865	18.1
Sweet potato	18	182	10.1	25	248	9.9	64	649	10.1

Source: BPS Bantul, 2014 (analyzed)

Agro ecological zones (AEZ) is a grouping of a region based on the physical environmental conditions which are almost the same, where the diversity of plants and animals is not differ significantly. The main component of agroecology is the climate (temperature and precipitation), physiographic region or shape (flat, wavy to mountainous) and soil (acidity, texture and drainage). Farming with commodities that not correspond to agro ecological zones (AEZ) can lead to low agricultural productivity, rising farming costs (production costs) and damage to the environment or ecosystem. According Syafruddin et al.(2004), a farming system that is efficient, high production and sustainable can be achieved among others by utilizing land resources based on characteristics, ability and suitability and supported by technology and appropriate government policies. Farming with a leading commodity according to agro ecological zones (AEZ) is one form of farming that aims to increase production, reduce costs thereby increasing profit. According Hendayana (2003), that in order to achieve the efficiency of agricultural development can be done by developing a commodity that has a comparative advantage both in terms of the supply and demand. From the supply side, leading commodities characterized by excess (superiority) in growth in biophysical conditions, technological and socio-economic farmer. On the demand side, the leading commodity market characterized by strong demand domestically and internationally.

According Sukmayani *et al.* (2014), development of leading commodities are different for each area/region depending on the characteristics and potential local resources.

Wetland paddy is a leading commodity according to agro ecological zones (IV/Wrh) on food crops sub-sector in Bantul by Loqation Quotient (LQ) > 1, Shift Share Analysis (SSA) is positive and in accordance with the zoning of agricultural commodities (Mulyono, 2015). Wetland paddy as the leading commodity was spread out in 10 sub-districts, namely Sanden, Kretek, Pundong, Bambanglipuro, Pandak, Bantul, Jetis, Banguntapan, Kasihan and Sedayu with area 11,666.66 ha (23%). This study purposed to analyze the farming feasibility, the increase in net profit and the scale of farming of wetland paddy as a leading commodity according to agro ecological zones (AEZ).

2. Research Method

2.1. Location and Time Research

The study was conducted in 2015 at the sites of the wetland paddy fields as a leading commodity, namely: 1). Panjangrejo Village, Pundong District, 2). Srigading Village, Sanden District and 3). Tirtomulyo Village, Kretek District, Bantul Regency and wetland paddy fields as a non-leading commodity, namely: 1). Panggungharjo Village, Sewon District, 2). Sriharjo, Imogiri District and 3). Srimartani Village, Piyungan District, Bantul Regency. The criteria of wetland paddy as a leading commodity were (1) LQ > 1, (2) SSA positive and (3) appropriate with AEZ, vice versa if at least one criterion was unfulfilled.

2.2. Types and Data Collection Methods

The data used in this research are secondary and primary data. Secondary data were obtained from publications Bantul Central Bureau of Statistics, Department of Agriculture and Forestry Bantul and Assessment Institute for Agricultural Technology (AIAT) Yogyakarta and any relevant research results such as wetland paddy area, harvested area, production and productivity. The

primary data were obtained through interviews with respondents/farmers using a structured questionnaire. The questionnaire is intended to provide guidance to the enumerators questions in the interview, so focus and be able to answer the research objectives. Respondents were selected by stratified random sampling approach. The number of respondents are 30 farmers consisting of 15 farmers of wetland paddy as a leading commodity according to agro ecological zones (AEZ) and 15 farmers of wetland paddy as a non-leading commodity. The number of farmers from both of wetland paddy as a leading commodity and non-leading commodity were not identified properly. Juanda (2009) stated that if there is not any information of the variance of the population, sampling method can be applied at least for 30 samples, because according to the central limit theory estimated average would be closer to the normal distribution. Data collected includes: 1. Characteristics of respondents/farmer, 2. Tenure respondents/farmer, 3. Accessibility and infrastructure of research sites, 4. The cost of production facilities cover the cost of seeds, fertilizers and pesticides or drugs, 5. Labor costs include the cost of land preparation, planting, fertilizing, spraying, harvesting and post-harvest, and 6. Production and price of grain.

2.3. Data Analysis

Feasibility of wetland paddy farming as a leading commodity according to agro ecological zones (AEZ) were analyzed using revenue and cost ratio (R/C), with R/C > 1 for feasible. According to Soekartawi (2002), formulation for R/C is presented as follows:

$$R/C = TR/TC \qquad (1)$$

where TR is for total revenue and TC is for total cost.

To analyze the increase in net profit of wetland paddy farming as a leading commodity according to agro ecological zones (AEZ) used ratio of the increase in net profit (NKB). According

Adnyana and Kariyasa (1995), the increase in net profit formulation is presented as follows:

$$NKB = \frac{KBs}{KBts} \qquad (2)$$

where NKB is the value of net profit, KBs is a net gain as a leading commodity wetland paddy farming according to agro ecological zones (AEZ) and KBts is a net gain as a non-leading commodity paddy farming.

Scale farming can be determined using a break even approach (Sudjana, 2007). Scale farming can be determined by the break even point of production (TIP) and the break even point of price (TIH). The break even point is determined at the time of TR = TC or total revenue equal to the total cost of farming. According Rahmanto and Adnyana (1997), the break even point of production (TIP) and the break even point of price (TIH) formulated as follows:

$$TIP = BP/H \qquad (3)$$
$$TIH = BP/P \qquad (4)$$

where P is production (kg), H is production price (Rp/kg) and BP is cost of production (Rp).

3. Results And Discussion

3.1. Farmers' Characteristics

Characteristics of the farmers include age, education, farming experience, number of dependents, the main job and main income as shown in Appendix 1.

Farmers majority, were aged over 35 years (Table 2), this showed that the farmers are in the productive age. On the other hand, people in productive age were potentially in doing farming. The farmers had low level of formal education where as 46.66% to 93.33% of the farmers got education below the junior high school and 6.67% to 20% of them had senior high school level. The level of education affects the ability of farmers to receive and find information about new technologies that support farming activities. Suharyanto, Destialisma, and Parawati (2005), higher education encourages farmers to be more rational in managing farming. Isgin *et al.* (2008), the farmers decisions whether "to adopt" or "not to adopt" an innovation were extremely affected by the level of formal education. The farmers which got experiences in farming more than 26 years were 40%-60% and no one of the farmers got experiences less than 5 years. Experience in farming became a value in doing farming, such as the timing of planting, pest and diseases, etc. Experience in farming can be a driving force for introducing new technologies and to improve abilities to take rational decisions. Rangkuti (2009), the experience build the farmer character into more open and able to cooperate with other farmers in a network. The number of covered family members between 3-4 people for each (53.33%), while 33.33% to 40% are between 1-2 people for each. While number of covered family members which more than 5 people were 6.67% to 13.34%. The main job of the farmers were 80%-100% as a farmer, and the rest were non-agricultural labors and others (village officials). The main income of respondents were 73.33% to 100% from farm production and more than 20% were from non-agricultural labors and 6.67% from village officials.

3.2. Land Tenure of Farmers

Land is known as a major asset for farm households related to farming activities. Land tenure became one of the indicators that used in the assessment for the level of welfare. The land tenure performance includs the type of land, land area and land ownership. Land types consist of irrigated land, rainfed areas, dry land and yard. The status of land tenure describes in three ways: its own, rent and profit sharing. The performance of land tenure is presented in Table 2.

The total area of land tenure by farmers were 0.32 to 0.53 ha for each, where the land tenure was dominated by irrigated land with an area 0.27 to 0.39 ha for each (Table 2). Land tenure status not only from its own farmers, but

also were obtained through a system of rent or profit sharing. Land that was leased or shared was land owned by individuals and belong to the village. The price for paddy field rent reached 15 million/year/hectare. In a profit-sharing system, the percentage of revenue sharing based on the commodities that grown on fields. For the area planted with paddy, the distribution of the results are 50% for owners and 50% for tenants, with the provisions all of the production cost and labor from tenants. Land planted with crops, the distribution of the results were 1/3 (33.3%) for owners and 2/3 (66.7%) for tenants with the provisions of all costs from tenants. Koirala, Mishra, and Mohanty (2016), land was a key factor in the agriculture production and land tenure had a significant impact on the technical efficiency.

Table 2. Performance of Land Tenure

| Type of land | Land area (ha) and Status | | | | | | | |
| | Leading Commodity According to AEZ | | | | Non-Leading Commodity | | | |
	Own	Rent	Profit sharing	Total	Own	Rent	Profit sharing	Total
Irigated land	0.08	0.10	0.09	0.27	0.18	0.02	0.19	0.39
Rainfed	-	-	-	-	-	-	-	-
Dry land	-	-	-	-	0.01	-	-	0.01
Yard	0.05	-	-	0.05	0.13	-	-	0,13
Total	0.13	0.10	0.09	0.32	0.32	0.02	0.19	0.53

Source: primary data (analyzed)

3.3. Accessibility and Infrastructure Research Area

Accessibility and infrastructure are factors that affect the success in farming. The performances of farmer accessibility are a distance of a farmer house to the farm/field, to the input market, to the output market and to resources of information. Input market is the store or shop that provides or sells agricultural inputs such as seeds, fertilizers, pharmaceuticals (pesticides), etc. Market output is the store or shop that accepts and purchase of agricultural products. Sources of the information is the Institute of Agricultural Extension in each district. The function and role of the Institute of Agricultural Extension (BPP) is a provider of information that needed by farmers, extension to farmers, farmers assistance and the development of farmers. The performance of accessibilities of the research location is shown in Table 3.

Table 3. Accessibility Research Area

No	Brief	Leading Commodity According to AEZ (km)	Non-Leading Commodity (km)
1	Distance to farm/field	0.63	0.67
2	Distance to input market	1.61	1.50
3	Distance to output market	1.48	2.81
4	Distance to resources of information	2.59	1.00

Source: primary data (analyzed)

From Table 3, it was shown that the distance of farmers' places to farm/field was approximately 0.6-0.7 km. The respondents places to input markets took the distances 1.5-1.6 km. Distanceof

farmers'places to market output were from 1.48 to 2.81 km. Distance of farmers'places to resources were from 1.00 to 2.59 km. Accessibility of this research location was very supportive where as the farms/fields, both input and output market as well as resources information were close to the farmers' places. Not only the farmers of wetland paddy as a leading commodity but also the farmers of wetland paddy as non-leading commodity were easy to acquire farming inputs such as seeds, fertilizers and pesticides, as well as in selling their crops due to their places were close to both input and output markets. The extension agents became the representative of the information resource which were be part of monthly meeting of the farmers' group. This made the distance between the farmers and information resources was not a kind of obstacle.

Performance of infrastructure includes the availability of labeled seeds, organic fertilizers, inorganic fertilizers, pesticides, agricultural tools and machinery, marketing of products and frequency of extension activities. The availability of organic fertilizers, inorganic fertilizers, pesticides, agricultural tools and machinery and the availability of sufficient product marketing available in the field (Appendix 2). Extension activitiesare often done by the extension of the Institute of Agricultural Extension, so it helps farmers to overcome the problems in the field. Availability of infrastructure in the field is very supportive with the farmers farming to reach the optimal production. The performanceof infrastructure research is presented in Appendix 2.

3.4 Analysis of Wetland Paddy Farming

Wetland paddy farming was a farming system that analyzed the first growing season (MT-I) or the rainy season in 2014/2015 on a half technical irrigated land. The seeds used by farmers was the seed of new varieties (VUB), as Mekongga, Situbagendit, IR-64, Ciherang and Inpari-23. Average use of seeds as 33 kg/ha on wetland paddy farmers as a leading commodity according to agro ecological zones, while the wetland paddy farmers as non-commodity as 37 kg/ha. Sahara, Alam, and Idris (2007), the results of research in Uepai District, Konawe, that the use of seed in paddy farming was between 30-80 kg/ha. According to Andriati and Sudana (2007), in Karawang, West Java Province the use of seed is up to 25 kg/ha.

Fertilization that was done by farmers did not yet follow the fertilizer recommendations which drawn up by the Ministry of Agriculture. For the wetland paddy farmers as a leading commodity according to agro ecological zones, the average use of urea 116 kg/ha, ZA 33 kg/ha, SP-36 50 kg/ha, KCL 3 kg/ha, NPK 274 kg/ha and organic fertilizers 1.24 tonnes/ha, while for the wetland paddy farmers as a non-leading commodity, the use of urea 182 kg/ha, ZA 82 kg/ha, SP-36 25 kg/ha, KCL 7 kg/ha, NPK 188 kg/ha and organic fertilizer 1.43 ton/ha. According to Andriati and Sudana (2007), the results of research in Karawang, West Java Province, the use of urea fertilizer are between 217-263 kg/ha, SP-36 88-121 kg/ha and KCL 15-26 kg/ha. Sahara *et al.* (2007), the result of research in Uepai District, Konawe the use of urea fertilizer are 150-250 kg/ha, SP-36 50-150 kg/ha and KCL 0-50 kg/ha. Based on the regulation of the Minister of Agriculture Number 40/Permentan/OT.140/4/2007 on the recommendation for N, P, and K in paddy farming specific locations in Bantul, urea fertilizer 250-300 kg/ha, SP-36 fertilizer 50-100 kg/ha and KCL 50 kg/ha without organic matter. Fertilization using organic materials such as straw (5 ton/ha), then the use of urea fertilizer were 230-280 kg/ha, SP-36 50-100 kg/ha without KCL fertilizer. Fertilization using organic materials such as manure (2 tonnes/ha), the urea fertilizer 225-275 kg/ha, SP-36 0-50 kg/ha and KCL 30 kg/ha. Sirrapa, Rieuwpassa, and Waas (2007), the use of quality seed and fertilizer plaid a role in increasing grain yield.

The cost structure of paddy farming include the cost of production inputs (seed, fertilizer, pesticides) and labor (tilling, planting, fertilizing, spraying, weeding, harvesting and post-harvest). The cost structure of paddy farming is presented in Table 4.

Table 4. Cost Structure Paddy Farming MTI 2014/2015

Brief	Leading Commodity According to AEZ		Non-Leading Commodity	
	Total	Percent	Total	Percent
Cost of production input(Rp)	2,480,574	25.5	2,601,509	25.5
Seed	334,489	3.4	351,719	3.4
Fertilizer	1,710,115	17.6	1,825,123	17.9
Pesticide/Medicine	435,970	4.5	424,667	4.2
Cost of Labor (Rp)	7,254,193	74.5	7,613,303	74.5
Tillling	1,747,685	18.0	1,951,204	19.1
Seeding	366,667	3.8	375,000	3.7
Planting	1,462,566	15.0	1,519,599	14.9
Fertilizing	353,333	3.6	411,667	4.0
Spraying	520,000	5.3	526,667	5.2
Weeding	1,064,524	10.9	1,087,407	10.6
Harvesting and post-harvest	1,739,418	17.9	1,741,759	17.0
Total cost of farming(Rp)	9,734,767	100.00	10,214,812	100.00

Source: primary data (analyzed)

From Table 4, the portion of the production cost reached 25.5%, while labor costs reached 74.5% from the total cost of wetland paddy farming. Ariani, Saryoko, and Muttakin (2009), concerning paddy farming during the rainy season on the Prima Tani location, Banten Province (Serang, Pandeglang and Lebak District), costs of production input reaches 21.2% to 25%, while labor costs reached for over 60 % of the total cost of paddy farming. Andriati and Sudana (2007), paddy farming during the rainy season in Karawang, West Java province in 2005 claimed that expenses used for production input reach 22%-25% of the total cost of paddy farming. Baharudin *et al.* (2016), the paddy farming input costs reached 42.2 %, while operations and employment cost reached 57.8 %. Chang *et al.* (2016), states that the cost of its inputs to produce paddy were less than 40 %.

Cost of production input cover the purchase of seeds, fertilizers and pesticides. Cost of production input on the wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) Rp. 2,480,574.- lower than the wetland paddy farmers as a non-leading commodity Rp. 2,601,509.-. This is because the average seed and fertilizer used by farmers of wetland paddy as a leading commodity according to agro ecological zones lower than wetland paddy as a non-leading commodity. The largest portion of the production input cost used for the provision of fertilizers reached 69%-70%, while the portion for the provision of seeds around 14 % and pesticides about 16%-18%. According to Ariani *et al.* (2009), the largest portion of the production input cost was used for fertilizers.

Labor cost included costs for land preparation, nursery, planting, fertilizing, spraying, weeding and harvesting and post-harvest. The cost of labor in the wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) Rp. 7,254,193.-, while the wetland paddy farmers as a non-leading commodity Rp. 7,613,303,-. The largest portion of the labor

cost used for the cultivation of land (24%-26%), harvest and post-harvest (23%-24%). The largest portion of the labor cost used to harvest (Ariani *et al.*, 2009). Total costs of farming of the wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) Rp. 9,734,767.- lower than the wetland paddy farmers as a non-leading commodity Rp. 10,214,812.- or difference Rp. 480,045.-.

The feasibility of wetland paddy farming is determined from the value of R/C, where the wetland paddy farming is considered feasible if the value of R/C is more than one. Production on wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) was 5.9 tonnes/ha of unhusked harvest was higher than in wetland paddy farmers as a non-leading commodity 5.7 tonnes/ha (Table 7). The production was still lower than the average of wetland paddy farming production Bantul Regency in 2013, which is 6.4 tonnes/ha (BPS Bantul 2014). The average price of unhusked harvest (GKP) on wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) Rp. 3,567.-, while in wetland paddy farmers as a non-leading commodity Rp. 3,543.-. That grain prices were still lower than the government purchase price (HPP) which was Rp. 3,700.-. Acceptance of farming in the wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) Rp. 21,130,908.-, while in the wetland paddy farmers as a non-leading commodity Rp. 20,315,562.-. Profits earned from farming on wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) Rp. 11,396,141.- was greater than the profit to the wetland paddy farmers as a non-leading commodity Rp. 10,100,750.-. Wetland paddy farming feasibility analysis is presented in Table 5.

The results of R/C analysis of wetland paddy is more than one, so that the wetland paddy farming is considered feasible. R/C farming value in wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) of 2.17

means that any expenses amount Rp 1,000.- to an input that given, gained acceptance Rp. 2,170. R/C farming value in wetland paddy paddy farmers as a non-leading commodity of 1.99 means that any expenses amount Rp 1,000.- to an input that given, gained acceptance Rp. 1,990.-. Ariani *et al.* (2009), research on paddy farming during the rainy season on the location of Prima Tani Banten (Serang District, Pandeglang and Lebak) acquired R/C from 1.9 to 2.3. Andriati and Sudana (2007), research about paddy farming during the rainy season in Karawang, West Java in 2005 acquired R/C 1.54 to 1.70. Sahara *et al.* (2007), the result ofresearch in Uepai District, Konawe obtained R/C of 2.28.

Table 5. Paddy Farming Feasibility Analysis MTI 2014/2015

Brief	Leading Commodity According to AEZ	Non-Leading Commodity
Total cost of farming (Rp)	9,734,767	10,214,812
Production (kg/ha)	5,924	5,734
Price (Rp/kg)	3,567	3,543
Acceptance (Rp)	21,130,908	20,315,562
Profit (Rp)	11,396,141	10,100,750
R/C	2.17	1.99
NKB	1.13	

Source: primary data (analyzed)

The increase in net profit (NKB) from wetland paddy farming as a leading commodity according to agro ecological zones (AEZ) is 1.13. This means that the profit of farming in wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) 1.13 higher compared with a profit of wetland paddy farmers as a non-leading commodity.

Analysis of the scale of farming can be determined by the break even point of production and the break even point of price. The break even point is used to determine the level of production

and the minimum price that must be achieved so that paddy farming could be profitable. Analysis break even paddy farming is presented in Table 6.

Table 6. Analysis of Break Even Paddy Farming MTI 2014/2015

Brief	Leading Commodity According to AEZ	Non-Leading Commodity
Total cost of farming (Rp)	9,734,767	10,214,812
Production (kg/ha)	5,924	5,734
Price (Rp/kg)	3,567	3,543
Break even production (kg/ha)	2,729	2,883
Break even price (Rp/kg)	1,643	1,781

Source: primary data (analyzed)

Table 8 shows that the break even point of production and the break even point of price on wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) Bantul were 2,729 kg/ha and Rp. 1,643/kg. This means that farming in wetland paddy farmers as a leading commodity according to agro ecological zones (AEZ) was still profitable if the production was not less than 2,729 kg/ha or the selling price was not lower than Rp. 1,643/kg. Break even point of production and the break even point of price on wetland paddy farmers as a non-leading commodity is 2,883 kg/ha and Rp. 1,781/kg. This means that farming in wetland paddy farmers as a non-leading commodity still profitable if production is not less than 2,883 kg/ha or the selling price is not lower than Rp. 1,781/kg.

The implication of this study is that an increase in harvested area, production and productivity in Bantul to do and focused on 10 districts wetland paddy as a leading commodity to agro ecological zones with an area of 11,666.66 hectares, namely Sanden, Kretek, Pundong, Bambanglipuro, Pandak, Bantul, Jetis,

Banguntapan, Kasihan and Sedayu. From the results of this study showed that wetland paddy production as a leading commodity according to agro ecological zones higher than wetland paddy as a non-leading commodity and total costs wetland paddy production as a leading commodity lower than wetland paddy as a non-leading commodity.

4. Conclusion

Wetland paddy farming as a leading commodity according to agro ecological zones in Bantul is feasible and more optimal (R/C 2.17) than the non leading commodity (R/C 1.99). Cost of wetland paddy farming as a leading commodity according to agro ecological zones lower than wetland paddy farming as a non-leading commodity. The profit of wetland paddy farming as a leading commodity according to agro ecological zones was 1.13 higher than wetland paddy farming as a non-leading commodity. Scale of wetland paddy farming as a leading commodity according to agro ecological zones was still be profitable if the production of at least 2,729 kg/ha or a minimum selling price of Rp. 1,643/kg. Scale of wetland paddy farming as a non-leading commodity was still be profitable if the production of at least 2,883 kg/ha or a minimum selling price of Rp. 1,781/kg.

Coaching and counseling about the latest technologies in agriculture needs to be done, especially fertilizer technology. Until now, fertilization is done by farmers do not follow fertilizer recommendations that have been prepared by the Ministry of Agriculture. In the future, the use of chemical fertilizers should be reduced even abandoned, and replaced with an organic fertilizer or manure. Dissemination strategy needs to be improved so that farmers willing to adopt the technology, so as to increase production and productivity.

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Appendix

Appendix 1. Farmers Characteristics

No	Farmers Characteristics	Leading Commodity According to AEZ		Non-Leading Commodity	
		Total	Percentage	Total	Percentage
1	Age	15	100.00	15	100.00
	≤ 35 year	-	-	2	13.34
	b. 36-55 year	10	66.67	8	53.33
	c. ≥ 56year	5	33.33	5	33.33
2	Education	15	100.00	15	100.00
	a. Pre school (0 year)	1	6.67	-	-
	b. Elementary (1-6 year)	7	46.66	6	40.00
	c. Junior high school (7-9 year)	6	40.00	4	26.66
	d. High school (10-12 year)	1	6.67	3	20.00
	e. College (≥ 13year)	-	-	2	13.34
3	Farming Experience	15	100.00	15	100.00
	a. ≤ 5 year	-	-	-	-
	b. 6 - 25 year	6	40.00	9	60.00
	c. ≥ 26 year	9	60.00	6	40.00
4	Number of Dependents	15	100.00	15	100.00
	a. 1-2 People	6	40.00	5	33.33
	b. 3-4 People	8	53.33	8	53.33
	c. ≥ 5 People	1	6.67	2	13.34
5	Main Job	15	100.00	15	100.00
	a. Farmers	15	100.00	12	80.00
	b. Farm labor	-	-	-	-
	c. Non farm labor	-	-	2	13.33
	d. Sales	-	-	-	-
	e. Goverment employee	-	-	-	-
	f. Etc	-	-	1	6.67
6	Main Income	15	100.00	15	100.00
	a. Farmers	15	100.00	11	73.33
	b. Agricultural labor	-	-	-	-
	c. Non agricultural labor	-	-	3	20.00
	d. Sales	-	-	-	-
	e. Goverment employee	-	-	-	-
	f. Etc	-	-	1	6.67

Source: primary data (analyzed)

Appendix 2. Infrastructure Research Area

No	Brief	Leading Commodity According to AEZ		Non-Leading Commodity	
		Total	Percent	Total	Percent
1	Availability of labeled seeds	15	100	15	100
	a. sufficient	15	100	15	100
	b. moderate	-	-	-	-
	c. less	-	-	-	-
2	Availability of organic fertilizers	15	100	15	100
	a. sufficient	15	100	15	100
	b. moderate	-	-	-	-
	c. less	-	-	-	-
3	Availability ofinorganic fertilizers	15	100	15	100
	a. sufficient	15	100	15	100
	b. moderate	-	-	-	-
	c. less	-	-	-	-
4	Availabilityof pesticides	15	100	15	100
	a. sufficient	15	100	15	100
	b. moderate	-	-	-	-
	c. less	-	-	-	-
5	Availabilityof agricultural tools and machinery	15	100	15	100
	a. sufficient	15	100	15	100
	b. moderate	-	-	-	-
	c. less	-	-	-	-
6	Availability of sufficient product marketing	15	100	15	100
	a. sufficient	15	100	15	100
	b. moderate	-	-	-	-
	c. less	-	-	-	-
7	Frequency of extension	15	100	15	100
	frequently	15	100	15	100
	b. rarely	-	-	-	-
	c. never	-	-	-	-

Source: primary data (analyzed)