Historical Research Letter
ISSN 2224-3178 (Paper) ISSN 2225-0964 (Online)
Vol.22, 2015

The Establishment and Development of the Institute for Agricultural Research (I.A.R) in Zaria, 1922-1945

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Abstract
The study examines the evolution and achievements of agricultural research in Zaria, with a particular focus on IAR, from 1922-1945. It explains the nature and character of food crop agricultural in pre-colonial Zaria that gave way to colonial export crop production in colonial Nigeria. The study adopted the political economy method and the underdevelopment/dependency theory, and argued that the primary motive behind British interests in colonizing Nigeria was to exploit its perceived enormous natural resources. Consequently, within the first three decade of the 20th century, the economic growth of the Nigerian colony was primarily stimulated by agricultural exports. As a result, distinct regions became noticeable in the production areas of agricultural exports: groundnut and cotton in the North; cocoa and palm kernel in the West; and palm oil and palm kernel in the East. The study argues that in line with the colonial objective of exploiting the rich agricultural resources of Nigeria, research centers were thought out as very critical in the improvement of seeds, quality of yield, and training of manpower in the practice of colonial agriculture. It is against this background that the British started the establishment of research centers in Nigeria since the last decade of the 19th century that culminated in the establishment of the Institute For Agricultural Research (IAR) in 1922.
Keywords: Establishment, Development, IAR

Introduction

Before the 1954 constitution which made agricultural research concurrently conducted by federal and regional governments, agricultural research in Nigeria consisted largely of research and experimental sections of the defunct federal department of agriculture with headquarter at Moor plantation, and outstations at Lagos, Samaru, Umudike, Shika, and Bedeggi. During this period, the private sector played a major role in export crop research, especially on cotton. This is because agricultural research in Nigeria laid much emphasis on export crops-oil palm, cotton, groundnut, cocoa and rubber-which were needed by the British economy. Thus, most of the research stations were located in areas suitable for the production of these export crops. Although this period of rapid export was brought to a sharp halt by the Great Depression in1929 when world-wide collapse in commodity markets brought severe reductions in Nigeria's export prices and temporary stagnation in export volume, emphasis on export crops increased with the outbreak of the Second World War when the British lost its far Eastern source of raw materials. This seminar paper attempts to historicize the formative process of I.A.R in Zaria and Samaru in particular. Therefore, the historical forces and factors that culminated in the establishment of the institute by the colonial regime, choice of sites, staffing of the institute, organization, development and its early effort in coordinating agricultural research and the application of such findings to agricultural production in the Northern region shall be examined.

The Genesis of I.A.R in Zaria

Since the sixteenth century, scientific knowledge, and the application of that knowledge via technical innovation, has been the cutting edge of Western comparative economic advantage. Advances in ship building, navigation, and weaponry allowed Western nations to penetrate all the oceans of the world and to establish outposts for trading their industrial goods, the products of that same technology. Advances in communications allowed Western scholars and scientists to exchange information, to codify it, to preserve it, and to build on a rapidly accumulating base of useful knowledge. The learned societies that proliferated in the eighteenth century performed experiments, published their proceedings, received reports from travelers all over the world, and weighed and disseminated the new information. During the nineteenth century, scientific knowledge increased at an exponential rate in Europe, both within and outside the universities, as new scientific institutions were founded.[1] Therefore, there is a parallel between advancement in scientific knowledge and colonial expansion.

The Fact that colonialism was propelled by the search for cheap agricultural raw materials and expansion of markets for the products of the colonialist, the question of agricultural research became very critical not just to the British colonial enterprise in Nigeria, but majority of European colonial powers. Therefore, colonial agricultural research was not for the development of the colonized. Instead, it was for the development

[1] Brockway, Lucile H. "Science and Colonial Expansion: The Role of the British Royal Botanic Gardens", in American Ethnologist, Vol. 6, No. 3, Interdisciplinary Anthropology (Aug., 1979), pp.449-450. Published by: Wiley on behalf of the American Anthropological Association. Stable URL: http://www.jstor.org/stable/643776

of the colonizers whose motive was the systematic exploitation of Nigeria's agricultural resources through research that neglected food crops for the much preferred cash crops. This was necessary to the colonialist in order to improve the quality of local seeds and the adaptation of exotic seeds in Nigeria's varied soil. Thus, soon after the Berlin conference of 1884/1885, the British mulled over how the application of scientific research to agriculture could stimulate the production of such industrial raw materials as palm kernel and oil, cocoa, cotton, groundnut, tobacco and rubber.

This colonial agenda became a reality in the late 19th century with the gradual establishment of research stations in Nigeria and British colonies elsewhere. Agricultural research in Nigeria started formally with the establishment of a botanical garden in Lagos in 1893 by Sir Claude McDonald with focus on the introduction of new crops; the acquisition of 10.4 kms of land in 1899 by the British Cotton Growers Association (BCGA) for experimental work on cotton, later named the experimental Moor Plantation area in Ibadan. This was followed in 1905 by a British Cotton Growing Corporation research station, abandoned in 1910.[2] Although Britain pioneered the establishment of botanical gardens in the world since 1841, the French, Dutch, Portuguese, Belgians and Germans each had a botanic garden solely devoted to developing tropical plants for the benefit of their colonial planters.[3] In particular, the imperial botanic gardens undertook plant transfers and scientific plant development that resulted in new plantation crops for the tropical colonies, thereby altering the patterns of world trade and increasing the plant energy and human energy in the form of underpaid labour, which the European core extracted from the tropical peripheries of the world system. Hence, colonial botanical garden had political implication on the history of Africa, as an institution generating information about plants of economic value. Botanic gardens have also contributed significantly to the colonial expansion of the West through active participation in the transfer of protected plants and their scientific development as plantation crops for the tropical colonies of the mother country. Cinchona, and rubber are prime examples.

What is worth noting is the fact that all the research efforts in colonial Nigeria were designed by the British Colonial officials to promote export crops to feed their home industries in the phase of aggressive capitalist expansion in Europe. At the same time, it was designed to train the needed manpower through demonstration in extension services that would in the long-run be used to facilitate the transformation of agriculture in the interest of industrial capitalism, and the efficient utilization of cheap labor in colonial Nigeria.

From our assessment of the chronicles of agricultural research in Nigeria, it appears that there is a relationship between the phases of colonial conquest and the establishment of agricultural research stations and institutes in Nigeria. This fact on ground informed the origin of agricultural research in Nigeria from the Western region in the late 19th century to the Northern and Eastern regions only in the early 20th century. The fact of the matter is that being the first victim of colonial conquest and subjugation in Nigeria, the Western region was the first to attract British colonial agricultural research interest, starting from Lagos and Ibadan from whence it subsequently spread to other parts of Nigeria. Hence, the establishment of a botanical garden in Lagos, and Moor plantation crop research centre in Ibadan in the late 19th century. The British Cotton Growing Association research station, established in 1905 marked the genesis of I.A.R in Zaria.

The Establishment of I.A.R in Samaru

The relationship between the phases of colonial domination and the setting up of agricultural research centers in Nigeria has been emphasized. Thus, the fall of Northern Nigeria to colonial domination in 1903 facilitated the idea of establishing an agricultural research stations and extension services in the region. Known as one of the major centers of agricultural production in Pre-colonial Nigeria, the British were determined to exploit such rich agricultural and human resources in the region through re-organization that served colonial interest, with considerable emphasis placed on research and extension services. Thus, in 1912, a Department of agriculture was established in each of the then Southern and Northern protectorates of Nigeria, to coordinate production, distribution, marketing and export of cash crops.[4] With the unification of Nigeria into a single politico-administrative unit in 1914, the two Departments of agriculture were merged. Progress was made in terms of infrastructure and human resources, resulting in more research personnel and a more technical research program that included plant breeding and pathology.[5]

But the activities of the Department were virtually suspended between 1914 and 1919 as a result of the First World War and its aftermath. However, from the early 1920s, there was a resurgence of activities and this

[2] See Ijere, M.O. "Colonial Policy in Nigerian Agriculture and Its Implementation," In Agricultural History Journal, Vol. 48, No. 2., Agricultural History Society Publishers, 1974, pp. 298-304(http://www.jstor.org/stable/3741237; Balogun, Adebisi M & Aletor, Valentine A: "Leveraging Technological Research and Development for Effective Management and Utilization of Nigeria's Natural Resources: The Agricultural perspective", An invited Paper at the TECHNO-EXPO 2009 by Raw Materials Research & Development Council, Abuja, Feb 10-13, 2008.
[3] Brockway, Lucile H., op.cit, P.p 449-465
[4] History of Agricultural research Council of Nigeria; http://www.arcnigeria.org/index.php
[5] Ibid

period has been called the "Faulkner Strip Layout" era in honor of the Director of Agriculture, Mr. O.T. Faulkner, who devised a statistical design for experimental trials in green manuring, fertilizer projects, rotational cropping systems and livestock feeding.[6] From this period to the mid-1940s, there were significant intensification and expansion of research activities, extension and training programs of the Agricultural Departments that played a critical role in the expansion of cash crops production in Nigeria. Because of the gains made by Mr. O.T. Faulkner's experiments, the British remained steadfast in establishing research stations in Northern Nigeria to complement the research efforts of the other research stations set up in Western Nigeria. This determination, on the part of the British, was crucial in the establishment of I.A.R in Samaru as we shall see subsequently.

During the early period of colonial rule in Northern Nigeria, the harnessing and exploitation of agricultural, livestock, and forest products for British industries started in earnest. Colonial officers and their cousins in the "private" sector, especially those in the United African Company (U.A.C) devoted considerable energy and time to this.[7] Colonial policies which included those dealing with the systematic destruction of Nigeria's industries, notably textile industries, and with taxation and forced labour, were geared to the production of cash crops for Britain and elsewhere. In order to sustain the large scale production of such crops, the British found it necessary to establish research centres in Northern Nigeria for improving top yields. The Department maintained three agricultural stations in Northern Nigeria viz, in Ilorin, Maigana, and Kaduna. In the South there were such stations in Ibadan, Onitsha, Calabar, and Agege. These and other stations were to serve as research centres for local agricultural crops, and for the collection of information useful to field workers.

Colonial authorities needed skilled and enlightened man-power to liaise with and teach Nigerian farmers the techniques of, for example, the application of imported chemical fertilizer, methods of producing newly imported species of crop, and the control of pests through the application of chemicals. There was also the need to raise the level of production of local livestock through cross-breeding with imported animals and good feeding.[8] The new agricultural methods also involved the promotion of mixed-farming. To achieve all these, there was the need to establish an educational institution which would produce the necessary low and middle level personnel. It was these colonial considerations that led to the establishment of the first School of Agriculture in the North, located in Samaru, Zaria.

I.A.R was established in 1922. At that time, it was known as agricultural station and also the administrative headquarters of the Department of Agriculture of the Northern Region of Nigeria. It was established to provide training courses for Staff in the Agricultural Department and later, the regional Ministry of Agriculture. The school started with one room, a school master and a handful of students.[9] In addition to providing a regular course, it also arranged for special courses to meet the increasing demand for agricultural and other skilled workers. For example, due to acute problem facing the agricultural department, owing to lack of suitably trained 'Northern Native Assistants', a specially designed course for "Mallamai" was introduced. Twenty Mallamai, drawn from various provinces, went through a program consisting of Arithmetic's, English, Hausa, Science and Agriculture.[10] The training was meant to make them clerical trained agricultural staff for all the provinces, particularly the agricultural extensions, and to also train others to assist them in the fields.

Factors that led to the Location of I.A.R in Zaria

The location of the Institute for Agricultural Research in Zaria was predicated on several factors which made it propitious in comparison to other regions in Northern Nigeria. Such factors could be traced to the pre-jihad, jihad, and colonial period. By the early 16th century, the importance of Zaria attracted the attention of Leo Africanus who pictured it as a rich city with extensive commercial network.[11] This commercial network attracted immigrants from various parts of the Sudan, especially Borno. By the 17th century, several immigrants from Borno were located both within and outside the city and later joined by immigrants from the western Sudan. The educational and Islamic activities of these immigrants made Zaria one of the leading centres of learning in Hausa land in the 18th century, frequented by students and scholars from many places.[12] The status of Zaria as a center of learning was reinforced with the success of the Sokoto Jihad of 1804 which brought about an Islamic revival and expansion of Islamic scholarship. The imposition of colonial domination in Zaria only accentuated the process in the 20th century.

[6] History of Nigeria Agriculture by Sector - OnlineNigeria.com.htm
[7] Mahadi, Abdullahi (ed) *History of Ahmadu Bello University (A.B.U), Zaria; 1962-1987*, Ahmadu Bello University Press, A.B.U., Zaria, 1987, p.27
[8] Ibid
[9] N.AK, Agricultural School Samaru Recruitment for, 11366.
[10] Ibid
[11] For details, see Enoch Oyedele. *Colonial Urbanization in Northern Nigeria: Kaduna 1913-1960*, PhD Thesis, A.B.U., 1987, P.71.
[12] Mahadi, Abdullahi, op.cit, P.26

The question of centrality in the location of I.A.R cannot be over-emphasized. Zaria occupies a central position in Northern Nigeria where people from different parts of the North could easily converge. Some scholars may consider this argument problematic considering the status and centrality of Kaduna being the capital of the defunct Northern Nigeria. The question is could it not have been more central than Zaria? Or, was it not just a political decision? Although such an argument could appear logical, it is our contention that the problem of locating an institution of learning that requires vast land which may not be easily available in a major colonial town like Kaduna may have accounted for the choice of Zaria which was by the way very close to Kaduna, with a rich history of learning that predates the colonial period. This may explain why several colonial officers pointed to Zaria on grounds of centrality.[13]

It is not just the question of centrality that attracted I.A.R to Zaria, but, the fact that Zaria was linked by roads, rails and air transport with virtually all the provinces and major towns of Northern Nigeria makes the factor of communication significant in the location of I.A.R in Zaria. For instance, Zaria was made the headquarters of the Nigerian Railway when the line from Lagos to Kano (through Zaria) was opened officially in 1912.[14] The Bauchi light railway which connected Zaria to Jos and Bukuru was opened in 1914. The Eastern railway from Kaduna through Makurdi to Port-Harcourt was opened in 1921. During this period of early railway construction, Zaria was also joined to Kaura Namoda by a rail line which passed through Funtua and Gusau. This high level of communication made Zaria the nucleus of railway stations such that by 1949, the Zaria railway station had to be re-structured and enlarged in order to ameliorate traffic congestion.

It is important to note that the proliferation of railway lines linked to Zaria in colonial period was a complement to the already existing cart road transport system in Zaria. This is because, as early as 1904 a cart road from Zungeru to Kano and Zaria was declared ready for wheel traffic during the dry season. By 1908, it was improved by bridging some of the major rivers such that it was used by a motor car in 1914.[15] With the completion of the Kaduna-Zaria road, attention was immediately given to Zaria-Kano road. In fact, the development of communication link between Zaria and other parts of the North gained further impetus with the construction of the Zaria airport which enabled the presence of visitors by air in the 1940's.

With the successful infrastructural build up for effective colonial domination, Zaria became one of the leading centers of flourishing colonial economy in Nigeria. The infrastructural facilities on ground were fundamentally decisive in the location of I.A.R in Zaria. This is because it spurred a flourishing trade and commerce and the opening of a station of the RNC and the presence of the BCGA as early as 1911. In addition, by 1919 there were 21 European merchant companies in Zaria purchasing and involved in the processing of agricultural produce.[16] Similarly, the place of Zaria as a leading centre of missionary activities due to its comparative religious tolerance which was at variance with other Northern provinces, ensured its preference among the missionaries. Therefore, the presence of missionaries, the trade and commercial hub which Zaria assumed, attracted I.A.R to the area.

Apart from the above factors, the geography of Zaria, especially its climate, was also favorable in the choice of Zaria. The colonialists were convinced that the climate of Zaria was conducive for the undertaking of laboratory work and the safety of the researchers.[17] Although Jos climate was considered to be more favourable when compared to Zaria, Abdullahi Mahadi aptly considered it as the only factor which favored it.[18] This is because Zaria's location in the rich agricultural region of savannah belt was a huge advantage. In fact, Zaria forms part of the 'cotton belt' of Hausa land which attracted the presence of the BCGA in the area. It was the agricultural importance of Zaria, among other factors, that led to the setting up of a regional agricultural research centre, The School of Agriculture. Another geographical advantage Zaria had which was also very important was the issue of availability of land. The large tracts of land made available to the British in Zaria could not have been possible in overcrowded places like Kano or hilly areas like Jos, the two areas which might have competed with Zaria effectively on the siting the of IAR.[19] From the foregoing analysis, it is clear that no single factor accounted for the establishment of I.A.R in Zaria. Rather, it was the combination of several factors, as we have argued, that led to the establishment of I.A.R in Zaria.

Land Acquisition and the Issue of Compensation

[13] Mr. R.E Snowell, Northern Scout Commissioner put this case aptly when he decided to choose Zaria as his headquarters: "I have been allowed to choose where I would like to have my headquarters. I decided to come to Zaria, mainly because it is such a good center for travelling to all parts of Nigeria."
[14] Mahadi, Abdullahi, op.cit P.33
[15] Ibid; see also Mahadi, Abdullahi, p.33
[16] N.AK, kadminagric.31282. Vol. 1
[17] Interview with Dr. A.M Falake, (62 years old) 7th June, 2013, at 2pm, in the Office of the Director. A.M Falake is the current director of I.A.R
[18] Mahadi, Abdullahi, op.cit. P.p 34-35
[19] *Ibid, p. 26*

In order to understand the question of land acquisition and the issue of compensation, it is important that we examine the administrative and socio-economic structures of Samaru, being the seat of I.AR. In the early days of colonialism, Samaru was organized as a labor camp and was administered as part of Sabon-Gari, Zaria District administration. A study by E.O. Oyedele has shown that prior to the emergence of I.A.R in 1922, Samaru was administered as an *Unguwa* (ward) of Bomo village nearby, because the settlement in this period was small. The local political head in this period was the *Sarkin pawa* (the head of butchers) who functioned in the capacity of first among equals with other elders in the village. He was directly accountable to the Galadima (wakilin Bomo), that is the representative of the village head of Bomo.[20] This is because of all the villages within the Samaru locality, it was only Bomo that had a village head in this period. Up to 1945 when Samaru was part of Bomo, land collectively belonged to the village head and his people. There was no private ownership of land except where farms were inherited and were thus identified as belonging to individuals. Land was granted to anybody who wanted it, regardless of the person's origin. All those who wanted land either for Agricultural or residential purposes, made their request to the village head of Bomo, who in turn would authorize the Galadima to allocate it. [21]

From the onset, Britain made crystal clear its desire for all colonies to be self-sustaining. Therefore, the colonial regime did everything possible to ensure the acquisition of lands with little or no compensation. It is important to note that, colonial schemes found full expression in the internal dynastic struggles that bedeviled the emirate, especially in the early period of colonial domination. It is argued that due to the prevailing rivalries within the emirate authority, caused by the existence of four contending ruling dynasties, colonial authority secured unshakable co-operation in the acquisition of land and even complicated the rivalry to their advantage.[22] This unfortunate dynastic tussle enabled the British to acquire large tracts of land without compensation initially at about 15 miles from Zaria on what was then Kano road, to the East of the main line, adjoining the village of Shika. The second site selected consists of track of uncultivated land around the village of Shika.[23] This was in response to the directives of the Director of Agriculture based at Ibadan, who assigned Mr. K.T. Rae, the senior Superintendent of Agriculture in the North, to choose a suitable site for the new station.

Agricultural activities in Shika site began in early 1922 but later abandoned due to problems of accessibility from Zaria, especially during the rainy season. As a result, Samaru was preferred and chosen due to its advantage of proximity, and could be reached by motor from Zaria in 20 minutes. It also had the appearance of being a healthy site; the lay of the land was very good for experimental plots. Such that in 1924 (two years after the establishment of the site), the land area was increased westward from 568 acres to over 724 acres. This extension encroached into the farmlands of peasants in Bomo village who were grudgingly paid some meager compensation.[24]

As far as the people of Bomo were concerned, the entire of land I.A.R occupies in Samaru belongs to them. Thus, their means of livelihood was taken away by both the British and the university administration after the attainment of independence. In an interview with Zaharadeen Ishaku, the grievance of the people of Bomo on the supposed takeover of their lands was conveyed forcefully:

> ***"The land I.A.R occupies belongs to us. It was forcefully taken away from us by the whites who claimed they compensated our Fathers'. As if that was not enough, the university that was established in the 1960's further encroached on our lands with the powers of government. The lands where the administrative building, area C and almost all the farmlands in the surrounding are located were confiscated from us. Yet our village remained undeveloped, lacking infrastructure when compared to Samaru. We have benefitted little or nothing from I.A.R. So it means nothing to us if it is bombarded by Boko haram or anybody."***[25]

Although Bomo's claim of the takeover of their land was affirmed by colonial sources, the premise of Zaharadeen's grievances and those of the people of Bomo was refuted by the current Deputy Director of IAR. According to Professor Ezra Bako Amans:

> ***"Land in Zaria was under the control of the emirs who were powerful enough to allocate it to the British at will or under pressure. In a colonial setting, all lands are the possession of the colonizing power with the paraphernalia of state apparatuses. They therefore represent the***

[20] Oyedele, E: *The History of Samaru and its Environs Up to 1987*, in of Higher Learning, in Mahadi, A (ed) History of Ahmadu Bello University (A.B.U) 1962-1987, A.B.U., Press, Zaria, 1987, p.44.
[21] Ibid.
[22] Interview with Mallam Ero Faskari, (52 years of age), 3rd March, 2013, 11:00am, I.A.R Administrative block. He is the head of agric extension and a custodian of the institute's documents.
[23] NAK, Zarprof 2569, Annual Report for 1924; see also Kadminagric. 31282 Vol., Samaru Plantation and agricultural station.
[24] Oyedele, Ibid. p.40
[25] Interview with Zaharadeen Ishaku, (60 years old), 10th march, 2013, at about 10:30 am, in Bomo Village. Zaharadeen is a district worker in Bomo. He spoke on behalf of the District Officer of Bomo, who was unavoidably absent.

government of the period, controlling both the land and the people occupying the lands. Bomo's local chiefs were responsible for compensation in connection with the native authority. The same goes for the post-colonial government."[26]

As we have discussed earlier, the British acquired lands easily in Zaria due to the dynastic struggles among different factions in Zaria. Similarly, the fact that Nigeria was a conquered territory meant that sovereignty was lost, and that lands automatically became the property of the conqueror with the prerogative to compensate or not. Therefore, it is our contention that given the period in question and the relationship between the colonizers and subjects, the grievances expressed by the people of Bomo are simply recent political agitations, designed to attract the attention of the university in the interest of Bomo village.

The Organization of I.A.R and the Formulation of Regional Agricultural Policies

Being a regional research station of the Department of Agriculture of the Northern Provinces, I.A.R was regionally organized and associated with the development and application of agricultural sciences to agriculture in Northern Nigeria. The formulation of agricultural policies was also regionally based, designed to realize the inextricable relationship between agricultural research and regional agricultural development in the Northern provinces. Therefore, while the main research station was based in Samaru, the institute also comprised several sub-sections to ensure extensive coverage of research findings and application across the Northern region.

The largest of the sub-sections was the Shika Research Station, five miles north-west of Samaru, also on the Zaria-Funtua road. This station which covers some 3, 000 acres started in 1928 as a government stock farm intended to be used later for research on grassland management and on animal production.[27] Other important sub-sections established in the colonial period were situated in Mokwa (Niger state), Kano, Baga in Borno, Yendev in Benue for livestock, and Bakura in Zamfara. The Mokwa Research Station was started by the Colonial Development Corporation (CDC) in the post-war years and was taken over by the research division in the late 1950's.[28] It lies 250 miles south-west of Samaru to the North of the Niger in the riverain provinces of Northern Nigeria. It was primarily concerned with the problems of the zone in which it lies. The Kano Research Station, lying 100 miles north-east of Samaru serves the needs of the drier Northern districts and gives special attention to problems associated with the cultivation of groundnut, millet and sorghum.

The formulation of agricultural policies for regional agricultural development was the responsibility of the Department of Agriculture, under the directives of the Director of Agriculture. He was assisted by the Assistant Director of Agriculture for the Northern Provinces, his Deputy and head of the agricultural station (I.A.R) in Samaru. They collectively ensured that all the research findings at Samaru agricultural station were experimented in the different sub-sections, in order to identify areas of better yield and further cultivation in such areas. On the 1st of April 1927, an important development came on board. Samaru was made the headquarters of the Assistant Director of Agriculture for the Northern provinces, and his deputy, so that the work of the Agricultural Department in the North was controlled from Zaria. Another innovation introduced was the appointment of a superintendent of agriculture to each emirate to supervise the cotton markets and seeds distribution.[29] It is however important to note that Samaru and Maigana remained the only experimental stations in the provinces. While Maigana was used solely as a cotton seed farm and breeding station, Samaru was both an experimental and research station and had its own staff of research officers and laboratories. Therefore, I.A.R in colonial Nigeria was organized and responsible for carrying out research in support of all aspects of the agricultural industry of Northern Nigeria. This was achieved through its sub-sections, informed by the policies of the Agricultural Department, and enforced by the Assistant Director of Agriculture for the Northern Provinces, his deputy, head of the Agricultural Station in Samaru, and the superintendents of agriculture in the Northern Provinces.

The Staffing of I.A.R and Staff Training

The staffing of I.A.R was intertwined with the staff training process of the agricultural department. This is because, apart from the early staff recruited by the institute in its early years, the later staff were essentially the trainees or products of its training wing presently known as the Samaru College of Agriculture (S.C.A.) in the colonial period. The formation of S.C.A was conceived by the British as a panacea to the lack of suitably trained Northern agricultural staff. The school started informally in July 1929, with the admission of 20 *Mallams,* some of whom were already in the employment of the department, and the others from the various Native Authorities

[26] Interview with Professor Ezra Bako Amans, (60 years of age), 17th May, 2013, at about 11:50 am, in the office of the Deputy Director.
[27] N.AK, Zarprof Annual Report for 1927. Vol.1. K6653
[28] Annual Report: Institute For Agricultural Research Samaru 1962-63, Ahmadu Bello University Press, Northern Nigeria, 1963, p.1
[29] N.AK, Zarprof Annual Report for 1927. Vol.1. K6653

(N.A's).[30] However, the formal take-off of the school was delayed due to shortage of middle 1V products, considered the minimum academic qualification from the region. However, a three year Agricultural Assistant certificate course was started in 1931, with 17 students admitted.[31]

From the recovered colonial documents, the first recruited staff in I.A.R by the Agricultural Department was a botanist who worked with the biological laboratory established in 1925. The botanist tested new strains of varieties of different crops which have been produced and tested with success. He was followed by a chemist who investigated the various successes as to the various factors which may be responsible for the phenomenal increase in yield following dressing of farm yard manure.[32] It is important to note that in the year 1926, Mr. J.D Shepherd became the principal of the institute up to the beginning of December, 1939, and was also actively involved in the research activities of the institute throughout his stay. Thus, he was not just the head of the institute, but also a staff. He was replaced by Mr. G. Brown who headed and researched with the institute from December of that same year through early 1940's, before taking up appointment as the Deputy Director of Agriculture, Northern provinces in 1948.

In the training wing of the institute (S.C.A.), Mr. H. Earnshaw was at the helm of affairs, and was assisted by Mallam Shehu Gambo, who attended a course at the agricultural school, Ibadan. In addition, other staffs of the research station including another Botanist were involved as teaching assistants.[33] The persistence of the colonialist in the training of northerners was to serve the capitalist agenda of accelerating the pace of export commodity, cheap labor and capital flight that was in the interest of colonial enterprise. It was such that in 1941, 18 students attended the course for technical assistants; 11 passed out in March and 11 new people enrolled.[34] Similarly, four students from the Northern provinces and three from the Southern provinces passed out of the school and got appointment in the department in 1942, while 21 students were admitted as new students in the school including one each from the Gambia and the Gold Coast (Ghana).[35] By 1948, it had developed into a full fledge school, with 47 students in training.

With the development of the research station and its teaching wing into a full-fledge school, the British thought it wise to consider the staffing of the agricultural department in the North by more non-Northern natives. This was in response to the complaint by the principal of the School of agriculture, Samaru, on finding that only two middle IV northerners had been recruited for the 1948 Agricultural Assistant's course. He therefore called for all Agricultural Officers to recommend middle IV Northern field overseers or N.A Assistants for admission to the agricultural assistants' course. As a result, eleven were recommended and 10 were admitted.[36] But because a record 47 students were admitted in that year, with the largest previous admittance being 19, such expansion necessitated extra staff that were to come from the South, and temporary buildings. At the same time the principal put up proposals as a result of which it was acquiesced that, the Samaru School should give priority to middle IV Northerners for training as Agricultural Assistants and that surplus places should be filled with middle VI Southerners; Middle VI Northerners should be trained at Ibadan School where they will have a much better opportunity of qualifying for the supplementary diploma course and eventual promotion to assistant agricultural officer.[37]

These decisions were reached, however, with some misgivings. This was because, in admitting middle 1V boys for training as Agricultural Assistants, the standard was lowered to the limit. It was also considerably modified to last for three years instead of two years through systematic teaching, due to doubts if the boys admitted could cope with the previous standard meant for Middle VI. On the other hand, considerable number of Southerners were admitted, thereby establishing a strong relationship between the schools of agriculture in Samaru and Ibadan through the swapping of students in the interest of the colonial state. The initiative of admitting Southerners became very fundamental in the development of I.AR. This was because their contribution became palpable, and accentuated the perceived weaknesses of the Northern Agricultural Assistants in training. The Deputy Director of Agriculture for Northern provinces, D.H. Brown, buttressed our position in his eulogy of the Principal's initiatives:

> ***"As regards the usefulness of Southerners in the Northern provinces, experience has shown that a good Southerner is extremely valuable on experimental farms, working with specialists***

[30] N.AK, Kadminagric. 11366-Agricultural station, Samaru: Recruitment for 1929-1947.
[31] Division of agriculture and Livestock Service Training, A.B.U Annual Report, 1972/73, p.23
[32] N.A.K, Zarprof Annual Report for 1925. 14830 Vol. 1. P.44
[33] N.AK, Kadminagric. 11366-Agricultural station, op.cit; also see Oyedele's History of Samaru, op.cit, p. 41
[34] N.A.K, Zarprof Annual Report for 1941. 34182, p.14
[35] N.A.K, Zarprof Annual Report for 1942, P.p. 18-19
[36] The one not considered for the agricultural assistant course was 30 years old and therefore considered too old by the colonialists, who were after very young able-bodied men for the exploitative colonial project.
[37] See details of the debate between the Secretary of the Northern Provinces, Principal of the School of Agriculture, Samaru and the Deputy Director of Agriculture for Northern provinces, D.H. Brown in N.A.K, Zariaprof Annual Report for 1947, SNP 17, 43300. P.P. 6-7.

> ***and in some cases the organization of extension work. It is generally conceded however that he is of extremely limited use in the actual carrying out of extension work owing to the lack of confidence shown by them. Until the middle schools can produce many more middle IV and middle VI Northerners I am afraid the choice lies between continued recruitment of Southerners for this type of work or considerable slowing up of agricultural development."***[38]

Thus, the schools of agriculture in Samaru and Ibadan complemented each other in the training of manpower to be exploited by the colonizers for the development of Britain and the underdevelopment of Zaria and its environs.

At this juncture, it is important we examine the exploitation of unskilled labour by the research station. Throughout this period, Samaru's and Bomo's main function was the supply of cheap labour to the agricultural station, manned by colonial agricultural experts. Such labour was exploited in the building of classrooms, laboratories and on the farms. More disturbing was the fact that the condition under which the labourers lived and worked was inhuman and generally pathetic. It was such that the labourers worked on colonial farms and building projects from 7.30 am to 4.00 pm for a pay of six-pence per day, the standard wage for labourers in the region as revealed by Enoch Oyedele.[39] The unfortunate thing to note is the fact that, the six pence earned by the laborers could not meet their needs and that of their families. It was simply meant to sustain them for the next working day because large portion of it was systematically taken away in the form of colonial taxation. Furthermore, all the labourers depended on the stream behind the village for their water supply, and were housed in a camp in the area covered by the present day estate department and the I.AR zoo, base in Samaru. Traces of the camp in the form of round huts and thatched roofs and broken pots, can still be found behind I.A.R. However, during the visit of the District Head of Sabon-Gari to the camp in 1945, the labourers complained to him bitterly about accommodation inadequacies. The District Head was said to have conveyed their message to the Native Authority and prompt action taken, leading to the selection of a new site which is the present day Bomo village before the rail.[40] The new site was mapped out by March 1947.

With the increasing monetization of the economy and the need to acquire money for transaction, the number of labourers grew to about 100, settled in what was known as ***layin lebura*** (labourers areas) in 1930. It is said that between 1930 and 1935, its population had increased steadily and the settlement had expanded eastwards, towards the area around Samaru Motor Park.[41] The exponential rate in the growth of labourers in our area of study was reflected in the available statistics on Samaru settlement which gave an estimate of 594 inhabitants by 1944, 168 of whom were farmers, while the rest were farm labourers, workers, petty traders, butchers, students and extension Staff. Hence, apart from the training of skilled workers to work on colonial farms in Zaria and its environs, the agricultural research station also maximally exploited the unskilled labour of the peasantry in the interest of British manufacturing industries.

Early Agricultural Research in I.A.R

Historically, research in I.A.R started formally in 1925 with the establishment of a biological laboratory and the arrival of a botanist and a chemist as researchers.[42] The botanist tested new strains of varieties of different crops, while the chemist worked as a soil scientist to determine agricultural mineral elements needed for plant growth like calcium, nitrogen, phosphorous, Zinc and molybdenum. This was in preparation for full scale cultivation of crops in Zaria and its environs. With the success achieved by the botanist and the chemist, experimental work at Samaru from 1926 and 1927 became chiefly concerned with the improvement of the fertility of the soil by means of green manuring and the use of green yard manure.[43] The essence of the field experiment was not to improve agriculture per se, but to discover methods of maintaining the fertility of the soil under perpetual cropping, thus making shifting cultivation unnecessary. The use of leguminous crops in various rotations was also attended to with a considerable amount of success, particularly when a bean crop was dug in a green manure in Bomo in 1928. It seems the success obtained by the British indicated that British perpetual exploitation of agriculture in the Northern provinces lay in mixed farming, intercropping and the use of bullocks for ploughing and cultivation.

The emphasis on mixed farming and intercropping was pivotal to the British aim of maintaining the fertility of the soil for effective exploitation. For instance, animals were to be bred for milk, feed on plant residue and defecate on the farm as biological nitrogen fixation (BNF), and the male offspring, other than those required for study purpose, would be used as bullocks, while the manure produced by them will be used to maintain the fertility of the soil. Through intercropping, before a particular crop is harvested, other crops are planted in

[38] Ibid
[39] Oyedele, op.cit. p.41
[40] N.A.K, Kadminagric. 81398, Vol. 11. This section was dedicated to laborers plight in Samaru village.
[41] Op.cit, p.42
[42] Interview with Malam Dodo, 5th June, 2013, in Agric Extension Serves, I.A.R. (55 Years of age).
[43] See N.A.K, Zarprof Annual Report for 1926, P. 185; also see N.A.K, Zarprof Annual Report for 1927, P.40.

between so that as some crops are taking away nitrogen, other crops return it in order to maintain the fertility of the soil for a long time. On the other hand, the use of bullocks was meant to make cultivation easier and to boost production level. It is our contention that the early focus of research on soil conservation geared towards maintaining the fertility and nutrients of the soil is a testament to the fact that, the British had thought colonial exploitation of Zaria's agricultural resources will continue unabated. No wonder, Winston Churchill on his assumption of office as British Prime minister unmistakably averred that, "I have not become the King's first minister in order to preside over the liquidation of the British Empire".[44] Therefore, independence was not given, but forced on the British through the resolute resilience of the Nationalists.

It is important to note that the objective of the agricultural department is slowly to improve the quality for export and to encourage farmers to cultivate their farms more efficiently and thus produce larger rhizomes, so that the finished products will command a better price owing to higher output. In the sphere of animal production, the concern of the British was basically on artificial insemination, breeding higher quality animals, creating conducive breeding environment through better nutrition, rearing disease-free stocks, better management and research into animal genetics. For the exploited farmers, the preoccupation with export crop production increasingly directed their attention from food production. This is because, as export crops expanded more and more lands that was suitable for food crops production was given over to export crop production. The use of such land, labour and labour resources for export crop production led to the abandonment of several crop varieties produced and consumed by the population. However, the operators of the colonial state realized that the living standards of the colonial peasantry, the producers of the wealth expatriated to Europe, were falling too drastically, as reflected in the increasingly poor quality of the food they were taking,[45] and the need for improvement.

It should not be mistaken, however, that the British were concerned with the well-being of the colonized people of Zaria. Such conclusion would be misleading owing to the fact that the living standard of the peasantry in a colonial state meant nothing to the colonizers. The concern with their living standard which was thought to have been falling drastically due to the fall in the quality of food they were taking found expression only in the light of the quality of labour they offered to the colonial state. Therefore, such concern was shown in order to enhance the energy of the peasantry for increased productivity for the colonial state. Thus, an agreement was reached that to raise and maintain the living standards and the nutritional value of the food consumed by the working population in Zaria had to be improved through the introduction of new food crops like, Irish potatoes, cream, wheat, and pork.[46] It is necessary to note that this argument was raised prior to the outbreak of the Second World War. And while in 1938 the Director of Agriculture had rejected these suggestions as far as they related to the Nigerian farmers, a year later he was urging the massive cultivation of the same food crops by the farmers in order to meet the needs of Europeans during the Second World War. Such double standards on the part of the British buttress our skepticism on the claims that Britain was concerned with the well-being of the farmers, orchestrated by its desire to lift their standard of living through improved quality of food consumed. This is in view of the fact that, the British brazenly continued with its original plans on export crop production at the expense of food crops which they falsely indicated concern for.

By 1930, demonstration plots showing the improved methods of cultivation were laid out side by side with the native plots in 8 villages in Kachia district, 2 villages in Kagarko, Bishinin and Chikun districts.[47] In Lere, however, the conditions were found unsuitable and the work was abandoned. Similarly, a hundred head of cattle of the Borno type were kept at Samaru with 20 to 30 calves which were reared by hands. The milk produced was recorded daily and the percentage of butter fat monthly. Feeding experiments were demonstrated to the farmers as balanced rations were fed to all classes of stock.[48] Milk records revealed the fact that the yield of a cow depends largely on the conditions under which it is kept prior to calving. In addition to this, 110 acres at Samaru and 33 acres at Bomo were cultivated by the cattle with the assistance of hand labour for minor operations. It was such that the British felt it was no longer necessary to apply to the emir for labour because the cattle drastically reduced the hand labour required, and those available in Samaru and Bomo seemed to be enough for the colonial projects.

Experiments continued with the application of farm-yard manure and the exhaustibility of crops-to determine the required quantity. Following dressing of farm-yard manure, a phenomenal increase in yield was

[44] James, Gump: Review of White, Nicholas's Decolonization: The British Experience Since 1945. H-Albion , H-Net Reviews, April, 2011. http://www.h-net.org/reviews/showrev.php?id=5088.
[45] McCulloch, W.E, Summary of an Enquiry into the Dietaries of the Hausa and Fulani Town, with some Observation of the Effect on the National Health, with Recommendation arising wherefrom, Lagos, Government Printers, 1930.
[46] Bonat, Z.K.A: Colonial and Post-Colonial Agricultural Policy Formulation in Northern Nigeria, 1945-1970: A Reconstruction from the Colonial Sources, Paper Presented to the Departmental Post-graduate Seminar, Department of History, Faculty of Arts, A.B.U, Zaria, 2013.
[47] N.A.K, Zarprof Annual Report for 1930, P. 43
[48] Ibid,p. 44

recorded, with the chemist called upon to investigate the factors responsible for the benefit of the farmers. The chemist analyzed samples and tested them for mineral contents and revealed that close grazing, mowing, and intercropping alongside the application of farm-yard manure were the responsible factors for such phenomenal increase.[49] Again, new strains and varieties of different crops which have been produced by the botanist were been tested with success. The result was that, various crops imported from abroad such as *Sunn Hemp*, *Amberique*, Soya and Lima all yielded well in Zaria. Also, there were experiments on the most economical methods of farming fodder crops in order to enable the cattle work desirably, without spending much.

The strategy of spending less to profit much by the British clearly came to fore in 1932. The British acquired 113 acres at Samaru and 40 acres at Bomo practically cultivated by cattle and less of hand labour, with consequent reduction in cost of production and with no reduction in yield. Thus, many labourers relying on the sale of their underpaid labor for survival in an increasingly exploitative colonial economy were relegated to the background. In fact, iron and wooden ploughs were in constant use[50] to reduce colonial expenditure on the agricultural farm. These agricultural technologies introduced impacted positively on the year's agricultural performance. For instance, the year 1932 was a good one for farming. Though cotton was set back by a late drought of 14 days in July, it generally made a good recovery with a promising prospect for the subsequent year.

It is pertinent to know that the years 1932 to 1939 were greatly devoted to experimentation in the demonstration farms in Samaru, Bomo, and other parts of Zaria emirate, with findings disseminated to the local farmers for practice. This was in order to advance the knowledge of agricultural science for improved seeds and yield, for marketing and exportation to Britain. The results showed that British soil conservation practices were successful. At the start of the experiments, land farmed as a demonstration on a definite four course rotations of crops started its cycle and the crops were said to be as good as or better than those grown on the same land four years ago without apparent loss of fertility.[51] A groundnut selection provided by the agricultural botanist at Samaru was grown at Kafin Soli and showed its superiority over the local varieties and the crop obtained is being kept for distribution as seed to selected farmers in the coming season. This formed a valuable demonstration to farmers. What is worth noting is the fact that, manure, comparably only to what native farmers would have available for a similar area, was applied. Other results of the findings were reported as follows:

a) Cotton has been grown through ***gero*** (millet) with success; yields of ***gero*** are unaffected and the cotton provides a useful cash crop.

b) Certain selected strains of groundnuts have yielded from 18-30% higher than local varieties. Guinea corn selected by the botanist has also been tested against local varieties.

c) Manorial experiments have been made with most farm crops.

d) Experiments have been made with a view to using a late sown cash crop for hay in the dry season.

e) An investigation into the possibility of keeping working cattle in cheap open un-roofed pens has shown that providing cattle have plenty of bedding, they keep in good health but that the manure produced although much greater in quantity is not as good in quality, judging by a field manorial trial this year.

f) Further experiments with grasses have been made with a view to improving pastures, a necessary concomitant for improving the quality of diary stock. The dairy herds of Bornu and Fulani animals have been in good health. The cattle dip has been used by neighboring mixed farmers with beneficial effects on their animals.

g) Various systems of calf rearing under tropical conditions of dairying have been tried out and a successful modification now devised which appears to keep calves free of scouring and wireworms, the great scourge of young stock in this country.

h) Silage made from grass in July is being fed successfully to all stock in the dry season, and hay of improved quality has been made for dry season food.

I) Stock bulls bred from the best cows are being tested by comparing yields of their offspring against yields of the original cows, in order to select in time the best strains on which to base the general improvement of stock.[52]

It appears that most of the local farmers became very enthusiastic with the experimental outcomes and thus ready for a good beginning in colonial agricultural fashion. This enthusiasm gave impetus to British mixed farming and intercropping scheme. This is because 37 new farmers took up mixed farming during the year in the emirate making it a total of 103. More pleasurable to the British was the fact that, the emir and the district heads also started farms and the British were satisfied with their efforts and intention to carry on with the mixed farming and intercropping on their farms. The addendum to this was that the N.A introduced a scheme to assist farmers in purchasing the necessary equipment, with repayment from farmers who started the scheme in 1932 deemed satisfactorily received in accordance with the schedule of repayments over a three year period.[53] It is our

[49] Ibid
[50] N.A.K, Zarprof Annual Report for 1932, P. 38
[51] Ibid
[52] Ibid, P.p. 38-45
[53] Ibid, P.p. 40-43

understanding that the involvement of the emir and his principal officers might have encouraged so many farmers from other districts to follow suit subsequently. This is in view of the fact that, the year saw the completion of the first season of mixed farming and intercropping extension in the emirate and the following numbers practiced:

Table 1.1: list of participants in the Mixed farming and intercropping scheme

Groups	Numbers
EMIR	1
District Heads	9
Village heads	3
Others	4
Total	17

Source: [1] N.A.K, Zarprof Annual Report for 1932, P. 38

To further British interest in mixed-farming, an arrangement was made with the Forestry Department by which mixed farmers may cut down listed trees on their farms, up to a limited number, without payment. This was considered assistance to farmers who wished to start in areas heavily wooded, when in the real sense it was desperation on the part of the British to raise production level in the interest of British companies and economy as a whole. However, some difficulty was experienced with trypanosomiasis in cattle, but it appeared that the majority of cases were found in a bunch of cattle purchased from the veterinary headquarters at vom, which through experiments offered little resistance.[54]

Likewise, owing to the success of intercropping, it was practiced at ***Daudawa*** seed farm on a large scale. The 900 acres by 1932 expanded to1380 acres of crops comprising 600 acres of cotton, 80 acres of beans for green manure, 260 acres bulrush Millet, 250 acres guinea corn, 100 acres groundnuts and 30 acres of maize.[55] Apart from the areas directly cultivated by the BCGA, there were 26 farms in an estate worked by native farmers. 10, 510 1bs of seed cotton- an average of 140 1bs per acre,-were produced by these farmers. The demonstration farms at Samaru came to attract much attention from N.A notables and the local farmers. Amongst the former may be mentioned the Sultan of Sokoto, and many emirs attending a conference in Kaduna for the better regulation of the cotton market and the elimination of middlemen, who also visited Samaru in May, 1934.[56] As such, mixed farming made considerable strides during the year with over 100 new farmers having been set up with ploughs and oxen. They were financed by a system of advances from N.A funds which are payable over a period of 3 years. The progress made in Samaru demonstration farms encouraged the establishment of other demonstration farms at Saminaka in Lere district, Kaduna and Birnin Gwari with apparent findings that excellent cotton can be grown in the districts served. This is because stimulated production has shown that with the requisite advice and encouragement of the agricultural department being sufficiently attended to, urgent good results can be obtained in the production of onions and potatoes to meet demands previously drawn from Madeira, Egypt, and Holland.

By 1935, Samaru's agricultural findings and agricultural transformation gained greater attraction, as it was visited by a larger number of people, Europeans and Africans, officials and non-officials. In July a number of administrative officers visited Samaru for a course of instruction in the methods of mixed-farming. Experiments were made with sweet potatoes, and a strain of cowpeas introduced from Nyasaland (Malawi) and also with a number of strains of guinea corn, cotton and groundnut selected by the botanist. These introduced crops adapted very well, and as such, distributed to farmers across Zaria with bumper harvest recorded in 1938.[57]

It is important we bring out the general weather condition and performances of crops in relation to the impact of the experimentation of Samaru research centre that was said to have stimulated a bumper harvest in 1938. The May and June early planting rains were uncertain and critical and much re-sowing of corn crops was necessary. Conditions during the remainder of the season however were excellent and good harvests of the staple food crops as well as export crops resulted. This is because rain continued until October 17th and totaled 45.26 inches at Samaru and Bomo in that year.[58] Thus, cotton production was excellent with a total crop of 15, 000 bales sold for export, the highest in 12 years. It should be noted however that not all produced cotton were exported, others were sold within Zaria to meet the keen demand of local spinning.[59] Groundnut production experienced similar increase, especially in the areas of Makarfi and Ikara with about 8, 000 tons sold in Zaria

[54] N.A.K, Zarprof Annual Report for 1933, P. 20
[55] Cotton was intercropped with maize, millet or Guinea corn with little apparent adverse effect on the yields which averaged per acre 468 1bs millet; 363 1bs maize, 475 1bs guinea corn and 413 1bs groundnuts. for details see N.A.K, Zarprof Annual Report, op.cit, p.40
[56] N.A.K, Zarprof Annual Report for 1934, p.19
[57] N.A.K, Zarprof Annual Report for 1935, p.18
[58] N.A.K, Zarprof Annual Report for 1939, p.19
[59] Ibid

province. In the case of tobacco, production totaled 100, 000 1bs of Virginia hybrid leaf purchased by the British American Tobacco, with anxious intention to increase production to 200, 000 1bs in the subsequent year. The performance of ginger was not an exception. It totaled an export of 73 tons of cured white and yellow ginger in 1938 compared to the 31 tons in 1935 which was the highest recorded as of then. Several hundreds of tons were absorbed by the local trade at high prices.[60] The high price by the marketing board was a strategy designed to facilitate a considerable increase in acreage in seasons to come.

I.AR and the Second World War

When the allied forces declared war on Hitler's Nazi Germany in September 1939, their African colonies were once more drawn into another European conflict which they knew nothing about. Throughout the war, Africa remained an essential source of manpower and raw materials for the allied war effort. Although the War was internationally reckoned to have disastrous consequences on colonial subjects, colonial officers in Zaria attempted to downplay the magnitude of such consequences. The quotation below may serve to buttress our observation:

> ***The great and favorable changes in the war situation during 1943 have not, as might have been supposed, led to a slackening of the war effort. The absence of any such tendency is partly due to the fact that Nigeria has been fortunate enough not to have had her security threatened at any time. To the peasants the war is and always have been something remote and abstract which has affected his little life but little. Those in authority have always been alive to the real implications of the struggle and its distance has not affected the people, reality.***[61]

The above statement by Zaria's resident officer, P.N. Noad, is a sham in the light of concrete historical evidence. This is because, before the war Britain left its major European merchant companies to control the marketing of African produce and to restrict the prices paid to African farmers. However, during the war the colonial state moved in to take a more prominent role. All over East, West and Central Africa, colonial authorities set up marketing boards to organize African production for export. At the same time, they used the political power of the government to impose official price controls.[62] Thus, although African palm oil, rubber, sisal, groundnuts, cotton, coffee, tea and cocoa fetched high prices in Europe, because of wartime shortages, African producers received no benefits from this. In fact, prices paid to African producers were kept at low fixed rates, as colonial government pocketed the differences and even sent subsidies to the allied war effort. The inflation of manufactured goods from Europe meant the people of Zaria had to grow more and more export crops just in order to buy the same amount of imports. This implies the intensification of exploitation by the British to achieve allied war objectives of defeating Nazism. Therefore, the attempt by Noad to downplay the impact of the war on Zaria's peasants is an unmaking of history.

Due to the expansion of activities in many fields owing to wartime conditions, the agricultural station at Samaru suddenly became concerned with the organization and control of exploitation of firewood and building materials jointly with the forestry department. As such, 25 communal forestry areas near Zaria were put in place under a simple working scheme with the objective of maintaining continuous supply of firewood.[63] This development brought about a decrease in forestry offences, and an improved system of felling regulation, with the peasantry appreciating the value of forestry control. The sudden attention of the British to the production of firewood and the inclusion of the agricultural school in such project was because of the use of wood gas vehicles, with firewood in the fuel tank. During World War 11, almost every motorized vehicle in continental Europe was converted to use firewood. Wood gas cars (also known as producer gas cars) are a not-so-elegant but surprisingly efficient and ecological alternative to their petrol (gasoline) cousins, whilst their range is comparable to that of electric cars. It is important to note that it was the rising fuel prices during the war that caused a renewed interest in this almost forgotten technology that first appeared in Germany in 1870.[64]

Furthermore, greater attention was given to crops that served British war effort, albeit in tandem with cash crops. Such crops included the English potatoes, sugar, ginger, Chilly pepper, soya beans, improved tomatoes and increased milk production and groundnut. For instance, when the production of English potato declined in Britain due to the war effort, colonies were considered the alternatives for the production of potato, a special crop in Britain. Jos was identified as the most favorable area for its cultivation, but later transferred to Zaria when improved seed for distribution was grown on Samaru's agricultural station's farms. The production of English potato continued to expand with the total crop for 1944 exceeding 500 tons which alone exceeded the

[60] For details of the bumper harvest recorded in 1939 see Zaria province for 1938, p.33 and the annual reports for the subsequent years up to 1945 where emphasis were made in comparative terms to that of 1938.
[61] N.A.K, Zarprof Annual Report for 1943, p.3
[62] Shillington, Kelvin: *History of Africa*, St. Martin's Press, New York, U.S.A, 1995, P.p. 362-372.
[63] N.A.K, Zarprof Annual Report for 1941, P.p.13-14.
[64] Wood Gas Vehicles: Firewood in the Fuel Tank for the Second World War, in Low-tech Magazine's Doubts on Progress and Technology, January 18, 2010.

former total annual imports into Nigeria. This resulted in the establishment of a large store by the Agricultural department to study storage problems of potato in Britain during the war.

The wartime efforts also engendered interest in the production of Chili pepper and onion by the agricultural department, experimented by the School of agriculture. The diversion was not without purpose; it was to aid the war effort. Chili pepper and onions were used in the production of tear gas used in the war front against Nazi Germany. The new focus also led to the cultivation of tomatoes leading to the discovery of an improved variety by the research centre, which remains the dominant variety of tomato in Nigeria today.[65] Furthermore, the war years saw an exponential growth in milk production, milk-buying units, and Soya in areas of the Jos Plateau and Samaru, with butter produced on a commercial scale. To further the production of milk, the diaries at Lagos and Moor plantation (Ibadan) were supplied with 105 cows from the Shika stock farm, and 11 cows and two bulls were also transferred to the Gold coast for an experimental diary at Accra; while 200-250 head of cattle were continuously maintained at Samaru to meet army requirement.[66] Thus, Zaria diary continued to produce and supply milk, mainly to the troops, and European and African staff through the established colonial research centre in Samaru.

In the case of Soya bean and groundnut, it was much more studied and grown at Samaru to meet the requirement of the army. The production of cheese and bacon was also undertaken and intensified for the consumption of the Soldiers. In the first instance, the colonial state embarked on a large scale propaganda and other measures to induce farmers to grow cash crops especially groundnut to generate enough resources to finance the war. Hence, the groundnut propaganda slogan, *"Plant a groundnut a day and keep Hitler at bay"*[67]. This propaganda actually worked because it led to the expansion of cash crop production especially cotton in Zaria province, in spite of the early cessation of rain in 1941. The Resident colonial officer, F.M Noad expressing his delight at the performance reported that:

> ***"The export cotton output for 1940/1941 season was the highest for all time being at 17, 226 tons, nearly 6, 000 bales larger than the previous records."***[68]

The shift in production to meet wartime demands no doubt accentuated the already relegated food crop production, and the inflow of other consumer goods into Zaria. One point to note is that all of these crops were mainly sold to the colonial army at ridiculously low prices compared to those obtained on the world market. This was made possible by the establishment of the post of marketing officer to coordinate the development of inter-colonial trade, right from the outbreak of the hostilities in 1939. These effectively controlled prices of items bought by the army and in some instances reserved certain products like milk, honey and to some extent sugar for the army alone. Abdulkadir Adamu rightly argued that this situation had two implications for the general well-being of the people. In the first place, it meant a reduction in the acreage for the traditional food crops like guinea corn and millet, thus a reduction in not only their production but supply as well. Secondly, since these crops are food and could therefore be consumed locally within Zaria and neighboring areas, they were non-the-less diverted and supplied to the British colonial soldiers at the expense of the indigenous populace.[69] In addition, the production of the crops was not entirely willingly-initiated by the farmers but forced on them to meet war time demands. The danger of inflation resulted in a further increase in the general tax incidence, but the total collected by the end of 1945 was by no means conspicuously lower than in the previous year. This implies that, the general level of exploitation was intensified, as the peasants were forced to shoulder the burden of the imperialist war. However, when the war ended, the colonial government withdrew from its over-concentration in the production of Irish potatoes. The 1945 report clearly stated that they "expected reduction in the production of English potatoes and sugar due to the end of the war, which led to reduction in demand.

The Introduction of "Modern" Farm Techniques and Implements

Shifting cultivation and crop rotation characterized agricultural practices in pre-colonial Nigeria, owing primarily to land tenure practice and lack of knowledge of highly mechanized farming which made farmers dependent on simple implements such as digging stick, hoe, cutlass and sickles.[70] The common crops produced

[65] Interview with Professor Ezra Bako Amans, op.cit; also interview with Ali masousou (Sarkin Yorubawa), (85 Years of age) in Samaru, 24th June, 2013, 7:00 pm, in his palace. He was 23 years of age at the time of the war and started work with the research centre in 1940, a year after he arrived Samaru. He gave a clear picture of the new focus of agricultural research occasioned by the event of the Second World War.

[66] Interview with Idris Abah, in Zaria city,(70 years of age), 10th March, 2002

[67] See Adarnu, Abdulkadir, *The Food Economy in Colonial Nigeria: op.cit, P.P. 83-80; also see* NAK, MOA 4203 Groundnut Report for 1935-55.

[68] *Ibid*

[69] Adarnu, Abdulkadir, *The Food Economy in Colonial Nigeria: op.cit, P.P. 85-86.*

[70] Fasinmirin, J.T and Braga, F. "Agriculture for sustainable food, energy and industrial development in the Sub-Saharan Africa: The case of Nigeria", in *African Journal of Food Science*, Vol. 3. (13), December 2009 P.p. 429-433 (Available online http://www.acadjourn.org/ajfs)

based on territorial specialization included, yam, okra, vegetables, maize, cocoyam, cassava, plantains, bananas, kola nuts, cocoa, oil palm and forestry products. Soil conservation and irrigation of farms during dry seasons had been an ancient agricultural practice among Nigerian farmers and was not particularly influenced by conservation practice of the modern days but was regarded as the most effective and correct way to maintain soil fertility and crop productivity. This implies that though the knowledge of the concept "Soil Conservation" was unknown, soil conservation practices were known to Zaria farmers albeit limited.

Similarly, the history of agriculture in Nigeria showed that output has been increased in the past mainly through bringing more land into cultivation and extending the agricultural frontiers through conversion of forests and natural grasslands. There were not much of researches carried out in the past on either the soil and or crops that were grown, neither was there much of soil conservation strategy adopted due to low level of scientific information. However, Nigeria benefitted tremendously from the fertile forest soil that were suitable for tuber crops and the native grassland that yielded their maximum from grain production. This situation changed with the establishment of a research center in Samaru in the second decade of the 20th century. Output was no longer determined by size of land under cultivation but rather, by the input of research and the practical application of the knowledge of science to agriculture.

It is important to note that the knowledge of soil science and crop science came to Zaria with the emergence of I.A.R. The botanist unraveled the knowledge of strains of crop, their adaptability and yield, while the chemist tested the quality of the soil before cultivation. Soil quality is of paramount importance to agricultural production as it determines the capacity of a soil type to function within a natural or adjusted ecosystem in the maintenance of water and air quality and support plant and human living. This technique of soil quality assessment that reflects the biological, chemical and physical properties of the soil, as well as the processes and their interactions within each resource unit in agriculture, came to Zaria through the Samaru research centre known today as I.A.R.

Hence, no doubt the establishment of I.A.R in Zaria introduced new farm techniques previously unknown to farmers, no matter how little or whether it only served colonial agricultural exploitation purposes or not. In the first place, the knowledge of agricultural conservation was broadened which opened path breaking ways of maintaining soil nutrients and fertility. This was achieved through field experiments that demonstrated that lands for agriculture can be brought under perpetual cultivation without recourse to shifting cultivation, bush fallowing and crop rotation, through other means of maintaining soil fertility and replacing lost soil nutrients. The newly introduced methods were intercropping practices, expansion of mixed farming practices through close grazing, and the application of green manuring and farm yard manure previously unknown to farmers. In the sphere of animal science, techniques such as artificial insemination, breeding of higher quality animals, creating conducive breeding environment through better nutrition, rearing disease-free stocks, better management and research into animal genetics was introduced through the research institute.

In the same vein, agricultural extension services which is an educational process designed to cause maximum number of desirable changes among farmers, which involves learning and teaching through the use of some tools or methods was another important farm technique introduced into Zaria by the Samaru research centre. Conscious efforts were made in selection, introduction and teaching of the practices involved in producing good varieties of crops and breeds of animals. Farmers selected the best seeds for multiplication, from which the seedlings were being transplanted to their farms.[71] Similarly farmers introduced to their farms improved seeds and animals from their neighboring communities. However, these colonial agricultural development initiatives were undertaken with the purpose of increasing production for export purposes.

Furthermore, agricultural research in Samaru obviously led to the introduction of "modern" farm implements that enabled large-scale farming in our area of study. Prior to the colonial period, agricultural practices as we have shown, largely depended on simple farm implements like digging stick, hoe, cutlass and sickle among other things. According to a former Director of I.A.R between 2002 to 2004, the introduction of new farm implements like ox-drawn, plough, iron and wooden ploughs, and bullocks in agricultural practice by the research centre should not be overlooked or underrated. His argument is based on the fact that the supposed outdated European implements introduced in Zaria were at that time superior to the local implements used by the local farmers and stimulated increased productivity within the shortest time possible.[72] However, although the introduced agricultural implements were superior to the local ones, they fell short of standard, given the level of agricultural revolution in Europe that culminated in agricultural mechanization.

Therefore, while agricultural research revolutionized agriculture in Europe, it decisively failed to revolutionize agriculture in Zaria through the same process. This may well explain the current state of agriculture

[71] Olagbaju J, Falola T: "Post Independence Economic Changes and Development in West Africa", In Ogunremi, GO and Faluyi, EK (eds.) *An Economic History of West Africa Since 1750*. Ibadan: Rex Charles, 1995, P.p. 78-85.
[72] Interview with Professor M. Missari, (Age: Undisclosed), , 18th June, 2012, at about 10:30 am, in the Faulty of Agriculture. He is a former director of IAR in the period 2002-2004.

in Africa that remains outside the corridor of mechanization. The reason is not far-fetched. Colonial research was fundamentally and irreversibly determined to exploit Zaria's agricultural resources only in the interest of their well established manufacturing industries. A revolution in agriculture could have altered the plan by linking the agricultural sector to manufacturing sector. It suffices to observe that Britain was not interested in such an idea that amounted to diversion from its original plan of colonial assault for unlimited plunder of raw materials and the further exportation of overproduced goods to the readily available and controlled markets of the colonized. Hence, Britain linked Nigeria's agricultural sector to its own manufacturing industries at home, just waiting to be fed with colonial raw materials, and the exportation of finished products to the colonies at an exorbitant price. Surprisingly, the British introduced tractor into Zaria in the 1950's, however, used only on colonial farms and I.A.R for large scale farming and demonstration purposes. This move was probably in desperation on the part of the British to close the chapter of colonial exploitation on a high note, when it was discovered that colonialism was soon to reach the end of the road.

Agricultural Improvement and Rural Development

The colonial government township ordinance Act promulgated in 1917 dictated the developmental course of the rural areas when it classified settlements into first, second and third class for the purpose of infrastructural provision. The first class settlements were mostly inhabited by Europeans and their workers.[73] Consequently, such settlements were the focus of heavy infrastructural concentration, and Lagos represented the classic example of such discriminatory infrastructural concentration. On the other hand, the second and the third class settlements were not given adequate policy attention in infrastructural provision. In order to critically determine whether or not agricultural improvement resulted in rural development, it is important we have a thorough grasp of the state of Nigeria's rural area and colonial interest in rural Nigeria.

According to Roger Blench, in rural Nigeria access was so problematic and information systems so underdeveloped that rural citizens were hardly able to articulate even major issues.[74] On the question of British interest in rural Nigeria, it was built on a twin-pillar. In the first place, the rural areas were available only as primary resource areas for export of raw materials. The second level of exploitation saw the rural areas as food productive centers for the few urban centers which eventually were to serve the basic food needs of the colonial inhabitants. This was absolutely a case of using the resources of the rural areas in "developing" the cities; just as available high tax revenue accruing from the rural communities did not match or correspond with the very low expenditures devoted for its development. From the above realities of colonial domination and its intent, colonial agricultural improvement could not have developed rural areas in Zaria. It instead milked and expropriated the rural areas of Zaria in the search for less expensive human and material resources to develop and sustain the British colonial empire and its economy as a whole.

However, typical of the colonialists attempts were made to present to the colonized people of Zaria a picture of rural development through various colonial initiatives. For instance, the development of a co-operative farming scheme by Colonel French was falsely presented as developmental to rural areas as bait to get the local farmers of Zaria attracted to colonial agriculture. The scheme involved among other things the harmonious co-operation of farmers in colonial agriculture and the granting of loans to farmers to enable them engage in large scale farming. The British argued that such efforts developed the rural areas by making money available, promoted increased productivity through the skills acquired from the demonstration farms and also brought civilization, thereby putting them on the path to development.[75] And that consequently, more research institutes and marketing boards were established to improve production of crops as well as handle storage and marketing of export crops respectively. The Nigerian Cocoa Marketing Board was established in 1947 while other marketing boards for cotton, groundnuts and oil palm were set up in 1949.[76]

The reality check of such a colonial propaganda and cover up reveals that, these marketing boards were more at the service of the colonial interest of local resource exploitation, which ended up impoverishing the rural sources of capital through commodity price distortion and excessive taxation. What appears indisputable is the fact that rural development in colonial Zaria was premised on the single emphasis of agricultural development and productivity for imperial gains. It is perhaps apt to argue that rural development in Zaria during this period was synonymous with agricultural development since other important channels of development were absolutely ignored. Apart from the visible role of agriculture in the livelihoods of the populace, the idea of agricultural-centered development plan for rural areas had much to do with the general orientation of the colonial masters, who saw local resource exploitation as a means of expanding their economic as well as sustaining their

[73] Akpan, Nseabasi S: "Rural Development in Nigeria: A Review of Pre- and Post-independence Practice", in *Journal of Sociological Research Vol. 3, No. 2, 2012*, p.148. (URL: http://dx.doi.org/10.5296/jsr.v3i2.2302).
[74] Roger Blench: "Position paper: The Rural Dimension (Nigeria: drivers of change)". Paper prepared for DFID. Cambridge 22 October, 2003, p.7. http://www.rogerblench.info/RBOP.htm
[75] Cited in Annual Report of the Agricultural Department, 1933, (Lagos: Government Printers, 1945), p.34
[76] Ibid

livelihoods and commercial interests. Such 'parasitic' relationship laid the initial foundation for the systematic disempowerment of Nigeria's rural areas up to the post-independence period.[77]

In contemporary times, it is common knowledge that while the rural areas are still described as synonymous with peasant and subsistent agriculture, it is equally seen as synonymous with absence of basic infrastructural facilities such as sanitation, electricity, pipe-borne water, good roads and health care services. How different is it from the colonial period which the colonialists claimed to have developed? The point being made here is that the British exploited the resources of these rural agrarian areas and left them undeveloped. The reason is to be found in the fact that agricultural improvement in the dictionary of the colonizers is conspicuously not the question of rural development, but an improvement for the further development of British industries dependent on such improvement. Little wonder why in spite of the immense and invaluable resources derived by the British in the rural areas of Zaria like Samaru, Shika, Giwa, Biye, Bomo, Bassawa and others not mentioned, only Samaru stands out as comparatively developed.

It is imperative to note that the state of infrastructural development in Samaru is tied down to heavy colonial presence in the area, particularly with the establishment of I.AR in the second decade of the 20th century. This necessitated the building of classrooms and staff quarters which made the residence of European in the area indispensable and infrastructural improvement inevitable for the healthy and good living of the European staff. Similarly, the setting up of NCAST and Aviation in an area very close to Samaru was another considerable advantage to Samaru. Indeed the establishment and development of A.B.U in Samaru gave more momentum to the development of Samaru, which is by all means ahead of all the rural areas in colonial Zaria. Hence, had it not been for the favourable position Samaru enjoyed during colonial rule, it would not have been better than the other areas at the same level with it during the period, especially Bomo, which we have shown in our discussion to be ahead of Samaru before the advent of the British. Therefore, since colonial domination was not interested in development, any development witnessed is either accidental or incidental.

Conclusion

The paper traced the historical antecedents that culminated in the idea of agricultural research in Europe, the genesis of agricultural research in Nigeria, the establishment of I.A.R in Zaria and its research efforts and development in the period 1922-1945. It argued that the historical antecedents to research in agriculture are rooted in the scientific revolution that swept across Europe in the late 16th and early 17th centuries. As is well known, the concomitant impact of the revolution in science was not limited to Europe, as it spread widely across the world and decisively altered the course of human history via the industrial revolution. Britain, the leading industrialized nation of the world, took advantage of the knowledge of science and turned it into an instrument of domination and exploitation, through colonial agricultural research.

The paper also shows that the Second World War brought a new focus on production that meets the needs of the battling Soldiers such as, English potatoes, sugar, ginger, Chilly pepper, soya beans, improved tomatoes and increased milk production. The situation of course was a further blow to the already neglected food crop production. Finally, the paper raised issues regarding the colonial claims of agricultural improvement and rural development. Such claim to rural development as far as the study is concerned is a smokescreen. This is because the rural areas of Zaria were not transformed, and remained underdeveloped in contemporary Nigeria due to the indelible imprints of colonial exploitation and the neglect it suffered, and is still suffering since post-colonial Nigeria followed same colonial trajectories.

SELECT-BIBLIOGRAPHY

PUBLISHED BOOKS, JOURNAL ARTICLES AND PAPERS

Akande, S.O: *A Study of Agricultural Research System of Nigeria*, NISER Monograph Series No. 6, 1999.

Abalu, G.O.J (ed): *Seminar on Nigerian Economy and Society since the Berlin Conference*, Vol.1, Zaria, 11th-15th November, 1985.

Ajaero, Chris: *The boom that Became our Doom*, published in News watch Magazine, Tuesday, 28th July, 2009.

Kirk-Greene: A.H.M: *Gazetteers of the Northern Provinces of Nigeria: The Highland Chieftaincies (Plateau Province) Vol. IV*. Frank Cass: London. 1972.

Kirk-Greene, A. H. M., *Gazetteers of the Northern Provinces of Nigeria, Vol. 1, the Hausa Emirates (Bauchi, Sokoto, Zaria, Kano*), London: Frank Cass, 1972.

Mahadi, A.(ed) *History of A.B.U 1962-1987*, A.B.U., Press Published, 1987. Charles, 1995.

Samir, A: "SADCC Prospectus for Disengagement and Development in Southern Africa": *Studies in African Political-Economy*-United Nations University, London, Zed books Ltd, 1987.

Walter R: *How Europe Underdeveloped Africa,* Bogle-L'Ouverture Publications, London. 197l.

Watts, M: *Silent Violence: Food, Famine and Peasantry in Northern Nigeria,* Berkely, California, 1983.

[77] Akpan, Nseabasi S: "Rural Development in Nigeria, op.cit., p.149

Yakubu, A.M. et al (eds.), *Northern Nigeria: A Century of Transformation, 1903 — 2003*, Arewa House publication, Ahmadu Bello University, Kaduna. 2005.

UNPUBLISHED WORKS, JOURNAL ARTICLES AND PAPERS

Abdulkadir, A: *British Colonial Agricultural Policies in Northern Nigeria, C. 1902 — 1945: A Case Study of Soba District*. A Master's Thesis submitted to the Department of History, Ahmadu Bello University, Zaria. 1992.

Adarnu, Abdulkadir, *The Food Economy in Colonial Nigeria: A Study of Food Production and Distribution in Zaria Metropolis C. 1902-1960*, Ph.D. Thesis submitted to the Department of History, A.B.U Zaria, 2001.

Adamu, Abdulkadir, "*The Major Trends in Nigerian Agriculture: Towards the 21st Century*," Paper Presented at the 38th Annual Congress of the Historical Society of Nigeria, Held in Zaria, 1994.

Agaldo, G. S: "A Survey of the Impact of Colonial Agricultural Policies on Nigeria's Agriculture," in Journal of iconomics and Financial Issues, Vol. 2, No. 1, 2000

Akpan, Nseabasi S: "Rural Development in Nigeria: A Review of Pre- and Post-independence Practice", in *Journal of Sociological Research Vol. 3, No. 2, 2012*. (URL: http://dx.doi.org/10.5296/jsr.v3i2.2302).

Brockway, L.H. "Science and Colonial Expansion: The Role of the British Royal Botanic Gardens", in American Ethnologist, Vol. 6, No. 3, Interdisciplinary Anthropology (Aug., 1979), Published by: Wiley on behalf of the American Anthropological Association. Stable URL: http://www.jstor.org/stable/643776.

Balogun, Adebisi M & Aletor, Valentine A: "Leveraging Technological Research and Development for Effective Management and Utilization of Nigeria's Natural Resources: The Agricultural perspective", An invited Paper at the TECHNO-EXPO 2009 by Raw Materials Research & Development Council, Abuja, Feb 10-13, 2008.

Bonat, Z.K.A: "Colonial and Post-Colonial Agricultural Policy Formulation in Northern Nigeria, 1945-1970: A Reconstruction from the Colonial Sources", Paper Presented to the Departmental Post-graduate Seminar, Department of History, Faculty of Arts, A.B.U, Zaria, 2013.

Fasinmirin, J.T and Braga, F. "Agriculture for sustainable food, energy and industrial development in the Sub-Saharan Africa: The case of Nigeria", in *African Journal of Food Science*, Vol. 3. (13), December 2009. (Available online http://www.acadjourn.org/ajfs)

Hogendarn, J. S: *The Origin of the Groundnut Trade in Northern Nigeria*, Ph.D Thesis, University of London, 1966.

Ibrahim, Muktar M: British *Colonial Labor Policies and the Changing Role of Labor in Kano Emirate C. 1903-1960*, PhD Thesis, Department of History, A.B.U., Zaria, 1994.

Ijere, M.O. "Colonial Policy in Nigerian Agriculture and Its Implementation" In Agricultural History Journal, Vol. 48, No. 2., Agricultural History Society Publishers, 1974, (http://www.jstor.org/stable/3741237

James, Gump: Review of White, Nicholas's Decolonization: The British Experience Since 1945. H-Albion, H-Net Reviews, April, 2011. http://www.h-net.org/reviews/showrev.php?id=5088.

Kazah-Toure, K: *The Development of the Nationalist Movement in Zaria Province, 1902- 1960*. A Master's Thesis submitted to the Department of History, Ahmadu Bello University, Zaria. 1991.

Mohammed, A. M: *European Trading Companies and the Underdevelopment of Northern Nigeria, 1855-1939: The Case of the Royal Niger Company/United African Company*, PhD Thesis, Department of History, A.B.U, Zaria, 1985

Okunmadewa, Foluso, and Joseph Olayerni: "Globalisation: Internal Policy Reforms, and Public Agricultural Research in Nigeria", In Bigman. David. (ed.), *Globalization and the developing countries,* London: CABI Internationa, 2002 pp..

Oyedele, E.O: *Colonial Urbanization in Northern Nigeria, Kaduna 1913-1960*, PhD Thesis, Department of History, A.B.U, 1987, Zaria.

Roger Blench: "Position paper: The Rural Dimension (Nigeria: drivers of change)". Paper prepared for DFID. Cambridge 22 October, 2003 (http://www.rogerblench.info/RBOP.htm

Safiyanu, M. A: *The Colonial State and Colonial Economy in Northern Nigeria. A Case Study of the Zaria Native Authority, C. 1902 — 1945*. A Master's Thesis submitted to the Department of History; Ahmadu Bello University, Zaria. 1991.

Umar, 1988: *Impact of British Colonial Rule on Agriculture in Gombe Division 1900- 1945: A Study in Agricultural Underdevelopment*. An M.A. Thesis submitted to the Department History, A.B.U, Zaria.

ARCHIVAL MATERIALS

NCAST, file No. 2557, NAK.

NAK, Kadminagric. 8149 vol.1. Samaru extension
NAK, Kadminagric. 31282 Vol.1
NAK, Kadminagric. 8149 Vol.1
Institute for Agricultural Research, Samaru (Federal Ministry of Agriculture and Rural Development), Ahmadu Bello University, Zaria, Nigeria-Information Leaflet.
N.AK, Agricultural School Samaru Recruitment for, 11366.
N.AK, kadminagric.31282. Vol. 1
NAK, Zarprof 2569, Annual Report for 1924
NAK, Zarprof 2460, Annual Report for 1925
Kadminagric. 31282 Vol., Samaru Plantation and agricultural station
N.AK, Zarprof Annual Report for 1926. Vol.2. K6652
N.AK, Zarprof Annual Report for 1927. Vol.1. K6653
Annual Report: Institute For Agricultural Research Samaru 1962-63
N.AK, Kadminagric. 11366-Agricultural station, Samaru: Recruitment for 1929-1947.
Division of agriculture and Livestock Service Training, A.B.U Annual Report, 1972/73.
N.A.K, Zarprof Annual Report for 1925. 14830 Vol. 1.
N.A.K, Zarprof Annual Report for 1941. 34182.
N.A.K, Zarprof Annual Report for 1942.
N.A.K, Zariaprof Annual Report for 1947, SNP 17, 43300.
N.A.K, Kadminagric. 81398, Vol. 11. This section was dedicated to laborers plight in Samaru village
Annual Report of the Agricultural Department, 1933, (Lagos: Government Printers, 1945)
N.A.K, Zarprof Annual Report for 1934.
N.A.K, Zarprof Annual Report for 1935.
N.A.K, Zarprof Annual Report for 1939.
N.A.K, Zarprof Annual Report for 1943.
N.A.K, Zarprof Annual Report for 1941.
NAK, MOA 4203 Groundnut Report for 1935-55.
SNP 19 35, 369 Zarprof Annual Report for 1947.

ORAL INTERVIEWS

Interview with Mallam Ibrahim Isah, (65 years of age), 21st July, 2011, at 4:30 pm, in Bomo Village. He is a farmer.
Interview with Dr. A.M Falake, (62 years old) 7th June, 2013, at 2pm, in the Office of the Director. A.M Falake is the current director of I.A.R
Interview with Mallam Ero Faskari, (52 years of age), 3rd March, 2013, 11:00 am, I.A.R Administrative block. He is the head of agric extension and a custodian of the institute's documents.
Interview with Zaharadeen Ishaku, (60 years old), 10th march, 2013, at about 10:30 am, in Bomo Village. He spoke on behalf of the District Officer of Bomo, who was unavoidably absent.
Interview with Professor Ezra Bako Amans, (60 years of age), 17th May, 2013, at about 11:50 am, in the office of the Deputy Director.
Interview with Mallam Kabiru Isah, (68 years of age), 29th January, 2014, at 4: pm, in Barnawa Kaduna. He is a former staff with IAR.
Interview with Malam Dodo, (55 Years of age), at about 2: pm, 5th June, 2013, in Agric Extension Services, I.A.R. He is a research scientist with IAR.
Interview with Idris Abah, (70 years of age), 10th March, 2002, at 11:30 am, in Zaria city. He is a veteran farmer.
Interview with Professor M. Missari, (Age: Undisclosed), 18th June, at 10: am, 2012, in the Faculty of Agriculture. He is a former Director of the institute between 2002-2004.

INTERNET MATERIALS

History of Agricultural research Council of Nigeria; http://www.arcnigeria.org/index.php
History of Nigeria Agriculture by Sector - OnlineNigeria.com.htm

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