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RESOURCE-USE EFFICIENCY AND OPTIMAL FARM PLAN IN PEPPER (*Capsicum spp.*) PRODUCTION IN OGUN STATE, NIGERIA

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ABSTRACT

This study estimated resource-use efficiency and optimal farm plan in pepper (*Capsicum spp*) production in Ogun State, Nigeria during the pepper production/planting season in 2010. The data were collected from 120 pepper farmers who were sampled using a multistage sampling technique with the use of structured questionnaire and were analysed using descriptive statistics and linear programming (LP). The results revealed that 85% of the sampled farmers were male with a mean age of 43 years and mean pepper farming experience of 12 years. Majority (77%) of the respondents cultivated between 0.10ha and 1.54ha of land with a mean farm size of 1.23ha. This study also revealed that 35.0% of the farmers practised intercropping, 62.5% were into cultivation of sole pepper with a mean farm size of 0.93ha, and the enterprise combinations included pepper/maize (6.67%) with a mean farm size of 0.93ha, pepper/cassava (13.3%) with a mean farm size of 0.96ha, pepper/tomato (7.5%) with a mean farm size of 1.47ha, and pepper/maize/cassava (10.0%) with a mean farm size of 1.66ha. The major constraints in pepper production among the sampled farmers were inadequate viable and disease-resistant seeds (84.2%), inadequate transportation (90.8%) and inadequate access to finance/credit (90.8%). The results of the LP programme recommended pepper/tomato and pepper/maize/cassava enterprises and suggested a mean farm size of 0.25ha and 0.66ha for the two enterprises, respectively. The result further suggested that the mean farm size cultivated be reduced by 82.99% for pepper/tomato enterprise and 60.24% for pepper/maize/cassava enterprise. The optimum plan yielded an increase of 115.47% in gross margin of pepper/tomato enterprise and 31.62% of gross margin in pepper/maize/cassava enterprise. There is potential to improve output in order to harness the potential of pepper production to the optimum level. Therefore, enterprises such as pepper/tomato and pepper/maize/cassava which maximize the use of farm resources should be cultivated by the farmers in the study area. It is recommended that potential or practising pepper farmers should be enlightened on the basis of their capacity in terms of land area to cultivate and resources and/or inputs at hand.

Key words: pepper, production, enterprises, combinations, linear programming, optimal, output, farmers

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INTRODUCTION

Pepper is an important agricultural crop, not only because of its economic importance, but also due to the nutritional and medicinal value of its fruits. It is a source of natural colours and antioxidant compounds [1]. Pepper is largely grown in many parts of Nigeria, but the major area of its production is Northern Nigeria [2]. The distribution of pepper is wide spread especially in tropical and subtropical ecologies including America, either as wild or cultivated forms [3].

Consumption of pepper accounts for about 20% of the average vegetable consumption per person per day in Nigeria [2, 4]. It is used extensively in food flavouring in the daily diet of over 120 million Nigerians, irrespective of their socio-economic status. It is used in the preparation of soups and stew, which are among the major essential compliments of staple based on cereals and root crops and also forms remedies for toothache and sore throat [5, 6].

Gruben and Tahir [7] pointed out that Food and Agriculture Organization (FAO) statistics estimated world production of C*apsicum* peppers in 2001 at 21.3 million tonnes from a harvested area of 1.6 million ha (average yield of 13.4 t/ha). Nigeria is known to be one of the major producers of pepper in the world, accounting for about 50% of the African production [2, 8]. Although, pepper is widely cultivated throughout Nigeria, yields obtained by peasant farmers are often very low [9]. Comparatively, yield in the developing countries is about 10 – 30% of that in developed countries [2, 7]. High potential pepper growing areas of Nigeria such as Kaduna, Kano, Jigawa, Katsina, Sokoto, Plateau and Bauchi States, produce enough pepper to meet the needs of the people in the deficit areas (example, Southwest – Ogun and Lagos States). However, the poor agricultural production as well as marketing system, disease and unstable price of pepper discourage farmers from producing more. Production constraints such as low soil fertility, weeds, lack of right combination of enterprises and diseases are the major problems. These factors, and others, can reduce resource-use efficiency. It is not clear who current producers of pepper are; the enterprise combinations in use; what the resource-use efficiency in pepper production or the optimal farm plan is; and the constraints to pepper production in the study area.

Therefore, this study was undertaken to determine the extent to which it is possible to raise the resource-use efficiency from sub-optimal levels (of 1.47ha of land cultivated under the current plan and 0.25ha in the optimal farm plan with respect to those producing pepper/tomato) (as depicted in Table 4) in pepper production in order to address food production problem in Ogun State, Nigeria. The cropping system was adopted because of the multiple goals of the farmer, which include income generation and care of the family which encourages the farmer to get as much as possible from different crops from the same piece of land, a situation which makes crop combination on the farm to be competitive and at sub-optimal levels. The objectives were to: describe the socio-economic characteristics of pepper farmers in the study area; describe pepper enterprise combinations; estimate resource

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use-efficiency in pepper production; determine the optimal farm plan; and identify constraints to pepper production in the study area.

RESEARCH METHODOLOGY

Theoretical Framework

***Production Theory and farm efficiency*:** Production is the process of transforming inputs such as capital, labour and land into goods and services called outputs. These resources can be organized by farm-firm or producing unit whose ultimate objectives may be profit maximization, output maximization, cost minimization or utility maximization or a combination of the four. In this production process, the manager or entrepreneur or the firm as the case may be is concerned with efficiency in the use of inputs to achieve his objectives. The theory of production presents the theoretical and empirical framework that facilitates a proper selection among alternatives so that anyone or a combination of the farmer's objectives can be attained.

***Concepts of Agricultural production*:** Agricultural production depends on proper interpretation of cost and revenue structures of enterprises. In this interpretation, financial success can be attributed to enterprises of which the revenues exceed costs. Yet, whether the accounting profits of enterprise is adequate to acknowledge an enterprise as successful is controversial. The enterprises utilize various inputs for production. However, the outcome of input processing is not directly related to the amount and cost of inputs. It is the technical process affecting the final output. Two identical firms having identical input structures may end up with differentiated yields or different cost-revenue structures. Therefore, it is also possible to find out that an enterprise having accounting profits may not be efficiently utilizing the inputs incorporated or an enterprise which has a negative profit scheme is implementing the best combination of activities possible.

SAMPLING TECHNIQUES

Primary data were used for the study. Data were obtained through structured questionnaire administered to respondents (pepper farmers) in the study area. One hundred and twenty pepper farmers in the study area were selected. Selection was first through purposive selection of the Local Government Areas Odeda, and Yewa North based on the strength in pepper production driven by climatic conditions, which favour the cultivation of pepper in these areas. Twelve villages in each of the Local Government Area were randomly chosen, and 5 pepper producers were randomly selected in 24 villages through simple random sampling technique producing a sample size of 120.

ANALYTICAL TECHNIQUES

The following analytical tools were employed in the analysis.

(i) **Descriptive statistics:** The use of frequencies and percentages, as well as means were adopted to describe the socioeconomic characteristics of the pepper farmers in the

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study area, description of pepper enterprise combinations; and identification of constraints to pepper production in the study area.

(ii) **Linear Programming Model:** Linear programming (LP) has been described as an efficient tool for determining the optimum farm plan where several enterprises exist and processes or activities as well as numerous restrictions on attaining specific objectives abound. These objectives can be in form of maximization of farm profit or minimization of production costs [10]. The reason for this among others are the fact that it overcomes some of the limitations of regression analysis approach in estimating response of agricultural product to changes in situations where time series data are unavailable and that data requirements are relatively easily available from farm surveys and farm records. Furthermore, it generates a profit optimizing farm plan and hence maximum feasible adjustment consistent with the resource supply and restrictions. In addition, the problem matrix shows the production opportunities open to a farmer while on the other hand, it shows the economic constraints on production [11]. Thus, linear programming technique was used to estimate the optimal enterprise combination of pepper and other crops that maximize economic returns as the optimal farm plan, which minimizes cost of production. The linear programming model is a mathematical optimization model that seeks to present an optimal model that maximizes the objective function.

Mathematically, it is specified as follows:

$$\text{Max } Z = \sum_{j=1}^{n} a_j q_j$$

Subject to:

$\sum b_{ij} q_j \leq G_i$

$Y_i \geq 0$ (non-negativity constraint)

where:

Z = Total gross margin to be maximized

a_j = Gross margin of the j^{th} pepper-based enterprise/mix

q_j = Amount (Area cultivated in ha) of the j^{th} pepper-based enterprise

j = Number of pepper-based enterprise/mix (j = 1, 2..... that is pepper-based enterprises identified in the study area).

b_{ij} = i^{th} resource of the j^{th} pepper-based enterprise

G_i = Maximum level of i^{th} resource available

The various enterprise combinations in the pepper production system considered in the study area included: pepper/maize, pepper/cassava, pepper/tomato, and pepper/maize/cassava. This is presented in Table 2.

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RESULTS

The result presented in Table 1 showed that 39.2 % of the sampled pepper farmers were within the age range of 36 to 45 years, 85.0 % were male and 84.2 % were married. The mean period of experience in pepper farming was 11.6 years with an average farm size of 1.23 hectares being cultivated; 88.3 % of the farmers practised crop rotation, 35.0 % practised intercropping while 65.0 % of the sampled farmers engaged in pepper production with the objectives generating income and meeting the farm-family needs.

Table 2 showed various enterprise combinations for pepper and other crops and Table 3 showed various problems being faced by the sampled farmers in the study area.

DISCUSSION

Socio-economic Characteristics of Pepper Farmers, Production Pattern and Farm Related Variables

The study showed that 39.2 % of the sampled pepper farmers were within the age range of 36 to 45 years (Table 1). This age range falls within the active economic age group and the mean age of 43 years implies that majority of the sampled pepper farmers were middle aged. The findings also showed that majority (84.2 %) of the sampled respondents were married, 85.0 % were male while 15.0 % were female. This implies that pepper production is male-dominated in the study area. This is because majority of the women find it easier to market, preserve and process pepper as an activity in pepper production. The mean period of experience in pepper farming being 11.6 years indicates that the farmers possess a substantial wealth of experience in pepper farming, which could improve pepper production in the study area. A mean farm size of 1.23 hectares was cultivated by the respondents indicating pepper was produced by smallholders and this may influence the adoption of technology employed, the scale of production, output level as well as the revenue accruable to pepper farmers.

The study revealed that 88.3 % of the farmers practised crop rotation and 11.7 % did not which may be due to the nature of the crop and the disposition of the pepper farmers to pepper production. According to the planting pattern practised by farmers, Table 1 shows that majority (62.5 %) of the farmers practised sole cropping, 35.0 % practised intercropping, while only 2.5 % practised both. The intercropping system practised by the pepper farmers could help them to diversify their farming activities, a situation which could increase accruable total farm revenue.

As evident from Table 1, 25.8 % of the sampled farmers engaged in pepper production with the main objective to generate income. The objective of meeting the farm-family needs accounted for 9.2 %, while 65.0 % indicated it was for income as well as meeting the farm-family needs. This shows that farmers engage in pepper production in order to meet family needs and to have enough income.

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Analysis of the Optimal Enterprise Combination for Pepper and Other Crops that Maximize Economic Returns

As evident from Table 2, about 63.0% of the sampled respondents cultivated sole pepper with a mean farm size of 0.93ha, and the enterprise combinations included pepper/maize (6.67%) with a mean farm size of 0.93ha, pepper/cassava (13.3%) with a mean farm size of 0.96ha, pepper/tomato (7.5%) with a mean farm size of 1.47ha, and pepper/maize/cassava (10.0%) with a mean farm size of 1.66ha.

Description of Pepper Farmers according to Constraints in Pepper Production

Table 3 shows that majority (84.2 %) of the sampled farmers faced problems in sourcing for inputs such as viable and disease-resistant seeds, fertilizer, pesticides and insecticides for improved crop establishment and to combat pest and disease outbreaks due to unavailability and affordability of such inputs. However, 15.8 % of the respondents did not have the aforementioned problem because they have more financial resources which enable them to have more access to good inputs thus, they were able to dedicate more inputs to pepper production. About 33.3 % did not encounter pest and disease problems while majority (67.0 %) of the respondents had this problem. This implies that there would be a reduction in yield and income accruable to the pepper farmers if problem was not tackled.

With respect to transportation, Table 3 shows that 9.2 % of the farmers did not have problem of transportation, while majority (90.8 %) had transportation problems due to bad roads leading to high cost of transportation which could be contributing to problems in sourcing for improved/hybrid seeds and fertilizer.

Problems of inadequate storage facilities for pepper also abound in the study area. Table 3 shows that only 13.3 % of the farmers did not have storage problems while 86.7 % had problems in storing their produce. The respondents indicated that, due to perishable nature of pepper, produce from pepper farming are stored mostly for consumption purposes. Processing is only in the form of parboiling, that is partly cooked by boiling the pepper with palm oil after which it is sun-dried in order to reduce the water content that contributes to its perishability, but the sun-dried pepper seeds could not be used for subsequent production due to the termination of the life of the living cells of the pepper fruit.

Table 3 further shows that 9.2 % of the farmers did not have the problem of finance/credit while majority (90.8 %) had. This implies that all the aforementioned benefits, for example, from the acquisition of production inputs, transportation, pests and diseases control, may be difficult to be obtained by the respondents. Credit is one of the essential inputs in agricultural production. It helps to improve resource capacity utilization and also provides opportunity for the purchase of adequate inputs for more efficient production. Credit can also be used to expand farm business to take advantage of economies of scale as well as the acquisition of new technologies and payment for hired labour and related services. It is also needed to acquire capital assets like farm machinery/equipment and working capital to purchase improved seedlings, fertilizer and agrochemicals.

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Majority (95.0 %) of the respondents encountered the problem of water supply after transplanting. They depended mostly on rainfall for production, while only 5 % did not have this problem because their farms were located in less drought-prone areas and were also closer to stream. The implication of this is that agricultural production and productivity will be lowered because of the rain-fed agriculture being practised by most of the farmers.

Table 3 also shows that 57.5 % of the respondents had commodity pricing problem, while 42.5 % did not. This is because of the glut in pepper outputs for sale and the desire of the farmers to dispose of their produce at the same time in order to avoid loss due to perishability or loss in transit. The importance of this is that it will enable the farmers to devise adequate measure on how to sell their produce.

Linear Programming Model

One of the characteristics of peasant farming is the cultivation of many crops simultaneously on the same piece of land; that is intercropping or multiple cropping. Moreover, multiple cropping has also been shown to be useful in the control of pests on the farm [12].

The objective function of the LP was to maximise the gross margin for the various enterprise combinations identified earlier in Table 2. These crop combinations show that pepper farmers are rational entrepreneurs who are willing to maximize output towards meeting farming objectives within the confine of limited resources. The solutions were obtained through the use of QSB Linear Programming Decision Support System.

Table 4 summarizes the result of the optimum plan for allocation of resources and enterprise combination of pepper farms that meets the objectives of maximizing the gross margin from production of pepper. As shown in Table 5, the result revealed that pepper/tomato (PETOM) and pepper/maize/cassava (PMZCA) enterprises were determined by the LP analysis results under the current farmers' production plan. In the case of PETOM enterprise, the optimum plan results suggested a smaller farm size of 0.25 ha, a down-sizing from 1.47ha (82.99% increase in margin when cultivation of smaller farm size is adopted). The gross margin resulting from this indicated that 0.25ha will yield ₦70,664.30 (that is, ₦282,657.20/ha and ₦415506.08 per 1.47ha) and this indicated an increase in total gross margin by 115. 47% as the original plan of farmers yielded ₦131,183.67/ha. In the case of PMZCA enterprise, the optimum plan results suggested a reduction in farm size from 1.66ha to 0.66ha (60.24%). The gross margin resulting from this indicated that 0.66ha will yield ₦186,553.75 (that is, ₦282,657.20/ha) and this indicated an increase in total gross margin by 31.62% as the original plan of farmers yielded ₦214,759/ha. This implies that the land allocated to production of pepper/tomato and pepper/maize/cassava by pepper farmers was 1.22ha and 1ha respectively in excess of optimal production of these enterprises, meaning that the farmers should cultivate on smaller land areas for optimal use of production resources. Sole pepper enterprise (SPEP), pepper/maize (PEPMZ) and pepper/cassava (PECAS) were not recommended for production because of the opportunity costs of the enterprises. The

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implication of this is that maximum gross margin will be reduced by ₦388,446.06k, ₦17,191.48k and ₦14,420.43k by forcing a unit (1 hectare) of enterprise of sole pepper, pepper/maize, and pepper/cassava, respectively into the plan.

Table 6 shows the resource status of the plan. The seeds and fertilizer were the most limiting factors of production in the plan. Without seeds, pepper production cannot be carried out in the first instance. The current plan of the farmers is such that heavy feeder crops such as cassava and maize were planted with pepper and this could result in the high loss of nutrients from the soil, therefore the need for fertilizer application to mitigate this potential setback in pepper production. The tight status in the plan showed that they are the important determinants of the gross margin that can be realized from the plan. The shadow prices (which indicates the true value of a product in the sense of equilibrium price) of the tight resources (that is the scarce resources) were also the marginal value product (MVP) of the resources, which showed the relative increase in the gross margin as a result of a unit increase in the resource. The shadow price for seeds and fertilizer was ₦10,370.23k and ₦8,127.04k, respectively. The implication of this is that a unit increase (1 kg) in seed use will result in an increase in gross margin by ₦10,370.23k and a unit increase (1 kg) in fertilizer use will result in an increase in gross margin by ₦8,127.04k.

CONCLUSION

Resource use in pepper production in the study area was found to be at sub-optimal levels considering the low gross margin resulting from each of the enterprise combinations under the activities in the current plan and activities in the optimal plan. There is potential to improve output in order to harness the potential of pepper production to the optimum level. Therefore, enterprises such as pepper/tomato and pepper/maize/cassava which maximize the use of farm resources should be adopted by the farmers.

RECOMMENDATIONS

Thus, the study recommends the following:

- With respect to actual production of pepper on the farm and the optimum plan results, pepper farmers could be enlightened by the extension service agents on the basis of their capacity in terms of land area to cultivate and the available resources. This would inform potential and practicing pepper farmers on the type of enterprise combinations to embark on- train farmers to engage in either pepper/tomato or pepper/maize/cassava production.
- With respect to the constraints being encountered by the respondents, a mechanism ensuring availability of inputs such as improved/high-yielding pepper cultivars should be instituted given the time-bound nature of pepper farming so that production and productivity may be improved. Research in agricultural engineering could be focused on viable methods of storing pepper so as to improve value addition in processing of pepper to combat the problem of storage and perishability of fresh

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pepper. Credit (that is financial assistance) should be augmented by effective and efficient basic inputs supply system to provide inputs like fertilizer, insecticides, and pesticides at subsidized rates and this should be delivered in good time with minimum collateral requirements and appreciable payback period, in order to enable farmers to access adequate farm resources and expand the existing scale of production. Irrigation facilities could be provided in order to increase agricultural production and to reduce the extent of dependency on rain-fed agriculture being practised by most of the farmers. Policies should be devised and implemented by the Government to stabilize pepper produce price and combat glut in market. Good and accessible roads and the maintenance of such roads are needed. Government assistance with the provision of transportation, such as motorcycles and vans to facilitate the transportation of production inputs and pepper produce from farms to market sites will be helpful.

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Table 1: Distribution of Pepper Farmers by Personal Characteristics, Production Pattern and Farm Related Variables

Characteristics	*Frequency*	*percentage*	*Mean*
Age (years)			
26 – 35	34	28.3	
36 – 45	47	39.2	
46 – 55	21	17.5	
56 – 65	12	10.0	
66 – 71	6	5.0	
Total	120	100.0	43.04
Gender			
Female	18	15.0	
Male	102	85.0	
Marital Status			
Married	101	84.2	
Single	11	9.2	
Widowed	4	3.3	
Divorced	4	3.3	
Total	120	100.0	
Pepper Farming Experience (Years)			
1-10	80	66.7	
11-20	32	26.7	
21-30	1	0.8	
31-40	4	3.3	
> 40	3	2.5	
Total	120	100.0	11.63
Farm Size (Hectares)			
0.1 - 1.54	92	76.7	
1.55 - 2.54	19	15.8	
2.55 - 3.54	3	2.5	
3.55 - 4.54	3	2.5	
4.55 - 5.54	2	1.7	
>5.55	1	0.8	
Total	120	100.0	1.23
Plot Rotation			
Yes	106	88.3	
No	14	11.7	
Total	120	100.0	
Planting Pattern			
Sole cropping	75	62.5	
Intercropping	42	35.0	
Both	3	2.5	
Total	120	100.0	
Objective of Cultivating Pepper			
Income only	31	25.8	
To meet family needs	11	9.2	
Both	78	65.0	
Total	120	100.0	

Source: Field Survey, 2010

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Table 2: Pepper-intercrop identified in Odeda and Yewa North Local Government Areas

S/No	*Enterprise*	*Code*	*percentage*	*Mean (ha)*	*Farm*	*Size*
1	Sole pepper	SPEP	62.5%	0.93		
2	Pepper/maize	PEPMZ	6.67%	0.93		
3	Pepper/cassava	PECAS	13.3%	0.96		
4	Pepper/tomato	PETOM	7.5%	1.47		
5	Pepper/maize/cassava	PMZCA	10.0%	1.66		

Source: Field Survey, 2010

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Table 3: Distribution of Respondents by Input/Production Cost Problems

Problems	***Frequency***	***Percentage***
Input Supply/Production Cost		
Yes	101	84.2
No	19	15.8
Total	***120***	***100.0***
Disease/Pest		
Yes	80	66.7
No	40	33.3
Total	***120***	***100.0***
Transportation		
Yes	109	90.8
No	11	9.2
Total	***120***	***100.0***
Storage		
Yes	104	86.7
No	16	13.3
Total	***120***	***100.0***
Financial/Credit		
Yes	109	90.8
No	11	9.2
Total	***120***	***100.0***
Irrigation		
Yes	114	95.0
No	6	5.0
Total	***120***	***100.0***
Pricing Problem		
Yes	69	57.5
No	51	42.5
Total	***120***	***100.0***
Yes		

Yes indicates those that were faced with the problems while No indicates those that were not faced with the problems

Source: Field Survey, 2010

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Table 4: Summary of Linear Programming (LP) Results for the Optimum Enterprise Combination for Pepper-intercrop Production System in Ogun State

LP Objective Function and Input Matrix

Objective Function: Maximize TGM = ₦157986SPEP + ₦56190.5PEPMZ + ₦230000PECAS + ₦192840PETOM + ₦356500PMZCA

Subject to:

Constraints	q_1	q_2	q_3	q_4	q_5	***Total***
1 Land	1	1	1	1	1	≤ +1.19
2 Labour	106.79	103.84	94.86	15.80	30.38	≤ +70.34
3 Seeds	3.03	0.36	0.96	13.00	0.42	≤ +3.55
4 Fertilizer	63.37	8.57	28.85	7.14	43.33	≤ +30.25
5 Agrochemicals	4.080	0.57	1.87	2.00	0.42	≤ +1.79

Note: q_1 = sole pepper enterprise (SPEP), q_2 = pepper/maize (PEPMZ), q_3 = pepper/cassava (PECAS),

q_4 = pepper/tomato (PETOM), q_5 = pepper/maize/cassava (PMZCA)

Source: Field Survey, 2010

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Table 5: Summary of Optimal Allocation

Activities in the Current Plan				Activities in the Optimal Plan				
Enterprise Mix	**Land Area Cultivated (ha)**	**Gross Margin (₦)**	**Gross Margin/ha (₦)**	**Land Area Suggested (ha)**	**Contribution to Maximum Objectives (₦)**	**Gross Margin/ha (₦)**	**Percentage increase (%)**	**Opportunity Cost**
Sole pepper q_1 (SPEP)	0.93	157,986.0	169,877.42	-	-	-	-	388,446.06
Pepper/maize q_2 (PEPMZ)	0.93	56,190.5	60,419.89	-	-	-	-	17,191.48
Pepper/cassava q_3 (PECAS)	0.96	230,000.0	239,583.33	-	-	-	-	14,420.43
Pepper/tomato q_4 (PETOM)	1.47	192,840.0	131,183.67	0.25	70,664.30	282,657.20	115. 47	0
Pepper/maize/ cassava q_5 **(**PMZCA**)**	1.66	356,500.0	214,759.04	0.66	186,553.75	282,657.20	31.62	0

Source: Field Survey, 2010

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Table 6: Resource Conditions

Constraints	Status	RHS	Shadow Price	Slack or Surplus	Minimum RHS	Maximum RHS
Land	Loose	≤+1.1900001	0	+.28150913	+.90849090	+ Infinity
Labour	Loose	≤+70.339996	0	+46.412205	+23.927792	+ Infinity
Seeds	Tight	≤+3.5500000	+10370.228	0	+.29321480	+7.9083052
Fertilizer	Tight	≤+30.250000	+8127.0366	0	+1.9497681	+42.787926
Agrochemicals	Loose	≤+1.7900000	0	+1.0104905	+.77950943	+ Infinity

Maximized Objective: ₦282,657.2; RHS means the right hand side values of the equation

Source: Field Survey, 2010

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