THE IMPACT OF AGRICULTURAL RESEARCH INSTITUTES ON THE ECONOMIC DEVELOPMENT OF NIGERIA

A CASE STUDY ON THE ROLE OF THE NATIONAL ANIMAL PRODUCTION RESEARCH INSTITUTE SHIKA - ZARIA

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A CASE STUDY ON THE ROLE OF THE NATIONAL ANIMAL PRODUCTION RESEARCH INSTITUTE SHIKA - ZARIA

by

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DISSERTATION

SUBMITTED TO THE DEPARTMENT OF ADMINISTRATIVE STUDIES INSTITUTE OF ADMINISTRATION IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF POSTGRADUATE DIPLOMA IN PUBLIC ADMINISTRATION OF

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Z A R I A

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P R E F A C E

Having worked in the Administrative Division of the National Animal Production Research Institute since its inception in 1976, it is considered both as a challenge and a motivator to examine its contributions to the Economic Development of Nigeria as an academic exercise. The study highlights such contributions and identified some constraints to achieving the objectives. Recommendations for improving the services of the institute are also given.

It is hoped that the findings of the study will provide some useful information to readers on the contributions of the Institute to its organisational objectives, and to the nation's economic development. It is also hoped that the study will form a basis for other researchers, who may wish to improve on this study or look into other areas of the Institute. Finally, it is hoped that the study will be useful to the National Animal Production Research Institute in particular and other Agricultural Research Institutes in general.

METHODOLOGY

The data used for this study were obtained using three main approaches:

(a) Oral Interviews

Interviews were held with the Director, Assistant Director, Heads of Departments, Heads of Sections, the cross section of both the research and supporting staff.

(b) Informal Discussions

Informal discussions were also held with the officials of the Institute at various stages of the study.

(c) Reference to Official Documents

References were made to the Annual Reports, Reports to the Board of Governors, Professional and Academic Board, Brochure, Seminar Book vol.1 of 1979 and official files of the Institute in search for the information presented in this paper.

LIMITATIONS

There were difficulties in arranging suitable times for interviewing the interviewees because of their other engagements. There were also delays in receiving relevant documents and reports.

A C K N O W L E D G E M E N T S

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CHAPTER ONE

I N T R O D U C T I O N

The fact that proper dissemination and utilization of Agricultural research information and findings often lead to rapid development of rural economy is undisputable. But that such research findings have not made much of the expected impact in Nigeria is evidenced from the report of the 3rd National Development Plan.[1] Majority of farmers still persist in the traditional method of production. Nonetheless, the present study attempts to outline research contributions made towards improvement of farming in the country by agricultural research institutes, using the National Animal Production Research Institute (NAPRI) as case study.

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[1] The Third National Development Plan 1975-80, Chapter 6 Para. 17.

DEFINITIONS

According to onions, (1975) Research is defined as act of an investigation directed to the discovery of some fact by careful study of a subject; a course of critical or scientific enquiry.[2] Agricultural Research Institute therefore, is an Organisation which is concerned with an act of investigation, directed towards the discovery of some fact by careful study within the context of agriculture, with the ultimate aim of improving the methodology of agriculture to enhance agricultural development and growth.

It is difficult to give a precise definition to Economic Development. It is of-course important to recognise that Economic Development is not equivalent to the total development of a society; it is only one dimension of general development.[3] Economic Development may, however, be defined as "the process whereby the real per capita income of a country increases over a long period".[4] This definition is the conventional measure of Economic Development. However, for the purpose of this study, for a country to be considered being engaged in meaningful economic development, there should be:

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[2] Onions, C.T, The Shorter Oxford English Dictionary (1975)

[3] Miers, G.M., Leading Issues in Ecomomic Development: Studies in International poverty, P.7

[4] Ibid P.8

(a) a high average national income as shown by the per capita income;

(b) adequate nutrition (i.e adequate protein and rich feeding);

(c) Low infant mortality and high life expectancy;

(d) High level literacy;

(e) Full gainfull employment for all able-bodied citizen;

(f) availability of hospital and network of good communication system linking the towns with the villages;

(g) diversified industry and agriculture; and

(h) adequate housing and a relatively egalitarian income distribution.

One of the ways in which developing countries, such as Nigeria, attempts to achieve the much desired economic development, is through the drawing up of Development Plans. Economic development planning started as far back as 1946 in Nigeria, but in the sense of single-valued national growth objective and the integration of resource utilization, it can be said that National Economic Development Plan started with the 1962-1968 Plan.[5] The second National Plan (1970-1974) has the

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[5]Olayide, S.O., Economic Survey of Nigeria (1960-1975) P.172.

following five (5) principal national objectives:

(a) a united, strong and self-reliant nation;

(b) a great and dynamic economy;

(c) a just and egalitarian society;

(d) a land of bright and full opportunities for all citizens;

(e) a free and democratic society.

The third National Development Plan 1975-80, however, in addition to the five principal long-term national objectives mentioned above, has the following specific short-term objectives aimed at facilitating the ultimate realisation of the long-term objectives:[6]

(a) Increase per capita income

(b) More even distribution of income

(c) Reduction in level of unemployment

(d) Increase in the level of high level manpower

(e) Diversification of the economy

(f) Balanced development, and

(g) Indigenisation of economic activity

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[6]The Third National Development Plan of Nigeria, 1975-80, P.29.

Abbreviations:

NAPRI	-	National Animal Production Research Institute.
NSTDA	-	National Science and Technology Development Agency.
ARCN	-	Agricultural Research Council of Nigeria.
IAR	-	Institute for Agricultural Research
AERLS	-	Agricultural Extension and Research Liaison Service.
DALST	-	Division of Agriculture and Livestock Staff Training.
BOG	-	Board of Governors
PAB	-	Professional and Academic Board
GDP	-	Gross Domestic Product
A.I	-	Artificial Insemination.
ABU	-	Ahmadu Bello University
OFN	-	Operation Feed the Nation

OVER-VIEW OF AGRICULTURAL RESEARCH INSTITUTES:

A few agricultural research institutes were established in Nigeria in the 1920s. The objectives and goals of the then research institutes were tailored to suit the interests of the colonial rulers. Futhermore, the early research institutes were established to meet the political, economic and social needs and aspirations of the then various regional governments. Consequently, the roles, objectives and goals of the early agricultural research institutes were conflicting and unco-ordinated, which resulted in serious duplication and a waste of both human and material resources.

The first attempt to co-ordinate the activities of the Agricultural Research Institutes was after Independence, when in 1964 an Act of Parliament on Research Institutes was enacted.[7] However, this did not have any appreciable impact in re-orientating the research institutes before the change from civil to military rule in January 1966. Another attempt was made by the Military Administration in 1971 to revive the Agricultural Research Institutes by establishing an Agricultural Research Council of Nigeria (ARCN).[8]

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[7]The Nigerian Research Institutes Act No.33 of 1964.

[8]Agricultural Research Council Decree No.25 of 1971.

The Agricultural Research Council of Nigeria had the following objectives:

(i) to co-ordinate research and training activities in the agricultural sciences (agriculture, livestock, forestry and fisheries);
(ii) to ensure implementation of Government Policy on agricultural research;
(iii) to advise on policy in respect of research and training in the agricultural sciences, and
(iv) to identify research priorities in the agricultural sciences.

In spite of this latest effort, the objectives and goals of Agricultural Research Institutes as laid down by the former colonial governments were not seriously affected.

By 1973, however, agriculture, which used to be the mainstay of the Nigerian economy had declined considerably, from about 63.4% of the GDP in 1960 to 27.9% in 1973.[9] It was then that the government recognised that economic development could not be achieved within a properly co-ordinated institutional framework. Consequently, Government promulgated a decree on Establishment and Management of Research Institutes.[10] The decree empowered the Federal Commissioner for Agriculture and Rural Development, on the advise of the ARNCN and the Nigerian Council for Science and Technology, to establish institutes

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[9]Olayide, S.O., OP Cit P'26

[10]Research Institutes (Establishments etc) Order 1975

to conduct research and training in any field of agriculture, veterinary science, fisheries, forestry and agrometeorology and water resources. Other provisions included in the establishment of the Institutes were:

(a) the designation of the institute

(b) the transfer of the Institute of any existing Federal or State Research Stations or Other assets belonging to any existing Federal or State Research department or Institute;

(c) the establishment and constitution of a governing board to manage the affairs of the Institutes,

(d) the setting up of a suitable association or any other form of relationship of the Institute with any University or institution of higher learning in Nigeria, and

(e) the repeal of the Nigerian Research Institutes Act 1964 in respect of institutes established under that Act.

It could therefore be said that the first attempt to give a sense of direction to Agricultural Research Institutes in Nigeria was contained in this decree.

The appropriate bodies vested with the powers of executing the provisions of this Decree, accordingly established 14 Agricultural Research Institutes on 29th November 1975 with their respective functions as given in Appendix 'A'.

Thus clear-cut objectives, responsibilities and/or functions were defined for each institute. Conflicts in roles were completely eliminated. Furthermore, all the institutes, except NAPRI were initially controlled by the ARCN. The centralisation of the control of the Institutes had helped a great deal in monitoring their activities and progress and in checking on ambiguities in functions.

In 1977 a new decree setting up the National Science and Technology Development Agency (NSTDA) was promulgated;[11] consequently, the Agricultural Research Council Decree No.25 of 1971 and the Agricultural Research Institutes Decree No.35 of 1973 were repealed. The NSTDA thus took over the functions of all the various statutorily established Research Councils which were dissolved as a result of the new Agency. The main function of the Agency, among other things, was to have executive responsibility for the promotion and development of Science and Technology, including initiation of policy relating to scientific Research and Technology.

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[11] National Science and Technology Development Agency Decree No. 5 of 1977.

The other functions of the Agency were:

(a) to advise the Federal Government on national science policies and priorities and on scientific and technological activities generally;

(b) to prepare periodic master plans for the development of science and technology and advise the Federal Government on the financial requirements for the implementation of such plans;

(c) to prepare annual budgets for scientific research development and receive grants for allocation to research institutions and special research projects conducted by universities under the aegis of the Agency;

(d) to advise the Federal Military Government on the creation of new research institutes and centres and the reorganisation of existing ones to meet national needs;

(e) to supervise and co-ordinate the activities of research institutes and centres established under this Decree;

(f) to allocate special research projects to the universities after consultation with the National Universities Commission;

(g) to take such steps as it may deem necessary to facilitate the application of the results of scientific and technological research by Federal and State Ministries and their agencies; and

(h) to advise on scientific and technical manpower requirements of Nigeria and to promote manpower training for research.

By December 1979, there were a total of 24 Agricultural Research Institutes under the aegis of the NSTDA scattered all over the Federation conducting research into various aspects of Agriculture. With the creation of a Federal Ministry of Science and Technology in December, 1979, the functions and assets of the NSTDA have been transferred to the new Ministry.

In this study, attempt is made at assessing the contributions of NAPRI to the realisation of its organisational objectives in relation to the overall Economic Development of Nigeria.

CHAPTER TWO

THE ORGANISATION AND FUNCTIONS OF NATIONAL ANIMAL PRODUCTION RESEARCH INSTITUTE

I. Historical Background.

The Shika Livestock Farm was the nucleus of what is now known as National Animal Production Research Institute. The Farm was established in 1928 by the Department of Agriculture, Northern Provinces of Nigeria with the objective of producing "by purely selective breeding, male cattle for use as studd bulls by native stock owners".[1] Selection was on the basis of milk yield, body weight and temperament. This policy was continued till 1957. Thereafter more emphasis was given to Animal Husbandry investigations which included feeding, management and parasite control.

In 1954, the Grassland Section was moved from Samaru to Shika and work was started on sown pastures and Range Management. A new laboratory and office block was completed in 1958.

In April, 1962, Shika Station was temporarily transferred to the Ministry of Animal and Forest Resources; and on the 4th October, 1962 Shika Station, together with other agricultural out-stations at Mokwa and Kano, were transferred to the Ahmadu Bello University and cave under the collective name of the Institute for Agricultural Research and Special Services. Shika Agricultural Research

Station then became part of Institute for Agricultural Research but closely linked with the Department of Animal Science in the Faculty of Agriculture, with the research staff assisting in teaching at the Faculty.

By virtue of the Agricultural Research Institutes Decree No.35 of 27th August 1973 and the Research Institutes (Establishment etc) Order of 29th November, 1975 establishing 14 Agricultural Research Institutes, including National Animal Production Research Institute, Shika Agricultural Research Station thus became the headquarters of the National Animal Production Research Institute with effect from 1st July, 1976. The Institute thus started function autonomously with effect from the date of inception, but remained within the administrative framework of the Ahmadu Bello University, Zaria.

The National Animal Production Research Institute is located 22 km. north-west of Zaria along the Zaria-Sokoto road. It lies within the Northern Guinea zone at Latitude $11^{o}11$N and Longitude $7^{o}38$E. It has a monsonal climate with an annual rainfall that varies from 800 mm to 1,300 mm and the long-term average is 1,100 mm most of which falls from late April to early October. The Institute occupies 1,150 hectares of land and is located in the Galma plains.

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[1]Brochure on the National Animal Production Research Institute.

II OBJECTIVES OF THE NATIONAL ANIMAL PRODUCTION RESEARCH INSTITUTE.

The objectives of the National Animal Production Research Institute as contained in the Research Institutes (Establishment) Order 1975 and Ahmadu Bello University Statute No.20, are:

(a) To conduct research into animal products generally, and in particular:-

(i) the genetic and nutritional improvement of cattle, sheep and goats and other livestock of economic importance;

(ii) the improvement of livestock management and husbandry practice;

(iii) the economics of meat production;

(iv) nomadism and the socio-economic effects of the settlement of namads;

(v) the integration of livestock into the farming systems and its socio-economic effects on the rural populations;

(vi) the improvement and management of natural range for the grazing of livestock;

(vii) the improvement, establishment and management of sown pastures, and

(viii) any other problems related to animal production.

(b) to co-operate with other bodies in the dissemination of knowledge of matters concerning animal production and of results of research conducted by the Institute;

(c) to arrange for such conferences of government-officers and other persons and for such courses and lectures as may be considered to further the above;

(d) to participate in the teaching functions of the University at all levels.

III. ORGANISATIONAL STRUCTURE

The Institute is governed by a Board of Governors (BOG) (see organisational structure as shown on P.16) who represent the ecological zones of the Federation, the Ahmadu Bello University Council and Senate with the Vice-Chancellor of Ahmadu Bello University as the Chairman. The Board of Governors meets at least twice a year to review research programmes, progress reports, research proposals and Budget proposal for the following year. The Board of Governors also gives policy guidelines on research activities.[2] The Board of Governors consists the following members:

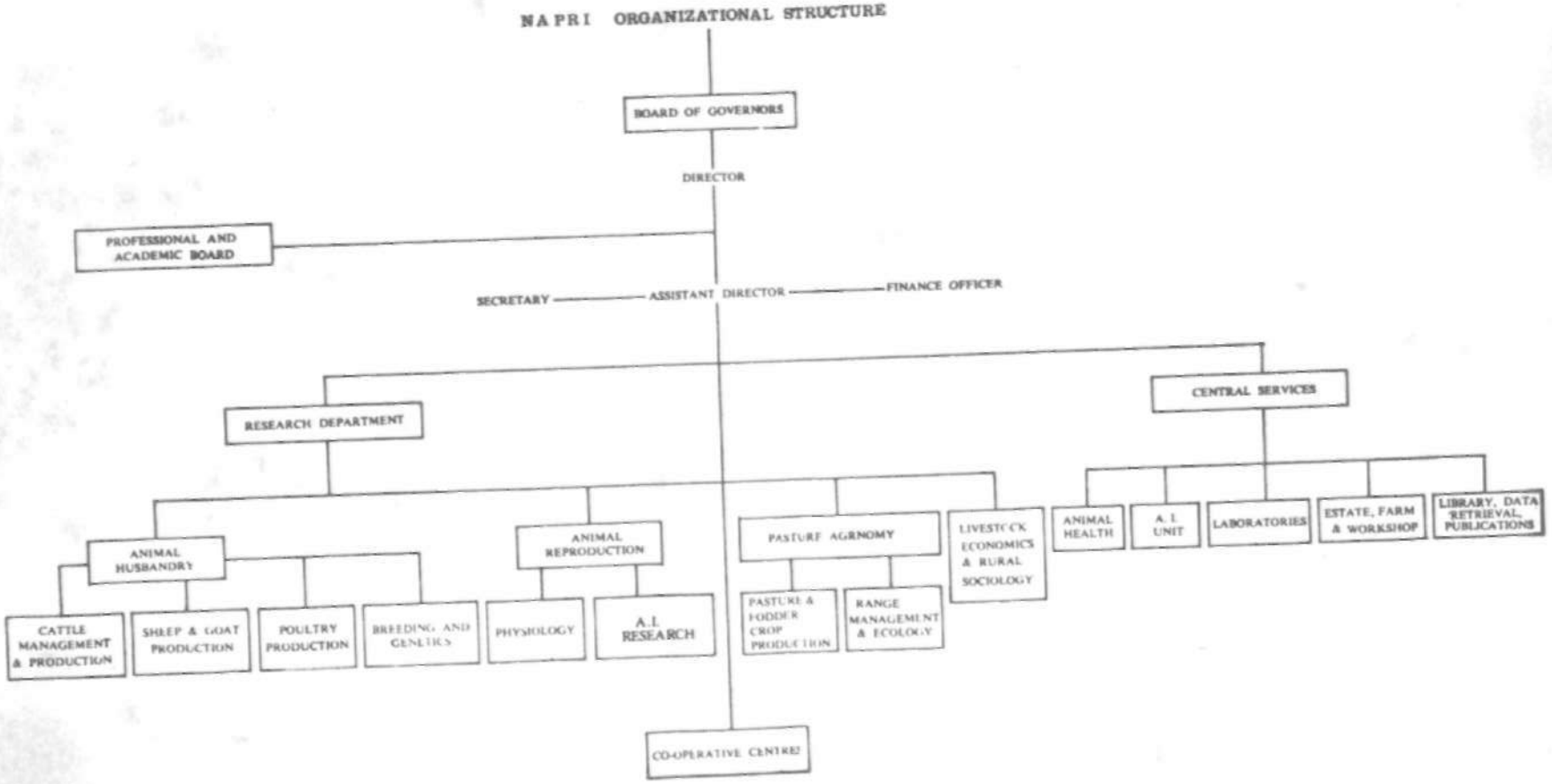
(a) The Vice-Chancellor, who shall be Chairman;

(b) The Provost for Agriculture and Veterinary Medicine;

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[2] Ahmadu Bello University Statute No.20 of 1976

NAPRI ORGANIZATIONAL STRUCTURE



(c) The Director of the Institute or in his absence, a person nominated by the Director;

(d) The Deans of the Faculties of Agriculture and Veterinary Medicine;

(e) The Directors of Agricultural Extension and Research Liaison Services and Institute for Agricultural Research; Samaru;

(f) One member of the academic staff, appointed by the Senate;

(g) One member elected from among their own number by the research staff of the Institute;

(h) One member of the Council, not being a member of academic staff, appointed by the council;

(i) Two persons representing the Forest zone of Nigeria to be appointed by the Council on the nomination of the Vice-Chancellor;

(j) Two persons representing the southern Guinea Savannah zone of Nigeria to be appointed by the Council on the nomination of the Vice-Chancellor;

(k) Two persons representing the Northern Guinea Savannah of Nigeria to be appointed by the Council on the nomination of the Vice-Chancellor;

(l) Two persons representing the Sudan and the Sahel zones of Nigeria to be appointed by the Council on the nomination of the Vice-Chancellor;

(m) The Permanent Secretary, Federal Ministry of Agriculture and Rural Development or his representative;

(n) The Secretary of the Agricultural Research Council of Nigeria or his representative (now defunct);

(o) Director, National Veterinary Research Institute or his representative;

(p) Director, Federal Livestock Department or his representative;

(q) Not more than 4 members co-opted by the Board

(r) The Registrar of the Ahmadu Bello University or a person appointed by him to be the Secretary of the Board of Governors.

The Board gives policy guidelines on research activities.

There is also a Professional and Academic Board (P&AB) which deals with research proposals and assesses successes, problems, and achievements and forwards its recommendations to the Board of Governors for policy decisions. This Board comprises the technical staff of various disciplines from in and outside the Institute with the Director of NAPRI as the Chairman.

Membership of the Professional and Academic Board consists of:

(a) The Director of the Institute as Chairman;

(b) The Provost for Agriculture and Veterinary Medicine;

(c) The Vice-Chancellor;

(d) The Deputy Vice-Chancellor;

(e) The Deputy Director(s) of the Institute;

(f) The Deans of the Faculties of Agriculture and Veterinary Medicine;

(g) The Directors of the IAR, AERLS and DALST;

(h) The Heads of Departments in the Institute and in affliated Departments of the Faculties of Agriculture and Veterinary Medicine;

(i) The Heads of Research Sections or Units in the Institute;

(j) The Director of the Veterinary Research Institute of Nigeria or his representative;

(k) Not more than 4 members elected from amongst their own number by the senior staff of the Institute exluding those who are ex-officio members of the Professional and Academic Board;

(l) Two members of academic staff elected by the Senate;

(m) One member each elected from the P&ABs of IAR and AERLS;

(n) Not more than 3 co-opted members

(o) The Secretary of the Institute as Secretary to the P&AB.

It is important to point out that the P&AB is subject to the overall control and direction of the Board of Governors, and its main duty is to assist the Director in the implementation of the policy for research work as laid down by the Board of Governors.

For administrative efficiency and effectiveness, the Institute is organised on Departmental basis which are further sub-divided into disciplinary sections. The Administration Department is headed by the Director as the Chief Executive and assisted by an Assistant Director, a Secretary and a Finance Officer. The Administrative Department includes the Central Administration, the Finance Section, Library, Printing and Publication, a Health Unit, and the Estate & Farm Management Sections.

1. ANIMAL HUSBANDRY DEPARTMENT:

This Department comprises of Cattle Management and Nutrition section, Sheep and Goats section, Poultry section, and Breeding and Genetics Section. Its research efforts are directed towards conducting research into animal nutrition, breeding and management, The current research priorities of the Department are:

(a) Animal Nutrition:

(i) Standards nutrient of animals

(ii) Evaluation of local ingridients, their feeding values, cotton seed, grass etc.

(b) Breeding:

(i) Selection of potential local breeds - cross-breeding local, and imported.

(ii) Genetics potential of animals with the aim of improving the potential of our local breeds

(iii) Development of foundation stock with particular reference to poultry to reduce the importation of one-day old chicks.

(c) *Management:*

(i) Comparing the performance of animals

(ii) Housing; suitable housing for animals and reproductive capacity of the animals.

(iii) Health and Disease control

(iv) Various Management systems.

2. PASTURE AGRONOMY DEPARTMENT

This Department comprises of Pasture and Fodder Section and Range Management and Ecology Section. Its broad objectives are to conduct research in pasture agronomy generally and in crops production, seed production of grasses and legume, large scale seed production and distribution and rangeland improvement and management.

The current research programme of the department consists of:

(a) Pasture and fodder crop production; the screening of forage species to determine their suitability and adaptability for pastures, hay and silage production; this includes the agronomic evaluation of the species.

(b) The testing of the responses of promising forage species to fertilizer and managerial inputs on sole crops and on grass-legume mixtures;

the digestibility of the feeds and the tenderness of the crops and its effects on animals.

(c) Seed production: this includes yield of species and cost of production and labour input. Research into techniques of seed production of grasses and the establishment of seed multiplication projects;

(d) Rangeland improvement and Management: Minimum methods of pasture establishment for introduction to range, this includes seed-bed preparation and the use of herbicide and Ecological Evaluation.

3. ANIMAL REPRODUCTION DEPARTMENT

This Department is broadly concerned with improvement fertility of cattle, sheep and goats through the application of techniques in reproductive physiology; techniques such as artificial insemination, synchronization of oestrus, supervulation and embro transfer.

The current research priorities of the Department include research into:

(a) Artificial Insemination, synchronization of Oestrus and other applied techniques in Reproduction.

(b) Reproductive ability of indigenous animals and factors controlling their reproductive performance;

(c) Infertility problems

(d) Reproductive herd management.

4. LIVESTOCK ECONOMICS AND RURAL SOCIOLOGY DEPT.

The research objectives of this department are to conduct research into:

(a) The description, analysis and evaluation of the livestock production, management and marketing activities;

(b) Collection and anlysis of all socio-economic data on livestock production and marketing;

(c) Feasibility studies of livestock production and marketing sector;

(d) Appraisals of policies, programmes and projects related to the livestock sector.

5. ARTIFICIAL INSEMINATION CENTRE

The Artificial Insemination Unit is a service unit. Its basic objective is the genetic nature and improvement of cattle in the country by making

available, semen from superior selected bulls to increasing beef and milk product.

Thus, its other functions include:

(a) Production, procurment, storage and distribution of semen;

(b) Continuous assessment of conception rates of inseminated animals;

(c) Procurement of equipment and supplies for sub-centres

(d) Training of Inseminators and users;

(e) To assist the States in the development of their aritificial breeding programmes;

(f) To assist in the diagonsis and prevention of reproductive problems and disease.

In addition to the above Research Departments, there are other supporting Departments/Sections that contribute to the achievement of the research objectives and goals of the research departments.

(i) <u>The Central Services</u>

The Central Services are provided by the Farm and Estate Management Sections, Library and the Laboratories.

The Farm Manager is responsible for the planning, cultivation and development of the farms. His duties include the maintenance of tractors and implements and all other NAPRI motor vehicles.

The Estate Manager is responsible for the maintenance of the buildings (residential and offices) and roads throughout NAPRI campus.

The Library has about 2,000 volumes of books on livestock and regularly receives pamphlets and reports. The Library is mostly used by the Research and Academic staff of the Institute and the Agricultural complex of the University. Students and other interested individuals are equally free to avail themselves of the facility.

Although the two laboratories are attached to the Animal Husbandry and Animal Reproduction Departments respectively, they provide central services to all departments in the Institute, other departments within the University and States.

(ii) <u>The Central Administration</u>

The Administration is headed by the Director as the Chief Executive of the Institute. He is responsible for the co-ordination and direction of research planning and execution as well as the

general administration of the Institute.[3] All Heads of Departments are responsible to the Director who is assisted by an Assistant Director.

The Secretary is responsible to the Director for the day to day personnel administration of the Institute. Although the Secretary is responsible to the Director for his duties, he is directly under the control of the Registrar.

The Finance Officer is responsible to the Director for the custodian of the Institute money. He is responsible for the day-to-day financial and accounting functions of the Institute. Like the Secretary, he is under the control of the Bursar, but responsible to the Director for his duties.

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[3]Guide to Administrative Set up and Functions of NAPRI dated 8th November, 1977.

CHAPTER THREE

RESEARCH CONTRIBUTIONS AND METHODOLOGY FOR DISSEMINATING RESEARCH FINDINGS

The general accusation against research institutes is that research findings are generally locked up in files and cupboards without making them available for use by the public.[1] It is pertinent, therefore, to consider the contributions made by NAPRI since its inception in July 1976 to date. The dissemination and utilisation of such research findings may lead to rapid development of the country's livestock industry.

Nigeria's population is steadily increasing and with the rise in income, the demand for good quality food is equally growing. NAPRI is contributing its quota towards increasing animal protein by conducting research into animal nutrition and management, breeding. physiology, livestock economics and sociology all aimed at improving the country's livestock industry.

In spite of financial, administrative and technical constraints on the young institute, it is gratifying to state that the institute is making some contributions to the livestock industry. In highlighting these, the contributions of the various

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[1] The Third National Development Plan of Nigeria, Ch.6.17

Research Departments will be enumerated.

I. ANIMAL HUSBANDRY DEPARTMENT:

This is the largest department in the Institute with four Research Sections. Its research priorities are given in Chapter Two. Broadly stated, the research efforts of the Department are geared towards better animal nutrition and management, breeding and development of foundation stock with emphasis on poultry. Compared to other departments in the Institute, the Department is relatively well staffed with trained and experienced researchers.

(a) Cattle Management and Nutrition Section

This Section is concerned with the effective and good management of the cattle on the station as well as making sure that the animals receive proper and adequate nutrition at appropriate stages and times.

It has been identified that as it is important for human beings to have clean and tidy surroundings, balanced and nutritious diet, so it is for cattle before they can produce their best. Animals are sprayed and de-horned at regular intervals; sick ones are treated by a resident Veterinarian.

Monthly weighing and counting of all animals are carried out to ascertain the performance of each herd.

There are about 750 heads of cattle including White Fulani (Bunaji), Sokoto Gudali, Friesan/White Fulani crosses, N'dama and Charolais x White Fulani crosses. Most of the animals are put on various experiements.

Its contribution includes occasional sale of culled animals to the public, the University authority and the University Animal Products Laboratory. The sale of animals by this Section is not on commercial basis, but the little contribution normally goes to a long way to augment the amount of meat and animals available to the public. The beef is of higher quality and comparatively cheaper at source than the beef in the market. Most of such animals are however, sold to the Animal Product Laboratory who has necessary facilities to slaughter and preserve the meat, thereby improving the hygenic condition of beef compared to what obtains in the local market.

The total revenue derived from the sale of such cattle for a period of three years amounted to eighty-four thousand, and sixty-one Naira and twenty-six kobo (₦84,061.26K). The breakdown is shown in Table 1.

Milk is produced and sold daily to the general public and Animal Product Laboratory for pasturising before sale to public. The prices of the milk has been between 05K per lb in 1976 to 11K per kg. in 1979. The revenue realised from the sale of fresh milk since the inception of NAPRI amounted to twenty-four thousand, seven hundred and twenty-two Naira and twelve kobo (₦24,722.12K). The breakdown is similarly shown in Table 1 below:

TABLE 1: Revenue from sale Cattle and Milk

Year	Revenue from Cattle	Revenue from Milk
1976/77	₦35,201.11	₦8,880.32
1977/78	30,254.03	7,748.03
1978/79	18,606.12	8,093.77
TOTAL:	₦84,061.26	₦24,722.12

Source: Debit Notes and monthly summary returns.

(h) Poultry Section

It is generally accepted that one of the quickest ways to increasing animal protein intake of a nation is through accelerated poultry production, It is therefore the objective of this Section to intensify research in the area of management, and nutrition. The development of foundation stock for the attainment of self-sufficiency in chick supply is also important.

Due to unavailability of housing facilities initially, research into poultry production problems did not start immediately at the inception of NAPRI. However, with the provision of these facilities, the section embarked on various types of research aimed at stimulating poultry production generally.

On the nutrition of poultry, the section has experimented on the use of local ingredients to replace the expensive and scarce imported ingredients for both table and laying birds in the tropics. The main supplementary sources of protein for poultry in this country have been fishmeal and groundnut cake. The latter is added to the rations since poultry requires a source of high quality animal protein.

Because of the shortfall in groundnut production, there is serious scarcity of groundnut cake which now costs between ₦200 - ₦260.00 per ton. This situation necessitated research into possible alternatives that can replace groundnut cake since this has become both scarce and expensive. It has now been through research at NAPRI that poultry feeds can be mixed using other materials such as cotton seed-cake and blood-meal which are cheaper that groundnut cake and imported rations. The immediate benefits derived from this research finding are numerous, but at least it can easily be seen to reduce our reliance on imported feeds, thereby conserving the country's foreign earnings.

This is an example of applied research which can have an immediate impact on poultry production in the country by lowering cost of production and therefore cost of poultry products. It has been shown that blood-meal can replace up to 66% and 100% of the fish meal in some poultry rations.[2] This would naturally effect cost reduction.

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[2]Olomu, J.M. Seminar paper presented, NAPRI Seminars Vol. I, 1979 PP.22-32.

On the management of poultry, consideration has been given to housing of poultry with particular reference to the height of the walls. Similarly, the stocking density for broiler chickens has been increased per unit area. The recommended practice in text-books is to allow 0.093^{m2} (1 29ft) space per bird. Through series of experiments conducted in NAPRI, it has been shown that it is not an economic use of floor-space; rather 0.064 to 0.074^{m2} per bird appears more appropriate based on the research findings of the Institute.[3]

The Section is capable of building Poultry Houses using local materials and equipments. Similarly, it has successfully trained local carpenters in the construction of poultry houses and equipment. Another major contribution is the training of local poultry farmers and its full participation in lecturing students at both undergraduate and postgraduate levels. Its contribution to poultry production during the OFN campaigns cannot be over-emhasized.

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[3]NAPRI 1977/78 Annual Reports Pp.41-42.

Research work will soon take-off on the development of foundation stock to reduce the importation of one-day old chicks. This will make the nation self-sufficient when fully established and the sooner the necessary infrstructural and financial requirements are provided, the better.

On the production and sale of eggs, an average of about 152 dozens is produced daily as by-product of research. Presently, because of financial constraint and limited personnel, only 2 broiler houses 2,800 birds per house per crop are available. Each house takes 3 crops per annum which means that 16,800 broiler chickens can be produced and sold to general public annually, at least to the University community in Zaria. These have helped in reducing the impact of the shortage of beef.

The total revenue realised from sales of poultry products for the past 3 years are submitted in Table 2 below:

TABLE 2: Revenue received from sales of chickens and eggs

Financial Year	Sales of chickens	Sales of eggs	Total revenue for the year
1976/77	₦6,016.00	-	₦6,016.00
1977/78	5,868,96	4,845.00	10,713.96
1978/79	23,682.66	41,735.15	65,417.81
TOTAL	₦35,567.62	₦46,580.15	₦82,147.77

Source: Computed from Poultry Monthly summaries.

(c) Sheep and Goats Section

Sheep breeding started in Shika (under Shika Agricultural Research Station) in 1972, with the objective of "improving the management and meat potential of the local breeds (Uda and Yankusa) through crossbreeding with exotic rams". Goat improvement breeding were first introduced to the Station in 1974 when few males were used for digestibility studies.[4] With the inception of NAPRI in July 1976, the Sheep and Goats Section had laid more emphasis on improving the management and meat potential of the local breeds of sheep and goats to ensure continued increasing contribution to meat supply in Nigeria.

The need to be fully aware of the real value of the idigenous sheep and goats calls for more intensive studies that will exploit, evaluate and further develop the breeds. Research efforts have, therefore, centred on cross-breeding and performance testing, nutrition, management, health and disease control. The objective is to evaluate, exploit and improve the potential of the local breeds and determine the management system most suited for optimum, efficient and economic

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[4] Adu, I. F. and Brinckman, W.L., Sheep and Goat production and Research at Shika (in press).

production to increase meat supply in Nigeria.

Research in the reproductive performance of local and cross-bred ewes involved collection and analysis of comparative data from records, to characterise reproductive traits in the indigenous breeds. Information so far available show that in this environment, the Yankasa is most fertile and has the lowest mortality among progeny to 6 months of age while the Uda is most prolific. Estimates of productivity based on weight of lamb per kg. showed that the Yankasa was 12% better than the Uda.[5]

Information on non-genetic factors influencing liveweight of lamb is basically vital in eliminating environmental effects and improving the efficiency of selection for meat production. Thus a research into the correcting factors for adjusting lamb weights showed that the most important factors for which corrections are necessary are the type of birth and age of the dam. Since the number of lambs born, their bith-weight and survival rates are directly and indirectly influenced by the mother's weight, the nutrition of the weather

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[5] Ibid P.4

before and during pregnancy becomes important. Series of experiments were undertaken during tupping and late pregnancy with mature Yankasa ewes fed with diets varying in energy and crude protein contents. The results howed the importance of extra feeding during tupping and pregnancy on ewe weights and lamb birth weights which significantly affected post-natal performance of the lambs by reducing mortality rates and weaning weight.

Research carried out to determine the best management systems for sheep showed that the system whereby sheep graze fenced improved Digitaria smutsii pastures at stocking rates of 20-30 heads/hectare is far from optimum; wet season gains on improved pastures were much lower (10-30/day) than expected.[6] The reasons adduced to the low gains include the low dry matter content of the pasture which prevents the consumption of sufficient dry matter, the incidence of heavy worm load which prevents optimal food utilization and the peculiar nature of the indegenous sheep in not relishing monospecies pasture. It also showed that the supplementation of grazing animals did not improve weight gains

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[6] Adu, I. F., et al; Highlights of Sheep and Goat Research at NAPRI, Shika (An unpublished paper)

and that the grazing of improved pasture was more expensive in terms of farming and pasture maintenance. The herding of sheep and goat ever large stretches of shrub savanna during the day and housing them at night, resulted in better growth and lower production cost and improved performance. Thus it is shown that the most important way of improving the performance of sheep and goats are through better management, better feeding and health care.

Research was initiated on the meat production potential of the local sheep and goats to evaluate the carcass yield and composition under feedlot conditions. The results showed that the indigenous sheep and goats have good meat qualities which can further be enhanced through improved management and up-grading for faster growth rate.

(d) Breeding and Genetics Section

This section is the fourth Research Section of the Animal Husbandry Department.

Its research priorities include:

(a) To conduct research to improve and develop beef breeds through exploitation of local breeds of cattle and cross-breeding for faster growth performance;

(b) To conduct research on the production of more and cheap beef of better quality and higher yield per carcass; and

(c) To increase the total milk yield.

The findings of the study showed that there was no staff in the section from the inception of NAPRI till the end of September 1979 when the Head of Section returned from an extended study leave. Consequently, no research contribution can be highlighted from this section for the period covered by this study.

With the return of the Head of Section and the reposting/recruitment of two geneticists, it is the view of the writer that the section will soon start to contribute its own quota to the overall objectives of the National Animal Production Research Institute.

(e) Feedlot Project Unit

The objective of this Unit, which is run on a revolving fund allocated by the institute is to run a semi-commercial feedlot fattening operation based on economics of production of beef using various grades of industrial by-products under group feeding system.

This project was initiated as a result of earlier research results that among various protein sources fed to feedlot cattle, underlinted cotton seed cake was found most readily available, much cheaper and yet highly and efficiently utlised by beef cattle. In order to put the finding into collective and commercial feeding system, the protein source was conclusively evaluated under a semi-commercial fattening operation. Two stages of experiements were conducted to determine the results.

The first experiment showed that, from 192 bulls fattened in the feedlot for 132 days, there was a net profit before tax of ₦32,922.76 after the deduction of all over-head costs (including, initial costs of bulls, cost of concentrate feed, roughages, and cost of labour including staff salaries for the period, depreviation of infrastructure and an assumed 6% bank interest). In the second stage of the project, 237 animals were equally fattened for 87 days before they were sold. A net profit of ₦43,207.77 was recorded after deducting all overhead costs as in stage one above.[7]

From the above research findings, it is evident that fattening operation is commercially viable and feasible and that local breeds (Bunaji and Sokoto Gudali) have the inherent genetic growth potential if managed and fed efficiently. Thus, the contribution of this research is based on a programme that can be used by producers to reduce costs of beef production and improve quantity and quality of the product. This will no doubt stimualate livestock farmers to go into large scale commercial beef production.

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[7] Olayiwole, N.B., Seminar Paper NAPRI Seminars Vol.1 1979 Pp.167-177.

TABLE 2: Comparative Senior Research Staff Position

Department	Year	Number of Staff On Duty	On Study Leave	Number of withdrawals	Total
Animal Husb. & Bioch. Dept.	1976/77	10	3	-	13
	1977/78	11	7	-	18
	1978/79	15	3	2	20
Pasture Agronomy	1976/77	2	-	-	2
	1977/78	4	-	-	4
	1978/79	4	-	1	5
Animal Reproduction.	1976/77	1	4	1	5
	1977/78	2	5	-	7
	1978/79	2	4	1	6
Livestock Econs & R/Soc.	1976/77	2	-	-	2
	1977/78	3	-	-	3
	1978/79	3	-	1	3
Artificial Insemination.	1976/77	1	-	-	1
	1977/78	2	1	-	3
	1978/79	2	2	-	4

Explanatory Note: Staff on study leave do not include staff pursuing their courses locally.

II. PASTURE AGRONOMY DEPARTMENT

The broad functions of the department are to conduct research into pasture (grassess and legumes) and fodder crop production, seed production and distribution, and Rangeland improvement and Management. Detail research priorities as given in Chapter Two, include direct attempt to provide adequate infrastructure such as grazing reserves, artisan wells and dams in the semi-arid areas to improve cattle production which government recognises as a major constraint in cattle production.[8]

This department consists of two sections that are jointly run due to shortage of skilled manpower for the various disciplines. There is said to be a global scarcity of Pasture Agronomists, consequently, efforts to recruit even from overseas countries yielded no positive results (Table 2).

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[8]Op Cit 3rd Chapter 7.11

The major contribution of this Department is their success in maximising and sustaining forage yields of high quality for optimum production. It has also succeeded through research, to device a new and more economical means of Verano seed production. Verano stylo seed imported from Australia, including air freight costs about ₦7,00 per kg. Through extensive research it has now become possible to produce Verano stylo seeds locally and at ₦3.00/ kg, cheaper than the imported. Furthermore, research is on to find ways of further reducing cost of this seed production by employing proper harvesting and cleaning equipments.

The Department has produced on a large-scale, seeds of various types. These species are being maintained and distributed to the States, institutions and private farmers throughout the country at a minimal cost. The number of beneficiaries has tripplied between 1977 and 1978. This may probably be due to the increasing emphasis on livestock development in the country. Pasture seeds serve multiple purposes such as soil erosion control along irrigation channels, roadsides, dams and ponds, greening and seed multiplication for pasture improvement.

Another significant research achievement is the use of ants as "harvester" in Stylosanthes seed production. Hand harvesting of stylo seed by removing seedheads, drying threshing and winnowing is labour intensive and costs about ₦10.00 per kg. of clean seeds. The seed yields are high but recovery by hand-harvesting is only about 10%. A successful research method of cutting the mature pods stylo crop and letting harvester ants gather the around their nests has resulted in 80% of the total yield recovery, instead of 10% by hand-harvesting. Also the "Harvester Ant" method reduces cost of seed collection to less than ₦1.00 per kg. of clean seed. The economic returns (both financial and labour-wise) of the success of this research innovation cannot be over-emphasized.

In view of the long dry season in savanna regions, and the fact that livestocks rely heavily on conserved fodders (which is scarce and expensive), research was conducted into screening promising grass species in terms of forage yield under different types of Management, and their suitability for hay production. The result of the research proved that

during a 12 week feeding period with 9 different grass-hays, all animals gained weight, thus reducing the cost of feeding during the dry-season.

III. ANIMAL REPRODUCTION DEPARTMENT:

The broad function of this departments is the improvement of fertility of cattle, sheep and goat through the application of techniques in reproductive physiology, techniques such as artificial insemination, synchronization of oestrus, supervulation and embryo transfer.

The Department contributed very little out-put due to shortage of skilled-manpower (Table 2). During the first two and a half years of the existence of NAPRI all the senior research staff of the department and one senior technical staff were sent for post-graduate courses in various specialization in Animal Reproduction. Later on, a new staff was recruited who also later left for course work for his doctorate degree. So virtually, the first three years were more of staff development period for the department.

The decision to train the staff was necessary in that no force is greater for social, economic and even political advancement than a good educational and manpower system.[9] This is more so as no organisational objectives can be achieved purely on financial and capital inputs, without much attention to trained manpower in various occupations. All the staff are already back to their sits and are now contributing their quota to the attainment of the objectives of the department in which they have participated in formulating.

However, it is worthwile to state that a successful system has been developed using in vitro techniques for storing bull semen. The experiment proved that it is possible to freeze semen on solid carbon dioxide (dry ice), thereby reducing complete dependence on importation of cattle semen. Further research work on synchronization of oestrus is showing positive result, while multiple ovulation in cattle, sheep and goats are being investigated.

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[9] Harbison F & Myres C.A., Education, Manpower and Economic growth - P.6

Meanwhile, research work are going on in various aspects of their current research priorities, as contained in Chapter Two. It will therefore be premature to report on uncompleted work.

IV. LIVESTOCK ECONOMICS AND RURAL SOCIOLOGY DEPARTMENT

This Department is one of four research departments of the Institute. Its objectives include conducting research into the description, analysis and evaluation of the livestock production, management and marketing activities. Its other functions are as stated in Chapter Two.

Since the inception of the Department, only one research staff has been on post. Another non-Nigerian, but African staff did not contribute much during his two year contract but has left. Two research staff have recently joined the Department and are now settling down to their research projects; it is too early to highlight any of their achievements.

Findings of the study showed that there are difficulties in getting the required skilled manpower (Table 2).

Vacant posts in the Department were said to have been advertised many times in both Nigerian and Overseas papers, but responses have been poor. Investigation revealed that the contents of both the job description and job specifications were detailed, but there was simply more demand than supply of this cadre of livestock specialists.

The Department had succeded in its research into the Economics of traditional Cattle Management among the sendementary Fulani in Zaria area. Report on this research will not be given since the study is expected to form the basis of an M.Sc thesis.

In another contribution, research was conducted into cattle Management by the settled pastoral Fulani in which the constraints to the pastoral Fulani settlement were identified as high prices of land, lack of cattle inputs (concentrates, fodders and mineral licks) during the dry season, construction of grazing areas, and above all that they were being deprived farming of crops.

Staff of the department have been travelling round the cattle production states to educate livestock farmers on the various aspects of livestock production, analyse their problems and give advice.

(V) THE ARTIFICIAL INSEMINATION UNIT

The Artificial Insemination Unit (AI) was set up on the initiative of the former 10 Northern States with the assistance of the Agricultural Extension and Research Liaison Service (AERLS). With the establishment of NAPRI in 1976, the A.I Unit was brought under its auspecies. It is now responsible for the introduction and extension of AI in the Federation. It is a service unit of the National Animal Production Research Institute.

The basic objective of the Unit is the wide and rapid dissemination of superior genetic material from superior bulls. This will result in an increase in the productivity of the indigenous cattle in the form of meat and milk.

Artificial Insemination, on such a wide and organised basis is new technique to Nigeria. Semen has been imported from United Kingdom, Germany, America and Kenya and insemination have been done on an ad hoc basis in various parts of the country.

Collection and insemination with semen from indigenous herds have also been done.

Semen has to be processed to enable it to be stored and used. The most commercially suitable technique is the deep freezing of semen, where the semen is stored in liquid nitrogen as this keeps the semen viable for several years. The constraint to the introduction of this technique is the delay in the commissioning of the liquid Nitrogen Plant of the Unit. It is thus not possible to make AI available as widely as would be desirable in the country.

As an interim measure, the AI unit is processing chilled semen which remains viable for 3 days and can be stored in a refrigerator and carried to the field in a thermas jar. This semen is being used as widely as possible within the 3-day restriction. The unit has for the last two years done 292 artificial insemination with 54 calvings to date. The Inseminators are being done in Institutional herds and in the herds of the migrant Fulani farmers.

The Unit has been training its own staff and that of the states in chilled semen processing with a view to using this simple and cheap techniques in interested states until such times as deep frozen semen is available.

(VI) GENERAL CONTRIBUTIONS:

In addition to the specific research contributions of the various departments to the development and improvement of the livestock industry, the Institute had also contributed to national development through active participation in national assignments in various ways such as giving expert advice, formulation of policies, consultancy services, feasibility studies, manpower development organising conferences and seminars etc. It may not be possible to give an exhaustive list of such contributions, but it is worthwile to highlight some of its other major national and States assignments.

(i) Grazing Reserve and Pasture Development

At the request of the Federal Government, the Institute gave expert advice to the government in February, 1978 on the development of grazing reserves and pasture improvement for increased ruminant production.

The document is titled "Guidelines on the Development of Grazing Reserves".

(ii) National Livestock Breeding Policy.

At the injuction of the National Livestock Development Committee, the Institute submitted a report and recommendation on National Livestock Breeding Policy to the National Livestock Development Committee in 1979.

(iii) The Institute is fully involved in the preparation of the Fourth National Development Plan which is currently in preparation.

(iv) The Institute produced feasibility studies report to the Federal Government on Poultry Industry in 1978.

(v) Feasibility studies report was also prepared and submitted to Kwara State Government on Poultry, Piggery and feedmill operation in 1978.

(vi) Consultancy services to various states of the Federation (especially the ten States of the former North) and various organisation are offered free of charge.

(vii) The Institute served on various Federal/State Committees pertaining to development of livestock industry.

(viii) Pasture seed distribution to States, private organisations and individuals to improve pasture development.

(ix) Extension services in Artificial Insemination and cattle management to various states, private livestock and Fulani pastorial farmers.

(x) General contribution to staff development through active participation in teaching and supervising undergraduate and post-graduate students in the Faculties of Agriculture and Veterinary medicine.

(xi) Contributed heavily to the defunct OFN in Poultry production.

VII. METHODOLOGY FOR DISSEMINATING RESEARCH FINDINGS.

Research findings will not make any appreciable impact on the public if the information is not properly disseminated to reach the users. The ultimate goal of the Institute is to finding practical solutions to the multiple problems limiting animal

production and then pass such solutions to the farmers for use. In order to achieve this, efficient methods of communication between the Institute and those concerned is imperative.

And in order to ensure that such informations get to all concerned, the Institute disseminates research information through the following ways:

(i) Agricultural Extension and Research Liaison Services (AERLS).

All research findings and achievements are sent to the AERLS who passes the package to all users (States, Ministries, private organisations, livestock farmers etc) through peronal contacts, film shows, public lectures, Radio and Television programmes, publications, pamphlets etc. In ensuring quick delivery of such packages from NAPRI, a representative of AERLS is attached to NAPRI to monitor all research findings and innovations. The uniqueness of the AERLS is that it is capable of translating all research findings into local languages and distribute them free of charge in the forms mentioned above.

(ii) NAPRI Open Day.

The Institute has a bi-annual open day in which members of the public, private farmers, private organisations, states representatives and individuals are conducted round the Institute farms and new findings and methods are shown to them for acceptance and adoption.

(iii) Livestock & Veterinary Conference

This is a national conference normally hosted by NAPRI with other Agricultural complexes of the Ahmadu Bello University, where all the States of the Federation are represented. During the conference, new research findings are released in forms of presentation of papers and discussions. Ideas are exchanged, states problems identified, analysed and solved.

(iv) Livestock Economics & Rural Sociology Department

The department is one of the research departments of the Institute. It liaises between the Institute and the Cattle production States and individuals to educate them and livestock farmers on the various aspects of livestock production and to analyse their problems and give technical advice.

(v) Other Methods.

Other methods of disseminating information by NAPRI include through co-operative research centres, conferences, seminars, public lectures and participation in radio and television programmes on 'Back to Farming'

Most of the research discoveries highlighted in this paper have been passed on to the various livestock organisations, Federal and States Governments, private and individual livestock farmers through the various methods mentioned above for acceptance and adoption. It is important to point out, however, that the general acceptance of some sophisticated innovations are gradual because human beings are generally susceptible to changes; and in some cases they lack the technical know-how and equipment.

CHAPTER FOUR

CONSTRAINTS TO RESEARCH CONTRIBUTIONS

The findings of the study showed that as a new institute, various problems, administrative, financial and technical, were encountered which impede the early realisation of the Institute's organisational goals. These constraints may be discussed under two broad headings of Administrative and Technical constraints.

I. ADMINISTRATIVE CONSTRAINTS

Administration is to achieve laid down objectives and goals of an organisation through the co-operation of human and material resources. In doing this, the administration needs to plan, organise, direct and control the activities of the system in order to achieve such objectives and goals. Administration is a multiple and complex field which needs consultation, co-ordination and co-operation with its human resources. In addition, it needs materials resources which could be obtained by finance.

Lack of adequate financial resources constitute serious bottleneck to the contributions of the institute. For instance, the institute was established 14 months after the Third National Development Plan (1975-80) was launched. Thus, the new institute was not catered for in the development plan. Consequently, the allocation received from the Federal Government during the past four years was minimal. The Institute received a total of ₦3.4 million as capital grant from the Federal Government for physical and capital development to cover the remaining 4 years of the development plan. The recurrent allocation received from the Federal Government for the 1976/77, 1977/78 1978/79 and 1979/80 fiscal years are presented in Table 4 below:

TABLE 4: Recurrent Allocation for 1976/77, 1977/78 1978/79 and 1979/80.

Year	Amount Allocated
1976/77	₦1,300,000.00
1977/78	1,020,000.00
1978/79	985,000.00
1979/80	1,058,817.00

Source: Annual Financial Reports.

As may be seen from the Table, the recurrent allocation decreased from ₦1.3 million in 1976/77 to less than ₦1 million in 1978/79. The implications and consequences of lack of sufficient financial allocation are obvious; these will be discussed under Technical constraints below:

For effective channel of communication, a two way channel of communication system is the most ideal.[1] Where there is only one channel of communication from top to bottom, without adequate room for a feedback, there is likely to be some kind of frustration, laxity, passivity and reduced produuctivity. The structure of communication in NAPRI, according to the findings of this study, is neither hierachical nor vertical. For instance, a staff could write direct to the Chief Executive or any other superior without necessarily writing through his immediate supervisor and such letters were said to have been attended to effectively. The unity of command is fussy and orders in most cases are conflicting.

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[1] Cuming, M.W., The Theory and Practice of Personnel Management, P.260.

To identify who is responsible for what duty is sometimes not easy to ascertain which had resulted in serious encroachment on each others responsibilities and usurp of authority, thus making "passing the buck" relatively simple.

Departments are expected to be making further research into the livestock industry to narrow down the areas of uncertainity and improve the quality of available information. In many cases, in the past, there was not the goodwill, cooperation, co-ordination and understanding between staff because of overlapping, conflicting and duplication of functions; rather some were impedements to others, and in some cases they resulted into witch-hunting of each other. However, it may be assumed that the above problem is being overcome with the recent restructuring of NAPRI Research Committees and Research Priorities. It is of course difficult to predict possitively that the restructuring would also improve relationships between Departments and the Administration which is fluid.

One of the characteristics of a good administration or "Management By objectives" is the degree of consultation and participation of sub-ordinates in organisational affairs. When staff participate in decisions that affect them and/or they are consulted, it helps both as a challenge and motivator than decisions imposed on them. This study discovered that there was general feeling that the administration takes certain major and sensitive decisions, which includes purchase of essential items, without due consultations with those concerned. Such decisions are capable of demtovating staff and thus reduce productivity.

II. TECHNICAL CONSTRAINTS

It is evident that the realisation of organisational objectives do not depend just on the availability of financial and other capital inputs, but more importantly, on the adequacy of trained manpower in the various occupations. As much as staff development scheme is highly acclaimed by the institute, the initial shortage of high level manpower in various disciplines had rendered the achievement of some of the institute's organisational goals impracticable.

In some departments, the staff on sit are two or one (Table 3), and in some disciplines, there is virtually no available staff. The shortage could have been escalated because of increased job opportunities and the unified salary structure in the country.

Consequently upon the lack of sufficient fund for the young institute, were problems of physical limitations in terms of laboratories, equipments, office and housing accomodations; inadequate water and telephone facilities, inadequate research materials and insufficient animals for research. For the Institute to make the expected impact on the economic development of Nigeria, the above infrastructures are pre-requisites. The assests inherited from the defunct Agricultural Research Station by NAPRI were, an office and laboratory building built in 1958 for a few number of staff, seven (7) senior staff houses and eight (8) junior staff quarters.

These are inadequate for the Institute. The inadequacy and in some cases the total absence of the necessary infrastructure constitutes serious constraints to the attainment of organisational objectives and the expected impact on the Economic Development of Nigeria.

Suggestions as to how the constraints identified by this study can be removed are given in the next chapter.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

This study has attempted to assess the contributions of the National Animal Production Research Institute to the realisation of its organisational goals in relation to the overall Economic Development of Nigeria. NAPRI has within a short period of its existence, made many research findings available to livestock farmers as well as helping to supplement the public's animal protein by selling cheaply its by-product and surpluses from research.

On its research activities, the Institute has made efforts in all areas of production, with emphasis on the development of new technology to boost animal production. These include the commercial feedlot operation, poultry nutrition and pasture development. It has been shown that intensive beef production on a commercial scale is viable and profitable for Nigerian farmers to embark upon, using local breeds of cattle and locally available feedstuff.

And in poultry nutrition, success was made in finding substitutes for important feed ingredients which hitherto were being imported at exhorbitant prices. This had made the poultry industry less-dependent on foreign countries and also maximise profit returns to both feedmiller and poultry farmers.

On seed production and distribution, achievements were made in increasing Verano stylo production and distribution, peduction in costs per kg and conservation of Nigeria's foreign exchange. The success in the use of "Harvester was seen.

In addition to the general research contributions to the development and improvement of livestock production in particular and the Economic Development of Nigeria in general, the Institute's contributions in various other assignments such as giving expert advice, formulation of policies, consultancy and feasibility services and manpower development have been focused.

Like any new organisations, some initial administrative and technical constraints, which could impede early attainment of organisational goals were identified.

RECOMMENDATIONS

Tc make this study meaningful, it is considered imperative to give some suggestions that could remove the constraints identified. The following are some recommendations, which in the view of the writer, will improve the contributions of the institute towards the realisation of its organisational objectives in relation to the Economic Development of Nigeria.

1. ADMINISTRATIVE RECOMMENDATIONS

(a) Finance

The role of finance in the attainment of organisational goals cannot be over-emphasized, especially in providing physical infrastructural facilities to a new organisation. For NAPRI to develop new technology and evolve new ideas and make the expected impact on the economic development of Nigeria, it must be equiped with modern scientific and laboratory facilities and sufficient animals to conduct

experiments. The allocation of ₦3.4 million for capital programmes and ₦4.4 million for recurrent expenditures from 1976 to 1980 is far from realism in an inflationary economy. Government should allocate more money to NAPRI for effective and efficient development of the livestock industry in Nigeria. The Institute should also contact the Food and Agricultural Organisation (FAO) of the United Nations for financial assistance.

(b) Salary Review for Researchers

The unified salary structure in the country does not seem to motivate potential Researchers to the Research profession. Government should appreciate the complexity, multiplicity, technicality and responsibility of Research staff in particular and University staff in general. The remuneration attached to a research staff should commensurate with its job specifications.

Government should review the present salary structure of research staff, otherwise it may lead to underemployment and underutilization of scarce human resources since potential candidates may look for alternative employment where less skill and technicality may be required.

(c) Restructuring of NAPRI Administrative System

The best way to overcome the administrative constraints identified in this study is to restructure the administrative system of the Institute. This is a difficult and time-consuming task, but the end result will justify the means, if it is carefully and tactfully done. The establishment of the following committees will also strengthen the restructure:

(i) Administrative Committee

An administrative committee should be established not to replace the existing Management Committee but to supplement it. The committee should be a forum where major administrative decisions (not management policies) are discussed and adopted. The membership should include all 'Administrators'.

(ii) Management/Workers Committee

The fact that staff participate in decisions that affect them help both as a challenge and motivator than decisions imposed on them. In order to create such an atmosphere and a two-way channel of communication, a routine Management/Workers meeting should be established. Decisions that affect staff welfare and conditions of service should be discussed with them before implementation.

(iii) Feeds Committee

In order to strike a balance and a compromise in the purchase of feeds, which is presently purhcased centrally, a Feeds Committee should be established. Membership should include: The Director and/or Assistant Director, Finance Officer, User Departments and the Secretary. This is not meant to usurp the responsibility of the Minor Works Committee.

(iv) Sales Committee

The present system whereby a Head of Department fixes prices for research by-products from his Department is unilateral and inappropriate. A Sales Committee responsible for fixing and regulating prices of research by-products (eggs, chickens, milk, cattle, sheep and goats) is considered more appropriate in an organisation and should be established. The membership should include: The Director and/or the Assistant Director, Finance Officer, Representative of seller sections and the Secretary.

(v) Appointment of substantive Heads of Departments

Necessary action should be taken to confirm the probationary appointments of Heads of Departments who qualify under the University rules. This will boost staff morale, reduce encroachments and increase unity of command.

(d) Staff Development Programme

As a long-term solution to the shortage of skilled manpower, the Institute should continue to invest on staff development programmes because it is a valuable investment. The mass training of staff for post-graduate courses overseas does not seem to be the best approach. It is suggested that the use of Nigerian Universities be explored first before sending staff overseas to minimise costs, hardships of students and to conserve Nigeria's foreign exchange.

(e) Orientation of the 'Administrators'

Administration is not a static subject, it is still developing because it is a relatively new field of study. Its purpose have been completely re-orientated, its functions enormously increased in number, variety and complexity and its method has grown from the "trial and erro" stage into an orderly discipline with an organised and ever increasing body of knowledge and experience.

Indeed, Administration has been revolutionized and now expected to be accelerator of economic and social change. The need to train administrators is therefore paramount.
All those involved in administration should be orientated to bring them in line with modern management techniques since administration is fast developing. There are short periodical, but intensive administrative courses in the Ahmadu Bello University which will help to broaden the mind, thought, skill and knowledge of the administrators.

II. TECHNICAL RECOMMENDATIONS

In reducing the shortage of high level manpower, efforts should be made to contact the Food and Agricultural Organisation (FAO) of the United Nations for technical assistance.

Efforts should be made to commission the Liquid Nitrogen Plant to create conducive atmosphere for the expansion of Artificial Insemination in Nigeria. Staff of AI unit should be regarded as service staff and should be designated as such rather than as Research staff, so that their evaluation for promotion is not based on number of publications. It is believed that this will boost their morale to devote their time and energy to extension services rather than concentrating on writing papers for promotion purposes.

As soon as sufficient fund is obtained, all necessary infrastructural requirements should be purchased. More animal for research should be considered as a priority to ensure that sufficient animals are available for researchers to use.

APPENDIX A

FUNCTIONS OF THE AGRICULTURAL RESEARCH INSTITUTES ESTABLISHED ON 29TH NOVEMBER 1975 UNDER THE AUSPECIES OF A. R. C. N.

(i) The Cocoa Research Institute of Nigeria which shall conduct research into cocoa, coffee, tea, kola and cashew and shall, in particular, undertake research into:-

(a) the improvement of the generic potential of the specified crops,

(b) the improvement of agronomic and husbandry practices,

(c) the mechanisation and improvement of the methods of cultivating, harvesting, processing and storage of the specified crops,

(d) the improvement of the utilization of by-products,

(e) the ecology of pests and diseases of the specified crops and improved methods of their control

(f) the integration of the speciied crops into farming systems in different ecological zones and its socio-economic effects on the rural populations, and

(g) any other problems related to the specified crops.

(ii) The Forestry Research Institute of Nigeria shall conduct research into forestry and the conservation of wild flora and fauna and shall, in particular, undertake research into:-

(a) the improvement of the genetic potentials of forest trees of economic importance,

(b) the improvement of silvicultural practices relating to forest trees of economic importance,

(c) the mechanisation and improvement of the methods of cultivaying, harvesting and processing of forest trees of economic importance,

(d) the improvement of the utilisation of by-products,

(e) the ecology of pests and diseases of forest trees of economic importance and improved methods of their control,

(f) the integration of the cultivation of forest trees of economic importance into the farming systems in different ecological zones and its socio-economic effects on the rural populations, and

(g) any other problems relating to forestry, wild flora and fauna.

(iii) The Kainji Lake Research Institute shall conduct research into:-

(a) the limnological behaviour and characteristics of the Kainji and other man-made lakes and their effects on the fish and other acquatic life,

(b) the abundance, distribution and other biological characteristics of species of fish and practical methods of their rational exploitation in the said lakes and the major rivers of Nigeria,

(c) the behaviour and characteristics of wild life and their conservation as well as range ecology in the Kainji lake area,

(d) the public health problems arising from the construction of dams and the resettlement of people around the Kainji and other man-made lakes,

(e) the development of irrigated crops around the Kainji lake,

(f) the socio-economic effects of the construction of the Kainji and other man-made lakes on rural populations, and

(g) any other related matters.

(iv) The Lake Chad Research Institute shall conduct research into:-

(a) the hydrological behaviour and characteristics of the Lake Chad and the limnology of the associated surface and ground waters,

(b) the abundance, distribution and other biological characteristics of species of fish and other acquatic forms of life in the lake and practical methods of their rational exploitation,

(c) the behaviour and characteristics of the wild fauna and flora associated with the lake and their conservation,

(d) the ecology and methods of control of crop pests and diseases of economic importance,

(e) the improvement of the methods of control of dry farming and livestock husbandry in the severe environmental condition around the lake,

(f) the improvement of the cultivation of wheat, barley and other crops by irrigation around the lake,

(g) the socio-economic and public health effects of the introduction of large-scale irrigation schemes and improved methods of animal husbandry and fishing on the rural populations around the lake,

(h) any other matters related to the lake.

(v) The Leather Research Institute of Nigeria shall conduct research into all aspects of the production and products of leather and the utilisation of local training materials.

(vi) The National Animal Production Research Institute shall conduct research into animal production and animal products generally, and in particular -

(a) the genetic and nutritional improvement of cattle, sheep, goats and other livestock of economic importance,

(b) the improvement of livestock management and husbandry practices,

(c) the economics of meat production,

(d) nomadism and the socio-economic effects of the settlement of nomads,

(e) the integration oflivestock into the farming systems and its socio-economic effects on the rural populations,

(f) the improvement and management of natural range for the grazing of livestock,

(g) the improvement, establishment and management of sown pastures, and

(h) any other problems related to animal production.

(vii) The National Cereals Research Institute shall conduct research into the production and products of rice, maize and grains legumes of economic importance and shall, in particular, undertake research into -

(a) the improvement of the genetic potentials of the specified crops,

(b) the improvement of agronomic and husbandry practices,

(c) the mechanisation and improvement of the methods of cultivating, harvesting, processing and storage of specified crops,

(d) the improvement of the utilisation of by-products,

(e) the ecology of pests and diseases of the specified crops and improved methods of their control,

(f) the integration of the cultivation of the specified crops into farming systems in different ecological zones and its socio-economic effects on the rural populations, and

(g) any other problems related to the specified crops.

(viii) The National Horticultural Research Institute shall conduct research into fruit trees and vegetables of economic importance generally and shall, in particular, undertake research into -

(a) the improvement of the genetic potentials of the specified crops,

(b) the improvement of agronomic and husbandry practices,

(c) the meahanisation and improvement of the methods of cultivating, harvesting, processing and storage of the specified crops,

(d) the improvement of the utilisation of by-products,

(e) the ecology of pests and diseases of the specified crops and improved methods of their control,

(f) the integration of the cultivation of the specified crops into farming systems in different ecological zones and its socio-economic effects on the rural populations, and

(g) any other matters related to the specified crops.

(ix) The National Root Crops Research Institute shall conduct research into the production and products yams, cocoa-yams, cassava, sweet potatoes, Irish potatoes and other root and tuber crops of economic importance and shall, in particular, undertake research into -

(a) the improvement of the genetic potentials of the specified crops,

(b) the improvement of agronomic and husbandry practices

(c) the mechanisation and improvement of the methods of cultivating, harvesting, processing and storage of the specified crops,

(d) the improvement of the utilisation of by-products,

(e) the ecology of pests and diseases of the specified crops and ,mproved methods of their control,

(f) the integration of the cultivation of the specified crops into farming systems in different ecological zones and its socio-economic effects on the rural populations, and

(g) any other matters related to the specified crops.

(x) The National Veterinary Research Institute shall conduct research into -

(a) all aspects of animal diseases and their treatment and control,

(b) all aspects of animal nutrition,

(c) the production of vaccines and sera,

(d) the introduction of exotic stock to improve meat, milk and egg production,

(e) the standardidisation and quality control of manufactured animal feeds, and

(f) any other related matters.

(xi) The Nigerian Institute for Oceanograph and Marine Research shall conduct research into the resources and physical characteristics of the Nigerian territorial waters and the high seas beyond, and in particular -

(a) the abundance, distribution and other biological characteristics of species of fishes and other marine forms of life and practical methods of their rational exploitation and utilisation,

(b) the improvement of brackish water fishing and fishculture,

(c) the socio-economic problems of exploiting the resources of the sea and brackish waters,

(d) the effects of pollution on Nigeria coastal waters and its prevention,

(e) the nature of the marine environment, including weather forecasting and thetopography of the seabed and the deposits on or under the seabed, and

(f) any other related matters.

(xii) The Nigerian Institute for Oil Palm Research shall conduct research into the production and production and products of Oil pal and other palms of economic importance and shall, in particular, undertake research into -

(a) the improvement of the genetic potentials of the specified crops,

(b) the improvement of agronomic and husbandry practicesrelating to the specified crops,

(c) the mechanisation and improvement of the methods of cultivating, harvesting, processing and storage of the specified crops,

(d) the improvement if the utilization of by-products,

(e) the ecology of pests and diseases of the specified crops and improved methods of their control,

(f) the integration of the cultivation of the specified crops into farming systems in different ecological zones and its socio-economic effects on the rural populations, and

(g) any other matters related to the specified crops.

(xiii) The Nigerian Institute for Trypanosomiasis Research shall conduct research into Trypanosomiasis and Onchocerciasis generally and, in particular -

(a) the pathology, immunology and methods of treatment of the diseases,

(b) the ecology and life-cycle of the vectors and the mode of transmission of the disease,

(c) chemical, biological and other methods or vector control,

(d) the socio-economic effects of the diseases on the rural populations, and

(e) any other matters related to the diseases.

(xiv) The Rubber Research Institute of Nigeria shall conduct research into the production of products of rubber and other latex producing plants of economic importance and shall, in particular, undertake research into,-

(a) the improvement of the genetic potentials of the specified crops,

(b) the improvement of agronomic and husbandry practices relating to the specified crops,

(c) the mechanisation and improvement of the methods of cultivating, harvesting, processing and storage of the specified crops,

(d) the improvement of the utilization of by-products,

(e) the ecology of pests and diseases of the specified crops and improved methods of their control,

(f) the integration of the cultivation of the specified crops into farming systems in different ecological zones and its socio-economic effects on the rural populations, and

(g) any other matters related to the specified crops.

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