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Potential to Increase Production and Income of Farmers of Freshwater Swamp Riceland in Gandus District, Palembang Regency

Potensi Peningkatan Produksi dan Pendapatan Petani Padi Sawah Rawa Lebak di Kecamatan Gandus Kota Palembang

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ABSTRAK

Kecamatan Gandus Kota Palembang memilik lahan sawah seluas 1.017,255 hektar, sebagain besar tersebar di Kelurahan Pulokerto yang merupakan lahan sawah dengan tipologi lahan rawa lebak. Data statistik menunjukkan bahwa produktivitas padi di Kota Palembang (4,4 ton/ha) masih rendah jika dibandingkan dengan produktivias padi Provinsi Sumatera Selatan (4,89 ton/ha) dan produktivitas padi nasional (5,13 ton/ha). Penulisan artikel ini bertujuan untuk memberikan gambaran mengenai potensi peningkatan produksi dan pendapatan petani di Kecamatan Gandus Kota Palembang. Potensi peningkatan produksi tersebut dapat dianalisa dengan mempertimbangkan kesenjangan produktivitas (*Productivity gap*) antara produktivitas padi di Kota Palembang dengan produktivitas padi provinsi dan nasional, dengan intensifikasi untuk meningkatan produktivitas dan peningkatan intensitas tanam untuk meningkatkan luas tanam. Intensifikasi pertanian dapat dilakukan dengan penggunaan benih unggul, pemupukan yang tepat, pengendalian hama penyakit tanaman dan penyuluhan untuk menyampaikan inovasi dan teknologi. Sedangkan peningkatan intensitas tanam dengan memperbaiki sistem pengairan. Dengan peningkatan produktivitas dan intensitas tanam tersebut dapat memberikan kontribusi terhadap peningkatan pendapatan dan kesejahteraan petani di Kelurahan Pulokerto, Kecamatan Gandus, Kota Palembang.

Kata kunci: kesenjangan produktivitas, padi, pendapatan, produktivitas

ABSTRACT

Gandus District, Palembang Regency has 1,017.255 hectares of rice fields, most of which are spread in Pulokerto Village, which was a rice field with a freshwater swamp typology. Statistical data shows that rice productivity in Palembang Regency (4.4 tons/ha) was still low when compared to South Sumatra Province rice productivity (4.89 tons/ha) and national rice productivity (5.13 tons/ha). The writing of this article aimed to provide an overview of the potential for increasing the production and income of farmers in Gandus District, Palembang Regency. The potential for increased production can be analyzed by considering the productivity gap between rice productivity in Palembang Regency, provincial and national rice productivity, with intensification to increase productivity and increasing planting intensity to increase planted area. Agricultural intensification can be

done through the use of superior seeds, proper fertilization, control of plant pests and diseases, and counseling to convey innovation and technology. Meanwhile, increasing cropping intensity by improving the irrigation system. With the increase in productivity and planting intensity, it can contribute to increasing the income and welfare of farmers in Pulokerto Village, Gandus District, Palembang Regency.

Keywords: income, productivity, productivity gap, rice

INTRODUCTION

Currently, the total swamp area in Indonesia is approximately 33.4 million hectares, around 9-14 million hectares of which are suitable for agriculture, but only 5.27 million hectares have been utilized (Maftuah et al., 2016 in Wandasari & Pramita, 2016).

The area of freshwater swamps in Indonesia is around 13.28 million hectares, which consists of 4.17 million hectares of the shallow freshwater swamp, 6.08 million hectares of the middle freshwater swamp, and 3.04 million hectares of the deep freshwater swamp that scattered through Sumatra, Kalimantan, and Papua. The largest freshwater swamp is in Sumatra, which is around 3.44 million hectares and is suitable for agricultural land about 1.15 million hectares (Yulia, 2017).

According to information from the Center for Education and Training of Water Resources and Construction of The Ministry of Public Works and Public Housing (2016), based on the level of hydrotopography, freshwater swamp land is divided into three types, there are:

a) The shallow freshwater swamp or embankments.
b) The middle freshwater swamp.
c) The deep freshwater swamp.

Most of the paddy fields in Palembang City are freshwater swampy rice fields scattered on the banks of the Musi River. The condition of rice fields located in suburbs areas makes it very vulnerable to land conversion, especially for residential and industrial land. Data from the Central Bureau of Statistics of Palembang City show that in 2017 the rice harvested area is 5,687 hectares and in 2019 it is reduced to 3,730 hectares. If this is not anticipated, it will cause the agricultural land as a food source to continue to conversion to non-agricultural land.

One of the centers for the cultivation of freshwater swamp rice in Palembang is Gandus District. Based on data from the Department of Agriculture and Food Security of the City of Palembang, in 2020 the area of lebak rice fields in Gandus District is 1,017,255 hectares. The average productivity level of freshwater swamp rice in Gandus District is 4.40 tons/ha.

Based on data from the Central Bureau of Statistics, this productivity is still lower than the average rice productivity of South Sumatra Province (4.89 tons/ha) and the average national rice productivity (5.13 tons/ha). The productivity gap is a potential that can be increased so that it can contribute to increasing rice production in Gandus District. This increase in productivity can be achieved by good plant cultivation techniques and increasing the planting area. The problem formulation of this paper are the productivity of freshwater swamp rice in Gandus District, Palembang City is still not optimal, so there is still potential for improvement.

The income of freshwater swamp rice farming is still not optimal, so it is very vulnerable to professional transfer to other sectors and can lead to the conversion of agricultural land functions.

The purpose of writing this paper is to study the potential for increasing rice production in the freshwater swamp rice fields in Gandus District, Palembang Regency and to study the increase in farmers' income based on the increase in rice productivity.

MATERIALS AND METHODS

The method used in this presentation was by analyzing secondary data from various studies that have been carried out on the freshwater swamp rice plant. Data on land area, production, and productivity of rice crops come from the Central Bureau of Statistics (2018) and from the Department of Agriculture and Food Security of the City of Palembang (2020).

The research was conducted in Gandus District, Palembang City, carried out in September 2021. The research sample was the members of Farmer Group Association Bina Usaha Mandiri in Pulokerto Village, Gandus District, Palembang City. Namely by giving a questionnaire about the technical cultivation and farming of rice fields. Data analysis refers to the potential for increasing production through agricultural intensification and extensification, while income analysis was by calculating revenues and expenditures.

According to Soekartawi in Gupito et al. (2014), farm revenue was the multiplication between production and selling price, farm costs were all expenditures used in a farm, and farm income was the difference between revenue and expenditure. This statement could be mathematically written as follows:

$TR = Y.Py$

Where :

Y = Production (kg)
TR = Total Revenue (IDR)
Py = Selling Price (IDR/kg)

Farming income could be known by calculating the difference between revenue and expenditure. The relationship between income, revenues, and cost could be written in mathematical form as follows:

$Pd = TR - TC$

Where :

Pd = Income (IDR)
TR = Total Revenue (IDR)
TC = Total Cost (IDR)

Meanwhile, to calculate the Total Cost was:

$TC = FC + VC$

Where:

TC = Total Cost (IDR)
FC = Fix Cost (IDR)
VC = Variable Cost (IDR)

RESULTS

Agricultural Intensification

Agricultural intensification was one way to increase the productivity of lowland rice, while the parts observed in this study were:

Use of Superior Seeds

The selection of superior seeds was the first step taken by farmers in agricultural intensification. Superior seeds were types of seeds that have beneficial properties for increasing food production. The selection of seeds was very influential on the yields that will be produced later. In Gandus District, the rice varieties that were widely planted were IR 42, Mekongga, Pandan Wangi, and Ciherang. Most of the farmers still use derivative seeds by setting aside some of the harvests to be used as seeds.

Balanced Fertilization

Fertilization was still less than the recommended fertilization, the application of organic fertilizer and agricultural lime (dolomite) has not been carried out. From the respondent farmers, information was obtained using 100 kg of Urea and NPK fertilizers.

Pest and Disease Control

Control of plant pests and diseases was mostly done chemically, namely by spraying pesticides on the market. The main pests were rats and stink bugs, while the main disease was blast.

Agricultural Extension

Data were obtained from the UPTD BPP Gandus at the Agriculture and Food Security Service of Palembang City, 2020 each village in Gandus District, namely

Pulokerto, Gandus, Karang Jaya, and Karang Anyar Villages each has one agricultural extension officer. In 2021, Pulokerto Village which has the largest area of freshwater swamp rice (867.8 ha) was fostered by 2 agricultural extensions. In addition, the South Sumatra Provincial Government also recruited Agricultural Economic Improvement Facilitator extension workers who were also assigned to Gandus District.

Agricultural Extensification

Most of the farmers still have not done the second planting, this was because in the second planting season (IP 200) more obstacles were faced, especially plant pests and diseases and drought. The second planting was usually carried out if there was a government-assisted project where some production facilities such as seeds and fertilizers were given assistance so as to reduce production costs.

Farmers' Income

The revenue obtained was the result of rice production multiplied by the selling price. From the results of interviews with farmers in Pulokerto Village, Gandus District, the average production was 5.3 tons/ha of harvested dry grain (GKP) or equivalent to 4.4 tons/ha of milled dry grain (GKP). So that the receipt of 22,567,500,- IDR/ha. The cost incurred by farmers for one planting season was 9,240,000,- IDR so that the income obtained by farmers was 22,567,500,- IDR−9.240.000,- IDR = 13,327,500,- IDR.

DISCUSSION

Increasing The Productivity of Freshwater Swamp Rice with Farming Intensification

Noor and Rahman (2015) stated that the biodiversity of food crops in tidal lowland and lowland swamp is quite extensive, including rice and non-rice which can be increased in terms of productivity, cropping intensity, and diversification and integration with livestock or fish. Agricultural intensification is one of the efforts to increase agricultural yields by optimizing existing agricultural land to obtain optimal results. Agricultural intensification is highly recommended to be implemented to get more products or agricultural yields with better quality. Agricultural intensification that is usually considered is the problem of procuring seeds, tillage, planting, fertilizing, pests and diseases control, harvesting and post-harvest activities (Ihsan et al., 2016).

The productivity of lowland swamps in West Kalimantan can be increased through improving soil fertility, rice varieties, land and water management, and cropping patterns. In addition, it is also necessary to support the socio-economic conditions of the community, institutions, and adequate infrastructure to improve the welfare of farmers and support food security at the local and national levels (Effendi et al., 2014 in Hatta et al., (2018)).

Meanwhile, according to Salasiah et al. (2014), agricultural intensification is an effort to increase the utilization of existing agricultural land. Initially, agricultural intensification is pursued through the Panca Usaha Tani program, which included the use of superior seeds, good soil management, proper fertilization, control or eradication of plant pests or diseases, and irrigation. Meanwhile, according to Siti Salasiah et al. (2016) agricultural intensification is an effort to increase land use existing farms. Initially, agricultural intensification is pursued by Panca Usaha Tani program, which includes the following activities: The Five Farmers' Enterprises are:

Use of Superior Seeds

The selection of superior seeds is the first step taken by farmers in agricultural intensification. Superior seeds are types of seeds that have beneficial properties for increasing food production. The selection of seeds is very influential on the yields that will be produced later. One of the causes of low rice production include not achieving

the optimum yield potential of new superior varieties (VUB) planted by farmers or the use of poor quality seeds and farmers' habits of using seeds from their own plants and quality/labeled seeds are difficult to obtain on time (Jumakir & Enrizal, 2015).

Research conducted by Suparwoto et al. (2017) in lowland swamp in Sungai Pinang District, Ogan Ilir Regency, South Sumatra Province against Inpari 9, Inpari 30, Inpari 33, Inpara 4, Mekongga and IR 42 varieties. The results shows that rice productivity ranged from 5-8 tons/ha (dry grain)), the highest yield is achieved by Inpara 4 (8 tons/ha), followed by Inpari 33 (7.7 tons/ha), Mekongga (6.8 tons/ha), Inpari 30 (6.6 tons/ha), Inpari 9 (6.3 tons/ha) and IR 42 (5 tons/ha).

According to Helmi (2015), the results of the study on lowland swamp using swamp rice varieties, Inpara 1, Inpara 2, and Inpara 3, Inpara 4, Inpara 5, Margasari and Mekongga varieties. Inpara 1, Inpara 2, and Inpara 3 varieties gave the highest productivity compared to other varieties. In addition to the swamp rice varieties Inpara 1, Inpara 2, and Inpara 3, the Mekongga variety still has good productivity in lowland swamp rice fields.

In Gandus District, the rice varieties that are widely planted are IR 42, mekongga, pandanus fragrant, and Ciherang. Meanwhile, the superior swamp seeds as described above have not been carried out by farmers. For this reason, further research is needed on the productivity level of swamp rice varieties as a comparison against varieties that are commonly planted by farmers.

Balanced Fertilization

Based on the observed variables of harvested dry unhulled rice, milled dry unhulled rice, and farming calculations as well as research objectives, it is obtained a technology package in lowland and swamp management that can increase rice productivity and income of lowland swamp farmers in West Kalimantan. The technology package is cultivation using the Inpago 8 variety, balanced fertilization technology (N 90 kg/ha, P2O5 22.5 kg/ha, and K2O 60 kg/ha), and the provision of ameliorants in the form of agricultural lime and organic fertilizers each 2 ton/ha, where productivity reaches 6.8 tons/ha GKP (Hatta et al., 2018).

According to Pujiharti (2017), rice production in lowland swamps in Lampung still has the opportunity to be increased by increasing the cropping index and productivity by implementing integrated crop management innovations, namely high-yielding varieties that have adapted well to the seasons, the 2:1 method of planting legowo or 4:1, water management, use of organic fertilizer as much as 2,000 kg/ha (goat or cow dung), NPK Phonska fertilizer 250 kg/ha, urea 90 kg/ha, and KCl 17.5 kg/ha or urea 200 kg/ha, SP-36 150 kg/ha, 100 kg KCl/ha and lime 1,500 kg/ha as well as integrated pest and disease management.In Gandus District, farmers have not used manure and agricultural lime (dolomite), even though the results of the study show that the use of these materials has the potential to increase production because it can improve soil physical properties and neutralize soil pH levels. The use of inorganic fertilizers is also still not optimal. For this reason, if farmers use organic fertilizers, agricultural lime, and inorganic fertilizers appropriately and in a balanced manner, there is still potential to increase productivity.

Pest and Disease Control

The basic principles of pest and disease control in lowland swamp rice are almost the same as in irrigated rice field control. The main disease pests found are generally rats, armyworms, stem borers, golden snails, while the main disease is blast and .leaf sheath blight (Susanti et al., 2017). Good control of plant pests and diseases is needed so that loss of production can be suppressed. The role of observers of plant pest organisms (POPT) and agricultural extension workers are very necessary to convey plant pest control technology.

Pest control is carried out in an integrated manner with the concept of Integrated Pest and Disease of Plant Management. The main pests of rice plants are mice and stem borers. To prevent rat attacks using the Trap Barrier System (TBS) and gropyokan and fumigation of rat nests. Using light traps and Pheromones (Fero-PBPK).

Agricultural Extension

According to Rogers, the term extension agent can be interpreted as someone who on behalf of the government or extension agency is obliged to influence the decision-making process carried out by the extension target to adopt the innovation of the extension material delivered. (Mardikonto in Siswanto, 2012). As agents of renewal, agricultural extension workers act as initiators, as motivators, as mediators, as supervisors and as facilitators to realize farmer participation in sustainable agricultural development (Bahua, 2015).

From the above definition, it can be seen how big the role of agricultural extension workers, as agents of renewal who must convey technology in agriculture. In terms of increasing the productivity of lowland swamp rice, agricultural extension workers are also required to guide and assist farmers and farmer groups in the cultivation of lowland swamp rice so that it is under good cultivation techniques. The potential for extension workers in Gandus District is sufficient, namely one extension worker for one village. For Pulokerto Village, which has the largest rice field area, 2 supervisors are placed. This potential should be utilized optimally by implementing appropriate extension programs and intensively conveying information on innovation and technology to fostered farmers, so that farmers can be motivated to cultivate good crops to increase productivity.

Increasing Production with Additional Cropping Intensity

Lowland swamp is mostly used for the development of rice cultivation. Shallow lowland swamp can be planted twice a year with the first planting pattern of surung rice (180 days old) and rintak rice (superior rice: 110-115 days old) for the second planting. The results of the study using the Inpara 1 rice variety in the lowland swamp can achieve an average yield of 5.65 tons/ha of milled dry grain (Lakitan & Gofar, 2013). One of the technologies developed by the community to control water in swampy swamps is with a mini polder of 250-1000 ha.

The design of this polder system control is carried out by constructing a water reservoir, drainage pump and irrigation water. The results shows that the polder system is able to increase cropping intensity from one time per year (IP 100) to three times per year (IP300), with a paddy - paddy-palawija cropping pattern (Saleh, 2020). With the application of water management technology and improved cultivation, lowland swamp can be cultivated three times in one year (IP 300%) with a rice - rice - palawija pattern, and rice productivity can increase up to 7 tons/ha (Djamhari in Syahbuddin, 2020).

Rice production in lowland swamps can be increased by increasing the cropping index, productivity, reducing yield gaps and yield loss. Increased production through increasing IP can be done by applying water management technology with the Surjan rice system, (Djamhari in Syahbuddin, 2020). With the surjan system, IP can be increased from 100% to 300% with a yearly cropping pattern of rice-paddy-palawija. Rice productivity in lowland swamps can be increased by using an integrated crop management (PTT) approach. Technologies that can be applied to lowland swamps are new high yielding varieties, planting methods, site-specific nutrient management, water management, and integrated pest and disease control.

Lebak rice fields that have the potential to be planted in the second planting season (IP 200) are shallow swamps. Data from the Gandus Agricultural Extension Agency shows that the area of shallow swamp rice

fields is 152.2 ha, so that the potential for paddy fields that can be increased by increasing the planted area of lowland swamp rice is 152.2 ha.

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Table 1. Analysis of intensive lebak swamp rice farming

No.	Description	Unit		Unit Price (IDR)	Amount (IDR)
		Amount	Unit		
A.	FIX COST				
	Sickle (3 years of use age)	2	Unit	45,000.00	30,000.00
	Bucket (2 years of use age)	4	Unit	30,000.00	60,000.00
	Hoe (3 years of use age)	2	Unit	30,000.00	20,000.00
	Hand sprayer (2 years of use age)	1	Unit	150,000.00	75,000.00
	AMOUNT OF FIX COST				185,000.00
B.	VARIABLE COST				
	Production Facilities				
	Seed	50	Kg	12,000.00	600,000.00
	Organic Vertilizer	2000	Kg	500.00	1,000,000.00
	Urea	200	Kg	2,250.00	450,000.00
	SP 36	150	Kg	2,400.00	360,000.00
	NPK	0	Kg	2,300.00	-
	KCl	100	Kg	11,000.00	1,100,000.00
	Dolomit	200	Kg	400.00	400,000.00
	Herbicide	10	Pack	20,000.00	200,000.00
	Insecticide	1	Liter	200,000.00	200,000.00
	Total				4,310,000.00
	Labor				
	Tillage				
	Land clearing	4	HOK	100,000.00	400,000.00
	Land tillage (Traktor)	1	Unit	800,000.00	800,000.00
	Land rake + dolomit	6	HOK	100,000.00	600,000.00
	Total				1,800,000.00
	Seeding and Planting				
	Seeding	5	HOK	100,000.00	500,000.00
	Seeding maintenance	2	HOK	100,000.00	200,000.00
	Palnting	10	HOK	100,000.00	1,000,000.00
	Total				1,700,000.00
	Maintenance				
	Basic Fertilization	3	HOK	100,000.00	300,000.00
	Suplementary fertilization I	3	HOK	100,000.00	300,000.00
	Suplementary fertilization II	3	HOK	100,000.00	300,000.00
	Weeding	12	HOK	100,000.00	1,200,000.00
	Pest and diseases control	2	HOK	100,000.00	200,000.00
	Total				2,300,000.00
	Harvest and Post-harvest				
	Harvest	6	HOK	100,000.00	600,000.00
	Threshing, transport, drying	8	HOK	100,000.00	800,000.00
	Post-harvest	4	HOK	100,000.00	400,000.00
	Total				1,800,000.00
	Amount of Labor Cost				7,600,000.00
	AMOUNT OF VARIABLE COST				11,910,000.00
D.	TOTAL COST (A+B)				12,095,000.00
E.	REVENUE	6,000.00	Kg	4,250.00	26,775,000.00
F.	INCOME (E-D)				14,680,000.00

Table 2. Analysis of conventional lebak paddy rice farming

No.	Description	Unit		Unit Price (IDR)	Amount (IDR)
		Amount	Unit		
A.	FIX COST				
	Sickle (3 years of use age)	2	Unit	45,000.00	30,000.00
	Bucket (2 years of use age)	4	Unit	30,000.00	60,000.00
	Hoe (3 years of use age)	2	Unit	30,000.00	20,000.00
	Hand sprayer (2 years of use age)	1	Unit	150,000.00	75,000.00
	AMOUNT OF FIX COST				185,000.00
B.	VARIABLE COST				
	Production Facilities				
	Seed	50	Kg	12,000.00	600,000.00
	Organic Fertilizer		Kg	500.00	-
	Urea	100	Kg	2,250.00	225,000.00
	NPK	100	Kg	2,300.00	230,000.00
	Herbicide	10	Pack	20,000.00	200,000.00
	Insecticide	1	Liter	200,000.00	200,000.00
	Total				1,455,000.00
	Labor				
	Tillage				
	Land clearing	4	HOK	100,000.00	400,000.00
	Land tillage (Traktor)	1	Unit	800,000.00	800,000.00
	Land rake + dolomit	6	HOK	100,000.00	600,000.00
	Total				1,800,000.00
	Seeding and Planting				
	Seeding	5	HOK	100,000.00	500,000.00
	Seeding maintenance	2	HOK	100,000.00	200,000.00
	Palnting	10	HOK	100,000.00	1,000,000.00
	Total				1,700,000.00
	Maintenance				
	Basic Fertilization	3	HOK	100,000.00	300,000.00
	Suplementary fertilization I	3	HOK	100,000.00	300,000.00
	Suplementary fertilization II	3	HOK	100,000.00	300,000.00
	Weeding	12	HOK	100,000.00	1,200,000.00
	Pest and diseases control	2	HOK	100,000.00	200,000.00
	Total				2,300,000.00
	Harvest and Post-harvest				
	Harvest	6	HOK	100,000.00	600,000.00
	Threshing, transport, drying	8	HOK	100,000.00	800,000.00
	Post-harvest	4	HOK	100,000.00	400,000.00
	Total				1,800,000.00
	Amount of Labor Cost				7,600,000.00
	AMOUNT OF VARIABLE COST				9,055,000.00
D.	TOTAL COST (A+B)				9,240,000.00
E.	REVENUE	5,310.00	Kg	REVENUE	22,567,500.00
F.	INCOME (E-D)				13,327,500.00

Increasing Farmers Income

From the results of interviews with several farmers, the author can compile an analysis of lebak rice farming in Gandus District. The average revenue of one planting season for 1 hectare rice farming is 22.57.500,- IDR, with a production cost of 9,240,000,- IDR, so that the income obtained by farmers is 13,327,500,- IDR (Yield 5.3 Tons of Harvested Dry Grain). Meanwhile, with the potential for increased productivity resulting in increased production and can increase farmers' income. With the increase in productivity to 6.3 tons/ha, the revenue of farmers increased to 26.775.00,- IDR, with a production cost of 12,095,000,- IDR, and the income earned is 14,680,000,- IDR

(Table 1 & Table 2). From the description above, it can be concluded that if an effort is made to increase the productivity of the lowland swamp rice plant with fertilizers, agricultural lime, and inorganic fertilizers, they can be covered by higher production yields. The increase in cropping intensity also increases farmers' income. However, the potential for increasing the cropping intensity can ideally be carried out on shallow lowland swamp rice fields. intensification, there will be a potential increase in farmers' income of 1,352,500,- IDR. Although there is an increase in production costs, due to the use of organic.

CONCLUSSION

Based on the results of primary data analysis, secondary data, and literature studies from several journals that are by the topic of the problems discussed in this paper, the authors can draw the following conclusions:

1. The potential for increasing the production of lowland swamp rice in Gandus District, Palembang City is still very possible to be achieved by implementing agricultural intensification. Use of high-quality seeds, balanced fertilization, control of plant pests and diseases, and increasing the role of agricultural extension workers in delivering technological innovations that support increased production of lowland swamp rice.
2. The potential for increased production can also be achieved by increasing the planting intensity on shallow lowland swamp areas. Of course, it must be supported by a good water management system.
3. The potential for increasing farmers' income can be achieved by increasing the production of lowland swamp rice.

Suggestion

1. The government must support the increase in the production of lowland swamp rice in the Gandus district, Palembang City, including by allocating activities that are in line with the intensification of lowland swamp rice, providing new high-yielding varieties seeds, opening sources of capital from banks.
2. The factor of yield loss due to plant pests and diseases is anticipated with the concept of integrated pest control, the use of organic pesticides, biological agents, so as to reduce production costs by utilizing existing materials around agricultural land.
3. It is necessary to conduct further studies or research on increasing plant intensity in the middle or deep lowland swamp. The second planting season can be with short-lived plant that are more mature, such as corn, and lowland vegetables.
4. Lowland swamp rice in Gandus District, Palembang City are decreasing as a result of the conversion of rice fields to non-agricultural lands, such as settlements, roads, and industries. Efforts to increase the productivity of lowland rice are a way to increase farmers' income and welfare, so that with profitable farming, farmers are not easily 'tempted' to switch professions or sell their fields.

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