

Rural Women's Use of Dry Season Vegetable Production Technologies in Owerri Agricultural Zone of Imo State, Nigeria

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Abstract

The nutritional importance of vegetables to human health and general wellbeing cannot be overemphasized. This study therefore, assessed rural women's level of use of dry season vegetable production technologies introduced by the extension agents in Imo State. The specific objectives were to: describe the socio-economic characteristics of the women farmers in the area, identify their sources of agricultural information, ascertain the common vegetables grown by the women, identify the production technologies disseminated to them and their level of use of these technologies in the area, and identify the constraints faced by the women. Structured questionnaire was used to collect data from 120 respondents. The data were analyzed using frequency distribution, percentage and mean. The results showed that the respondents were moderately educated and majority (91.07%) of them belonged to different social organizations. Their major sources of information include radio/TV (43.33%), extension agents (46.67%) and fellow farmers (65%). Common vegetables grown include waterleaf, fluted pumpkin, green, among others. The women were aware of the different dry season vegetable production technologies disseminated to them and they moderately used them. They were however constrained by poor financial resources ($\bar{x} = 2.48$) and the challenges of water for irrigation ($\bar{x} = 2.57$). The study recommended, among others, that both government and non-governmental organizations should provide soft loans or grants to the women so as to enable them purchase relevant farm inputs and equipment.

Keywords: Vegetable production, dry season, technologies, rural women, Imo State

1.0 Introduction

The place of vegetables in balancing the natural nutrient requirements of human nutrition can never be over-emphasized. Vegetables are natural sources of vitamins A, B, C, D, E, minerals and sometimes fats and oils (Ezeibe, 2011). He noted that vegetables equally supply essential micronutrients in human nutrition that act as preventive agents to several ailments. For example *Telfairica occidentalis* leaves extract is regarded as blood tonic in Nigeria where it is taken solely or with addition of honey or milk for stressed and anaemic patients.

Vegetables are produced and consumed in large proportions, especially in southern Nigeria. According to Enete and Okon (2010) fluted pumpkin production has become a major occupation of many small scale producers in both rural and semi-urban communities of Abia State. Similarly, Mlozi (2003) noted that increase in vegetable production may improve food security and offer employment opportunities to the populace, especially women who form a substantial production community. According to CBN (2004)

vegetable production contributed about 4.64% of the total staple food production between 1970 and 2003. Vegetable production offers significant opportunity for poor women to earn a living as producers and traders, since it requires relatively low capital. Thus vegetable production plays an important role in income generation and subsistence. Odiaka, et al (2008) noted that *telfairica* is now being cultivated, not only as backyard but also as commercial crop during the wet and dry seasons. Kebede and Gan (1999) noted that the main sources of farm income for small and limited resource farmers are basically arable crop production, vegetables and non-vegetables, while FAO (2006) equally noted that there has been a rise in production of vegetables in general, induced by growing public demand, driven in large part by enhanced consumer awareness of the dietary and health benefits of fresh vegetable consumption.

Vegetable production during the dry season is in the form of small scale low cost irrigation system (Hart, et al., 2005). However, it is noteworthy that under this system, farmers in Nigeria obtain very low yield compared to global yield (Singh and Mohammed,

2006). Dry season vegetable farming constitutes a source of income and employment to rural farmers in Owerri Zone of Imo State (Kadurumba, et al., 2011). They further noted that apart from the nutritional benefits and income-generating potentials of backyard vegetable production, it equally plays a crucial role in off-setting the food budget of household involved.

A balanced diet should contain 250-325g of vegetables and the average human requirement for vegetables is 285/person/day for a balanced diet (Attarvar, 2000). However, Hart, et al (2005) noted that in Nigeria, vegetable consumption range from 59-130g/person/day during the months of May-June, the peak season of vegetable production. This range is far below the recommended average (285g/person/day) and is even lower during the dry season. Dry season vegetable production is one of the Women-in-Agriculture (WIA) programmes of Imo State Agricultural Development programme (ADP). Several dry season vegetable production technologies have also been disseminated to the women. What is not certain is how far the women have need these technologies. This study therefore, assessed the extent the women have adopted and used these technologies in producing vegetables during the dry season. Hence, the following research questions were addressed:

- What are the socio-economic characteristics of the women?
- What are their sources of agricultural information on vegetable production?
- What are the common vegetables grown by the women?
- To what extent have they adopted and used the listed vegetable production technologies?
- What factors constrain their increased productivity?

The specific objectives of the study included to: describe the socio-economic characteristics of the women; ascertain their sources of agricultural information on vegetable production; identify the common vegetables grown by the women; determine to what extent the women have used the recommended dry season vegetable production technologies; and, ascertain the constraints faced by the women in vegetable production.

2.0 Materials and Methods

The study was carried out in Owerri Agricultural Zone of Imo State. The zone has ten (10) Local Government Areas (LGAs). Common crops grown

include Cassava, Yam, Maize and a wide variety of vegetables.

A multi-stage random sampling technique was used to select one hundred and twenty (120) women dry season vegetable farmers for the study. In the first stage, four (4) LGAs were randomly selected. In the second stage, three (3) communities were also randomly selected from each of the four LGAs. In the final stage, ten (10) vegetable farmers were equally randomly selected from each of the communities, giving a total of 120 farmers. The ADP extension staff in the zone helped in the selection process and also assisted in data collection. Data were collected using validated structured questionnaire and interview schedule. The literate farmers were given the questionnaire to fill while the interview schedule was used to collect information from illiterate ones. Information was sought from the farmers on their socio-economic characteristics, sources of agricultural information, common vegetables grown, extent of use of the listed technologies and constraints faced. The data collected were analyzed using descriptive statistics such as frequency tables, percentages and means. Data on extent of use of the technologies and constraints were analyzed using mean score. This was achieved by using a three-point Likert-type rating scale of: to a very large extent (3), to a large extent (2) and, to a little extent (1) and, very serious (3), serious (2) not serious (1). The values were computed thus: $3+2+1 = 6/3 = 2.00$. Therefore, any mean score greater or equal to 2.00 was regarded as "to a large extent" or "serious" respectively, while any mean score less than 2.00 was regarded as "to a little extent" or "not serious" respectively.

The mean scores were computed using the formular:

$$\bar{x} = \frac{\sum fx}{N}$$

Where: \bar{x} = Mean Score

= Summation sign

f = No. of respondents in each row
(frequency)

x = nominal value of each response

category (3,2,1)

N = Sample Size

3.0 Results and Discussion

3.1 Socio-economic Characteristics of the Women Vegetable Farmers

Table 1: Distribution of respondents according to socio-economic characteristics (n=120)

| | Socio-economic characteristics | Frequency | Percentage (%) | Mean |
|-----|--|-----------|----------------|-----------|
| 1. | Age range (yrs) | | | |
| | 21 – 30 | 18 | 15.00 | |
| | 31 – 40 | 38 | 31.67 | |
| | 41 – 50 | 34 | 28.33 | 45.58 yrs |
| | 51 – 60 | 21 | 17.50 | |
| | Above 60 | 9 | 7.50 | |
| 2. | Marital status | | | |
| | Single | 30 | 25 | |
| | Married | 90 | 75 | |
| 3. | Educational status | | | |
| | No formal education | 15 | 12.50 | |
| | Primary education | 35 | 29.16 | |
| | Secondary education | 50 | 41.67 | |
| | Tertiary education | 20 | 16.67 | |
| 4. | Farm involvement | | | |
| | Full time | 75 | 62.50 | |
| | Part time | 45 | 37.50 | |
| 5. | Farm size | | | |
| | 0.1 – 0.5ha | 25 | 20.83 | |
| | 0.6 – 1ha | 35 | 29.17 | |
| | 1.1 – 1.5 ha | 41 | 34.17 | 1.06ha |
| | 1.6 – 2 ha | 10 | 8.33 | |
| | Above 2ha | 9 | 7.50 | |
| 6. | Farming experience | | | |
| | 1 – 10 years | 34 | 28.33 | |
| | 11 – 20 years | 47 | 39.17 | |
| | 21 – 30 years | 25 | 20.83 | 17.08 yrs |
| | Above 30 years | 14 | 11.67 | |
| 7. | Household size | | | |
| | 1 – 3 | 26 | 21.67 | |
| | 4 – 6 | 42 | 35.00 | 6 persons |
| | 7 – 9 | 40 | 33.33 | |
| | Above 9 | 12 | 10.00 | |
| 8. | Membership of social organization | | | |
| | Member | 110 | 91.67 | |
| | Non-member | 10 | 8.33 | |
| 9. | Cropping system | | | |
| | Mono cropping | 12 | 10.00 | |
| | Mixed cropping | 108 | 90.00 | |
| 10. | Extension visit | | | |
| | Regularly | 42 | 35.00 | |
| | Once in a while | 68 | 56.67 | |
| | Not at all | 10 | 8.33 | |

Source: Field survey data, 2014

Results in Table 1 show that majority of the respondents (60%) fall within the age range of 31-50 years, with mean age of about 45 years. This implies that the women are within the active and productive age, necessary for carrying out dry season vegetable production activities. Also majority (75%) of the women are married. Marriage confers higher level of responsibility and prestige. Also income from the sale of the vegetables will help sustain the family. The table equally reveals that more than half (70%) have acquired at least secondary education. Education or literacy is important in the adoption and use of agricultural technologies. The table equally shows that some of the farmers engage in other activities such as petty trading and civil service. These serve as sources of additional income to the families. The table also shows that majority (84.17 %) of the respondents cultivate less than 2 ha of farm land. This agrees with Ibeawuchi et al,

(2007) who reported that most vegetable farmers in south-eastern Nigeria are small farm holders. The table also shows that majority (60%) of the women have farming experience of 11-30 years, with mean farming experience of 17 years. This is expected to have positive influence on adoption and use of technologies. The mean household size is 6 persons. High household size can serve as source of family labour. Majority (91.67%) belong to one social organization or the other, which can serve as important source of farm information and experience sharing. Majority (90 %) of the farmers practice mixed cropping which is an insurance against the failure of one crop and also increases income. Most of the farmers (56.67 %) are visited by extension agents once in a while. Extension agents serve as important source of farm information and education and therefore need to visit the farmers regularly.

3.2 Sources of Farm Information

Table 2: Distribution of respondents according to sources of information

| Sources of information | Frequency* | Percentage (%) |
|------------------------|------------|----------------|
| Other farmers | 78 | 65.00 |
| Radio/TV | 52 | 43.33 |
| Extension agents | 56 | 46.67 |
| Newspaper/magazine | 12 | 10.00 |

Source: Field survey data, 2014 *multiple responses

Table 2 reveals that fellow farmers (65%), extension agents (46.17%) and radio/TV (43.33%) constitute major sources of information to the farmers. The

result is similar to the findings of Nwakor, Ifenkwe and Onummadu (2009) and Ibrahim, Adejoh and Edoke (2009) who identified Radio, TV, Extension workers, fellow farmers, friends, among others, as major sources of information to farmers.

3.3 Types of Vegetables Grown

Table 3: Distribution of respondents according to vegetables grown

| Vegetable | Frequency* | Percentage (%) |
|--|------------|----------------|
| Fluted pumpkin (<i>Telfairia occidentalis</i>) | 92 | 76.67 |
| Waterleaf (<i>Talinum triangulare</i>) | 102 | 85.00 |
| Green (<i>Amaranthus cruentus</i>) | 68 | 56.67 |
| Solalum (<i>Solalum species</i>) | 64 | 53.33 |
| Scent leaf (<i>Occimum viridis</i>) | 52 | 43.33 |
| Utazi (<i>Congronema latifolium</i>) | 44 | 36.67 |
| Curry leaf (<i>Muraya koenigi</i>) | 54 | 45.00 |

Source: Field survey, 2014 *multiple responses

Table 3 reveals that the common vegetables grown by the farmers include: fluted pumpkin (76.67%), water leaf (85%), green (56.67%) and curry (45%), among others. The growing of different kinds of

vegetables is probably to satisfy different consumer demands in the state. This practice also helps to insure against the failure of one crop or the other and equally helps to boost the income of the farmers.

3.4 Extent of Use of Technologies

Table 4: Distribution of respondents according to extent of use of technologies

| Technologies | To a very large extent | To a large extent | To a little extent | \bar{x} | Remark |
|------------------------|------------------------|-------------------|--------------------|-----------|------------------|
| Nursery practices | 62(51.67) | 41(34.16) | 17(14.12) | 2.38 | To a large ext. |
| Use of treated seeds | 16(13.33) | 40(33.33) | 64(53.33) | 1.60 | To a little ext. |
| Bed preparation | 22(18.33) | 38(31.67) | 60(50.00) | 1.68 | To a little ext. |
| Irrigation | 64(53.33) | 48(40.00) | 8(6.67) | 2.47 | To a large ext. |
| Regular weeding | 72(60.00) | 46(38.33) | 2(1.67) | 2.58 | To a large ext. |
| Fertilizer application | 24(20.00) | 40(33.33) | 56(46.67) | 1.00 | To a little ext. |
| Use of insecticides | 30(25.00) | 38(31.67) | 52(43.33) | 1.82 | To a little ext. |
| Prompt harvesting | 72(60.00) | 44(34.67) | 4(3.33) | 2.57 | To a large ext. |

$\bar{x} \geq 2.00$ means “to a large extent”

Percentages are in parenthesis

$\bar{x} < 2.00$ means “to a little extent”

Table 4 reveals that the farmers used the following technologies to a large extent: regular weeding ($\bar{x} = 2.58$), prompt harvesting ($\bar{x} = 2.57$), irrigation ($\bar{x} = 2.47$) and nursery practices ($\bar{x} = 2.38$). They however, used the following to a little extent: insecticide application ($\bar{x} = 1.60$) and fertilizer application ($\bar{x} = 1.00$). Prompt and effective adoption and use of farm technologies are expected

to enhance productivity. The low use of treated seeds, fertilizers and insecticides application may be due to non-availability or high cost of these essential farm inputs. This situation may consequently lead to poor yield and low income for the farmers. Provision of panacea to these challenges will definitely boost productivity.

3.5 Perceived Production Constraints

Table 5: Distribution of respondents according to perceived production constraints

| Constraints | Very serious | Serious | Not serious | \bar{x} | Remark |
|-------------------------|--------------|-----------|-------------|-----------|---------|
| Low capital outlay | 78(65.00) | 22(18.33) | 20(16.67) | 2.48 | Serious |
| High cost of chemicals | 76(63.33) | 30(25.00) | 14(11.67) | 2.52 | Serious |
| High cost of labour | 68(56.67) | 34(28.33) | 18(15.00) | 2.42 | Serious |
| Problem of water supply | 80(66.67) | 28(23.33) | 12(10.00) | 2.57 | Serious |
| Labour intensive nature | 72(60.00) | 35(29.67) | 13(10.83) | 2.57 | Serious |
| Poor yield | 66(55.00) | 43(35.83) | 11(9.17) | 2.45 | Serious |
| Transportation problem | 62(51.67) | 42(35.00) | 16(13.33) | 2.38 | Serious |
| Poor extension visit | 71(59.17) | 28(23.33) | 21(17.50) | 2.41 | Serious |
| Poor market situation | 69(57.50) | 36(30.00) | 15(12.50) | 2.45 | Serious |

$\bar{x} \geq 2.00$ means “serious”

percentages are in parenthesis

$\bar{x} < 2.00$ means “not serious”

Table 5 shows that the farmers perceived all the listed constraints as serious challenges confronting their enhanced productivity. These include: high cost of chemicals ($\bar{x} = 2.57$), low capital outlay ($\bar{x} = 2.48$), poor yield ($\bar{x} = 2.45$), among others. Solution to these problems would enhance productivity. The result is similar to the findings of Ezeibe (2011) who identified lack of inputs (fertilizer, herbicides, etc), poor yield, high cost of labour, lack of fund, poor market among others, as constraints to pumpkin production by rural women farmers in Abia State.

4.0 Conclusion and recommendations

The study has shown that most of the farmers are relatively young, fairly educated and have many years of farming experience but are small farm holders. They rely mainly on fellow farmers, extension agents and radio/TV for their farm information and equally grow a wide variety of vegetables. The technologies which the farmers use to a large extent include: regular weeding, prompt harvesting, irrigation and nursery practices. They are however, constrained by the following factors: problem of water supply, labour intensive nature of the work, high cost of chemicals, low capital, poor yield, among others. Based on key findings, the following recommendations are made:

- Government, individuals and non-governmental organizations should provide soft loans and grants to these resource poor farmers to boost their production.
- Also water pumping machines can be given to these farmers at reduced cost to aid irrigation processes.
- The state ADP should employ, train and post more extension agents to assist the farmers.
- Extension agents should encourage the farmers to form associations so as to enjoy the advantages of bulk purchase and sale of their products.

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