

CGIAR GENDER PROGRAM

WORKING PAPER, NO. 10

WOMEN IN AGRICULTURE IN WEST ASIA AND NORTH AFRICA: A REVIEW OF LITERATURE

Prepared by Lamia El-Fattal
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in the Dry Areas (ICARDA)

CGIAR Secretariat
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- Working Paper, No. 9 CGIAR Human Resources Survey: 1991, 1994. Key Observations on International Staffing with a Focus on Gender; Deborah Merrill-Sands, October 1995.
- Working Paper, No. 10 Women in Agriculture in West Asia and North Africa: A Review of Literature; Lamia El-Fattal, April 1996.
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FOREWORD

In 1992, the International Center for Agricultural Research for Dry Areas (ICARDA) requested and received a small grant from the CGIAR Gender Program to increase their knowledge about the roles of women in crop and livestock production in West Asia and North Africa (WANA), their mandate area. The grant supported the research activities of their consultant, Dr. Lamia El-Fattal, to identify, secure, and review printed literature on this subject. As this report documents, such literature for WANA, unlike other regions, is scarce and much of it fugitive. Dr. El-Fattal has diligently sought out published and unpublished papers. She has then done a systematic review of what is available to present what is known and what is still unknown about women's and men's roles in agriculture in the region and to suggest the implications for the future research of ICARDA and its NARS partners.

We are very pleased with the results of this investment. This work is an important contribution to the stock of knowledge about productive roles of rural women in WANA. The review provides a solid base for all those engaged in improving agriculture and livestock technologies and policies for the rural poor in the region—men and women—to take knowledgeable and systematic steps to accomplish those tasks. ICARDA is to be congratulated for supporting Dr. El-Fattal and initiating this activity and Dr. El-Fattal for carrying out a thorough review.

Hilary Sims Feldstein
Program Leader, Gender Analysis
CGIAR Gender Program

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ABBREVIATIONS AND ACRONYMS

| | |
|---------|--|
| CGIAR | Consultative Group on International Agricultural Research |
| CIP | Centro Internacional de la Papa* |
| EAP | Economically active population |
| FAO | Food and Agriculture Organization of the United Nations |
| GAD | Gender and Development |
| ICARDA | International Center for Agricultural Research in the Dry Areas* |
| IDA | Institute for Development Anthropology (Binghamton, N.Y.) |
| IDS | Institute of Development Studies (Sussex, U.K.) |
| IIMI | International Irrigation Management Institute* |
| ILO | International Labour Organization |
| INSTRAW | International Research and Training Institute for the Advancement of Women |
| IPGRI | International Plant Genetic Resources Institute* |
| IUED | Institut Universitaire D'Etudes Du Developpement |
| IWSAW | Institute for Women's Studies in the Arab World (Beirut, Lebanon) |
| NARS | National Agriculture Research System |
| NRI | Natural Resources Institute (Kent, U.K.) |
| UNDP | United Nations Development Program |
| UNESCO | United Nations Education, Scientific, and Cultural Organization |
| VENA | Faculty of Social Behavioral Sciences (Leiden, the Netherlands) |
| WAD | Women and Development |
| WANA | West Asia North Africa |
| WID | Women in Development |

* Centers of the CGIAR

WOMEN IN AGRICULTURE IN WEST ASIA AND NORTH AFRICA: A REVIEW OF LITERATURE

I. INTRODUCTION

This paper provides an overview of the information available in a variety of published material on the topic of women in agriculture in West Asia and North Africa (WANA). The purpose is to examine the role of women in agriculture in this region and determine the extent of variability associated with their participation. Although the data is scarce and the number of studies available on the topic are limited in both number and scope, numerous themes relating to the work women do in agriculture and the problems they face have been identified in this review. The ultimate purpose of this effort is threefold: (1) to consolidate information from the review so as to lay out the patterns (commonalities, variation and range), so far as is known, of women's roles in agriculture; (2) to assess the methodologies used to conduct gender-related studies; and (3) to suggest research and technology development strategies which (a) address the constraints faced by women in agriculture in the region and (b) provide *ex ante* analyses of the likely impact on women of proposed new technologies.

A clearer and more coherent understanding of what women do in the farming systems of WANA can contribute to improving efforts in understanding what the constraints and opportunities are to increasing agricultural productivity. Such insight should help in the design and implementation of valuable research and the development of appropriate technology to increase food production and improve the general standard of living in these countries. Ignoring the role of women in the development of new agricultural technologies may actually have a negative impact on rural women and on the development process as a whole. The differential impact of technology adoption on farm household members is an important theme in gender analysis and the rationale behind it rests in the opinion that households are not integrated units but that:

technological changes that benefit the men in a household may not always benefit the women, and may even be detrimental to them, or that changes that adversely affect the men have a worse effect on the women. That is, the popular assumption of the household as a unit of convergent interests is questioned and it is argued that, in addition to the effect of technological change on a particular socioeconomic class of households and hence on women as members of that class, there would be a differential effect by gender within each class (Agarwal, 1985:67).

Following this introduction, section II of this paper summarizes gender-related efforts at ICARDA and the background events leading up to the writing of this paper. Section III is a description of the research activities carried out to collect data and material for this review. The fourth section provides a brief overview of WANA, summarizing the agricultural environment and providing the backdrop in which rural women in this region conduct their work. Section V looks at the literature as a whole and provides a critical analysis of the research methodologies employed and the theoretical underpinnings used. Sections VI and VII bring together the data available on the extent of women's participation in agricultural work and the type of work they perform, respectively. In the latter section, it was important to distinguish their labor efforts into two broad categories: livestock production on the one hand and crop production on the other. The last review sections bring together the data available in the region regarding factors influencing women's participation in agricultural work (section VIII); wage differentials (section IX); ownership of land and livestock (section X) and some data regarding the representation of women in agricultural institutions and level of institutional and technical support which they currently receive (section XI). Finally, section XII concludes the review with a summary statement and provides some discussion for future research and technology development strategies at ICARDA in an attempt to address the constraints and problems facing women in agricultural production in WANA.

II. BACKGROUND TO STUDY

The Consultative Group for International Agricultural Research (CGIAR) Gender Program was established in 1991 with the overall goal to "institutionalize within the CG System the commitment, knowledge, and skills required for gender concerns to be addressed effectively" (CG Gender Program, Revised Program, 1992-1993). This policy was arrived at after a recognition that agricultural research could be made more effective, and higher rates of return could be achieved, if technologies were developed that cater for specific biophysical and socio-economic factors, including those associated with gender.¹

¹ Gender staffing issues at the international agricultural research centers, though not within the scope of this paper, are also a major concern of the CGIAR Gender Program and include issues such as recruitment, retention and advancement of women at the Centers. Some important activities and projects to address gender staffing issues have been achieved on both a center-wide or center-specific level. Activities have included, among others, a survey of internationally-recruited women and dissemination of a guideline paper and a holding of a workshop on spouse employment.

Gender analysis, within this framework, was defined as "the systematic investigation of men's, women's and children's roles with respect to their activities and enterprises, access to and control over resources, and incentives for production and the application of the findings and analysis to research planning." (Feldstein et al., 1992:4). When properly applied, gender analysis in research and technology development is included in characterization studies to examine the conditions in which a technology is to be introduced (i.e ex-ante), and takes into account the differential impact of newly developed technology on women, men and children when and where relevant, once a technology is introduced.²

Since the establishment of the CGIAR Gender Program, some important achievements in developing and testing concepts and strategies of gender analysis in research have been realized. For example, a number of consultancies at centers such as Centro Internacional de la Papa (CIP), International Plant Genetic Resources Institute (IPGRI) and the International Irrigation Management Institute (IIMI) focused on identifying where gender analysis may be relevant to each of the Centers' programs and projects (CGIAR Gender Program Progress Report, May 1993).

As part of its center-specific activities and in response to a request by the International Center for Agricultural Research in the Dry Areas (ICARDA), Hilary Sims Feldstein from the CGIAR Gender Program and July Leesburg, a consultant for the CGIAR from the International Center of Agriculture at the University of Wageningen visited ICARDA for two weeks in November, 1992 with two major objectives in mind:

² For additional information on gender analysis in agriculture, see for example The Role of Gender in Agricultural Development by Susan V. Poats, Issues in Agriculture, No. 3, The CGIAR, 1992; "Gender and Intra/Inter-Household Analysis in On-Farm Research and Experiment" by Poats et al. In The Household Economy: Reconsidering the Domestic Mode of Production, edited by Richard R. Wilk, Westview Press, 1989; Gender Analysis in Agriculture, Volumes 1 and 2, Hilary S. Feldstein and Susan S. Poats, West Hartford, Connecticut: Kumarian Press, 1989 and "The Gender Variable in Agricultural Research", by H.S Feldstein, C.B. Flora and S.V. Poats. A Paper Prepared for the Women in Development Unit, International Development Research Centre, Ottawa, Canada, 1989.

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- 1) to conduct a Center review to analyze ICARDA's research portfolio and determine where gender analysis is relevant and likely to have the highest payoff.³
 - 2) to develop the terms of references for ICARDA's gender research committee and its gender consultant, and plan with them ICARDA's future gender activities accordingly.

Following intensive meetings and discussions with a large number of ICARDA administrators and scientists from the various research programs, a report entitled "Gender Analysis in Agricultural Research at ICARDA: A Portfolio Review and Strategy for the Future" was prepared. The report includes a set of specific observations, strategies and recommendations that address the most important gender issues at ICARDA, and sets a number of working hypotheses to identify where gender variables might be relevant in ICARDA's current and planned research activities.

In addition to the portfolio review, and also in response to a request by ICARDA, a small grant from the CGIAR gender program was made to ICARDA to contribute towards the research expenses of a gender consultant. In consultation with the portfolio review team and ICARDA's Gender Research Committee, the responsibilities of the gender consultant were formulated in a set of specific terms of reference that, along with other responsibilities, included the following:

1. Conduct a review of literature on gender issues in agriculture in the West Asia and North Africa (WANA) region, where the bulk of ICARDA's work is concentrated. The focus of the research is to understand the important issues and variability within the region vis-a-vis women in agriculture and to assess methodologies employed as to their relevance to gender-sensitive research at ICARDA.
2. To produce a position paper where attention to gender variables are explored and identified in ICARDA's key activities. This information will be synthesized from the review of literature, from a number of short exploratory trips to some countries in the region, as well as additional detailed discussions with ICARDA researchers.

³ ICARDA has a worldwide mandate to improve barley, lentil and faba bean, and a regional responsibility in WANA to improve wheat, chickpea, forage and pasture and the farming systems associated with these crops. Emphasis is also placed on both rangeland improvement and small ruminant management and nutrition. ICARDA is based in Aleppo, Syria.

The following section describes in more detail the methodology and research activities employed to collect data and information for the review of literature.

III. METHODOLOGY AND RESEARCH ACTIVITIES

The review of literature is based on a synthesis of multidisciplinary research material and information collected from informal discussions held with local officials and some farmers during short exploratory trips to Syria, Lebanon, Tunisia, Algeria and Egypt.

The bulk of the work, however, is based on published documents located after a reasonably thorough search in books, dissertations, journals, documents, papers, grey material and other references in English, French and Arabic. The review involved a study of material from various disciplines such as agronomy, development, rural studies, sociology, anthropology, economics, history, politics and women studies. While the intention was to review the most recent literature on the subject (1980 and onwards), it was often necessary to include some works published earlier.

The task began by conducting a bibliographic search on CD-ROM from the ICARDA library in Aleppo. From this list, relevant literature to our theme was identified. This was followed by a personal visit to the libraries of the International Labor Organization (ILO) and the Institut Universitaire D'Etudes Du Developpement (IUED) in Geneva to search for these and other references.

From the literature retrieved, as well as from citations listed in bibliographies, directories and resource books, a further collection of relevant literature was identified. Written requests for assistance from various institutions yielded very positive responses. Institutions that did separate searches for this study and/or supplied documentation were: Institute of Development Studies (IDS) at the University of Sussex; Association IBISCUS, Paris; Women and Autonomy Centre, Faculty of Social and Behavioral Sciences (VENA) at the University of Leiden, the Netherlands; The International Center for Research on Women (ICRW) in Washington DC; The Natural Resource Institute (NRI) in Kent, The United Kingdom; the Institute for Development Anthropology (IDA) at Binghampton, New York; Programme Development and Support Division, UNDP; FAO Regional Office for the Near East in Cairo and FAO Damascus Office; and Bureau of Applied Research in Anthropology at the University of Arizona at Tucson.

Once a comprehensive list of relevant material was compiled, this was sent to an assistant at the University of Delaware, USA, whose task was to locate, retrieve, photocopy and compile the literature deemed relevant to the review. Over 80% of the material requested was located either at the University of Delaware, or in

neighboring libraries, or was obtained by inter-library loan. Further documents in Arabic and some grey material were gathered from visiting national programs in various countries (Syria, Tunisia, Algeria, Egypt and Lebanon) or were sent by colleagues and contacts working in international or national programs in the region.

IV. WANA: A BRIEF OVERVIEW

While the countries of WANA⁴ exhibit extraordinary variability in their economic, social and political structures, they nevertheless share some common environmental and agricultural features that permit them to be treated as a relatively consistent group vis-a-vis some important aspects regarding food production. In this section, a brief overview of WANA's agricultural environment is given in an effort to set the stage for assessing the role of women in the region's dominant agricultural systems. It will be argued that the nature of agriculture in WANA, along with other factors, is a main determinant of the type and amount of work conducted by women and men in the region, and that recent transformations in the social and economic structure of the area is affecting, in both positive and negative ways, the contribution of both sexes to agricultural production.

With some exceptions, agriculture in WANA is primarily rainfed. In this region, temperatures are often extreme and rainfall is scarce, averaging a total of 200-600 mm of rain per year. Not only is rainfall limited, but the amounts received are highly variable within the growing season and between one year and the next. Consequently, agriculture tends to be an extremely risky enterprise in WANA, with highly variable productivity directly dependent on the season's total rainfall and its distribution. According to Tully (1992a:3), compared to irrigated cultivation, rainfed systems involve "higher risk, marked seasonality, lower productivity per hectare, and frequently, lower returns to labor and investment." Because of this highly variable agricultural environment, farmers in WANA, especially those with small land holdings, often adopt production strategies such as crop and livestock diversification to minimize risk.

Such difficult environmental conditions create a complex and fragile agricultural system suitable mostly for cereal-livestock production. In WANA, wheat is the main cereal crop, with bread and durum wheat dominant in the higher rainfall zones (350-

⁴ In this report, the WANA region is defined to include the following countries: Algeria, Egypt, Pakistan, Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Sudan, Syria, Tunisia, Turkey and Yemen, and to a lesser extent Ethiopia and countries of the Arabian Peninsula, namely Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

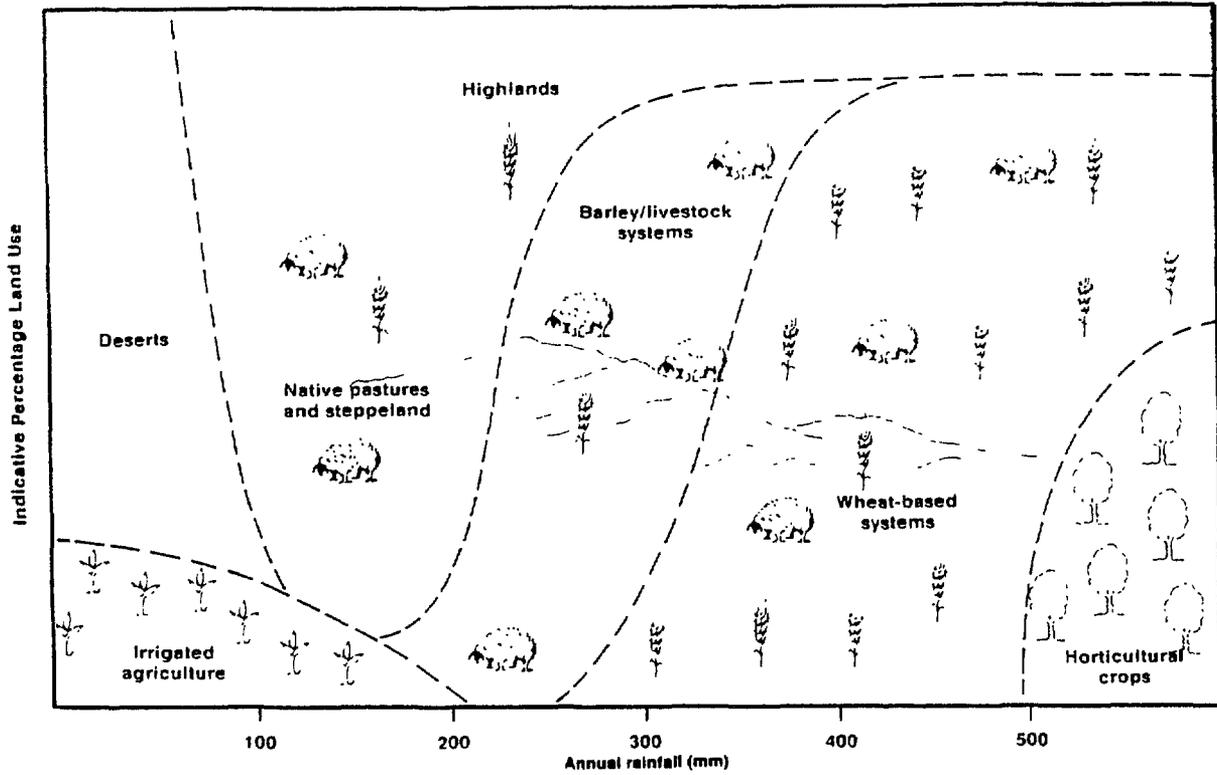
600 mm). In these more favorable areas, food legumes such as chickpea, faba beans and lentils, as well as some feed legumes and forage crops (e.g. vetch/oats, oats, peas) are often grown in rotation with the cereal crop in a two or three course rotation involving a secondary cereal and/or a summer crop such as melon, sunflower or sesame. Some livestock may be integrated into the farming systems of this wetter zone. On the coastal zones of WANA where the growing environment is relatively favorable, fruits and vegetables and some tree crops such as citrus, olives and nuts may occupy sizable areas.

In the drier zones of WANA where average annual rainfall is about 200-350 mm, barley is the most favored crop and livestock (predominantly sheep and goats) is an essential component of the farming system. According to numerous studies reviewed by Belaid and Morris (1991:28), up to 82% of a farmer's agricultural income is derived from animal husbandry in these zones. Consequently, it is not surprising that crop production in these drier areas is designed to sustain animal production first and foremost. Thus, barley is grown mostly for grain and straw for animal feed though it may enter into human diets from time to time, depending on the region and its tradition.

In these drier high risk zones, farmers tend to minimize investing into costly inputs such as fertilizers and herbicides. A two-course rotation of barley and fallow is commonly practiced. Fallow is either cultivated or left for livestock to graze. Livestock feeding practices throughout the year involve a complicated system based on numerous sources of feed. Briefly, animals are fed barley grain and straw in the winter, while in spring and summer, livestock graze the weedy fallow and the rangelands. Depending on the season, barley may be either entirely grazed green in the late spring or animals may be allowed to graze barley during its early growth allowing it to recover and produce a full crop with further rains later on in the season. After harvest, animals are placed on harvested land to graze the stubble and other crop residues. Along with barley and livestock, other crops may be grown under irrigation in these drier regions of WANA.

In the drier zones of WANA (200 mm or less), there exist a considerable number of people that live a pastoral or agro-pastoral life, and depend primarily on animal production for their livelihood and some irrigated agriculture. Livestock (mainly sheep and goats) feed mostly on natural pastures in the steppe. Up until colonial times, agricultural and pastoral societies coexisted with each other and the environment, until agriculture was modernized and mechanized, cash crops were introduced, and political and social structures were transformed. Currently, these transformations are posing a serious threat to both the environment and the society of these pastoral communities (Horowitz and Jowkar, 1992). Figure 1 gives a schematic representation of the different agricultural systems in WANA in relation to each other and to total annual rainfall.

Figure 1: Diagrammatic Representation of the Major Agro-Ecological Zones in West Asia and North Africa



When WANA is compared to other developing regions of the world, the data indicates greater usage of modern agricultural technologies such as mechanization and fertilizers in agricultural production (Janssen, 1992). According to Richards and Ramezani (1990), the rate of mechanization in agriculture is higher in WANA than in all other developing regions. Most of the mechanization is in the use of tractors for the cultivation of cereal crops, mainly that of wheat. Soil preparation prior to planting and threshing operations are the most mechanized, while sowing, fertilization and harvesting tend to be less so. Hand harvesting of food legumes and to some extent cereals is still common in some regions in WANA, such as in areas where labor is abundant or where the terrain or soil is not suitable for machinery. Barley is less mechanized as a crop than wheat, and other crops such as food legumes are less mechanized on the whole than cereals. In Syria, for example, it was estimated that over 30% of the barley crop may be still hand harvested (Belaid and Morris, 1991:48). Though threshing is commonly done by machines, most other post-harvest activities such as cleaning, winnowing and bagging are often manual operations that occupy vast amounts of time and require much human effort.

Fertilizer use in WANA is expanding (Belaid and Morris, 1991:44), but usage and quantities remains highly variable depending on the farmer's expectations of coming rains. To minimize risk, farmers usually apply fertilizers in two or three applications. The application of phosphorous at planting and nitrogen at tillering is common for the cereal crop and in some areas for food legumes. In most cases, fertilizers are applied by hand-broadcasting.

Hand weeding during crop growth is common, in spite of effort to control weeds by deep plowing and numerous other tillage operations prior to planting. Chemical herbicides are not used often due to their unavailability in some cases, and because of their high costs. In WANA, hand-weeding is often necessary since weeds pose a serious threat to crop productivity as they compete for soil moisture and nutrients and because hand-pulled weeds are often an important source of feed for farm animals. Though no empirical studies have been conducted to verify this observation, hand-weeding and hand-harvesting, tasks usually relegated to women, may be the most time consuming and tedious tasks in cereal production (El-Fattal, 1992).

A little over half of WANA's population live in rural areas, and agriculture engages about one third to one half of the region's workforce (Tully, 1991a:3). Population growth in WANA is very rapid, with about 15 million people added to the region each year (Janssen, 1992), and some countries such as Algeria, Iraq, Iran and Syria registering some of the highest growth rates in the world. While many WANA countries were either self-sufficient in food production or even food exporters in the early 1960s, today, alarming quantities of foodstuffs are imported into WANA to satisfy increasing demands. According to Belaid and Morris (1991:21): " The WANA

Region as a whole now imports nearly 65 kg of wheat per capita (approximately 32% of total per capita wheat consumption) and 25 kg of barley (approximately 30% of total per capita barley consumption)."

Farm size in WANA tends to be small, with most farms constituting about 10 hectares (ha) or less and occupying about 25% of the total arable land (Tully, 1992a). Most of these are subsistence farmers. On the other end, large farms of 50 ha or more occupy 15 to 45% of the total arable land but constitute only a small percentage of the total number of farms (Belaid and Morris, 1991). A predominant portion of the work associated with food production is conducted by men, women and children within the context of a farming household (Glavanis and Glavanis, 1983). As Tully (1992b:72) states: "The majority of farm labor in the region is provided by unpaid family workers with the proportion of family to hired labor being the greatest on small farms of 10 ha or less and in dryland areas."

The small size of the majority of farms in WANA prevents them from absorbing the available labor in large families, let alone incur costs of hiring labor from outside the farm. A high dependency of the farm household on the labor market for outside additional income affects the composition of farm households, with women, children and older men left behind to carry out a large bulk of the agricultural work.

In all WANA countries, the overwhelming majority of urban and rural households are headed by men, though female-headed households do occupy a considerable percentage of total rural households. According to FAO (1995), the number of female headed rural households is highest in Pakistan and Sudan, 25% and 23.8% respectively, followed by Egypt (16%), Morocco (16%), Tunisia (11.3%), Lebanon (11%), Turkey (7.1%), Syria (6.1%) and Iran (5.6%).

Family structures for the majority of households in WANA are patriarchal and extended, and men, as heads of households, have predominant control over land, household revenues and decision-making. Often, rural households consist of a relatively large number of people living together in the same compound or in adjacent compounds. The average farming household consists on average of 10 family members or more (Tully, 1989). The extended family may include several generations with one or two grandparents and numerous married sons with their wives and children.

There is a very high temporary and permanent rural-to- urban migration as well as immigration from the poorer countries such as Yemen and Egypt to the oil-exporting countries of the Arab Gulf countries and to Western Europe from Turkey and North Africa. The main push factors are the lack of jobs as a result of an increasing population force that cannot be absorbed in agriculture alone, coupled with

low wages and the nature of agriculture itself. In WANA, the labor needed in agricultural production is concentrated mostly during two periods of the year, when cereals are planted in the Fall and early winter and then once again during harvesting, usually in June. This leaves a large period of time, of about 5-6 months, for farmers to seek employment elsewhere. As is the case in much of the developing world, work opportunities outside agriculture in the rural areas are very limited and living conditions such as health, education and transportation conditions remain poor.

There is an urgent need to increase agricultural productivity in WANA. At present, productivity is low in comparison to other favorable environments and to the region's potential. In a region where good arable land and water are scarce, there are indications that most efforts to intensify food production are destroying natural resources and in turn, causing environmental degradation which is seriously threatening the viability of many farming communities, especially those located in the drier marginal zones (ICARDA Annual Report, 1993).

The development and adoption of new technologies and resource management practices aimed at increasing productivity are doomed to fail if the biophysical and socio-economic constraints and opportunities to increased production are not properly understood. This is now a fact that needs no further elaboration as many failed rural development projects attest. The negative impact of poorly designed technology is well documented in development literature.⁵

V. STATE OF THE LITERATURE: A CRITICAL ANALYSIS

V.1 The Availability of Studies on Women in Agriculture

Very little systematic, thorough or organized research to date has been conducted to specifically characterize and understand the role of women in agricultural production in WANA, in spite of rapidly burgeoning literature worldwide on Women in Development (WID), Women and Development (WAD), Gender and Development (GAD) and women in agriculture in general. An in-depth analysis of the existing literature shows that with some exceptions, few other research topics have been as neglected and subject to inordinate amounts of contradictions and misinterpretations as this one.

⁵ See, for example, a review of 21 studies on the impact of new technologies (such as high yielding varieties and mechanical milling) on women farmers by Buvinic and Mehra (1990).

This is partly due to the fact that, with the exception of the Institute for Women's Studies in the Arab World (IWSAW) at the Beirut University College in Beirut, Lebanon, no other regional or international center or institution in the region or outside has conduct regular and systematic research on women in WANA. IWSAW's focus, moreover, has not been rural WANA. Instead, this institute focuses more on studies relating to education, employment and demography with a heavy urban bias. Recently, the FAO Regional Office for the Near East developed a Plan of Action for Women in Agriculture in the Near East for 1996-2000. Seventeen country coordinators from the region participated in formulating this plan. The plan was based on a synthesis report which pooled together data collected on women in agriculture in the seventeen countries by the country coordinators.

A general comparison and assessment of the amount of literature and data available on women in agriculture in other parts of the world with those available on women in WANA points to a heavily lop-sided distribution. Considerably more research and data exist on women in Sub-Saharan Africa, East Asia and Latin America compared to North Africa and West Asia. In addition to this observation, a count of the number of projects conducted by the various United Nations Agencies in WANA with a focus on women shows that they are by far fewer in number than in other regions of the world (INSTRAW, 1980). Moreover, not all WANA countries are evenly covered by research. For example, research and data on Pakistan, Ethiopia, Yemen, Egypt and Tunisia are by far more numerous than in countries where agriculture is equally important to the national economy and where women pay similarly important roles such as in Iran, Syria and Iraq.

The lack of research on the topic of rural women in WANA is surprising in light of the rather large and growing body of literature on women in the region in general, a great majority of which focuses on law and legal issues.⁶ Familial and marital relations, education, health, employment and training, mass media and women and literature are other common themes. Most of these studies are limited to country capitals and/or large cities or towns. Only a handful of attempts actually apply gender analysis directly to investigate the agricultural activities of women and men and analyze access to and control of resources by them in WANA.

The few studies that do describe the role of women in agricultural production in WANA are generally isolated case studies of a village or a region within a country. There have been no country-level, regional-level or farming systems level analysis of gender in agriculture with the exception perhaps of a commendable effort in

⁶ Islamic law especially, in particular those aspects that deal with marriage, divorce, inheritance and property ownership.

Pakistan.⁷ Furthermore, no attempts to date have dealt with looking at WANA as a region, though a some overview papers or state of the literature reviews use the Middle East, Arab World or Islamic countries as geo-political regions to study women, yet few of these latter attempts have looked specifically into women's role in agriculture.⁸

V.2 A Critique of Past Studies

A rather large and unrepresentative amount of work falls under the umbrella of anthropological work or general social science studies. Many of the anthropological studies were written in the 1960's and 1970's, most by Western scholars with a heavy underlying orientalist-paternalistic perspective (Glavanis and Glavanis, 1983; Kandiyoti, 1985). This perspective views the people and the social structure in which they operate in as not only different, but also inferior to those in the West. With a somewhat amused and often shocked and offended tone, these researchers use the dialectic which they have constructed to describe and analyze the social, economic and political structure of rural societies, often with serious consequences. From this narrow ethnocentric perspective, it is not difficult to see how important issues regarding the relationship between men and women vis-a-vis each other and their role in production and consumption can be either ignored, over-emphasized, misdiagnosed or misinterpreted.

For example, the orientalist-paternalistic approach has led many observers to misinterpret modesty by women as total powerlessness and subordination to men, which as this review will later show, some researchers with a more value-free approach have recently contested. In some cases, the fact that women may not always own their separate plots of land or occupy themselves with a particular crop (as is the case in much of sub-saharan Africa) has led some researchers to underestimate the role of women in crop production even though they may be heavily involved in activities necessary to grow several crops such as sowing, weeding, harvesting and bagging. Perhaps a better indication of the short-comings of these works arises from the fact that they resort to little, if any, methodological self-questioning. A serious

⁷ See Rural Women in Pakistan Farming Systems Research, Proceedings of the Workshop on Role of Rural Women in Farming Systems Research, Islamabad, January 12-14, 1988 by Pakistan Agricultural Research Council.

⁸ See, for example, a subsection of Chapter 2 entitled: Middle East and North Africa, In Women in Rural Production Systems: Problems and Policies by Deniz Kandiyoti, UNESCO, 1985. Also, an outdated paper by Nadia H. Youssef, entitled "Women and Agricultural Production in Muslim Societies," 1977.

consequence of this obscured vision is consistently reflected in the lack of collection and interpretation of data on women's work. Because the majority of women's work is unremunerated, it is more often unaccounted for in many economic studies. As Morsy (1990:90) correctly states:

A number of recent studies of women's work reveal how eurocentric interpretations of women's economic activities in the Third World derive from a reductionist definition which equates work with wage labor...such an economistic focus on wage labor hides not only women's domestic labor, but also their more 'public' contribution to the so-called informal sector.

With the exception of a very small number of studies (Zimmermann, 1982; Rassam and Tully, 1988; Sabir et al., 1989; Salem-Murdock; 1990; Morvaridi, 1992), the objectives of most of these research efforts were to study social structures and relations in a village, rather than specifically analyze the role of men and women in the village's agricultural system and their contributions to productive activities. Such studies described kinships and village ceremonies such as weddings, births and death in detail, often by-passing or else briefly describing the sexual division of labor in agriculture (e.g. Fuller, 1961; Dresch, 1989). In the case where agriculture production was observed and recorded, more emphasis was placed on what tasks men are performing in the field, without any serious attempt to observe what women might be doing in the field or closer to the home, such as animal husbandry, seed selection and sorting and cleaning or any other post-harvest activities. Some of these studies may refer to what women do in the field in passing, but few elaborate on what agricultural tasks women usually do and how long these tasks take to perform.⁹ This oversight is especially worrisome in those few studies that purport to examine the economic role of rural women. It appears that some anthropologists understand agricultural work to mean field work only. This narrow-sightedness seriously underestimates other agricultural work in which women may be heavily involved in, such as cleaning and bagging for example.

As a general rule, women anthropologists tend to focus more on the work of women within the boundaries of the home, such as housework, cooking, child rearing, embroidery and carpet and tent weaving, while male anthropologists focus on the work of men in the field, thus feeding into the existing stereotype of a public sphere dominated by men and a private one dominated by women (see, for example, Dorsky, 1986). As Davis (1985:133) correctly states "If one examines the status of Muslim women in the context of the *male* world, one indeed concludes that their

⁹ An exception to this may be Vanessa Maher's Women and Property in Morocco, 1974. See chapter 7 pp. 104-120.

status is low." This is precisely the conclusion Mason (1975) reaches in his analysis of the status of women as a result of his incomplete observation of a wedding ritual in a Libyan desert community. Mason relies totally on male informants to collect information of women's activities during this seven-day ceremony. By basing his analysis of a wedding ceremony on such limited data, Mason wonders at the end of his work whether any "female emancipation" in the Arab/Moslem world is at all possible.

Separate to, or often superimposed with the orientalist-paternalistic approach described above is another equally distorting and unsatisfactory framework commonly used to interpret the role of women in WANA. This framework uses Islam to explain the position of women in society. Within this framework, two opposing effects of Islam on women are reached. On the one hand, anti-Islamic writings blame Islam for the subordination of women in the Islamic societies of WANA, often using religious texts to deduce that Islam legally enforces the superior rights of men over those of women. Islamic apologists on the other hand refer back to pre-Islamic times and Islamic texts to deduce that, in fact, Islam has liberated women from many constraints by giving them an unprecedented legal status such as the right to inheritance and ownership of property.¹⁰ To what extent these arguments hold true in rural WANA are important issues which ought to be addressed elsewhere. Suffice it to say here that the impact of rural poverty appears to have influenced traditional social relations within the household and outside. As some students of WANA have shown, while compliance with the modesty code and strict segregation between the sexes may be evident in urban areas, they are impossible to impose in rural areas, especially in the poorer regions, where economic necessity demands the full participation of women in the agricultural production process. With the exception of the wives of very rich farmers, or in areas which are very rich agriculturally, travellers in rural WANA have noticed that women working in the fields do so alongside men, and though they may have their head covered to protect themselves against the weather, never are these women veiled or dressed in exact accordance to religion (Antoun, 1968; Badran, 1982; Davis, 1985; Kandiyoti, 1985).

Both the orientalist-paternalistic dialectic and the framework that uses Islam as a means to explain the status of women (with its two opposing conclusions) are unsatisfactory and distortive outlooks that do little to explain the position of women in WANA. They provide a poor analytical framework to understanding women's roles in agricultural production. These approaches tend to be self-defeating and reinforcing to the status-quo. According to Glavanis and Glavanis (1983:5):

¹⁰ For a refreshing overview of women in Islam, see for example Nikki R. Keddie's article "The Past and Present of Women in the Muslim World," in the *Journal of World History*, Vol 1, no. 1, 1990.

most studies of the rural Middle East have taken the form of the traditional anthropological ethnography which tends to characterize rural society as static and resistant to social change. Many of these studies, when examining village life, have tended to focus on the existence of cultural barriers and normative values for an explanation of rural communities which are characterized as exemplifying an absence of any form of social change.

Such defeatist diagnosis can be especially weak in attracting local or international efforts and support to conduct research and develop appropriate technologies to benefit men and women alike. It is hardly surprising then that WID efforts in WANA are limited, for why should any efforts be expended if religion and/or inherent differences and inferiorities interfere with attempts at reform, change and development?

What is badly needed then is a fresh paradigm arrived at by the application of satisfactory research methods whereby the social, political and economic construct and the variability involved in WANA is properly diagnosed, and the factors influencing the amount and type of work women perform are well understood. This type of effort should be exerted to construe a valid research agenda and develop a useful and practical set of technologies to help men and women alike and contribute to the overall goal of agricultural development.

The two major and universal themes that appear to be consistent across most studies are (1) women play important roles in food production systems in WANA and their involvement is increasing, and (2) the extent of their participation, over space and over time, is a function of numerous forces at play. These forces are the changing relationship between technologies, institutions and markets and the impact of these evolving factors on the farming systems of the region. Using these two themes as general guidelines to examine the literature and construct the basis for a new understanding of women in agriculture in WANA, the following sections provide an overview of available research and information on women in agriculture.

VI. THE EXTENT OF WOMEN'S PARTICIPATION IN AGRICULTURAL WORK

There is a widespread conception that, compared to other regions in the world, women in WANA have a very marginal role in employment in all sectors of the economy including that of agriculture, and that they participate mostly in consumption and reproductive activities from within the boundaries of their household and under the dictatorship of male members of the family. Whether this conception is true, or whether women play more significant roles in the food production systems in WANA

will be examined in this section. Using the literature to extract data and information, the extent of women's participation in agriculture will be discussed, and the factors affecting their participation will be analyzed.

VI.1 Women's Participation in the Labor Force

An examination of the aggregate statistical data available on women's work in WANA and women's work in other regions of the world supports the idea that, in comparison, women in WANA have a marginal role to play in all major economic activities including that of agriculture (differences among countries notwithstanding). For example, according to Moghadam (1990), the Middle East has the lowest ratio of women to men in the labor force than in other region of the world (29% in the Middle East compared to 90 percent in Eastern Europe and the ex-Soviet Union) and that in spite of some progress over the past twenty years:

In Muslim countries...the percentage of economically active females among females of working ages is less than half of that in non-Muslim countries. The participation rates are even lower in the Arab countries of the Middle East and North Africa. The female share of the labor force is also lower in Middle Eastern countries than elsewhere (Moghadam, 1990:13).

Using data from the 1960s and 1970s, Azzam et al. (1984) conclude that although the participation rates of women in the working force in Arab countries were increasing slowly, the rate was still significantly lower in these countries (27.1%) than in other developing areas of the world such as Africa (39.9%) and Asia (41.7%).

More recent assessments of the contribution of women in the overall workforce and in agriculture in WANA have heavily contested the conclusions regarding the low rate of women's participation. Instead, these researchers show that the contribution of women to work is much higher than originally estimated. These authors show that the data is unreliable and that the numbers severely underestimate the extent to which women do work. In addition to the problem of under-reporting, there appears to be large and consistent discrepancies between different sources for the same statistic and between micro-studies and statistics on a national level. For example, the percent involvement of women in the Egyptian labor force was estimated to be 7.8% by a United Nations source for 1985 (United Nations, 1989) and almost three times as much (21.4%) by the International Labor Organization for 1984 (ILO, 1988, see Table 1). With regard to the discrepancies between micro-studies and national statistics, a detailed survey of 72 farm households in Baluchistan, Pakistan, shows that women are far more involved in agriculture than what the nationally collected statistic

leads us to believe. According to the latter, only 2% of women in the Province of Baluchistan are active in this sector (Sabir et al., 1989).

Though discrepancies are not limited to WANA alone and in fact, include almost all developing countries, the problem seems to be more acute in WANA than elsewhere. According to a statement by the United Nations regarding the underreporting of women's work in agriculture:

... The evidence available shows that the discrepancies between national census statistics and micro-studies are more extreme for the Latin American, Middle Eastern and North African regions (Quoted by Nuss, 1992:17).

The reasons behind the underreporting and discrepancies of women's work are numerous and predominately rooted in the widespread yet narrow definition of work, generally regarded as a full-time activity that involves earning a wage whereby goods and services are produced and sold. When such a shortsighted definition is applied, it is not surprising then that official statistics often omit what women and men do in the informal sector of the economy and ignore work performed as unpaid labor. An FAO report on Jordan estimates that of all the women working in agriculture in this country, 73.3% do so as unpaid labor (FAO, 1995).

The small number of female-headed households in urban and rural WANA, compared to Asia and sub-Saharan Africa, and the fact that most of the work performed by women is in the informal sector of the economy and/or performed as unpaid family labor also contributes to underreporting. The lack of a clear-cut division between male and female-headed households and the fact that there are no definite and absolute female crops/activity domains in WANA may be masking the overall contribution of women in the agricultural production process. For example, in Turkey, the population census in 1985 showed that 94.9% of all farming households were headed by men, yet up to 53.8% of the agricultural labor force was composed of women, the vast majority of whom were working as unpaid family labor (Morvaridi, 1992).

The problem of underreporting and/or inaccuracies in the available data may be more serious in agriculture and in WANA than in other sectors or regions for several important reasons as well. First, the time of the year when data is collected might seriously affect overall survey results. Surveyors may be collecting data in the field at a time when women are least active outside the home, such as the period in-between sowing and weeding for example; or data might be collected at a time when men are particularly active, such as during harvest. In Syria, for example, census-taking occurs during the month of September when farm labor requirements for men and women are relatively low (Keddie, 1979; FAO, 1983). As stated earlier, the

amount of agricultural work in WANA is highly variable within a year and among years as well. Thus, the extent of women's involvement in agriculture as permanent/temporary, family/hired labor, paid or unpaid work may be very different from season to season and year to year (Saunders and Mehenna, 1986). In the event of a good year, an overall increase in work (such as at harvest time) may be recorded, while an opposite trend may be observed in bad years (FAO, 1983). In a study of men, women and children's work in Egypt, Hansen and El-Tomy (1965), find that the seasonality of labor is more severe for women and children than it is for men.

Second, since the overwhelming majority of households in WANA are headed by men, census-takers are usually collecting information from the household head, who may be either unaware of what women do on a day-to-day basis and/or are unwilling to admit women's participation in production (Badran, 1982; FAO, 1983). Such an admission may be a source of embarrassment to men who, in the dominant tradition and culture, are required to provide for women. Women's main responsibilities are understood to be mainly in the caring for children and in household work.

Perhaps a more important reason for the underreporting is that a large bulk of the work that women do is not considered as such by either the men or the women interviewed. The failure to report unpaid work such as water and fuel fetching, weeding, seed cleaning, bagging and sorting and day-to-day livestock care can seriously undermine estimates of the overall participation of women in the agricultural production process. In Syria, for example: "A good deal of the agricultural work performed by women is done within the family farms as unpaid labor and therefore is not recognized in the statistics of labor" (FAO, 1983: 59).

Women in WANA, especially those from the poorer urban and rural areas, play a predominant role in the large and increasing informal sector (Hammam, 1979; Shami, 1990). This sector is defined as a set of economic activities that "cannot be statistically captured and recorded in the national accounts" (Ramzi, 1988:116). In the urban areas, such informal work may include hired household help or small-scale food processing or clothes-making "cottage" industries. In the rural areas, family poultry enterprises and milk and cheese processing are very common informal activities by women that contribute significantly to the farming household income. Davis (1985) shows that in addition to field work, women in rural Morocco earn income in various other ways such as when they work as seamstresses, fortune-tellers, mid-wives, musicians, broom-makers, sorceresses and holy women. According to Ramzi (1988:113), the bulk of women's work is in the informal sector in the rural areas of Egypt, and Ishak (1988) estimates that 60% of the female labor force in Egypt is working in the informal sector. In the Sudan:

...women's participation in agricultural production amounts to 87 percent in the traditional sector or the non-market economy. Their participation drops to 10 percent in the modern mechanized agricultural sector, where traditional women's employment has been transferred to men (Rahama and Hoogenboom, 1988:71)

In WANA, the national statistics show very sparse data on women's participation in agriculture. When data is collected at the national level, it is often in the aggregate, usually data on permanent or temporary family and hired labor by sex. Aggregate data can seriously mask differences in the rates of participation of women in various sectors. For example, while in the mid to late 1970s the overall participation of women in Saudi Arabia's working force was 2.6%, their participation in agriculture was 5% and in nomadic and herding communities, it was estimated to be 32% (Allaghi and Almana, 1984:25).

Table 1 displays official data on the percentage of women in the economically active population (EAP) of WANA countries in the 1970s and 1980s and the extent of their participation in agriculture. The table shows there to be wide variation between the countries in the region. For example, countries such as Turkey, Tunisia, Egypt and the Sudan registered the highest percentages of women in EAP with rates of 34%, 23.6%, 21.4% and 20.8% respectively in 1984 and 1985. All of the Arab Gulf countries with the exception of Kuwait showed a participation rate of women in the EAP of no greater than 8.2%. With the exception of Iran (and to a much lesser extent, Turkey), all other countries in WANA showed an increase in the rate of participation of women in the labor force over time.

Though the official statistics are questionable and data is not available for all WANA countries for the same year, it is still possible to conclude that the data in Table 1 shows a significant role for women in the agricultural sector. In countries where agriculture is a major sector in the economy such as in Turkey, Syria, Egypt and Iran, the rate of women's participation is as high as 54.3%, 27.5% and 22.1% respectively. In fact, Moghadam (1990) shows that women play a much more significant role in agriculture compared to their involvement in the labor force in general, or in other specific sectors of the economy such as in professional, technical, administrative, clerical and service-oriented work.

VI.2 Changes in Women's Participation in the Agricultural Labor Force

Further analysis of the data available shows there to be a significant increase in women's participation in the agricultural sector. Table 2 provides some information regarding the evolution of women's work over time in some countries of the region. Between the years 1960 and 1985, the percentage of women's participation in

Table 1: Evolution of Women's Participation in the Labor Force and in Agriculture in WANA Countries for Available Years

| Country | Years | % of Women in EAP* | Year | % in Agriculture |
|--------------|---------|--------------------|------|------------------|
| Algeria | 1975 | 4.3a | | |
| | 1985 | 11.6a | | |
| Libya | 1975 | 5.0a | 1970 | 7.2d |
| | | | 1985 | 17.7d |
| Morocco | 1970 | 11.8b | 1970 | 10.4d |
| | 1985/82 | 17.7b | 1985 | 16.0d |
| Tunisia | 1970 | 10.8b | 1970 | 5.5d |
| | 1985 | 23.6b | 1985 | 20.8d |
| Egypt | 1975 | 7.5a | | |
| | 1984 | 21.4a | | |
| Ethiopia | 1977 | 36.6g | | |
| Sudan | 1975 | 20.0c | 1970 | 23.8d |
| | 1985 | 20.8c | 1985 | 26.4d |
| Iraq | 1977 | 17.3a | 1970 | 5.3d |
| | | | 1985 | 41.0d |
| Jordan | 1970 | 6.0b | 1971 | 23.5f |
| | 1985 | 7.8b | 1983 | 33.0f |
| Lebanon | 1975 | 18.4h | 1970 | 22.7d |
| | | | 1985 | 37.7d |
| Syria | 1970 | 10.8a | 1970 | 13.4d |
| | 1984 | 12.4a | 1985 | 27.5d |
| Turkey | 1975 | 36.5c | 1970 | 48.9d |
| | 1985 | 34.0c | 1985 | 54.3d |
| Iran | 1976 | 15.3a | 1970 | 9.4d |
| | 1986 | 10.0a | 1985 | 22.1d |
| Yemen | 1970 | 5.4b | 1970 | 5.5d |
| | 1985 | 9.3b | 1985 | 10.2d |
| Kuwait | 1970 | 6.9a | | |
| | 1985 | 19.7a | | |
| Oman | 1970 | 6.1b | 1970 | 2.9d |
| | 1985 | 8.2b | 1985 | 2.6d |
| Saudi Arabia | 1975 | 2.6e | 1970 | 3.8d |
| | | | 1985 | 3.2d |

Source: a. Moghadam (1990); b. Mehra et al. (1992);
c. Nuss (1992); d. Richards and Ramzani (1990);
e. Allaghi and Almana (1984); f. Mujahid (1988);
g. Hammam (1981); h. Azzam et al.(1984).

* Economically Active Population

agriculture increased considerably in all countries except for Oman, Saudi Arabia and Jordan, where oil wealth and/or modernization had a large impact on all social structures and segments of the economy. In Iran, Iraq, Syria and Tunisia, the percentage of women working in agriculture increased from less than 10% in 1960 to 20% or more in 1985. Increases in the percentage of women working in agriculture are also observed in Lebanon, Libya, Morocco, Sudan, Turkey and in both Yemens.

VI.3 Factors Affecting Women's Participation in Agriculture

Numerous studies have analyzed the economic and social reasons behind the changes in women's participation in the agricultural sector (Sweet, 1967; Taylor, 1984; Myntti, 1984; Hammam, 1979; Friedl, 1981; Weir, 1987; Toth, 1991; Taylor, 1987; FAO, 1981; Morvaridi, 1992; Dorsky, 1981; Shashahani, 1986; Hammam, 1986). The major causes behind this increase lies in the substitution of traditional subsistence and household economies by expanding wage-labor markets and capital-intensive and mechanized agriculture. Thus, more and more temporary or permanent out-migration of men has occurred which in turn has caused labor shortages in rural areas. Consequently, a large number of women are left behind to do the majority of the work as paid and/or unpaid family labor. In Yemen, for example, about one-third of the economically active population work in the oil-rich countries of the Gulf. The overwhelming majority of these are men who leave their families behind for a two-to-four year period (Hammam, 1986). In her study of two villages in Egypt, Taylor (1984) documents the dramatic changes that have occurred between the mid-1970s and the mid-1980s and shows how migration and the introduction of capitalist agriculture has affected the lives of the women who inhabit them, including an increase in their workload. Similar trends has been observed in other countries such as Jordan, Algeria, Syria and Lebanon.

Table 3 compares the total number of men and women working as family and hired labor in some WANA countries. In spite of the different time frames and methods used to collect and calculate the data, a few interesting comparisons can still be made. The data shows that women constitute 27.5%, 26.3%, 26.4% and 37.5% of the total agricultural force in each of Tunisia, Syria, Jordan and Iraq, respectively. It also appears that a significantly larger number of women work as family labor than as hired labor. Though more men than women work as both family and hired labor (with the exception of Syria where more women work as family labor than men), the ratio of female to male labor is much higher when the work is family, rather than hired labor. Thus, women's family labor is 22.8%, 20.5%, 22.4% of all agricultural labor in Tunisia, Syria and Jordan, and women's hired labor is 3.2%, 2.7% and 4.0% of all agricultural labor in these countries respectively. This finding shows that a great proportion of the work conducted by women in agriculture is in the form of unpaid

Table 2: Evolution of Women's Participation in the Agricultural Labor Force in Selected WANA Countries, 1960-1985 (percentage of farm labor force which was female).

| Country | Year | 1960 | 1970 | 1980 | 1985 |
|-----------------------------------|------|------|------|------|------|
| Iran | | 5.0 | 9.4 | 20.8 | 22.1 |
| Iraq | | 2.0 | 5.3 | 41.0 | 41.0 |
| Jordan | | 3.9 | 4.1 | 0.9 | 1.1 |
| Lebanon | | 17.5 | 22.7 | 32.2 | 37.7 |
| Libya | | 1.7 | 7.2 | 16.0 | 17.7 |
| Morocco | | 2.8 | 10.4 | 14.1 | 16.0 |
| Oman | | 3.1 | 2.9 | 2.9 | 2.6 |
| Saudi Arabia | | 3.8 | 3.8 | 3.2 | 3.2 |
| Sudan | | 23.3 | 23.8 | 24.1 | 26.4 |
| Syria | | 9.2 | 13.4 | 27.4 | 27.5 |
| Tunisia | | 1.5 | 5.5 | 19.9 | 20.8 |
| Turkey | | 49.9 | 48.9 | 51.6 | 54.3 |
| Yemen Arab Rep. | | 4.6 | 5.5 | 9.4 | 10.2 |
| People's Democratic Rep. of Yemen | | 11.2 | 13.9 | 13.0 | 13.6 |

Source: Adapted from Richards and Ramezani (1990).

Table 3: Agricultural Labor by Sex (Available Countries and Years).

| | Tunisia (1990) (000) % | Syria (1985) (000) % | Jordan (1983) (000) % | Iraq (1977) (000) % |
|---------------|------------------------------|----------------------------|-----------------------------|---------------------------|
| Family Labor | | | | |
| Male | 280 26.6 | 76 14.5 | 78 39.4 | |
| Female | 240 22.8 | 107 20.5 | 44 22.2 | |
| Hired Labor | | | | |
| Male | 111 10.5 | 44 8.4 | 68 34.3 | |
| Female | 34 3.2 | 14 2.7 | 8 4.0 | |
| Farm Operator | | | * | |
| Male | 372 35.4 | 265 50.7 | | |
| Female | 15 1.4 | 16 3.1 | | |
| Total Labor | 1052 | 523 | 198 | 941 |
| Male | 763 72.5 | 385 73.6 | 145 73.2 | 588 62.5 |
| Female | 289 27.5 | 138 26.4 | 53 26.8 | 353 37.5 |

* Farm operators in Jordan are included under the family labor category.

Sources: Adapted from El-Fattal (1992); Al-Ashram (1990); Aydin (1990) and Mahdi (1990).

labor. The available data also shows that a very small percent of women are farm operators in Tunisia and Syria.

Additional information on the nature of women's work in agriculture in these countries shows that a large percentage of the hired work is temporary. In Jordan and Iraq, about 8.6% and 6.0% of the permanent hired labor is female (Aydin, 1990; Mahdi, 1990), while in Tunisia, the figure is less than 1.4 percent (El-Fattal, 1992). The fact that most hired female labor is seasonal highlights the volatility of their employment opportunities. These temporary female laborers rely on an unstable base for income generation within the year and between seasons as a result of the highly variable climatic conditions in WANA's rainfed agricultural systems. While the seasonality of work opportunities also affects men, it is more of a problem for women simply because relatively more women depend on this type of unstable source for income compared to men.

VII. WOMEN IN AGRICULTURAL PRODUCTION

VII.1 The Gender Division of Labor in WANA

In spite of the diversity and variation in the theoretical underpinnings, methodologies, research objectives and interpretations of findings that emerge from the literature, it is clear from the research conducted that women are heavily involved in agricultural production in WANA. Though there are no clear-cut "women's" crops, a gender division of agricultural labor is observed across all countries and farming systems in WANA.

The division of labor according to gender in WANA has been characterized in the literature in various ways but almost always tends to reflect the nature of the agricultural enterprise and the operations involved. Thus, men are observed to be more involved in capital-intensive, mechanized crops and operations, while most of what women do are tasks that are more labor-intensive and require either manual labor or the use of simple hand tools such as hand weeding for example (Maher, 1974; El-Fattal, 1992). Hence, in cereal production, the role of women is often limited to manual harvesting (since all other operations related to cereal production such as land preparation, sowing, and threshing and transporting are generally mechanized). In food legume production, however, women perform all tasks with the exception of land preparation as this latter is usually the most mechanized operation in the production of these crops (El-Fattal, 1992). Harvesting of olives, fruit trees and summer crops are a women's job, while men will use tractors, seed drills, fertilizer spreaders and irrigation equipment for the other production operations.

Besides mechanized/unmechanized and capital/labor intensive crops and activities, the literature distinguishes between men's and women's work in other ways. While men may be more active in food production and the transporting and marketing of food products (both processed and unprocessed), women are more engaged in food processing which adds value, that is, cleaning, sorting, grading, storing, etc. Women's work appears to be more concentrated on subsistence foods and men's in cash crops. Consequently, women tend the kitchen gardens and take care of the crops that are grown on smaller plots for food, while men work in the larger fields which may be grown to cotton and cereals for example. Furthermore, men are seen to be more active in crop production compared to women who seem to be more active in all aspects of animal husbandry except for marketing.

However, trips to the rural areas of WANA often reveals situations in which men and women work side-by-side together in the field. Indeed, Rassam and Tully (1988) state that in Syria, women and men will help each other when the need arises,

especially during peak labor demands such as during the harvesting of a bumper crop (Hansen and El-Tomy, 1965, Egypt). Horowitz and Jowkar (1992) compare women and men's joint work to a pendulum, with women helping men in their traditional work and vice-versa when circumstances arise. Badran (1982) describes the work of men and women in rural WANA as having "a high degree of functional symmetry" which is localized within the farming household and does not extend beyond its boundaries. A task allocation study in three locations in Baluchistan, Pakistan (Sabir et. al, 1989) showed women working closely with men in planting, harvesting, threshing and storage.

Having briefly sketched out the division of agricultural work in WANA by gender, the rest of this section will use the literature to describe in further detail the specific tasks which women perform in livestock and crop production.

Studies which conduct activity analysis by gender and ask questions such as who does what, where and when, paid or unpaid, on-farm or off-farm work are extremely scarce in WANA. As stated earlier, the overwhelming majority of relevant research (anthropological or otherwise), contains brief accounts or descriptions of what women do without detailing the specific tasks involved or providing activity analyses or time-allocation studies which would have provided more useful, accurate, and detailed information. In spite of their limitations, however, some broad conclusions can be made from the analysis of the data provided by these types of studies. A summary of the most frequently mentioned activities in twenty-six studies is given in Table 4.

The data summarized in Table 4 reinforces the argument already developed that women play an important role in certain activities relating to crop and livestock production in WANA and indicates the tasks which they seem to be most heavily involved in. Of the 26 studies which describe what women do in crop production in WANA, 14 refer to their work in harvesting; 16 in weeding and thinning, and 13 in sowing and transplanting. Seven studies refer to their involvement in sorting, grading and cleaning and another 6 refer to their role in storage. Furthermore, eight studies mention women's involvement in threshing and winnowing, 6 studies describe women as involved in fertilizing and manuring, while 4 studies mention that they are involved in tillage and plowing. Only three studies or less provide any account of women's role in pest control and processing or marketing.

With regard to women's roles in livestock, a larger number of studies refer to women's role in milking and milk processing (9), fodder gathering (8), and poultry and rabbit care (5) than in other tasks such as herding (2), breeding/ selection (1) or marketing (2). Numerous accounts are given by some studies regarding their role in childcare, food preparation, water and fetching and fuel gathering.

Table 4: Number of Studies Citing Agricultural Activities Performed by Women.¹¹

| Crop | No | Livestock | No | Other | No |
|---------------------------|----|---|----|------------------|----|
| Tillage/Plowing | 4 | Feeding/Watering | 2 | Childcare | 3 |
| Sowing/Transplanting | 13 | Fodder Gathering | 8 | Cleaning | 3 |
| Fertilizing/Manuring | 6 | Herding | 2 | Food Preparation | 3 |
| Weeding/Hoeing/Thinning | 16 | Poultry and Rabbit Care | 5 | Baking | 2 |
| Pest Control | 1 | Cleaning Stable | 2 | Water Fetching | 6 |
| Harvesting | 19 | Dung for Fuel/ Fertilizer | 2 | Fuel Gathering | 5 |
| Threshing/Winnowing | 8 | Care for Sick/ Pregnant/Lactating Animals | 2 | | |
| Bundling/Bagging | 5 | Milking | 9 | | |
| Seed Selection | 4 | Ghee/Butter/ Cheese-Making | 9 | | |
| Sorting/Grading/ Cleaning | 7 | Breeding/Selecting | 1 | | |
| Storage | 6 | Marketing | 2 | | |
| Processing | 2 | | | | |
| Marketing | 2 | | | | |

Sources: 1. Beneria, (1986); 2. Morvaridi(1992); 3. Rassam and Tully (1988); 4. Toth (1991); 5. Saunders and Mehenna (1986); 6. Sabir et al. (1989); 7. Maher (1981); 8. Shashahani(1986); 9. Hopkins (1987); 10. Rahama and Hoogenboom (1988); 11. FAO (1979); 12. Salem-Murdock, 1990; 13. Moors(1989); 14. Glavanis (1984); 15. Malhas (1988); 16. Weir (1987); 17. UNDP (1980) 18. Ishak (1988), 19. Richards and Martin (1981), 20. Badran (1982), 21. El-Fattal (1992), 22. Delain (1985), 23. Carpenter (1991), 24. Zimmermann (1982), 25. Dresch (1989), and 26. Tully (1990b).

¹¹ Caution should be taken in interpreting Table 4. It is by no means intended to imply that since 19 studies refer to women's involvement in harvesting and only 16 refer to their work in weeding/hoeing or thinning, then women are more occupied by the former than they are by the latter. Only time-allocation studies can actually verify this type of conclusion.

Having sketched out a brief outline of women's work in crop and livestock production in these previous sections, the following will examine the literature more closely in an effort to provide a clearer and more detailed picture of what they actually do in each type of enterprise.

VII.2 Women and Livestock Production

Livestock production is an important and integral component of farming systems in WANA. In nomadic or semi-nomadic societies, livestock rearing is the main production activity and the source of most, if not all, economic output. Livestock also contributes a large proportion of the income of farmers with small landholdings. These are by far the most common type of farm in the region. On these farms, animals have traditionally played an important role in reducing the risk associated with the region's climatic variability and unstable growing environment by acting as a buffer against uncertain crop yields. During unfavorable environmental conditions such as drought, farmers will quickly sell live animals, dairy products and other animal products such as hide, hair and wool to deal with the economic crisis. During good years, however, animals provide farmers with an additional source of income to purchase machinery, fertilizers and other technologies or pay for a wedding. According to Shalaby (1991), a large portion of a household's saving goes into the purchase of additional livestock.

In fact, crop production and livestock rearing in WANA cannot be looked at as separate and distinct farm enterprises. The two systems, crop production and livestock, are intrinsically linked, each depending on the other for its existence and success. According to Carpenter (1991), the viability of farming systems is dependent on the interface between the production of crops and livestock. In Pakistan, Carpenter asserts:

farmers need animals to plough their fields, carry their produce, provide dung to cook their food, provide nutritious milk products, bank their agricultural profits against their children's marriages, and insure against crop failure. Perhaps most important of all, farmers need livestock to fertilize their fields." (Carpenter, 1991:70-71).

In their search for a new paradigm for the study of agrarian relations in the Middle East, Glavanis and Glavanis (1983) stress the importance of livestock production in the continued viability of the peasant household. In Egypt, state policies regarding subsidies and pricing discouraged farmers from growing traditional crops such as maize, wheat, cotton and rice and instead encouraged them to invest in animals. Animal husbandry in Egypt has thus become a relatively lucrative enterprise, causing farmers to alter their agricultural practices including their crop mix to cater

for the integration of livestock into their farming systems. As Glavanis in a later article on Egypt adds:

Livestock is significant to the small peasant household not only because of its relative profitability vis-a-vis the traditional crops. Adult animals provide the peasant household with draft power, as well as with its most important sources of animal protein, cheese. Furthermore, most small peasant households rely primarily upon the selling of approximately two-thirds of their cheese production and nearly all their butter production to meet their daily cash needs (Glavanis, 1984:37).

Women have a critical role to play in livestock production in WANA. While their role in field crop production is often variable and limited compared to the role of men, women in WANA have a universal and overall responsibility for livestock. In a comparative study of the extent of women's participation in agriculture in lower and upper Egypt, Abou el Seoud and Estira (1978) show that more women are involved in milking and poultry raising than are engaged in field crop activities such as plowing, hoeing, fertilizing, harvesting and so on. According to a study in the Nile Delta cited by Glavanis (1984:38), women spend more time in livestock care than men and the extent of their involvement is a function of farm size.

Women's work in animal husbandry is repeatedly referred to in the literature as the main agricultural activities conducted by women. The work they do includes all aspects of livestock production with the exception of herding and marketing¹². Along with sheep and cows, women are also responsible for goats, camels, buffaloes, donkeys, chickens, rabbits, geese and ducks. Thus, women feed and water these animals, often spending long hours collecting fodder and carrying water from far away sources. Women clean out the stables and prepare animal dung for household fuel and fertilizer. Women care for sick, pregnant and lactating animals and help to wean the young. Women are involved in animal grooming and general maintenance. Women spend considerable time milking the animals, often twice or three times a day and in making cheese, butter and ghee. All these activities are very labor intensive and require much time and effort on a daily basis. A woman's familiarity with the animals in her care gives her much knowledge about an animal's health and production capability such as milk and meat yields and quality. Some research documents that it is a woman's responsibility to select animals for breeding (FAO, 1981 (Yemen); Sabir et al. 1989 (Pakistan)).

¹² Though a few studies indicate that young girls may be responsible for herding in some cases and widows and old women may be involved in the marketing of animal goods.

According to Tully (1990b), the extent of a woman's participation in livestock production is a function of the distance between the household dwelling and the location of the animals. Citing a earlier study by Rassam (1984), Tully (1990b:74) states that in Syria, "women contributed 83% of the labor to feeding animals held near their households, but only 12% when animals were moved to distant pastures". This finding has been confirmed by the observation in Egypt that women are involved in fieldwork until the age of twenty, when they take up the responsibility of livestock as they become household bound at this age (Hammam, 1986).

As such, women are more involved in caring for animals that require little or no intensive herding such as cows, camels, buffaloes, donkeys, chickens, rabbits, geese and ducks. These animals are fed fodder, concentrates, hay and other feed either stored or grown near the household dwelling. This is in wide contrast to the feeding requirements of sheep and goats who need to graze distant pastures. Just because these animals are housebound does not mean that they require less work. In fact, caring for these animals is very labor intensive, requiring much time for their daily care and maintenance.

One very time-consuming and tedious chore is collecting fodder to feed the animals. This responsibility falls on the women and children in Iran (Shashahani, 1986); Egypt (Hopkins, 1987); Yemen (Weir, 1987); and Pakistan (Sabir et al., 1989). In the case where animals are fed weeds from cultivated lands or shrubs growing on collective village lands, women walk considerable distances in search for fodder. Not only are walking distances often long, but the weight of the fodder collected may be very heavy. Women can be seen hauling this fodder on their backs or mounting it on draft animals. In Yemen where the terrain is mountainous, women can be seen climbing up and down steep mountain slopes in search for fodder. According to Weir (1987), this process can take up to two or three hours a day. In less extreme cases, women collect weeds or forage crops from nearby fields. Maher (1974) observed that in Morocco, women spend up to two hours a day, an hour each in the morning and evening cutting hay and lucerne to feed the animals in the spring and fall. In a time allocation study of fifteen households in central Tunisia, Salem-Murdock (1990) shows that men are not involved at all in animal care, while the women and children on small landholdings spend on average 5.6 hours a day taking care of livestock.

As Tully states:

Women play a major role in the production and sale of animals and their products whenever stock is home-based, care is intensive, and sales are made from the farm. Male participation in animal husbandry becomes particularly important when animals and their products leave the village sphere, either to graze or to enter the market (1990b:74)

Dairy Processing

Cash income obtained from women's work in livestock production may be quite high. Shalaby (1991:247) asserts that in the traditional villages in Egypt "livestock is the most valuable resource for home processed products. It helps in home consumption and provides daily cash needs." According to a study he cites in Egypt "approximately two-thirds of the cheese and nearly all the butter (is sold) to meet cash needs (Ibid, 1991:247). Among the Baggara tribe in the Sudan, Horowitz and Jowkar (1992) cite a study in which up to two-thirds of the household income is derived from milking activities performed by women. A detailed study conducted by Zimmermann (1992) in a village in Egypt's Nile Delta showed that while it is culturally unacceptable to sell milk, the selling of dairy products was an extremely lucrative enterprise. Zimmermann estimates that these products bring in monthly cash earnings in the range of what might be earned as minimum wage. Zimmermann adds:

A cautious estimate, based on figures given to me by my informants, leads to a conclusion that the dairy products are responsible for about a third of the total cash income of an average farm with 1.3 feddan and one or two cows or buffaloes (1982:13).

The milking and manufacturing of dairy products such as yogurt, cheese, butter and ghee are important and time-consuming women's activities (Nelson, 1973; Maher, 1974; Zimmermann, 1982; FAO, 1983; Dorsky, 1986; Shashahani, 1986; Hopkins, 1987; Moors, 1989; Sabir et. al, 1989; Tully, 1990b; Carpenter, 1991; Shalaby, 1991; Toth, 1991). These dairy products provide important sources of protein to the farm household diet and selling the surplus provides the family with extra cash to buy other goods such as sugar, tea and cooking oil. None of the studies are explicit about whether men or women receive the cash from the sale of dairy products and the implication is that it accrues to the household as a whole.

Poultry Income

Perhaps the only livestock enterprise that is completely a women's domain and involves little or no interference from the male members of the family is poultry raising. Though this activity is usually a small-scale home-based enterprise, women are nevertheless responsible for the selling of poultry products and are often the sole decision-makers regarding the disposal of income derived from this activity. Thus, women in Syria sell live poultry and eggs (UNDP, 1980; FAO, 1983; Rassam and Tully, 1988), as do women in Pakistan (Sabir et al., 1989), Egypt (Saunders and Mehenna, 1986; Hopkins, 1987; Taylor, 1987; Morsy, 1990; Shalaby, 1991; Toth, 1991); Morocco (Maher, 1974; Davis, 1985) and Israeli-occupied territories (Rosenfeld, 1968). As is the case with the sale of dairy products, the selling of poultry and poultry products by women usually occurs in the village either to

neighbors or to tradeswomen and rarely involves a trip by women to the market to sell their goods. According to Rosenfeld (1968) and Davis (1985), the money women make from selling poultry and poultry products is considered pocket money and is theirs to keep and spend as they wish.

VII.3 Women and Crop Production

While women's work in crop production is not as dominant as their work in animal husbandry, women still appear to have a significant and important role in the production and processing of field crops and crops grown for local food consumption. According to El-Solh and Chaalala (1992), about 25% to 30% of crop production in Tunisia is carried out by women, and Zagdouni and Benatya (1990) estimate that female labor contributes close to 25% of the total days in crop production in Morocco. A review of a study in Egypt by Tully (1990b) shows that women do 30% of the work associated with crop production in the Delta region of Egypt. Because data is severely lacking, it was not possible to disaggregate the specific tasks women perform by crop type (field, food, summer crops, etc.). Instead, the following section uses the available literature to give a more general account of the crops and tasks where women in WANA predominate.

Field Crop Production

As shown in a previous section, cereals (such as wheat and barley), food legumes (such as chickpeas, faba beans and lentils) and forage crops (such as oats, vetch, peas) are the main field crops grown in WANA and constitute the basis of most of the rainfed farming systems of this region. The extent of women's involvement in the production of these crops is primarily a function of the level of mechanization used. Generally speaking, women's involvement in the production of these crops diminishes as the level of mechanization increases (Rassam and Tully, 1988; Gana and Khaldi, 1990). Thus, a woman's role in cereal and forage production is more limited than her role in food legume production largely because the former crops rely more on mechanization than the latter. In field crop production, therefore, women's prime responsibility lies in the manual work of seed selection, sowing, fertilizing with manure, hand weeding, harvesting, cleaning grain and winnowing (Tully, 1990b).

Cereals

Because cereal production is the most mechanized of all crops, the extent of women's participation in these crops is less than in other crops and is often limited to handweeding and some harvesting since soil preparation, sowing, harvesting, threshing and transporting are mechanized tasks. In a survey of 47 farming

households in Syria (Rassam and Tully, 1988), women had no or insignificant roles to play in the heavily mechanized tasks such as tillage, herbicide use, winnowing and transporting (0%, 5%, 17% and 16% of total adult input respectively), while men's participation is lower in unmechanized handweeding, seeding and cleaning practices (5%, 14% and 27% of total adult input, respectively).

Though women's labor is lower in cereal crops than in other crops, they do have substantial roles in cereals production, particularly in post-harvest activities. According to a review of literature by Badran on women in the Middle East and North Africa (1982), semi-nomadic women in Sudan are responsible for the threshing and winnowing of maize and women from a settled tribe in northwest Egypt plant and harvest barley. Ishak (1988) cites studies which have estimated that up to 50% of women's time in the Delta region in Egypt is spent on fertilizing, weeding, harvesting, sacking and marketing cereals. A study by Richards and Martin (1981) provides another example of the involvement of women in wheat winnowing. In her study of a northeast village in Turkey, Morvaridi (1992) documents women's work in threshing and storing wheat and barley, and Weir (1987) in Yemen describes women's work in harvesting sorghum, wheat and barley and weeding terraces grown to these crops. In Morocco, Maher (1981) describes women's work in wheat production as involving winnowing and cleaning the crop from stones prior to milling.

Food Legumes

A number of studies also cite women's involvement in food legume production (Hopkins, 1987; El-Fattal, 1992; Delain, 1985; Rassam and Tully, 1988). A farm survey in northern Tunisia conducted by El-Fattal (1992) shows food legume production to be extremely labor intensive with women performing a large portion of the labor required to grow these crops. The survey showed that women plant, fertilize, weed, harvest, thresh, clean and bag food legumes and spend more time on these crops than men. Weeding appeared to be the most time-consuming task for women, followed by harvesting. On large farms, women were hired to perform these tasks while on smaller farms, these tasks were the responsibility of the female members of the farm household. Women's role in food legume production in a northwestern region in Tunisia is also documented in Delain (1985) whose findings also show a heavy involvement of women in all aspects of food legume production. According to this study, women spend a minimum of 3 days and a maximum of 40 days per hectare to weed food legumes, while harvesting time took 2 to 15 days per hectare.

According to Rassam and Tully (1988) in their study of 47 farming households in Syria, women's work constituted 70% of the total adult input required to grow food legumes. The bulk of their work was also found to be in handweeding and harvesting (86% and 85% of total adult input respectively). Cleaning and bagging also

required heavy input from women (66% and 56% respectively). Similar to their findings for cereal cropping, Rassam and Tully show that men were solely responsible for tillage operations, and their work in winnowing, seeding and fertilizer application for food legumes was more than the work of women in these tasks (89%, 86%, 81% respectively).

Furthermore, Rassam and Tully conducted a comparative study of time spent by women and men on cereal and food legume production. The study showed that in cereal production, women provided 44% and men 56% of the labor, while in food legume production, women provided 70% and men 30% of the labor. Table 5 provides a breakdown of the proportion of time spent by women and men on each task associated with legume and cereal production.

Forage Crops

Of all the work associated with forage production, women appear to play a predominant role in harvesting. (Carpenter, 1991(Pakistan); Zimmermann, 1982(Egypt); Dresch, 1989 (Yemen); Weir, 1987 (Yemen); Ishak, 1988 (Egypt); Tully, 1990b; Maher, 1981 (Morocco); Sabir et. al, 1989 (Pakistan); Hopkins, 1987 (Egypt). This task appears to be very time-consuming and tedious work.

According to Carpenter's summary of women's responsibilities in livestock and fodder (1991) in Pakistan, an estimated 14-25% of a woman's working day is spent on collecting, carrying and processing fodder. Fodder collection can occur from cultivated and/or uncultivated fields. Typically cutting fodder grass, weeding in fields or gathering leaves from trees, crop residues, thinning cultivated crops. Fodder is collected for stall-feeding which is becoming more and more common as agriculture intensifies, as is the case in Egypt, Syria and Lebanon.

In Yemen, where heavy male migration has left many of the women behind to do the bulk of the work on small farms, especially work associated with livestock production, women spend up to 2 to 3 hours per day climbing steep terraces to collect and carry fodder back to their dwellings (Weir, 1987).

In Egypt, the increase in the intensity of agriculture is causing critical shortages of green feed for animals, especially on smaller land-holdings and farmers must make careful decisions as to how much land is to be allocated to feed. Since women are the primary care-takers of livestock, and derive a large percentage of their income from their products, women go to the field three times daily to and cut clover for fodder (Zimmermann, 1982).

Table 5: Contribution of Men and Women in Legume and Cereal Production as Percentages of Hours Spent (in Syria, for the 1982/83 cropping season).

| Agricultural Activity | Legumes | | | Cereals | | |
|-----------------------|--------------|---------------------|-------|--------------|---------------------|-------|
| | % hrs. spent | % total adult input | | % hrs. spent | % total adult input | |
| | | men | women | | men | women |
| Tillage operations | 3.7 | 100 | 0 | 10.1 | 100 | 0 |
| Seeding | 1.5 | 86 | 14 | 5.1 | 86 | 14 |
| Herbicide use | -- | -- | -- | 0.8 | 95 | 5 |
| Fertilizer use | 0.9 | 81 | 19 | 11.0 | 79 | 21 |
| Hand weeding | 16.1 | 14 | 86 | 20.6 | 5 | 95 |
| Pest control | 2.5 | 71 | 29 | 8.5 | 73 | 27 |
| Harvesting | 58.4 | 15 | 85 | 26.2 | 38 | 62 |
| Transporting | 5.3 | 74 | 26 | 12.0 | 84 | 16 |
| Threshing | 6.6 | 57 | 43 | 4.6 | 62 | 38 |
| Winnowing | 1.6 | 89 | 11 | 0.4 | 83 | 17 |
| Cleaning | 2.4 | 34 | 66 | 0.4 | 27 | 73 |
| Bagging | 1.0 | 44 | 56 | 0.2 | 66 | 34 |
| Total | 100 | 30 | 70 | 100 | 56 | 44 |

Source: Adapted from Rassam and Tully (1988).

Summer Crops and Fruit Tree Production

The data available on what women do in summer and in tree crop production is very limited in WANA. The following summarizes the information available in the reviewed literature:

- Women are responsible for tomato farming in the Oulja region in Morocco (Beneria, 1986). This region had altered its traditional cereal-

based farming system to growing fruits and vegetables, mainly tomatoes (Beneria, 1986).

- Women spent more time than men in the production of summer crops such as sesame and vegetables in the West Bank (Moors, 1989).
- Olive harvesting is both women's and men's work (Moors, 1989) in the West Bank.
- In Syria, a time-allocation study of 47 land-owning households in four villages in the north of the country showed that although men spent more hours than women in summer and tree crop production, women spent more time in planting, thinning and weeding and pest control than men, while men were more involved in tillage operations, pruning, hoeing, irrigating and fertilizer use (Rassam and Tully, 1988).
- Women are heavily involved in the hoeing and harvesting of cotton and sugar beet in northeast Turkey (Morvaridi, 1992).
- In northern Jordan, women perform approximately 50% of the work associated with vegetable and fruit production (Malhas, 1988).
- In Yemen, 40% and 20% of the work associated with vegetable and fruit crops respectively, is carried out by women (FAO, 1995).
- A survey in four different regions in Egypt estimated that women performed 50% of the work associated with peanut cultivation. The main tasks performed by women were seed treatment and harvesting (FAO, 1995).

VIII. FACTORS INFLUENCING WOMEN'S PARTICIPATION IN AGRICULTURAL WORK

The prior section has documented the considerable percentage of paid and unpaid agricultural labor force provided by women with some detail on the type of work which they perform. This section will reexamine the literature to identify the factors which appear to influence women's participation in agricultural work.

Whether women in rural WANA work inside or outside the household as family or as hired labor, and the amount and type of work they perform appears to be a function of numerous interlinked factors such as land-holding size and tenancy (as well as landlessness), farming system type, the extent of mechanization used on the

farm, available male labor, and a woman's social and economic status within the household as well as within society (UNDP, 1980; Tully, 1990b).

Land-Holding Size and Tenancy

Women from landless families and those from small landholdings perform more tasks and work longer hours than women from large land-holdings, and women from rich rural households appeared to play an insignificant role in agricultural production in WANA (Maher, 1974; Badran, 1982; Davis, 1985; Larson, 1984; Rassam and Tully, 1988; Moors, 1989; El-Fattal, 1992; Morvaridi, 1992).¹³

Landless rural families depend primarily on the labor of all members of the household for income, thus, it is common for women from landless families to seek employment on large farms. Farmers with small land-holdings cannot usually afford to hire labor from the outside, preferring instead to rely on labor available from within the family and farming household. Men from smaller land-holdings are more likely to migrate to the urban areas or abroad in search for wage labor. In this case, women from small farming households will assume the agricultural responsibilities usually reserved for men on their own farm or if excess female labor exists, women from small land-holdings may seek temporary employment on other neighboring farms (Zagdouni and Benatya, 1990).

Poorer farmers with small land-holdings are more likely to rely heavily on the available male and female manual family labor to perform operations such as sowing, harvesting and threshing, usually with the help of simple hand-tools and/or animal traction. Richer farmers may either own machinery or afford to lease it when the need arises. According to Rassam and Tully (1988:294) "In households that hand harvest part or all of their cereals, there is more work for both men and women, but especially for women."

Not only does land-holding size determine women's work in agriculture, but it appears that land management and tenancy also might influence female participation in agriculture. According to Morvaridi (1992), in Turkey, landowners give preference for establishing sharecropping contracts to families with a large number of women. These families guarantee that work is made available during labor shortages.

¹³ These trends were observed in Tunisia, Morocco, Jordan, Syria, Yemen, Turkey and Israeli-occupied territories.

Available Male Labor

A larger number of women work in agriculture in regions and countries where there is heavy male-outmigration to urban areas and abroad. Thus in countries like Egypt, Yemen, Turkey and Syria, where large numbers of men seek off-farm employment, women are left behind to do the bulk of the agricultural work (Taylor, 1984; Hammam, 1986).

Women's Socioeconomic Status

The age of a woman and her marital status influences the extent to which she is involved in agricultural production and the types of work she performs. It is most often the poor, young and unmarried, (or the old and widowed) who do the bulk of the agricultural work in WANA (Youssef, 1974; Hammam, 1986; Tully, 1990; Salem-Murdock, 1990; Taylor, 1987; Hopkins, 1987; FAO, 1983; Moors, 1989; Abu Nasr, 1985; Myntti, 1985; Shami and Taminian, 1990; Morsy, 1990; Zimmermann, 1982; Kandiyoti, 1985).¹⁴ More precisely, at what stage a woman is in her life cycle determines her status in the household and consequently her contribution to family or hired agricultural work. As Taylor (1987:265-266) states:

The allocation of domestic and agricultural tasks assigned to women shifts over time and parallels stages in their reproductive cycles, as does the allocation of resources to them. The heaviest and most menial domestic tasks, such as drawing water and cleaning out the animals' room, are given to unmarried daughters and to daughters-in-law before they bear sons. In addition, they contribute heavy labour on the land. They receive smaller quantities of food and the least choice. After the birth of sons, the workload of the daughter-in-law lightens and her status improves. Her reproductive role more or less ceases when her own sons marry, giving her in turn daughter-in-laws to aid her in household and agricultural chores. At this point, at the height of her status and authority in the household, her labour is lightest.

Young, unmarried women are most likely to be seen working in the fields in WANA. This category of women appear to do the bulk of paid and unpaid female work in this region. According to Hammam (1986), women will give up field work for animal husbandry at about age twenty. This latter activity usually requires that women be physically closer to the home. A labor allocation study by Salem-Murdock

¹⁴ In fact, aggregate statistical data from Egypt, Syria, Lebanon and Tunisia shows that the greater proportion of women in the total labor force in these countries are single, and in the 15 to 24 age category (Azzam et al., 1984:7).

(1990) in central Tunisia showed that compared to adult women, young girls (15 years and younger) work more hours in farm labor, while adult women worked longer hours in housework. The type of work that women perform also appears to be a function of their age and marital status. In Jordan, Shami and Taminian (1990) note that hired women farm laborers are most often unmarried girls or widowed women. In the Sudan, pastoral women perform all tasks associated with animal husbandry, except for herding, which is a chore often relegated to young girls (Rahama and Hoogenboom (1988). In Morocco, Egypt, Yemen, Syria and Tunisia (Davis, 1985; Beneria, 1986; Taylor, 1987), only old and widowed women may be seen selling agricultural produce in the market.

IX. WOMEN AND WAGES

The previous sections of this paper show that most of the work performed by women in agriculture in WANA is unremunerated family labor, and that women spend long hours throughout the various seasons in all types of activities related to crop and livestock production without being paid. Only very small numbers of women are hired. The literature indicates that when hired, women are taken in on a temporary and/or seasonal basis. The effect of this is an unstable source of income that may vary from year to year, season to season and may depend on the tasks involved (broadcasting, weeding, bagging, cleaning). In this disadvantaged capacity, women are paid very low wages, or payment is not in cash, but in kind. In this latter instance, women receive a certain amount of the cereal threshed and winnowed or a bag or two of the lentil crop harvested. Thus, in spite of long hours of work, women who are paid in kind still do not have access to cash. As such, they are denied the choice to spend earned money as they wish. In some instances, payments are made to the head of the family, as is documented in Tunisia by Ferchiou (1985), on women's work in olive harvesting.

Most, if not all of the governments in WANA have passed legislation requiring equal rights for women and men in the field of work including that of equal remuneration. However, the principle of equal pay for equal work has been difficult to implement, especially with respect to working women in the rural areas of the region.¹⁵ As in the rest of the world, the research conducted across WANA invariably notes that women are paid less than men, often showing that women working in agriculture may earn two-thirds or even one half of what men earn for the same type of work (UNDP, 1980; FAO, 1981(Yemen); FAO, 1981(Jordan); FAO, 1983; Davis, 1985; Kandiyoti, 1985; Saunders and Mehenna, 1986; Moors, 1989; Morsy, 1990;

¹⁵ See Azzam et al. (1984) In J. Abu Nasr et al. (ed.) for a review of legislation in the Arab World concerning women.

Toth, 1991; El-Fattal, 1992; Hopkins, 1991). Table 6 summarizes the data available on wage differentials between men and women in some WANA countries.

According to Toth, the fact that women earn less than men has not been affected by market changes in the value of labor. Instead, he maintains that the differences between men and women's pay have "remained historically constant over time, despite increases and declines in the absolute magnitude of the wage itself" (1991: 224). Data collected by Saunders and Mehenna in 1962 and again in 1978 in one village in Egypt shows that in both years, women in fieldwork were paid half the wages of men for the same type of work (1986).

El-Fattal (1992) documents differentials in wage earnings between men and women with women earning about two-thirds the wage of men on farms in Northern Tunisia, except on state farms where the concept of equal pay for equal work can be easily enforced. The actual wages received by men and women in agricultural labor, and the wage differentials between the genders depends on the region and season under study (Toth, 1990). For example, wage differentials are less when there is an abundance of female and male labor in the region and during peak labor demands such as at harvest time. In a forthcoming study on barley production in Morocco, Saade (1993) shows that during the off-season, the wages women receive are about 70% the wages received by men, while during the peak labor season of cereal harvesting, when the demand for labor is high, women's wages are 75% that of men's.

Several obvious methodological problems are encountered in some of the studies cited above regarding wage differentials which appear to undermine the findings. Clearly, wage differentials vary according to whether the wage is temporary (hourly, daily or monthly) or permanent, and differ according to season, task and region. It is important to stress here that future studies to examine wage differentials between men and women should take this variation into consideration and studies should be conducted in the same area, during the same time and observing the same work performed by men and women.

X. OWNERSHIP OF LAND AND LIVESTOCK

Information on land and livestock ownership is very scarce in WANA and no studies were found on women's ownership of other productive resources such as water, trees, machinery, storage facilities, animal housing, fertilizers and seeds. Data on land ownership is difficult to get hold of, or else ownership records simply do not exist. Though this information may be sought directly from farmers in formal surveys, the results should be interpreted with great caution, since it is unlikely that the information provided is accurate. Farmers often fear taxation and government

Table 6: Wage Differentials Between Men and Women in Some WANA Countries

| Country | Wage Differentials |
|---------|---|
| Egypt | Women earn two-thirds of wages earned by men as daily wages. |
| Iran | Women receive 46% of men's wages. Wage differentials vary according to task. |
| Iraq | Women earn less than men and the wage differential has increases between 1985-1993. |
| Jordan | Women earn less wages than men for similar tasks. |
| Lebanon | Women earn half the wages earned by men as daily labor. |
| Morocco | Women earn 71% of men's wages for casual labor. Wage differentials vary according to season. |
| Syria | Wage differentials vary according to task. |
| Tunisia | Women earn 30-50% of wages earned by men as temporary wages. |
| Turkey | Women receive 40-70% of men's daily wages. |
| Yemen | Women earn two-thirds of wages earned by men as daily wages. Wage differentials vary according to region. |

Source: Adapted from FAO (1995).

control and usually underreport the size of their land and livestock holdings. Furthermore, Badran (1982) and Dresch (1989) show that in some areas of WANA such as in the Yemen, women who own land register it in the names of their male relatives. Thus, the examination of official records may not be a reliable way to study ownership patterns by gender. Despite these problems, research in this area has shown that women rarely own land in WANA and when they do, the land is controlled by their male relatives until the title is transferred to their sons, once they are married or old enough to manage the land themselves.

Land Ownership

Patterns of land ownership in most of WANA is not a reflection of Islamic tradition. In this tradition, women enjoy explicit economic rights such as the right to own and control personal assets including land and the full right to be involved in economic transactions such as trading and commerce. Islam clearly calls for separate ownership of property between husband and wife and does not require the woman to help support the family in times of financial crises (Antoun, 1968; Tully, 1990b).

While her inheritance rights are not equal to those bestowed to a man's by Islam,¹⁶ a woman is nevertheless allowed to inherit as well as to buy and sell property. However, as frequently is the case, Islamic tradition with respect to these rights are disregarded in favor of more conservative traditions. Thus, while women have the theoretical rights to ownership and inheritance of land and other property, studies in WANA have repeatedly shown that women rarely exercise these rights in practice (Antoun, 1968; Rosenfeld, 1960; Rosenfeld, 1968; Nelson, 1973; Maher, 1974; Fazel, 1977; Mason, 1975; Boutaout, 1979; Badran, 1982; Ginat, 1982; Larson, 1984; Taylor, 1987; Dresch, 1989; Moors, 1989; Sabir et al., 1989; Horowitz and Jowkar, 1992).¹⁷

Some literature in WANA has shown that women give up the right to their land to brothers or fathers who in return must offer her protection from her husband and his family in times of conflict as well as support her in times of need (Rosenfeld, 1968; Ginat, 1982; Taylor, 1987; Dresch, 1989; Sabir et al., 1989). Often where a woman's land is being managed by her male relatives, a woman receives a portion of the land's remittances and/or presents and other favors from these relatives throughout the year. For example, women will be given presents during religious feasts (Eid) and her father and brothers may contribute substantially to her children's marriage ceremonies and other important occasions.

There are only a handful of studies that report actual figures regarding the percent of land owned by women in various regions in WANA (Rosenfeld, 1960; Ginat, 1982; Zimmermann, 1982; Rahama and Hoogenboom, 1988; Sabir et al. 1989; Shami and Taminian, 1990; FAO, 1995). In the Arab village that Rosenfeld studied in 1960 in Israeli-occupied territories, only two women took their share of inheritance.

In Baluchistan province in Pakistan, Sabir et al. (1989) show that in a survey of 72 households, only 6 women owned land. These were very small landholdings, ranging from 0.4 to 1.5 hectares. These same women also owned livestock which were managed by male relatives who gave women a portion of the milk, wool and hide produced. Citing research conducted in 1973, Rahama and Hoogenboom (1988) show that 10% of the land in the large irrigated schemes in the Sudan was owned by women while in the Western rainfed areas, women owned 46.4% of the farms in the area of Wadi Kutum. In the small hamlets studied by Ginat in the Israeli-occupied

¹⁶ In Islam, men inherit twice the share of land than women if the land is surveyed (*mulk*), and men and women inherit equal shares if the land is unsurveyed (*Amiri*).

¹⁷ This finding applies to both agricultural and pastoral societies and have been reported in Morocco, Tunisia, Libya, Egypt, Jordan, Arab villages in Israeli occupied territory, Iran, Pakistan and Yemen.

West Bank, 15% of all women owned property (N=46). Ginat explains how these women came to own property:

Six women inherited land from their fathers, four from their deceased husbands, while thirteen women obtained property from their husbands as part of the bride price given to the woman's father by the husband as part of the marriage agreement...Five women inherited land from their mothers and three other women received it as a gift from their sons. Fifteen women had bought the land from their own money (1982:173-174).

By far the most detailed analysis of land ownership is provided by Shami and Taminian (1990) in their study of villages in the Jordan valley. Distinguishing between local and absentee landowners, this study showed that out of the total number of local landowners in 1965, 5.3% were women who collectively owned 1.5% of the total land area, averaging a farm size of 4.75 dunums.¹⁸ In 1987, the percent of local women landowners more than doubled to 12%. These women owned 6.3% of the total land area and the average farm size was estimated at 11 dunums. These figures are in sharp contrast with absentee women landowners who, in 1978, owned almost 16% of the total land area. According to these same researchers, most women landowners became owners because either they had no brothers to whom the land could go to or they inherited land from their husbands. Even in this case, women's ownership was only temporary until her sons are old enough to take control of the land. Although these women may have legal ownership of land, in very few instances are these lands being managed by them.

Results from an FAO study of landownership patterns in some WANA countries (1995) indicate large gender gaps in the amount of land owned and in the average size of landholdings. Furthermore, the study shows that lands distributed to farmers by the governments of Egypt and Morocco strongly favored male ownership. In Egypt, only 7.4% of the reclaimed land was distributed to women, and women in Morocco received less than 6% of the land taken over after colonization by the Moroccan government.

Livestock Ownership

Similar findings were also documented with respect to livestock ownership in a review of pastoral societies by Horowitz and Jowkar (1992) and Fazel (1977). According to Fazel (1977) in his study of the Boyr Ahmad tribe in Southwest Iran, it is the men who own the flock in this pastoral society rather than the women, who

¹⁸ 1 dunum equals 0.1 hectares

nevertheless appear to be doing the great majority of the work relating to livestock production and are also actively involved in the decision-making regarding the flock's management. In a detailed study of a village in the Nile Delta, Zimmermann (1982) reported that approximately 10% of the cows and buffaloes in the village were owned by women, many of whom entered into partnerships with other villagers to purchase an animal. In Pakistan, while women may own land and livestock, they rarely control when they can be bought or sold and for what price (Sabir et al., 1989). Women livestock owners are reported to be common in Negev (Horowitz and Jowkar, 1992).

A few studies report that women own household poultry such as chicken, ducks, geese and rabbits (Saunders and Mehenna, 1986) or draft animals such as donkeys and camels (Boutaout, 1979). Though women may own these small-scale production enterprises, rarely have they been reported to sell their products in the market, leaving this responsibility to men. Decisions regarding what and when to sell, including prices bargained for may not be always hers alone. The money earned from these household enterprises is considered a woman's own pocket-money which she is free to spend as she pleases.

The fact that women rarely own or control land, animals and other productive resources in spite of their heavy involvement in crop and livestock production has important implications regarding gender inequality and the potential to overcome their disadvantaged situation. Women's lack of economic security reduces their political and social status which in turn reinforces gender inequality and their dependence on men. Without being able to exercise their right to property ownership, women lack collateral and thus are denied credit from rural banks and other means of empowerment (new technology and more land, e.g.).

XI. INSTITUTIONAL REPRESENTATION AND SUPPORT

Some improvements have occurred since the 1980s, and women appear to be employed in larger numbers in national agricultural institutions in WANA. However, men still comprise the overwhelming majority of those employed, especially occupying high managerial and decision-making positions. In Egypt, in 1992, less than 5% of the 62 administrative positions in the Ministry of Agriculture were held by women. In Syria and in the Sudan, only one out of the 49 and one out of 61 managerial positions managers at their Ministries of Agriculture are held by women, respectively. In Yemen in 1990, only 3.7% of the policy-making positions were held by women and in Jordan, the number is only 1.5% (FAO, 1995). Turkey has the highest representation of women in decision-making positions at the Ministry of Agriculture and Rural Affairs (6%)(Ibid, 1995). In Morocco, in 1991, 15.5% of those employed at the Ministry of Agriculture were women and in Iraq, women occupied only 1% of the workforce in the Ministry of Agriculture.

A survey conducted by the FAO (1995) shows that only a few countries such as Egypt, Iraq, Jordan, Sudan and Yemen have recently established WID units that concern themselves with rural women. These units are either attached to their ministries of agriculture or other ministries such as ministry for social affairs. Tunisia and Pakistan are the only countries which have established independent ministries that concern themselves solely with women affairs. Most of the WID units have limited policy and project objectives and poor funding with little potential for any significant impact on improving conditions facing rural women. Both governmental and non-governmental (national and international) support for these WID units appear to be small and erratic, usually limited to small-scale and isolated projects. Their scope also appears to be limited to basic education and health concerns though some training courses in a few traditional domains such as carpet-weaving, food preparation and hygiene are offered. These ignore equally important subjects relating to improving women's productivity and income in agriculture. Often, a gender or "women's" component to larger scale projects is instituted, but these too appear to be last minute additions with limited objectives. Scant effort is made to fully integrate women in these projects from their onset.

Credit facilities for women in WANA are also limited and only a small number of women farmers apply for loans. No special institutional arrangements have been made by any country to establish a credit lending facility specifically for rural women. In addition to the lack of infrastructure, female illiteracy and women's lack of ownership of land act as obstacles to receiving agricultural loans from banks or savings associations. Credit is scarcely available to women through either agricultural banks or cooperatives. A major obstacle in women's access to credit is the usual required collateral especially in the form of land ownership (FAO, 1995). Sudan offers the only exception to this rule where the Agricultural Bank of Sudan (ABS) has had an important role in financing cooperatives for rural women. For example, ABS has provided loans specifically for women to purchase inputs for sesame, groundnut and gum arabic production

The overwhelming majority of extension officers in WANA are male and most, if not all of their target farmers are males. The FAO survey (1995) shows that the highest percentage of female extension officers for the region is in Morocco (15% of total number of extension officers), while in Sudan, Egypt, Tunisia, Iran and Oman the figures are 12%, 4.8%, 4.2%, 1.9% and 0.5% respectively. Interaction between women farmers and extension officers occurs mostly in the event that the farm is a female-headed one, (which is rarely the case in WANA), or when the extension officer is a woman providing services in the field of home economics and traditional activities which women perform at home (health, hygiene, nutrition, home management and child care). In recent interviews with extension officers in Tunisia, Algeria and Syria, male officers stated that they preferred to talk to male farmers and showed great caution in communicating with women. In Tunisia and Algeria, the

officers would ask the women after the whereabouts of the men from a distance. Women were rarely invited to join in any discussions that took place between extension officers and male farmers, even though many of the discussions took place inside the house dwelling. In Syria, however, women often joined in the discussion with the extension officer and provided for some interesting and heated debate.

XII. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

In spite of a shortage of both qualitative and quantitative data, this paper clearly shows that women's contribution to agricultural production in WANA is significant. It also shows that women's work is complimentary to men's work. Women spend long hours daily performing a number of time-consuming and labor-intensive work related to crop and livestock production. These efforts contribute substantially to farm income and household welfare. Though their exact contribution in terms of time, effort and income have yet to be quantified, women as hired or family labor appear to have a large and increasing responsibility in agricultural work. Operations not yet mechanized such as planting, weeding, harvesting, and post-harvesting operations required in major food crops significantly occupies women's time as does most of the work involved in animal care. This is in addition to activities within the household, such as reproduction, child-rearing, house-keeping and fetching water and fuel for household use.

The paper also shows that while a division of agricultural tasks between men and women exists, as is the case in the rest of the world, men and women work together to ensure household livelihood and that women will do men's work and vice-versa if conditions require it. The extent of women's involvement in agriculture depends on their social and economic status with factors such as landlessness, size of landholding, farming system, land management practices, labor market forces, and the age and marital status of women influencing the extent of women's participation in agriculture.

Based on information and themes provided by the review, this section gives some thought to developing short-term and long-term research ideas for ICARDA by setting up a number of working hypotheses which incorporate gender in the appropriate and relevant phases of its research and development work. These research ideas are not intended to be absolute or all-inclusive. Rather, they provide some suggestions and guidelines for conducting gender-sensitive work at ICARDA.

ICARDA and Future Gender-Related Work

ICARDA's mission has been to develop adoptable and sustainable agricultural technology in order to increase the quantity and quality of food in a difficult and

highly variable eco-region. Specifically, ICARDA has a world responsibility for the improvement of barley, lentil and faba bean, and a regional responsibility in WANA for the improvement of wheat, chickpea, and pasture and forage crops and the associated farming systems (ICARDA Annual Report, 1993).

Researchers at ICARDA can better target their efforts and improve the likelihood of technology adoption by investing some time and resources to diagnose the biophysical and socioeconomic environment in which the new technology is to be introduced. Among the socioeconomic variables that should be extracted and examined before, during and after the introduction of a technology is gender. Gender analysis is important because it has been shown to (1) improve research efficiency by providing a better understanding of men's and women's constraints, opportunities and preferences which lead to better technology adoption, (2) ensure equity between men and women by improving the lives and welfare of both groups. By conducting gender analysis, the effectiveness of technology development and adoption can be improved, and areas where there is the greatest need for further improvement can be identified. As Feldstein and Jiggins (1994:3) state "Using gender as a focus means that the system as a whole is better described and the opportunities for technological innovation are better understood."

Briefly, gender analysis examines farming systems by asking questions about men and women roles in production such as (1) who does what, when and where? (2) who has access to or control over resources? and (3) who benefits from each enterprise? (Feldstein and Jiggins, 1994:4-5). By asking these questions, a more complete picture of the overall pattern of production systems is established which can assist in focusing research and development efforts in a way that improves their chances for success. Gender analysis helps to identify potential collaborators, sex-specific constraints or preferences, as well as sex-specific activities for further focus.

Before discussing some gender-related considerations for improving the efficiency of research at ICARDA, the following section provides two specific examples that highlight the importance of gender as a key determinant of technology adoption. Both technologies have important implications for men and women in the region. Specifically, the examples show how changes in production systems through the introduction of improved technology affect farming systems, especially with regard to the timing and intensity of women's labor.

Differential Impact: The Case of Winter-Sown Chickpea and Lentil Mechanization

As Feldstein et al. correctly state (1989:1): "All aspects of agricultural research, from problem selection to methodology to testing to dissemination, have social implications." Indeed, while certain technologies have shown wide-scale

benefits and improved farm income, other technologies have had only harmful effects, while the impact of most other technologies clearly depends on the specific situation where they were introduced." This latter case can be illustrated by two examples of technologies developed by ICARDA which clearly have a gender component.

ICARDA has a responsibility to improve the chickpea and lentil crop, which are key crops in the rainfed farming systems of WANA. Among the new technologies developed to improve the yield of these food legumes, new winter chickpea varieties and the mechanical harvesting of lentils are the most promising. Though these technologies have not been adopted yet at a large scale, it appears from the research conducted that they are potentially economically attractive enterprises. Both these technologies appear to have important implications for women.

The Case of Winter-Sown Chickpea

Briefly, the new winter-chickpea varieties are bred for their resistance to cold temperature and disease which permit them to be planted earlier in the wet season than the traditional spring-sown varieties. Earlier planting means taking advantage of a longer growing season and better moisture regimes. Experiments have shown that winter-sown chickpeas considerably outyield the spring-sown varieties. To ensure higher productivity from winter-sown chickpeas, however, an extra weeding of this crop is required. Weeding in WANA is usually performed by women by hand and it is expected that the responsibility for this extra weeding will fall to women.

Farmer's adoption of these technologies will have an affect on women's labor and the benefits or harm to women appear to depend on the circumstances in which they are introduced. As El-Fattal (1992) shows in an ex-ante adoption study of winter chickpea technology in northern Tunisia, large farmers will be most likely to adopt winter-sown chickpea since they have access to the financial resources required to hire women to perform the additional weeding. Small farmers however, are unlikely to adopt this technology because of their limited access to cash for hiring extra labor and the limits of unpaid family labor. Thus, the adoption of winter-sown chickpeas by large farmers will lead to additional job opportunities and income for women from landless rural households or women from smaller land-holdings.¹⁹ Needless to say, although this technology leads to the creation of more jobs for women, the type of work involved remains tedious and tiresome. In the unlikely event of small farmers adopting winter-sown chickpea, the impact of this technology on women will be negative. Since it is unlikely that smaller farmers will hire women to do the extra-weeding, the additional weeding will become an added responsibility of women from the family. As this work will not be remunerated, it is argued that the new technology

¹⁹ No impact on women from large farm holdings was predicted by this study.

does little to improve women's lives on this farm type, regardless of whether it will improve household income as a whole.

In the final analysis, whether or not the adoption of winter-sown chickpea varieties is beneficial to women depends on who makes income-spending decisions in the family. It appears from the review of literature that women are often neglected in income-spending decisions, and that the additional income received by the household from their labor is spent by men according to their set priorities. However, it is possible to argue that even if women are excluded from this process, their negotiating power within the family may improve as a result of their bringing in more income. Compared to women who gain no income, such an improvement might ultimately help to empower women, allowing them to participate more in decision-making and perhaps in gaining additional direct and indirect non-cash benefits.

The above ex-ante analysis remains speculative until empirical data is collected to verify the conclusions reached. In particular, data on income spending decisions are needed such as who controls women's income and to what extent do women have direct access to cash, decision-making and informal power. It is clear from this review of literature that very few studies have looked into who has access to or control over resources and decision-making for production in the WANA region. Consequently, the impact of this technology cannot be accurately understood until further research is conducted in this area.

The Case of Lentil Mechanization

As with chickpea, lentil is a highly labor intensive crop, especially harvesting which is a task usually performed by women, either by hand-pulling or with the help of a scythe. Consequently, ICARDA has been working on mechanized lentil harvesting by developing improved tall, non-lodging cultivars and mechanical lentil harvesters. Though no studies have been conducted to date to determine the potential impact of these technologies on women's labor, it is still possible to suggest that, like winter-sown chickpea technology, differential impacts on women can be expected, especially with respect to the timing and intensity of their labor.

It is possible to predict that the mechanization process will replace both hired and family women labor and whether this is good or bad will ultimately depend on the availability of other jobs for women. In the case of family labor, this technology can be viewed as an overall positive development, since it will free women from this tedious task to do other things, or it might simply provide them with some extra free time to rest. In the case of hired labor, mechanical harvesting will displace women labor which in turn will cause them to lose an important source of income. Unless there are other jobs in the region available to them at that time, such a loss may seriously reduce farm income.

Though these predictions still need field verification, the potential adoption and impact of winter-sown chickpea and mechanical harvesting of lentil appears to be dependant on a whole set of complex factors. These include local and regional conditions, farm size, farming system type, timing and intensity of women's labor, and the availability of alternative employment opportunities. To ensure successful adoption and utilization of these technologies, the above factors must be examined carefully in every setting in which these, as well as other technologies, are to be introduced.

It is argued in this paper that ICARDA's goals can be better met if the knowledge of both female and male farmers is used in technology design and development. Higher rates of return to research can be achieved, by incorporating users' perspectives (men's and women's) in the design and development of technologies, in order to improve their likelihood of adoption. In addition to efficiency, gender equity aspects of technology development can be addressed either by designing technologies **which do not** adversely affect women farmers or by developing technologies aimed specifically at improving women's productivity and reducing their workloads.

Gender Methodologies: A Client-Oriented Approach

Scientists at ICARDA can incorporate gender analysis regularly in the process of their work, from the first stage of problem selection to methodology, testing, dissemination and in impact and adoption studies. ICARDA scientists may want to consult with their clients (men, as well as women farmers) prior to making any decisions regarding technology design. Gender issues (if any), can be weighed in advance of technology development so as to avoid any potential negative impact. Gender variables can then be re-examined after the technology is developed. Tradeoffs that emerge from the adoption of new technology could be debated. For instance, scientists may be encouraged to look into the impact of a newly introduced mechanical harvester on female and male labor. A mechanical harvester may shorten the growing season, which may offer the opportunity of planting a second crop. How will this new technology alter employment opportunities for both men and women?

The above informal client-oriented approach which can be used systematically by ICARDA scientists to learn more about the impact of a new technology on a production system can be enhanced by including gender variables in more formal mechanisms such as in:

1. Baseline and characterization studies, rapid appraisal studies, travelling workshops, and adoption and impact studies. These methodologies can be modified to incorporate information on gender by asking questions about men and women roles in food production such as (1) who does what, when and

where? (2) who has access to or control over resources? and (3) who benefits from each enterprise? It is argued that by collecting data on gender in these ways, a more complete picture of the production process emerges, which in turn allows ICARDA to be more efficient in its efforts to identify points of technology intervention and in designing technological improvements.

2. On on-farm and on-station trials, women as well as male farmers can be encouraged to participate in these trials. Women and men can be asked to state their needs, criteria, and preferences and make their selections. Since women predominate in postharvesting, their knowledge and preference with respect to desirable postharvest characteristics would be useful to breeders at ICARDA and NARSs. Incorporating a users' perspective—women's and men's—can contribute to a more successful research partnership between farmers on the one hand and researchers from ICARDA on the other. It allows for a more effective design, development and adoption of technology, as well as ensures equity between the sexes by taking into account gender needs and preferences.

By systematically applying the above two methodological approaches, ICARDA can become the leading institution in the region in the collection of basic information on men's and women's roles and needs in agriculture, and in the development and application of gender methodologies. Such methodologies can then be used by national agricultural research institutions (NARSs) in their efforts to conduct more effective diagnostic and adaptive research.

Gender-Related Priority Areas for Research At ICARDA

The following is a list of several research areas where gender analysis appears to be most relevant at ICARDA. These research suggestions are prioritized according to several criteria. These are: a) research suggestions in areas where women in the region appear to have an important (or potential) role; b) research suggestions where gender analysis is likely to have the greatest payoff and c) research suggestions which are clearly part of ICARDA's own research priorities.

—The effect of increased yields from improved cereal and food legume varieties.

Increased yields may cause more work for women in harvesting and post-harvesting activities such as cleaning, sorting and bagging. Thus, ICARDA could research:

1. What are the implications of this additional labor on women's workload?
2. Does an increased workload indicate the need for equipment which can assist them in conducting these tasks?

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3. Do women receive any benefits from this increased workload?
 4. Whether they do will depend on intrahousehold dynamics, culture, social structure, etc. If they don't benefit, what can ICARDA do to offset this?

By examining these issues, ICARDA can reach a better understanding regarding the quality and acceptability of the final products which emerge from its research in germplasm enhancement. Also, the adoption of high yielding varieties may require additional resources (in this case manual or mechanical equipment and tools for cleaning, bagging and sorting). Do these additional requirements affect the likelihood of adoption of these new high yielding varieties?

—The extent to which women are involved in subsistence cereal production (especially harvesting in Syria, Morocco, and Baluchistan, Pakistan, e.g.). Who is responsible for seed selection in cereals production?

By answering these questions, it is possible to improve the efficiency of research on cereal improvement by involving the relevant persons with the best knowledge (who can assist the scientist) during problem identification and on on-station and on-farm assessments.

—The gender division of labor in food legume production such as sowing, fertilizing, weeding, harvesting and seed selection in Egypt and Ethiopia, for example.

Information on current food legume production practices from appropriate informants can be incorporated in discussions about current conditions and existing practices, and in assessment of improved practices. Such information allows for more effective design, development and adoption of new food legume technology (such as winter-sown chickpea and other high yielding chickpea varieties and mechanical lentil harvesting). It also ensures that the research approach is sensitive to equity issues between men and women.

—The impact of better management techniques (herbicide use, planting dates, etc.) on the intensity and timing of men and women's labor. Do they increase or decrease their workload? Are women involved in the decisions taken regarding these management techniques?

Information derived from the above questions can be used by ICARDA to discover the best collaborators (men, women or both) to rely on in the testing and evaluation of new management techniques. This in turn will ensure that the

technology being developed is based on valid and complete data, which could contribute to the efficiency of technology development and adoption.

—The constraints facing women in livestock production with regard to the feeding, animal hygiene, disease control and health issues.

Since women do a lot of the work associated with livestock production, they appear to be the best source of information for ICARDA scientists for identifying constraints and problems of livestock health and nutrition. Discovering these constraints might reveal specific problems which ICARDA research can address.

—The technologies to improve dairy production (such as better feed), which could improve women's income derived from the selling of milk yogurt, cheese and ghee.

This research suggestion is a good example of how ICARDA can develop technology to benefit women directly, by promoting gender equity by increasing women's income or within household bargaining position, and enhancing food production at the household level. The actual impact of improved dairy production should be empirically verified.

—The role of women in natural resource conservation and management.

Women can become important collaborators in developing technologies for natural resource conservation and management, since they are the prime gatherers and users of water and fuel for household use. The tasks they perform (activities analysis) and how they make management decisions regarding these tasks become important questions since they will be affected by, and will affect the adoption of any proposed solutions offered by ICARDA scientists. Women's need for water and fuel may also suggest specific technologies which ICARDA could help develop.

—The role of women in rangeland management and use, and the potential impact or adoptability of new rangeland management techniques such as sown pasture on women.

Women collaborators can provide useful information to scientists working on the development of new rangeland management techniques. If sown pasture is introduced, questions such as whether men or women will perform these tasks, how much time is expected from them, and whether such labor will be available become

important prior to developing the technology, and in its evaluation after the technology is introduced.

This paper reviews the available literature on the topic of women in agriculture in West Asia and North Africa with the purpose of (1) defining their role in food production, (2) identifying major constraints which women face as contributors to farming household security and livelihood and (3) assist in developing gender-related priority research activities at ICARDA. In addition to showing that rural women in the region are an enormous human resource, crucial for agricultural production, the paper also highlights women's limited access to and control over productive resources such as land, inputs and technology, as well as support services such as extension, information, training and marketing. The paper concludes with several concrete gender-anchored recommendations in the process of technology development at ICARDA.

Real progress is not expected unless the above findings and recommendations are translated into concrete actions to benefit women farmers directly. This will require serious dedication on the part of scientists whose research efforts can be made more effective if sensitized to gender concerns. We hope that this paper contributes to this sensitization, and provides some impetus towards the development of a consistent and persistent strategy to include a gender perspective in process of all technology development.

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