Advances in Forestry Science
Original Article

Socio-economic benefits and challenges of urban forestry in ijebu-ode metropolis of Ogun State, Nigeria

Akinyode Timothy Olawumi[1]

[1] Department of Agricultural Science, Tai Solarin University of Education, P.M.B 2118, Ijagun, Ijebu-Ode, Ogun State, Nigeria

*Author for correspondence: olawumiat@tasued.edu.ng
Received: 19 May 2017 / Accepted: 19 March 2018 / Published: 31 March 2018

Abstract
The research assessed socio-economic benefits and problems of urban forestry in Ijebu Ode Metropolis of Ogun State, Nigeria through a survey of 200 purposively selected urban tree growers using questionnaire. The data generated were analysed using descriptive statistics and Chi square. The findings revealed that majority (88%) of the respondents are between the ages of 31-50years, 74% had tertiary education, 90% are married, and 86% are involved in tree planting with 11-20years experience in urban forestry. Majority (98%) grow trees producing edible fruits such as Mango (92%), Cashew (52%), Coconut (26%), Pawpaw (8%), Guava (8%), Banana (2%) and others-Croton (4%), Bitter leaf (42%), Neem (46%), Hibiscus flower (4%) and Ixora (6%) for other uses. Urban trees benefits respondents in terms of shade (96%), edible fruits (92%), windbreaks (82%), environmental beautification (78%), medicinal plants (80%) and air purification (72%). Chi square analysis shows significant association between produce sold from urban trees and the type of plant grown (0.007), growth of trees (0.026) and knowledge of urban forestry (0.006) at $p< 0.05$. The study concludes that urban forestry is highly beneficial to the residents and recommends more awareness on growing tree species in urban areas, proper planning and legislation to ensure compliance to sustainable uses.
Keywords: Urban Forestry, Metropolis, Resources, Socio-economic, Ijebu-Ode

Introduction

Urban forestry includes activities carried out in the city centre, suburban areas and the "urban fringe" or interface area with rural lands. Miller (1997) defined urban forestry as "an integrated, city wide approach to the planting, care and management of trees in the city to secure multiple environmental and social benefits for urban dwellers. "*Urban forestry is the management of trees for their contribution to the physiological, sociological, and economic well-being of urban society. Urban forestry deals with woodlands, groups of trees and individual trees, where people live - it is multifaceted, for urban areas include a great variety of habitats (streets, parks, derelict corners, etc) where trees bestow a great variety of benefits and problems*" (Grey and Deneke 1986).

Urban forestry, thus, includes the management of individual as well as group of trees and urban foresters see arboriculture as one important component of their subject. Urban forestry is also not restricted to trees that have been planted. Many urban trees may have established naturally, although in an environment in which competition for land is high, they are unlikely to survive longer unless actively cultivated and managed.

Urban forests bring many environmental and economic benefits to cities. Among these are energy benefits in the form of reduced air conditioning, reduced heating by shading buildings, homes and roads, absorbing sunlight, reducing ultraviolet light, cooling the air, and reducing wind speed (McPherson 1994; McPherson and Row tree 1993; Simpson and McPherson 1996; Coder 1996; Wolfe 1999; Hastie 2003; Lohr et al 2004). There are also economic benefits associated with urban trees such as increased land, property and rental value (Morales et al 1983; Anderson and Cordell 1988; Wolf 1998; Dwyer et al 1992; Mansfield et al 2005; Orland et al 1992; Hastie 2003; USDA Forest Service 2003, 2004).

Well-maintained trees and landscaped business districts have been shown to encourage consumer purchases and attract increased residential, commercial and public investments (Wolf 2004 and 2007). Trees located in business areas may also increase workers' productivity, recruitment, retention and satisfaction (Kaplan and Kaplan 1989; Kaplan 1992; Wolf 1998). Urban forests also improve air quality, absorb rainwater, improve biodiversity and potentially allow recycling to 20% of waste which is wood-based.

The social and even medical benefits of nature are also dramatic. Urban poverty is common to areas lacking green spaces. Visiting green areas in cities can counteract the stress of city life, renew vital energy and restore attention and as well improve medical outcomes. Simply being able to see a natural view out of the window improves self-discipline in inner city girls.

Having regular access to woodland is desirable for schools and indeed Forest kindergartens take children to visit substantial forests every day, irrespective of the weather. When such children go to primary school, teachers observe a significant improvement in reading, writing, mathematics, social skills and many other areas. Various methods are available to capture the value of urban trees, each designed to analyse a specific type of green space (individual trees, parks, trees on golf courses, etc).

Urbanization provides new jobs and new opportunities for millions of people in the world and this has contributed immensely to poverty eradication efforts worldwide. At the same time, rapid urbanization adds pressure to the resource base, and increases demand for energy, water, and sanitation, as well as for public services, education and health care (UN 2013).

Since 2007, more than half of the world's population has lived in urban centres and it is estimated that the proportion would have exceeded 70 per cent by 2050. Eighty per cent of the world's urban population will live in developing regions, especially in cities of Africa and Asia.

Materials and Methods

The Location

Ijebu Ode is a Local Government Area and city located in the South-Western Nigeria, close to the A121 highway. The city is located 110 km by road North-East of Lagos; it is within 100 km of the Atlantic Ocean in the Eastern part of Ogun State and possesses a warm tropical climate. Ijebu Ode is located on longitude 3.920E (3055'12"E) and latitude 6.820N (6049'12"N). The mean annual rainfall is 138.92mm and temperature is 24.990C with an estimated population of

222,653 (2007). It is the second largest city in Ogun State after Abeokuta with area of 192 km².

Research Sampling and Administration of Questionnaires

Two hundred (200) Urban Tree growers were purposively sampled with the use of questionnaire designed to elicit essential responses on socio-demographic characteristics and urban forestry activities. The respondents were drawn from randomly selected towns within the city namely: Adefisan, Adeola road, Ondo Road, Molipa, Ikangba, Igbeba, Idowa, Ososa, Erinlu, Alapo and Ala. The questionnaires were administrated personally by the researcher to the respondents at their different locations.

Data Analyses

The data generated from the survey were analysed and the results were presented using:

(a) Descriptive statistics involving the use of frequency tables and percentages.

(b) Chi-square (X^2) analysis was used to test for the relationship between the incomes generated from sale of urban products and certain socio-economic characteristics. The formula for the Chi-square (X^2) is given as:

$$X^2 = \sum \frac{(O - E)^2}{E}$$

Where O = Observed measurement

E= is Expected value (mean)

Results and Discussion

The results, as shown in Table 1, reveals that there are mainly (50%) within economically active ages of 31-40years and 41-50years (38%). Mostly (74%) had tertiary education and are generally married (90%) with household sizes ranging from 3-8persons per households.

Table 1 - Demographic and Personal Characteristics of Respondents (N=200)

Variables	Frequency	Percentage
Age (Years)		
21-30	4	8.0
31-40	25	50.0
41-50	19	38.0
51-60	2	4.0
Level of Education		
Primary	5	10.0
Secondary	8	16.0
Higher Education	37	74.0
Marital status		
Divorce	1	2.0
Married	45	90.0
Single	4	8.0
Household Size		
3	10	20.0
4	12	24.0
5	9	18.0
6	8	16.0
7	7	14.0
8	4	8.0

Table 2 shows that 86% of the respondents are involved in tree planting with experiences of 11-20years (60%) and 1-10years (34%). Majority (60%) had previous knowledge about urban forestry and they grow edible fruit trees (98%), shrubs (44%), ornamental plants (18%) and other trees (14%).

Table 2 - Urban Forestry Information (N=200)

VARIABLE	FREQUENCY	PERCENTAGE
Involvement in Tree Planting NO	7	14.0
YES	43	86.0
Experience (yrs)		
1-10	17	34.0
11-20	30	60.0
21-30	3	6.0
Knowledge		
YES	20	40.0
NO	30	60.0
Type of Trees Grown		
Edible fruit plant	49	98.0
Ornamental plants	9	18.0
Shrubs	22	44.0
Trees	7	14.0
Source of Planting Material		
Forestry	49	98.0
Horticulturist	1	2.0
Type of Planting Material		
Seeds	48	96.0
Roots	3	6.0
Stems	24	48.0
Seedlings	5	10.0

The source reveals that there are planting materials mainly (98%) from Ogun State Ministry of Forestry and other private forestry and horticultural Nurseries (2%). In terms of planting materials used for propagation, they generally use seeds (98%), stems (48%), seedlings (10%) and roots (6%).

Table 3 summarizes the perceived benefits derived from growing trees in urban centres in their order of importance to include provision of shade (96%), nutrition supplementation via production of edible parts like leaves, fruits and nuts (92%), serves as wind breakers (82%), production of medicinal materials (80%), beautification of the environment/ ornamental and aesthetic values (78%), erosion control (72%), release of oxygen to the atmosphere for human use (72%), carbon dioxide reduction (44%) , noise pollution reduction (36%), wood for fuel (26%), habitat for wildlife (18%),fodder for livestock (6%) and provision of timber and poles (2%).

Table 3 - Distribution of respondents according to the benefits derived from urban forestry

BENEFITS	FREQUENCY	PERCENTAGE
Provision of shade	48	96.0
Beautification of Environment	39	78.0
Wind breaker	41	82.0
Edible parts	46	92.0
Fodder	3	6.0
Medicinal parts	40	80.0
Release of Oxygen to the environment	36	72.0

Control of Erosion	36	72.0
Reduction of Carbon (iv) oxide	22	44.0
Fuel wood	13	26.0
Noise reduction	18	36.0
Habitat for wildlife	9	18.0
Provision of timber and poles	1	2.0
Total	**352***	**704***

** Greater due to multiple responses*

Ward (1992) and Adejumo (2003) highlighted the benefits derived from growing trees in the metropolis to include - First, it provides a physical condition with appealing outlook. Second, it promotes good health as carbon - related gasses generated in cities are utilized during plants' photosynthesis while oxygen that is useful for man is released as bye product. Third and perhaps the most important to this study, plants generally enhance the economic and social values of the community. Generally, trees have a positive impact on energy and carbon dioxide conservation, air quality, urban hydrology, noise reduction, ecological stability, landscape spaces, medical and psychological health, real estate values, economic development, and community wellbeing (Dwyer et al 1992).

FAO (2016) indicated the benefits of growing trees in cities as sstrategic placement of trees in urban areas can cool the air by between 2 ºC and 8 ºC, large urban trees are excellent filters for urban pollutants and fine particulates, mature trees regulate water flow and improve water quality, wood can be used for cooking and heating, spending time near trees improves physical and mental health by increasing energy level and speed of recovery, while decreasing blood pressure and stress, trees can provide food, such as fruits, nuts and leaves, trees properly placed around buildings can reduce air conditioning needs by 30% and save energy used for heating by 20–50%, trees provide habitat, food and protection to plants and animals, increasing
Urban biodiversity, Landscaping, especially with trees, can increase property values by 20%.

Table 4 reveals the negative effects of growing trees in the city as constituting nuisance (94%), energy reduction (78%), unorganized wastes and litters (68%) as well as vandalization (12%).

Table 4 - Distribution of respondents according to the negative effects of urban forestry

EFFECTS	**Frequency**	**Percentage**
Nuisance	47	94.0
Solar energy	39	78.0
Vandalization	6	12.0
Unorganised waste	34	68.0
Total	**126***	**252***

** Greater due to multiple responses*

Table 5 shows that respondents faced the following constraints in urban forestry in the study area- loss of green (100%), lack of public awareness (90%), lack of information (78%), inadequate spaces (72%), uncontrollable root ystems (46%) respectively in their order of importance.

Table 5 - Distribution of respondents based on major constraints to in urban forestry

CONSTRAINTS	**FREQUENCY**	**PERCENTAGE**
Loss of greens	50	100.0
Lack of information	39	78.0
Lack of public awareness	45	90.0
Inadequate fund	4	8.0
Root System	23	46.0
Poor Tree care Practices	15	30.0
Poor tree selection	10	20.0
Inadequate space	36	72.0
Poor soil	10	20.0
Poor nursery stock	4	8.0
Government policy	1	2.0
Total	**237***	**474***

** Greater due to multiple responses*

Table 6 shows the association between the socio-economic characteristics of urban foresters and their sales of produce. The Chi square value (0.007) for test of independence of the type of plant grown and sales of produce is significant (P<0.05) which indicated that there is a strong association between the type of tree grown and sales of produce. i. e. the more trees farmers grow, the more they have produce to sell from them. On the other hand, the chi square value of the association between the town of farmers and the sales of produce (0.319) is not significant (P<0.05), which means there is no significant association between the town / village and sales of urban tree products.

Table 6 - Chi Square of Association between socio - economic characteristics and sale of produce

VARIABLES	**CHI^2 VALUE (P<0.05)**	**DECISION**
Type of plant grown	0.007	Significant
Town	0.319	Not Significant
Age	0.093	Not Significant
Level of Education	0.360	Not Significant
Marital status	0.370	Not significant
Household size	0.170	Not significant
Length of growing trees	0.004	Significant
Growing trees	0.026	Significant
Knowledge of urban forestry	0.006	Significant

Also, the chi square value (0.093) of the association between age of urban foresters and their sales of product is not significant (P<0.05) which means there is no significant association between the ages of urban foresters and their sales. More so, the chi square value (0.360) of the association between the level of education and sales of produce is not significant (P<0.05) meaning there is no significant association between the level of education of urban foresters and their sales of produce and the same applied to marital status of urban foresters which had a chi square value 0.370 which is not significant (P<0.05).

Moreover, the chi square value (0.170) of the association between the household size of urban foresters and the sales of product is not significant (P<0.05) as it shows no association between the two variables. Whereas, the chi square value 0.004 is significant (P<0.05) which shows that there is a strong association between the length of time the urban foresters have been growing trees and their sales of produce; that is the longer the number of years of involvement in urban forestry the more produce they will have to sell.

Also, the chi square value 0.026 of the association between the growth of tree and sales of produce from urban forestry is significant (P<0.05) which means that all the urban dwellers who grow trees are likely to have produce to

sell from the trees. Finally, the chi square value (0.006) of the association between knowledge of urban foresters about urban forestry and the sale of produce although show a weak association but there is indeed a relationship. It is therefore regarded as significant.

Oyebade et al (2015) reported that there was high association between the demographic characteristics of the respondents and knowledge about the potential benefits of trees within the study areas. Educational level of respondents helps by making them know the functions of these trees to their environment. The study showed that a great number of respondents were students and can help in the dissemination of urban forest information as to why we need trees around our environments. Konijnendijk et al (2004) also reported that urban trees protect soils and moderates harsh urban climates by cooling the air, reducing wind speeds and shading.

Conclusion and Recommendation

The study concludes that urban forestry is highly beneficial to the residents and recommends more awareness on growing tree species in urban areas, proper planning and legislation to ensure compliance to sustainable uses.

References

Ali, M H, *et al.* (1992) 'Trees and Tree Lovers of Egypt' in: *Proceedings of the Fifth National Urban Forest Conference*, Los Angeles, California, November 1991, Rodbell, P (Editor), pp 208–210.

Arboricultural Association, (1990), *Amenity Valuation of Trees and Woodlands*, Arboricultural Association, p 8–9.

Beatty, R, (1985), 'Planning Guidelines for Urban Forest Management, *Economics of Ecosystem Management*, (Hall, D O, Myers, N and Margaris, N S, Eds), Dr W Junk Publishers, Dordrecht, pp 165–173.

Benavides Meza, H M, (1992), 'Current Situation of the Urban Forest in Mexico City', *Journal of Arboriculture*, 18 (1): 33–36.

Biddle P G, (1987), 'Trees and Buildings', *FC Bulletin*, 65: 121–132.

Bradford, M G and Kent, W A (1977) *Human Geography Theories and their applications* University Press, Oxford, U.K.

Burch W R, and Grove, J M (1993) 'People, trees and participation on the urban frontier' *Unasylva* 44(173): 19–27.

Caballero Deloya M, (1993) 'Urban forestry in Mexico City' *Unasylva* 173(44):28–32.

Campbell T, (1989), 'Environmental Dilemmas and the Urban Poor', in, *Environment and the poor: Development strategies for a common agenda*, Jeffrey Leonard, H, et al. (US-Third World Policy Perspectives no 11), Washington, DC: ODC, 1989, pp 165–187.

Carter E.J. (1992a) 'Tree cultivation on private land in the middle hills of Nepal: lessons from some villagers of Dolakha District' *Mountain Research and Development* 12 (3):241–255.

Carter E.J. (1992b) 'Limbe Botanic Garden and Rainforest Genetic Conservation Project Socio-Economic and Institutional Study Final Report' Report produced under assignment to the Overseas Development Administration, UK.

Carter, E. J. (1995) The Potentials of urban forestry in Developing countries: A concept paper.

Chacalo A and Pineau, M, (1991) 'Problemes environmentaux et situation des arbres urbains dans la Ville de Mexico'. *Journal of Arboriculture* 17(2): 49–54.

Clark J R and Kjelgren R, (1990), 'Water as a Limiting Factor in the Development of Urban Trees', *Journal of arboriculture* 16(8): 203–208.

Clifford, D R and Gendle, P, (1987), 'Treatment of Fresh Wound Parasites and of Cankers', in *Advances in Practical Arboriculture*, Patch, D (Editor), Forestry Commission 65, HMSO, London, pp 145–148.

Cline-Cole, R A, Falola, J A, Main, H A C, Mortimore, M J, Nichol, J E and O'Reilly, F D, (1987), 'Wood Fuel in Kano, Nigeria', final report of the Rural Energy Research Project, submitted to the United Nations University Development Studies Division, Bayero University, Kano.

Cline-Cole, R A., (1990), 'The Urban Fuel Plantation in Tropical Africa: A case for re-evaluation, *Land Use Policy*, 7(4):323–336.

CONCERN, (1992), 'Progress Report on the Natural Resource Programmes Nampula Province Mozambique'. CONCERN, Dublin, Ireland.

Cook, D, (1978), 'Trees, Solid Barriers and Combinations: Alternatives for Noise Control', *Proceedings of the National Urban Forestry Conference*, ESF Publication 80-003, Syracuse, New York, USA, pp 330–334.

Coppin, N J and Richards, I G, (eds) (1989) 'Use of Vegetation in Civil Engineering' Construction Industry Research and Information Association, London, UK.

Davies, R J, (1987), 'Weed Competition and Broadleaved Tree Establishment', in *Advances in Practical Arboriculture*, Patch, D (Editor), Forestry Commission 65, HMSO, London, pp 91–99.

Diarra, N, (1975), 'Le Jardinage Urbain et Suburbain au Mali: Le Cas de Bamako', *Journal d'Agriculture Tropicale et de Botanique Appliquee*, 22 (10–12): 359–364.

Douglas (1983) 'The Urban Environment' Edward Arnold.

Drakakis-Smith, D, (1987),*The Third World City*, Methuen Introductions to Development Series, Methuen London, New York.

Ebenreck, S, (1988), 'Trees for Third World Cities', *American Forests*, November/December 1988: 65–68.

Encyclopædia Britannica Inc., 2012. Web. 02 Aug. 2012 <http://www.britannica.com/EBchecked/topic/282512/Ijebu-Ode>.

Famoriyo, S, (1984), 'Administration of Land Allocation in Nigeria', *Land Use Policy*, July 1984: 217–224.

Food and Agriculture Organisation of United Nations 2016): Benefits of Urban Trees; FAO, 2016, C0024e/1/03.16, FAO, Rome, Italy.

Fortmann L and Riddell J (1985) 'Trees and tenure. An annotated bibliography for agroforesters and others' Land Tenure Center, University of Wisconsin, Madison, USA.

Gadgil, M and Parthasarathy, M A, (1977), 'Trees of Bangalore', *Indian Farming*, 26 (11): 64–67.

Gerhold, H D; Steiner K C and Sacksteder, C J. (1987). 'Management information systems for urban trees'. *Journal of Arboriculture* 13(10): 243–249.

Gilbert, A and Gugler, J, (1992), *Cities, poverty and development Urbanization in the Third World*, Second Edition Oxford University Press, 331p.

Haile, F, (1991), *Women Fuelwood Carriers in Addis Ababa and the Peri-Urban Forest*, ILO, Geneva, 94p.

Hardoy, J and Satterthwaite, D (Eds), (1986), '*Small and Intermediate Urban Centres: Their role in national and regional development in the third world*', Hodder and Stoughton, London, 411p.

Hardoy, J E, Mitlin, D and Satterthwaite D, (1992), 'Environmental problems in Third World Cities', Earthscan Publications Ltd, London, UK.

Hill, D, (1992), 'Urban Forestry Awareness in Quito, Ecuador', in *Proceedings of the Fifth National Urban Forest Conference*, Los Angeles, California, November 1991, Rodbell, P (Editor), p 211–212.

Honghai, D, (1992) 'Urban Agriculture as Urban Food Supply and Environmental Protection Subsystems in China' *Proceedings of an International Workshop on Planning for Sustainable Urban Development: Cities and Natural Resource Systems in Developing Countries* Department of City and Regional Planning, University of Wales College of Cardiff; DPU, University College, London; Institute of Local Government Studies, University of Birmingham; IIED, London.

Hull, R B and Harvey, A (1989) 'Explaining the Emotion People Experience in Suburban Parks' *Environment and Behaviour* 21(3): 323–345.

Jim, C Y, (1990a) 'Selection of Tree Species for Urban Plantings in Tropical Cities' In: *Proceedings of XIX World Congress, IUFRO, Montreal*.

Jim, C Y, (1990b) 'Evaluation of Tree Species for Amenity Planting in Hong Kong' *Arboricultural Journal* 14:27–44.

Jim, C Y, (1991) 'Street Trees in a County Town in South China' *Arboricultural Journal* 15:145–160.

Johnston, M, (1992), 'Urban Forestry - Building Partnerships for Green Cities', unpublished paper presented at the World Congress, IFPRA, Hong Kong, 7 p.

Kamara, J N, (1984), *Energy for Rural Households and Urban Poor: A case from Sierra Leone*, workshop on Energiebedarf fur die Nahrungsmittelerzeugung in Entwickungslandern, Universitat des Landes Hessen, Witzenhausen, 2–4 July, 1984, 33p + app.

Kuchelmeister, G, (1991), 'Urban and Peri-Urban Multipurpose Forestry in Development Cooperation: Experience, Deficits and Recommendations' mimeo report funded by Commission of the European Communities under contract article B 946/90-19, by author from Illertissen, Germany, 164p.

Leach, G, (1987), 'Energy and the Urban Poor', *IDS Bulletin*, 18 (1): 31–38.

Lee-Smith, D; Manundu M; Lamba, D and Gathuru, P K, (1987) 'Urban Food Production and the Cooking Fuel Situation in Urban Kenya' National Report: Results of a 1985 National Survey. Mazingira Institute, Kenya.

Leonard, J H et al. (1989), *Environment and the Poor: Development Strategies for a Common Agenda*, (US-Third World Policy Perspectives no 11), Washington DC: ODC, 222p

Lipkis, A and Lipkis, C, (1990), 'Trees for Africa: A Fruit Tree Partnership', in *Proceedings of the Fourth Urban Forestry Conference*, St. Louis, Missouri, USA, October 1989, Rodbell, P (Editor), p 79–80.

Lowe, M, (1992), 'Shaping Cities', in *State of the World 1992*, World Watch Institute, W W Norton & Co, New York, pp 119–137.

Malhotra, K C and Vijavakumar, M, (1987) 'Greening Urban Centres', *Science Age*, August 1987, pp 12–15.

Malhotra, K C and Vijavakumar, M, (nd) 'Man - Tree Relationship in an Urban Setting: A Socio-Ecological Study', in *Anthropology, Development and Nation Building*, Kalla, A K and Singh, K S (Editors), Concept Publishing Co, New Delhi, pp 273–290.

Matthews, R, Burton, N, Price, C, et al. (1990), 'The Benefits of Amenity Trees' Cobham Resource Consultants.

Miller, R W, (1988), *Urban Forestry Planning and Managing Urban Greenspaces*, Prentice Hall, New Jersey, USA.

Miller, R.W (1997): Urban Forestry: Planning and Managing Urban Green Spaces, 2nd Edition, Prentice Hall, New Jersey.

Murray, S, (1992), 'Urban Forest Planning in Quito, Ecuador', in *Proceedings of the Fifth National Urban Forest Conference*, Los Angeles, California, November 1991, Rodbell, P (Editor), p 213–216.

Niñez, V, (1985), 'Working at Half Potential: Constructive Analysis of Home Garden Programmes in the Lima Slums with Suggestions for an Alternative Approach', *Food and Nutrition Bulletin*, 7 (3): 6–14.

Onganga, O, (1992), 'Urban Forestry Development in Kenya', in *Proceedings of the Fifth National Urban Forest Conference*, Los Angeles, California, November 1991, Rodbell, P (Editor), pp 217–219.

O'Rourke, T, (1990), 'An International Urban Forestry Network', in *Proceedings of the Fourth National Urban Forest Conference*, St. Louis, Missouri, USA, October 1989, Rodbell, P (Editor), pp 81–82.

Oyebade, B.A ,Popo-ola, F.S Itam E.S (2013): Perception of Urban Dwellers about the benefits and Management of Urban Trees in Uyo Metropolis, Akwa Ibom State, Nigeria,ARPN Journal of Science and Technology, VOL. 3, NO. 7, Pp 767-773. http://www.ejournalofscience.org

Patch, D, (1987), 'Trouble at the Stake' in *Advances in Practical Arboriculture*, Patch, D (Editor), Forestry Commission 65, HMSO, London, pp 77–84.

Pokorny de Marcet, C. (1992), 'The greening of Guatemala City', in *Proceedings of the Fifth National Urban Forestry Conference*, Los Angeles, California, USA, November 1991, Rodbell, P (Editor), pp 220–221.

Pollard, D F W, (1977), 'Impressions of Urban Forestry in China', *The Forestry Chronicle*, October 1977: 294–297.

Poynton, R, (1976), 'Tree Planting in an Urbanizing South Africa', in *Trees and Forests for Human Settlements: Proceedings of Papers Presented During P1.05-00 Symposia*, Centre For Urban Studies, Toronto, Canada, p 136–149.

Profous, G V and Loeb, R E, (1990), 'The Legal Protection of Urban Trees: A Comparative World Survey', *Journal of Environmental Law*, 2 (2): 179–192.

Profous, G V, (nd) 'Urban Forestry around the World: A Tale of Five Cities' unpublished paper.

Rankin, K and Joshi M S, (1992), 'Speaking for Shivapuri's Rim-Dwellers' *Himal (Jan–Feb)*.

Richardson, S D, (1975), 'Urban Forestry - Apartheid or Integration?' *Proceedings of the Seventh World Forestry Congress*, Buenos Aires, October 1972. pp 3801–3807.

Sand, P, (1993), 'Design and species selection to reduce urban heat islands and conserve energy.' Paper presented at the *Sixth National Urban Forest Conference*, Minneapolis/St. Paul, Minnesota, USA, 14–18, September 1993.

Sanyal, B, (1985), 'Urban Agriculture: Who Cultivates and Why? A Case Study of Lusaka, Zambia', *Food and Nutrition Bulletin*, 7 (3): 15–24.

Sheikh, M.I, (1976), 'Arboriculture in Pakistan.' Trees and Forests for Human Settlements. Paper presented at the *IUFRO Symposium*, Vancouver, Canada, 11-12, June 1976.

Shepherd, G, (1990), *Forestry, Social Forestry, Fuelwood and the Environment: A Tour of the Horizon*, ODI Social

Forestry Network paper no 11a, Overseas Development Institute, London.
Shigo, A L, (1991) 'Modern Arboriculture' Shigo and Tree Associates, USA.
Shyam Sunder, S, (1985), 'Urban Tree Planting - Foresters Efforts in Bangalore, India', *Proceedings of the IX World Forestry Conference*, Mexico, pp 684–690.
Siki, B, (1984), 'Agriculture, Fuelwood and Conservation Farming in the Atzera Range, Lae, Papua New Guinea', in *Social, Economic and Institutional Aspects of Agroforestry*, United Nations University, pp 86–88.
Smit, J and Nasr, J, (1992), 'Urban Agriculture for Sustainable Cities: Using Wastes and Idle Land and Water Bodies as Resources', *Environment and Urbanization*, 4 (2): 141–154.
Smit, J, (1992) 'Urban Agriculture in Latin America, Africa and Asia', Mimeo prepared for the UNDP Project # GLO-84-007 by RDC Consultants, 1711 Lamont Street, Washington DC 20010 (contact Smit, J, Senior Consultant), 37pp.
Streiffeler, F, (1987), 'Improving Urban Agriculture in Africa: A Social Perspective', *Food and Nutrition Bulletin*, 9 (2): 8–13.
Thaman, R .R, (1987), 'The Pacific Islands and beyond', *Unasylva*, 39 (155): 2–13.
Tregay, R and Ertzgaard, K, (1979), 'Sweden: Ecological Techniques in Urban Landscapes', unpublished mimeo, p 1–2.
Tregay, R and Moffat, D, (1980), 'An Ecological Approach to Landscape Design and Management in Oakwood, Warrington', unpublished mimeo, 25 pp.
Ulrich, R S, (1984) 'View through a Window May Influence Recovery from Surgery' *Science* 224 (4647):420–421.
Ulrich, R S, (1990) 'The Role of Trees in Human Well-Being and Health' in *Proceedings of the Fourth Urban Forestry Conference*, St. Louis, Missouri, USA, October 1989, Rodbell, P (Editor), p 25–30.
United Nations (2013): Department of Economic and Social Affairs, World Economic and Social Survey 2013, Sustainable Development Challenges United Nations, New York, 2013, 216pp.
United Nations, (1991) 'World Urbanization Prospects 1990 Estimates and Projections of Urban and Rural Populations and of Urban Agglomerations' Department of International Economic and Social Affairs. New York, USA.
Van Lindert, P and Van Western A, (1991), 'Household Shelter Strategies in Comparative Perspective: Evidence from Low-Income Groups in Bamako and La Paz', *World Development* 19(8): 1007–1028.
Wade, I, (1987), 'Community Food Production in Cities of the Developing Nations', *Food and Nutrition Bulletin*, 9 (2): 29–36.
Webb, R (ed), (1991), '*Tree Planting and Maintenance in Hong Kong*', The Government Printer, Hong Kong, 53pp.
Webb, R, (1993), 'An Urban Forestry Strategy for Hong Kong: Interdepartmental Working Group on Urban Trees', mimeo, 32pp.
Weinstabel, P, (1984), 'Agro Forestry Aspects of the Establishment of the Green Belt Around Ouagadougou, Upper Volta', in *Social Economic and Institutional Aspects of Agroforestry*, United Nations University, pp 56–60.
White, R, (1992), 'The International Transfer of Urban Technology: Does the North have Anything to Offer to the Global Environmental Crisis?, *Environment And Urbanization*, 4 (2):109–120.
Wolf, K. L (2002): Using case studies in urban forestry education. College of Forest Resource, University of Washington. Pp26-45. www.cfr.washington.edu/research.
World Bank, (1992) *World Development Report 1992 Development and the Environment* Oxford University Press, Oxford, U.K.