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Optimization of Agricultural Resource Use in Various Cropping Patterns in Dry Land Irrigated With Groundwater in Pringgabaya District

Gina Sorayya[1], Halimatus Sa'diyah[2], Abdullah Usaman[3]

[12] Agribusiness Masters Study Program

[12] Faculty of Agriculture, Mataram University Indonesia

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Abstract: **Implications from P2AT development is give convenience for farmers plant throughout year for 3 seasons plant consecutively. Election pattern proper planting can utilise resource agriculture like land, facilities production, energy work and water optimally. The purpose of study This is for analyze pattern crops that can optimize use resource agriculture on land dry irrigated groundwater in the District Pringgabaya. Research methods This use method study quantitative Where amount respondents as many as 60 people with area sample research in the village North Pringgabaya, Mount Malang, and Labuhan Lombok. The analysis used use linear programming and analysis approach sensitivity. Research results show that pattern plants that can optimize use resource agriculture on land dry irrigated groundwater in the District Pringgabaya is plant shallot red and chili cayenne pepper for village North Pringgabaya , plants corn and tobacco For village Mount Malang, and plants with total income maximum amounting to Rp.273.575.074**

Keywords: **Cropping Patterns, Groundwater Irrigation, Linear Programming, Optimization.**

I. INTRODUCTION

West Nusa Tenggara Province is a province with a leading sector, namely the agricultural sector, which drives the economy. Land is resource potential amount Enough big. NTB Province has land agriculture reaching 1,673,476 hectares, namely more from 84% of the area NTB's land area is 2,010,249 hectares, apart from That followed also by diversity commodities abundant crops and livestock [8]. Diversity commodities sector agriculture in West Nusa Tenggara Province can seen from data from the Central Statistics Agency West Nusa Tenggara Province in the number 2023, where type plant which are cultivated in West Nusa Tenggara Province include crops food, plants horticulture, plants biopharmaceuticals, and so on. Based on matter said sector agriculture of course need maintained and improved quality and productivity.

Things that are true become challenges in the sector agriculture is How effort in increase productivity land. Low productivity land can has implications for the decline level welfare farmer [15]. Productivity related close with use of input and patterns running farming business. Study of management optimal farming will still relevant see phenomenon use of input that is still wrong [19]. So that research on conditions land certain Still need done. One of the condition land that is still need noticed is land potential dry for developed. According to Hikmat et al. 2022 [6] many lands dry in the provinces of NTB and NTT with good characteristics, morphology, chemistry, physical and mineralogical properties and can support growth plants, so that still very potential for developed become land agriculture. One of the districts in NTB Province that are located land dry is East Lombok district.

East Lombok Regency is one of the regency with land area potential dry for developed. In the condition this, the challenges faced farmer is is scarcity water resources. For overcome problem In this regard, the NTB Regional Government is making efforts water pump built through Project Groundwater Development (P2AT) Department Public Works now the amount Already reach 495 units, consisting of of 314 units on Lombok Island and the rest on Sumbawa Island [14]. Before the existence of project this, farmer only capable farming on one season plant just consequence lack of water for prores irrigation. So that with existence project This expected can fulfil need irrigation of land dry in West Nusa Tenggara province. Based on the data obtained from the PUPR Service of West Nusa Tenggara sub-district Pringgabaya is subdistrict with amount well pump the most in East Lombok district.

II. RESEARCH METHOD

Research Methods and Techniques

Research methods used in study This is method study descriptive. Where the problem is raised contain mark scientific, and its nature No too area [13]. Unit of analysis in study This is pattern plant land dry on the ground water pump irrigation in the District Pringgabaya. Taken from 3 villages potential that is village North Pringgabaya, village Mount Malang and villages Labuhan Lombok as area sample study with amount respondents as many as 60 people. Type of data used are qualitative data and quantitative data. Qualitative data is data that is not done operation mathematics, while quantitative data is data that can be done operation mathematics in it [7]. Deep data collection techniques study This implemented with survey method.

Development and Data Analysis

In running a farming business, farmers not only focus on increasing the amount of production sold but also how to increase their income and profits, which can indirectly improve their welfare [16]. Variables compiler function objective is income net (net far income) obtained farmer with method reduce mark production or income gross farm income with total costs farm expenses (total farm expenses) during One year of each activity , with formula as following [5], [21]:

$NFIi = GFIi – TFEi$

$Ci = Py . yi – Px . xi – FC$

In preparation input-output variables (aij) are obtained from amount physical / value use of inputs by farmers converted respondents For need covering an area of 1 ha. In the study this , value adjacent right or factor barrier covering various resource agriculture like land , facilities production consisting of from seeds / seedlings , urea fertilizer , NPK Phonska , and Pesticide Liquid and Pesticides Solid . This value determined with multiplying the average usage resource agriculture per unit activity with an average area land farmers in the fields water pump irrigation Subdistrict Pringgabaya where the average area land farmers in the fields water pump irrigation Subdistrict Pringgabaya as much as 5,851 Ha.

Estimation of Linear Programming Functions on Pumped Water Irrigation Land

Optimization or production optimization is the process of solving resource allocation problems with the aim of maximizing or minimizing costs using linear programming methods [10]. Optimization is closely related to how to allocate limited resources to achieve certain goals, either minimum costs or maximum profits. One alternative solution to this optimization problem is the linear programming approach through maximization or minimization decisions [3]. The application of this linear programming approach has been widely applied in various fields, especially in agriculture. There are many competing activities to obtain optimal results using available resources [12]. The use of these resources is allocated to all existing activities to obtain optimal results from problems encountered in the field.

A linear program has three basic components: an objective function to maximize or minimize, constraints or limitations that must be met by the resulting solution, and decision variables. The decision-making technique used in this optimization problem is the simplex method [17].

Function Objective:

$Maximize\ Z = C\ 1\ X\ 1 + C\ 2\ X\ 2 + \ldots\ldots + C\ j\ X\ j$

Function Constraint:

$a\ i1\ X\ 1 + a\ i2\ X\ 2 + a\ i3$

and non- negative conditions :

$Xj \leq 0$, for $j = 1, 2, \ldots\ldots, n$.

Information :

aij = coefficient technology variables taking decision to -j in constraint i-th , namely use resource agriculture per hectare.

bi = resource i-th limited the amount, which limit activities.

Xj = variables taking decision or activities (that you want to do) searched), namely type farming food and horticulture dominant in the sub-district Pringgabaya.

i = number from resource agriculture that becomes constraint.

j = number variables taking decision (activity).

Next, the linear programming planning model is solved. use simplex method with linear programming matrix model.

In addition to the optimal solution, analysis was also carried out sensitivity or optimal post. After obtained use resource optimal farming in various pattern planting , analysis was also carried out sensitivity or optimal post if there is possibility occurrence changes good on Cj in function goal , aij in function constraints , as well as on bi or mark adjacent right function constraint or availability resource agriculture. Sensitivity analysis itself is defined as an analysis conducted to determine parameters related to changes in production system performance to generate profits. Furthermore, it can determine whether the objective function coefficients and constraints can change without affecting the optimal solution [1]. Another study [2] explains that sensitivity analysis is a reanalysis to examine the effects that will occur as a result of changing conditions. Factors related to these changes are influenced by several variables, including price, cost increases, and production output. Sensitivity analysis is conducted by changing the magnitude of important variables, each separately or in combination with a certain percentage that is already known or predicted [20].

III. RESULTS AND DISCUSSION

General condition of the pump well

In her research, Herni Yulita 2023 [22] also explains that in everyday life, water sources in irrigation systems can be classified into three categories, namely: (1) Springs, which are water sources from underground, such as wells, artesian wells, and groundwater; (2) River water, which is water found above ground; (3) Reservoir water, which is water found on the surface of the ground, such as in rivers. However, the difference is that reservoir water contains a small amount of silt, while its dissolved substances are the same as those in river water.

According to the Ministry of Public Works and Housing (PUPR) in 2017, pump wells are classified into three types based on their depth: shallow wells, medium-depth wells, and deep wells. Shallow wells can irrigate an area of 1–7 hectares, medium-depth wells can irrigate an area of 8–15 hectares, while deep wells can irrigate rice fields spanning 16–60 hectares. In Pringgabaya District, pump wells are divided into three groups. Group 1 has a capacity of 2 cylinders with a water flow rate of 10 liters per second, Group 2 has a capacity of 3 cylinders with a water flow rate of 18 liters per second, and Group 3 has a capacity of 4 cylinders with a water flow rate of 22 liters per second. When considering well depth, wells with a flow rate of 10 liters per second are classified as medium-depth wells, while those with flow rates of 18 liters per second and 22 liters per second fall under the deep-well category.

Production, Production Value, Cost Production and Income Farming

Cost components the production in question in study This is overall costs incurred by farmers during the production process in farming land dry irrigated groundwater in the sub-district Pringgabaya in one production process per season planting consisting of from cost variables and costs remains Farming costs consist of fixed costs and variable costs. Fixed costs are costs that are not affected by the size of sales or production. Conversely, variable costs are costs that are affected by the size of sales or production [11]. While analysis income consists of of 3 components that is production, value production and income farming.

Table 1. Analysis Income farming on land water pump irrigation in the District Pringgabaya 2025

Village Name	Planting Season	Crop Type	Symbol	Production	Production Value	Total Revenue
Pringgabaya Utara	1	Corn	X111	10,359	51,579,487	31,900,142
		Shallot	X112	11,166	170,595,533	112,199,035
	2	Shallot	X122	9,394	116,045,714	56,597,345
		Chilli	X123	8,549	158,151,093	129,321,107
	3	Corn	X131	8,916	44,578,313	14,726,539
		Chilli	X133	4,722	80,309,655	43,492,931
		Tobacco	X134	1,143	80,000,000	32,895,238
		Tomato	X135	12,000	60,000,000	30,659,028
Gunung Malang	1	Corn	X211	9,290	39,273,364	17,661,367
	2	Corn	X221	7,757	35,961,478	15,687,653
		Tobacco	X224	1,020	40,102,041	16,107,642
	3	Corn	X231	10,117	41,906,542	21,512,535
Labuan Lombok	1	Corn	X311	7,931	36,034,483	15,163,606
		Shallot	X312	10,000	145,853,659	94,164,831
		Chilli	X313	5,222	82,833,333	48,499,877
		Rice	X316	10,800	58,400,000	37,200,844
	2	Chilli	X323	2,710	41,806,452	20,228,996
		Tobacco	X324	1,087	47,244,094	17,163,088
		Tomato	X325	10,000	70,000,000	36,974,103
	3	Corn	X331	11,064	49,787,234	25,578,942
		Shallot	X332	9,375	187,500,000	122,434,375
		Rice	X336	13,200	92,400,000	39,748,000

Source: Processed Primary Data, 2025

From the table on can seen that income earned Enough varies depends land and seasons planting . Average income highest is on the pattern planting X332 (Shallot PLANTING SEASON 3 Labuhan Lombok) with a total income of Rp. 184,934,375 per Ha, while income lowest is pattern Planting X131 (Corn PLANTING SEASON 1 North Pringgabaya) with a total income of Rp. 14,726,539 per hectare. The difference income This caused by Because existence difference output prices on crops similar. Output prices in each season plant depending on the type plants and land. For plant shallot red in Labuhan relatively more expensive on PLANTING SEASON 3 than on PLANTING SEASON 1. For plant chilli the price of cayenne pepper in North Pringgabaya more higher in PLANTING SEASON 2 compared to PLANTING SEASON 3, whereas Labuhan Lombok price more higher on PLANTING SEASON 2 compared to PLANTING SEASON 2. Then plants in Labuhan Lombok more tall the price on PLANTING SEASON 3 compared to PLANTING SEASON 1.

Seen from type cultivated plants, can known that plant corn and tobacco is type the most numerous plants endeavored farmers on site research , although the reality income earned relatively more low compared to plant others . Some reasons put forward among other things because plant corn and tobacco is relatively small plants stand to water limitations so that become commodity common main cultivated by farmers land dry since before the existence of the P2AT program in East Lombok Regency , especially in the location research . This is supported by research by Anny Mulyani and Mamat HS 2019 [9] which states that plant corn is commodity superior in the province of NTB which can planted with good on the ground dry and relatively more profitable compared to plant secondary crops others . Likewise with commodities tobacco, in the research of Suud et al 2023 [18] stated that tobacco should planted on dry land and has good drainage .

Optimization Analysis of Usage Resource Agriculture in Various Cropping Patterns

Determination Objective Function, Function Constraints , and Input-Output Coefficients

Amount activity (pattern planting) that comes in in function objective as many as 22 activities , namely pattern Plant X111, X112, X122, X123, X131, X133, X134, X135, X211, X221, X224, X231, X311, X312, X313, X316, X323, X 324, X325, X331, X332, and X336 which are grouped based on village , season planting , and types plant .

Optimization Analysis Results

Primal Completion

Analysis results with linear programming with primal solution can obtained information that of 22 activities pattern planting , there are 11 activities included to in the basis. This is indicates that 11 patterns plant the is pattern recommended planting Because can maximize income farmers in groundwater irrigation areas East Lombok Regency , namely as big as 293,322,086,403 (Rp.293,322,086,403).

Table 2. Primal Linear Programming Solution for Farming on Pumped Water Irrigation Land in the District Pringgabaya 2025

Aktivitas	Status	Value (Ha)	Reduced Cost (Rp)
X111	Non Basis	0	79,694,024
X112	Basis	247	0
X122	Non Basis	0	71,654,616
X123	Basis	247	0
X131	Non Basis	0	27,144,948
X133	Basis	247	0
X134	Non Basis	0	12236730
X135	Non Basis	0	14,472,940
X211	Basis	775.96	0
X221	Basis	388.04	0
X224	Basis	387.95	0
X231	Basis	775.99	0
X311	Non Basis	0	47,638,088
X312	Basis	649	0
X313	Non Basis	0	14,132,256
X316	Non Basis	0	25,424,000
X323	Basis	246.5	0
X324	Non Basis	0	18,004,894
X325	Basis	402.5	0
X331	Non Basis	0	158,344,144
X332	Basis	649	0
X336	Non Basis	0	141,456,368

Source: Processed Primary Data, 2025

From the results on can seen that selected farming business in optimal conditions from settlement the primal problem is pattern incoming plants to on a basis with mark reduced cost of zero. Reduced cost value show mark marginal product (marginal value product), namely state size additional (if positive) or reduction (if negative) optimal program value (income maximum) if happen addition entrepreneurship activity as big as One unit activity . At the completion of the primal can it is also seen that activities that are not selected as optimal solution (non-basic state), has mark reduced cost positive . This is show business activities the Still profitable , because addition One unit activity cause addition optimal program value of mark reduced cost then mark reduced cost show How many big necessary changes to the coefficients function objective something non-basic activities so that variables the become profitable For entered to in optimal solution or in another sense , namely cost additional must covered when want to force something activity (pattern (plant) follow in optimal solution .

Dual Settlement

Exhausted resources used in the optimal solution can seen from mark Slack of zero. This is occurs in availability land in each village and season planting, use of irrigation water in the village Mount Malang on the third seasons , as well as water use in the village Labuhan Lombok in season plant 2 where amount available resources (RHS = right hand side) are the same with mark usage in optimal solutions (usage), so that No there is remainder use or mark Slack is the same with zero. Meanwhile That use resource other Still there is remainder , meaning resource the No finished used in optimal solutions , such as availability rice seeds , namely No used The same very in the optimal solution so that mark Slack The same with RHS value.

Table 3. Solution of Dual Linear Programming for Farming on Pumped Water Irrigation Land in the District Pringgabaya 2025

Resource	Status	Dual Value	RHS Value	Usage	Slack
Pringg.Utara -1	B	113470496	247	247	0
Pringg.Utara -2	B	130341584	247	247	0
Pringg.Utara -3	B	45131968	247	247	0
Gunung Malang -1	NB	0	776	776	0
Gunung Malang -2	B	2661703.5	776	776	0
Gunung Malang -3	NB	0	776	776	0
Labuhan Lombok -1	B	64403244	649	649	0
Labuhan Lombok -2	B	13380124	649	649	0
Labuhan Lombok -3	B	185184368	649	649	0
Corn	NB	0	382,842	40,452	342,391
Tobacco	NB	0	427,029,918	9,026,939	418,002,979
Shallot	NB	0	19,632,705	1,765,157	17,867,548
Chillie	NB	0	449,300,046	18,002,300	431,297,746
Tomato	NB	0	398,318,077	8,204,704	390,113,373
Rice	NB	0	877,650	0	877,650
Urea	NB	0	3,693,493	997,708	2,695,785
NPK	NB	0	3,952,961	1,050,289	2,902,671
liquid pesticide	NB	0	14,944	3,609	11,334
solid pesticide	NB	0	14,668	4,034	10,634
Labor -1	NB	0	477,453	110,367	367,085
Labor -2	NB	0	572,436	186,989	385,448
Labor -3	NB	0	461,815	113,884	347,931
Irrigation Pringg.Utara-1	NB	0	2,613,704	2,508,735	104,968
irrigation Pringg.Utara -2	NB	0	3,461,864	3,004,541	457,323
irrigation Pringg.Utara-3	NB	0	7,994,252	7,899,162	95,090
irrigation Gunung Malang -1	B	2056.036	7,701,459	7,701,459	0
irrigation Gunung Malang-2	B	980.463	13,073,964	13,073,964	0
irrigation Gunung Malang-3	B	1192.409	12,754,220	12,754,220	0
irrigation Labuhan Lombok -1	NB	0	8,068,227	4,679,638	3,388,589
irrigation Labuhan Lombok-2	NB	1033.62	12,182,582	12,182,582	0
irrigation Labuhan Lombok-3	NB	0	15,002,273	10,280,160	4,722,113

Source: Processed Primary Data, 2025

Analysis Sensitivity

In analysis sensitivity, there is range mark coefficient function goals and resources. Range values the show sensitivity of the optimal program value, meaning during change mark coefficient function purpose and availability resource is at within the range limit, then every purposeful endeavors add One unit activity and resource No will change condition optimal program value . The range of coefficient activity (revenue per unit) activities) obtained from results analysis optimization use resource agriculture in various pattern planting in groundwater irrigation areas East Lombok Regency is indicated by the completion objective row ranges which is analysis sensitivity to function purpose . Sensitivity range every activity the shown in the following table:

Table 4. Sensitivity Analysis Results Objective Function in various Activity Farming

Aktivitas	Status	Value (Ha)	Minimum (Lower Limit)	Maksimum (Upper Limit)	Allow-able decrease	Allow-able increase
X111	Non Basis	0	NO LIMIT	83,479,630	INFINITY	31,900,142
X112	Basis	Value (Ha)	138,695,391	NO LIMIT	31,900,142	INFINITY
X122	Non Basis	0	NO LIMIT	172,643,059	INFINITY	56,597,345
X123	Basis	247	101,553,749	NO LIMIT	56,597,345	INFINITY
X131	Non Basis	0	NO LIMIT	59,304,853	INFINITY	14,726,539
X133	Basis	247	68,072,925	NO LIMIT	12236730	INFINITY
X134	Non Basis	0	NO LIMIT	112,895,238	INFINITY	32,895,238
X135	Non Basis	247	NO LIMIT	90,659,028	INFINITY	30,659,028
X211	Basis	0	18,867,208	NO LIMIT	20406156	INFINITY
X221	Basis	0	35,684,136	NO LIMIT	277341.91	INFINITY
X224	Basis	775.96	38,286,223	NO LIMIT	1,815,818	INFINITY
X231	Basis	388.04	17,649,218	NO LIMIT	24257324	INFINITY
X311	Non Basis	387.95	NO LIMIT	51,198,089	INFINITY	15,163,606
X312	Basis	775.99	99,648,232	NO LIMIT	14,132,256	INFINITY
X313	Non Basis	0	NO LIMIT	131,333,210	INFINITY	48,499,877
X316	Non Basis	649	NO LIMIT	95,600,844	INFINITY	37,200,844
X323	Basis	0	33,409,536	NO LIMIT	8396916	INFINITY
X324	Non Basis	0	NO LIMIT	64,407,183	INFINITY	17,163,088
X325	Basis	246.5	54,013,026	NO LIMIT	15986974	INFINITY
X331	Non Basis	0	NO LIMIT	75,366,176	INFINITY	25,578,942
X332	Basis	402.5	210,252,000	NO LIMIT	39,748,000	INFINITY
X336	Non Basis	0	NO LIMIT	132,148,000	INFINITY	39,748,000

Source: Primary Data, processed 2025

Analysis sensitivity furthermore is in a situation Where if happen change to provision resource agricultural use. Sensitivity range resource agriculture This appears on the completion right hand side ranges, ie explain sensitivity optimal program value against change availability resource or on value adjacent right . As for the range sensitivity resource the can seen in the following table.

Table 5. Results of Sensitivity Analysis of Production Inputs on Various Activity Farming

Resource	Status	Dual Value	RHS Value	Minimum (Lower Limit)	Maksimum (Upper Limit)	Allow-able decrease	Allow-able increase
Pringg.Utara -1	B	113470496	247	0	257	247	10.33
Pringg.Utara -2	B	130341584	247	0	284	247	37.6
Pringg.Utara -3	B	45131968	247	0	250	247	2.98
Gunung Malang -1	NB	0	776	776	None	0.034	INFINITY
Gunung Malang -2	B	2661703.5	776	736	821	40.43	45.13
Gunung Malang -3	NB	0	776	776	None	0.007	INFINITY
Labuhan Lombok -1	B	64403244	649	0	1,119	649	469.88
Labuhan Lombok -2	B	13380124	649	494	1,327	154.7	678.22
Labuhan Lombok -3	B	185184368	649	0	947	649	298.11
Corn	NB	0	382,842	40,740	None	342102.03	INFINITY
Tobacco	NB	0	427,029,918	9,025,758	None	418004160	INFINITY
Shallot	NB	0	19,632,705	17,845,001	None	1787704	INFINITY
Chillie	NB	0	449,300,046	18,002,350	None	431297696	INFINITY
Tomato	NB	0	398,318,077	8,204,893	None	390113184	INFINITY
Rice	NB	0	877,650	0	None	877650	INFINITY
Urea	NB	0	3,693,493	997,541	None	2695951	INFINITY
NPK	NB	0	3,963,309	1,049,824	None	2913485	INFINITY
liquid pesticide	NB	0	14,944	3,644	None	11299.39	INFINITY
solid pesticide	NB	0	14,668	4,027	None	10640.88	INFINITY
Labor -1	NB	0	477,453	66,240	None	411212.72	INFINITY
Labor -2	NB	0	572,436	218,564	None	353872.22	INFINITY
Labor -3	NB	0	461,815	114,384	None	347430.25	INFINITY
Irrigation Pringg.Utara-1	NB	0	2,613,704	2,508,779	None	104925	INFINITY
irrigation Pringg.Utara -2	NB	0	3,461,864	3,004,508	None	457356	INFINITY
irrigation Pringg.Utara-3	NB	0	7,994,252	7,899,060	None	95192	INFINITY
irrigation Gunung Malang -1	B	2056.036	7,701,459	0	7,701,800	7701459	341
irrigation Gunung Malang-2	B	980.463	13,073,964	12,355,472	13,792,624	718492.063	718660
irrigation Gunung Malang-3	B	1192.409	12,754,220	0	12,754,336	12754220	116
irrigation Labuhan Lombok -1	NB	0	8,068,227	4,679,939	None	3388288	INFINITY
irrigation Labuhan Lombok-2	B	1033.62	12,182,582	5,957,171	15,995,254	6225411	3812671.8
irrigation Labuhan Lombok-3	NB	0	15,002,273	9,116,268	None	5886005	INFINITY

Source: Primary Data, processed 2025

From the results analysis sensitivity optimal program value against change resource agriculture in various pattern plant in right hand side ranges completion, can known that optimal program value obtained have a sensitivity range to availability resources used. Situation This can explained that the sensitivity range resources that have positive dual value (more big from zero) and has minimum range (lower limit) and maximum limit (upper limit) on the value certain indicate that optimal program value is sensitive to change availability resource said . Meanwhile For other resources with nonbinding status have a certain minimum limit and maximum limit No limited (no limit). Situation second This show that optimal program value is not enough sensitive to change availability resource because of the sensitivity range more wide compared to situation first. Meanwhile, resources that have a minimum limit equal to zero and an unlimited maximum limit indicate that these resources are not used in activities in the optimal solution, because in reality the activities included in the basis do not use these resources.

IV. CONCLUSION AND SUGGESTIONS

Conclusion

The highest average income is in the X332 planting pattern (Shallot PLANTING SEASON 3 Labuhan Lombok) which is Rp. 184,934,375 with a production cost of Rp. 65,065,625/Ha. While the planting pattern with the lowest average income is X131 (corn PLANTING SEASON 3 Pringgabaya Utara) with an income of Rp. 14,726,539 with a production cost of Rp. 42,468,129/Ha. This difference in cost is due to the use of resources that are not optimal. There are 22 kinds pattern common planting implemented farmers in the fields dry groundwater irrigation Subdistrict Pringgabaya, with grouping based on type plant each village For every season planting. Optimal planting patterns on land dry irrigated groundwater in the District Pringgabaya produce income as big as Rp.273.575.074with recommendation wide land as following:

a. X112 (Pringgabaya 1 Shallot) covering an area of 247 Ha

b. X123 (Pringabaya PLANTING SEASON 2 Chilli) as wide as 247 Ha

c. X133 (Pringabaya PLANTING SEASON 3 Chilli) covering an area of 247 hectares

d. X211 (Gunung Malang PLANTING SEASON 1 Corn) covering an area of 776 Ha

e. X221 (Gunung Malang PLANTING SEASON 2 Corn) covering an area of 388 Ha

f. X224 (Gunung Malang PLANTING SEASON 2 Tobacco) covering an area of 388 Ha

g. X231 (Gunung Malang PLANTING SEASON 3 Corn) covering an area of 776 Ha

h. X312 (Labuhan Lombok PLANTING SEASON 1 Shallot) 649 Ha

i. X323 (Labuhan Lombok PLANTING SEASON 2 Chilli) covering an area of 246.5 Ha

j. X325 (Labuhan Lombok PLANTING SEASON 2 Tomato); and pattern planting) covering an area of 402.5 Ha

k. X332 (Labuhan Lombok PLANTING SEASON 3 Shallot) covering an area of 649 Ha

Suggestion

Referring to the results research and discussion, then suggestions or implications policy can put forward as following:

1. For farmers , to optimize use resource agriculture limited to groundwater irrigation areas East Lombok Regency , then pattern recommended planting is farmers in the village North Pringgabaya should plant shallot red on PLANTING SEASON-1, chili cayenne pepper on PLANTING SEASON-2 and PLANTING SEASON-3, farmers in the village Mount Malang should plant corn throughout year and planting tobacco on PLANTING SEASON-2, farmers in the village Labuhan Lombok should plant shallot red on PLANTING SEASON-1 and PLANTING SEASON-3, planting chilli cayenne pepper and tomatoes on PLANTING SEASON-2.
2. For researchers furthermore can do study with add condition geographical land and plant water requirements to in the model for see How condition geographical land and plant water requirements influence income farmers in the fields dry groundwater irrigation subdistrict Pringgabaya .
3. For the government, it should evaluate mechanism service well pump and setting wages with the hopes of well operators can get higher wages worthy

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