

Prospects of Animal Traction in Southern Nigeria, an Empirical Study

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Abstract

The objective of this paper is twofold. First, it reports on the degree of adoption in Oyo state of Nigeria of modern technology, with particular emphasis on mechanical and labour-saving innovations. It proceeds to make a strong case for animal traction as a viable alternative to tractor technology.

It was observed from farm survey and analysis that tractors and related innovations were not being adopted for various reasons. Some of the reasons include: smallness of farm, untimeliness of tractor services, uneven topography, lack of spare parts, etc. As a result, farmers in Oyo state depend on manual labour for almost all their farm operations.

Preliminary investigations reveal that the absence of appropriate technology is one of the impediments to agricultural production transformation. Against this background, this paper recommends the introduction of animal traction to farmers in the rain forest zone of Nigeria, where hitherto, the practice has been relatively alien.

Introduction

The stagnation that has prevailed in Nigerian agriculture has been due largely to the fact that the majority of farmers have benefited only marginally from recent advances in food production technology. These advances involve the use of farm machinery, improved varieties, inorganic fertilisers and agro-chemicals (IAR & T, 1985). One reason for the low rate of adoption of the innovations is their inappropriateness to farmers' conditions. Therefore, the development and adoption of appropriate technologies along with complementary services could considerably increase a farmers' productivity and income. Increases in productivity on individual farms will add up to a substantial increase in aggregate production (Daramola 1987).

The Nigerian agricultural scene is largely dominated by small farms of less than 2.0 hectares, which collectively account for over 90% of the total agricultural production in the country (Falusi and Olayide 1980; Idachaba 1985). Since the vast majority of such farms will probably remain small their production problems deserve to be studied and appreciated before they can be solved. This paper seeks to contribute to the on-going search for appropriate technology for farmers while helping to overcome some of their farm production problems.

Methodology

The study was conducted in Oyo State in two distinct ecological zones based upon climatic and vegetational factors namely, western rain forest and intermediate savanna. Previous studies conducted in the state reveal that in 1979, 15% of the estimated 755,000 farming households in the state were adopting improved seeds/seedlings, the most widely adopted innovation (Rural Agricultural Survey 1980). By 1985, this percentage of adopters dropped to 12% ; 11% used agrochemicals; 7% adopted fertiliser; 6% patronised formal sources of credit, while less than 5% benefited from technical/extension services (Rural Agricultural Survey 1986).

The research findings reported are not as extensive as the preceding rural agricultural sample surveys due to resource limitations. Hence, a balance was struck between available resources representativeness and the need to analyse primary data collected.

Information on farm management practices was collected using structured questionnaires. Secondary data includes records of supply and distribution of agricultural inputs within the state from all the agencies involved. See Daramola (1987) for more detailed discussion.

From a random sample of 62 villages scattered all over the 24 agro-service centre (ASC) areas in

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the state, another sample of 122 cassava/maize farmers was selected. Three of the ASCs (Igboho, Saki and Tede) fall under the jurisdiction of the defunct Oyo North Agricultural Development Project (ONADEP). The implication of this observation is that the project authorities ensured a more regular supply of inputs and extension due to the special nature of their structure and funding.

Results

There was a marked difference in the level of adoption observed for project and non-project farmers. Generally, the adoption scores of farmers using package of recommendations as standard was abysmally low. This is not unexpected, because recommendations were usually based on on-station research findings which were largely at variance with farm circumstances.

An aggregated adoption score model, which assigned scores to farmers based on various levels of the innovations used relative to recommended level, was employed. The rationale for this is that the quantity used is more important than use versus non-use, especially in relation to threshold levels. According to Schutjer and Van der Veen (1977), the major technology issues relate to the extent and intensity of use at the individual farm level, rather than to the initial decision to adopt a new practice.

Employing a continuous variable between two values (0 and 1), only 38 out of the 122 respondents obtained up to half of the maximum adoption score. Seventeen farmers out of the 122 respondents did not adopt any of the innovations. No farmer operated at the recommended level.

The tractor-hiring services of the agro-service centres was almost non-existent with many of the tractors in unserviceable conditions. Where such services were available the waiting lists led to delayed planting and subsequent crop failures. As a result, the subsidy on mechanisation (especially tractor) did not get to farmers. Against this background, the inefficient and rudimentary rural labour market became the only option available to farmers. The government policy of encouraging tractorisation through subsidized credit, import duties exemption, and subsidised service costs has led to negligible output growth, besides being a burden on the public purse, whereas similar, or even higher contributions could have been achieved with indigenous draught power resources (Farrington and Abeyratna 1982).

Other important considerations against tractorisation are the associated costs of capital (fixed) and operating (variable) costs of tractors.

The only obvious advantage of tractors over traditional draught system is in the cultivation of large areas of rainfed or irrigated farmlands (Siriweera, 1989). Due to farmers' land tenure structure-small and fragmented holdings-tractorisation usually is an unprofitable business in the rainforest zone of Nigeria. The technical staff required in operating and servicing tractors is not readily available. Similarly, the foreign currency for spare parts importation is also scarce. Tractors are also unable to work on farmlands whose topographies are uneven, or with dense vegetation and swamps.

In the light of the foregoing, animal-drawn equipment can significantly raise labour productivity during the labour bottle-neck periods.

Conclusions

Three technological options are available to farmers for production - manual operations, draught and animal power, and mechanisation. The first and third options have been shown in this paper, to have restrictions for different reasons. Draught animal power has its own peculiar technical, economic, institutional and social implications, which would need to be addressed before it can be successfully introduced and massively adopted. It also stands to reason that AT per se cannot overcome the problems of agricultural production in southern Nigeria. It has to be combined with improved, simple and inexpensive hand tool technologies which should be appropriate to local circumstances. In addition to this, the package approach to promoting technological innovations is more desirable than individual innovations. Institutional and infra-structural support services such as good access roads, market, credit facilities, extension services, etc, have been reported to significantly influence adoption (Daramola, 1987).

In order to surmount the task spelt out above, the farming systems research approach seems most appropriate in investigating and developing draught animal power for farm production. In the southern (rainforest) zone of Nigeria, where draught animal power is relatively alien, the diagnosis of possible constraints constitutes the initial initiative. This should be followed by designs. The communication of findings through extension network to farmers as well as gradual removal of non-technical constraints through collaboration with policy-makers, are capable of achieving desired results. Essentially, the more objective and structured questionnaire techniques would have to be combined with the subjective rapid rural appraisal and farmer discussions.

Specifically in the rainforest zone of southern Nigeria, baseline and 'ex ante' studies are urgently required in evaluating some hypothetical policy interventions. Several problems are anticipated which seem daunting, but with adequate planning and relevant studies, rapid success can be recorded in adoption. Problems to be addressed include the menace of trypanomiasis and possible

breeding/importation of tolerant and/or resistant species; the choice of animal and sufficient quantity; the creation of liberal credit facilities to overcome the initial capital costs involved; the handling of animals in the execution of farm operations. This list is by no means exhaustive as further research will doubtless highlight other problems.

Résumé

Cette communication commence par faire le point sur l'implantation des technologies modernes dans l'Etat d'Oyo (Nigéria) et met un accent particulier sur les innovations mécaniques et sur celles qui permettent une économie de main-d'oeuvre. Elle s'emploie ensuite à plaider en faveur de l'utilisation de la traction animale en tant qu'alternative viable à la tracteurisation.

Des études et des enquêtes en milieu paysan ont révélé que les tracteurs et d'autres innovations connexes étaient très peu répandus. Parmi les raisons évoquées pour expliquer ce phénomène: la petite taille des exploitations, l'irrégularité des prestations de services en tracteurs, le relief accidenté, l'absence de pièces de rechange, etc. En conséquence, les paysans de l'Etat d'Oyo se voient obligés d'exécuter pratiquement toutes les opérations culturales à la main.

Des études préliminaires révèlent que l'absence de technologies appropriées constitue l'un des obstacles à la transformation de l'agriculture. Sur cette base, la présente communication préconise l'introduction de la traction animale dans la zone forestière humide du Nigéria, où cette technique est jusqu'à présent demeurée peu pratiquée.

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