



## Journal of International Women's Studies

Volume 10 | Issue 4

Article 12

May-2009

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### Recommended Citation

Torimiro, Dixon O.; Odeyinka, Simsola M.; Okorie, Victor O.; and Akinsuyi, Moses A. (2009). Gender Analysis of Socio-Cultural Perception of *Moringa Oleifera* Amongst Farmers in Southwestern Nigeria. *Journal of International Women's Studies*, 10(4), 188-202. Available at: <http://vc.bridgew.edu/jiws/vol10/iss4/12>

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## Gender Analysis of Socio-Cultural Perception of *Moringa Oleifera* Amongst Farmers in Southwestern Nigeria

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### Abstract

*Moringa oleifera* (horseradish tree - English) is a perennial plant, which has been found to possess high economic and cultural values in many countries of the world. This study was carried out to analyse the socio-cultural perception about *Moringa oleifera* according to farmers' gender in Southwestern Nigeria. It specifically established the correlates of perception of *Moringa oleifera* among the farmers; described the sociodemographics of the farmers; examined the gender gaps in the level of awareness and propagation of *Moringa oleifera*; compared their willingness to adopt innovation on *Moringa oleifera* and analysed the constraints associated with men's and women's propagation of *Moringa oleifera*. A snow-ball sampling technique was used to select equal number of male and female respondents across the region. The results revealed amongst others, that widowhood and illiteracy were the likely interlocking system, which has reshaped oppression among the female respondents. Statistically significant gender gaps or inequalities at  $P \leq 0.05$  level, existed in the level of awareness ( $F = 6.29$ ), propagation ( $F = 15.56$ ), willingness to adopt innovation ( $F = 12.61$ ) and socio-cultural perception of *Moringa oleifera* ( $F = 11.34$ ). The study concluded that the gender differential gaps could reverse the gains of innovations on *Moringa oleifera* by limiting the adoption of innovation and propagation of the plant among the farm families. It, therefore, recommended that the generated innovations should be properly screened to ensure that they do not upset the delicate economic power balance between men and women in the farming sector or widen the gender inequalities or create other vectors of oppression. So, policies that encourage women's literacy as well as access to innovations and farm labour, most especially amongst the widows are indispensable in enhancing socio-cultural perceptions and adoption of innovation as well as propagation of *Moringa oleifera* for sustainable development in Southwest Nigeria.

**Keywords:** Gender and agriculture, Women in Nigeria, *Moringa oleifera*, sustainable development

### Introduction

According to Verma *et al.* (1976) *Moringa oleifera* (horseradish tree – English) is a short, slender, deciduous, perennial tree. Almost every part of the tree is of value for

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food. *Moringa*news (2008) reported that the leaf is a power house of nutritional value. The seed is said to be eaten like a peanut in Malaya. Thickened root is used as substitute for horseradish. The Foliage is eaten as greens, in salads, in vegetable curries, as pickles and for seasoning. The root is used in Nicaragua for dropsy. *Moringa oleifera*, in the belief of some folk, does not only have high nutritional and medicinal values (Morton, 1991), but also possesses mystical power. For instance, while the India's ancient tradition of *Ayurveda* believed that the leaves of *Moringa oleifera* prevent about 300 diseases; and Hartwell (1971) had reported that the flowers, leaves and roots are used in remedies for tumors and dropsy in Nicaragua, Duke (1978) wrote that the branches are used as charms against witchcraft. More so, *Moringa oleifera* are not only planted around homes among the Hausa of Nigeria, to provide fence but also are planted on graves to prevent hyenas from exhuming corps. *Moringa oleifera* is, thus, perceived in the Hausa culture, as a sacred tree that protects both the living and the dead.

*Moringa oleifera*, because of its socio-economic and cultural importance, is raising a growing international interest among NGOs, scientists, public and private sectors. But then, it is imperative to note that while a number of studies have been carried out on the origin, morphology and chemistry of *Moringa oleifera* (Fuglie, 2001 and Olson, 2001), little or no effort has been made to unearth the prevailing gendered socio-cultural perceptions about the plant amongst its custodians (farm families). While research on chemistry of *Moringa oleifera* could lead to invention or new discovery, investigation on its prevailing gendered socio-cultural perceptions could accelerate the adoption of innovations on the plant and enhance sustainable development, most especially among the rural women, who are more vulnerable to poverty and malnutrition (Williams and Torimiro, 2008).

Adoption or rejection of an innovation has always been influenced, although at varying degree, by the complementarity of males' and females' perceptions and roles within the farm families (Ekong, 2003). For instance, Campbell and Barker (1997) reported that an innovation that increased yield in cassava and subsequently improved men's income was abandoned in Zaire because women perceived it as increasing their workloads. More so, in Latin American Community, a pipe-borne water project set up to deal with guinea worm infestation, failed because its utilisation was perceived as disrupting social interaction among women (Rogers,1995). In the same vein, Kolawole (2001) reported that a completed and functional hand-pump water project in Badagry Lagos, Nigeria was abandoned because men perceived its usage as an impediment to the progress of other house chores. Consequently, the pump was called "Wahaaladabule"-meaning trouble has come to the community. These imply that males' as well as females' perceptions are indispensable in the process of change within the farm families (Ogunlana, 2004; and Okunade, 2006). In other words, though the term "farm" because of the prevailing patriarchal system in Africa, evokes a mental picture of masculinity, the position of women folk in any issue remains cardinal in the overall development of the farm family.

In fact in Nigeria, history indicates that any policy or innovation that tends to shift the delicate economic power balance between the sexes towards the male-gender is always resisted through women's social action (Awe, 1992). For instance, the historic "Aba Women Riot of 1929" signaled the demise of warrant chief system and symbolised the first indigenous assault on colonialism, which women folk perceived as oppressive

(Martins,1988). Further, Martins (1988) wrote that “Ngwa North Women Riot of 1948” successfully entrenched the rejection of an innovation in palm oil processing that tended towards bringing male competitors into palm kernel business, which was hitherto known as women’s exclusive trade. Similarly, the same innovation in palm oil processing was kicked out of Ibibio land in 1950 through the collective action of Ibibio women who like their Ngwa North counterparts perceived the new technology as a sheer ploy to take the bread from their mouth and destroy their means of livelihood into the bargain (Martins, 1988). Therefore, depicting feminine traits as “...weak, timid, passive...” (Macionis, 1996), most especially in Nigeria agricultural sector, where women had caused many revolutions and are currently involved in all stages of agricultural production, even in the traditionally tagged “men’s job”, is rather a misnomer. More so, the female-gender carries out a higher proportion of agricultural production in the nation’s rural economy (Deji, 2008).

These invariably, underscore the need for proper documentation of women’s as well as men’s perceptions about any innovation, especially in the agrarian sector of developing economies, where female-gender through ardent of hard work is gradually but determinedly breaking the shackles of patriarchal system, which has been variously identified as the precursor for gender inequality and thus, the bane for human development (Williams and Torimiro, 2008). Accordingly, the prevailing perception of the sexes about an innovation in a given social system is the yard-stick for ascertaining its receptivity or hostility towards the new technology as well as its tools for managing the system’s natural resources, which includes the genetic resources - the building blocks of biodiversity and agriculture.

Now that many research stations are replete with innovations on *Moringa oleifera*, which have qualified the plant as “The miracle tree” (Fuglie, 2001), there is therefore, the need for empirical investigation on the prevailing socio-cultural perceptions about the plant among the farm families, especially those in Southwest of Nigeria, where paucity of such information still holds sway (Torimiro *et al.*, 2007). The study thus, addressed the following research questions: Are there differences in the sexes’ sociodemographics that could influence their perception about *Moringa oleifera*? Are there gendered differential gaps in their level of awareness, perception, propagation and willingness to adopt innovation on the plant? Do men and women face the same degree of constraints in their propagation of *Moringa oleifera*?

Accordingly, the paper, aimed at analysing the gendered socio-cultural perception about *Moringa oleifera* amongst farmers in Southwestern Nigeria. It specifically established the correlates of perception about the plant among the farmers; described the sociodemographics of the farmers by gender; examined the gender gaps in awareness, propagation, and perception of *Moringa oleifera*; compared the willingness of the male and female respondents to adopt innovation on *Moringa oleifera* and analysed the constraints associated with men’s and women’s propagation of *Moringa oleifera* vis-à-vis culture, land, finance and risk aversion.

### **Conceptual framework**

Socio-cultural perceptions about *Moringa oleifera* embody the views, superstitions, religio-magico or religio-medico practices, and gendered differences on its propagation and utilisation amongst the rural folk. Gendered socio-cultural perception is

understood to include the social construction of female and male embedded in the cultural set up of communities, which influence entitlements. Gender analysis refer to the variety of methods used to understand the relationships between men and women, their access to resources, their activities, and the constraints they face relative to each other, which provides information that recognises that gender, and its relationship with race, ethnicity, culture, class, age, disability, and/or other status, is important in understanding the different patterns of involvement, behaviour and activities that women and men have in economic, social and legal structures (Jiggins *et al.*, 1997 and Torimiro *et al.*, 2007). An analysis of gender relations provides information on the different conditions that woman and men face, and the different effects that policies and programmes may have on them because of their situations. Such information can inform and improve policies and programmes, and is essential in ensuring that the different needs of both women and men are met. This study, therefore, explored how socio-demographics, cultural beliefs, awareness, propagation and practices affect women's perceptions of *Moringa oleifera* in comparison to men's, particularly focusing on whether there were any variations. The study also explored whether women as well as men were comparatively constrained by factors like land, finance and risk aversion as well as the degree of impediment that culture offers to women's as compared to men's propagation of *Moringa oleifera*.

## **Methodology**

This study was conducted in the three states (Ekiti, Oyo and Osun) that were randomly selected out of the seven states in Southwest Nigeria by a team of scientists lead by two rural sociologists. These states are predominantly agrarian. The major agricultural produce in the Southwestern Nigeria, include: *Oryza sativa* (Rice), *Zea mays* (Maize), *vigna sp* (Cowpea), *Manihot sp.*(Cassava), *Dioscorea sp.*(Yam), *musa sp.* (Plantain/ Banana), *Citrus sp.* (Orange), *Theobroma sp.*(Cocoa ), *Saccharium sp.*( Sugar cane), *Ananas sp* (Pineapple), *Carica sp.*(Pawpaw), Kola sp. (Kola nut), *Elaeis sp.* (Oil palm) (Odeyinka and Ajayi, 2004).

A snow-ball sampling technique was used to select equal number of male and female respondents in each of the three States. A total number of one hundred and twelve respondents (comprising fifty six for each of the genders) were selected and interviewed across the States. Pre-tested and validated structured interview schedule was used to elicit quantitative data from the respondents. The data collected were summarised using descriptive statistics such as mean, standard deviation, percentage and frequency distribution. Also, Pearson correlation and One-way-ANOVA test were used to make deductions.

## **Results and Discussion**

### *Sociodemographics*

Perception is the way people organize and interpret the world around them in order to give meaning to their surroundings. The interpretation and meaning an individual derives from a reality is a function many factors like personality, age, experience, and learning. Hence, the socio-demographics of a given subjects play a fundamental role in shaping their world views (Robles-de-la-torre and Hayward, 2001). Data presented in Table 1 showed the results of the selected sociodemographics of the respondents. The mean age of the male respondents was 54.20 years with a standard deviation of 9.70

while that of the female respondents was 47.10 years with a standard deviation of 9.40. About 1.80% and 8.90% of the male and female respondents were below the age of 35 years; just as 2.50% and 28.30% of the two categories, respectively, were between 35 and 45 years. The age distribution of the male respondents was as follows: 17.80 % was between 46 and 55years; 48.30 % was between 56 and 65 years, only about 7.10 % was older than 65 years. However, among the female respondents, 41.10% and 23.20 % were between 46 and 55, and between 56 and 65 years, respectively. But unlike the male respondents, none (0.0%) of the female respondents was in age bracket older than 65 years. This indicates that there were more young female farmer-respondents in the study area, which could be as a result of the prevailing socio-cultural practices that permit the married young men to migrate to cities with or without their wives, while the married young women are allowed to travel to cities with their husbands or they remain in the rural areas (Ekong, 2003). While the majority (53.60%) of the female respondents had no formal education, only about 37.50 % of the male respondents had no formal education. About 7.10 and 3.60 % of the male and female respondents, respectively, had adult education. Also, about 14.30% and 12.50 % of the male and female respondents had incomplete primary education. About 21.40 and 17.90 % of the two categories had complete primary education; just as 5.40 and 7.10 % of the male and female respondents had incomplete secondary education. About 10.70% and 5.50 % of the male and female respondents had complete secondary education. However, while 3.60% of the male respondents had university education, none (0.0 %) of the female respondents had university education. This indicates a gender gap in formal education, which could be as a result of early marriage and teenage pregnancy that have been identified as the bane of girl child education in sub Saharan Africa (UNICEF, 2003, and Torimiro *et al.*, 2008).

About 76.80% and 87.50 % of the male and female respondents were Christians, while 23.20% and 10.70 % of the male and female respondents were Muslims. Only about 1.80 % of the female respondents were traditionalists. The mean house size of the male respondents was 7.0 with a standard deviation of 0.34 while that of the female respondents was 5.0 with a standard deviation of 0.20. Also the data showed that the majority (77.40 %) of the female respondents had household size ranging between 1 and 6, while only 44.60 % of the male respondents had household size ranging between 1 and 6. However, while many (53.60 %) of the male respondents had household size between 7 and 13, only few (22.60 %) of the female respondents had household of the same size. More so, while none (0.0 %) of the female respondents had household size between 14 and above, 1.80 % of the male respondents had household size between 14 and above. Possession of a larger household size by the male respondents relative to their female counterparts may not be unconnected with polygyny and polyandary, which are considered as value and vice, respectively, in the study area. In Africa, members of households form part of the labour force (Torimiro *et al.*, 2003), therefore, the size of male respondents' labour force would be greater than that of their female counterparts. The majorities (92.90% and 91.90%, respectively) of male and female respondents were married, just as 8.90% and 9.10% of the two categories were widowers and widows, respectively. This indicates that there were more widows than widowers in the study area, which could be a reflection of life expectancy that is 46 and 48 years for males and females, respectively (FOS, 2004). Moreover, within the African cultural context, the essence of marriage is procreation. In fact, in Nigeria, marriage is only consummated

after a woman has given birth (Jibowo, 2000). Hence, women are considered unfit for marriage after menopause, consequently, widows who have passed menopause find it difficult to remarry, however, there is no age limit for men, so, widowers easily remarry (Ekong, 2003). These imply that there are both cultural (polyandry) and natural (menopause) factors that entrenched gender inequality in household size and subsequently in labour force in the study area. About 16.10% and 48.10% of the male and female respondents had animal rearing as occupation, just as 98.10% and 51.80 % had crop farming as their major occupation. It implies, therefore, that most of the male respondents relative to their female counterparts were more involved in crop farming. This agrees with the findings of Sumberg and Mark (1985) and Torimiro et al. (2003). The traditional land tenure system, which vests authority of land ownership in men (Ekong, 2003) could, perhaps, accounts for more male respondents involving in crop farming.

With regard to sources of information on *Moringa oleifera*, about 20.70% and 41.0 % of the male and female respondents, respectively, indicated that their parents were their first source of information; 17.90% and 10.70% of the male and female categories claimed that friends were their first source of information. However, while the majority (51.0 %) of the male respondents agreed that extension agents were their first source of information, only about 1.80 % of the female respondents indicated extension agents as their first source of information. The provision of information on *Moringa oleifera* by extension agents to more male respondents relative to their female counterparts seemed to have betrayed the current emphasis on gender sensitivity in extension delivery and services in Nigeria (Jiggins *et al.*, 1997; and Torimiro *et al.*, 2007).

The income of the subjects is expressed in Naira (₦ – a symbol of Nigerian currency, USD\$1 = ₦145.2). The mean income per annum of the male respondents was ₦155, 082.00 with a standard deviation of 6966.12 while that of the female respondents was ₦ 115, 937.50 with a standard deviation of 13,408. While 91.0 % of the male respondents had annual income greater than ₦ 280, 000.00, only 1.8 % of the female respondents had annual income greater this range. The difference between the males' and the females' average incomes reflects the age-long gender inequality in the farming sector. Worst still, the standard deviation (₦13, 408) of women income is twice that of their men counterparts (₦ 6,966.12). This indicates a higher degree of income variation among the female respondents. These findings accentuate intersection theory, which states that while all women potentially experience oppression on the basis of gender, women are nevertheless, differentially oppressed by the varied intersections of other arrangements of social inequality (Collins,2000 ). Perhaps, widowhood and illiteracy are the likely interlocking system, which has reshaped oppression among the female respondents.

### **Gender gaps in some selected variables**

Data in Table 2 revealed that 65.0% and 45.0 % of the male and female respondents were aware of *Moringa oleifera*. However, only 40.10% and 15.50 % of the male and female respondents, respectively, claimed to have planted *Moringa oleifera*. With regard to the constraints in propagation of *Moringa oleifera*, while 49.0% of the female respondents identified cultural constraint, none (0.0 %) of their male counterparts was hindered by cultural constraints. Only about 12.50 % of the male respondents

claimed that insufficient land was a major obstacle to propagation of *Moringa oleifera*, however, majority (69.60 %) of the female respondents agreed that insufficient land was a major obstacle to *Moringa oleifera* propagation. The majorities (70.90% and 98.20%, respectively) of the male and female respondents, identified lack of finance as the major problem hindering propagation of *Moringa oleifera* in the study area. 3.60% and 29.10 % of the male and female respondents, respectively, claimed that risk aversion was their major constraint in propagation of *Moringa oleifera*. While 94.40% of the male respondents claimed to be willing to adopt innovation on *Moringa oleifera*, only about 23.6% of the female respondents indicated readiness to adopt innovation on *Moringa oleifera*. These indicate that gender gaps exist in awareness, propagation, constraints to propagation and adoption of innovation on *Moringa oleifera*. The causes of these gender gaps have too often been linked to the biologically determined differences between females and males, and, therefore, perceived to be "natural" and unchangeable. But worthy of note is the fact that the biological differences between females and males are constant and universal, whereas the gender gaps differ between cultures and change over time. Accordingly, rather than being anchored in human biology, gender gaps are caused by social structures. For instance, the gender gap that exists in risk aversion could be a reflection of the gender gap in formal education, as Kolawole (2001) had reported a significant but negative relationship between risk aversion and formal education in the study area. Therefore, the gender gaps in awareness, propagation, constraints to propagation and adoption of innovation on *Moringa oleifera* cannot be a product of the differences in anatomical configurations of men and women, but rather an index of some socio-politico-cultural structures, which give undue advantages to males over their female counterparts.

### **Respondents' perception of *Moringa oleifera***

Data presented in Table 3 showed ten perceptual statements, which were validated and presented to the respondents for their responses against a likert scale ranging from strongly agree to strongly disagree. 60.0% and 20.0% of the male and female respondents, respectively, strongly agreed that *Moringa oleifera* is of great economic importance. While about 58.0 % of the male respondents strongly agreed that *Moringa oleifera* is of great cultural value to the community, only 1.8 % of the female respondents strongly agreed that *Moringa oleifera* is of great cultural value to the community. Majority (57.0 %) of the male respondents strongly agreed that farmers in the community will adopt innovation on *Moringa oleifera* if introduced into the community. The majority (56.0 %) of the female respondents were, however, undecided that farmers in the community will adopt innovation on *Moringa oleifera* if introduced into the community. The perceptual mean scores for male and female respondents were 40.50 and 26.80, respectively. The study also revealed that 23.40% and 5.40 % of the male and female respondents had favourable perception; just as 64.0% and 65.0% had indifferent perception of *Moringa oleifera* but 22.60% and 22.90 % of the two categories, had unfavourable perception of *Moringa oleifera*.

### **Correlates of perception of *Moringa oleifera***

Data presented in Table 4 showed that at  $p \leq 0.05$  level of significance, income ( $r = 0.384$ ), awareness ( $r = 0.330$ ) and propagation ( $r = 0.285$ ) had positive and significant



relationship with perception of *Moringa oleifera*. These imply that if the levels of income, awareness and propagation are raised, the farmers' perception of *Moringa oleifera* would be favourably increased. Age ( $r = - 0.264$ ) had significant but negative relationship with perception of *Moringa oleifera*. ANOVA result revealed that at  $p \leq 0.05$  level of significance, there were significance differences between male and female respondents' levels of awareness ( $F = 6.29$ ), propagation ( $F = 15.56$ ), willingness to adopt innovation on *Moringa oleifera* ( $F = 12.61$ ), and perception on *Moringa oleifera* ( $F = 11.34$ ). Therefore, the gender gaps observed in the level of awareness, propagation and perception of *Moringa oleifera* were statistically significant.

### **Conclusion and recommendation**

The mean age of the male respondents was 54.20 years with a standard deviation of 9.70 while that of the female respondents was 47.10 years with a standard deviation of 9.40. The difference between the males' and the females' average incomes reflects the age-long gender inequality in the farming sector while the standard deviation of women income, which was twice that of their men counterparts indicates a higher degree of income variation among the female respondents. Widowhood and illiteracy were the likely interlocking system, which has reshaped oppression among the female respondents. More so, greater number of men was willing to adopt innovation on *Moringa oleifera* in the study area than women. The number of male respondents, who had favourable socio-cultural perception of *Moringa oleifera*, was about four times that of the female respondents who had the same perception about *Moringa oleifera*. Statistically, significant gender gaps or inequalities were found in the level of awareness, perception and propagation of *Moringa oleifera*. Economic constraints and socio-politico-cultural dynamics like financial constraint and land tenure system, respectively, amongst others, were identified as the bane of favourable socio-cultural perception, especially amongst the female respondents. These apparent gender inequalities and vectors of oppression (widowhood and illiteracy) amongst the farm family could jeopardise the adoption of the current innovations on *Moringa oleifera*. These, therefore, underscore the need for putting in place adequate measures to accelerate the elimination of the observed "matrix of domination" (widowhood and illiteracy) as well as the identified gender inequalities. Also, the generated innovations should be properly screened to ensure that they do not upset the delicate economic power balance between men and women in the farming sector or widen the gender inequalities or create other vectors of oppression. So, policies that encourage women's literacy as well as access to innovations and farm labour, most especially amongst the widows are indispensable in enhancing socio-cultural perceptions and adoption of innovation as well as propagation of *Moringa oleifera* for sustainable development in Southwest Nigeria.

### **Appendix**

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**Table 1: Distribution of respondents according to their socio-economic characteristics**

| Variable              | Males     |            | Females    |            |
|-----------------------|-----------|------------|------------|------------|
|                       | Frequency | %          | Frequency  | %          |
| <b>Age</b>            |           |            |            |            |
| < 35                  | 1         | 1.8        | 5          | 8.9        |
| 35-45                 | 16        | 28.6       | 14         | 25         |
| 46-55                 | 10        | 17.8       | 23         | 41.1       |
| 56-65                 | 27        | 48.3       | 12         | 23.2       |
| > 65                  | 4         | 7.1        | 0.0        | 0.0        |
| <b>Total</b>          | <b>56</b> | <b>100</b> | <b>56</b>  | <b>100</b> |
| <b>Education</b>      |           |            |            |            |
| No formal education   | 21        | 37.5       | 30         | 53.6       |
| Incomplete primary    | 08        | 14.3       | 12         | 21.4       |
| Complete primary      | 12        | 21.4       | 10         | 17.9       |
| Incomplete secondary  | 03        | 5.4        | 4          | 7.1        |
| Complete secondary    | 06        | 10.7       | 4          | 7.1        |
| University education  | 02        | 3.6        | 1          | 1.8        |
| <b>Total</b>          | <b>56</b> | <b>100</b> | <b>100</b> |            |
| <b>Religion</b>       |           |            |            |            |
| Christianity          | 43        | 76.8       | 49         | 87.5       |
| Islam                 | 13        | 23.2       | 6          | 10.7       |
| Traditional           | 0.0       | 0.0        | 1          | 1.80       |
| <b>Total</b>          | <b>56</b> | <b>100</b> | <b>56</b>  | <b>100</b> |
| <b>Marital Status</b> |           |            |            |            |
| Single                | 0.0       | 0.0        | 0.0        | 0.0        |
| Married               | 52        | 92.9       | 51         | 91.9       |

|                                    |           |            |           |             |            |        |
|------------------------------------|-----------|------------|-----------|-------------|------------|--------|
| Widowed                            |           | 4          | 7.1       |             | 5          | 8.1    |
| <b>Total</b>                       | <b>56</b> | <b>100</b> |           | <b>56</b>   | <b>100</b> |        |
| <b>Household Size</b>              |           |            |           |             |            |        |
| 1- 6                               | 25        | 44.6       |           | 43          | 77.4       |        |
| 7- 13                              | 30        | 53.6       | X = 6.9   | 13          | 22.6       | X= 5.4 |
| 14 and above                       | 1         | 1.8        | Sd = 0.34 |             | 0.0        | 0.0    |
| Sd= 0.2                            |           |            |           |             |            |        |
| <b>Total</b>                       | <b>56</b> | <b>100</b> |           | <b>56</b>   | <b>100</b> |        |
| <b>Occupation*</b>                 |           |            |           |             |            |        |
| Mix farming                        | 56        | 100        |           | 56          | 100        |        |
| Non-farming enterprise             |           | 1          | 1.8       |             | 23         | 41.1   |
| <b>Income per annum in Naira**</b> |           |            |           |             |            |        |
| <20,000                            |           | 0.0        | 0.0       |             | 0.0        | 0.0    |
| 20,000 – 60,000                    |           | 1          | 1.8       |             | 7          | 12.6   |
| 61,000 – 80,000                    |           | 0.0        | 0.0       | X = 155,000 | 4          |        |
| 7.2 X = 115,000                    |           |            |           |             |            |        |
| 81,000 – 120,000                   |           | 0.0        | 0.0       | Sd = 6,966  | 22         |        |
| 39.6 Sd = 13408                    |           |            |           |             |            |        |
| 121,000 –160,000                   |           | 0.0        | 0.0       |             | 13         | 39.6   |
| 161,000 – 200,000                  |           | 1          | 1.8       |             | 7          | 12.6   |
| 201,000 – 240,000                  |           | 0.0        | 0.0       |             | 2          | 3.6    |
| 241,000 – 280,000                  |           | 1          | 1.8       |             | 0.0        | 0.0    |
| >280,000                           |           | 51         | 91        |             | 1          | 1.8    |
| <b>Total</b>                       | <b>56</b> | <b>100</b> |           | <b>56</b>   | <b>100</b> |        |
| <b>First Source of information</b> |           |            |           |             |            |        |
| Parents                            | 9         | 16.1       |           | 6           | 10.7       |        |
| Fellow farmers                     |           | 10         | 17.9      |             | 0.0        | 0.0    |
| Friends                            |           | 10         | 17.9      |             | 6          | 10.7   |
| Extension Agents                   |           | 27         | 48.2      |             | 1          | 1.8    |
| No response                        | 0.0       | 0.0        |           | 43          | 60.7       |        |
| <b>Total</b>                       | <b>56</b> | <b>100</b> |           | <b>56</b>   | <b>100</b> |        |

Source: Field Survey, 2007 \* Multiple responses,.

X = Mean, Sd = Standard deviation, \*\* N 145 = 1 US\$

**Table 2; Gender gaps in some selected variables**

|                               |           | Males      |            |            |     |
|-------------------------------|-----------|------------|------------|------------|-----|
| Females                       |           |            |            |            |     |
| Variables                     |           | Frequency  | %age       | Frequency  |     |
| %age                          |           |            |            |            |     |
| <b>Awareness</b>              |           |            |            |            |     |
| Yes                           | 36        | 65         | 25         | 45         |     |
| No                            | 20        | 35         | 31         | 55         |     |
| <b>Total</b>                  | <b>56</b> | <b>100</b> | <b>100</b> | <b>100</b> |     |
| <b>Propagation</b>            |           |            |            |            |     |
| Yes                           | 23        | 40.1       | 9          | 15.5       |     |
| No                            | 33        | 59.9       | 47         | 84.5       |     |
| <b>Total</b>                  | <b>56</b> | <b>100</b> | <b>100</b> | <b>100</b> |     |
| <b>Cultural constraints</b>   |           |            |            |            |     |
| Yes                           | 00        | 00         | 27         | 48         |     |
| No                            | 56        | 100        | 29         | 52         |     |
| <b>Total</b>                  | <b>56</b> | <b>100</b> | <b>100</b> | <b>100</b> |     |
| <b>Land constraints</b>       |           |            |            |            |     |
| Yes                           | 07        | 12.5       | 39         | 69.6       |     |
| No                            | 49        | 81.5       | 17         | 30.4       |     |
| <b>Total</b>                  | <b>56</b> | <b>100</b> | <b>100</b> | <b>100</b> |     |
| <b>Financial constraints</b>  |           |            |            |            |     |
| Yes                           | 39        | 70.1       | 55         | 98.2       |     |
| No                            | 17        | 29.9       | 1          | 1.8        |     |
| <b>Total</b>                  | <b>56</b> | <b>100</b> | <b>100</b> | <b>100</b> |     |
| <b>Risk aversion</b>          |           |            |            |            |     |
| Yes                           | 54        | 3.6        | 16         | 29.1       |     |
| No                            | 02        | 96.4       | 40         | 3.6        |     |
| <b>Total</b>                  | <b>56</b> | <b>100</b> | <b>100</b> | <b>100</b> |     |
| <b>Adoption of innovation</b> |           |            |            |            |     |
| Yes                           | 53        | 94.4       | 13         | 23.4       |     |
| No                            | 03        | 5.6        | 43         | 72.6       |     |
| <b>Total</b>                  | <b>56</b> | <b>100</b> | <b>100</b> | <b>100</b> |     |
| <b>Perception</b>             |           |            |            |            |     |
| Favourable                    |           | 13         | 23.4       | 3          | 5.4 |
| Indifference                  | 36        | 64         | 36         | 65         |     |
| Unfavourable                  | 7         | 22.6       | 17         | 29.6       |     |
| <b>Total</b>                  | <b>56</b> | <b>100</b> | <b>100</b> | <b>100</b> |     |

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(95.4) (0.0) (3.6) (0.0) (0.0) (0.0) (5.4)  
 (41.4) (54.0) (0.0)  
 Field Survey, 2007

**Table 4: Correlates of Perception of *Moringa oleifera***

| Variables                       | r      | r <sup>2</sup> |
|---------------------------------|--------|----------------|
| Awareness                       | 0.330  | 0.11           |
| Willingness to adopt innovation | 0.285  | 0.08           |
| Age                             | -0.264 | 0.07           |
| Income                          | 0.384  | 0.15           |

Field Survey, 2007

**Table 5: One-way Analysis of Variance Result**

| Variables  |                | Sum of Squares       | Df  | Mean Square         | F-value | Significance |
|------------|----------------|----------------------|-----|---------------------|---------|--------------|
| Age        | Between Groups | 1393.080             | 1   | 1393.080            | 15.350  | .000**       |
|            | Within Groups  | 9982.911             | 110 | 90.754              |         |              |
|            | Total          | 11375.991            | 111 |                     |         |              |
| House size | Between Groups | 64.021               | 1   | 64.021              | 14.421  | .000**       |
|            | Within Groups  | 475.006              | 107 | 4.439               |         |              |
|            | Total          | 539.028              | 108 |                     |         |              |
| Income     | Between Groups | 4251725359<br>8.485  | 1   | 42517253<br>598.485 | 6.781   | .010**       |
|            | Within Groups  | 6834009130<br>68.182 | 109 | 62697331<br>47.415  |         |              |
|            | Total          | 7259181666<br>66.667 | 110 |                     |         |              |
| Awareness  | Between Groups | 1.509                | 1   | 1.509               | 6.285   | .014*        |
|            | Within Groups  | 26.411               | 110 | .240                |         |              |
|            | Total          | 27.920               | 111 |                     |         |              |
| Adoption   | Between Groups | 417.420              | 1   | 417.420             | 12.612  | .002**       |
|            | Within Groups  | 3.537E-02            | 107 | 3.568E-02           | 19.617  | .001**       |
|            | Total          | 3.853                | 108 |                     |         |              |
| Perception | Between Groups | 249.009              | 1   | 249.009             | 11.337  | .001**       |
|            | Within Groups  | 2415.982             | 110 | 21.963              |         |              |
|            | Total          | 2664.991             | 111 |                     |         |              |

Field survey, 2007.

Df = Degree of freedom

\*\* Significance at  $P \leq 0.01$

\* Significance at  $P \leq 0.05$