INTRODUCTION
The domestication and use of animals by humans date back to about 12,000 years. Despite the small number of mammalian species which mankind chose to domesticate in the few primary and secondary (or copy cat) centres of origin (Payne and N.L. Hodges, 1997) several thousand distinct breeds or races have spread across the earth. This biodiversity results from natural selection for adaptation as people emigrated with their animals over the surface of the earth and also from human choices for food or aesthetic appearance. The preferential selection of distinct genetic traits is reflected in the breeds, types or races that are adapted to specific uses or environments and that are often named after the language, people or locality where they are dominant. This vast array of thousands of breeds is a human heritage worthy of conservation. In the twentieth century, humanity which slashed animal biodiversity over the millennia suddenly became the destroyer of those domestic animal breeds (FAO 2002). This aggression is driven by intensification of food production which favours only a few breeds. Biodiversity, accumulated over thousands generations, is today challenged by an accelerating process of extinction. While mankind behave wisely though almost unconsciously in building up bioweb, we are now foolishly squandering animal capital for short term gains (Hodges, 2002).

The establishment of sustainable systems of food production to meet the needs of an expanding world population will be one of the great challenges of this century. This challenge is particularly acute for livestock production system. Ample evidence now exists to demonstrate that global economic development is being accompanied by increased demand for meat, milk, eggs and other animal products. Sustainable development of more productive and efficient livestock herds and flocks will be required to meet these challenges. This development will involve both identification of immediate tactical management activities to improve production, productivity of current herds and flocks as well as establishment of long q-0term strategic programme for comparative evaluation and continued genetic improvement of these animals, hence the quality of life of an average Nigerian.

POTENTIALS OF NIGERIANS LIVESTOCK.
Livestock products amount to about 25% of the total agricultural production in Africa (FAO, 1998) while animal traction, manure for fertilizer and fuel were estimated to be about half of the combined value of meat, milk and eggs. With almost 10% of Tropical Livestock Units of animal population in Africa available in Nigeria alone (Table 1) (i.e., 12.5 million) out of the 147 million TRLU (ILCA, 1993), the contribution of Nigeria to the genetic resource of livestock species, breeds and strains in the world is highly significant although data on the numbers and their characteristics are still very limited. The different species and breeds have better survival, are hardy, have a high degree of heat tolerance, are partially resistant to many of the prevailing diseases and possess the ability to survive long periods of feed and water shortages under hostile environments and poor management practices. These properties are basically genetic and have been acquired through natural selection over hundreds of generations, hence the indigenous livestock breeds are repositories of unique genes that could be used in other parts of the world. Most populations of indigenous livestock in Africa in general and in Nigeria in particular have been subjected to little or no deliberate selection for productivity. Selection is the basic procedure used both by nature and by man to change the attributes of animals. In many programme for livestock improvement, the first difficulty and sometimes, the greatest is the decision on the objectives for improvement, the process of selection that will make the objective realistic (i.e. attainable) and the ability to hold the
Objective for reasonable period of years (sustainability). In other words, the process of selection involves the choice or preference of some animals to others which subsequently leads to changes in frequency of particular genes between parents and offspring generations and in this way performance might be affected.

**Table 1: Nigeria’s Livestock Population**

<table>
<thead>
<tr>
<th>Livestock</th>
<th>Pastoral</th>
<th>Village</th>
<th>Urban</th>
<th>Total</th>
<th>% S.E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>11,478,145</td>
<td>2,358,078</td>
<td>49,590</td>
<td>13,885,813</td>
<td>1.6</td>
</tr>
<tr>
<td>Goats</td>
<td>1,142,154</td>
<td>32,287,589</td>
<td>1,023,981</td>
<td>34,453,724</td>
<td>2.9</td>
</tr>
<tr>
<td>Sheep</td>
<td>2,678,152</td>
<td>18,356,718</td>
<td>1,057,732</td>
<td>22,092,602</td>
<td></td>
</tr>
<tr>
<td>Pigs</td>
<td>3,352,560</td>
<td>53,821</td>
<td>3,406,381</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rabbits</td>
<td>1,475,437</td>
<td>244,409</td>
<td>1,719,846</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td>97,860,320</td>
<td>6,397,640</td>
<td>104,257,960</td>
<td></td>
<td>3.3</td>
</tr>
</tbody>
</table>

Selection as normally practiced works only on the additive part of the genetic variation (VA), which is the chief component of resemblance between relatives. This ratio (VA/VP) of additive to total variation (VA) referred to as heritability ranges from low to medium to high. When the value is high, more rapid response to selection is expected whilst on the other hand when it is low, progress might be slow or there might be total lack of progress. The response to selection per generation on the other hand depends not only on the heritability but also on the selection pressure applied, which is reflected in the average superiority of the selected parents over the mean of their group and the proportion of animals selected (i.e. selection differential) (Falconer, 1989).

In practice, a lot of attention is paid to make accuracy of selection as high as possible by using many records on the same individual and information about the performance of the individuals’ relatives and his or her progenies. Although this trend to substantially increase the interval between generations, a practical benefit of genetic improvement must be measured as progress per year, there must be avoidance of inbreeding in selection programmes, such that adequate number of sires in the top group within the herd should be selected. Although large numbers of breeding males (sires) will reduce genetic superiority, this has to be done to ensure long-term effectiveness of the programme.

**BREEDING AND IMPROVEMENT TECHNOLOGIES.**

Increased production of milk, meat, eggs and animal fibre has been based on extensive records of pedigree performances which are essential for accurately identifying superior individual animals. The science of population genetics developed in the 1930s and 1940s, by Scientists in Europe and North America has since been effectively applied to achieve substantial increases in animal production and productivity in developed countries. Progress has been greatest in dairy cattle, pigs and poultry. Compared with improvement achieved 30 years ago, today’s dairy cow in Europe and the United States, and other Industrialized countries produces around 5,000 kg of milk per cow per year and sometimes twice as much. Fat thickness has declined by half in today’s pigs, while the broiler chicken today matures in 42 days (6 weeks) instead of 3 months (NRC, 1993). By contrast, average annual milk production per cow is 509kg in Africa, 610kg in Asia and 900kg in South America (Heap, et,
al. 1992). Genetic improvement of local domestic stock is therefore not only a very important option but a condition for the development of the livestock sector in developing countries.

TRAITS AND IMPROVEMENT METHODS.
Many breeders usually want to improve every trait or at least several traits at the same time. The more the traits that are included in the selection processes, the less is the progress for individual traits and zero progress could result from inclusion of too many traits. This puts emphasis on the importance of getting the objectives right and pursuing the objective to a logical conclusion.

UNIQUE TRAITS
Breeds with unique physiological or other characteristics are of great interest in the global livestock development. In the past, such breeds have provided missing links in the genetic history of livestock species through the study of blood groups, protein polymorphisms and morphological characteristics. The developing science of molecular engineering to identify DNA sequences that cause uniqueness of breed traits, the new technique of genome mapping, transfer of DNA within and between species and the production of viable transgenic animals for products used in pharmaceutical industries are still far from application in Nigeria, yet are the current focus of intensive research that may have greater impact on animal production, health and quality of human life in this new millennium. Livestock improvement programmes generally require population sizes that are larger than can be managed by single institution. The development of cooperative breeding programmes with sets of biological procedures and organizational structures within which different species can be accommodated, must be put in place. Large volumes of animal life history and pedigree data are needed in these programmes, hence their development would not be possible without various computer data bases and analytical programmes that are coordinated and distributed both nationally and internationally at least within the African continent.

ENHANCING PRODUCTIVITY.
Genetic improvement is one of the most effective strategy available for altering the performance of farm animals. It is relatively slow compared to some other methods such as improved feeding but it is permanent and cumulative and in most cases highly cost effective and sustainable. Populations of animals of high genetic merit are needed to achieve high efficiency and competitiveness in any livestock industry. Genetic improvement has generally been used very effectively in pig and poultry industries in many countries. Rates of genetic improvement depends on four main factors:

- selection intensity achieved
- accuracy with which genetic merit in the trait of interest is predicted
- the amount of genetic variation in the trait of interest
- generation interval (GI)

The main opportunities for breeders to accelerate rates of improvement are through choice of the most accurate methods of predicting breeding values and by maintaining high selection intensities and low generation intervals. However, there are biological limits to which selection intensity and generation interval can be alleviated. As a result of their earlier sex maturity and high reproductive rates, it is possible to achieve greater selection intensities and shorter GI in pigs and poultry than in ruminants. A better understanding of the relationships between traits of production and those conferring adaptation to harsh environments could help in the production of more sustainable breeding programmes.

In most cases the tools to achieve these improvements are already available but need to be fine-tuned and applied more widely. For example, the methodology for producing more comprehensive breeding goals and indexes is well developed, in other cases, new
technologies can contribute to accelerating genetic improvement. Scanning techniques can improve rates of progress in carcass characteristics by providing more accurate predictions of the carcass composition of candidates for selection (Adelambo, 1992). New techniques for automatic identification and data capture could improve the accuracy of selection of milk characters. There are two types of new technologies which can have major impact on rates of livestock improvement. These are:

Reproductive technologies
Molecular genetic technologies.

REPRODUCTIVE TECHNOLOGIES.
It is possible to achieve much higher selection intensities in species or breeds with a high reproductive rate than in those with lower reproductive rates. Similarly, shorter generation intervals can be achieved in those species or breeds which reach sexual maturity at a younger age. Because of the biological advantage in reproductive rates, higher rate of genetic changes is possible in pigs and poultry than in ruminants. In cattle on the other hand, the major trait of interest is again sex limited and can only be measured fairly late in life. This therefore prompted breeders of these species to look into new reproductive technologies that can accelerate progress in genetic improvement programmes in ruminants. These reproductive technologies include:

- Artificial Insemination AI (Dingwell and McKelvey, 1993)
- Multiple ovulation embryo recovery and embryo transfer MOET (Gordon and Lu 1990, Gordon, 1994)
- In-vitro embryo production (Gordon 1994, Krulpp and denDaas, 1997)
- Embryo splitting and nuclear transfer (Nicholas 1996, White, 1989)
- Embryo and semen sexing (Cran N.L and Johnson, 1996)
- Cloning (mass production of identical embryos) (Wooliams & Whimut, 1989)

Many of these techniques are not only of potential value in accelerating response to selection in breeding programmes, they have potentials in accelerating dissemination of genetic improvement from elite to commercial tiers of livestock industries. Although techniques for selection are usually useful in dissemination, not all techniques of value in dissemination are useful in selection.

MOLECULAR GENETIC TECHNOLOGIES
To date, most selection in livestock has been practiced with little or no knowledge of what is happening at the DNA level. Selection has been on the effect of the genes rather than directly on the genes themselves. Some traits are controlled by single genes and have a large visible effect, e.g. coat colour, polled-ness, double muscling. Here there is visible association between the gene and the effect. However, for most traits of economic importance the performance is affected by the genotype at many different loci; they are influenced by the environment, so the link between the gene and the performance is further obscured. While earlier works on livestock improvement used clues from performance of the candidate and their relatives to estimate the additive effect of all loci affecting the trait and at the same time removing environmental influences, they are good at predicting the average genetic merit of the offspring but cannot distinguish between them until the offspring get performance records of their own. Under the new development techniques, molecular technologies are already having impact or may have impact in the future. The existence and gross structure of
chromosomes has been known since the early 1900s, the chemical structure of DNA and its role in inheritance came into effect in the 1950s. However, it is only relatively recently that advances in molecular and cell biology allowed the identification and location of individual functional genes and the sequence of the DNA on chromosomes. These in essence provided molecular tools to assist conventional selection procedures and allow gene transfer. These recent advances include:

(1) DNA SEQUENCING.

Nucleic acid sequencing has also been used to address virtually any systematic problem in population genetics, although it is not the most efficient or cost-effective. When two organisms are distantly related, the conserved (constant) sequence region which exhibits extensive sequence homology are used whereas when closely related, the vari Able region which displays different sequences are used. Once again, because genetic differences between breeds are low as detected in cattle, direct sequencing is an unlikely candidate for population analysis. In order to uncover the level of variation needed to distinguish breeds, the stretches of DNA to be sequenced would be prohibitively long. It will be labour intensive, involve use of extensive equipment, enzymes, reagents and radio-active labeling.

(2) MARKER-ASSISTED SELECTION.

Here, marker-assisted loci are used either to identify and locate useful traits or to describe population structure. Although the same marker systems can be used for the two different approaches, the experimental design however differs in the two approaches. The characterization of production traits in livestock species using molecular markers is currently a very attractive area of research as we now have Bov map, Pigmap, Sheepmap, etc. in production in several laboratories all over the world. The identification of such markers requires however, the examination of large pedigrees or populations which are carefully phenotyped before genotyping. Some of these techniques in use include:

**Development of markers:** Any identifiable segment of DNA in the genome (the entire genetic code of animals) which shows variation between animals can be used as a marker. Markers may be all or part of a functional gene, or part of the genome which does not code directly for the production of a protein. Several markers have been developed. They are of value in genome mapping, marker assisted selection, parentage verification and product identification. There are two types of markers currently of most value in livestock genome mapping and of value in marker assisted selection. The first is the Restriction Fragment Length Polymorphism (RFLP) (Thelma, et al. 1989). This is a method that utilizes restriction enzymes to cut the DNA in the number and position of sites at which the animals vary. The variation is termed restriction polymorphism, i.e. different forms. The RFLPS are used to detect variation in the DNA sequence of different animals using:

1. PCR to multiply the fragments containing restriction sites;
2. Digesting the multiplied samples with one or more restriction enzymes; and
3. Separating the digested fragments from each animal in adjacent columns of a gel;
4. Distinguishing different genotypes from the size of DNA fragments produced by staining or use of a labeled probe.

**OTHER GENETIC SYSTEMS.**

Under these systems, parts of the genome with distinct modes of inheritance are sampled such as autosomal, mitochondrial and Y-chromosomal DNA. Autosomal DNA are sexually-inherited, mitochondrial are maternally inherited, while Y-chromosomal DNA are paternally inherited. With appropriate technology, it is envisaged that the livestock industry in Nigeria could be revolutionized for example through characterization, conservation and utilization
of rare genetic variants among the different livestock breeds. The relative degree of diversity and adaptation in Nigeria’s animal breeds call for some efforts at characterizing the breeds at the molecular level in order to establish the genes that could be conserved and which are probably peculiar to these groups of livestock as is done in other developed countries.

It is very necessary for Nigeria to be involved in the utilization of:

- Blood typing information
- DNA typing information
- Use of selected markers
- Register of the different livestock data bases.

So as to have access to the International

- livestock breeds and poultry diversity data base
- genome maps
- breeds information
- livestock and poultry breed encyclopaedia
- other genetic data-bank.

In essence, the wide animal genetic base and varying ecological niches should be the focus of breed development that may be peculiar to these groups of livestock. There is need to diversify and consolidate our livestock base so as to inculcate the philosophy of self-reliance in our youths.

LIVESTOCK IMPROVEMENT STATIONS.

There is an urgent need to establish species/commodity specific livestock research stations and in particular regional livestock research stations to take care of the improvement, development, utilization and unidirectional breed development of our livestock breeds specifically adapted to the different ecozones. Nigeria could boast of dairy cattle breed development and Improvement in the NW zone and middle-belt (Plateau) of the country using the Open Nucleus Breeding Scheme if a Dairy Research Station is established. Meat and Grassland Research, Monogastric Research and more importantly Poultry Research Institutes are essential for the country to forge ahead in order to meet the basic animal protein demand of the population. Not only are the animals to be developed but industrial outfits to process and distribute livestock products will similarly be expanded thereby creating job opportunities for the teeming populace. Nigeria’s manufacturing sector has continued to decline for lack of appropriate local input. Capacity utilization in most industries declined steadily from 73.3% in 1981 to 33% in 1997. One major reason for this anomaly was the reliance of manufacturers on imported inputs, the procurement of which has been complicated by movements in the exchange rate of the Naira.

The present administration is expected to give livestock improvement the desired attention and similarly lend credence to the industrial sector because together, they are strategically important to the country’s economic growth. The present administration should look critically at these problems of animal livestock vis-à-vis livestock products Industrial base. It is hereby suggested that:

1. Increased expertise in the area of breeding and genetic improvement.
2. Collaborative and more strategic research,
3. Specialized institutes; and
4. Focus on facilitating basic research on problems specific to livestock production be vigorously pursued.
DEVELOPMENT OPPORTUNITIES.
Opportunities abound to increase ruminant milk and meat production. These opportunities take different forms according to ecological zone and region.

in the humid areas south of the country, there is great and long term potential to increase production if trypanosomiasis and dermatophilosis can be controlled through multiplication of appropriate cattle breeds.

in the sub-humid zone, there is ample opportunity in the medium term to increase forage production, hence this combined with freedom from tsetse allowed greater concentration of cattle herds.

In the semi-arid zone, seasonal milk surpluses are available hence the potential for dairy development.

CATTLE PRODUCTION.
Age at first calving in the neighbourhood of 36-50 months could be reduced through selection.

Annual calving rates usually less than 50% could be increased.

Successive calving intervals of more than 2 years could also be reduced.

Calf losses from birth to weaning of 20-50% could be reduced through management.

At the same time, the southern zone could concentrate on monogastrics, poultry, pigs and rabbit production.

TRYPANOSOTTIVE BREEDS.
In Africa, over the last 2 decades, an estimated 10 million Zebu cattle have progressively entered the sub-humid savannas and in some countries, the entire livestock industry depends on trypanosensitive breeds kept under low to medium fly challenge. These production systems rely heavily on the use of chemoprophylactic and chemotherapeutic drugs as proven by high percentage, that is, over 50% of drugs sales in those countries were on trypanocidal drugs. There is need to carry out research in:

- The extent of drug resistance,
- The dynamics of resistance and
- Specific conditions that trigger resistance.

Genetic differences have been reported within and between even trypanosensitive breeds. For example, reports between Orma and Galana Boran cattle breeds by Murray, et. al. (1986) give an indication of what could be achieved if concerted effort had been directed at the selection of resistant/tolerant animals even within the trypanosensitive breeds over the years. Several cattle populations in West Africa have evolved under a permanent tsetse challenge and might exhibit major differences in trypanotolerance. A better characterization and understudy of the scope of these differences would greatly contribute to the more efficient production of Zebu breeds in tse-tse affected areas. Research to enhance trypanotolerance through genetic improvement including genetic engineering and gene-transfers might be especially applicable here (Adebambo, 1998; Adebambo, et. al. 1998). An increased use of trypanotolerant cattle is presently constrained by their population size of 115,000 (RIM, 1992). The present 10 million head of trypanotolerant cattle breeds in Africa is far below the potential carrying capacity of the tse-tse zone of 34 million heads estimated by Tacher (1988) or 110 million estimated by FAO (1979). Africa’s tse-tse affected areas constitute one of the continent’s
under-utilized resources and could play a pivotal role in alleviating its food deficit, provided appropriate research and development strategies are adopted to develop this potential. Livestock could make an important contribution to land use sustainability provided appropriate technologies are developed to control the main disease and improve the poor nutritional level. The World Bank's involvement in livestock development in tsetse affected areas dates back to the 1970s. Out of the total of $1.8 billion World Bank funding for livestock development in Sub-Saharan Africa (de N.L. Haan, 1988) an estimated $300 million was distributed or committed to livestock development in the tsetse infested areas of West and Central Africa. Approximately $80 million out of this amount was used to finance credit programmes (small holder fattening and animal traction), $50 million for parasitodal ranching, 30 million for importation and distribution of trypanotolerant breeds, $10 million for tsetse eradication and $100 million to strengthen veterinary and livestock extension services.

In all, performance of these investments has been rather disappointing the main reasons being:

- Inappropriate macro-economic policies
- Weak institution
- Inadequate technological packages
- Policies/prices and exchange rates that frequently favoured the consumer, relatively unattractive to producer and not conducive to increasing productivity.

Excessive salary costs and inflexible central administrative procedures of these ranches which is incompatible with the assertive management required in livestock rearing.

Adaptation problem of imported trypanotolerant cattle to their new environment.

Finally, a total lack of appropriate technology in range management and sustainable tsetse eradication.

The current trend in World Bank's lending programmes is to move away from parasitodal and private ranching and use of trypanotolerant cattle imports, hence we would demand that World Bank lending should be directed at increasing animal production through establishment of specialized livestock breeding and research stations and the development and utilization of specialized indigenous livestock breeds.

DRIVING FORCES.

In Europe, breeding organizations strongly influenced the composition of farm animal populations used for food production. Economic, social and environmental developments encouraged selection of highly productive breeds for use in intensive animal production systems. This decreased the contribution of low input-low output breeds to food production thereby threatening the existence of these breeds. Application of the genetics to the improvement of farm animals and the use of artificial reproduction techniques led to the development of advanced breeding schemes and advanced methods to identify the genetically superior animals within selected high productive breeds. Here improvement is obtained for only a few traits. The other traits which were ignored in the selection were compensated for by increasing management efforts. In worldwide animal production, molecular geneticists are searching for genes which influence production, quality of products, health and reproductive traits in animals. In this search, crosses between breeds with extreme characteristics play an important role. They guarantee a high degree of heterozygosity and linkage disequilibrium which is required to detect associations between highly polymorphic marker loci and polymorphism at quantitative and qualitative trait loci.
Many breeds are the result of long domestication process and a long period of adaptation to local circumstances. They reflect a long history of symbiosis between mankind and farm animals and can help to classify adaptation processes which can be worthwhile for the management of animal genetic resources in the present production system. Within community, there is a growing awareness for the ecological value of regions as a result of vegetation, nature and farm management. Within the complex, the presence of animals interacting with this complex is of great ecological significance, hence the need to develop animal breeds that can contribute to the development of local products with an ecological image.

ROLE OF NIGERIA IN INTERNATIONAL ANIMAL GENETIC RESOURCES CONTEXT.
In 1992, the Second United Nations Conference on the Environment in Rio-de-Janeiro recognized the importance of farm animal genetic resources in Agenda 21 and in the Convention on Biological Diversity (CBD). Nearly all countries have signed this convention which resulted in political and social awareness of national animal genetic resources. Specific activities are now in place, directed towards the conservation of all indigenous livestock genetic resources in several countries most especially in countries where most of these resources had been eroded over the years. The CBD considers farm animal genetic variation as a component of the overall global biological diversity and similarly recognizes the sovereignty of each country over its own genetic resources which implies also the obligation to conserve these resources.

In 1980, the European Association for Animal Production established a working group in the field of animal genetic resources. Their major activities were to organize regular surveys of breeds of farm animals in different European countries and to integrate the genetic science in conservation activities. Hence, from 1988 to 1994, FAO and the EAAP managed the Global Data Bank for farm animal genetic resources at the Hannover Veterinary University in Germany. To date, the Domestic Animal Diversity Information System (DAD-IS) reported 332 cattle, 407 sheep, 123 goat, 156 pig and 213 horse-breeds maintained in 37 European countries (McHugh, et. al. 1994; FAO, 1998). If through concerted efforts, within such a short duration, these communities could characterize and define their indigenous livestock genetic resources, Nigeria has nothing to lose but rather has a lot to gain if her very few animal diversity could be defined. There is something definitely inherent in these animal breeds, deposited over the years by nature that could be exploited for global utilization in the nearest future and definitely within the present millennium.

In prosperous countries of the European community, the demand for specialized food from animal origin increases, so also is the situation in Nigeria where we import several specialized animal products to feed our teeming population. Besides this, prosperity increases the use of animal for other goats like hobby farming and use of animals for sports (for example, horses in polo and horse racing). Nigeria to me is a very prosperous nation. These animal breeds are available in Nigeria. Despite the fact that their development requires a large variability in the genetic variation of the species used, there are breeds in Nigeria that can qualify for all the criteria. They need to be characterized, exploited and properly utilized.

GROWING GLOBAL POPULATION.
The global human population hit the 6 billion in October 1999 and is expected to hit the 7 billion mark before the year 2030. In the past, the demand for increased food production has been realized by a combination of genetic improvements, greater farming inputs and cultivation of more land for agriculture. It can hardly be expected that in the future, the agricultural inputs can still be increased and that more land can be cultivated. Therefore, genetic improvement is the most viable approach to meet increasing demand for food from animal origin under intensive systems while rural areas might continue to serve as food
production outlets that require low input and low output breeds which are locally developed and adapted to these areas.

RESPONSIBILITY OF SCIENTISTS.
Scientists are expected to develop, monitor and signal schemes that will help governmental organizations to watch over population that might be exploited or threatened with extinction. Genetic science should be translated into guidelines for conservation plans. Individual breeders and breeding organizations are to help in conservation activities by collating materials for genebank and performing breeding programmes for small population at risk. There is however the need for government initiation and national subsidy for breeders and breeding organizations to be able to play a key role in the success of animal genetic resources conservation and utilization activities.

SUMMARY.
The current estimated animal population in Nigeria comprises 13.8 million cattle, 22 million sheep, 34.5 million goats, 104.3 million poultry and 3.4 million pigs (RIM, 1992) which is over 12 million Tropical Livestock Units and about 10% of animal population in sub-Saharan Africa. The livestock industry provides a mean of livelihood for a large sector of the population, the Indigenous breeds forming the backbone of livestock production because of their ability to survive and reproduce under stressful environments and their being highly diversified. Because of the rapidly increasing population, there is need to increase substantially, production of food especially from the livestock resources to meet the ever-increasing food and industrial demand for livestock and livestock products. Although limitations in economic and financial conditions do not permit the production environment to be altered sufficiently to suit high potential of temperate breeds, early efforts at increasing production levels were based on, and emphasized by breeding policies and strategies that encouraged the replacement of Indigenous breed with those from temperate regions.

With the futile effort of most of these replacement programmes, it is now very obvious that Nigeria will only develop productive and well-adapted domestic breeds in selection programmes if rural herds could be used as point of collection of breeds into regional open nucleus breeding systems. Nigeria is far better equipped to achieve the much desired objective of becoming self-sufficient in livestock production. The human and material resources at the disposal of the nation should guarantee the sustained physical effects necessary if this could be backed up with readily available modern agricultural technology. The most crucial element missing or inadequately expressed is the political will of the government and people of Nigeria to persist until the ultimate success is achieved. Both politicians, technocrats and farmers must be totally committed because success in animal production through genetic improvement can only be realized where there is wholehearted commitment and sustained involvement of the entire farming community.
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