

Analysis of Structure and Performance of Pumpkin (*Cucurbita Pepo* L.) Marketing in Nasarawa State, Nigeria

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This study examined the structure and performance of pumpkin marketing in Nasarawa State, Nigeria, with the view of ascertaining its efficiency. Data were collected with the aid of structured questionnaire from 60 randomly selected pumpkin sellers. Data were analysed using descriptive statistics, marketing margin analysis and Gini coefficient estimation. Results revealed that pumpkin marketing was profitable with a marketing margin ratio of 66.99 %. But the estimated Gini index of 0.786 indicates a

non-competitive market. The major constraints faced by marketers include perish-ability of the crop and price uncertainty which if properly addressed can enhance efficiency. In other words, if the marketing of pumpkin is to improve market competition should be increased.

Keywords: Pumpkin, marketing margin, competition, constraints, structure, performance

INTRODUCTION

Vegetables are crops that can be easily grown, most of which generally take less time to mature. Vegetables are one of the major sources of food consumed by humans and these constitute an important source of food for both human and animal consumption. Although, the actual quantity of carbohydrates, proteins, minerals and fats may be limited and varies from one vegetable to another, the real value of vegetables generally lies in the minerals, vitamins and fibre content (Girei *et al.*, 2017). The joint FAO/WHO Consultation on Diet, Nutrition and the Prevention of Chronic Diseases recommended a minimum daily intake of 400 g of fruits and vegetables (WHO, 2003). In human nutrition, the minerals and vitamins content make vegetables a class of essential protective foods (Ohen *et al.*, 2014), hence, any balanced diet should include vegetables and fruits for this reason, and the proportion of vegetables required in a balanced diet per capita per meal should be of the order of 45% of the total volume of food intake (Balogun *et al.*, 2015). Pumpkin is locally called "Kabewa" in Hausa land. It is one of the most underutilized crops belonging to the family Cucurbitaceae; one of the largest families in plant kingdom consisting of largest number of edible plant

species which include squash, cucumber, watermelon, etc. Among different species of this genus, *Cucurbita pepo* has the greatest monetary value (Paris, 2008). The Cucurbitaceae family is the second largest horticultural family in terms of economic importance after Solanaceae and pumpkin is reported to be of Mexican and American origins.

There is a high indication of diversity among the pumpkin species in Nigeria, yet the crop is underutilized. Despite its health and dietary benefits, the production of pumpkin is mostly done at subsistence level with low yield and with virtually no commercial importance (Onyishi *et al.*, 2013). Pumpkin is a vine crop that plays an important role in the traditional setting as a cover crop and a weed control agent (Delahaut and Newhouse, 2006). In Nigeria, it is a traditional vegetable crop, grown mainly for its' leaves, fruits and seeds, consumed either by boiling the leaves and fruits, or by roasting or baking the seeds (Facciola, 1990). The leaves, fruits, flowers and seeds are health promoting foods. Different parts of the plant have been used as medicine in some developed world. The leaves are haematinic, analgesic, and also used to relieve intestinal inflammation or enteritis, dyspepsia

and stomach disorders (Sentu and Debjani, 2007). Pumpkin fruit is an excellent source of vitamin A which the body needs for proper growth, healthy eyes and protection from diseases. It is also rich in vitamins C, E, lycopene and dietary fibre (Ward, 2007). Pumpkin has emerged as an important indigenous vegetable in Nasarawa State, with potential for income and livelihoods to producers and marketers. It has huge potential for market but this has not been adequately appreciated, nor fully exploited.

Marketing of vegetables in Nigeria

Marketing of agricultural produce and products in Nigeria is critical to increasing agricultural productivity and employment. Poorly developed marketing and markets are a common characteristic of traditional foods in Nasarawa State. However, knowledge on food choices and nutrient qualities of traditional crops provides an opportunity for their increased marketability. It is believed that poor linkages in the marketing channels and poor marketing infrastructure are factors of high and fluctuating consumer prices, and only a small proportion of the consumers' money may be reaching the vegetable farmers (Adenegan, 2011) cited in Isitor *et al.* (2016). The amount of vegetable produce made available to the consumer by the marketer is more important than the level of vegetable production, given the costs incurred for marketing, including transportation from producing areas and the quantities that perish during haulage (Egbuna, 2009; Muhanji *et al.*, 2011). Marketing of vegetable is one of the most rewarding and risky farming activities. Its special characteristics, high perish-ability and price and yield variations throughout a production year, coupled with the changing of consumers' demand could lead to increase in uncertainty encountered by farmers (Vassalos, 2013). In the same vein, Adenuga *et al.* (2013) described marketing of vegetable as a complex phenomenon due to its perishable nature, seasonality and bulkiness. To mitigate this challenge, they argued that vegetable production requires an efficient marketing system, a process whereby an organization accurately identifies and meets its customers' wants and needs. It is also an operation of various business activities that direct the goods and services from the producers to the ultimate consumers (Galadima, 2017). Haruna *et al.* (2012) defines agricultural marketing as the performance of all the activities involved in the flow of agricultural products and services from the initial points of production until they reach the hands of the ultimate consumers. It is therefore interested in everything that happens to the crop after it leaves the farm gate; making decision, taking action and bearing the responsibility of the action.

Marketing Channels and factors affecting marketing of Vegetables

A marketing channel is the sequence of intermediaries or

middlemen, and markets through which produce pass from producers to final consumers (Isitor *et al.*, 2016). These authors reported three main vegetable marketing channels: (i) Farmers - wholesalers - retailers - consumers; (ii) Farmers - itinerant buyers - retailers - consumers; and (iii) Farmers - itinerant buyers - wholesalers - retailers - consumers. Marketing of farm products is affected by certain features that are unique to the industry. These factors include: seasonality of products, perish-ability of products, inelastic demand, production hazards, changes in market demand, large number of small producers, and geographical specialisation of the production.

Problem statement

Most research studies in Nigeria have concentrated on production and utilization of African leafy vegetables but little attention has been given to value chain improvement especially in the areas of production and marketing of vegetables pumpkin inclusive. The challenge of marketing perishables in Nigeria is further complicated by the need for exploitation of preservation technologies to maximise economic value. Although pumpkin being the most important economic crop of the Cucurbitaceae family, its full potential and exploitation remain low and the marketing of pumpkin in the world over time have not been studied nor documented, a fact that also applies to the situation of pumpkin in Nasarawa State.

Vegetables have long been regarded as minor crops and thus, have attracted little marketing attention, compared to other crops (Agbugba *et al.*, 2011). Consequently, their marketing is complex and challenging because of their special characteristics which include: perish-ability, seasonality, high economic value and standardization requirement (Adebisi-Adelani *et al.*, 2011). This study therefore attempts to assess the structure, conduct and performance of pumpkin marketing in Nasarawa State. Specifically the study: (i) describes the marketing channels of pumpkin in the study area; (ii) analyses the marketing margin of pumpkin in the study area; assesses the market structure of pumpkin and (iv) identify the constraints associated with pumpkin marketing in the study area.

METHODOLOGY

Study area

The study was conducted in Nasarawa State, Nigeria. The state has three agricultural zones; the western, the southern and the central. It consists of 13 local government areas namely, Awe, Doma, Keana, Obi, Lafia, Nasarawa-Eggon, Akwanga, Wamba, Kokona, Keffi, Karu, Nasarawa, and Toto with a total population of 2,040, 112 by NPC, (2006) figures and a projected

population 2,688,965 for 2016 when applying the projected growth rate of 2.8% per annum. The State lies between latitude 7° and 9° North and longitude 7° and 10° East. The state shares common boundary with Plateau State and Taraba State in the East, Benue State in the South, Kaduna State in the North, Kogi State and the Federal Capital Territory (FCT) in the West (NSMI, 2006). The crops grown in the study area are mainly maize, rice, groundnut, yam, sorghum, cassava, pumpkin, pigeon pea, among others.

Sampling techniques

A multistage sampling technique was adopted to select the respondents for this study. The first stage was the purposive selection of one local government area (LGA) from each of the three agricultural zones, Toto, Nasarawa-Eggon and Doma LGAs. At the second stage two villages were purposively selected from each of the 3 LGAs making a total of 6 villages for the study. In the last stage 10 pumpkin marketers were randomly selected from each of the selected villages, making a total sample of 60 respondents for the study.

Methods of data collection

The Primary data used for the study were collected through interview using a well structured questionnaire. Information were collected on volume of output sold, selling price, cost of buying, transportation costs, channels of distribution, and other constraints faced by marketers.

Analytical techniques

Descriptive statistics

Arithmetic mean was computed according the following formulae;

$$\bar{X} = \frac{\sum_{i=1}^n X_i}{N} = \frac{X_1 + X_2 + X_3 + \dots + X_n}{N} \dots \dots \dots (1)$$

Where

- \bar{X} - Mean
- $\sum X_i$ = summation of the sample
- N = Total number of observations
- Σ = Summation
- Xi = Individual observation

Percentage was mathematically expressed as:

$$Percentage (\%) = \frac{X}{N} \times 100 \dots \dots \dots (2)$$

Where,

X = Individual observation

N= Total number of respondents

Marketing margin analysis

This is the difference in the price of a commodity at different stages of time, place, form and possession as it moves from producer to the ultimate consumer. Olukosi *et al.* (2007) defined marketing margin as the differences in prices between that part paid by the consumer and that obtained by the producer. The study made use of the modified form of marketing margin model adopted by Olukosi *et al.* (2007) in order to determine the margin of the marketers in marketing of Pumpkin in the study area. The model is mathematically presented as under:

$$MM = \frac{SP - CP}{SP} \times \frac{100}{1}$$

Where,

MM = Marketing margin

SP = Selling price

CP = Producer's price or Supply price

Gini-Coefficients

The Gini-Coefficient is a measure of statistical dispersion most prominently used as a measure of inequality of income distribution or inequality of wealth distribution. It is defined as ratio with values zero and one. Thus, a low Gini-Coefficient indicates more equal income or wealth distribution, while a high Gini-Coefficient indicates more unequal distribution, with a value of zero corresponding to perfect equality and one to perfect inequality. The total value of sales of Pumpkin from each market was used to compute Gini-Coefficient. As an index of measurement, it is easily ascertainable and more reliable. This tool was used by Girei *et al.* (2013); Kassali *et al.* (2018). The Gini-Coefficient was computed using the formula as captured below.

$$GC = 1 - \Sigma XY$$

Where;

GC = Gini Coefficient

X = Proportion of sellers

Y = Cumulative proportion of total sales

Σ = Summation sign

RESULTS AND DISCUSSION

Marketing channels of pumpkin

Figure 2 shows the marketing channel as observed in the

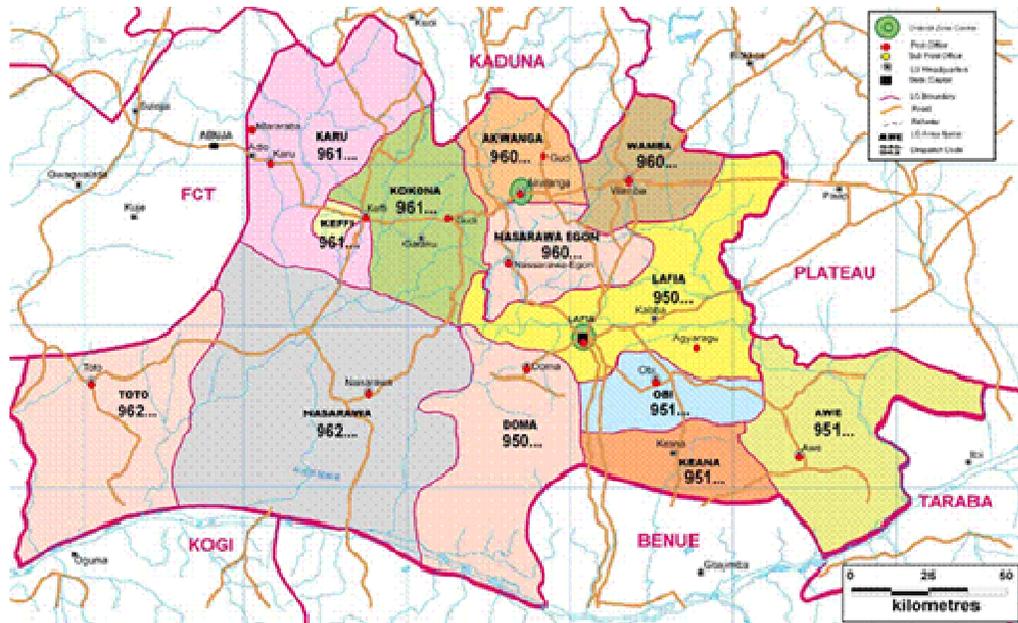


Figure 1. Map of Nasarawa state showing the study area.

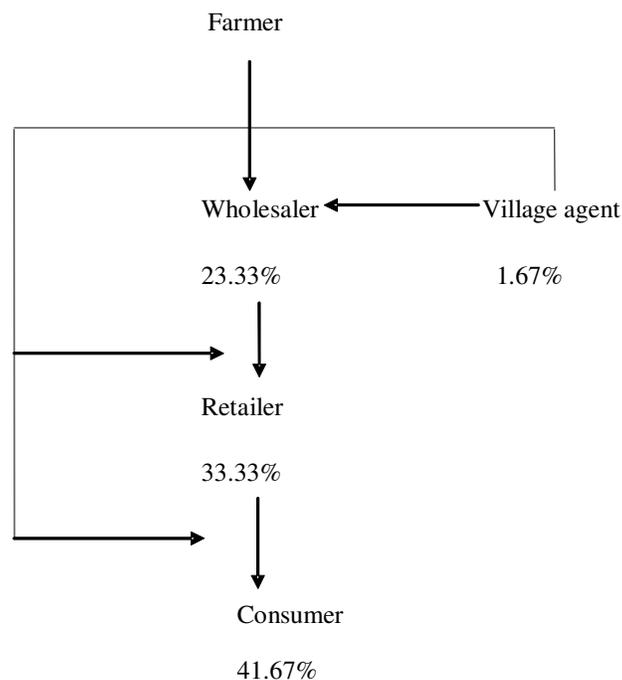


Figure 2. Marketing channel of *Cucurbita pepo* in Nasarawa state.

study area. Marketing channel is the sequence of intermediaries or middlemen, and markets through which produce pass from producer to final consumer (Isitor *et al.*, 2016). According to Ngbede *et al.* (2014) marketing plays a vital role in the production process because a

well-organized and efficient market structure ensures profitable return to seller, at a reasonable price to consumers. Figure 1 revealed that pumpkin farmers in the study area sell their produce to village agent, wholesaler, retailer and consumer. 41.67% of consumers

buy directly from the farmer and they are the majority. About thirty three percent (33%) of retailers also purchased directly from the farmers then sell to the consumers. Twenty three percent (23%) of wholesalers purchase from the farmer then sell to the retailers or directly to the consumers. The low percentage of the wholesalers is due to market and capital constraints. Lastly, the village agent which is the minority at 1.67% buys directly from the farmer and sells to the wholesaler. Due to the low demand of pumpkin, most of the farmers produced in small quantity which in turn sells to consumers directly.

Marketing margin of pumpkin

Table 1 shows the marketing margin of pumpkin in the study area. It shows the differences in the price incurred and price received by the sellers. The result revealed that the average buying cost incurred by marketers was ₦85621.67 while the average price received was ₦142983.30, making an average marketing margin of ₦57361.63, which represents an average marketing margin ratio of 66.9 percent. This result implies that pumpkin marketing is profitable in the study area, which is in conformity with the study of Anuebunwa, (2008) on marketing of okra in Ebonyi state, Nigeria. Though, the

price of pumpkin generally fluctuates due to the seasonality of the production. Source: Data analysis, 2017.

Table 1. Marketing margin of pumpkin trade in the study area.

Particulars	Average
Average revenue received by seller (₦)	142983.30
Average Quantity sold (kg)	878.08
Average Purchase cost (₦)	85621.67
Average Quantity purchased (kg)	878.08
Marketing Margin (₦)	57361.63
Marketing Margin (%)	66.99

The structure of the pumpkin market

The distribution of pumpkin sellers by average size and total value of yearly sales as shown in (Table 2) indicates that 53% of pumpkin marketers had sales more than ₦20,000 per annum representing 96% of the total value of yearly sales. The mean value of the sales of pumpkin is estimated at 142983.3. This analysis is in line with the study of Anuebunwa, (2008) who stated that a small percentage of the marketers accounted for the higher percentage of total monthly sales, which is also confirmed by a Gini index of 0.786, closer to one; an

Table 2. Distribution of pumpkin sellers by average size and total value of yearly sales.

Yearly Sales (₦)	Frequency	Percentage of traders	Proportion of traders (X)	Total value of sales	Percentage of total value of sales	Proportion of total value of sales (Y)	XY
≤ 20,000	28	46.67	0.4667	334,000	3.89	0.0389	0.0182
20,001- 40,000	8	13.33	0.1333	266,000	3.10	0.0310	0.0041
40,001-60,000	6	10.00	0.1000	305,000	3.56	0.0356	0.0036
60,001-80,000	5	8.33	0.0833	374,000	4.36	0.0436	0.0036
>80,000	13	21.67	0.2167	7,300,000	85.09	0.8509	0.1844
Total	60	100	1	8,579,000	100	1	0.2139
Mean				142983.3			
Gini Coefficient	0.786						
Gini index	78.61%						

Source: Data analysis, 2017.

indication that there is inequitable distribution of sales. This result reveals a high market concentration, meaning few marketers tend to dominate the pumpkin market in the area. This is therefore an indication of imperfect market competition with monopolistic features, as few traders handle the largest shares of pumpkin sales in the market.

Constraints faced by pumpkin marketers

Table 3 represents the various problems associated with

Table 3. Constraints faced by pumpkin sellers.

Constraints	Frequency	Percentage (%)
Perish-ability of the crop	27	45.00
Market price uncertainty	22	36.67
Transportation	12	20.00
Inadequate capital	10	16.67

Source: Field survey, 2017.

pumpkin marketing in the study area. The result revealed that 16.67% of marketers had problem of inadequate

capital, 36.67% were faced with market price market uncertainty, 45% reported perish-ability of the crop and 20% had problem of transportation. Most of the respondents, however, indicated more than one marketing constraints, thereby confirming the findings of Emokaro and Erhabor (2006b), that farmers and marketers are faced with more than one constraint in the production and marketing process. This result is also in line with the findings of Girei and Galadima (2016) who stated that the complex nature of the constraints could impact negatively on the marketing and therefore production of the crop.

Conclusion

This study examined the marketing of pumpkin in Nasarawa state, Nigeria . Data were collected with the aid of structured questionnaires from 60 respondents which were purposively selected based on the intensity of pumpkin production and marketing. The results of this study revealed that pumpkin marketing is profitable in the study area. But the market is characterised by degree of concentration which implies high market inefficiency, as results suggest that few pumpkin sellers tend have control over the market. Farmers tend to sell their produce to village agent, wholesalers, and retailers or directly to consumers. Besides the market imperfection, the major constraints faced by marketers include perish-ability of the crop and the market price uncertainty which if properly addressed will improve marketing efficiency. It is therefore recommended that: (i) Market information centres should be established to facilitate adequate communication and flow of information between marketers through marketing system; (ii) producers should be encouraged to form cooperatives as these might not be getting the right price for the produce in view of the high concentration of the market, as this would in return ensure efficiency and increased productivity, while guaranteeing sustainable pumpkin production.

REFERENCES

- Adebisi-Adelani O, Olajide-Taiwo FB, Adeoye IB, Olajide-Taiwo LO (2011). Analysis of Production Constraints Facing Fadama Vegetable Farmers in Oyo State, Nigeria, *World J. Agric. Sci.*, 7(2): 189–192.
- Adenuga AH, Fakayode S B, Adewole RA (2013). Marketing Efficiency and Determinants of Marketing Surplus in Vegetable Production in Kwara State. An Invited Paper Presented at the 4th International Conference of the African Association of Agricultural Economists, September 22-25, Hammamet, Tunisia.
- Agbugba IK, Okechukwu FO, Solomon RJ (2011). Challenges and Strategies of Marketing Indigenous Leafy Vegetables in Nigeria, *J. Home Econ. Res.*, Vol.15: pp.11 – 20.
- Anuebunwa FO (2008). Marketing of Fresh Okra in Ebonyi State, Nigeria. National Root Crops Research Institute, Umudike, Abia State. 4 (1): 71 – 81.
- Balogun OI, Bello TA, Afodu OJ (2015). Determinants of Farm Productivity Among Fluted Pumpkin Farmers in Ikenne Local Government Area, Ogun State, Nigeria. Department of Agricultural Economics and Extension, Babcock University, Ogun State. *Ethiopian Journal of Environmental Studies and Management*, 8(2): 152–160.
- Delahaut KA, Newhouse AC (2006). Growing Pumpkin and other Vine Crops in Wisconsin Extension Publication, p.22.
- Egbuna NE (2009). Urban Agriculture: a strategy for poverty reduction in Nigeria. Retrieved from: <http://www.docstoc.com/docs/34548910/Urban-Agric-as-a-strategy-for-poverty-reduction-in-Nigeria>
- Emokaro CO, Erhabor PO (2006b). Comparative Analysis of Input Used and Profitability among Cassava Farmers in the Three Agro-Ecological Zones of Edo State. *Journal of Sustainable Tropical Agricultural Research*, 19: 16–22.
- Facciola S (1990). *Cornucopia – A Source Book of Edible Plants*. Kamping Publications, California, USA. 677pp.
- Galadima OE (2017). Agricultural Marketing and Prices. Department of Agricultural Economics and Extension Nasarawa State University, Keffi, Nigeria.
- Girei AA, Haruna U, Osazuwa VN (2017). “Analysis of Profitability of Pumpkin (Cucurbita spp.) Production in Central Agricultural Zone of Nasarawa State, Nigeria. *Asian Research Journal of Agriculture*. 3(1): 1-9.
- Girei AA, Galadima OE (2016). Resource Use Efficiency and Profitability of Maize Production in Lafia Local Government Area of Nasarawa State, Nigeria. *European Journal of Academic*, 3 (6): 234–238.
- Girei AA, Dire B, Bello BH (2013). Assessment of cost and returns of cattle marketing in central zone of Adamawa State, Nigeria. *Brit. J. Mark. Stud.* 1(4): 1 – 10.
- Haruna U, Sani MH, Danwanka HA, Adejo E (2012). Economic Analysis of Fresh Tomato Marketers in Bauchi Metropolis of Bauchi State, Nigeria. *Nigeria Journal of Agricultural Food Environment*. 8(3): 1 – 8.
- Isitor SU, Otunaiya AO, Iyanda JO (2016). Efficiency of Vegetable Marketing in Peri-Urban Areas of Ogun State, Nigeria. *Journal of Agricultural Science*, 8 (3): 142–150. Accessed 27 April, 2018 from: https://prog.lmu.edu.ng/colleges_CMS/document/books/efficiency%20of%20vegetable%20marketing%20Ogun%20state1-PB.pdf
- Kassali R, Girei AA, Sanu ID (2018). Analysis of yam marketing in Akoko North-East Local Government of Ondo State, Nigeria. *International Journal of Agricultural Marketing*. 4(2): 170-177.
- Muhanji G, Roothaert RL, Webo C Mwangi S (2011). African indigenous vegetable enterprises and market access for small-scale farmers in East Africa, retrieved from: <http://www.ingentaconnect.com/>
- Ngbede SO, Ibekwe HN, Okpara SC, Onyegbule UN, Adejumo L (2014). An Overview of Okra Production, Processing, Marketing, Utilization and Constraints in Ayaragu in Ivo Local Government Area of Ebonyi State, Nigeria. *Greener Journal of Agricultural Sciences*, Vol.4 (4), pp. 136-143.
- NPC [National Population Commission] (2006). National Population and Housing Census for Nigeria. Abuja, Federal Republic of Nigeria
- NSMI (2006). Nasarawa State Ministry of Information Annual Report. Lafia, Nasarawa State, Federal Republic of Nigeria.
- Ohen SB, Umeze GE, Cobham ME (2014). Determinants of Market Participation by Cucumber Farmers in Odukpani Local Government Area, Cross River State, Nigeria. *Journal of Economics and Sustainable Development*. 5 (2), 2014, ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online).
- Olukosi JO, Isitor SU, Ode MO (2007). *Agricultural Marketing and Prices: Principles and Applications*. 3rd ed. Living Books Series, GU Publications, Abuja, FCT.

- Onyishi GC, Ngwuta AA, Onwuteaka C, Okporie EO (2013). Assessment of Genetic Variation in Twelve Accessions of Tropical Pumpkin of South Eastern Nigeria. *World Applied Sciences Journal* 24(2): 252-255.
- Paris HS (2008). "Summer squash," in *Vegetables I. Handbook of Plant Breeding*, Vol. 1, eds J. Prohens and F. Nuez (New York, NY: Springer).
- Sentu S, Debjani G (2007). Effect of Ripe Fruit Pulp Extract of Cucurbita pepo L. In: *Aspirin – Induced Gastric Duodenal Ulcer in Rats*, S. N. Pradhan Centre for Neurosciences. University of Calcutta, Kolkata, India. Pp. 639 – 645.
- Vassalos M (2013). *Essays on Fresh Vegetable Production and Marketing Practices. A Dissertation Submitted in Partial Fulfilment of Requirements for the Degree of Doctor of Philosophy in the College of Agriculture at the University of Kentucky, Lexington, Kentucky.*
- Ward EM (2007). Nutrient your diet may be missing. Available at: <https://www.webmd.com/food-recipes/features/7-nutrients-your-diet-may-be-missing#>. P.1
- WHO (2003). World Health Organization: Diet, Nutrition and the Prevention of Chronic Diseases. Report of a Joint FAO/WHO Expert Consultation, WHO Technical Report Series #916, Geneva. Available online at: www.medicinenet.com/script/main/art.asp.