PROBLEMS AND PROSPECTS OF LIVESTOCK DEVELOPMENT IN NIGERIA

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Considerable attention is given these days to Food Production including livestock because we all want to be properly fed at a price that can easily be afforded by the average Nigerian.

Food production is so important that we should all be seen to be playing role in achieving the national goals of self-sufficiency. You may be involved in solving problems through research activities or by educating agricultural students and farmers or by farming directly or indirectly or several other ways.

Although Government will formulate policies, these policies have to be translated into programmes which will be implemented by Nigerians of different cultural backgrounds, different ecological zones and different levels of skill and general education. The success of the agricultural programme depends to a large extent on the absorption of technology by these varied groups of Nigerians largely resident in the rural areas. The policies and the research work will be useful only when they can be adaptable to our socio-economic and environmental situation and also when they are acceptable to the people that are involved with primary production and marketing.

The Livestock Industry is one very important component of the Agricultural Sector of this country's economy. The Sector contributes substantially to the Gross Domestic Product amounting to N1.8 billion in 1980 and N2 billion in 1981.

Livestock is primarily a source of quality protein which is required for balanced

nutrition. Already there are several Nigerians who are now engaged in the rearing of one form of Livestock or the other and need varying levels of assistance for promoting their business and increasing their incomes. We are also aware that livestock production generates raw materials for agro-based industries which provides additional employment for Nigerians and reduce our dependence on foreign-manufactured livestock products. Livestock also plays a significant role in promoting crop production through the use of animal traction and manure for soil fertility. However, I will stress as a protagonist of livestock development that such objectives should not be allowed to contradict the primary role of livestock as producing meat and milk for human consumption.

The basic problem we have in the Livestock Sector as in other agricultural sectors is the inability to match production with supply. The current level of supply of animal protein will require to be increased at an annual growth rate of 45% to meet British Medical Association (BMA) minimum nutritional requirement by 1990. In the present circumstances it will be too ambitious to plan with BMA standard. The FAO has recommended 20gm/Capita/day for developing countries. Our present intake which includes local and imported supplies is less than 10gm. A two-fold increase in supplies is required at current population level, income growth and demand elasticity for animal protein. From history and past ex-

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periences of other developing countries, such a task is difficult to achieve but yet a strategy has to be worked out in achieving self-sufficiency and national self-reliance. There is no alternative, otherwise millions of Nigerians will subsist on unbalanced diet leading to malnutrition, unproductivity and high susceptibility to debilitating diseases.

In the crop sub-sector, we have witnessed the biological revolution in the production of hybrid cereal production and chemical revolution in the production of fertilizer and insecticides. These technologies have been transferred to some developing countries for example the Phillipines and have aided them in achieving their self-sufficiency objective in rice. This breakthrough of technology transfer has not been possible in the livestock sector in the developing countries except to a limited degree in some South American countries like Brazil and Argentina. It is pertinent to mention that these countries have some ecological and climatic advantages in addition to skilled manpower to raise high-yielding exotic animals.

An F.A.O. survey in 1978 indicated that with the exception of pigs, higher percentages of each type of livestock are reared in developing countries and Nigeria is one. Also Fitzhugh *et al* (1978) reported that approximately 2/3 of the World's domesticated ruminants are found in developing regions but they produce only 1/3 of the World's ruminant meat and 1/5 of milk supply.

The major problems in achieving faster growth rate in livestock production depends on a number of factors. I will attempt in this paper to discuss some of them (1) Biological ability of the animals to grow and reproduce economically. (2) The availability of resources — feed and water to sustain efficient growth and reproduction. Here can be included the constraint due to pressure on available

land and on permanent and temporary pastures by animal populations and tsetse infestation. (3) Effective Veterinary Service and ready availability of vaccines and other drugs required to reduce the risk of mortality and other productive functions.

(4) The finance to support an expansion Programme.

(5) The skill and willingness of producers to utilize improved technology.

(6) The profitability of the production enterprise.

Cattle Development:

Cattle is at the moment the major contributor of meat and milk for human consumption. The potential meat deficit for Africa is estimated to be 3 million tons (trend scenario) and 8 million tons (planned scenario). It is predicted that with the exception of Southern Africa, every single region of Tropical Africa will have a meat deficit by 2,000.

In Nigeria deficit could be up to 1 billion tons of beef if drastic changes are not made in our development efforts. The prospects for dairy products are also in similar situation. Nigeria consumes less than 10kg/capital/annum of dairy products. The average for developing countries is 40kg and that of developed countries is over 100kg.

To achieve self-sufficiency, increases of 75% (trend) and 200% (planned scenario) will be required for ruminants. The attainment of such increases are theoretically possible when one considers the present low production potential of our indigenous animals where meat yields is rarely over 12kg per animal, whereas average for developing countries is 170kg and developed countries is 800kg. For milk, African breeds rarely produce more than 600 litres/lactation/animal whereas it is nearly 2,000 litres as world average and 4,000 litres for developed countries.

Such levels of production would not only require a transformation of production system but more capital investments, better skills, imported inputs like machinery, fertilizer, fencing materials, seeds, drugs etcetera. Good breeds of cattle, fodder resources and supplementary feed will be particularly required. Livestock development is a secondary industry, depending on the products of crop production as raw materials. Examples of such ingredients like maize, oilseed cakes are in short supply in the country. From a survey carried out by the FLD in 1975, total amount of supplementary feed required to maintain the weight of cattle attained at the beginning of the dryseason would be 635,000 tons per annum. Past records on Animal Feed Programme indicate that we have rarely used up to 20% of this amount. Such level of supplementary feed will require a minimum of about ₦100,000.000 investment costs excluding transportation and overhead charges. This amount can, however, be considerably reduced with the use of pastures. Australian research in pasture for the past two decades have shown that beef can be produced more economically on improved tropical pastures. Improved pastures increases meat yields through high stocking rates, reduced time to reach slaughter weight, higher calving percentage and earlier mating of heifers. If for instance cotton seed cake is replaced with legume-based pasture, there will be a saving of ₦40,000,000 and above on investment on a national scale and this can be achieved on 634,000 hectares of land. This indicates that in the area of feed, there are possibilities of increasing resources. However, this is not an easy task.

In Nigeria, most of the ruminant livestock are confined to tse-tse free regions north of latitude 12°N but with low rainfall. The rapid maturation rates of these tropical forages, combined with

the leaching of plant nutrients sharply reduce nutritive value. It has been reported (Ademosun, 1979) that protein in Nigerian forages drop from 6% in the rainy season to 2% in the dry season. Conservation at the peaks of surpluses are made difficult by high moisture content and humidity.

Our range resources are today at a crisis situation. In 1951, 33% of our grazing land was under — utilized. However, grazing resources have reduced from 67% of land resources in 1957 to 50% in 1976 due to the intensification of agricultural, industrial and related activities in the country.

The other limiting factor for availability of food resources is tse-tse infestation. Most of the cattle are located in areas with low rainfall and sparse pastures whereas the high rainfall areas with better prospects for pasture development are tse-tse infested.

I cannot conclude a discussion of cattle development in this country without mentioning pastoral development. There is an imbalance between feed and animals, coupled with drought and diseases which have compelled the nomads to move their herds from place to place. The nomadic pastoralists are a peripheral group with insecure titles to land and are progressively encountering difficulties in securing sufficient fodder and water as more land is being allocated to arable agriculture. Certain pastoral practices as overgrazing and burning of bush have damaged the habitat and reduced stocking rates. Pastoral livestock development will, therefore, be viewed in the light of environmental, technological and cultural constraints. There is an urgent need for the elaboration of sound principles in areas of range management and possibly mixed farming. The application of such a programme will depend largely on secure titles to land. However, I would stress that mere land allocation will not be suffi-

cient. Pastoralists could merely take advantage of the land to provide for dependents for growing millet and other foodstuffs, and taking up nomadic life once again. It may be desirable to set conditions which must be strictly adhered to by beneficiaries of such a land adjudication programme where defaulters will lose their title to land.

A programme of providing land tenure rights is being started in Nigeria in Bauchi State, but it is necessary at this stage to review what has happened in other African countries. There are the Group Ranches in Kenya as group ranch is a demarcated area of rangeland to which a group of pastoralists, who graze their individually owned herds on it, have official land rights. They are different from co-operative ranches where members own their animals jointly. In Kenya the group ranches are incorporated and are eligible for loans to provide dips, water etcetera. The objectives are to provide land tenure rights and to commercialise pastoral production. As at 1978, 18 group ranches have received loans from the World Bank under the Kenya Livestock development project. In Tanzania eight group ranches were registered by 1978. Botswana has also tried to set up group ranches under the Village Area Development Programme. In Upper Volta and Senegal one and five group ranches have been established respectively. The problems experienced in these group ranches include:

(a) economic viability — Some indicate that the ranches will be viable in years of good rainfall and not viable in years of poor rainfall in which case nomadism outside the land boundary may be necessary. In fact it is mentioned that in Kenya close relatives take membership of other group ranches in order to guarantee movement to other places in time of insecurity.

(b) enforcement of quotas — Viability is dependent on stocking rate. It has not been possible to enforce a higher off-take

in group ranches. Where there is a reduction of stocking rate it is mainly due to emigration. Whereas planners think that there are too many animals for the size of ranch, the owners feel there are not enough animals for the members.

(c) Management problem — It has been difficult to co-ordinate decision making regarding a number of issues e.g. where to pasture, when to water, whether to sell and how many to sell. Even where a manager has been appointed, it has been found impossible to enforce decision which the pastoralists do not agree to. From the Kenyan experience, group ranches have failed to commercialise pastoralism, however they have succeeded in protecting the pastoralists right to land ownership. The Bauchi programme will depend on individual ownership of land, where graziers can jointly finance infrastructure as dips, water etc.

Fattening is another area in which rapid increases in meat output can be achieved in the shortest possible time. Commercial trials at Mokwa with molasses and cottonseed cake or Urea indicate economic weight gains of about 40—50kg in 90 day fattening cycle. This now forms the basis of the small-holder fattening programme of the livestock project unit of Federal Livestock Department, which have provided credit and technical support to over 1,000 small-holder fatteners.

The use of trypanotolerant cattle in the tse-tse — infested southern parts of the country will also help to increase meat yields in the country. Investment costs for trypanosomiasis control and land clearing could however limit profit considerably.

Dairy Cattle:

The milk deficit even creates more problems. The current supply from local herds is about 490,000 tons and about 300,000 tons is imported annually. The demand will move up to about 3,000,000

tons or more. In tropical South America, improvement through breeding has been slower than expected in the region. The reasons are due to widespread ignorance of what constitutes genetic quality for milk production and how it is measured. The fact that artificial insemination (A.I.) and recording services exist in many parts of the country is frequently considered sufficient to solve all problems. Moreover, the bulls used are of inferior quality. In 1968, 42% of bulls used in A.I. in Lima area had negative progeny test ratings (were sires whose daughters would be expected to produce less milk than contemporaries). In most cases selection is based on physical characteristics which have nothing to do with milk production. Secondly selection in many parts is hindered by shortage of heifers. The lesson for us in Nigeria is that with better nutrition and management production of milk can be considerably increased. However we should emphasize the aggressive development of grade animals in ecologically suitable areas like the mambilla, Jos and Obudu highland areas. These areas if properly planned can support a cattle population of nearly half a million grade cattle which could produce nearly a billion tons of milk. Climatic conditions are believed to affect the development of dairy animals significantly. The tropics is characterised by temperature variations of 20°—35°C. Yields have been found to decline in Holsteins at 21°C, in Brown Swiss and Jerseys at about 24°—27°C and in Brahman at 32°C. High humidities have also been found to cause decline in production. Attempts have been made in some disadvantaged environmental zones to create microclimate conducive to high milk production. For example the use of airconditioned houses and irrigation for all year round fodder production. The investment costs have been very expensive. This strategy is not recommended for Nigeria. Attempts

have been made to introduce exotic high yielding dairy cattle but their performance have been remarkably below temperate standards. Pure Friesians produce about 2,000—3,000kg per lactation and crossbred about 1,000kg. In tropical South America, the Friesian and Brown Swiss are kept in places where climatic stress is not severe — for example in high altitude areas. In Ecuador, Brazil and Peru, the Friesians have performed best and produce nearly 4,000kg/lactation/cow. It has been observed that it would take about 25—50 years to increase genetic potential of local breeds for milk yield by 50%. But this can be done through better nutrition and management as have been done in Jos, Plateau by Pullan *et al.*

Small Ruminants:

There are about 30 million sheep and goats which contribute about 35% of the quantity of beef consumed in the country. Their meat is relished and there is great demand particularly for festive and religious occasions. They are widely distributed throughout the country and various surveys have indicated that about 60% of rural house-holds keep small ruminants. In addition to their current economic importance, they have a significant potential to increase the national protein supply not only for meat, but also for milk and generate rural tanning industries. They have a short generation interval. They are hardy and can thrive on poor quality diets. The Southern dwarf breeds are trypanotolerant and because of their size they are easily manageable by livestock producers. In spite of all these, small ruminant production has not benefited from technology improvement in this country. Production has remained in the hands of traditional producers. People keep Sheep and Goats either as a hobby or to provide additional income outside the cropping season. For Small

Ruminant production to make any meaningful impact, we must move away progressively from the present traditional management system whereby the animals themselves take care of their housing, nutritional and breeding requirements to a technology and business — oriented production system.

The immediate problems in Sheep/Goat raising are to improve nutrition and management (which includes housing) animal health care, reproduction and genetic quality. Once there is a clear perception of solutions to these problems, support services of extension, credit and marketing will be required to effect development at the grass-root level. For nutrition, we need to ask ourselves whether to base production on improved pasture, browse plants, feed lot system using grains and Industrial bye-products or a combination of both. For breeding, do we improve genetic quality through selection or cross breeding with exotic animals. Should we select for growth rate, size, milk, twinning or disease resistance, should mating be indiscriminate or scheduled to take advantage of favourable environment. For disease control, have we identified all the diseases that threaten small ruminant production. Do we understand the epidemiology of these diseases, are there vaccines and/or drugs to control them. What type of housing or shelter do they require? Should Small Ruminant Production be integrated with crop production? Will the innovations be adopted by the livestock farmers? What are the economic returns on investment associated with the technical innovations, these questions require to be answered.

As I pointed out earlier small ruminant development has been neglected in many developing countries. A study of livestock development projects in Africa by ILCA indicated that only about 1% of funds allocated by major donor Agencies to

livestock projects in West and Central Africa was for sheep and goats production. Research has not also been seriously encouraged nor are the results so far obtained able to offer significant technical inputs to increased production. However, a new trend is developing in West Africa. Research and multiplication activities are now initiated at Kolda in Senegal, Yanfohla in Mali, Manor River Union Project in Sierra Leone and Liberia, Ejura in Ghana, Ibadan, Shika, Katsina and Chad Basin Authority in Nigeria.

The Federal Government established the Katsina Sheep Farm and recently the Zugu Goat Farm to provide an elite commercial farm from which small farms can obtain breeding stock. There are no over 3,000 sheep at the Katsina farm. Records of production factors are kept and with culling and selective breeding, the productivity of the flock is being gradually upgraded.

Poultry and Pigs:

The prospects of achieving relative self-sufficiency will largely depend on increased production of poultry. This is because of its short generation interval, prolificacy, adaptability of high producing exotic breeds to an environment and availability of appropriate development technology for poultry. Problems of rapid expansion here depends on ready availability of breeding stock and day-old chicks, quality feed, vaccines and drugs. In spite of these difficulties success in the past is remarkable. The 1979 Agricultural Credit Loan Guaranteed Scheme statistics show livestock lending to be N21 million or 64% of total lending. Out of this 19.9 million was for poultry. The maize problem has to be solved preferably by increasing local production. In addition, other available energy feed sources should be used to replace some amounts of maize. Efforts are set in motion to effect quality control of feeds.

Animal Health Problems:

In the developed countries, losses from animal health problems have been drastically reduced during the last few decades through intensive disease control measures. Despite their sustained attention, however, disease losses in such countries are still estimated to account for about 15 per cent of the cost of production.

In Nigeria and indeed all the developing world, Veterinary inputs and activities have only started to expand with the growing livestock industry. Losses through animal diseases occur at a much higher rate than in the developed world and many a times such production losses range between 30 — 40 per cent which could be valued at a minimum of 200 million Naira every year at the 1981 prices.

The list of animal health problems responsible for such an annual toll of invisible national disaster could be inexhaustible but could however be narrowed down to three broad categories namely: epizootic diseases, husbandry and management problems, and chronic debilities. The sources of losses through these problems are identical and could therefore be enumerated as follows:

- (a) Numerical and physical losses through:
 - (i) direct mortality of young and adult animals and birds;
 - (ii) animals lost through abortions;
 - (iii) slaughter of affected or condemned animals and birds.
- (b) Milk losses through:
 - (i) abortions;
 - (ii) increased calving index;
 - (iii) direct mortality;
 - (iv) reduction of output in chronic survivors.
 - (v) milk condemnations due to contaminations.

(c) Indirect Losses through:

- (i) weight loss and retarded growth;
- (ii) breeding deficiencies;
- (iii) condemned parts and organs.
- (iv) opportunity costs e.g. in terms of replacement;
- (v) cost of prevention and control.

Such epizootic diseases that account for the greater part of losses in cattle include Trypanosomiasis, Contagious Bovin Pleuropneumonia, (CBPP), Rinderpest, Brucellosis, Blackquarter, tickborn disease, Streptothricosis, Foot and Mouth disease and reproductive disease like Brucellosis.

In small ruminants, Kata (P.P.R.) or Pneumo-enteritis complex of sheep and goats and parasitic gastro-enteritis. In poultry, the major diseases include Newcastle disease, chronic respiratory disease, Gumboro disease, fowl cholera, avian leucosis and salmonellosis. Other animals and avian species are so similarly affected by various epizootics. In 1981, there were 41 reported out-breaks of CBPP, Rinderpest and all which affected 11,033 head of cattle out of which 378 died. Similarly four of the reported poultry disease caused the death of 26,859 birds, and as many as 594,545 birds were involved. These four diseases were Newcastle, Gumboro, fowl cholera, and pullorum disease.

The management problems causing economic losses include lack of adequate water and feed supply, management malpractices and absence of legalized specific disease free zones and effective movement control. Debilitating conditions are generally caused by parasitic gastro-enteritis, chronic and or wasting diseases most of which are in fact emergent disease conditions like lumpy skin and Johnes disease of cattle, Blue tongue and enterotoxaemia of sheep, chronic respiratory disease of poultry.

During the last few decades we have witnessed agricultural revolution occasioned by technology transfer involving the development and rapid diffusion of high yielding varieties of cereals in the tropics the technological and economic foundations for the development of modern feed-livestock farming in the tropics will involve far more complex research than was involved in the development of the high-yielding varieties of cereals. We have the challenge to carry out location — specific research that is appropriate to our environment, socio-cultural and economic state. For this, I would recommend the systems approach in research leading to a more efficient production system rather than the traditional component research whereby individual researcher works sporadically according to his whims and caprices. Such development: oriented research should lead to a package in housing, breeding, nutrition, and animal health care, to the livestock operator. We must recognize that the innovation packages may differ for different classes of producers (Small, medium and large-scale and for different ecological zones. Whatever innovations we must pass on to the farmer must be technically and economically feasible.

However, the adoption of these techniques will also depend on the skills, capital and cultural resources of the producer. Most peasant farmers are conservative and inefficient in performing productive tasks and allocating resources. Here we need the Extension Agent who will link up the research results to the farmers, design programmes to change their attitudes, improve their technical efficiency and effectiveness in allocating resources. Researchers must realise that the results of their work which is funded with public money is for the benefit of society, and in this respect the farmer. It is not essentially for publication in journals and Institutional Reports.

To satisfy national objectives, livestock enterprise has to be a business and nothing else. The producer must be prepared to invest in infrastructure and cost of technology. He must be skilled enough to adopt technological innovations and astute in taking appropriate management decisions at appropriate times. The success of the poultry industry is based on the business approach rather than the traditional objectives to livestock rearing which may be for social security, hobby et cetera.