

PROJECT EXPERIENCES IN SENEGAL**ADAMA FAYE
ISRA, KAOLACK, SENEGAL****INTRODUCTION**

Senegalese agro-climatic zones vary from Sahelian in the north to Savanna in the south. Rainfall varies from 300 mm to 1,200 mm. Northern soils are sandy while in the south soils vary from lowland clays to upland lateritic soils.

Several important historical factors have affected agricultural production in Senegal. One is a 1964 law which permitted the redistribution of land not being cultivated. The effect has been to push farmers to produce on all their land, leaving none in fallow. Marketing in Senegal was organized only for groundnuts. Production inputs like seed and fertilizer could be paid in kind using groundnuts. Credit was made available as part of the groundnut extension package and inputs were subsidized.

JUSTIFICATION

Use of animal traction was a response to the need for additional sources of power. Experiments with tractors had failed and labor bottlenecks existed, especially for planting and weeding. There was also a need to harvest groundnuts quickly before the soil became so dry and hard that it was difficult to remove them. The objective of introducing animal traction was to replace some manual labor using equipment that would allow the operation(s) to be more timely, completed more quickly and possibly increase (groundnut) yields through better efficiency.

Donkeys and horses were available in quantity but did not have sufficient draft force for some operations. Mules were socially unacceptable because of their sterility. Oxen were available but neither the Zebu or the N'Dama had the size, conformation and disease resistance thought necessary. Many years were spent trying to develop a new cattle breed by crossing Zebu and N'Damas. But the process was too complicated for farmers and the research organization was never able to produce enough of the improved breed to have any impact.

METHODOLOGY

Studies on the work capacity of different types of animals were carried out for the various operations and soil types found throughout the country. Considerable effort was devoted to developing animal traction tools. Stables were developed in part as a means of collecting manure to be used in maintaining soil fertility. The effects of manure, timing of operations, and the field operations themselves were studied in terms of their impact on soil structure and soil fertility. Production systems were studied looking at different rotations and the effects of long-term animal

traction use. These were evaluated both for physical and economic results.

Farmers typically had livestock traditions and were capable of caring for their animals with the help of government vaccine programs. Pre-extension activities were carried out at a number of centers throughout the country (PAPEMs). These served as sites for multilocal trials as well. The Experimental Units served as a pilot project where research problems could be tested on farms and extension problems and procedures could be tested as well.

Extension activities were carried out by parastatal development organizations. These activities included:

1. Supplying oxen and equipment;
2. Training oxen at centers;
3. Training farmers in tillage techniques;
4. Supplying credit under easy terms; and
5. Supplying other inputs at subsidized prices.

RESULTS

Animal traction by itself has not had a yield effect in Senegal. It has increased the area under cultivation by increasing the speed and reducing the difficulty of work. Perhaps the lack of yield effects is due to the fact that certain techniques, such as plowing under organic matter at the end of the rainy season, have never been adopted by farmers. Comparisons of profitability can be very hazardous due to the lack of homogeneity of conditions between the point of departure and an existing situation.

With regard to animal health, the government veterinary service lacks the means to meet the demand for its services. In spite of all this, animal traction is well-integrated into the farming systems of Senegal. The diffusion of animal traction has proceeded rapidly using horses in the north and oxen in the south (Senegal has the largest number of animal traction units in West Africa, over 200,000). Over time the use of donkeys has decreased and horses have increasingly been used for transportation as well as field work.

Statistics for the Sine-Saloum region show the following results:

	<u>1970</u>	<u>1980</u>
Area Under Cultivation (ha)	770,000	935,000
Pairs of Oxen	2,100	26,600
No. Ha/Pair of Oxen	39	9.7

Additional problems remain in the areas of preventing soil erosion, maintaining soil fertility and with several aspects of the availability of animals. The availability of animals for hire is limited by their use in a number of activities and by the importance of timeliness and climatic conditions. Some farmers also find it difficult to replace aging animals. At the national level there is a need for animal traction to help increase agricultural production. However, as both animal and human populations grow in numbers, there is increasing competition between the two for land and other resources.

Plowing at the beginning of the rainy season is no longer advised. Plowing has been demonstrated to increase yields but delayed planting reduces yields so much that the advantages of plowing are not worth the risk of planting being delayed.

Senegal has recently adopted a new research approach, placing farming systems research teams in each region of the country. These teams are identifying problems specific to each region and will work to test and develop locally adapted solutions. This effort is only now beginning to produce preliminary results.

