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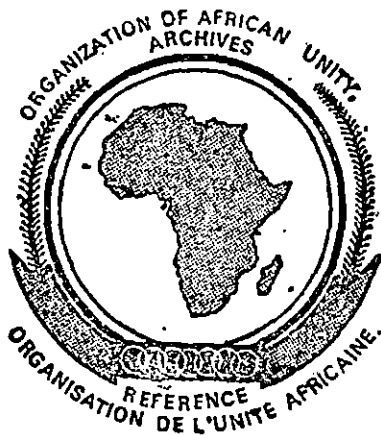
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Utilisation of Agro-Industrial Byproducts, and
Crop Residues in Livestock Production in Africa



Utilisation of Agro-Industrial Byproducts and
Crop Residues in Livestock Production in Africa

Introduction and Justification

With the increase of population of Africa, a large percentage of whom are agricultural, the land available for food production is expanding while that for grazing is dwindling. In Kenya for example the size of grazing land has been gradually decreasing and the overall transfer of land from grazing to cultivation led to a 14 percent fall in livestock carrying capacity (Ministry of Agriculture 1977). In Nigeria, out of a total land area of some 924,000 square kilometres, the estimated grazing land area is 20,720,000 hectares most of which have been degraded due to over-grazing and over-stocking (FMNP, 1981). Generally, natural grazing land is of low productivity and is either over or understocked. The development of improved pasture and planted forage is a very slow process because of limitations imposed by technical, economic and human factors. The rise in demand of major food crops especially of the major cereals makes them inadequate and expensive in feeding livestock.

Agricultural production in many countries of Africa over the past decade, has begun to be better organised as more and more development plans give priority to food production for domestic use. In Nigeria for example, the establishment of Eleven River Basin Development Authorities and Agricultural Development Projects are focusing more on crops development. As a result larger acreages are being mechanized with resultant increase in the number of Agriculture - based industries. However, large quantities of these agro-industrial byproducts and crop residues available in the region which could be used for animal feeding either go to waste or are under utilised and yet a key factor limiting animal production is inadequate nutrition. In the Sudan, a survey on agro-industrial byproducts and crop residues indicated the availability of 4.5 million tons and that the energy present in these byproducts could satisfy about 9% of the maintenance requirements of the national herd. The major byproducts include the following: cereal straws, groundnut hulls and haulms, sugar cane tops, bagasse, molasses cotton-stalks and trash, sesame field residues, wheat bran and cotton seedcake and field residues of sorghum and cotton after crop harvest. In Cameroon, it was reported that cotton seed meal, an agro-industrial byproduct and the major protein source, has promoted efficient growth when fed to non ruminant and ruminants. In Nigeria, the agricultural byproducts are classified into animal waste products, crop residues and byproducts, and industrial byproducts together with the major nutrients supplied. Examples are: Animal waste products - Poultry excreta, feather meal, Hatchery wastes meal, Rumen content, blood meal. Crop residues and byproducts - Corn stovers, cocoa pod, cassava peels, Rice bran, pineapple bran, sugar cane tops, sugar cane bagasse, cocoa beans etc. Industrial byproducts - Saw dust, sewage sludge, molasses, brewers spent grains, Bakery residues, Oil palm sludge, urea etc. In Senegal, crop residues include rice straw, millet straw, sorghum straw, maize cobs, groundnut haulms and bean

haulms while agro-industrial byproducts include hulls/shells of groundnuts and cotton, oilcakes of groundnut and cotton, Brewers grains etc. In countries where an inventory of agro-industrial byproducts have been conducted, similar information would have been gathered. In some countries, it has been shown that without the availability of crop residues cattle will survive the long dry season only with poor health and much weight-loss when the natural grazing land is in poor condition (Okaiyeto, 1984). These products should be considered as a very valuable feed resource and could often constitute a basic component of less expensive rations for livestock. Much of information has been accumulated during recent years by research and experimental work on the chemical and feeding properties of agricultural byproducts but there is lack of knowledge of the effect of these foodstuffs on the performance of animals when used in practical situations and applying different feeding systems. In order to improve the efficiency of utilisation of the ration, more detailed investigation is also needed on the digestion, absorption and metabolism of some of the less well known but locally available by-products.

Objectives and Work Plan

1. To improve the status of animal nutrition and hence the performance of the animal by promoting the use of locally available agro-industrial byproducts and crop residues and by transferring the appropriate feeding techniques to the small farm level,
2. To develop feeding methods for ruminants and non-ruminants based on optimal utilisation of readily available agro-industrial byproducts,
3. To study the possible constraints to the utilisation of locally available agro-industrial byproducts,
4. To identify and strengthen the capability of selected national institutions in carrying out practical oriented feeding experiments,
5. To train extension personnel for the transfer of the technology acquired through the project.

The project will be conducted by the countries in Africa in close collaboration with one another and the OAU/IBAR would serve as the co-ordinator of the activities.

The work plan will consist essentially of the following elements for each type of feed resource considered:-

1. Detailed investigation of the nutritive value and feeding properties of the locally important by-products,

2. Field trials to assess the technical, economical and sociological feasibility of introducing a given feeding system,
3. Organization of seminars/workshops to facilitate the exchange of information, experience, the discussion of results obtained and the planning of future work,
4. Strengthening of the extension services through training courses at the intermediate level in order to transfer the technology to farmers.

A consultant will visit the participating countries for discussions and identification of the institutions. The participating countries will be selected from the following:- Senegal, Ivory Coast, Ghana, Nigeria, Cameroon, Zaire, Tanzania, Kenya, Sudan, Malawi, and Zambia.

1st Phase

Preparatory mission for discussion and identification of institutions.

10.	<u>Project Personnel</u>	M/M	US\$
10.01	Agronomist or Animal Nutritionist (1)	2	12,000.00
10.02	Administrative Support (1)	1	2,050.00
20.	<u>Duty Travel</u>		8,000.00
Total.....			<u>22,050.00</u>

2nd Phase

	Total	1st Year	2nd Year	3rd Year	4th Year	5th Year
	US\$	US\$	US\$	US\$	US\$	US\$
Field trials and experimentation	400,000.00	80,000.00	80,000.00	80,000.00	80,000.00	80,000.00
80. <u>Training</u>						
80.01 Workshop (2)	100,000.00	45,000.00	-	-	-	55,000.00
80.02 National (one in each country)	200,000.00	-	60,000.00	65,000.00	75,000.00	-
<u>Duty Travel</u>	30,000.00	10,000.00		10,000.00	-	10,000.00
Component total...	630,000.00	135,000.00	140,000.00	155,000.00	155,000.00	145,000.00
Total Phases 1 & 2	752,050					
90. Contingencies (15%)	112,800	20,250.00	21,000.00	23,250.00	23,250.00	21,750.00
Grand Total....	864,850.00	155,250.00	161,000.00	178,250.00	178,250.00	166,750.00

Explanatory Note

Amount to cover four institutions/experimental stations operating at US\$20,000.00 per year for 5 years.

National Training courses one in each country for 20-25 participants.

Duty travel for co-ordination purposes.



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