



Three Decades of Experimentation in Tropical Nigeria: A Personal Experience

Igboji P. O

Department of Soil Science and Environmental Management, Ebonyi State University, Abakaliki, Nigeria.

ARTICLE INFO

Article history:

Received: 6 March 2015;

Received in revised form:
28 April 2015;

Accepted: 5 May 2015;

Keywords

Life, decades,
Academics,
Research, Tropical agriculture,
Experimentation.

ABSTRACT

Life is a journey. The way time flies. Three decades of academics, research and charity packed life. From 1984 – 2014 the pedestal has been on to shape tropical agriculture, capture temperate agriculture, and serve humanity in all spheres of life. Most rewarding is the metamorphosis in academics and charity at local and cross-country levels. There can be no better tribute to my lecturers, supervisors, students, bosses, schools, colleges and universities than to review this personal three decades of experimentation in tropical Nigeria.

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Introduction

The region of the earth lying between the tropics of cancer, 23.5° N and Capricorn, 23.5° S defines the tropics. It is also differentiated with latitude which is the distance north or south of the equator as measured by degrees of the angle at the earth's center; and with longitude which is a measure of distance on the earth's surface east or west of the Greenwich meridian, an imaginary line running from pole to pole, through Greenwich in London. Longitude, like latitude is measured in degrees of an angle taken from the center of the earth. The precise location of a place is given by a grid reference comprising longitude and latitude (Collins, 2006). Nigeria is located in the western part of Africa, bordering the gulf of guinea, lying between Latitude 04° 20' and 14° 30' E of Greenwich (Collins, 2006).

Experimentation is scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact (Oxford dictionary, 2015). When a known order is established the null hypothesis is confirmed, while when a new order is established the null hypothesis is rejected and the alternative hypothesis accepted. This work reviews personal three decades of experimentation in tropical Nigeria.

The period 1984-1985 experimentation

The role of farm machines in agricultural development of Nigeria was evaluated at Federal School of Agriculture/National Root Crops Research Institute, Umudike (now Michael Okpara University of Agriculture). OND (General Agriculture dissertation). Supervisor – Engr. G. I. Nwandikon

Summary

The era of farm machines as a substitute to human or animal labour has widened throughout the whole world. This has been a tremendous development compared to the time of our forefathers. The era of farm machines has led to surplus food for mankind. In Nigeria, the government has been intensifying agricultural mechanization to boost self sufficiency in food production immediately the oil glut set in, in the early eighties. This led to the establishment of many river basin development authorities, tractor hiring units and national centre for mechanization of agriculture in the country. Machines that are used for different farm operations are classified according to uses. In Nigeria, mechanization of agriculture has many

hindrances, varying from land tenure system to attitude of government towards mechanized agriculture. Agricultural mechanization in Nigeria will equally improve if the government and governed intervenes into the militating factors. Many new machines, both indigenous and expatriate are also being developed and tested which will play more significant role in boasting effective agricultural mechanization in Nigeria and hence self sufficiency in food production in the nearest future.

The period 1987 – 1988 experimentation

Reactions of cocoyam cultivars to root knot nematode (*Meloidogne incognita*) populations was studied at Federal School of Agriculture/National Root Crops Research Institute, Umudike (now Michael Okpara University of Agriculture). HND (General Agriculture) dissertation. Supervisor – Dr E. C. Nwauzor

Abstract

Five varieties of cocoyams were evaluated for their reaction to four levels of root knot nematode (*Meloidogne incognita*) populations in polybags in Federal School of Agriculture, Umudike. The varieties include: ede-ocha, coco-india, ede-ofe, ukpong and ede-uhie. The population densities were 0 (control), 100, 500, and 5,000. Galling, a remarkable symptom of root-knot nematodes was observed on corms/cormels. The outgrowth that looked like galls were “eyes” of cocoyam. Root knot nematodes was found to have little or no effects on the growth, yield of corms and cormels. Therefore, the *colocasia* and *xanthosoma* cultivars tested were declared resistant. **The period 1989 – 1990 experimentation**

Evaluation of rice yield grown in association with cowpea, popcorn and okro. Department of Soil Science, College of Agricultural Sciences, Anambra State University of Science and Technology (ASUTECH), Abakaliki. PGD (Soil Science and survey) dissertation. Supervisor – Dr F. N. Nnoke

Abstract: Evaluation of rice yield grown in association with cowpea, popcorn and okro was investigated. Five different crop combinations, including sole rice was studied. The experiment was laid in randomized complete block design (RCBD). The treatments were replicated three times. The crops were grown to harvest age. Results obtained showed the crop combination in order of optimum performance with rice intercrop as follows:

rice/cowpea, sole rice, rice/cowpea/popcorn/okro; rice/popcorn and rice/okro. Thus, cowpea is a better intercrop with rice than okro or popcorn.

The period 1991 – 1992 experimentation

Effect of different levels of nitrogenous fertilizer and cowpea population on the growth and yield of maize-cowpea intercrop. Department of Soil Science, College of Agricultural Sciences, Enugu State University of Science and Technology (ESUT), Abakaliki. MSc (Soil Science). Supervisor: Dr F. N. Nnoke

Abstract: Effect of different levels of nitrogenous fertilizer and cowpea population on the growth and yield of maize cowpea intercrop was investigated. Sixteen treatment combinations in a 4 x 4 factorial experiment were studied. The factors are four levels of nitrogenous fertilizer as they affected a definite maize density. Results obtained showed that maize/cowpea intercrop is better at a cowpea density of 50,000 stands ha⁻¹ and at a nitrogenous fertilizer level of 60 kg N ha⁻¹.

The period 1996 – 1997 experimentation

Reaction of acid sandy soil to welders carbide waste in tropical environment. Department of Soil Science, University of Nigeria, Nsukka. MSc (Soil Science) dissertation. Supervisor: Dr I Unamba-Oparah

Abstract: A neglect for correction of surface and sub-surface acidity can be a yield limiting factor in tropical soils. This study was conducted to address this problem using local resources. Welders' carbide levels were evaluated on an acid sandy Ustoxic Paleustult. There was high significant ($P = 0.01$) difference for soil pH(KCl) at subsoil using 4 t ha⁻¹ waste after the first year of cropping. There was no significant effect of waste on exchangeable acidity. There was significant ($P = 0.05$) differences for total N at subsoil after the first year, with 2 t ha⁻¹ waste giving highest cocoyam (*Colocasia esculenta* (L.) tuber yield of 4.47 t ha⁻¹ for the two years. The waste had no significant effect on cocoyam tiller potential, number of leaves and height; except for LAI at 72 d after planting ($P = 0.05$); where a LAI of 0.8 was recorded using 2 t ha⁻¹ of the waste during the first yr of cropping. The highest groundnut (*Arachis hypogea*) yield of 0.65 t ha⁻¹ was recorded using 1 t ha⁻¹ of the waste for two yr. Cocoyam tuber yield was positively correlated to soil pH(H₂O); $r = +0.49/+0.13$ at top and sub-soil soil after the first y of cropping. The same positive correlation, $r = +0.39/+0.64$ was recorded at both soil depths after the second yr of cropping. On the other hand seed yield of groundnut was negatively correlated with soil pH(H₂O) at top and sub-soil; $r = -0.30 - 0.22$ after the first yr of cropping, but positively correlated, $r = +0.23$ at sub-soil after the second year of cropping. There was significant positive correlation between cocoyam tuber yield and exchangeable Al in top soil after the two yrs of cropping, $r = +0.58/0.90$ and that between seed yield of groundnut and exchangeable acidity in the sub-soil, $r = +0.90$ after the first yr of cropping. Welders' carbide waste was found ideal for correction of soil acidity in an acid Paleustult top and sub-soil acidity, though at high application rate. However, low rates enhanced the yield of both crops.

The period 1998 – 1999 experimentation

1. Comparative study of incorporated *Gliricidia sepium* and *Gmelina aboris* as green maure on maize production. Department of Soil Science, College of Agricultural Sciences, Enugu State University of Science and Technology, Abakaliki. B.Agric (Soil Science) dissertation. Name of student: O. O. Uwaeze. Supervisor: P. O Igboji

Abstract: Effect of incorporated *Gliricidia sepium* and *Gmelina aboris* as green manure on maize production was investigated. Four treatment combinations in a randomized complete block design were studied. The treatments were replicated four times and the crops were grown to harvest age. The treatments were 5 t ha⁻¹ of *Gmelina aboris* leaves (fresh), 5 t ha⁻¹ of *Gliricidia sepium* + *Gmelina aboris* leaves (fresh); 5 t ha⁻¹ of *Gliricidia sepium* leaves (fresh) and control. Results obtained showed that maize production was optimum at 5 t ha⁻¹ of *Gliricidia sepium* and *Gmelina aboris* leaves. This was followed closely by 5 t ha⁻¹ of *Gmelina aboris* leaves. The test green manure leaves were declared agronomically and ecologically sound in agriculture

2. The effect of different levels of nitrogenous fertilizer on the soil physico-chemical properties and on growth-yield of *Amaranthus hybridis* (Green). Department of Sol Science, College of Agricultural Sciences, Enugu State University of Science and Technology, Abakaliki. B.Agric (Soil Science) dissertation. Name of student: J. O. Ibeleme. Supervisor: P. O. Igboji

Abstract: The effect of different levels of N-fertilizer on soil physico-chemical properties and on growth-yield of Amranthus hybridis (Green) was studied at Soil Science Department Research and Teaching Farm, Enugu State University of Science and Technology, Abakaliki, between 17th April to 18th June, 1999. Five treatments namely: 0, 30, 60, 90 and 120 kg N ha⁻¹ were laid out in a randomized complete block design (RCBD), each replicated four times. The crop was grown to harvest age. From the results 30 – 60 kg N ha⁻¹ enhanced optimum leaf yield, whereas 60 kg N ha⁻¹ improved seed yield; 0.91 t ha⁻¹ and 0.0046 t ha⁻¹ leaf and seed yield were obtained respectively. On the other hand 60 kg N ha⁻¹ promoted plant height, 120 kg N ha⁻¹ induced leaf area index. Urea was found to be notorious in accentuating low pH. Organic matter was very low. Low nitrogen was recorded and this may be connected with the mobility of the element in the test soil

1. Comparative studies on different sources of organic manure on soil physico-chemical properties and on growth-yield of maize (*Zea mays*). Department of Soil Science, College of Agricultural Sciences, Enugu State University of Science and Technology, Abakaliki. B.Agric (Soil Science) dissertation. Name of student: E. Igheghe. Supervisor: P. O. Igboji

Abstract: The comparative studies of different sources of organic manure on soil physioc-chemical properties and on growth-yield of maize (*Zea mays*) was evaluated at the teaching and research farm of Soil Science Department, Enugu State University of Science and Technology, Abakaliki. Five treatment, 0, 5 t ha⁻¹ each of rice husk dust, cattle dung, poultry droppings and mixture of the three organic manure were laid out in a randomized complete block design, each replicated four times. The crops were grown to maturity age. Results obtained showed that rice husk dust gave highest grain yield, 1.85 t ha⁻¹ at statistically significant level ($P = 0.05$). This was followed by cattle dung, 1.68 t ha⁻¹ and poultry droppings, 1.08 t ha⁻¹. Rice husk dust equally enhanced other agronomic parameters like height, number of leaves, leaf area index, germination/tasseling/number of cobs count. The soil pH appreciated with the soil amendments at high significance level ($P = 0.01$). The same trend was observed with regards to soil organic matter especially using dry poultry droppings enhanced total N, and exchangeable bases like Ca and Mg which are vital ingredients in the amelioration of soil acidity. The organic manures used recorded high proportions of total N, organic matters, exchangeable bases and available phosphorus, which were markedly conspicuous in dry poultry droppings used for

the work. Soil temperature, which was used as an index of soil microbial activity and mineralization also rose with poultry droppings for all the days assessed, from incorporation of waste; and at 5 and 10 cm soil depths. Moisture retention and porosity was enhanced by rice husk dust and cattle dung raised soil bulk density. Based on the results, poultry droppings was recommended in the amelioration of soil physico-chemical properties, whereas rice husk dust will optimize yield from angle of physical fertility (available moisture and total porosity).

2. Effect of different levels of nitrogenous fertilizer on soil physico-chemical properties and yield of okra (*Abelmoschus esculentus*). Department of Soil Science, College of Agricultural Sciences, Enugu State University of Science and Technology, Abakaliki. B.Agric (Soil Science) dissertation. Name of student: S. N. Okolo. Supervisor: P. O. Igboji

Abstract: The effect of different levels of nitrogen fertilizer on the physico-chemical properties of the soil and on the growth-yield of okra (*Abelmoschus esculenta*) was evaluated at Enugu State University of Science and Technology, Soil Science Teaching and Research Farm, Abakaliki. Five treatments namely: 0, 30, 60, 90 and 120 kg N ha⁻¹ using urea were laid out in a randomized complete block design, each replicated four times. The crop was grown to harvest age. The control plot gave highest okra yield of 0.053 t ha⁻¹; followed by plot treated with 90 kg N ha⁻¹, 0.049 t ha⁻¹. The fact that control plot out-yielded treated plots is a pointer that nitrogen nutrition may not be the requirement of the test soil. Cases have arisen where certain essential mineral elements have been neglected or un-identified. Residual trials or soil analysis may reveal more facts about the soil. Soil acidity may also have contributed to the poor yield observed, especially in treated plots. Urea is also notorious for production of acidic radicals during hydrolysis and need to be augmented with dolomite (CaMgCO₃)₂, especially at 120 kg N ha⁻¹. The soil organic matter remained high before and after cropping. The reduction in N at harvest even in treated plot is not fully understood. Leaching and denitrification may also have led to the result obtained. The fact that 60 kg N ha⁻¹ enhanced available K is a welcome development. The low Ca and Mg must have been as a result of the soil acidity. The same reason is deduced for low cation exchange capacity. Base saturation of the soil remained high before and after cropping. There was low P and the level of exchangeable acidity was moderate. However, the use of nitrogen fertilizer was not a waste, but further residual trials will be rewarding

3. The effect of different levels of nitrogenous fertilizer on the growth and yield of garden egg (*Solanum melongena*). Department of Soil Science, College of Agricultural Sciences, Enugu State University of Science and Technology, Abakaliki. B.Agric (Soil Science) dissertation. Name of student: S. E. Obi. Supervisor: P. O. Igboji

Abstract: The effect of different levels of N-fertilizer on the physico-chemical properties of the soil, as well as growth-yield of garden egg (*Solanum melongena*) was investigated. Five treatments, 0, 30, 60, 90 and 120 kg N ha⁻¹, replicated four times were laid out in randomized complete block design. The crop was grown to harvest age. Results of the experiment showed that soil texture remained the same before and after cropping. The soil pH was weakly acidic at harvest. There were moderate OM, low nitrogen, low Na/K, moderate Ca/Mg; high base saturation, low CEC, low P and moderate EA at harvest. The 30 and 60 kg N ha⁻¹ was discovered to be maximum for higher leaf and fruit yield. Other agronomic parameters like height, number of leaves and LAI were enhanced by the same range of N-fertilizer.

4. Effect of different types of mulching material on the yield of melon. Department of Soil Science, College of Agricultural Sciences, Enugu State University of Science and Technology, Abakaliki. B.Agric (Soil Science) dissertation. Name of student: E. N. Onyenze. Supervisor: P. O. Igboji

Abstract: The effect of different types of mulching material on the soil physico-chemical properties and growth-yield of melon (*Colocythis citrullus*) Crantz was investigated at Department of Soil Science Research and Teaching Farm, Enugu State University of Science and Technology, Abakaliki between 15th April to 23rd September, 1999. Five treatments namely: rice husk dust, dry grasses, wood ash, dry leaves and control were laid out in a randomized complete block design, each replicated four times. The crop was grown to harvest age. Results obtained show that optimum melon pod yield, 7.42 t ha⁻¹ was recorded in plots mulched with rice husk dust. Other agronomic parameters like height was enhanced by wood ash, whereas weed density was suppressed by rice husk dust. In terms of physical soil parameters, wood ash helped in conserving soil moisture; whereas rice dust apart from enhancing total porosity, also helped in reducing bulk density. Bulk density and total porosity were also found to be inversely related. The mulching materials had high OM, total N, exchangeable bases and available P. After cropping, wood ash was found to increase soil pH, whereas rice husk dust reduced it. Dry leaves gave high OM, total N, and lower C:N ratio. Moderate K and Mg were recorded in all plots. Ca was found to be limiting, probably due to soil reaction. Likewise, the low CEC and available P recorded in all plots were linked to soil reaction. The soil base saturation was high, whereas exchangeable acidity may only be reduced by supplemental liming. Thus, in Abakaliki agroecological condition, the melon cultivar (Ashii) used in the experiment was declared to have the potential of yielding 7.42 t ha⁻¹ of fresh pod. Other season, same or varying mulch will elucidate more facts on test crop and soil

The period 2000 – 2005 experimentation (temperate agriculture)

The effect of land management on the biological properties of an east anglian agricultural soils. Center for Environment and Society/Department of Biological Sciences, University of Essex, UK. PhD (Environmental Sciences) Thesis. Supervisors: Prof J. N. Pretty and Prof. A. S. Ball

Abstract: This thesis addressed three key topics over a two year period: (1) diurnal and seasonal trends in field and laboratory soil respiration in a park grassland (2) the effects of land management on whole ecosystem and soil respiration, carbon and nitrogen levels, microbial C, enzyme activity (cellulase, urease and phosphomonoesterase), and humic acid content in agricultural and non agricultural soil (3) modelling soil C turnover, sequestration and microbial respiration in the agricultural and non agricultural soil using the CENTURY 4.0 model over a period of 8050 years covering 7 periods of English agriculture. All studies were conducted at Wivenhoe Park and Writtle College in the East Anglian Region of England. At Wivenhoe Park field soil respiration varied over time and seasons with the highest respiratory activity recorded in the summer months (78.7 mmol CO₂ m⁻² h⁻¹). Field soil respiration was dependent on both soil temperature and WFPS in 2002 (R² multiple = 45.6 + 10.5T + 86.9WFPS mmol CO₂ m⁻² h⁻¹). Soil respiration under constant temperature and moisture were not significantly different in all soil samples taken at the same time. At Writtle College significant differences were observed in whole ecosystem and soil respiration amongst land management. Whole ecosystem and soil respiration were

dependent on soil total C ($R^2 = 0.61$ and 0.88 respectively) and on soil microbial C ($R^2 = 0.6$ and 0.73 respectively) in 2002. The results reveal that woodland, grassland, and arable land do not sequester enough C. Integrative approaches are required. Generally, these studies have contributed to the global ones targeted at estimating C-fluxes and overall nutrient levels in diverse soils. It was able to identify the potential benefits of sustainable practices. Given the current land management in these project areas soil C and N will be moderate in the next 25 – 30 years before impacts that will require other sustainable options will be noticed.

The period 2006 – 2012 experimentation

Worked for Tesco Stores Ltd and Asda Stores Ltd, UK and established the following foundations and causes: World Citizens in Pain, Suffering, Labour with Dignity, Peace and Freedom; World Children Creative and Personal Development Fund; Institute for the advancement of ebonyi friendship and hospitality; Igboji ola idike centre for ancient and modern history and civilization; idike Igboji ola centre for governance and citizenship; Abakaliki-Ekumenyeni tv/radio/web; afikpo-edda tv/radio/web; Reginald chiedozie university of nigeria and foreign languages, culture, customs and tradition; okere-mbeji specialist hospital and maternity; pazolla international to chronicle lives and achievements of men and women of substance in ebonyi, nigeria, africa and the world. Over 65% of my expression of will in careers at Tesco and Asda stores, UK and Nigeria are towards actualizing these foundations/causes with full support of everyone in the world who cherish the visions.

The period 2013 – 2014 experimentation

Effect of indiscriminate dumping of waste on the concentration of selected gases: a case study of abakaliki metropolis. Department of Soil Science and Environmental Management, Faculty of Agriculture and Natural Resources Management, Ebonyi State University, Abakaliki. BSc (Environmental Management) dissertation. Name of student: J O Aloh. Supervisor: Dr P.O. Igboji

Abstract: The effects of indiscriminate dumping of wastes on the environment was investigated in three locations of abakaliki metropolis namely: college of agriculture, ebonyi State university (CAS) eating and drinking area; meat market, abakpa; afikpo road motor parks and government reserved area (GRA) as control. The gases measured were: carbon monoxide (CO), nitrous (iv) oxide (NO_2), ammonia (NH_3) and hydrogen sulphide (H_2S), replicated four times at equo-distance of 10 m using portable environmental gas monitors. The CO air concentration across sampling period varied by $0.57 \pm 0.01 \text{ mg l}^{-1}$ at CAS with highest CO air concentration of 0.72 mg l^{-1} at 8 weeks of survey and least, 0.47 mg l^{-1} at 2 weeks. At abakpa meat market, the CO air concentration differed across all monitoring period by $0.64 \pm 0.01 \text{ mg l}^{-1}$ with highest CO of 0.72 mg l^{-1} at 10 weeks and least, 0.57 mg l^{-1} at 2 weeks of survey. At afikpo road motor parks the variation in CO concentration was $0.66 \pm 0.01 \text{ mg l}^{-1}$ at 4 weeks and least, 0.57 mg l^{-1} at 10 weeks of survey. At GRA the difference in CO air concentration across monitoring period was $0.47 \pm 0.01 \text{ mg l}^{-1}$ with highest CO air concentration of 0.55 mg l^{-1} at 8 weeks and least, 0.42 mg l^{-1} at 6 weeks. NO_2 air concentration was worrisome at afikpo motor parks compared to CAS, meat market and GRA. The NH_3 and H_2S levels were similar at all locations. The poisonous nature of these gases call for caution, especially since NO_2 , NH_3 , and H_2S failed the US-California, Nigeria and Nigeria automobile council (NAC) standards. It should be routinely monitored at abakaliki to avoid factors that will predispose them to critical levels including

indiscriminate dumping of refuse. More sustainable refuse handling system was also recommended that do not favour only citizens of GRA.

Effect of power generating sets on gas emission in abakaliki, ebonyi state. Department of Soil Science and Environmental Management, Faculty of Agriculture and Natural Resources Management, Ebonyi State University, Abakaliki. BSc (Environmental Management) dissertation. Name of student: N . C. Nwangbo. Supervisor: Dr P. O. Igboji

Abstract: The emission of power generating sets in abakaliki were studied. Four locations namely: gunning road, ogoja road, ebonyi state university CAS and onuebonyi as control. Four gases namely: carbon dioxide (CO_2), nitrous (iv) oxide (NO_2), CO, NH_3 were measured at 2 weeks interval for a period of three months using portable environmental gas monitors; replicated four times at equo- distance of 10 m. The highest CO_2 concentration, 0.89 mg l^{-1} was at 2 weeks at gunning road, 0.84 mg l^{-1} at 2 and 12 weeks at ogoja road; 0.89 mg l^{-1} at 2 weeks at CAS and 0.89 mg l^{-1} at 12 weeks at onuebonyi. That of CO air concentration were 0.72 mg l^{-1} at 12 weeks in gunning road; 0.72 mg l^{-1} at 4 and 12 weeks in ogoja road; 0.73 mg l^{-1} at 8 weeks at CAS and 0.72 mg l^{-1} at 12 weeks in onuebonyi. The number of power generating sets were positively correlated to CO and NH_3 air concentration ($r = 0.63$ and 0.04) respectively. The regression equation can be used to accurately predict the gases concentration based on similar experimental conditions. The gases were within the limit set by WHO, and Nigeria environmental protection council (NEPC). Nevertheless, caution is required in view of their poisonous nature and rising use of power generating sets in midst of epileptic power supply in abakaliki, in addition to traffic and anthropogenic sources to avoid exceeding limits.

Determination of gaseous emission from the combustion engines during traffic congestion. Department of Soil Science and Environmental Management, Faculty of Agriculture and Natural Resources Management, Ebonyi State University, Abakaliki. BSc (Environmental Management) dissertation. Name of student: O . Odii. Supervisor: Dr P. O. Igboji

Abstract: This work evaluated the effects of traffic congestion on air gaseous concentrations in four roads in abakaliki namely: onwe road, water works road, afikpo road and unagboke road as control. The measurements were at 2, 4, 6, 8, 10 and 12 weeks intervals, replicated four times at equo-distance of 10 m per road. Gas monitors designed for monitoring the gases namely: CO, NO_2 , NH_3 , and H_2S were used. The CO air concentration at the three roads, except control were between $0.87 - 0.88 \text{ mg l}^{-1}$ in the morning and $0.87 - 0.88 \text{ mg l}^{-1}$ in the afternoon. There were positive correlation between number of cars and the individual gases studied. The NO_2 , NH_3 and H_2S air concentration varied over the times of day and intervals monitored. The regression equations can be used to predict various gases air concentrations under similar experimental conditions. The CO, NH_3 and H_2S were within permissible limits set US-California Air Quality Standard; NAC and NEPC. The NO_2 air concentration failed the test. In view of the poisonous nature of these gases, their place in environmental monitoring should be continuous including that of CO_2 that could not be assessed in this study due to unavailable monitor.

DVD documentary researches done within 2000

Ebonyi State University: Teaching and Research Advances; UNDP-Ebonyi State Government/Pazolla Ventures Documentary featuring rural appraisal survey of agricultural potentials of Ebonyi State; State Programme Monitoring Advisor (UNDP), Program Manager (EBADEP); Chairman

(SHB, UNDP) and MD (Pazolla Ventures) on agricultural programs and successes of Ebonyi State; appraisal of farmers sites infested with rice gall midge and stakeholders of agriculture in Ebonyi state; empowerment of farmers of Ebonyi south, central and north constituency on sustainable agriculture, environment and rural development.

Radio/Magazines/Newspapers documentary between 2001 – 2014

The place of forestry in environmental management and protection and utilization of local delicacies in food culture of Nigeria. Feb/Mar, 2014; Radio Nigeria/Unity FM Abakaliki; Developing the agricultural potentials of Ebonyi state. Dove Magazine, 2nd edition, ISSN 1595-4536-54, Feb – Mar, 2000; Seed Bank: The Izzi Experience; Pazolla Publications, Nov – Dec, 2001.

Conclusion

The place of experimentation in tropical agriculture has come a long way. Many schools, colleges, research institutes, universities have done great jobs in raising agricultural graduates that have changed the landscape of tropical agriculture. Great thanks to Federal School of Agriculture/National Root Crops Research Institute, Umudike; Anambra and Enugu State University of Science and Technology; University of Essex, Ebonyi State University, Ebonyi State, Nigeria and United Kingdom. Likewise my supervisors and mentors namely: Engr. G. I. Nwandikom; Dr E. C. Nwuzor, Prof. F. N. Nnoke; Prof. I Unamba-Oparah; Prof. J. N. Pretty; Prof. A. S. Ball and my students O. O. Uwaeze, E. Igheghe; ; J. O. Ibeleme; S. N. Okolo; S. E. Obi; E. N. Onyenze; O. Odii; J. O. Aloh and N. C. Nwangbo and others who could not be covered in this piece due to displaced dissertations/thesis. Special thanks to staff and management of Tesco and Asda Stores Ltd, UK. Great thanks to the Apostolate of Vatican City as custodian of my wills of my foundations and causes and my life – The World Citizens in Pain, Suffering, Labour with Dignity, Peace and Freedom.

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