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Improving Selected Vegetable Productivity in the Coastal Lowland of Cameroon

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Abstract

This study analyses the productivity of selected vegetable farmers within three communities in the coastal lowland area of Cameroon. A multistage sampling technique was used to collect primary data from a cross-section of four vegetables, namely tomato, pepper, cucumber, and okra farmers. Ordered logistic regression was used to examine constraints to productivity and their relationship with yield in vegetable farming. Results revealed that a good proportion of respondents strongly agree that poor post-harvest practices constitute a constraint to productivity by 5.3%. Similarly, as the trend in poor marketing facilities increases, it increases farmers' strong agreement as a constraint to productivity by 3.4%. Results also showed that farmers perceive lack of credit facilities as a significant constraint to productivity in vegetable farming. Findings suggest that appropriate mechanisms for post-harvest practices, proper management of marketing facilities, and credit will improve productivity in vegetable farming in Cameroon.

Keywords

Vegetable Productivity, Input Use, Ordered Logistic Regression, Coastal Lowland

1. Introduction

Cameroon's agricultural sector in 2023 employed over 43.42% of the population, which is an increase from 42.20% in 2022. It is the first year of growth since 1993, during which the country reached its maximum value of 68.90% of total employment [1]. The Budgetary Central Government Expenditure in Cameroon for agriculture is estimated to have increased from 6759.41 million USD in 2020 to 7496.43 million USD in 2021 [2]. The country has also increased its investment in value-added agriculture, fishery, and forestry from 5659.1 million USD in 2019 to 6042.4 million USD in 2020 [3]. Agriculture's contribution to Cameroon's GDP has decreased from 833.89 million USD in the second quarter of 2022 to 777.88 million USD in the third quarter of 2022 [4]. Agriculture has fundamental importance in rural economies for its potential to reduce poverty and promote inclusive growth. Factors such as crop selection, farm management practices, and socio-economic conditions influence the relationship between farm size and productivity [5]. In Cameroon, humid tropic areas are more representative of agricultural products. To ensure sustainable production, analyzing the competitive position of agricultural products favours a better orientation of national strategies [6].

Agricultural productivity can be enhanced following innovation in adoption. Agricultural production increases in a timely and appropriate manner with education and credit permitting the adoption of innovation in the course of production. To achieve full yield potential, other productivity-enhancing factors should be promoted [7]. There exists a nexus between small scale farmers' productivity, food security, and climate adaptability. In Cameroon, small scale farmers are vulnerable to climate change, and this causes agricultural losses, thereby increasing the risk of food insecurity [8]. Challenges hindering farmers' empowerment include: farmer's interest, time constraints, access to trainers, training cost, source of training programs, and ignorance; incorporating collective farmers' characteristics in policies can help improve farm efficiency and reduce food insecurity [9]. These food security challenges have propelled the government to increase agricultural budgetary expenditure.

There exists a productivity gap between beneficiaries and non-beneficiaries of agricultural credit. Farmers can't be productive enough without significant capital [10]. In agriculture, credit enables farmers to adopt new practices and purchase necessary inputs. Educated farmers have a tendency to adopt new practices and boost productivity, whereas traditional ones remain reluctant. Improved seeds and modern equipment are two productivity-enhancing factors, but they, taken alone, can't sufficiently boost yield. Other factors needed to enhance productivity are credit access, large farm size, and effective training [11].

Nutritional status is of prime importance. It gives an individual the necessary energy to carry out daily activities and contributes to children's proper upbringing. In Cameroon, tomato, pepper, cucumber, and okra hold specific roles in dietary and cultural meals in the study area. Eating habits and lifestyles differ among age groups, especially during the era of university studies. Forms of malnutrition have been found among university students in the University of Maroua, a state higher education institution located in the Sudano-Sahelian agroecological area of Cameroon. Their feeding habits had low protein, food, fruit, and vegetable consumption [12]. Fruits and vegetables are important reserves of phytochemicals, anti-carcinogenic; they possess chemopreventive agents [13]. For industries, fruits and vegetables serve as raw materials for thousands of processed products. Tomato, pepper, cucumber, and okra are full of potential for food, medicinal, and cosmetic industries. Nevertheless, production levels have been declining and the main causes are traced to lack of credit, limited extension visits, poor marketing, poor transportation facilities, pests and diseases, and high cost of planting materials [14]. Policy implications for nutrition security in Cameroon indicate that there is a nexus between nutrition security, technical efficiency, and profitability. There is an urgent need to improve the production levels of fruits and vegetables and, more importantly, improve their productivity and profit margin on the side of farmers and accessibility on the side of consumers, specifically their nutrition security [15]. A major point of interest for farmers in Cameroon is to regroup themselves into agricultural organizations, which will help them benefit from financial facilities and sharing of experience for efficiency [16].

Vegetables are produced under various production systems, and in Cameroon, all agroecological zones are producing fruits and vegetables with climatic specificities [17]. Fruit and vegetable production, particularly in the coastal lowland, remains an essential component of agricultural activities. Elaborating changing farming practices like mixed farming and promoting the cultivation of vegetables by providing good seeds will be effective strategies to fight against poverty and malnutrition nationwide [18]. To respond to the rising demand for nutrient-dense vegetables for income, food, and nutrition security, strengthening collaborative efforts to scale out sustainable agricultural technologies is a policy option [19]. Some collaborative efforts can militate for farmers' access to subsidies, improve access to Good Agricultural Practices (GAP), and create market-based solutions. These actions will significantly contribute to the improvement of the vegetable sector and national food security [20].

With the world's growing population, food productivity is becoming an attractive area in agriculture. Smallholder leafy vegetable farmers are often faced with resource-use inefficiency in production [21]. The present study focuses on tomato, pepper, cucumber, and okra. While tomato is an indubitable ingredient for many daily meals in Cameroon, the yield of pepper production in Cameroon is a cause for concern as it has been decreasing, with 349.1 kg/ha in 2018, 340.6 kg/ha in 2019, and 339.4 kg/ha in 2020. Okra remains one of the most available and highly demanded legumes in the country, and cucumber yield has also experienced a discernible decrease, with production declining from 946.8 kg/ha in 2018, 920.6 kg/ha in 2019, to 906.6 kg/ha in 2020 [3]. One of the main causes of these successive drops is inaccessibility to credit [22]. Onuwa [23] identified farm size, labour, quantity of seeds, and agrochemicals as other causes of the drop in yield. This stimulates the need to establish linkages between constraints faced by farmers and their ability to achieve optimum yields. Therefore, this study seeks to investigate the relationship between productivity constraints and yield in vegetable production.

2. Methods and Data

2.1. Modeling Framework

Parametric or non-parametric models have been employed to measure constraints to productivity. A Cobb-Douglas production function and benefit-cost analysis were used [24] to examine factors favoring high economic returns for farmers in organic turmeric production. A multiple regression analysis and a 4-point Likert scale were employed [25] to investigate major constraints to off-season cucumber production and recorded lack of access to credit, high cost of inputs, pests and diseases. A 7-point Likert scale was used to examine institutional barriers affecting technology transfer training in agriculture [26]. Within the context of this study, a parametric model that takes into consideration valuable estimates is a very strong approach to examine constraints to productivity. Thus, we use an ordered logit model to investigate productivity constraints. In its general form, the model can be presented as:

$$P_r\left(Y \le j\right) = P_r\left(Y = 1\right) + \left(P_r\left(Y = 2\right) + \cdots + P_r\left(Y = j\right)\right). \quad (1)$$

Y is the dependent variable with 4 categories. $Y = 1$ if the response is strongly disagree, $Y = 2$ if the response is disagree, $Y = 3$ if the response is agree, and $Y = 4$ if the response is strongly agree. P_r is the Response Category for the jth Outcome $= i$

$$P_r = \Pr\left(k_{i-1} < b_1 X_{1j} + b_2 X_{2j} + \cdots + b_k X_{kj} + u_j \le k_i\right). \quad (2)$$

where $i = 1$ to n is the index of each farmer.

X is the vector of the exogenous variables and includes a set of eight variables. Constraints investigated in this study were incorporated following the works of [27] concerning credit constraints on agricultural productivity, together with [14], [28] concerning productivity constraints in off-season cucumber. In total, eight constraints were considered. They are the productivity constraints: X_1 = High cost of planting materials and needed inputs, X_2 = Poor post-harvest practices, X_3 = Low income of farmers, X_4 = Lack of access to credit facilities, X_5 = Poor marketing facilities, X_6 = Government policies, X_7 = Difficult access to land, X_8 = Problem of pests and diseases.

b is the coefficient vector, $k_1, k_2, \cdots, k_{i-1}$ are the cut points. The ordered logit models are not linear in the parameters. Consequently, they are estimated by using maximum likelihood techniques. This ordered logistic regression model explained the perceptions of local communities with regard to the constraints in vegetable productivity.

Age was recorded in years, gender was binary with 1 for female and 2 for male, education had 1, 2, 3, and 4 for primary, secondary, high school, and university respectively. Farm size was measured in hectares, experience in years, labor in man-days, adoption of mulching techniques, access to extension services, and farm training programs in number of times, capital in currency, fertilizers, seed, and yield in kilograms, pesticides in liters. Crops were represented by 1, 2, 3, and

4 for tomato, cucumber, pepper, and okra respectively, and communities were 1, 2, and 3 for Dibombari, Manjo, and Yabassi respectively.

2.2. Study Area

The Littoral Region within the coastal lowland zone of Cameroon is situated on the southwestern side of the country. It is located between latitude 4˚16' North and 10˚8' East with an elevation of 103 m (338 feet). The total surface area of the region is 20,248 km^2 with a total population of 3,354,978 inhabitants and a density of 170 inhabitants per km^2 [29]. This region has a Human Development Index (HDI) of 0.673, standing as the highest in Cameroon [27] [30].

There is a spatial distribution of extensive and intensive agricultural systems, and the organization of farm production consists mainly of family farms and co-operative farming. The land fertility in the area suits the farming of a wide variety of crops. Animal rearing, fishing, and cropping activities are carried out by some households in a semi-subsistence manner. There is an increase in pests and diseases in the cultivation of vegetables, mainly due to the relatively high temperatures associated with high humidity levels in the tropics. Farmers therefore extensively use pesticides to meet high standards and cosmetic quality requirements of vegetables in international markets. The production of vegetables like tomato and cucumber in the Littoral region was 4838 tonnes and 38,715 tonnes, respectively, in 2018. For okra, 3698 tonnes were produced, while pepper production totaled 1167 tonnes [4].

Most commercial farmers' main motives are profitability and autonomy for household food security [26]. Led by the Ministries of Agriculture and Livestock (MINADER and MINEPIA), the Program for the Improvement of the Competitiveness of Family Farms (ACEFA) disbursed financing worth 231.23 thousand USD in 2016 to owners of family farms in the Littoral region. This move was officially expected to substantially increase the income of 250,000 farmers who were beneficiaries of the program [28].

The employment rate in the urban centres of the Littoral region totals 78.6%, and in the rural centres, nearly 87.1%. This employment is characterized mainly by farming activities, which are the major source of income. In this region, about 39.8% of people are engaged in more than one activity to have diversified sources of income. People engage in a number of agricultural activities, livestock, forest, fisheries, and equally services such as transportation and consultancy [31]-[33].

The study area is also home to many Internally Displaced Persons (IDPs) from the North West and South West regions who, despite damages incurred from socio-political crises and numerous difficulties encountered in their new area of residence, manage with little to undertake agricultural ventures [29].

2.3. Data, Sampling Framework, and Size

Primary data were collected using questionnaires. The targeted population for this study comprised cucumber, tomato, pepper, and okra farmers. A multistage sampling technique comprised purposive sampling, cluster sampling, simple random sampling, and convenience sampling. Two divisions (Mungo and Nkam) were purposively chosen given the availability of vegetable producers in these areas [34] [35]. Following cluster sampling, these areas were grouped into three sub-divisions, namely Dibombari and Manjo from Mungo Division, with Yabassi from Nkam Division. Moreover, to select farmers in these sub-divisions, a systematic sampling technique was adopted. Participants were chosen by selecting every 4^{th} household in blocks of villages. In Dibombari, a total of 16 villages were sampled, followed by 7 villages in Manjo and 11 in Yabassi. While in the field, we conducted a rapid allocation exercise of villages. Starting at a randomly selected household, the field agent skips 3 households and selects the 4^{th} until all the households in the village were done. In some villages, we had to move to the next intersection for a new segment so as to continue the 4^{th} household rule because the previous segment was over. Some households which were not eager to participate were replaced by the households following them. These sub-divisions of interest had both male and female vegetable farmers in basic subsistence and commercial settings. The sample size of the unknown target was calculated as follows:

$$n = z2.\left[pq\right]/d2. \tag{3}$$

where n represents the sample size, z is the z-score corresponding to the confidence level, p is the estimated proportion of the population adopted based on previous empirical studies, q is the complementary proportion and is calculated as 1-p, and d is the error margin. The error margin lies between 0 and 1 [14]. It helps to illustrate the percentage at which the behaviour of the sample diverges from the total population. Within a 95% confidence interval, the sample size will be: $n = \left[(1.962)(0.5)(1-0.5)\right]/(0.052) = 384.16 \approx 385$ farmers. A 5% error margin is appropriate for this context because it provides a reliable ground to infer population opinions. However, due to the realities and circumstances encountered in the field, a sample of 258 farmers could be obtained. This is mainly because some farmers were not eager to participate in the survey and other farmers were not available during the data collection period.

3. Results

3.1. Socioeconomic Characteristics of Farmers

About 258 farmers were interviewed, with 143 females. Most women in our sample did not have off-farm jobs. These results deviate from the work of [31], reporting that beliefs, norms, and traditions limit women's activities both on-farm and off-farm. The farmer's average age was 40.7 years, revealing that the majority of households were at productive stages of their life. These results deviate from the work of [32], who found that older farmers were more efficient than younger ones. Only 7.75% of farmers have attended high school level. The low percentage in high school is due to lack of financial means, while some farmers were Internally Displaced Persons (IDPs) without the possibility of continuing their education. Results show 20.16% of farmers with university level. This is in accordance with [33], who found that the more educated farmers are, the more likely they are to be productive.

A farmer's average experience was 8.3 years. Theoretical expectations confirm that the more experience farmers get, the more likely they are to be technically efficient, which is in line with [34], supporting the idea that experience significantly contributes to increasing farmers' productivity. The minimum experience was one year, as some farmers were new to vegetable farming, while the maximum experience was 27 years, which was linked to the presence of older farmers in the sample. On average, the number of times a farmer received extension visits throughout the farming season was 11 times. This is in accordance with [35], whose results show that the more farmers receive extension visits, the more they get valuable information, which increases productivity. A minimum of one extension service was recorded for some farmers with limited accessibility and poor road conditions, while a maximum of 26 visits was attributed to farming areas located near extension centres. The average number of times a farmer adopted mulching techniques was 7 times throughout the farming season. This can be associated with the fact that farmers became more aware of this technique and its importance through extension services, and it is in line with [33], which shows that the more farmers receive agronomic advice, the more likely they are to be productive. The maximum number of times (22) it was applied indicated that farmers in these areas needed to conserve soil moisture content on their farms, while the minimum of one time shows soil moisture content was sufficient for crops. Farmers attended training programs 6 times per year on average. This is because farmers have access to extension services and are afforded the opportunity to participate in programs organized by competent authorities. This is in line with [32] [36], sustaining that training helps farmers improve skills and increase farm productivity. A minimum of one training program can be attributed to the fact that some farmers are far from extension posts and the road conditions are not good. A maximum of 20 training programs indicates that some of the farmers were afforded more access to extension services.

3.2. Resource Allocation and Farm Productivity

Four major vegetables were considered: tomato, cucumber, pepper, and okra. From the sample, almost half of the farmers (127) cultivated tomato, followed by cucumber (56), pepper (45), and okra (30) farmers. This can be attributed to the fact that tomato farming is a more lucrative and highly demanded venture than other vegetable crops. The low okra production can be linked to the lack of quality seeds and necessary inputs such as fertilizer and pesticides. Furthermore, many farmers lack proper managerial skills to obtain optimum yield from their land according to [37]. The average productivities for tomato and cucumber in this study were 280 kg/ha and 284 kg/ha, respectively. This is far below their national productivity levels of 12,631.9 kg/ha and 1020 kg/ha. On the other hand, the productivity of okra was 265 kg/ha and that of pepper was 280 kg/ha. These values are very low compared to their national productivity levels of 2647.1 kg/ha and 2065 kg/ha [4].

3.3. Input Use in Vegetable Production

Table 1 presents the input use and productivity of tomato, pepper, cucumber, and okra production in the study area. The mean farm size for the concerned vegetables was 0.1930 ha, as many farmers do not own land. The least farm size of 0.012 ha reveals a lack of means to acquire larger farms. Some authors [38] and [39] sustain that farm size significantly contributes to the increase of farmers' productivity. The average number of labor days for a farmer throughout the farming season was 36 man-days, as many farmers were cultivating delicate crops. This was not in accordance with [24], who found that labor-saving technologies significantly contribute to increasing farmers' productivity. We can also associate this distribution of man-days with the Chayanov model of household structure. That is, more than half of the responses take more than 30 man-days, as their household structure is composed of mostly older people.

Table 1. Distribution of input use in vegetable production.

Input Use	Mean	Minimun	Maximun	Productivity (unit/ha)
Land	0.1930	0.012	1.00	
Labour	36	2	69	187
Financial Capital	56,691	10,000	200,000	293,736
Fertilizers	50.3	10	450	260.6
Pesticides	6.36	1	25	33
Seeds	0.011	0.020	0.40	0.06

n = 258. Source: Field Survey.

Farmers' mean financial capital amounted to 101.63 USD. This therefore contributes to the farmers' productivity, and it agrees with [31], who indicated that the productivity of farmers having access to credit is greater than that of those who do not. A minimum of 17.93 USD can be associated with the fact that some farmers could not meet collateral requirements. The maximum credit obtained was 358.53 USD. On average, a farmer makes use of 526.56 USD/ha as financial capital.

On average, a farmer used 50.3 kg of fertilizers throughout the farming season. Relating to farm size, to be productive, a farmer had to apply 50.3 kg on 0.1930 ha. This is in accordance with [31], affirming that fertilizers significantly contribute to increasing farmers' productivity. The minimum quantity of fertilizers used was 10 kg, as some farmers were cultivating areas having the required plant nutrients. The maximum quantity of fertilizer that was used was 450 kg, as some farmers cultivated large farmlands.

Survey results reveal that on average, a farmer used 6.4 L of pesticides throughout the farming season. To be productive, a farmer needed to apply 6.4 L on 0.1930 ha of land. This is not in line with [40], who found that pesticides do not contribute to increased farmers' productivity. The minimum quantity of pesticides that was used was 1 L, as some farmers were cultivating areas that had fewer pest and disease issues. The maximum quantity of pesticides used was 25 L, explained as some farmers were cultivating large farmlands which were more susceptible to pests and diseases.

3.4. Crop Yield and Input Use per Sub-Division in the Littoral Region

Table 2 presents details of crop yield in the study area. On average, a farmer used 0.011 kg of seeds throughout the farming season. To be productive, a farmer had to use 0.011 kg on 0.1930 ha of land and 0.057 kg/ha. The minimum quantity of seeds used was 0.020 kg, as some farmers were cultivating on relatively small farm sizes. The maximum quantity of seeds used was 0.40 kg, as some farmers were cultivating large farmlands [23] and [33], sustained that the quantity of seeds is a significant determinant of productivity.

Table 2. Crop yield in Dibombari, Manjo, and Yabassi.

Crop type	Dibombari		Manjo		Yabassi	
	Average yield (kg)	Productivity (kg/ha)	Average yield (kg)	Productivity (kg/ha)	Average yield (kg)	Productivity (kg/ha)
Tomato	52.4	236	54	310	60	380
Cucumber	59	266	50	287	61	386
Okra	50.3	227	52	298.2	52	329
Pepper	48.1	217	55	315.4	65.4	414

Dibombari n = 117, Manjo n = 93, Yabassi n = 48.

3.5. Productivity in Dibombari, Manjo, and Yabassi

According to Table 3, which presents links between input use and productivity throughout the study area, different top productivity levels were recorded per vegetable; still, all four crops are severely underperforming regarding national productivity levels. In Dibombari, farmers were more productive in cucumber farming with 266 kg/ha; however, this value is still below the national productivity of 1020 kg/ha. The least productivity was recorded among pepper farmers with 217 kg/ha. In Manjo, the highest productivity was recorded in pepper farming with a value of 315.4 kg/ha; this remains six times smaller than its national productivity of 2065 kg/ha. Yabassi had the highest productivity with pepper at 414 kg/ha. It is the highest performance in vegetable farming across the study area; however, it remains very low compared to its national productivity of 2065 kg/ha [4]. The highest mean farm size for a farmer was recorded in Dibombari at 0.2221 ha, while the least mean capital was recorded in Yabassi at 934.36 USD. The lowest mean of 34 man-days was recorded in Manjo. The least mean of 0.01 kg of seeds was recorded in Manjo, 32.8 kg of fertilizers in Yabassi, and 5.6 l of pesticides in Dibombari.

Table 3. Input use and productivity level in Dibombari, Manjo, and Yabassi.

Input use	Dibombari		Manjo		Yabassi	
	Mean	Productivity (unit/ha)	Mean	Productivity (unit/ha)	Mean	Productivity (unit/ha)
Land	0.2221		0.1744		0.1581	
Labour	38	171	34	195	35	221
Financial capital	56,700	255,290	58,725	336,725	52,729	333,516
Pesticides	5.6	25.2	6.8	39	7.4	47
Seeds	0.012	0.054	0.01	0.06	0.01	0.06
Fertilizers	49.3	222	60.5	347	32.8	207.5

Dibombari n = 117, Manjo n = 93, Yabassi n = 48; Source: Field survey.

3.6. Constraints to Productivity in Vegetable Production

Table 4 below shows constraints to farmers' productivity. The study reveals that only poor post-harvest practices were considered significant at the 1% level of significance.

Table 4. Constraints to productivity in vegetable production.

Constraints	Outcome 1	Outcome 2	Outcome 3	Outcome 4
Poor post-harvest practices	−0.05203***	−0.01566**	0.01445**	0.05324***
Difficult access to land	0.005647	0.0017004	−0.001569	−0.0057783
Government policies	0.0119227	0.0035901	−0.0033127	−0.0122
Poor marketing facilities	−0.0326967*	−0.0098454	0.0090849*	0.0334573*
Lack of credit facilities	−0.0302094*	−0.0090964	0.0083937	0.0309121
Low income of farmers	−0.0047444	−0.0014286	0.0013183	0.0048548
Problem of pests and diseases	−0.0269825	−0.0081248	0.0074971	0.0276101
High cost of planting material	−0.029218	−0.0087979	0.0081183	0.0298976

Notes: $p < 0.1$; $p < 0.05$; $p < 0.01$. n = 258 Source: Field Survey.

3.7. Discussion

An increasing trend in poor post-harvest practices tends to decrease strong disagreement by farmers as a constraint to productivity by 5.2% (Outcome 1). Similarly, as the trend in poor marketing facilities increases, it reduces farmers' strong disagreement as a constraint to productivity by 3.3%. Also, lack of credit facilities tends to decrease farmers' strong disagreement as a constraint to productivity by 3%. Only poor post-harvest practices are statistically significant at 5%. An increasing trend in poor post-harvest practices tends to decrease disagreement by the farmers as a constraint to productivity by 1.6% (Outcome 2). An increasing trend in poor post-harvest practices tends to increase farmers' agreement as a constraint to productivity by 1.5%. Similarly, as the trend in poor marketing facilities increases, it increases farmers' agreement as a constraint to productivity by 0.9% (Outcome 3). An increasing trend in poor post-harvest practices tends to increase strong agreement by the farmers as a constraint to productivity by 5.3%. Similarly, as the trend in poor marketing facilities increases, it increases farmers' strong agreement as a constraint to productivity by 3.4% (Outcome 4).

Lack of credit was found to be among the constraints to productivity as perceived by vegetable farmers. This is in accordance with [41] [42], who found that to achieve a set target in agricultural productivity, policy measures should be put in place to avoid agricultural credit misuse, as it needs to be continuously improved. Poor marketing facilities significantly affect productivity at the 10% level of significance. This is in line with [43], who found that lack of alternative marketing facilities is part of the problems farmers face. Poor post-harvest practices were significant at 1%. This is in accordance with [44], who confirm that post-harvest losses are part of the major problems faced by farmers. We projected to investigate productivity constraints of vegetable production. Results from tables above indicate that there are some constraints that affect crop yield in vegetable production at various levels of significance. Poor post-harvest practices affect the yield of crops at the 1% level of significance.

4. Conclusions

This study examined the productivity of vegetable farmers in the coastal lowland of Cameroon. The main motivation behind this study was the lack of sufficient information on factors that determine productivity in vegetable farming ventures. With a sample size of 258 respondents, consisting of 143 female farmers engaged in vegetable production in three different sub-divisions, the study's findings provide insightful information on the nature and productivity of vegetable farmers in Cameroon.

The results have shown that poor post-harvest practices, poor marketing facilities, and lack of credit facilities are constraints to farmers' productivity in vegetable production and could significantly increase productivity if properly addressed and managed.

Collaborations between various actors in agricultural production for the improvement of productivity in Cameroon have been established among universities, research centers, and partner organizations in recent years. Notwithstanding, strengthening these partnerships with policy-guided measures will facilitate the understanding and relevance of research output.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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