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Report of a Seminar

# Women and Agricultural Technology: Relevance for Research

Volume 2 – Experiences in International  
and National Research

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# **Women and Agricultural Technology: Relevance for Research**

## **Volume 2 - Experiences in International and National Research**

**Report from the CGIAR Inter-Center Seminar  
on Women and Agricultural Technology**

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Women and Agricultural Technology:  
Understanding the Needs of Both the Direct Users and the  
Ultimate Beneficiaries of  
ILRAD's Research

by

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## I. INTRODUCTION

Over the last 15 years, development specialists have been paying increasing attention to the effects of development programs on recipient populations. The earlier assumption that the effects of national economic development would trickle down to the needier segments of the population has been seriously questioned. It has been realized that a special, conscious effort is required to improve the lot of the neediest of the population. As more experience in the determination of basic needs has been gained, a number of special topics have emerged as being of particular relevance. Among these, a high priority is being given to the question of the role of women in economic development.

In the past decades, numerous examples have come to light of women being excluded from the development process. Development has been designed with little or no consideration of the role of women or of the possible negative effects of an intervention on women, both as persons and as mothers (Tinker 1976). Although for example, there was ample ethnographic information detailing the important role of women in agriculture throughout most of the African continent (see Fig. 1), this role was largely ignored (Nelson 1981). In many African production systems, more so in agricultural than pastoral societies, women have their own fields and/or their own sources of income and have specific and often substantial contributions to make to family provisioning. Yet agricultural interventions were designed as if the family in Africa was provisioned in the same manner as the traditional family in the West, with husband/father as the bread-winner and women having only domestic responsibilities. This mistaken assumption has, for example, led to irrigation projects being designed which provide only men with fields to be used largely for cash crops and depriving women of their fields and kitchen gardens critical for subsistence production (Broch-Due 1983, Conti 1979, Dey 1983). Provision of credit has been made almost exclusively to males, ignoring these independent female occupations in intact households, as well as the high proportion of female-headed households, estimated at over 20% on the African continent (Carloni 1984, Tinker 1976).

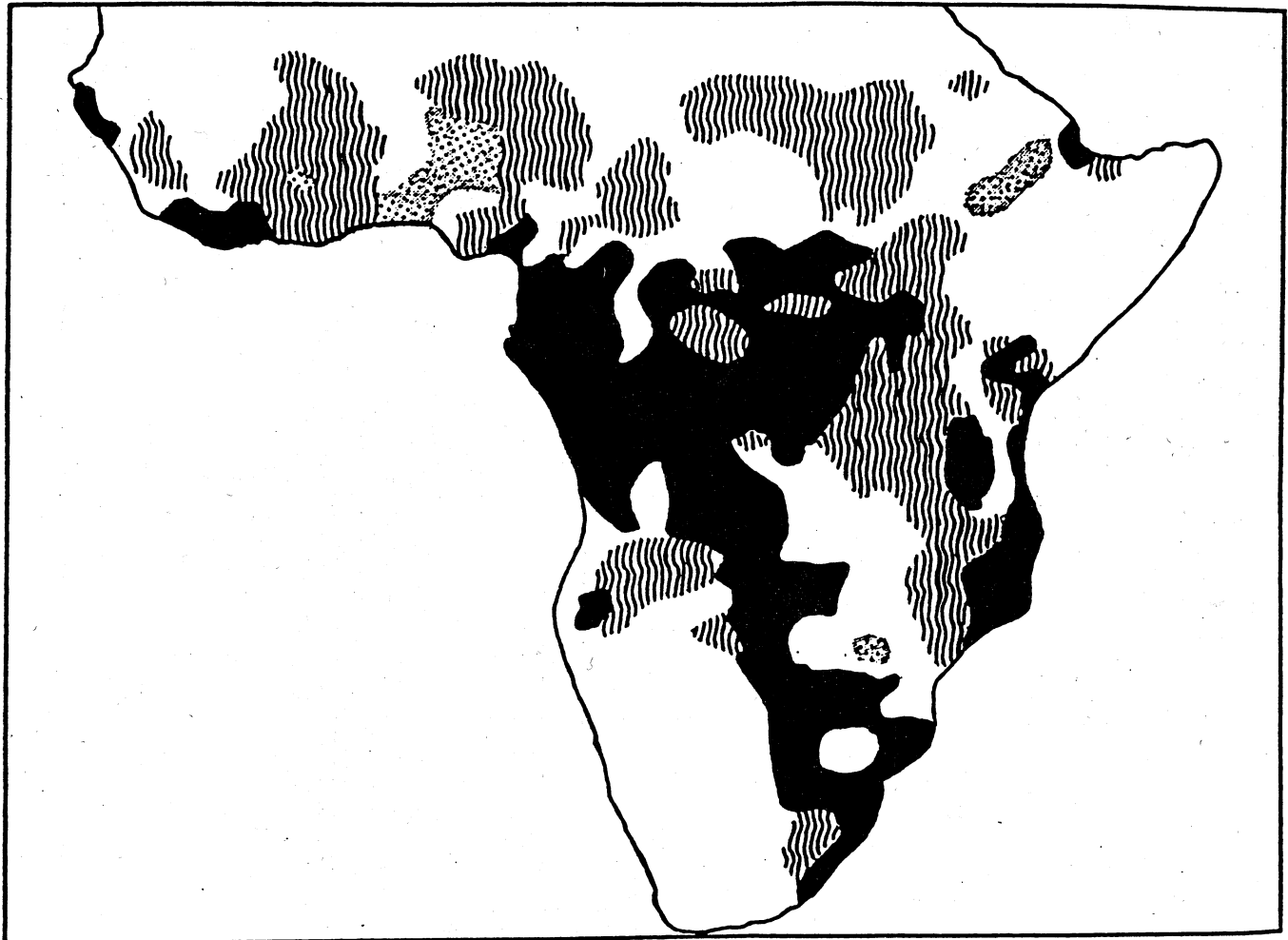
In view of the increasing attention being paid to the specific effects of development interventions on women, it is fitting that, at this time, the CGIAR centers consider their activities, past and proposed, in the light of the accumulating knowledge about the users' perspective, and particularly about the important role women have to play in development.

## II. ILRAD'S MANDATE

While ILRAD is well aware of the important issues relating to women and development, its mandate does not provide for direct involvement in these issues. ILRAD's mandate, as established by the Memorandum of Agreement signed with the Government of Kenya states in part:

"The purpose of the Laboratory will be to serve as a world centre for research on ways and means of conquering as quickly as possible,

FIGURE 1



Men only prepare ground, women do all the other work
  Men do most of cultivation

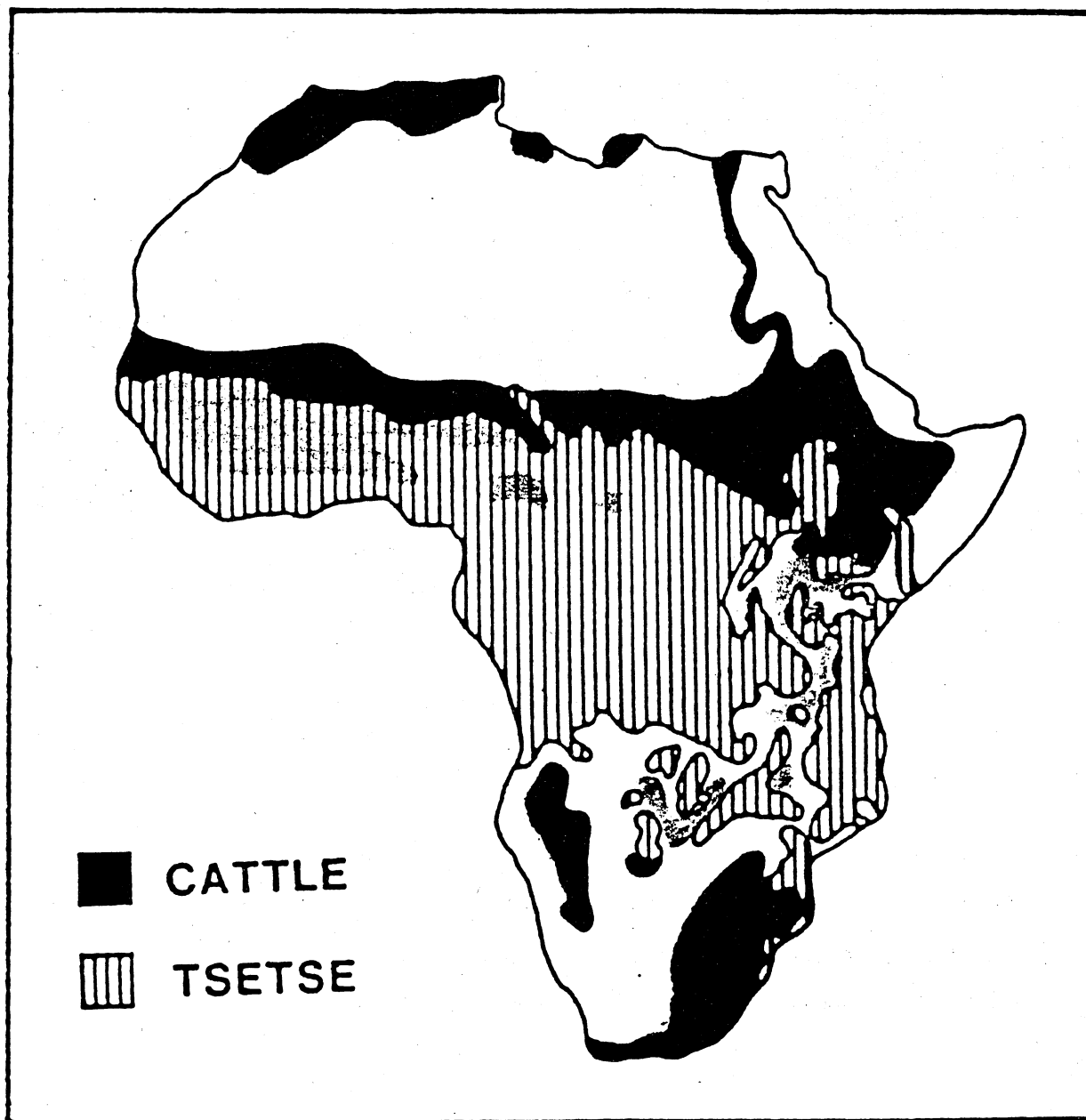
Men take part in cultivation, but women do most of it
  Not available

Note:

The map is taken from Boserup (1970:18). As she notes (1970:17) "This map was prepared forty years ago by H. Baumann, a German expert on African subsistence farming". Thus it represents a period of time before there was significant cash cropping or migration to urban areas. Nevertheless, it can be viewed as representing a cultural tradition which still plays an important part in the contemporary division of labor. Boserup goes on to discuss the continuing importance of females in African agriculture. She states (1970:22) "Thus, the available quantitative information about work input by sex seems to indicate that even today village production in Africa south of the Sahara continues to be predominantly female farming".



FIGURE 2



Major cattle-production areas and tsetse-infested zones in Africa. There is little overlap except in the regions of West and Central Africa where trypanotolerant N'Dama and West African Shorthorn cattle are kept.

major animal diseases which seriously limit livestock industries in Africa and in many other parts of the world. The laboratory will concentrate on intensive research concerning the immunological and related aspects of controlling Trypanosomiasis and Theileriosis (mainly East Coast Fever).... In carrying forward its program, the Laboratory will develop close linkages with governmental and regional organizations undertaking research on the same or related disease problems."

In this context, it is critical to distinguish between the direct users of ILRAD's research findings, e.g., national research centers, veterinary departments, regional organizations, and the ultimate beneficiaries, the client populations who will eventually benefit from the results of ILRAD's efforts together with those of the direct users. It is clear from ILRAD's structure and rather unique mandate, that a large part of its research can be described as basic.<sup>1</sup> ILRAD must rely on contacts with its direct users to provide the necessary information about their needs and the needs of their ultimate clients. ILRAD was clearly never intended to be primarily a field-oriented research organization.

We believe that this special role of ILRAD is well in keeping with expectations for international centers. As noted by TAC (TAC Priorities 1979):

"As clearly indicated at the 1977 Bellagio Conference, the trend is for national programs to request international research to carry out activities which may be different from their own, in particular those which they are not ready to undertake at present either due to lack of sufficient funds, staff and facilities or because they consider these activities as having a longer-term perspective; for example some aspects of path-breaking research..." (our emphasis)

Nevertheless, as an international agricultural research center, it is incumbent upon ILRAD to be aware of the potential benefits and other effects of its research on the ultimate beneficiaries.

### III. THE ULTIMATE BENEFICIARIES OF ILRAD'S EXPECTED TECHNOLOGIES

ILRAD is researching various ways of controlling trypanosomiasis and theileriosis, primarily through the development of vaccines, the improved use of chemotherapy and the exploitation of existing genetic resistance in certain breeds of domestic livestock. These diseases were chosen by TAC and ILRAD's Board because of their overwhelming importance. In Africa alone, these diseases are believed to be responsible for the deaths of 3 million head of cattle a year; in addition they cause substantial productivity losses. Trypanosomiasis has effectively

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<sup>1</sup> According to the second review of the CGIAR, research can be classified into four categories: basic, strategic, applied and adaptive. According to this classification, ILRAD's work can be viewed as essentially strategic (i.e. designed for the solution of specific problems); however, given the specific immunological approach which the center was asked to pioneer, a significant proportion of its efforts have had to be devoted to basic research.

precluded the keeping of livestock on approximately 7 million square km of land, which could otherwise support approximately 125 million head of cattle (Murray and Gray 1984) and contribute substantially to alleviating Africa's ever-increasing protein deficit. Thus, in considering the potential beneficiaries of ILRAD's research, one can distinguish between producers who currently live in livestock producing zones and those who live where domestic livestock production is virtually non-existent.

#### (A) Current Livestock Keeping Areas

Over 90% of the domestic ruminants in Africa are owned by small holder farmers and pastoralists; by Western standards, these animals have very low productivity. This is partially because producers do not often attempt to maximize production per unit animal; but it is largely due to high incidence of disease and low development of veterinary infrastructures.

In proposing possible applications of improved methods of disease control, ILRAD must consider, with its national collaborators, the possibilities available for the delivery of the necessary veterinary services. Whereas in the developed world, access to veterinary drugs, vaccines, etc., is solely through licensed personnel, in much of the developing world, both veterinary services and producers apply modern veterinary treatments. Decisions on the supply and application of veterinary materials are matters of national policy, but whether vaccines or drugs are applied by the Veterinary Department or producers themselves, they need to be simple, safe in application, and be easily distributed through the existing infrastructure. We rely on our contacts with national organizations, especially veterinary departments, to determine the feasibility of introduction of improved methods of control of trypanosomiasis and theileriosis.

An important consideration in developing control measures for disease is the cost of implementation. A conscious effort must be made to produce vaccines/drugs which are affordable by the average producer who keeps low-yielding animals. In the long term, it might be possible for higher yielding, improved animals to be introduced; but in the medium term, this is unlikely to happen throughout many areas of developing countries.

In considering the eventual beneficiaries of ILRAD's research into trypanosomiasis and theileriosis, both inter- and intra-household differences among end users must be kept in mind. In each area, there are rich and poor households which will have different problems and differential access to resources. Recent experience has also shown that within households there are divisions of labor responsibility, and benefits between men and women.

Inexpensive disease control measures will be of particular advantage to the poorer producers. Risk aversion is particularly strong in households at the margin of subsistence. High disease incidence, in the absence of workable controls, makes poor producers reluctant to invest in livestock even when they have capital to do so. In addition, as smaller farmers have proportionally fewer animals, the loss of an animal through disease has a much greater impact on his welfare and that of his family, than it has for the richer farmer with more animals and more surplus capital.

When we consider that the bulk of households in Africa that are headed by women fall in the poorer stratum, the importance to them of cost-effective disease control is obvious.

Livestock in Africa fulfill a variety of important functions. They may provide milk, occasionally meat and are often an important source of cash income. In addition, cattle have a direct impact on crop production through the provision of manure and traction. Livestock also serve important investment and store of wealth functions. In different production systems, the relative labor input and benefit derived from animal keeping varies significantly within the household. In some systems, livestock are exclusively owned by men, while women have important roles in their care. In other systems, especially where women have independent sources of income, women individually own and care for their own animals, and benefit directly from the proceeds of sales. Women, usually, are more likely to benefit directly from increased milk supply, whereas men are more likely to benefit directly from increased draft power. For pastoralists, lower disease incidence will mean more milk for women, and more cash income for the family. Such income is usually controlled by men, but separate intra-household economies are less well developed in pastoral societies. Clearly, there is great complexity among production systems in Africa, which national-level organizations must take into account in their policy decisions on the provision of veterinary drugs and services.

#### (B) Areas Where Trypanosomiasis Currently Curtails or Precludes Ruminant Livestock

Large portions of Africa are affected by trypanosomiasis to such an extent that livestock keeping is virtually non-existent. Fig. 2 shows the distribution of trypanosomiasis and cattle keeping in Africa. Approximately 7 million km<sup>2</sup> are devoid of cattle because of trypanosomiasis. It is interesting to note that most of this area includes production systems in which most of the agricultural work is traditionally done by women (see Fig. 1). ILRAD is working very closely with ILCA, at sites in a number of African countries, to determine the nature of the resistance to trypanosomiasis found in some breeds of domestic livestock. It is hoped to determine levels of productivity under different levels of trypanosomiasis challenge, identify suitable genetic markers, and thus eventually to be able to selectively breed animals of sufficient resistance to survive and produce well in these areas. It is not within ILRAD's mandate or resources to determine the eventual micro-level impact of the introduction of trypanosomiasis-resistant animals to these areas. However, through collaboration with ILCA, national governments and other regional and international bodies, these issues will be fully addressed.

#### IV SUMMARY

ILRAD is well aware of the need for eventual adaptation of proposed new technologies to specific user groups. It views this as a long-term national responsibility. Through various training activities and other collaborative efforts with national-level organizations, ILRAD is developing the cooperation which is essential for the eventual support of site-specific work. To enhance that possibility, even now, at this early

stage of our strategic research, ILRAD is cognizant of, and takes into account, the situations of both its direct users and the eventual end-users, especially in terms of (1) infrastructural constraints (e.g. to production and delivery of vaccines, introduction of new or improved breeds of livestock, and (2) the need for cost effectiveness of the final product.

Nevertheless, ILRAD must be circumspect in acceding to potential national demands. As the second review of the CGIAR has noted, many less-developed countries "would like the Centres to develop technical assistance activities in their own countries and could easily over-extend the management capacity of Centres and divert them for their main research programs". ILRAD, in conjunction with its sister institutions must encourage, but not replace, site-specific national-level efforts aimed at fully incorporating the users' perspectives.

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