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## Needs and constraints of Citrus marketers in North-central Nigeria

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### **Abstract**

Highest proportion of citrus produced in Nigeria is marketed locally. The study assessed Citrus marketing in the North Central zone of Nigeria an area noted for large production of Citrus. Questionnaire was used to collect data from forty-six respondents which were analyzed using descriptive statistics. Most respondents were male (58%), married (82.6%), had secondary education (43.5%) with 71.7% within 20-40 years. Majority (71.6%) sourced produce from farmers or assemblers (65.2%) and sold in jute bags/sacks 78.3%. Prominent information needs among respondents were on health (76.1%), marketing channels and loan procurement (73.9%). Training required was mostly on citrus processing and health empowerment (73.9%). Moreover, 52.2% of citrus marketers packaged the fruits in sacks, jute bag/sacks were the most preferred mode of packaging (69.6%), and 78.3% were not aware of plastic crates. Challenges encountered in citrus marketing were high cost of transportation and perishability of citrus fruits (78.3% respectively). The study recommends capacity building of citrus marketers on appropriate post-harvest handling and citrus processing. It is important to enforce a standard unit of measurement which would contribute to enhancing the livelihoods of the marketers.

**Key words:** training needs, challenges, citrus marketing, perishability, packaging, jute bags/sacks

### **Introduction**

Citrus is among the ten most popular fruits globally with the largest commercial cultivation in Brazil and China. According to Food and Agriculture Organization's report of 2007, Nigeria is rated as the 9<sup>th</sup> Citrus producing country with annual average production capacity of about 3,325,000 tones. Citrus is one of the most widely grown fruit trees in sub-tropical Africa and it is believed that it was introduced into the region by the colonial administration and missionaries. It is fully adapted within the cropping systems of the country. The varied ecological and climatic conditions suitable for production of citrus gives Nigeria immense comparative advantage and the potential to lead the world in citrus production (Olife *et al.*, 2015).

Citrus production in Nigeria is concentrated in the guinea and sudan Savannah zones (Olaniyan, 2004). In 2012, about 3,900,000 tonnes of citrus was produced from an estimated land area of 800,000 hectares (FAO, 2014). Citrus is being produced in about 14 states across the federation especially in Benue and Nasarawa states (IITA, 2001). Citrus is one of the ten most widely cultivated and important fruits crops in Nigeria and is mostly consumed fresh and sometimes used in industrial processing (IITA, 2001). Oranges form the bulk of citrus fruits produced in Benue state (one of the major producing areas in Nigeria) while some quantities of limes, lemons and grape fruits are also being produced in the state (Onyenobi *et al.*, 2009). A myriad of

challenges are faced in citrus production such as lack of access to high quality seedlings, lack of well-structured/organized markets, inadequate market infrastructure for handling the perishable nature of citrus fruits, among others (Lenne and Ward, 2010; Lyatad *et al.*, 2009). Citrus is mostly cultivated in North central Nigeria especially in Benue state. Despite that large area of land is put to citrus production is increased; increase in the land area is not equivalent to the yield experienced which is as a result of factors limiting increased production (Bhat *et al.*, 2015). These constraints are faced in the areas of production, harvesting, marketing, storage, processing, among others (Chase, 2007). About 30-50% post-harvest losses is experienced in citrus production before the fruits get to the final consumers in urban centres (Taiwo, 2005). Since marketing is one of the identified constraints in citrus value chain, it is imperative to examine the needs and constraints of citrus marketers so as to improve marketing of the fruit in the North central zone of Nigeria.

Fruit marketing system in Nigeria is observed to consist of three stages: smallholder farmers that offer small surpluses to traders in the village markets, traders that move the accumulated produce along the market channel to secondary collection centers. Lastly is the movement of produce to central wholesale markets in urban centers. It is transported to urban central wholesale markets mainly in open, non-refrigerated trucks with capacities ranging from less than 10 tonnes to up to 30 tonnes (Aworh, 2005). Citrus fruits produced in Nigeria are mostly consumed locally without much value addition.

Fresh fruits and vegetables are inherently more liable to deterioration under tropical conditions characterized by high ambient temperatures and humidity and a high incidence of pests and diseases. Post-harvest losses of fruits and vegetables are extremely high (30-50 %) in Nigeria due to poor marketing, distribution and storage systems (Busari *et al.*, 2015). Consequently, mechanical damage to produce as a result of impact, bruising, compression and vibration during transportation and poor transport conditions, including bad roads, account for a good part of the post-harvest losses of fruits and vegetables in the country.

Previous studies on citrus have assessed factors limiting the production of citrus among smallholder farmers in Benue state (Attah *et al.*, 2018); determined agronomic practices involved in citrus fruit production in Benue state (Ortese *et al.*, 2012); examined the impact of citrus farming on socioeconomic status of farmers in Benue state (Christopher and Edoh 2020). In the same vein, Fakayode *et al.*, 2010 examined the viability of sweet orange market and profile of sweet orange marketing in Kwara state; while Oyedele and Yahaya 2010 assessed the attitude of citrus farmers towards training on improved production techniques as well as constraints to citrus production in Southwest Nigeria. Moreover, Tiri *et al.*, 2015 assessed the factors affecting marketing efficiency of sweet orange markets in Kano metropolis and specially examined the problems militating against marketing of sweet orange. However, none of these studies specifically examined the needs and constraints of citrus marketers in North central Nigeria (Benue and Nasarawa states) as considered in this study.

In light of this, the study is necessary as it will furnish us with the needs and constraints of citrus marketing especially in the largest citrus producing zone in Nigeria. The specific objectives of the study were to:

- i. determine marketers' socio-economics characteristics
- ii. identify information and training needs of marketers
- iii. Ascertain materials used in packaging by marketers
- iv. identify challenges in citrus marketing

## **Methodology**

North Central geopolitical zone of Nigeria was purposively selected due to large production of citrus in the zone. Respondents were contacted through the Agricultural Development Programme in the zone. Selection was based on the available marketers mobilized within the limit of the state Agricultural Development Programmes in the zone. Areas covered in the North Central (NC) include Benue state (Tarka, Ushongo) and Nasarawa state (Eggon, Oba, Obi and Akwanga). Structured questionnaire was used to collect information from respondents. A total of 46 respondents were interviewed for this study comprising 35 (76.1%) and 11 (23.9%) respondents from the Benue and Nasarawa states respectively. Data were analyzed using descriptive statistics.

## **Results and discussion**

### **Socio-economic characteristics of citrus marketers**

There were more male (58.7%) than female (41.3%) respondents involved in the study, majority (71.7%) were between 20-40 years, married (82.6%), had household size of 1-10 persons (67.4%) while 43.5% of respondents had secondary education. Few (4.5%) had Citrus marketing as their major occupation, 63.1% had between 1-10 years of experience in citrus marketing and 69.6% were members of association. Most of the respondents were assemblers (65.2%) while 71.6% source their produce from farmers (Table 1). Also, 78.3% use jute bags/sacks to buy and sell citrus fruits. Age range of respondents depicts that majority were in their youthful age and the level of education could enhance learning and marketing activities of respondents. Buying directly from farmers could enhance profitability; however, selling of produce in bags and sacks is an indication that the marketers had no standard unit of measurement.

**Table 1: Socio-economic characteristics**

| <b>Variable</b>                             |                     | <b>Frequency</b> | <b>Percentage</b> |
|---|---------------------|------------------|-------------------|
| <b>Sex</b>                                  | Male                | 27               | 58.7              |
|   | Female              | 19               | 41.3              |
| <b>Age</b>                                  | < 20                | 2                | 4.4               |
|   | 20 – 40             | 33               | 71.7              |
|   | 41 – 60             | 7                | 15.2              |
|   | Above 60            | 4                | 8.7               |
|   |                     |                  |                   |
| <b>Marital status</b>                       | Single              | 6                | 13.0              |
|   | Married             | 38               | 82.6              |
|   | Widowed             | 2                | 4.4               |
| <b>Religion</b>                             | Christianity        | 45               | 97.8              |
|   | Islam               | 1                | 2.2               |
| <b>Household size</b>                       | 1 – 10              | 31               | 67.4              |
|   | 11- 20              | 6                | 13.0              |
|   | 21 – 30             | 1                | 2.2               |
|   | Above 30            | 1                | 2.2               |
|   | No response         | 7                | 15.2              |
| <b>Educational Qualification</b>            | No formal education | 8                | 17.4              |
|   | Primary education   | 9                | 19.6              |
|   | Secondary education | 20               | 43.5              |
|   | Tertiary education  | 8                | 17.4              |
|   | Others              | 1                | 2.1               |
| <b>Citrus marketing as major Occupation</b> | No                  | 43               | 77.3              |
|   | Yes                 | 3                | 4.5               |
|   | <b>Total</b>        | <b>46</b>        | <b>100</b>        |

|  |               |    |      |
|--|---------------|----|------|
| <b>Years of experience in citrus marketing</b> | 1 – 10        | 29 | 63.1 |
|  | 11 – 20       | 9  | 19.6 |
|  | 21 – 30       | 7  | 15.2 |
|  | Above 30      | 1  | 2.1  |
| <b>Membership of association</b>               | No            | 14 | 30.4 |
|  | Yes           | 32 | 69.6 |
| <b>Level of marketing</b>                      | Assembler     | 30 | 65.2 |
|  | Wholesale     | 3  | 6.5  |
|  | Retail        | 2  | 4.4  |
|  | No response   | 11 | 23.9 |
| <b>Source of produce</b>                       | Farmers       | 33 | 71.6 |
|  | Wholesalers   | 2  | 4.4  |
|  | Others        | 2  | 4.4  |
|  | No response   | 9  | 19.6 |
| <b>Unit used in buying and selling</b>         | Plastic crate | 2  | 4.4  |
|  | Jute bag      | 3  | 6.5  |
|  | Basket        | 2  | 4.4  |
|  | Sack          | 33 | 71.6 |
|  | Others        | 4  | 8.7  |
|  | No response   | 2  | 4.4  |

**Source: Field survey, 2018**

### **Information and training needs of citrus marketers**

As reflected in Table 2, information needs of respondents were on health empowerment (76.1%), marketing channels (73.9%), loan procurement (73.9%), produce sourcing (67.4%), pricing information (65.2%) and preservation/storage during marketing (63.0%). Training needs were mostly on processing (73.9%), health empowerment (73.9%), post-harvest handling methods (71.7%), preservation during marketing (67.4%) and nutrition (67.4%). It was reported that 45% of citrus produced in Nigeria is consumed fresh and 30% are wasted due to post-harvest losses while 25% are processed (NIHORT, 2000). Onwualu *et al.*, (2013), also reported losses

of 30-60% during peak harvesting seasons due to lack of appropriate transport, storage and processing facilities. Processing of citrus fruits into juice concentrates and other products will greatly reduce the amount of wastages experienced especially during the period of glut.

**Table 2: Information and training needs among respondents**

| Variable                                  | Information Needs |      |    |      | Training Needs |      |    |      |
|---|-------------------|------|----|------|----------------|------|----|------|
|   | Yes               | %    | No | %    | Yes            | %    | No | %    |
| Produce sourcing                          | 31                | 67.4 | 15 | 32.6 | 23             | 50.0 | 23 | 50.0 |
| Pricing information                       | 30                | 65.2 | 16 | 34.8 | 19             | 41.3 | 27 | 58.7 |
| Marketing channels                        | 34                | 73.9 | 12 | 26.1 | 17             | 36.9 | 29 | 63.1 |
| Packaging methods                         | 20                | 43.5 | 26 | 56.5 | 27             | 63.1 | 19 | 36.9 |
| Handling methods                          | 26                | 56.5 | 20 | 43.5 | 33             | 71.7 | 13 | 28.3 |
| Preservation and storage during marketing | 29                | 63.0 | 17 | 37.0 | 31             | 67.4 | 15 | 32.6 |
| Processing                                | 28                | 60.9 | 18 | 39.1 | 34             | 73.9 | 12 | 26.1 |
| Credit/ Loan                              | 34                | 73.9 | 12 | 26.1 | 26             | 56.5 | 20 | 43.5 |
| Health                                    | 35                | 76.1 | 11 | 23.9 | 34             | 73.9 | 12 | 26.1 |
| Nutrition                                 | 23                | 50.0 | 23 | 50.0 | 31             | 67.4 | 15 | 32.6 |

Source: Field survey, 2018

**Measures and Packaging materials used by Citrus marketers**

Most of the respondents packed citrus fruits in sacks (52.2%), baskets (17.4%) and jute bags (15.2%). The most preferred mode of packaging is the jute bag/sack (69.6%) because of the ease of carriage; the use of jute bags/sacks is customary in the study area, cheap, durable, protects and also retains freshness of citrus fruits. Most (78.3%) of the marketers are not aware of plastic crates as a means of packaging citrus. Marketers (78.3%) also stated that they keep citrus fruits in their custody for less than 7 days while most of them (93.5%) purchase citrus fruits weekly (Table 3).

**Table 3: Measures and Packaging materials used by Citrus marketers**

| Variable   | Frequency | Percentage |
|--|-----------|------------|
| <b>Packaging materials used</b>                    |           |            |
| Jute bags  | 7         | 15.2       |
| Sacks  | 24        | 52.2       |
| Baskets  | 8         | 17.4       |
| Others   | 2         | 4.4        |
| Prefer not to response                             | 5         | 10.8       |
| <b>Preferred mode of packaging</b>                 |           |            |
| Jute bag/sack                                      | 32        | 69.6       |
| Basket   | 3         | 6.5        |
| Bucket   | 2         | 4.3        |
| Plastic crates/tray                                | 3         | 6.5        |
| No response  | 6         | 13.0       |
| <b>Awareness of plastic crates</b>                 |           |            |
| Yes  | 8         | 17.4       |
| No   | 36        | 78.3       |
| No response  | 2         | 4.3        |
| <b>Frequency of purchase</b>                       |           |            |
| Annually   | 2         | 4.3        |
| Weekly   | 43        | 95.3       |
| Prefer not to say                                  | 1         | 2.2        |
| <b>Length of time marketers keep Citrus fruits</b> |           |            |
| Less than 7 days                                   | 36        | 78.3       |
| 7 days and beyond                                  | 5         | 10.9       |
| No response  | 5         | 10.9       |

**Source: Field survey, 2020**

### **Challenges in Citrus marketing**

High cost of transportation (78.3%) and perishability (78.3%) of citrus fruits were the most serious challenges encountered in citrus marketing in the study areas. However, 61.1% of the respondents opined that the challenges were not severe; only 5.6% and 11.1% viewed them to be severe challenges. Moreover, marketers were faced with low pricing (71.7%) and inadequate storage facilities (63.0%). Severity of challenges showed that 65.5% and 36.4% of those who experience inadequate storage facilities and low pricing respectively stated that these are not severe challenges. Only 21.2% of the marketers observed low pricing to be a severe challenge (Table 4). Poor storage conditions was also highlighted as major constraint to sweet orange marketing in the study of Fakayode *et al.*, (2010), which examined the viability of sweet orange marketing in Nigeria with reference to Kwara state. In the same vein, inadequate storage facility for enhanced shelf life of citrus fruits was identified as a constraint to marketing the fruits in Central Punjab, Pakistan (Usman *et al.*, 2018).

**Table 4: Challenges in Citrus marketing**

| Challenges                    | Frequency<br>(Percentage) | Very<br>severe | Severe   | Not<br>severe | No<br>response |
|-------------------------------|---------------------------|----------------|----------|---------------|----------------|
| Improper handling             | 25(54.4)                  | 3(12.0)        | 10(40.0) | 12(48.0)      | -              |
| High cost of transportation   | 36(78.3)                  | 2(5.5)         | 11(30.6) | 22(61.1)      | 1(2.8)         |
| Inadequate storage facilities | 29(63.0)                  | -              | 9(31.0)  | 19(65.5)      | 1(3.5)         |
| Activities of middlemen       | 27(58.7)                  | 3(11.1)        | 12(44.4) | 12(44.4)      | -              |
| Inadequate packaging methods  | 24(52.2)                  | 2(8.3)         | 11(45.8) | 11(45.8)      | -              |
| Low pricing                   | 33(71.7)                  | 7(21.2)        | 7(21.2)  | 12(36.4)      | 7(21.2)        |
| Improper grading/scale        | 27(58.7)                  | 3(11.1)        | 8(29.6)  | 16(59.3)      | -              |
| Perishability                 | 36(78.3)                  | 4(11.1)        | 8(22.2)  | 22(61.1)      | 2(5.5)         |
| Market levies                 | 27(58.7)                  | 4(14.8)        | 9(33.3)  | 12(44.4)      | 2(7.4)         |

**Source:** Field Survey, 2018

### Conclusion and recommendation

Citrus marketing in the study area is carried out by young males, whose information and training needs as well as challenges encountered in the course of marketing the citrus fruits have been profiled. Paying attention to the needs and constraints of this group of stakeholders in the citrus value chain is expected to enhance the entire value chain as the ultimate aim of production is marketing which helps to get the produce to the final consumers. From its findings, the study recommends that capacity building of citrus marketers on appropriate post-harvest handling and citrus processing is important. In the same vein, enforcement of standard unit of measurement would contribute to enhancing the livelihoods of actors involved in this aspect of the value chain.

### Reference

- Abdulsalam Z. (2004). Analysis of cross-border food grain marketing between Nigeria and Niger Republic: Department of Agric Economics and Rural Sociology, Ahmadu Bello University, Zaria Nigeria.
- Ashiko, F. T. G., Ior J. A. and Ayilla, V. N. 2016. Economic Analysis Of Citrus Marketing In Benue And Kano States Of Nigeria, International Journal of Innovative Research and Advanced Studies (IJIRAS) 3(5):195-198.
- Attah A. J. , Mbah E. N. and Okeke M. N. 2018. Assessment of Factors Limiting Production of Citrus among Smallholder Farmers in Benue State, Nigeria, Journal of Agriculture and Crops ISSN(e): 2412-6381, 4(12): 170-175, 2018 URL: <https://arpgweb.com/journal/journal/14> DOI: <https://doi.org/10.32861/jac.412.170.175>.
- Aworh O.C. (2004). Food Preservation: The act, the science and the technology: The PG School University of Ibadan, Ibadan, Nigeria. Pp61.
- Bhat, A., Jyoti, K., Manish, S., and Rajinder, P., 2015. Constraints in production and marketing of citrus fruit in Jammu region of J&K State. Economic Affairs Journal, 60:331-337.
- Busari Ahmed O. et al (2015) Food Security and Post-Harvest Losses in Fruit Marketing in Lagos Metropolis, Nigeria (Discourse Journal of Agriculture and Food Sciences).
- Chase, W. G., 2007. "Production of citrus fruits." *Proceeding of International Society of Citriculture*, vol. 13, pp. 1365-1373.



- Christopher, I.C, and Udoh, E. 2020. An assessment of citrus farming in Nigeria, International Journal of Recent Research in Social Sciences and Humanities (IJRSSH) 7(1):10-15, January - March 2020, Available at: [www.paperpublications.org](http://www.paperpublications.org).
- Fakayode S.B., Omotesho, O.A., Babatunde, R.O. and Momoh A.A. 2010. The Sweet Orange Market in Nigeria, How Viable? Research Journal of Agriculture and Biological Sciences, 6(4):395-400.
- Fakayode, S.B., Omotesho, O.A., Babatunde, R.O. and Momoh, A.A. 2010. The Sweet Orange Market in Nigeria, How Viable? Research Journal of Agriculture and Biological Sciences, 6(4): 395-400, 2010.
- IITA (2001). Maize crop. International Institute of Tropical Agriculture (IITA) Ibadan: 1-3.
- Lenné, J.M., and A.F. Ward. (2010). Improving the efficiency of domestic vegetable marketing systems in East Africa Constraints and opportunities. *Outlook on Agriculture* 39(1): 31-40.
- Lyatuu, E., G. Msuta, S. Sakala, M. Maope, S. Ketseemang, and L. Lebotse. (2009). Marketing indigenous leafy vegetables and how small-scale farmers' income can be improved in the SADC region (Tanzania, Zambia and Botswana). Final Marketing Report of Joint SADC.
- National Horticultural Research Institute -NIHORT (2000). 25 Years of Research into Horticultural Crops Development in Nigeria (1975 – 2000). Editors O.A. Denton, K.O. Alasiri and M.A. Adejoro.
- Olaniyan, A. O. 2004. General information about mango and citrus production in Nigeria, Paper presented at the Mashav International training on mango and citrus orchards growing and Management, Held at Maizube Farms, Minna, Niger State, 22nd Nov–3rd Dec, 2004, 10pp.
- Olife I.C. et al (2015) Citrus Fruits Value Chain Development in Nigeria: International Knowledge Sharing Platform, Vol 5, No 4. Journals and Books Hosting.
- Onwualu, A.P.; Obassi, E. and Olife, I.C. (2013) Policy Brief on Fruit Juice and Concentrates, RMRDC, ISBN: 13-978-978-52367-4-3.
- Ortese, E. Baiyeri, K. P. and Ugese, F. D. 2012. Demographic Features of Citrus Producers and Agronomic Management of the Crop in Benue State, Nigeria, Production, Agriculture and Technology Journal, 8(1):180-190, June, 2012; ISSN: 0794-5213.
- Oyedele O.O. and Yahaya, M.K. 2010. Citrus farmers production constraints and attitude to training on improved techniques of citrus production, Journal of Agriculture and Social Research (JASR) 10(2):69-76.
- Taiwo, T. A., 2005. Production of fruits, vegetables, grains, legumes, root crops in Nigeria, problems and prospects vol. 1: University Press. p. 9.
- Tiri, G.D., Ekpa, D. and Akinyemi, M. 2015. Empirical assessment of factors affecting marketing efficiency: A focus on sweet orange markets in Kano metropolis, Nigeria, International Journal of Innovative Agriculture and Biology Research 3(2):1-9, April-June, 2015.
- Usman M, Ashraf, I., Chaudhary, K. M. and Talib, U. 2018. Factors Impeding Citrus supply chain in Central Punjab, Pakistan International Journal of Agricultural Extension 6(1):1-5.