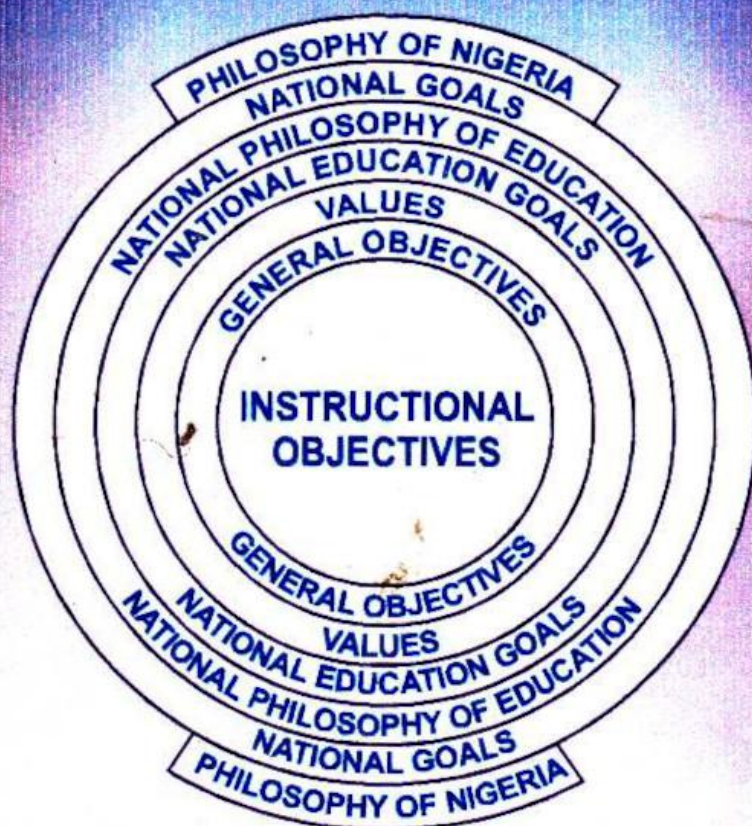


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SERIES 1

Chapter Ten

URBAN AGRICULTURE IN NIGERIA: THE DISASTROUS IMPLICATIONS

By

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INTRODUCTION

Nigerian environment is one which is in a continuous state of degradation. It is a common observation that every town in Nigeria shares one form of environmental problem or the other. This ranges from air and water pollution to soil degradation. Another important pollution in the city is the abundant carbon monoxide from automobile exhausts (Essien, 2000).

The world human population is projected to 10.5 billion in 1990 – 2005, against 5 billion projected in 1980 – 1989, (Stone et al. 1999). The concentration of human population is more pronounced in cities than in rural areas. While population increases, the city occupants also embark on agricultural activities on subsistence, or below subsistence level. Crop cultivation, animal rearing, food processing and application of agrochemicals are commonly abused in urban farming.

The abuse of urban agriculture was very intensive during the period of Operation Feed the Nation Programme of 1976. According to Ezedinma (1995), increasing food insecurity, dwindling income and rising inflation continue to sustain urban agricultural production. Man's quest for quick and high returns of agricultural produce without due regard to the fragile tropical soil, is as old as tropical agriculture and has resulted in a phenomenon of soil doom (unproductive soil).

The urban cultivators are generally land conscious and greedy. They cause more damage to the biosphere environment of man than their

rural counterparts. In the light of this, the objectives of this paper are to appraise agricultural activities in the urban area and highlight the associated environmental consequences.

AGRICULTURAL ACTIVITIES IN URBAN CENTRES

The following agricultural activities are usually abused in urban centres.

- (a) Animal rearing
- (b) Cropping
- (c) Application of Agro-chemicals
- (d) Irrigation
- (e) Composting
- (f) Timber Utilization
- (g) Food processing
- (h) Marketing of agricultural produce

(a) **ANIMAL REARING:** Some urban dwellers are also involved in production of animals on a small scale. The aspects of animal farming in the urban areas include poultry, piggery, rabbitary, goatry and currently snail production. However, the latter does not create much impact like others on the environment.

The problems of animal farming in urban areas include limited space, inadequate or non-existence of forage and improper waste disposal. The nomadic herdsmen give no regard to overgrazing and compaction caused by the cattle. Overgrazing leads to erosion, extinction of desirable plant species and poisonous weed encroachment.

Wastes problem emanates from excessive animals' dung. According to Ensminger (1977) one cow produces as much wastes as 16 humans. Thus, with 200,000 cows, the wastes problem is equal to a city of 320,000 people. In developed nations of the world, the wastes are recycled for animal feeds or as manure. In Nigeria, the wastes constitute a nuisance in the streets. The dung are eroded into streams, rivers, ponds and lakes, resulting in public health hazards (Udomekwa, 2000). Animal dung produce more harmful effect during the wet season than in the dry season (Uchegbu, 1998).

Drainage from feedlots has a high strength of polluting the surroundings. Ammonia gas produced from animal urine and in the poultry house

contributes to rendering the environment unsuitable for human survival. Emission of ammonia gas is more pronounced in pens overstocked with birds. Semi-intensive goat and sheep productions are often associated with urban husbandry. Feeds are mainly fodder gotten from the environment. Feed supplement from kitchen bio-wastes is an added advantage. The search for fodder results in deforestation and over-utilization of natural pastures. These practices also contribute to environmental insecurity in the urban area.

(b) **CROPPING:** Pressure on land is a major problem facing cities and towns in Nigeria.

The problem has now extended to many rural areas in South Eastern parts of Nigeria. Cost of one plot of land in Uyo and Calabar is now over Five Hundred Thousand Naira (₦500,000.00). The situation is even worse in Lagos, Abuja, Kaduna, Onitsha, Enugu and Port-Harcourt main towns where it is difficult to procure a parcel of land for residential building with the sum of over Two Million Naira (₦2,000,000.00).

Increasing demands for housing, establishment of institutions of learning, industries, recreational grounds, hospitals, road constructions, markets establishment, have deprived over 60% of the urban occupants the opportunity for Subsistence Agriculture due to relatively limited space for agricultural activities.

In recent times, the available space in the city including residential quarters is used for cropping. This cropping is abused by those practicing continuous cropping. Refuse is the main source of maintaining the soil fertility, (Nweke and Wineh, 1980). The farmers deliberately dump household refuse and animal droppings on their surroundings to raise crop yield, (Agboola, 1979). The dumping of the materials is usually carried out without any regard to the environment.

The continuous cropping of the environment contributes to the existing erosion problem caused by road construction and congested buildings in the city.

(c) **APPLICATION OF AGRO-CHEMICALS:** Agro-chemicals are more available in the urban centres than in the rural environment. Very often, their respective prices in the town are relatively low. Subsistence Agriculture in urban centres makes more use of agro-chemicals per unit area than at commercial level. In the cities, the limited land is not used for cash crops, but for food crops. The food crops range from root-tuber crops to vegetables.

Leafy vegetables require nitrogenous fertilizer for rapid growth. The urban cultivators usually apply fertilizer for waterleaf production at two weeks interval. The leftover (residual nitrogen in the soil combines with soil water to form either nitric acid or tetra oxosulphate (vi) depending on the kind of nitrogenous fertilizer. Such nitrogenous compounds are Ammonium Sulphate (vi), $\text{NH}_4)_2 \text{SO}_4$, which can lead to the formation of tetra oxosulphate (vi) (H_2SO_4), in the soil, or Ammonium Nitrate (NH_4NO_3) which can equally lead to the formation of nitric acid.

Acid soil is crop specific and has harmful effect on the ecosystem. Washing away of fertilizer compounds, particularly, nitrate, by rain water can lead to disastrous effect on aquatic wild lives. Agrochemicals used for pests control (pesticides), or weeds control (herbicides) can pollute the immediate environment and leaching of these chemicals usually results in underground water contamination. Pesticides, such as DDT, Aldrin and Veto 85 are still in use by urban cultivators in Nigeria. Fungicides of mercury compounds also cause serious health problem. Herbicide, such as 2- 4D and 2-4-57 can accumulate in the plant tissues and processed crop products to cause health hazards on the consumers.

(d) **ABUSE OF IRRIGATION:** Irrigation can alleviate the food insecurity of the drought zone by contributing to food production. Market or home gardening is at its production peak between November – March, which falls under dry season farming in Nigeria.

The vegetable of dry season farming in urban areas of Western Nigeria are cocks comb (*Celosia argentia*), Weudu (*Corcorius glitorius*) and green (*Amaranthus species*). In the urban centres of South Eastern

Nigeria, the popular leafy vegetables include bitter leaf, *Telfairia*, and waterleaf, while urban areas in Northern Nigeria produce *amaranthus* spp, cabbage, lettuce, etc.

The dry season Agriculture entails the use of irrigation for crop production. The irrigation is carried out without judicious control of both quality and quantity of water supply. Water logging and erosion are always associated with uncontrolled irrigation. Poor source of water like salty water can lead to increase alkalinity. Consequently, the soil becomes unproductive and cannot support plant growth, leading to ever increasing food insecurity. The ecosystem becomes disrupted since the micro fauna and flora do not thrive well on alkaline soil.

(e) **COMPOSTING:** The use of compost manure for crop production was mainly regarded as school affairs in West Africa until about 1980. School farmland is always very limited and it is cropped within 2 years rotationally. Application of compost manure becomes necessary to raise the fertility of the soil. By 1960 – 1970, pressure on land and continuous cropping was ever limited. Today the use of compost manure has gained public acceptance, particularly, among the urban cultivators.

Compost materials include: (i) bio-wastes from compound, kitchen, markets and restaurants and (ii) weeds and leaves of plants. Proper composting requires technology and poor composting produces leachate, which is a terrible land pollutant (Uchegbu, 1998). The heat emitted from the compost mass during composting increases health inconveniences, particularly during heat period.

(f) **TIMBER UTILIZATION:** Timber utilization is carried out mostly in the urban areas. A lot of carpenters utilize the high population and demand for house furniture and building, thus set up their businesses indiscriminately in the urban areas, even within residential houses. The by-products of wood include sawdust and the wood shavings. The sawdust and the wood shavings are good sources of fuel and useful mulching materials. The wood by-products are usually heaped before disposal. The heap materials can be burnt and if it is wet can be dumped indiscriminately. This is when it becomes a nuisance and a problem in the urban area. The frequent burning of the shaving or sawdust is

another environmental problem. Air becomes polluted. The ashes produced are bound to be carried away by water erosion or wind to water bodies, hence causes water contamination.

(g) **FOOD PROCESSING:** Food processing is very common in urban centres. The processing is often very intensive. Cassava must be grated. Beans, cereals, tomatoes and fresh pepper must be grounded. The grinding produces noise, which also constitutes nuisance in the already noisy environment caused by moving vehicles and other noise making occupants. Grating also produces leachate, which attracts flies due to unpleasant odour produced in the process of fermentation. Indoor food and water may become contaminated, resulting in health hazards.

Smoking of fish, chicken, maize, plantain, meat, etc, produces smoke, which increases atmospheric carbon monoxide. Air pollution is a major source of headaches, respiratory problems, chronic coughs, sore throats, skin rashes and eye irritation, (Uchegbu, 1998). It is a general belief that children are more susceptible to urban pollution than the adults. There is a report by Aina (1995) that some 40,000 children die worldwide from diseases and other epidemics every day due to our poor wastes disposal.

(h) **MARKETING OF AGRICULTURAL PRODUCE:** The agricultural products that are no longer marketable due to spoilage are discarded sometimes at the spot of sales (market or public place), particularly by women who constitute over 60% in the business of marketing perishable agricultural produce in Nigeria. Such solid wastes include fermented garri, foo-foo, okro, leafy vegetables, tomatoes, mangoes, pepper and other fruits. Unfortunately, there is no day set aside for sanitation in the urban market. Every day is a market day, including Sundays and public holidays. The bio-wastes pollute the environment and increase health hazard for the urban occupants.

SUMMARY OF DISASTROUS IMPLICATIONS OF ABUSED URBAN FARMING

Agricultural Activities	Disastrous implications	Sustainable Agricultural practices
(a) Continuous Cropping	<ul style="list-style-type: none"> - Poor soil fertility - Erosion - Leaching - Unproductive and acidic soil - Disruption of ecosystem - Famine and malnutrition 	Proper crop rotation
(b) Nomadic herding	<ul style="list-style-type: none"> - Littering of dung on the high ways and streets - Overgrazing - Contamination of rivers, stream and other water bodies. - Outbreak of epidemics. 	Control herding
(c) Unsuitable farming methods, e.g. slope wise farming	<ul style="list-style-type: none"> - Increase erosion menace, which deepens gullies. 	Crop cultivation on ridges across the slope with heavy mulching and provision of cross bars. Tree planting should be encouraged.
	<ul style="list-style-type: none"> - Increase carbon monoxide in the atmosphere, leading to respiratory problems and increase danger of ozone layer and reduction in visibility. 	Alley cropping and control smoke device for roasting.
(e) Food processing	<ul style="list-style-type: none"> - Leachate pollutes the environment and underground water. 	General sanitation at the processing centres.
(f) Indiscriminate disposal of bio-wastes of Agricultural origin.	<ul style="list-style-type: none"> - Increase cholera, typhoid and dysentery. 	Control of wastes disposal.
(g) Marginal land cultivation.	<ul style="list-style-type: none"> - Danger of flood - Unproductive land 	Tree planting on marginal farmland.

(h) Poor location and practice of home gardening and fish production.	<ul style="list-style-type: none"> - Loss of aesthetic value of residential quarters. Breeding ground for mosquitoes and consequence effect of malaria on the occupants. 	Home gardening production with due regards to man's environment. Net coverage of artificial fishpond becomes very important.
(i) Fodder for intensive goats or sheep rearing.	<ul style="list-style-type: none"> - Deforestation and wind damage increase. - Erosion hazard. 	Establishment of forage crops and provision of supplementary feeds to animals.
(j) High stocking rate of farm animals due to limited space.	<ul style="list-style-type: none"> - Flies of the surrounding and increase flies contaminations. - Increase ammonia gas. 	Appropriate stocking rate.
(k) Indiscriminate application of Nitrogenous based fertilizer	<ul style="list-style-type: none"> - Increase acidity - Unproductive soil 	The use of compost and farm yard manure should be intensified.
(l) Indiscriminate pesticides and herbicides application.	<ul style="list-style-type: none"> - Air pollution - Underground water contamination. - Encourage lungs and liver diseases 	Organo pesticide and integrated weed control should be emphasized.

CONCLUSION

The high population and food crisis in Nigeria necessitate an ever increasing intensity in the use of any available land for agricultural activities.

Over-cropping, nomadic herding, poor irrigation, indiscriminate disposal of bio-wastes, farming on marginal areas and ignorance of the fragile tropical soils contributes to the devastating environment for human living.

RECOMMENDATIONS

The following recommendations can help to minimize environmental hazards caused by agricultural activities in urban centres in Nigeria:

- (i) The inherited anxiety by African youths for city migration should be discouraged to reduce urban congestion. This could be achieved by providing social amenities, industries and employment in rural areas by governments of all levels and by privileged Nigerians. Even among the urban dwellers, birth control is necessary through family planning. Japan has reduced her birth rate to keep space with food production over some decades now.
- (ii) Environmental Education should be incorporated into Agricultural Development Programme (ADP) in Nigeria, to enable the Extension Agents educate the urban farmers both on agricultural issues and also on environmental education.
- (iii) Implementation of sustainable Agriculture in urban areas can make remarkable contribution to higher crop yields and conservation of the soils. This should include the use of high-yielding variety, better breeds of animals and controlled use of agro-chemicals.
- (iv) Legislation on the sanitation of the residential quarters and control of the abuses of agricultural activities should be established and implemented in urban areas.
- (v) Composting method of wastes in the outskirts of the town should be introduced and encouraged.
- (vi) Wastes disposal board should be adequately funded and sub-units should be established to meet the credibility of its functions throughout the urban areas.

- (vii) Involvement of women in wastes management should also be encouraged.
- (viii) The use of device to disperse the air pollutants by using strong wind becomes necessary, particularly in the dry season. In the rainy season, rain drops naturally dilute the pollutants and make them relatively harmless.
- (ix) Land reclamation to include deserts, rocky areas, hills, valleys, swampy areas, sloppy land, etc, within the urban centres should be carried out.

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