



husbandry. The greater populations are predominantly peasant farmers who cultivate permanent crops such as cocoa, oil palm, Citrus, cashew and mango. Food crops planted in the area include maize, yam, cassava, cowpea and vegetables, some other fruits planted in the area are banana, plantain, pineapple and sugar cane. They are also notable for cocoa farming and oil palm processing.

Its headquarters is in the town of Awo. It has an area of 270km<sup>2</sup> and a population figure 74,435 [9]. Primary data were collected by the use of a structured interview schedule to elicit information from the respondents. The population of the study were farmers in the study areas. A simple random sampling procedure was used to select six towns in the study area which are; Ido Osun, Okinni, Iragberi, Egbedi, Awo and Ofatedo. Twenty (20) respondents were selected from each town to give a total number of 120 respondents.

The data were presented using descriptive statistics such as frequency distribution and percentage. A 3-point scale of Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree which was assigned the score of 5,4,3,2 and 1 respectively was used to determine the perceived effect of climate change on crop production. The inferential statistic used was Ordinary Least Square Regression (OLS). The regression model is specified as follows;  
 $Y=f(X_1+X_2+X_3+X_4+X_5+X_6+X_7+X_8+X_9+e)$  Where,

Y=Sum of constraints faced in managing the effect of climate change, X<sub>1</sub>=Sex (Dummy), X<sub>2</sub>=Marital status(Dummy), X<sub>3</sub>=Farming Experience, X<sub>4</sub>=Age, X<sub>5</sub>=Farm Size, X<sub>6</sub>=Years spent in highest education, X<sub>7</sub> = Family size, X<sub>8</sub>= Number of dependants, X<sub>9</sub>=Perception of Climate change effect

### 3. Results and Discussions

#### 3.1 Socio-Economic Characteristics

Age distribution of the respondents as shown on table 1 indicates that the mean age of the respondents was 47.4 years with many (44.3%) within the age range of 41 to 59 years and the least age group (8.3%) was 71 and above. This implies majority of the respondents were still in their active years and might be in need of training to increase their knowledge since at this age farmers will be very willing to learn how to bring about improvements in their farm work. About 70 percent of the respondents were male, 68.3 percent were married and more than half (51.7%) had a family size less than 5 people. The majority (71.7%) of the respondents had vocational education, 20percent had adult education and few (8.3%) did not have any informal education. About half (49.2%) of the respondents had formal education for 4 to 7 years with mean years of formal education of 3.2 years. This implies the respondents had very low level of education and will greatly need assistance of extension agent in order to fully understand climate changes as it affects agriculture since all (100%) the respondents had farming as their primary occupation.

The respondents had small land holdings with mean of 0.82 hectares as 73.3 percent had between 0.1 and 1.0 hectares,

21.7 percent had 1.1 to 2.0 hectares and 5 percent had 2.1 to 4.0 hectares of land. Going by the classification that farmers with holding ranging from 0.10 to 5.99-hectares are small-scale farmers [8], it implies that all these respondents can be classified as small scale farmers. This further shows the dare need of farmers to understand climate change so as to manage their resources to cope in the mist of challenges posed at farmers by climate change. Also, 62.5 percent had been in farming for 2 to 10 years. The mean year of farming was 12.2 years. Cassava (100%), Maize (100%), Sweet potato (56.7%) and Yam (47.5%) were the most cultivated crops. This implies that maize and cassava were the most widely cultivated crop this might be because the two combinations (cassava and maize) give optimal contribution to the gross margin [10]

**Table 1:** Distribution of respondents by socio-economic characteristics

Socio Characteristics	Frequency	Percentage
<b>Age (years)</b>		
20-30	14	11.7
31-40	30	25
41-60	53	44.3
61-70	13	10.7
71 above	10	8.3
<b>Mean=47.4years</b>		
<b>Sex</b>		
Male	83	69.2
Female	37	30.8
<b>Marital Status</b>		
Single	14	11.7
Married	82	68.3
Widow/er	10	8.3
Divorce	7	5.8
Separated	7	5.8
<b>Family Size</b>		
Less than 5	62	51.7
5 – 10	54	45.0
12 – 2	4	3.3
<b>Mean=4.9years</b>		
<b>Informal Education</b>		
None	10	8.3
Adult Education	24	20.0
Vocational Education	86	71.7
<b>Formal Education (Years)</b>		
None	18	15.0
1-3	43	35.8
4-7	59	49.2
<b>Mean= 3.2 years</b>		
<b>Primary Occupation</b>		
Farming	120	100
<b>Farm Size (Hectares)</b>		
0.1-1.0	88	73.3
1.1-2.0	26	21.7
2.1-3.0	3	2.5
3.1-4.0	3	2.5
<b>Mean=0. 82ha</b>		
<b>Farming experience (years)</b>		
2-10	75	62.5
11-20	29	24.2
21-43	16	13.3
<b>Mean=12.24years</b>		
<b>Crops Cultivated</b>		
Cassava	120	100.0

Maize	120	100.0
Cowpea	20	16.7
Sweet Potato	68	56.7
Tomato	44	36.7
Pepper	46	38.3
Okra	35	29.2
Yam	57	47.5
Cocoa	20	16.7
Plantain	8	6.7

Source: Field Survey

### 3.2 Farmers' Perception of the effect of climate change on crop production

The weighted mean perception scores were ranked in descending order of the effect of climate change on crop production as shown in Table 2. It showed that the respondents were highly aware of the effect of climate change on crop production in the study area except that the farmers do not agree that land portions have been less suitable for crop cultivation (2.73). This might be because the small holdings of the farmers as shown in table 1 where the mean farm size is 0.82ha constrained them from regarding any land portion as not suitable for cultivation. This also emphasises the reason farmers do not practise shifting cultivation in managing the effect of climate change on crops. This practice therefore, contradicts the opinion that many adaptation and mitigation options can be combined to address climate change, because no single option is sufficient by itself [11].

Respondents who perceived the effect of climate change on crop production was high (61.7%).

**Table 2:** Distribution of respondents' perceived effect of climate change on crop production

Statements	WMS	Rank
Climate change has resulted in changes in weather pattern, thereby making them unpredictable and unreliable	4.71	1
It has resulted in increased cost of production	4.4	2
Results to practices that maintain soil moisture, such as mulching to effectively reduce evaporation from the soil and make crop yield good	4.32	3
Late commencement of rainfall causes adverse effect on crops in terms of germination and growth.	4.30	4
Changes in climatic factors affect planting time and makes planning difficult	4.20	5
The increase in drought will not lead to increase in crop yield.	4.14	6
Increase in temperature does not make the plant grow well because of heat stress.	4.10	7
Climate change has resulted to the need for more use of fertilizer in improving and conserving soil structure better	3.83	8
Unpredictable weather changes favour disease prevalence which affects crop sustainability	3.35	9
Increased flooding causes erosion and also reduces crop growth	3.03	10
Land portions have been less suitable for crop cultivation	2.73	11
<b>Level of perceived effect of climate change on crop production</b>	<b>Frequency</b>	<b>%</b>

Low	46	38.3
High	74	61.7

**WMS: Weighted Mean Score**

### 3.3 Major constraints in managing the effect of climate change

Respondents specified inadequate knowledge of handling climate change effect (1.57), lack of reliable information about weather and climate (1.57), lack of extension services and advice (1.33) and inadequate appropriate tools and equipment for farming (1.03) as likely constraints to effective management of the effect of climate change. Despite the fact that respondents who perceived the effect of climate change was high, they still acknowledge that they have a lot more to learn about climate change.

**Table 3:** Major constraints in managing the effect of climate change

Constraint	Mean
Inadequate knowledge of handling climate change effect	1.57
Lack of reliable information about weather and climate	1.57
Lack of extension services and advice	1.33
Inadequate appropriate tools and equipment	1.03

### 3.4 Result of OLS showing the relationship between constraints faced in managing the effect of climate change and some selected characteristics of the farmers.

The result of the analysis on table 4 revealed that farming experience ( $t=2.298$ ;  $p<0.05$ ) and farm size ( $t=2.123$ ;  $p<0.05$ ) had positive and significant relationship with constraints faced in managing the effect of climate change. This implies that as the farmers increase in their farming experience the more the constraints faced in managing the effect of climate change. This implies that, the farmer's experience has not helped them in managing their farms against climate change effects. This corroborates the findings that without additional mitigation efforts beyond those in place today, and even with adaptation, warming by the end of the 21st century will lead to high then to very high risk of severe, widespread and irreversible impacts globally [11]. Also, as the farmers increase their farm size, the more the constraints faced in managing the effect of climate change. This calls for greater commitment of extension personnels to ensure that farmers adopt best practises for managing their farms. The coefficient of determination was 0.702 implying that 70% of the constraints faced in managing the effect of climate change by the farmers was explained by the variables included in the model.

**Table 4:** OLS showing the relationship between constraints faced in managing the effect of climate change and some selected characteristics of the farmers.

Determinants	Regression	Std.	t-value	p-value
(Constant)	11.393	0.921	12.375	0.000
Sex	-0.346	0.359	-0.964	0.337
Marital status	0.265	0.380	1.362	0.488
Farming Experience	0.113	0.049	2.298	
Age	-0.010	0.021	-0.415	0.482
Farm Size	0.666	0.314	2.123	0.036**
Years spent in	0.141	0.102	1.380	0.170

Family size	0.025	0.090	0.276	0.783
Number of	0.177	0.226	0.780	0.437
Perception of climate	0.537	0.541	0.992	0.323

\*\*Significant at 0.05,  $R^2=0.702=70.2\%$

#### 4. Conclusion and Recommendations

The study concludes that the farmers are aware of the effect of climate change on crop production and based on the findings of the study it is recommended that;

1. Farmers groups, governmental and non-governmental extension organization should organize training programmes on various strategies farmers can effectively combine to manage their farms against the effect of climate change.
2. There should be government assistance in terms of supply of drought resistant variety of crops and should see to land management procedures that will grant farmers access to land.
3. Extension organizations while planning training programmes should consider the low level of education of the farmers so as to fully benefit them through the programmes.

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