**RESULTS AND DISCUSSION**

**4.1 Social–Economic Characteristics of the Respondents**

The result as shown in Table 4.1 reveals that the age distribution of farmers in the study area according to the age range presented revealed that 73.3% of the male respondent were above 40 years whereas 66.7% of the female respondents were above 40 years while 3.4% of both the male and female respondents were below 30 years respectively. The mean age of the male and female respondents are 49.12 and 46.30 years respectively which is an indication that the respondents are still very active to engage in agricultural production that will contribute to household food security and utilization of CSAP’s. The result is in line with the findings of Haddabi *et al*. (2019), Yusuf *et al*. (2015) and Agom *et al.,* (2022) who claimed that at the active working age, household heads adopt innovations that positively affect their productivity and income.

Table 4.1 also revealed that the majority of the male (76.7%) and female (80%) respondents were married, while 2% were divorced. The findings revealed that most of the respondents were married, and it implies that farming is a stable job in the region. The result is in line with the findings of Agom *et al.,* (2022) and Ubokudom *et al.,* (2017) who found that households of their respondents are married and both the spouses are working are expected to be more food secure than single households, widowed or divorced. Most rural farmers will prefer to marry to have cheap labour for agricultural activities to enable their household to be food secure.

Table 4.1 also showed that about 46.7% of the male respondents had tertiary education and 38.3% of the female respondents had secondary education. The high literacy level in the area could suggest a better awareness, adoption and utilization of Climate Smart Agricultural practices. Educated farmers adopt agricultural innovations easier, and this could improve their agricultural productivity and ensure food security. This finding agrees with that of Haddabi *et al.,* (2019) but is contrary to the findings of Agom *et al.,* (2022).

Table 4.1 also showed that about 66.6% of the male respondents have household sizes of 5 - 10 persons, whereas 60% of the female respondents have household sizes of 5 - 10 persons. The mean household size for both male and female respondents were about 7 and 8 persons. Farm households with larger household sizes tend to have more labour from the family for farming activities even though the dependency ratio will be high. Lager household size tends to reduce per capita food expenditure and per capita household income, thus increasing their likelihood of being food insecure. The findings correspond with that of Agom *et al.,* (2022) and Nkeme, (2021) who asserted that the larger the family size the lesser the food availability to each person within the household and also nutritional status will be affected.

Table 4.1 also showed that majority of both the male (75%) and female (78.3%) respondents are primarily engaged in farming, hence farming their primary occupation which may suggest a stable food security and utilization Climate Smart Agricultural Practices in the area. This finding is in line with Nkeme, (2016).

The distribution of monthly income of farming households shown in Table 4.1 revealed that the majority of the male (61.7%) and female (53.3%) earned ₦50,000-₦100,000 monthly from Cassava production. Additionally, majority of the male (46.7%) and female (38.3%) earned ₦50,000-₦100,000 monthly from non-farming activities. The result also showed that 51.7% and 66.7% of the male and female respondents respectively received lower than N50,000 from family and friends as source of income The result indicates that the farming households had numerous streams of income and they would be able to afford their basic needs.

The distribution shown in Table 4.1 also revealed that the majority of the female (73.3%) and male (65%) respondents are members of cooperative and 87.9% & 83.3% of male and female respondents respectively have been a member of the cooperative below 5 years. Being a member of cooperative is an indication of access to information and resources. The result also showed that the male (50%) and female (55%) respondents source of credit comes from families and friends; hence they have no access to credit facilities from any financial institution or cooperative. Access to credit is an important factor that can influence the likelihood of adoption of new technologies by farmers to augment their income level and attain food security. Farm credit plays an intermediate role between the adoption of farm technology and the increase in farm output vis-á-viz their income level. This finding corroborates that of Haddabi *et al.* (2019) and Agom *et al.,* (2022) who asserted that farmers cannot expand their production activities due to limitations to finance.

The distribution shown in Table 4.1 revealed that the majority of the female (71.7%) respondents had access to extension agents in contrast to the male (66.7%) respondents that had no access to extension agent. Access to an extension agent of the female respondents is an indication of access to information and resources. Additionally, the female (60%) respondents were visited bi-weekly compared to the male (33.3%) respondents who were visited weekly. The distribution shown in Table 4.1 revealed that the majority of the female (50%) respondents land acquisition is by Rent/leased compared to the male (26.7%) respondents that on their lands. Land acquisition is major determining factor in terms of the Climate Smart Agricultural practices employed by the farmers just as reported by Haddabi *et al.* (2019).

Table 4.1 showed that revealed that the majority of the female (38.3%) and male (41%) respondents had farm sizes less than 2.0 hectares. The finding revealed that food crop farmers in the study area are mainly small-scale farmers, hence food production is at a subsistence level which could lead to diversification of income sources by farmers to food secure. This finding corresponds with the finding of Haddabi *et al.,* (2019) and Oyebanjo *et al.,* (2013) that the majority of Nigerian farmers are small-scale farmers who cultivate less than 5 hectares.

**Table 4.1: Distribution of Respondents Based on their Socio-economic Characteristics**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Male** | **Percentage (%)** | **Female** | **Percentage (%)** |
| **Age** | **(Mean = 49.12 years)** |  | **(Mean = 46. 30 years )** |  |
| Below 30 | 2.0 | 3.4 | 2 | 3.4 |
| 30 - 40 | 14.0 | 23.3 | 18 | 30.0 |
| Above 40 | 44.0 | 73.3 | 40 | 66.6 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Marital Status** |  |  |  |  |
| Single | 8 | 13.3 | 5 | 8.3 |
| Married | 46 | 76.7 | 48 | 80.0 |
| Divorced | 2 | 3.3 | 2 | 3.3 |
| Widow | 0 | 0.00 | 5 | 8.3 |
| Widower | 4 | 6.7 | 0 | 0 |
| **Total** | **60** | **100** | **60** | **100** |
| **Education** |  |  |  |  |
| Primary | 5 | 8.3 | 18 | 30.0 |
| Secondary | 27 | 45.0 | 23 | 38.3 |
| Tertiary | 28 | 46.7 | 19 | 31.7 |
| **Total** | **60** | **100.0** | **60** | **100.0** |
| **Household Size** | **(Mean = 8 persons)** |  | **(Mean = 7 persons)** |  |
| Below 5 | 18 | 30.1 | 20 | 33.3 |
| 5 - 10 | 40 | 66.6 | 36 | 60.0 |
| Above 10 | 2 | 3.3 | 4 | 6.7 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Primary Occupation** |  |  |  |  |
| Farming | 45 | 75.0 | 47 | 78.3 |
| Civil Services | 4 | 6.7 | 9 | 15.0 |
| Trading | 8 | 13.3 | 2 | 3.3 |
| Teaching | 3 | 5.0 | 2 | 3.3 |
| Others | 0 | 0 | 0 | 0 |
| **Total** | **60** | **100** | **60** | **100** |
| **Monthly Income from Cassava farming** |  |  |  |  |
| Below ₦50,000 | 15 | 25.0 | 17 | 28.3 |
| ₦50,000- ₦100,000 | 37 | 61.7 | 32 | 53.3 |
| ₦100,000- ₦300,000 | 8 | 13.3 | 11 | 18.3 |
| Above ₦300,000 | 0 | 0 | 0 | 0 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Monthly Income from non- farming** |  |  |  |  |
| Below ₦50,000 | 23 | 38.3 | 22 | 36.7 |
| ₦50,000- ₦100,000 | 28 | 46.7 | 23 | 38.3 |
| ₦100,000- ₦300,000 | 8 | 13.3 | 11 | 18.3 |
| Above ₦300,000 | 1 | 1.7 | 4 | 6.7 |
|  | **60** | **100** | **60** | **100.0** |
| **Source of Income from Family members** |  |  |  |  |
| Below ₦50,000 | 31 | 51.7 | 40 | 66.7 |
| ₦50,000- ₦100,000 | 22 | 36.7 | 15 | 25.0 |
| ₦100,000- ₦300,000 | 5 | 8.3 | 5 | 8.3 |
| Above ₦300,000 | 2 | 3.3 | 0 | 0 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Farming Experience** |  |  |  |  |
| Below 5 years | 10 | 16.7 | 21 | 35.0 |
| 5-10 years | 19 | 31.7 | 21 | 35.0 |
| Above 10 years | 31 | 51.6 | 18 | 30.0 |
| **Total** | **60** | **100** | **60** | **100** |
| **Membership of Cooperative** |  |  |  |  |
| Yes | 21 | 65.0 | 44 | 73.3 |
| No | 39 | 35.0 | 16 | 26.7 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Years in Cooperative** |  |  |  |  |
| Below 5 years | 53 | 87.9 | 50 | 83.3 |
| 5-10 years | 6 | 9.9 | 8 | 13.3 |
| Above 10 years | 1 | 1.7 | 2 | 3.3 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Sources of Credit** |  |  |  |  |
| Families/Friends | 30 | 50.0 | 33 | 55.0 |
| Banks | 11 | 18.3 | 7 | 11.7 |
| Cooperative | 8 | 13.3 | 10 | 16.7 |
| None | 11 | 18.3 | 10 | 16.7 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Access to Extension Service** |  |  |  |  |
| Yes | 20 | 33.3 | 43 | 71.7 |
| No | 40 | 66.7 | 17 | 28.3 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Times visited** |  |  |  |  |
| Weekly | 20 | 33.3 | 13 | 21.7 |
| Bi-weekly | 12 | 20.0 | 36 | 60 |
| Monthly | 13 | 21.7 | 5 | 8.3 |
| Yearly | 15 | 25.0 | 6 | 10.0 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Mode of Land Acquisition** |  |  |  |  |
| Owned | 16 | 26.7 | 15 | 25.0 |
| Rent/leased | 14 | 23.3 | 30 | 50.0 |
| Inherited | 15 | 25.0 | 13 | 21.7 |
| Communal | 6 | 10.0 | 2 | 3.3 |
| Family | 9 | 15.0 | 0 | 0 |
| **Total** | **60** | **100.0** | **60** | **100.0** |
| **Type of Labor** |  |  |  |  |
| Family | 28 | 46.7 | 18 | 30.0 |
| Hired | 26 | 43.3 | 34 | 56.7 |
| Grouped | 6 | 10.0 | 8 | 13.3 |
| **Total** | **60** | **100** | **60** | **100.0** |
| **Farm Size** | **(Mean = 3.43ha)** |  | **(Mean = 3.38ha)** |  |
| Below 2ha | 25.0 | 41.7 | 23 | 38.3 |
| 2ha - 4ha | 12.0 | 20.0 | 15 | 25.0 |
| Above 4ha | 23.0 | 38.4 | 22 | 36.7 |
| **Total** | **60** | **100** | **60** | **100.0** |

**Source:** Computed using field survey Data (2023)

**4.2 Food Security Status of Respondents**

Table 4.2a and 4.2b present the summary statistics of the food security indices among the sampled households. For the male respondents, based on the food security line (2/3MPCFDE = ₦15982.64), it was observed that 63.3% of the households were food insecure and 36.7% were food secure as shown in Table 4.2a. For the female respondents, based on the food security line (2/3MPCFDE = ₦6268.11), it was observed that 48.3% of the households were food insecure and 51.7% were food secure as shown in Table 4.2b. this implies that the household of the female respondents are food secured than the male respondents. This could be due to the high accessibility of extension officer for information, high income level and small household size (7). The implication is that 51.7% and 36.7% of the female and male respondents respectively who were food secure had physical, social and economic access to food while the remaining 48.3% and 63.3% of the male and female respondents respectively who were food insecure had limited access to food due to physical, social and economic constraints towards accessing food in the study area. The average household size for the male and female respondent were 8 and 7 respectively. For the female respondents, 8 and 7 persons were food insecure and food secure households respectively. For the male respondents, 10 and 8 persons were food insecure and food secure households respectively. The female respondents in the study area could therefore be regarded as more food secure than the male respondents. Similar results were obtained by Haddabi *et al*. (2019), Nkeme, (2021), Ibok *et al.,* (2016) and Agom *et al.,* (2022) who asserted that the larger the household size, the food insecure the household.

**Table 4.2a Indices of Male Respondent Household Food Security Status**

|  |  |  |  |
| --- | --- | --- | --- |
| **Food Security Indices** | **Food Insecure Household** | **Food Secured Households** | **All** |
| Percentage of Household (%) | 63.3% | 36.7% | 100% |
| Number of Household | 38 | 22 | 60 |
| Mean of Household size | 10 | 8 | 8 |
| Mean of Household Expenditure | ₦57,530.21 | ₦33,354.80 | ₦90,885 |
| Mean per capita Household food Expenditure | ₦15,175.52 | ₦8,798.44 | ₦23,973.96 |
| 2/3 mean per capita Household food expenditure = ₦15,982.64 | | | |

Source: Computed using field survey Data (2023)

**Table 4.2b Indices of Female Respondent Household Food Security Status**

|  |  |  |  |
| --- | --- | --- | --- |
| **Food Security Indices** | **Food Insecure Household** | **Food Secured Households** | **All** |
| Percentage of Household (%) | 48.3% | 51.7% | 100% |
| Number of Household | 29 | 31 | 60 |
| Mean of Household size | 8 | 7 | 7 |
| Mean of Household Expenditure | ₦26,370.99 | ₦28,227.34 | ₦54,598.33 |
| Mean per capita Household food Expenditure | ₦4,541.25 | ₦4,860.92 | ₦9,402.17 |
| 2/3 mean per capita Household food expenditure = ₦6268.11 | | | |

Source: Computed using field survey Data (2023)

**4.3 Awareness and Utilization of Climate Smart Agricultural Practices**

Table 4.3a and Table 4.3b shows the awareness level and utilization of climate Smart Agricultural Practices among male and female respondents in Eket Agricultural zone. The findings revealed that majority of the male (90%) and female (88.3%) respondents were highly aware of Climate Smart Agricultural Practices. From the results as shown in Table 4.3a, the male respondents always utilize the following Climate Smart Agricultural practices; agroforestry (68.3%), Crop Rotation (55%), Mixed Cropping (61.7%), Intercropping (50%), Compost Making (41.7%), Improved fallowing (46.7%), Organic Manure (70%), Mulching (51.7%), Cover Crops (53.3%), Mixed Farming (53.3%) and Improved Crop Variety (43.3%) was often Utilized and Irrigation (53.3%) was Never Utilized. For the female respondents as shown in Table 4.3b, majority always utilize most of these Climate Smart Agricultural Practices; agroforestry (53.3%), Crop Rotation (45%), Mixed Cropping (56.7%), use of improved crop variety (78.3%), Organic Manure (56.7%), Mulching (40%) and Mixed Farming (43.3%). Additionally, Cover Crops (45%), mixed farming (43.3%) and Intercropping (48.3%) was often Utilized whereas Irrigation (83.3%), Compost Making (45%), Improved fallowing (43.3%) was Not Utilized by the female respondents in the study area. This finding is in line with Assan *et al.,* (2018) who reported that male heads of farm households were generally more engaged and aware in adaptation practices than females.

**Table 4.3a: Awareness and Utilization of Climate Smart Agricultural Practice for Male Respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Awareness Question** | | | **Yes** | **No** | **Remarks** |
| Are you aware of climate smart agricultural practices? | | | 54(90%) | 6(10%) | Mostly Aware |
| **Climate Smart Agricultural Practices** | **A.U.** | **O.U.** | **N.U.** | **Means** | **Remarks** |
| Agro-forestry | 41(68.3%) | 16(26.7%) | 3(5.0%) | **2.63** | **Always Utilized** |
| Crop Rotation | 33(55%) | 23(38.3%) | 4(6.7%) | **2.48** | **Always Utilized** |
| Mixed Cropping | 37(61.7%) | 19(31.7%) | 4(6.7%) | **2.55** | **Always Utilized** |
| Improved Crop Variety | 25(41.7%) | 26(43.3%) | 9(15%) | **2.27** | **Often**  **Utilized** |
| Intercropping | 30(50%) | 21(35%) | 9(15%) | **2.35** | **Always Utilized** |
| Compost Making | 25(41.7%) | 15(25%) | 20(33.3%) | **2.08** | **Always Utilized** |
| Improved fallowing | 28(46.7%) | 22(36.7%) | 10(16.7%) | **2.30** | **Always Utilized** |
| Organic Manure | 42(70%) | 14(23.3%) | 4(6.7%) | **2.63** | **Always Utilized** |
| Mulching | 31(51.7%) | 25(41.7%) | 4(6.7%) | **2.45** | **Always Utilized** |
| Cover Crops | 32(53.3%) | 18(30.0%) | 10(16.7%) | **2.37** | **Always Utilized** |
| Mixed Farming | 32(53.3%) | 21(35.0%) | 7(11.7%) | **2.42** | **Always Utilized** |
| Irrigation | 22(36.7%) | 6(10%) | 32(53.3%) | **1.83** | **Not Utilized** |

**\*A.U. – Always Utilized, O.U. –Often Utilized, N.U. – Not Utilized**

Source: Computed using field survey Data (2023)

**Table 4.3b: Awareness and Utilization of Climate Smart Agricultural Practice for female Respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Awareness Question** | | | **Yes** | **No** | **Remarks** |
| Are you aware of climate smart agricultural practices? | | | 53(88.3%) | 7(11.3%) | Mostly Aware |
| **Climate Smart Agricultural Practices** | **A.U.** | **O.U.** | **N.U.** | **Means** | **Remarks** |
| Agro-forestry | 32(53.3%) | 10(16.7%) | 18(30%) | **2.23** | **Always Utilized** |
| Crop Rotation | 27(45%) | 23(38.3%) | 10(16.7%) | **2.28** | **Always Utilized** |
| Mixed Cropping | 34(56.7%) | 22(36.7%) | 4(6.7%) | **2.50** | **Always Utilized** |
| Improved Crop Variety | 47(78.3%) | 11(18.3%) | 2(3.3%) | **2.75** | **Always Utilized** |
| Intercropping | 22(36.7%) | 29(48.3%) | 9(15%) | **2.22** | **Often Utilized** |
| Compost Making | 24(40%) | 9(15%) | 27(45%) | **1.95** | **Not**  **Utilized** |
| Improved fallowing | 24(40%) | 10(16.7%) | 26(43.3%) | **1.97** | **Not**  **Utilized** |
| Organic Manure | 34(56.7%) | 21(35%) | 21(35%) | **2.48** | **Always Utilized** |
| Mulching | 24(40%) | 20(33.3%) | 16(26.7%) | **2.13** | **Always Utilized** |
| Cover Crops | 12(20%) | 27(45%) | 21(35%) | **1.85** | **Often Utilized** |
| Mixed Farming | 23(38.3%) | 26(43.3%) | 11(18.3%) | **2.20** | **Often Utilized** |
| Irrigation | 5(8.3%) | 5(8.3%) | 50(83.3%) | **1.25** | **Not**  **Utilized** |

**\*A.U. – Always Utilized, O.U. –Often Utilized, N.U. – Not Utilized**

Source: Computed using field survey Data (2023)

**4.4 Perceived Effects of Climate Smart Agricultural Practices (CSAPs) on Food Security**

Analysis was done to identify the observed perceived effects of Climate Smart Agricultural Practices on farming activities by the respondents in the study area as shown in Table 4.4a and Table 4.4b. Effort was also made to diagnose these observations according to gender. From Table 4.4a, the adoption of CSAPs was strongly agreed by the male respondent to cause the following effects; increased farm productivity (65%), increase food security (63.3%), improve household’s welfare (63.3%), increase in farm income (61.7%), and preservation of biodiversity and ecosystem (41.7%). And few of the male respondents agreed that the following effects are perceived by adoption of CSAP’s; provide efficient techniques to control pest and diseases (46.7%), enhance resilience and sustainability of our food system (40%) and ensuring a stable and consistent food supply (46.7%).

The female respondents as shown in Table 4.4b, strongly agreed that the following effects are perceived in the adoption of CSAP’s; increased farm productivity (61.4%), increase food security (53.4%), improve household’s welfare (53.4%), control pest and diseases (55%), enhance resilience and sustainability of our food system (38.3%), and preservation of biodiversity and ecosystem (48.3%). And few of the female respondents agreed that the following effects are perceived by adoption of CSAP’s; provide efficient techniques to increase in farm income (50%) and ensuring a stable and consistent food supply (60%). From this findings, it indicates that majority of both gender strongly agreed that the perceived effect of the adoption of CSAP’s are feasible and this results agrees with the work of Oladele, (2019), Nkeme, (2016), Adekunle, (2019) and Akinbile, (2019) who found that the use of Climate Smart Agriculture practices increased crop yields and improved food security among smallholder farmers in Nigeria's savanna regions. Additionally, Mashi, (2019) also found that the adoption of Climate Smart Agriculture practices such as agroforestry and use of improved crop varieties led to increased crop yields and enhanced food security among smallholder farmers in Nigeria's arid regions.

**Table 4.4a: Perceived Effects of Climate Smart Agricultural Practices (CSAPs) on Food Security by the Male Respondents**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Perception Statement** | **S.A.** | **A.** | **D.** | **S.D.** | **Means** | **Remark** |
| Increased farm productivity | 39(65%) | 16(26.7%) | 1(1.7%) | 4(6.7%) | **3.50** | **Strongly Agreed** |
| Potential to increase food security | 38(63.3%) | 14(23.3%) | 5(8.3%) | 3(5.0%) | **3.40** | **Strongly Agreed** |
| Improved farming Household’s welfare | 38(63.3%) | 12(20%) | 6(10%) | 4(6.7%) | **3.45** | **Strongly Agreed** |
| Increased farm Income | 37(61.7%) | 15(25%) | 4(6.7%) | 4(6.7%) | **3.42** | **Strongly Agreed** |
| Pest and Disease Control | 19(31.7%) | 28(46.7%) | 9(15%) | 4(6.7%) | **3.03** | **Agreed** |
| Enhances Resilience and sustainability of our food systems | 20(33.3%) | 24(40%) | 6(10%) | 10(16.7%) | **2.90** | **Agreed** |
| Stable and consistent food supply | 27(45%) | 28(46.7%) | 3(5.0%) | 2(3.3%) | **3.33** | **Agreed** |
| Preservation of biodiversity and ecosystem services | 25(41.7%) | 22(36.7%) | 10(16.7%) | 3(5.0%) | **3.15** | **Strongly Agreed** |

**\*S.A. – Strongly Agreed, A. – Agreed, D. – Disagreed, S.D. – Strongly Disagreed**

Source: Computed using field survey Data (2023)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Perception Statement** | **S.A.** | **A.** | **D.** | **S.D.** | **Means** | **Remark** |
| Increased farm productivity | 37(61.4%) | 16(26.6%) | 4(6.8%) | 3(5.2%) | **3.60** | **Strongly Agreed** |
| Potential to increase food security | 32(53.4%) | 25(41.6%) | 2(3.3%) | 1(1.7%) | **3.57** | **Strongly Agreed** |
| Improved farming Household’s welfare | 32(53.4%) | 26(43.2%) | 1(1.7%) | 1(1.7%) | **3.53** | **Strongly Agreed** |
| Increased farm Income | 20(33.2%) | 30(50%) | 7(11.7%) | 3(5.1%) | **3.27** | **Agreed** |
| Pest and Disease Control | 33(55%) | 20(33.2%) | 4(6.7%) | 3(5.1%) | **3.48** | **Strongly Agreed** |
| Enhances Resilience and sustainability of our food systems | 23(38.3%) | 22(36.7%) | 7(11.7%) | 8(13.3%) | **3.00** | **Strongly Agreed** |
| Stable and consistent food supply | 18(30%) | 36(60%) | 4(6.7%) | 2(3.3%) | **3.23** | **Agreed** |
| Preservation of biodiversity and ecosystem services | 29(48.3%) | 19(31.7%) | 2(3.3%) | 10(16.7%) | **3.12** | **Strongly Agreed** |

**Table 4.4b: Perceived Effects of Climate Smart Agricultural Practices (CSAPs) on Food Security by the Female Respondents**

**\*S.A. – Strongly Agreed, A. – Agreed, D. – Disagreed, S.D. – Strongly Disagreed**

Source: Computed using field survey Data (2023)

**4.5: Constraints to Climate Smart Agricultural Practices Adoption**

As shown on Table 4.5a and Table 4.5b, the constraints to climate Smart Agricultural Practices Adoption was examined. From Table 4.5a, majority of the male respondents holds that the constraints that limits the adoption of CSAP’s was very serious; lack of awareness (60%), poor extension service (46.7%), low dissemination of information (46.7%), limited availability of equipment (68.4%), limited availability of inputs (65%), inadequate financial resource (58.3%), poor technical capacity of farmers (60%), lack of access to agricultural credit (50%), high cost of improve crop variety (56.7%), non-availability of farm labor (48.3%), lack of inadequate government policy (65%), high cost of production (65%), pest and disease (48.3%), high cost of input (51.7%) and lack of improved storage facilities (56.7%). Additionally, few of the male respondent dictates that these constraints; illiteracy of farmers (48.3%) and shortage of labor (50%) as serious.

For the female respondents as shown in Table 4.5b, majority hold that the following constraints that limits the adoption of CSAP’s was very serious; lack of awareness (45%), , low dissemination of information (45%), limited availability of equipment (38.3%), illiteracy of farmers (51.7%), %), inadequate financial resource (56.7%), lack of access to agricultural credit (70%), high cost of improve crop variety (50%), non-availability of farm labor (38.3%), high cost of production (61.7%), pest and disease (58.3%), shortage of labor (45%), and lack of improved storage facilities (55%). Additionally, some of the female respondent dictates that these constraints; poor extension service (60%), limited availability of inputs (53.3%), poor technical capacity of farmers (53.3%), lack of inadequate government policy (51.7%), high cost of input (51.7%) are serious constraints. From this findings, it indicates that the constraints affecting the adoption of Climate Smart Agricultural Practices Adoption in the study area is serious among the male and female respondents and this finding is in line with Onuoha and Akachukwu, (2021), Akinnifesi *et al.,* (2021) who found out that the challenges affecting the adoption of climate smart agricultural practices includes a majority of the abovementioned constraints among the male and female farmers.

**Table 4.5a: Constraints to Climate Smart Agricultural Practices Adoption by the male Respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Constraints** | **V.S.** | **S.** | **N.S.** | **Means** | **Remark** |
| Lack of Awareness of CSA | 36(60%) | 23(38.3%) | 1(1.7%) | **2.58** | **Very Serious** |
| Poor Extension Services | 28(46.7%) | 22(36.7%) | 10(16.7%) | **2.30** | **Very Serious** |
| Low Information Dissemination | 28(46.7%) | 22(36.7%) | 10(16.7%) | **2.30** | **Very Serious** |
| Limited Availability of Equipment | 41(68.3%) | 18(30%) | 1(1.70%) | **2.68** | **Very Serious** |
| Illiteracy of farmers | 22(36.7%) | 29(48.3%) | 9(15%) | **2.22** | **Serious** |
| Limited availability of inputs | 39(65%) | 17(28.3%) | 4(6.7%) | **2.58** | **Very Serious** |
| Inadequate financial resource | 35(58.3%) | 23(38.3%) | 2(3.3%) | **2.55** | **Very Serious** |
| Poor technical capacity of farmers | 36(60%) | 21(35%) | 3(5.0%) | **2.55** | **Very Serious** |
| Lack of access to agricultural credit | 30(50%) | 28(46.7%) | 2(3.3%) | **2.47** | **Very Serious** |
| High cost of improved crop variety | 34(56.7%) | 24(40%) | 2(3.3%) | **2.53** | **Very Serious** |
| Non-availability of farm labor | 29(48.3%) | 28(46.7%) | 3(5%) | **2.43** | **Very Serious** |
| Lack of inadequate government policy | 39(65%) | 20(33.3%) | 1(1.7%) | **2.63** | **Very Serious** |
| High cost of production | 30(50%) | 28(46.7%) | 2(3.3%) | **2.47** | **Very Serious** |
| Pest and Diseases | 29(48.3%) | 26(43.3%) | 5(8.3%) | **2.40** | **Very Serious** |
| Shortage of labour | 28(46.7%) | 30(50%) | 2(3.3%) | **2.43** | **Serious** |
| High cost of input | 31(51.7%) | 27(45%) | 2(3.3%) | **2.48** | **Very Serious** |
| Lack of improved storage facilities | 34(56.7%) | 22(36.7%) | 4(6.7%) | **2.50** | **Very Serious** |

**\*V.S. – Very Serious, S. – Serious, N.S. – Not Serious**

Source: Computed using field survey Data (2023)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Constraints** | **V.S.** | **S.** | **N.S.** | **Means** | **Remark** |
| Lack of Awareness of CSA | 27(45%) | 19(31.7%) | 14(23.3%) | **2.22** | **Very Serious** |
| Poor Extension Services | 14(23.3%) | 36(60%) | 10(16.7%) | **2.07** | **Serious** |
| Low Information Dissemination | 27(45%) | 17(28.3%) | 16(26.7%) | **2.18** | **Very Serious** |
| Limited Availability of Equipment | 23(38.3%) | 22(36.7%) | 15(25%) | **2.13** | **Very Serious** |
| Illiteracy of farmers | 31(51.7%) | 16(26.7%) | 13(21.7%) | **2.30** | **Very Serious** |
| Limited availability of inputs | 23(38.3%) | 32(53.3%) | 5(8.3%) | **2.30** | **Serious** |
| Inadequate financial resource | 34(56.7%) | 23(38.3%) | 3(5%) | **2.53** | **Very Serious** |
| Poor technical capacity of farmers | 26(43.3%) | 32(53.3%) | 2(3.3%) | **2.40** | **Serious** |
| Lack of access to agricultural credit | 42(70%) | 13(21.7%) | 5(8.3%) | **2.63** | **Very Serious** |
| High cost of improved crop variety | 30(50%) | 22(36.7%) | 8(13.3%) | **2.37** | **Very Serious** |
| Non-availability of farm labor | 23(38.3%) | 19(31.7%) | 18(30%) | **2.08** | **Very Serious** |
| Lack of inadequate government policy | 19(31.7%) | 31(51.7%) | 10(16.7%) | **2.15** | **Serious** |
| High cost of production | 37(61.7%) | 19(31.7%) | 4(6.7%) | **2.55** | **Very Serious** |
| Pest and Diseases | 35(58.3%) | 16(26.7%) | 9(15%) | **2.43** | **Very Serious** |
| Shortage of labour | 27(45%) | 22(36.7%) | 11(18.3%) | **2.27** | **Very Serious** |
| High cost of input | 17(28.3%) | 31(51.7%) | 12(20%) | **2.08** | **Serious** |
| Lack of improved storage facilities | 33(55%) | 19(31.7%) | 8(13.3%) | **2.42** | **Very Serious** |

**Table 4.5b: Constraints to Climate Smart Agricultural Practices Adoption by the female Respondents**

**\*V.S. – Very Serious, S. – Serious, N.S. – Not Serious**

Source: Computed using field survey Data (2023)

**Test for Hypothesis**

Pearson correlation was used to test the hypothesis; there is no significance difference between gender, climate smart agricultural practices and food status of the farmers in the study area. From Table 4.6a, intercropping as a CSAP’s showed significant at p>0.05 level and agroforestry and compost making also showed significant at >0.01 level for the female respondents. From the results in Table 4.6b, there was no significant between Climate Smart Agricultural practices and food security status among the male respondents. Hence, the null hypothesis that there is no significant difference between gender, climate smart agricultural practices and food status of farmers in the study area is rejected.

**Table 4.6a: Pearson Correlation Coefficients for the female respondents**

|  |  |  |
| --- | --- | --- |
| **CSAP’s** |  | **FSS** |
| Agro-forestry | Pearson Correlation | 0.331\*\* |
| Sig. (2-tailed) | 0.010 |
| N | 60 |
| Crop Rotation | Pearson Correlation | 0.238 |
| Sig. (2-tailed) | 0.068 |
| N | 60 |
| Mixed Cropping | Pearson Correlation | 0.135 |
| Sig. (2-tailed) | 0.305 |
| N | 60 |
| Improved Crop Variety | Pearson Correlation | 0.182 |
| Sig. (2-tailed) | 0.164 |
| N | 60 |
| Intercropping | Pearson Correlation | 0.354\*\* |
| Sig. (2-tailed) | 0.005 |
| N | 60 |
| Compost Making | Pearson Correlation | 0.310\* |
| Sig. (2-tailed) | 0.016 |
| N | 60 |
| Improved fallowing | Pearson Correlation | 0.184 |
| Sig. (2-tailed) | 0.159 |
| N | 60 |
| Organic Manure | Pearson Correlation | 0.208 |
| Sig. (2-tailed) | 0.111 |
| N | 60 |
| Mulching | Pearson Correlation | 0.119 |
| Sig. (2-tailed) | 0.366 |
| N | 60 |
| Cover Crops | Pearson Correlation | 0.168 |
| Sig. (2-tailed) | 0.201 |
| N | 60 |
| Mixed Farming | Pearson Correlation | 0.129 |
| Sig. (2-tailed) | 0.327 |
| N | 60 |
| Irrigation | Pearson Correlation | 0.070 |
| Sig. (2-tailed) | 0.595 |
| N | 60 |

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

**Table 4.6b: Pearson Correlation Coefficients for the male respondents**

|  |  |  |
| --- | --- | --- |
| **CSAP’s** |  | **FSS** |
| Agro-forestry | Pearson Correlation | 0.004 |
| Sig. (2-tailed) | 0.976 |
| N | 60 |
| Crop Rotation | Pearson Correlation | -0.035 |
| Sig. (2-tailed) | 0.788 |
| N | 60 |
| Mixed Cropping | Pearson Correlation | 0.106 |
| Sig. (2-tailed) | 0.418 |
| N | 60 |
| Improved Crop Variety | Pearson Correlation | 0.252 |
| Sig. (2-tailed) | 0.052 |
| N | 60 |
| Intercropping | Pearson Correlation | 0.157 |
| Sig. (2-tailed) | 0.230 |
| N | 60 |
| Compost Making | Pearson Correlation | 0.247 |
| Sig. (2-tailed) | 0.057 |
| N | 60 |
| Improved fallowing | Pearson Correlation | 0.206 |
| Sig. (2-tailed) | 0.114 |
| N | 60 |
| Organic Manure | Pearson Correlation | 0.233 |
| Sig. (2-tailed) | 0.074 |
| N | 60 |
| Mulching | Pearson Correlation | -0.219 |
| Sig. (2-tailed) | 0.093 |
| N | 60 |
| Cover Crops | Pearson Correlation | -0.170 |
| Sig. (2-tailed) | 0.194 |
| N | 60 |
| Mixed Farming | Pearson Correlation | 0.042 |
| Sig. (2-tailed) | 0.751 |
| N | 60 |
| Irrigation | Pearson Correlation | 0.210 |
| Sig. (2-tailed) | 0.108 |
| N | 60 |

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

**SUMMARY, CONCLUSION AND RECOMMENDATION**

**5.1 SUMMARY**

The study analyzed gender perception on the effect of the climate smart agricultural practices on food security status of farmers in Eket Agricultural zone, Akwa Ibom State, Nigeria. The specific objectives were to: describe the socio-economic characteristic of farming households; identify the level of awareness and utilization of climate smart agricultural practices; examine the food security situation; examine the effects of the climate smart agricultural practices on food security status of farmers; identify the constraints to climate smart agricultural practices adoption in the study area.

The result of socioeconomic characteristics showed that greater proportion of the male (76.7%) and female (80%) respondents in the study area are married. The mean age, household size, and farm size of the male and female respondents were; 49.12 and 46.30 years; 8 and 7 persons and 3.43 and 3.38 hectares, respectively.

The results of the food security status of the female showed that 48.3% of the households were food insecure and 51.7% were food secure while 63.3% of the households were food insecure and 51% were food secure. Hence, the female respondents were more food secured than the male respondents.

The results of awareness level of climate Smart Agricultural Practices among male and female respondents revealed that majority of the male (90%) and female (88.3%) respondents were highly aware of Climate Smart Agricultural Practices. Additionally, majority of the male respondents utilized organic matter (70%), whereas the female respondents utilized improved crop variety (78.3%) and in contrast the male (53.3%) and female respondents (83.3%) never utilized irrigation as Climate Smart Agricultural Practices.

The result of the perceived effect of Climate Smart Agricultural Practices among the male (65%) and female (61.4%) on increased farm productivity was observed.

Based on the constraints in Climate Smart Agricultural Practices adoption, the findings indicated that limited availability of equipment (68.4%) was a major constraint for the male respondents and access to agricultural credit (70%) was a major constraint among the female respondents in the study area.

**5.2 Conclusion**

The study analyzed gender perception on the effect of the climate smart agricultural practices on food security status of farmers in Eket Agricultural zone, Akwa Ibom State, Nigeria. Climate smart agricultural practices was mostly utilized among both gender in the study area. Furthermore, the result showed that both gender perceived the effect of CSAP’s to be positive and increased farm productivity in the study area. conclusively, the major constraints affecting the adoption of CSAP’s were limited access to credit facilities and unavailability of equipment. In spite of the constraints faced by farmers in the study area, the result from the analysis of this study showed that the Climate Smart Agricultural Practices was utilized and perceived to increase farm productivity and these practices did not have any significant effect on the male farmers but on the female farmer’s households in the study area.

**5.3 Recommendations**

Based on the findings of the study, the following recommendations are suggested;

1. Effective agricultural policies and programmes should focus on granting farmers improved access to agricultural credit and available farm equipment as these would enable them adopt and utilize climate smart agricultural practices to increase their production.
2. There is need therefore for training and re-training of extension agents on Climate smart agricultural practices to enable them disseminate same to farmers on the need to use these practices and available resources efficiently.
3. Farmers in the study area should be assisted to organize themselves into groups/ cooperatives in order to access credit facilities and land for cultivation.