

# **Global Scenario of Farm Women in Agriculture: Cross cutting Issues**

**Veenita Kumari**

Deputy Director (Gender Studies), MANAGE, Hyderabad

The dream of socio-economic empowerment of women will not be complete without empowering those who are living at the last periphery. The ones whose day starts before sunrise and continues after sunset. These are the women farmers, whose voices often go unheard owing to their gender, and who struggle to establish their identity at the grass root level due to patriarchal traditions and gender socialization. However, gender based discrimination continues in multiple ways.

Gender inequality is one of the oldest and the most pervasive forms of inequality that shapes our economies, societies and communities. It denies women their voices, devalues their work and results in power imbalances between women and men from the household to the national and global levels.

Women play a crucial role in all farm-related activities from land preparation to marketing. They contribute a higher proportion of labor in agricultural sector than men. However, they are not active in decision making. It stresses the need for a new agricultural research and extension agenda which integrates gender analysis into the process of technology generation and dissemination. It also comes up with future strategies to make women a more active part of important farm decisions both at the household and legislature level.

Women comprise a large proportion of the agricultural labor force in Sub-Saharan Africa, ranging from 30 to 80 percent (FAO 2011).<sup>1</sup> Yet women farmers are consistently found to be less productive than male farmers. The gender gap in agricultural productivity—measured by the value of agricultural produce per unit of cultivated land—ranges from 4 to 25 percent, depending on the country and the crop (World Bank and ONE 2014).

This gap exists because women frequently have unequal access to key agricultural inputs such as land, labor, knowledge, fertilizer and improved seeds. The fact that the gender gap persists suggests that the underlying constraints are still inadequately tackled in agricultural policy strategies and programs.



978-81-947184-1-3

We estimate that the gender gap amounts to \$100 million in Malawi, \$105million in Tanzania, and \$67 million in Uganda per year. These estimates can help policy makers understand the scale of the gains that could be made from designing better policies to improve women's ability to use agriculture to lift themselves and their families out of poverty and to contribute to economic growth. Closing the gender gap will require changing existing or designing new policies, which may require additional resources.

### **Making current agricultural policies more gender responsive**

▲ Such policies may include tweaking existing policies, such as agricultural extension services, to purposely include both women and men.

▲ Designing new agricultural policies that are gender targeted. Policy makers can design agricultural policies that focus specifically on the needs of women farmers, for example, by promoting time or labour-saving and sustainable technologies.

Increasing GDP by closing the gender gap in agricultural productivity has the potential to lift as many as 238,000 people out of poverty in Malawi, approximately 80,000 people in Tanzania and 119,000 people in Uganda. Annual crop output could increase by 2.1 percent in Tanzania, 2.8 percent in Uganda, and 7.3 percent in Malawi.

### **Malawi**

In Malawi, the unconditional gender gap is estimated to be 28 percent. The costs of this unconditional gender gap equate to-

- ▲ 7.3 percent of current crop production; or
- ▲ 6.1 percent of agricultural GDP (or about \$90 million); or
- ▲ 1.85 percent of total GDP (or approximately \$100 million), including the multiplier effects of benefits to other sectors in the economy.

### **Tanzania**

In Tanzania, the unconditional gender gap of 16 percent represents

- ▲ 2.1 percent of current agricultural output; or
- ▲ 1.5 percent of agricultural GDP (or over \$85 million).

### **Uganda**

The unconditional gender gap in agricultural productivity in Uganda is 13 percent. The costs of this unconditional gender gap equate to

- ▲ 2.8 percent of current crop output; or

- ▲ 1.6 percent of agricultural GDP (or about \$58 million); or
- ▲ 0.42 percent of total GDP (or nearly \$67 million), including the multiplier effects of benefits to other sectors in the economy.

Women and men farm different crops. Women farmers are less likely to grow cash or export crops that men sell to the market for higher incomes. In Malawi, the primary cash crop, tobacco, is only planted on 3 percent of women's plots compared to 10 percent of men's plots. Overall, there is a 28 percent gender gap between women and men in the fraction of land devoted to export crops in Malawi. Closing these gender gaps in the cultivation of cash crops has the potential of raising GDP over \$28 million in Malawi, \$3 million in Tanzania, and \$8 million in Uganda.

Women are disadvantaged in accessing agricultural machinery and production technologies. In all the three countries profiled, women's access to agricultural implements and machinery is significantly lower than that of men. Differences in the use of implements and machinery explain 18 percent of the gender gap in Malawi, 8 percent in Tanzania, and 9 percent in Uganda. In Malawi, women own fewer agricultural implements and machinery.

In addition to this gender mechanization gap, women also use lower levels of advanced agricultural technologies, such as pesticide and inorganic fertilizer. About 12 percent of the gap, or \$13 million, in potential gross gains in Tanzania can be accounted for by the gender difference in pesticide use. Lower use of inorganic fertilizer by women is equivalent to potential gross gains in GDP of over \$2 million in Uganda.

Agriculture is under performing in many developing countries for a number of reasons. Among these is the fact that women lack the resources and opportunities they need to make the most productive use of their time. Women are farmers, workers and entrepreneurs, but almost everywhere they face more severe constraints than men in accessing productive resources, markets and services.

Women make essential contributions to agriculture in developing countries, but their roles differ significantly by region and are changing rapidly in some areas. Women comprise, on an average, 43 percent of the agricultural labour force in developing countries, ranging from 20 percent in Latin America to 50 percent in Eastern Asia and sub-Saharan Africa. Their contribution to agricultural work varies even more widely depending on the specific crop and activity.

- Women in agriculture and rural areas have one thing in common across regions: they have less access than men to productive resources

and opportunities. The gender gap is found for many assets, inputs and services – land, livestock, labour, education, extension & financial services and technology – and it imposes costs on agriculture sector, the broader economy and society as well as on women themselves.

- Closing the gender gap in agriculture would generate significant gains for the agriculture sector and for the society. If women had the same access to productive resources as men, they could increase yields on their farms by 20–30 percent. This could raise total agricultural output in developing countries by 2.5–4 percent, which could in turn reduce the number of hungry people in the world by 12–17 percent. The potential gains would vary by region depending on how many women are currently engaged in agriculture, how much production or land they control, and how wide a gender gap they face.
- Policy interventions can help close the gender gap in agriculture and rural labour markets. Priority areas for reform include: - eliminating discrimination against women in access to agricultural resources, education, extension and financial services and labour markets; - investing in labour-saving and productivity-enhancing technologies and infrastructure to free women's time for more productive activities; and - facilitating participation of women in flexible, efficient and fair rural labour markets.

Women make essential contributions to agriculture and rural economic activities in all developing country regions. Their roles vary considerably among and within regions and are changing rapidly in many parts of the world where economic and social forces are transforming agriculture sector. The emergence of contract farming and modern supply chains for high-value agricultural products, for example, present different opportunities and challenges for women than they do for men. These differences derive from the different roles and responsibilities of women and the constraints that they face.

Female agricultural labour force in Latin America in 2010 was slightly higher than in 1980. The South American countries of the Plurinational State of Bolivia, Brazil, Colombia, Ecuador and Peru dominate both the average and the rising trend, while many countries in Central America and the Caribbean have seen declining shares of women in the agricultural labour force.

## **Women in agriculture**

### **Agriculture labour force**

Women work in agriculture as farmers on their own land, as unpaid workers on family farms and as paid or unpaid labourers on other farms and agricultural enterprises. They are involved in both crop and

livestock production at subsistence and commercial levels. They produce food and cash crops and manage mixed agricultural operations often involving crops, livestock and fish farming. All of these women are considered as part of the agricultural labour force.

Based on the latest internationally comparable data, women comprise an average of 43 percent of the agricultural labour force of developing countries. The female share of the agricultural labour force ranges from about 20 percent in Latin America to almost 50 percent in Eastern and South-eastern Asia and sub-Saharan Africa. The regional averages mask wide variations within and among countries. Women in sub-Saharan Africa have relatively high overall labour-force participation rates and the highest average agricultural labour-force participation rates in the world. Cultural norms in the region have long encouraged women to be economically self-reliant and traditionally give women substantial responsibility for agricultural production in their own right. Regional data for sub-Saharan Africa conceal wide differences among countries. The share of women in the agricultural labour force ranges from 36 percent in Côte d'Ivoire and the Niger to over 60 percent in Lesotho, Mozambique and Sierra Leone. A number of countries have seen substantial increase in the female share of the agricultural labour force in recent decades due to a number of reasons, including conflict, HIV/AIDS and migration. Women in Eastern and South eastern Asia also make very substantial contributions to the agricultural labour force, almost as high on average as in sub-Saharan Africa. The regional average is dominated by China, where the female share of the agricultural labour force has increased slightly since 1980 to almost 48 percent. The share of women in the agricultural labour force in most other countries in the region has remained fairly steady at between 40 and 50 percent, although it is substantially lower and declining in some countries such as Malaysia and the Philippines. The Southern Asian average is dominated by India, where the share of women in the agricultural labour force has remained steady at just over 30 percent. This masks changes in other countries where the female share of the agricultural labour force appears to have increased dramatically, such as Pakistan where it has almost tripled since 1980, to 30 percent, and Bangladesh where women now exceed 50 percent of the agricultural labour force. The female share of the agricultural labour force in the Near East and North Africa appears to have risen substantially, from 30 percent in 1980 to almost 45 percent. Some of the highest and fastest-growing rates of female agricultural labour force participation in the region are found in Jordan, the Libyan Arab Jamahiriya and the Syrian Arab Republic. The countries of Latin America have high overall female

labour-force participation rates, but much lower participation in agriculture than those in other developing country regions. This pattern reflects relatively high female education levels, economic growth and diversification, and cultural norms that support female migration to service jobs in urban areas.

### **Time-use**

Time-use surveys that cover all agricultural activities reveal considerable variation across countries, and sometimes within countries. In Africa, estimates of the time contribution of women to agricultural activities ranges from about 30 percent in Gambia to 60–80 percent in different parts of Cameroon. In Asia, estimates range from 32 percent in India to over 50 percent in China. The range is lower in Latin America, but exceeds 30 percent in some parts of Peru. A striking degree of within-country variation is observed in India. While this nationally representative data indicates that the national average for women's share of total time-use in agriculture is 32 percent, the share ranges from less than 10 percent in West Bengal to more than 40 percent in Rajasthan. These studies also reveal that female time use in agriculture varies widely depending on the crop and the phase of the production cycle, the age and ethnic group of the women in question, the type of activity and a number of other factors. The data for India hide wide variations between West Bengal and Rajasthan, but in both areas, younger women contribute a higher share of the total time provided in agriculture by their age group than older women do in theirs. In Rajasthan, for example, girls aged between 14 and 19 contribute up to 60 percent of the total time spent on agriculture by their age group (Jain, 1996). Planting is a predominantly female activity, but women are typically involved to some extent in all activities except ploughing. Studies from Indonesia reveal greater involvement of women in upland rice production than that of wet rice and in the management of young plantation crops such as cinnamon and rubber rather than the same crops at maturity. Two separate studies are reported each for Peru and Zambia, and the differences reflect different time periods and locations within the countries.

Evidence shows, however, that female farmers are largely excluded from modern contract-farming arrangements because they lack secure control over land, family labour and other resources required to guarantee delivery of a reliable flow of produce. For example, women comprise fewer than 10 percent of the farmers involved in smallholder contract-farming schemes in the Kenyan fresh fruit and vegetable export sector (Dolan, 2001), and only 1 of a sample of 59 farmers

contracted in Senegal to produce French beans for the export sector was a woman (Maertens and Swinnen, 2009). While men control the contracts, however, much of the farm work done on contracted plots is performed by women as family labourers. For example, in 70 percent of the cases of sugar contract-farming in South Africa, the principal farmer on the sugarcane plots is a woman (Porter and Philips Horward, 1997). Women work longer hours than men in vegetable contract-farming schemes controlled by male farmers in Punjab State India (Singh, 2003). In a large contract-farming scheme involving thousands of farmers in China, women – while excluded from signing contracts themselves – perform the bulk of the work related to contract farming (Eaton and Shepherd, 2001). Women may not be well compensated as unpaid family labour in contract-farming schemes (Maertens and Swinnen, 2009).

### **Women as livestock keepers**

Within pastoralist and mixed farming systems, livestock play an important role in supporting women and in improving their financial situation, and women are heavily engaged in this sector. An estimated two-thirds of poor livestock keepers, totalling approximately 400 million people, are women (Thornton et al., 2002). They share responsibility with men and children for the care of animals, and particular species and types of activity are more associated with women than men.

### **Women in fisheries and aquaculture**

In 2008, nearly 45 million people worldwide were directly engaged, full time or part time, in the fishery primary sector. In addition, an estimated 135 million people are employed in the secondary sector, including post-harvest activities.

According to the FAO report of 2008 including data from 86 countries, 5.4 million women worked as fishers and fish farmers in the primary sector. This represents 12 percent of the total. Women are reported to constitute 33 percent of the rural aquaculture workforce in China, 42 percent in Indonesia and 80 percent in Viet Nam (Kusabe and Kelker, 2001).

### **Gender gap in agriculture: Cross cutting issues**

Access to productive resources such as land, modern inputs, technology, education and financial services is a critical determinant of agricultural productivity. Agriculture is important to women, but

female farmers have less access to the productive resources and services required by agricultural producers. Women are less likely than men to own land or livestock, adopt new technologies, use credit or other financial services, or receive education or extension advice. While the size of the gender gap differs by resource and location, the underlying causes for the gender asset gap are repeated across regions: social norms systematically limit the options available to women.

## **Land**

Land is the most important household asset for households that depend on agriculture for their livelihoods. Improving women's access to land and security of tenure has direct impacts on farm productivity, and can also have far-reaching implications for improving household welfare. Strengthening land ownership by women in Nepal, for example, is linked with better health outcomes for children (Allendorf, 2007).

The evidence illustrating gender inequalities in access to land is overwhelming. Women across all developing regions are consistently less likely to own or operate land; they are less likely to have access to rented land, and the land that they do have access to, is often of poorer quality and in smaller plots. The most comprehensive data on women's access to land come from the FAO Gender and Land Rights Database (FAO, 2010f), and were collected from different data sources, including household surveys, agricultural censuses and the academic literature. The database provides information on the shares of "agricultural holders" who are male and female. An agricultural holder is defined as the person or group of persons who exercise management control over an agricultural holding. The holding may be owned, rented or allocated from common property resources and may be operated on a sharecropped basis. Stark gender disparities in land holdings are apparent in all regions. Women represent fewer than 5 percent of all agricultural holders in the countries in North Africa and West Asia for which data are available. The sub-Saharan African average of 15 percent masks wide variations, from fewer than 5 percent in Mali to over 30 percent in countries such as Botswana, Cape Verde and Malawi. Latin America has the highest regional average share of female agricultural holders, which exceeds 25 percent in Chile, Ecuador and Panama.

Inequality in access to land is more acute in Bangladesh, Ecuador and Pakistan, where average land holdings of male-headed households are more than twice the size of those of female-headed households.



## **Farm labour**

Labour availability depends on the amount of family labour that a household can mobilize and the amount of labour that can be hired in local labour markets. Labour constraints can be more acute for both women and female-headed households than for men and male-headed households for several reasons. Women generally face gender-specific constraints as agricultural labourers and in hiring-in labour. Low levels of human capital – education, health and nutrition – are a constraint on women's labour productivity in agriculture and other sectors (Behrman, Alderman and Hoddinott, 2004).

## **Information and extension**

Good and timely information on new technologies and techniques is essential for farmers when deciding whether or not to adopt an innovation. Although private extension services are playing an increasing role in some countries, such as Brazil, China and India, public extension services remain the key source of information on new technologies for farmers in most developing countries. Extension services encompass wide range of services provided by experts in the areas of agriculture, agribusiness, health and others and are designed to improve productivity and the overall well-being of rural populations. The provision of agricultural extension can lead to significant yield increases. Yet, extension provision in developing economies remains low for both women and men, and women tend to make less use than men of extension services (Meinzen-Dick et al., 2010).

In social contexts where meetings between women and men from outside the family nucleus are restricted, a lack of female extension agents effectively bars women from participating. The preference for female extension agents varies by country and marital status. In Ghana, for example, male and female farmers in male-headed households have equal contact with extension agents but female farmers in female-headed households have much less contact, although they are willing to speak to agents of either sex (Doss and Morris, 2001). In the United Republic of Tanzania, on the other hand, many female farmers prefer to talk to a female extension officer and, by 1997, one-third of extension officers were women, up from almost none 15 years prior (Due, Magayane and Temu, 1997). However, even when women have access to extension services, the benefits may not be obvious.

Extension service agents tend to approach male farmers more often than female farmers because of the general misperception that women

do not farm and that extension advice will eventually “trickle down” from the male household head to all other household members. Extension services are often directed towards farmers who are more likely to adopt modern innovations, for example farmers with sufficient resources in well-established areas.

Time constraints and cultural reservations may hinder women from participating in extension activities, such as field days, outside their village or within mixed groups (Meinzen-Dick et al. 2010).

### **Financial services**

Financial services such as savings, credit and insurance provide opportunities for improving agricultural output, food security and economic vitality at the household, community and national levels. Many studies have shown that improving women’s direct access to financial resources leads to higher investments in human capital in the form of children’s health, nutrition and education. Women generally have less control over the types of fixed assets that are usually necessary as collateral for loans. Institutional discrimination by private and public lending institutions often either ration women out of the market or grant women loans that are smaller than those granted to men for similar activities (Fletschner, 2009; World Bank, FAO and IFAD, 2009). In seven out of nine countries in the Rural Income Generating Activities (RIGA) dataset, rural female-headed households are less likely than male-headed households to use credit. In Madagascar, for example, the share of female-headed households that use credit is 9 percentage points smaller than the share of male-headed households who do so. The cases of Ghana and Panama are noteworthy in that no gender gap is apparent in the use of credit.

In Uganda, women entrepreneurs receive just 1 percent of available credit in rural areas (Dolan, 2004). Also in Uganda, nearly all female-headed households reported a desire to expand agricultural activities but lacked the money to purchase land and inputs such as seeds, fertilizer and pesticides, and/or to hire-in labour. They cited lack of access to credit as one of the most prominent barriers to livelihood diversification (Ellis, Manuel and Blackden, 2006).

Chowdhury (2009) reported that credit to women from the Grameen Bank was positively and significantly correlated with the performance of male-managed micro-enterprises but not those managed by females. In Eastern Asia, the evidence regarding bias in credit access is mixed. In China, de Brauw et al. (2008) found that households in which women manage their own farms appear to have almost identical access to land and credit relative to male-headed households.

## **Technology**

Access to new technology is crucial in maintaining and improving agricultural productivity. Gender gaps exist for a wide range of agricultural technologies, including machines and tools, improved plant varieties and animal breeds, fertilizers, pest control measures and management techniques. A number of constraints, including the gender gaps mentioned, lead to gender inequalities in access to and adoption of new technologies, as well as in the use of purchased inputs and existing technologies. The use of purchased inputs depends on the availability of complementary assets such as land, credit, education and labour, all of which tend to be more constrained for female-headed households than for male-headed households.

Adoption of improved technologies and inputs may also be constrained by women's lower ability to absorb risk.

In Ghana, for example, Doss and Morris (2001) found that only 39 percent of female farmers adopted improved crop varieties (compared with 59 percent of male farmers) because they had less access to land, family labour and extension services.

### **Productivity of male and female farmers**

Many studies have attempted to assess whether female farmers are as productive as male farmers. These studies covered a wide range of countries (primarily, but not only, in Africa), crops, time periods and farming systems, and used various measures of productivity and efficiency.

#### **Burkina Faso**

With the exception of own labour, the plots controlled by women used less of all other inputs. Women's yields were lower than men's for a variety of crops – 20 percent lower for vegetables and 40 percent lower for sorghum – but the difference was explained entirely by their lower use of productive inputs, which in turn was a result of gender-specific social norms. The first found that female farmers produced 15 percent lower value per hectare than male farmers. It also found that female farmers needed advice from female agricultural extension workers – not just more inputs – in order to achieve higher yields.

Research in the Ethiopian highlands found that female-headed households produced 35 percent less per hectare, in value terms, than male-headed households but the differences were due to lower levels of input use and less access to extension services by the female farmers (Tiruneh et al., 2001). In the same region, yields for barley and other cereals were found to be 50 percent higher for farms operated by men

because farms run by female-headed households had only half the male labour and less than one-third of the amount of draught animal power (Holden, Shiferaw and Pender, 2001).

Women in Ghana were found to be as efficient as men in maize and cassava production, but they achieved lower yields and earned lower profits because they could not maintain the fertility of their land (Goldstein and Udry, 2008).

In western Kenya, female-headed households were found to have 23 percent lower yields than male-headed households, but the difference was caused by less-secure access to land and lower education levels (Alene et al., 2008).

A nationally representative study in Malawi found that maize yields were 12–19 percent higher on men's plots, but when women were given the same level of fertilizer for use on experimental plots, they achieved the same yields (Gilbert, Sakala and Benson, 2002).

In Osun State, female rice producers achieved 66 percent lower yields than male farmers but the difference was attributable to differences in input use (Oladeebo and Fajuyigbe, 2007). Similarly, in Ondo and Ogun States, female small-scale cassava farmers achieved lower yields and lower returns than their male counterparts because they used fewer inputs and purchased inputs of lower quality or higher price (Timothy and Adeoti, 2006).

Female managed farms in Nepal produce less value per hectare than male-managed farms, but the differences are nearly all accounted for by lower inputs use (Thapa, 2008). Female managed farms in China are at least as profitable as those run by men, according to data from the China National Rural Survey (Zhang, De Brauw and Rozelle, 2004).

The labour productivity of female farm workers in Bangladesh is at least as high as that of male workers when input use is the same (Rahman, 2010). Labour productivity studies for oil palm in Indonesia (Hasnah, Fleming and Coelli, 2004), for rice in Nepal (Aly and Shields, 2010) and for vegetables in Turkey (Bozoglu and Ceyhan, 2007) all show that female labour is at least as productive as male labour when differences in irrigation and seed type are considered.

### **Production gains from closing the gender gap**

If gender-specific differences in input use could be overcome and female farmers could achieve the same yields as male farmers, the evidence suggests that the production gains could be substantial.

### **Other social and economic benefits of closing the gender gap**

In addition to increase in production and income, closing the gender gap in agriculture would generate broader social and economic benefits by strengthening women's direct access to, and control over, resources and incomes. Evidence from Africa, Asia and Latin America consistently shows that families benefit when women have greater status and power within the household. Increased control over income gives women a stronger bargaining position over economic decisions regarding consumption, investment and production.

The statistics on farm women across the globe and the cross cutting gender issues reflect the gap between male and female farmers in various countries. These data are suggestive of the fact that a lot of efforts are needed to bring farm women at par with their counterparts. Hence, gender responsive approach, policies, programs and schemes are the much needed and sought after ways to address gender concerns of farm women globally.

#### **References:**

- Alene, A.D., Manyong, V.M., Omany, G.O., Mignouna, H.D., Bokanga, M. & Odhiambo, G.D. 2008. Economic efficiency and supply response of women as farm managers: comparative evidence from Western Kenya. *World Development*, 36(7): 1247–1260.
- Allendorf, K. 2007. Do women's land rights promote empowerment and child health in Nepal? *World Development*, 35(11): 1975–1988
- Aly, H.Y. & Shields, M.P. 2010. Gender and agricultural productivity in a surplus labor traditional economy: empirical evidence from Nepal. *Journal of Developing Areas*, 42(2): 111–124.
- Behrman, J.R., Alderman, H. & Hoddinott, J. 2004. Hunger and malnutrition. Paper prepared for the Copenhagen Consensus – Challenges and Opportunities. Unpublished.
- Bozoglu, M. & Ceyhan, V. 2007, Measuring the technical efficiency and exploring the inefficiency determinants of vegetable farms in Samsun Province, Turkey. *Agricultural Systems*, 94: 649–656.
- Chowdhury, J.A. 2009. Microcredit, microenterprises, and self-employment of women: experience from the Grameen Bank in Bangladesh. Dhaka, University of Dhaka.
- de Brauw, A., Li, Q., Liu, C., Rozelle, S. & Zhang, L. 2008. Feminization of agriculture in China? Myths surrounding women's participation in farming. *The China Quarterly*, 194: 327–348

- Dolan, C.S. 2001. The “good wife”: struggles over resources in the Kenyan horticultural sector. *Journal of Development Studies*, 37(3): 39–10.
- Doss, C. & Morris, M. 2001. How does gender affect the adoption of agricultural innovations? The case of improved maize technology in Ghana. *Agricultural Economics*, 25 (1), 27–39.
- Due, J.M., Magayane, F. & Temu, A.A. 1997. Gender again – views of female agricultural extension officers by smallholder farmers in Tanzania. *World Development*, 25(5): 713–725.
- Ellis, A., Manuel, C. & Blackden, C.M. 2006. Gender and economic growth in Uganda: unleashing the power of women. Washington, DC, World Bank.
- FAO. 2010f. FAO Gender and Land Rights Database (available at <http://www.fao.org/gender/landrights>).
- FAO. 2011 (forthcoming). World Census of Agriculture: analysis and international comparison of the results (1996-2005). FAO Statistical Development Series No. 13. (Columns 3 and 4). Rome
- Fletschner, D. 2009. Rural women’s access to credit: market imperfections and intra household dynamics. *World Development*, 37(3): 618–631.
- Gilbert, R. A., W. D. Sakala, and T. D. Benson. 2002. “Gender Analysis of a Nationwide Cropping System Trial Survey in Malawi.” *African Studies Quarterly* 6 (1): 223–43.
- Goldstein, M., and C. Udry. 2008. “The Profits of Power: Land Rights and Agricultural Investment in Ghana.” *Journal of Political Economy* 116 (6): 981–1022.
- Hasnah, Fleming, E. & Coelli, T. 2004. Assessing the performance of a nucleus estate and smallholder scheme for oil palm production in West Sumatra: a stochastic frontier analysis, *Agricultural Systems*, 79(1): 17–30.
- Holden, S., Shiferaw, B. & Pender, J. 2001. Market imperfections and land productivity in the Ethiopian Highlands. *Journal of Agricultural Economics*, 52(3): 53–70.
- Jain, D. 1996. Valuing work: time as a measure. *Economic and Political Weekly*, 31(43): WS46– 57. (pp. 48–49).
- Kusabe, K. & Kelker, G., eds. 2001. Gender concerns in aquaculture in Southeast Asia. Gender Studies Monograph No. 12. Bangkok, Asian Institute of Technology, School of Environment Resources and Development.

- Maertens, M. & Swinnen, J.F.M. 2009. Are modern supply chains bearers of gender inequality? Paper presented at the ILO-FAO workshop “Gender Dimension of Rural
- Meinzen-Dick, R., Quisumbing, A., Behrman, J., Biermayr-Jenzano, P., Wilde, V., Noordeloos, M., Ragasa, C. & Beintema, N. 2010. Engendering agricultural research. IFPRI Discussion Paper No. 973. Washington, DC, IFPRI.
- Oladeebo, J.O. & Fajuyigb, A.A. 2007. Technical efficiency of men and women upland rice farmers in Osun State, Nigeria. *Journal of Human Ecology*, 22(2): 93–100.
- Porter, G. & Phillips-Howard, K. 1997. Contract farming in South Africa: a case study from Kwazulu-Natal. *Geography: Journal of the Geographical Association*, 82(3&4): 1–38.
- Singh, S. 2003. Contract farming in India: impacts on women and child workers. Gatekeeper Series No. 111. London, International Institute for Environment and Development.
- Thapa, S. 2008. Gender differentials in agricultural productivity: evidence from Nepalese household data. MPRA (Munich Personal RePEc Archive) 144 Paper 13722 (available at <http://mpra.ub.unimuenchen.de/13722/>).
- Timothy, A.T. & Adeoti, A.I. 2006. Gender inequalities and economic efficiency: new evidence from cassava-based farm holdings in rural south-western Nigeria. *African Development Review*, 18(3): 428–443
- Tiruneh, A., Tesfaye, T., Mwangi, W. & Verkuyl, H. 2001. Gender differentials in agricultural production and decision-making among smallholders in Ada, Lume and Gimbichu Woredas of the Central Highlands of Ethiopia. Mexico City, International Maize and Wheat Improvement Center and Ethiopian Research Organization.
- Thornton, P.K., Kruska, R.L., Henninger, N., Kristjanson, P.M., Reid, R.S., Atieno, F., Odero, A.N. & Ndegwa, T. 2002. Mapping poverty and livestock in the developing world. Nairobi, ILRI (International Livestock Research Institute).
- World Bank, FAO & IFAD. 2009. Gender in agriculture sourcebook. Washington, DC, World Bank.
- World Bank and ONE. 2014. Levelling the Field: Improving Opportunities for Women Farmers in Africa. Washington, DC: World Bank.

Zhang, De Brauw and Rozelle, 2004. China's rural labor market development and its gender implications. China Economic Review, Volume 15, Issue 2, 2004, Pages 230-247.

•