



Animal Traction in Cameroon and Zaïre

Impact, constraints and experiences



The impact of animal traction for production in a permanent farming system in North-West Cameroon: the role of the PAFSAT Project

by

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Abstract

In the North-West Province of Cameroon, the traditional farming system based on crop rotations is threatened by new constraints. Conditions are such that mechanization of cultivation may accelerate land degradation. Measures to combat the problems were introduced in 1985 by the Project for the Promotion of Adapted Farming Systems based on Animal Traction (PAFSAT). PAFSAT promoted an alternative "Permanent Farming System" adapted to the ecology and to the resources and knowledge of the local farmers. Up to 1987, 26 farmer training sessions had been undertaken by PAFSAT and about 700 target farmers have been settled in over 110 villages. Land preparation techniques make full use of organic wastes. Most tools are locally manufactured or assembled. In 1986 the small local producer "Catmi" manufactured 500 animal-drawn ridgers, 200 bullock carts and 40 planters.

Introduction

The Republic of Cameroon is a developing country with an area of 475,400 km² and a population of 9.6 million inhabitants. About 66% of this population live in rural areas and depend directly on agriculture and related activities. Small farmers predominate and in 1985 these cultivated an average of 1.8 hectares. The majority of the farms are family-based units in which farmers make their own decisions on the use of natural and economic resources. The government realises the productive capacity and potential of the small far-

mers and has been making efforts to help this sector in order to increase crop production.

The North West Province is one of the ten principal administrative units of the country. Its total area is 17,910 km², representing nearly 4% of the national territory. The region is characterised by uneven mountainous highlands with volcanic features, ranging from 2400 m to 6000 m above sea level. The vegetation consists of grassland savannas with sparse forests spreading on the lower fringes of the plateau. The average rainfall amounts to 2000 mm (falling between mid-March and mid-November) and the temperature ranges from 15 °C to 28 °C. There are approximately 400,000 cattle in the region.

Recent animal traction activities in the Province started in Ndop in 1968 and in RTC-Mfonta in 1969 and animal traction became a major extension programme of the Wum Area Development Authority (WADA) in the Menchum region. Animal traction was extended to the other areas of the Province in 1980. The Project for the Promotion of Adapted Farming Systems based on Animal Traction (PAFSAT) started in 1985 as a result of technical co-operation between the Republic of Cameroon and the Federal Republic of Germany. PAFSAT is an agricultural project that promotes animal traction as an appropriate technology and accessible natural resource which can accelerate the adoption of the per-

manent farming system being promoted by PAFSAT.

Impact of animal traction

Between 1985 and 1987, PAFSAT organized 26 training sessions in which a total of 699 target farmers (652 farmer families and 47 women groups) were trained and settled in over 110 villages. There is increasing interest in the new technology and applications are greater than training facilities. In 1987 only 30% of the total applicants could be trained. The number of women groups increased by 42%. Over 90% of the trainees were crop farmers but 10% of the trainees dropped out after training.

Animal traction has been adapted to various farming activities:

- clearing of land with a roller cutter;
- plowing;
- harrowing, and raking with harrow;
- puddling in irrigated rice plots;
- sowing of rice and wheat seeds with seeders;
- ridging with adjustable ridger;
- weeding and covering fertilizer;
- incorporation of farm residues;
- transportation of farm products such as fire wood and organic manure with ox carts.

A permanent farming system

The traditional farming system is characterised by crop rotation. This farming system which regenerates its own fertility over the years is constantly being threatened by emerging constraints:

- population growth (3%);
- increased cultivation of cash crops such as coffee and plantains;
- increased population of livestock;
- transhumant cattle in search of dry season feed;
- reduction of the fallow period and therefore of the fertility levels;
- reduction of soil organic matter;

- acceleration of erosion, especially by heavy rainfall in hilly regions like the North-West Province;
- burning of organic matter;
- clearing methods that expose the soil to erosion risk.

Under such conditions mechanization of land preparation may accelerate land degradation. This may in turn result in increased land pressure, further exposure of land to erosion and increased mono-cropping and resultant loss of symbiotic benefits associated with mixed- and inter-cropping.

New developments in animal traction

To enhance animal traction as well as alleviate these constraints, a permanent farming system emphasizing soil conservation and improvement was introduced, and this innovation led to the formation of PAFSAT in 1985 in order to promote it. The "permanent farming system" approach is based on a combination of various elements including:

- contour bonds reinforcing ridges, combined with use of organic matter in seedbed preparation;
- annual crop planting on ridges between contour bunds;
- crop rotation incorporating a high proportion of legumes and green manure for fertility;
- leguminous fodder fallows;
- mixed and double cropping;
- use of animal manure, compost and crop residues for fertilization;
- minimum tillage.

These new techniques were adopted by both target and neighbouring farmers. Farmers accepted the techniques for gaining soil fertility as these were appropriate to their resources and local knowledge systems. The use of permanent crops was seen as a way of integrating the interests of both male and female farmers.

Animal traction implements

Most tools are manufactured in Cameroon. This facilitates the necessary adjustments to field needs and local manufacturing possibilities:

The *adjustable ridger* is adapted to make ridges varying from 40 to 80 cm to accommodate planting practices and crop types. Breaking every other ridge can increase the size of alternate ridges to 120 cm. Adaptations were based on an imported European model, and plow frames were also adjusted to take the ridger. The *roller-cutter* is used for clearing land for cropping and for incorporating vegetative residues into soil. To date fifty such implements have been made by Catmi, the small implement workshop in Bamenda. Most *bullock carts* are locally made from relatively inexpensive imported axles and wheels.

Support given to local manufacturers and workshops has included studies of needs and preparation of prototypes, calculation of production cost and prices, and technical advice and supervision. Other systems of decentralised maintenance workshops are being stu-

died. In 1986 Catmi manufactured: 500 ridgers, 200 bullock carts, 50 roller cutters and 40 seeders.

Résumé

Dans le nord-ouest du Cameroun, le système d'exploitation basé sur la rotation des cultures est menacé par de nouvelles contraintes. Dans les conditions actuelles, la mécanisation des travaux agricoles pourrait contribuer à la dégradation des sols. Des mesures pour contrecarrer cette évolution furent introduites en 1985 par le projet Promotion of Adapted Farming Systems based on Animal Traction (PAFSAT). Le PAFSAT vise à mettre en place un système culturel permanent adapté aux conditions écologiques et aux connaissances et ressources des paysans. 699 fermiers pilotes ont été répartis sur 110 villages entre 1980 et 1987. PAFSAT a aussi organisé 26 stages de formation. Ce projet introduit de nouvelles techniques culturales visant à la conservation et à la préparation des sols et faisant une utilisation intensive des engrais organiques. Le soutien technique a renforcé la fabrication locale des outils qui utilise un certain nombre de pièces importées. En 1986, Catmi, un atelier local, a fabriqué 500 buttoirs, 200 charrettes à boeufs, 40 planteurs.