

INTERNAL  
ID 95214

Unpublished  
156  
[1989]

CIMMYT WORK IN DIRECTING ASSISTANCE TO DEVELOPING COUNTRY  
WOMEN: A REVIEW

Judith Carney

Economics Program

## INTRODUCTION

The principal manner in which CIMMYT has directed assistance to women in developing countries is through its work in on-farm research, known as on-farm research with a farming systems perspective (OFR/FSP). Over the past decade the commitment to OFR/FSP has grown with the increased involvement in strengthening the research capacities of national agricultural research centers. OFR/FSP activities have reached developing country women in two broad but interrelated areas: 1) the development of methods for sensitizing researchers to the needs and circumstances of a target group of farmers; and 2) workshops and training programs in the effective use of the methods. This paper's objective is to review the areas in which OFR has assisted developing country women and to highlight current research activities of relevance to women.

### 1. CIMMYT'S PROCEDURES FOR ON-FARM RESEARCH: AN HISTORICAL REVIEW

CIMMYT's entry into on-farm research dates from the early 1970s when interest began focusing on ways to understand the differential adoption rates of improved maize and wheat technologies. A series of studies resulted, which showed farmers adopt technologies that are appropriate to their agro-climatic and socio-economic circumstances and

reject those that are not (summarized in Perrin and Winkelmann 1976). Out of this work emerged two concerns central to CIMMYT's work in OFR/FSP: 1) to involve the rural poor in productivity increases available through CIMMYT's research activities; and 2) to orient production and crop improvement research towards the needs and circumstances of such farmers.

CIMMYT's Economics Program has been a major participant in CIMMYT's work on OFR/FSP. One major impact of the Economics program over the past decade has been the development of research methods. In the planning stage of OFR/FSP a multidisciplinary research team identifies the primary socio-economic and agro-climatic circumstances affecting farm production. Once clarified, the information is used to determine research priorities. The priority components are then further investigated in the experimental stage in order to formulate technologies that improve upon farmers' practices. These experiments are tested on farmers' fields so that technology is developed under conditions similar to those farmers experience. Technologies are then recommended after careful testing against farmers' practices in several locations and after economic analysis of the results.

The principal procedure in OFR/FSP of direct bearing to the rural poor, particularly women, is the identification of a recommendation domain, defined as a "homogeneous group of

farmers who share the same problems and possess similar resources for solving these problems" (Low 1986). Since a recommendation domain enables researchers to think about a key element of applied research, (i.e. targeting), the manner in which it is defined is critical to assisting the rural poor. While the concept is referred to as a research tool, not a policy instrument (Tripp 1986), its definition is shaped by the policy objectives of the countries in which CIMMYT is engaged in on-farm research.

To the extent the population is made up of female farmers, the recommendation domain concept applied correctly should identify their special technical needs. However, the concept is not well developed for intra-household issues (see below). While the recommendation domain concept has not yet been employed to target a specific group of disadvantaged women, its potential is receiving increasing attention within both CIMMYT and the international research community.

## 2. DEVELOPING EFFICIENT RESEARCH METHODOLOGIES

### 2.1 On-Farm Research on Women's Work in Production and Processing

OFR/FSP undertaken in collaboration with many national programs has brought forward women's important role in productive activities. Research by Ashraf (1976) and Mwamufiya and Fitch (1976), for instance, provided early information on rural labor patterns, including the gender division of labor, in small-farm production in Pakistan and Zaire, respectively.

More recent on-farm research has illuminated the relationship of technology generation to women's work and encompassed: the impact of technological change, especially the use of combine harvesters, on female labor markets [Pakistan] (Smale 1987); the relationship between women's time and food processing [Ghana and Ecuador] (Tripp 1985); the importance of developing maize varieties suitable for women's traditional food processing methods [Malawi] (Blackie 1988); and the relationship of women's time allocation in on-farm and off-farm work to technology utilization [Swaziland and Zimbabwe] (Low 1986).

## 2.2 Women as Decision Makers

While the analysis of on-farm decision-making is an important aspect of the Economics program's agenda, only recently have studies begun illuminating the role of female decision-making in technology adoption. A recent study on changing maize production practices in Ghana, for instance, showed that women adopt new technologies as fast or faster than men (Tripp et.al. 1987). But the fact that women only represented 15 percent of the study's sample and of these, only five grew maize as a monocrop, has uncovered additional areas that need to be researched.

The first is sample bias. As the farmers in the study were randomly drawn from the list of people who had attended the agricultural verification-demonstration trials, the low participation of female farmers needs better understanding. Secondly, given the importance of maize as a food crop and Ghanaian women's pre-eminence in food cropping, more work needs to be done on whether they are receiving equal exposure to new varieties and improved cropping practices. Additional research is needed on female decision-making, particularly why they tend to concentrate on intercropping and food crops. Finally, the study's discovery that women's maize practices vary from men's may be of critical importance in the design of relevant agricultural technologies. For instance, if women are the dominant food

farmers but only grow intercropped maize, then agronomic improvements and recommendations need to be adjusted to this practice. These issues, generated out of disaggregating data by gender, have broader implications for research methods since they are central to the implementation of appropriate agricultural technologies.

### 2.3 Current Methodological Issues of Relevance to Women

The explosion of research on women's role in agricultural production over the past decade and particularly, increasing documentation on the differential gender impact of technological change, has generated a number of new research directions on women of direct relevance to CIMMYT's OFR/FSP work. The most important of these derive from household studies which address problems in decision-making analysis. Such studies have had two important outcomes. First, they have shown that many developing country rural households are composed of different sub-units (production, consumption and investment), which condition farm management practices and decision-making; and secondly, these studies have brought into relief the importance of intra-household relations in regulating family member's access to resources and hence, farming decisions.

The Economics program's outreach staff have been in the vanguard of applying these research findings to OFR/FSP. Based on extensive on-farm research in eastern and southern Africa, Low has argued for the need to orient on-farm research methodologies towards household economics concepts. He points to the importance of extending analysis of the socio-economic circumstances used in defining recommendation domains so that they include the differential opportunities between households for non-farm wage employment and other income-earning activities. Often it is the nature and extent to which farm households exploit these non-farm opportunities that most strongly influence farming practices and the aims and objectives of farm production.

A recommendation domain exercise recently carried out in Swaziland supports his conclusions. It found variations in cropping systems within an agro-climatic region were greater than the variations between different agro-ecological regions. The within-region variation stemmed from differences in internal household circumstances rather than from external circumstances (cited in Low, 1986). Low's recent publications explore the development of economic models of the household economy which promise a more accurate analysis of how male and female family members allocate time and thus, labor, within households (1986).



One area of Economics program activity specifically focused on women is a study proposed for coastal Kenya on female maize growers. The study centers on inter- and intra-household relations, particularly those that regulate women's access to resources (including agronomic and extension information), their labor allocation, crop management practices and response to improved technologies. This is the Economics program's first study specifically focused on women, and results from many of the issues raised in recent years by OFR/FSP researchers working in sub-Saharan Africa. The information will be incorporated into CIMMYT's OFR/FSP research methodologies. The Kenya study will be conducted by a geographer, Judith Carney, who is a Rockefeller post-doctoral research fellow.

### 3. Workshops and Training

The second major focus of CIMMYT's activities designed to assist developing country women involves workshops and training. These workshops are held to strengthen the research capacities of national agricultural research centers by teaching OFR/FSP methodologies. As a part of this effort CIMMYT has begun sponsoring "networkshops" with the purpose of bringing national researchers together so they can share research problems, methods, results and ideas. The first of these, held in Lusaka, Zambia in 1984 brought together participants from 10 eastern and southern

African countries to discuss the role of rural sociology and anthropology in farming systems research and extension.

Among the conclusions reached were two of direct relevance to the Center's program's training workshops. One was the need to design agricultural technologies that specifically target women's needs and circumstances. Another addressed the issue of gender bias in OFR/FSP research. This conclusion focused on two important areas: 1) the need to make researcher bias explicit during training courses, especially in the early stages of on-farm research when research priorities are established; and 2) the need to secure greater participation of female professionals in OFR/FSP training courses.

CIMMYT's regional training workshops in collaboration with the University of Zimbabwe have addressed this first concern. An important component of the three week diagnostic methods workshop is to define a recommendation domain and develop appropriate technological recommendations for maize farmers. The survey exercises take place in a communal area with a high percentage of female-headed households, which has helped sensitize workshop participants to the importance of interviewing female farmers.

The second workshop conclusion poses more problems for CIMMYT. While committed to training developing country

female researchers through its programs, its ability to do so is constrained by the selection process. Candidates are proposed by national research organizations which reflect male-dominated research structures. In some cases staff have successfully pressured for female selection [e.g., two OFR courses in Pakistan], but there are no established procedures or quotas to target professional women.

A more recent workshop on methodological issues was held in Lusaka, Zambia from April 24-30, 1987. Its purpose was to expose farming systems researchers in the region to the importance of inter- and intra-household issues in farmer decision-making and thus, in planning and assessing changes in current farming practices. The workshop was multidisciplinary and included participants from both the social and technical sciences who represented eight countries in eastern and southern Africa.

Among the issues discussed was the need for a better understanding of how differences between and within households affect technology adoption. Of particular relevance to women was the call for more attention to intra-household factors, specifically the manner in which gender, age or position within the farm unit affect or are affected by the introduction of new technologies. Workshop participants drew on their experience in the region to discuss what information is important to collect, the degree

of detail required, as well as methods to collect the information. Out of this discussion came the suggestion that inter- and intra-household differences in technology adoption might be better analyzed by shifting research attention within a recommendation domain to the level of the community.

### CONCLUSION

Over the past decade there have been considerable advances in our understanding of the risks, needs and circumstances of the rural poor. CIMMYT staff are in the forefront of developing methods by which these insights can be practically applied by national agricultural researchers. As this brief review endeavored to show, OFR/FSP work is both an approach and a process. It is on-going as well as iterative. And of fundamental importance to the concerns of this review, OFR/FSP researchers are creatively involved in the development of methods to assist resource-poor farmers, male and female.

## References

- Ashraf, Malik 1976, Notes on the role of rural Pakistani women in farming in the Northwest frontier province . Mexico:CIMMYT
- Blackie, Malcolm 1988, Thoughts on Urgent Needs of Agriculturally Dependant People in sub-Saharan Africa. Unpublished paper presented to the Rockefeller Foundation, February.
- Byerlee, Derek, Larry Harrington, and Donald Winkelmann 1982 "Farming Systems Research: Issues in Research Strategy and Technology Design." American Journal of Agricultural Economics, Vol.63, No.5, December, pp.897-904.
- CIMMYT Economics 1988 From Agronomic Data to Farmer Recommendations. Mexico:CIMMYT.
- CIMMYT Economics 1984 Planning Technologies Appropriate to Farmers. Concepts and Procedures. Mexico:CIMMYT.
- CIMMYT and ADRP 1984 Report on an ARPT/CIMMYT Workshop on the Role of Rural Sociology and Anthropology in Farming Systems Research and Extension. Networking Workshop Report No.6. Lusaka:CIMMYT/ARPT.
- Guyer, Jane 1986 "Intra-Household Processes and Farming Systems Research: Perspectives from Anthropology" in (J. Moock,ed.) Understanding Rural Africa's Households and Farming Systems. Boulder:Westview, pp.92-104.
- Jiggins, Janice 1986 Gender Related Impacts and the Work of the International Agricultural Research Centers. CGIAR Study Paper #17. Washington D.C.:World Bank.
- Low, Allan 1987 Regional Workshop on Inter-/Intra-Household Issues and Farming Systems Research. Trip report on workshop held in Lusaka, Zambia from April 24-30. Mimeograph.
- Low, Allan 1986 Agricultural Development in Southern Africa. Farm-household Economies and the Food Crisis. London:James Currey.
- Low, Allan 1986 "On-Farm Research and Household Economics" in (J. Moock,ed.) Understanding Rural Africa's Households and Farming Systems. Boulder:Westview, pp. 71-91.

- Mwamufiya, M. and J. Fitch 1976 Labor use patterns for the production of maize in southern Zaire. Mexico:CIMMYT.
- Perrin, R. and D. Winkelmann 1976 "Empediments to technical progress on small versus large farms." American Journal of Agricultural Economics, vol.58, pp.888-894.
- Smale, Melinda 1987 Wheat Harvest Technology in Punjab's Rice-Wheat Zone: Combines, Laborers, and the Costs of Harvest Delay. Islamabad:PARC/CIMMYT Paper no.87-23.
- Tripp, Robert; Kofi Marfo; A.A. Dankyi; Michael Read 1987 Changing Maize Production Practices of Small-Scale Farmers in the Brong-Ahafo Region, Ghana. Ghana:Ghana Grains Development Project/CIMMYT.
- Tripp, Robert 1986 Some Common Sense about Recommendation Domains. Farming Systems Support Project Newsletter, vol.4, no.1, Gainesville, Florida.
- Tripp, Robert 1985 CIMMYT's Experience with the Users' Perspective in Technology Development. Paper presented to the CGIAR Inter-Center on Women and Agricultural Technology. Bellagio, Italy. 25-29 March.
- Tripp, Robert 1982 Including Dietary Concerns in On-Farm Research: An Example from Imbabura, Ecuador. Working Paper 82/2. Mexico:CIMMYT Economics Program.

## APPENDICES

- I. Countries Represented In CIMMYT In-Service Training Programs  
(Maize and Wheat) 1967-1987
  - a) Latin America and the Caribbean
  - b) Sub-Saharan Africa
  - c) Asia and the Pacific
  - d) Middle East and North Africa
  - e) Regional Totals
  
- II. Number of Female In-Service Trainees CIMMYT Headquarters
  - a) Maize and Wheat
  - b) Wheat
  - c) Maize

Note on Appendices:

Data is as yet unavailable on the number of female participants in the regional workshops, but information has been collected on overall female representation in the in-service training programs at headquarters during the period 1967-1987. It should be noted that while females represent only six percent of total participants in the maize and wheat training programs, there has been a dramatic increase in their numbers during the last ten years. From 1967 to 1977 only 27 women were trained, but the number jumped to 76 from 1977 to 1987.



Appendix I a  
 COUNTRIES REPRESENTED IN CIMMYT IN-SERVICE TRAINING PROGRAMS  
 (MAIZE AND WHEAT) 1967-1987

LATIN AMERICA AND THE CARRIBEAN

<u>Country</u>	Male	Female
1. Argentina	39	1
2. Belize	5	
3. Bolivia	45	
4. Brazil	30	1
5. Chile	14	4
6. Colombia	37	3
7. Costa Rica	21	
8. Cuba	5	
9. Dominica	1	
10. Dominican Rep.	23	3
11. Ecuador	47	1
12. El Salvador	27	2
13. Grenada	1	
14. Guatemala	49	2
15. Guyana	3	
16. Haiti	15	1
17. Honduras	35	
18. Jamaica	1	
19. Mexico	83	3
20. Nicaragua	27	1
21. Panama	18	1
22. Paraguay	22	2
23. Peru	77	11
24. Uruguay		2
25. Venezuela	<u>13</u>	<u>—</u>
Total:	638	38

## Appendix I b

COUNTRIES REPRESENTED IN CIMMYT IN-SERVICE TRAINING PROGRAMS  
(MAIZE AND WHEAT) 1967-1987SUB-SAHARAN AFRICA

<u>Country</u>	Male	Female
1. Benin	2	1
2. Botswana	2	
3. Burkina Faso	2	
4. Burundi	3	
5. Cameroon	10	1
6. Cap Verde	1	
7. Chad	1	
8. Congo	2	
9. Ethiopia	34	3
10. Ghana	36	1
11. Guinea	3	
12. Guinea Bissau	2	
13. Ivory Coast	7	
14. Kenya	34	3
15. Lesotho	2	1
16. Madagascar	3	
17. Malawi	14	1
18. Mali	4	
19. Mauritius	2	
20. Mozambique	3	1
21. Nigeria	42	
22. Rwanda	5	
23. Senegal	5	
24. Somalia	8	1
25. Sudan	6	
26. Swaziland	1	
27. Tanzania	64	6
28. Uganda	6	1
29. Zaire	34	
30. Zambia	16	1
31. Zimbabwe	<u>2</u>	<u>1</u>
Total:	356	22

Appendix I c  
COUNTRIES REPRESENTED IN CIMMYT IN-SERVICE TRAINING PROGRAMS  
(MAIZE AND WHEAT) 1967-1987

ASIA AND THE PACIFIC

<u>Country</u>	Male	Female
1. Bhutan	2	
2. Burma	6	
3. China	11	
4. India	33	
5. Indonesia	19	2
6. S. Korea	19	2
7. Malaysia	4	
8. Nepal	58	
9. Papua N. Guinea	1	
10. Philippines	41	11
11. Sri Lanka	3	
12. Thailand	51	15
13. Viet Nam	<u>13</u>	<u>1</u>
Total:	261	31

Appendix I d  
 COUNTRIES REPRESENTED IN CIMMYT IN-SERVICE TRAINING PROGRAMS  
 (MAIZE AND WHEAT) 1967-1987

<u>Country</u>	<u>MIDDLE EAST AND NORTH AFRICA</u>	
	Male	Female
1. Afghanistan	21	
2. Algeria	52	1
3. Bangladesh	67	2
4. Cyprus	1	
5. Egypt	52	
6. Iran	10	
7. Iraq	5	
8. Jordan	7	
9. Lebanon	4	
10. Libya	4	
11. Morocco	27	
12. Pakistan	105	3
13. Saudi Arabia	4	
14. Syria	13	
15. Tunisia	37	
16. Turkey	80	6
17. Yemen	6	
18. Yemen Dem.	<u>1</u>	<u>    </u>
Total:	496	12

Appendix I e  
 COUNTRIES REPRESENTED IN CIMMYT IN-SERVICE TRAINING  
 PROGRAMS (MAIZE AND WHEAT) 1967-1977: REGIONAL TOTALS

<u>REGION</u>	<u>MALE</u>	<u>FEMALE</u>	<u>% of total</u>
Middle East, N. Africa	496	12	2%
Asia and Pacific	261	31	12%
Latin America	638	38	6%
Sub-Saharan Africa	<u>356</u>	<u>22</u>	<u>6%</u>
All Totals	1751	103	6%

# Composition of CIMMYT Maize and Wheat In-Service Trainees (1967-1987)

