

Rural Women Subsistence Farmers, Indigenous Knowledge Systems and Agricultural Research in South Africa

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ABSTRACT The study used secondary sources to make a critical analysis of the issue of rural women farmers, Indigenous Knowledge Systems (IKS) and agricultural research for sustainable livelihood in South Africa. Examples were drawn from the following provinces Eastern Cape, Kwazulu-Natal, Limpopo, Mpumalanga, and North-West. The study argues that a critical understanding of the way these factors impact on agricultural policy and research for a sustainable rural livelihood should be an important challenge for policymakers, researchers, development agencies, and other stakeholders. Women using their IKS played great role in agriculture. These factors tend to be marginalized in agricultural research. They have limited access to and control over agricultural resources. Therefore, a critical understanding of IKS and gender in agricultural research should be taken seriously by researchers, policymakers and other stakeholders. These factors influence the interpretation and use of IKS in agriculture.

INTRODUCTION

The paper is based on the argument that, although the promotion of agricultural research, especially in small-scale farming is at the heart of poverty-focused macroeconomic policy in South Africa, in practice, agricultural policy and research tends to marginalise the contribution of rural women and their associated indigenous knowledge systems in agriculture. According to the United Nations Food and Agricultural Organization (FAO) (2011), African small-scale farmers are predominantly women. The World Bank (2012) indicates that rural women in South Africa and in most other African countries, spend up to 60% of their time on agricultural work. Kotane (2009) and Ncube (2009) show that in most rural areas of South Africa, women are the major subsistence farmers, providing the basis of household and community sustainable livelihood. The majority of these women depend on their local community-based agricultural knowledge and innovation systems for agricultural production. The paper argues that, in the absence of males, African rural women of South Africa play a critical role in ensuring household food security. The World Bank (2012) explains food security as existing when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life. In the context of this discussion, a household is considered food-secure when its occupants do not

live in hunger or in fear of starvation. Hunn (2006), on the other hand, defines Indigenous Knowledge Systems (IKS) as bodies of knowledge, skills and beliefs produced locally and traditionally transmitted orally from one generation to the next. They are also known as community knowledge systems. It is on this basis that, using an examination of secondary sources and examples from different parts of South Africa, the paper interrogates the role of rural women farmers, and IKS in agricultural research for sustainable community livelihood.

Theoretical Overview/ Conceptual Framework

Although much has been written about the issue of gender and sustainable development in Africa and South Africa in particular (Karim 2008; Ncube 2009), limited research has been conducted on the role of African rural women subsistence farmers and their indigenous agricultural knowledge, in agricultural research for food security and a sustainable livelihood (Hyzer 2008). Johnson (2007) indicates that IKS is an underutilised resource in the rural development process of South Africa. The majority of the people, especially women subsistence farmers, depend on IKS for ensuring a sustainable household livelihood. FAO (2008) adds that the marginalisation of rural women farmers in the implementation process of rural development policy and research in South Africa and Africa in general, goes hand

in hand with the marginalisation of their community-based agricultural knowledge systems. This is so in spite of the increasing realization among various developmental stakeholders, including, researchers, and policymakers, that a country's ability to build on and mobilise the local knowledge systems available among its people, especially women, for socio-economic development, is as essential as the availability of physical and financial resources. This is based on the view that learning from what local communities already know creates an understanding of local conditions and provides an important context for activities designed to help such communities (World Bank 2012).

FAO (2008) provides three examples of gender-based variants of household food production systems in Africa, including South Africa. First, is the situation whereby women are responsible for production of all or most food crops. In this variant, food plots are considered women's plots. Second, men and women jointly cultivate staple food crops in fields controlled by male household heads. In this system, the male household head controls the output. Third, men are responsible for food production, while women specialise in food processing.

Schultz (2009) indicates that in most traditional societies in Africa there is in agriculture, a rigid division of labour by gender. This is usually based on the types of socio-economic and cultural activities performed on the farm or on the type of crops grown by men and women. The division of labour is based on patriarchal norms that typically require women to care for the needs of the members of the households, while men are involved in bringing cash income to the household. Women are also expected to help their fathers, and their husbands in their fields, which increases women's workload. Sometimes men will help women to clear their plots, thus preparing the land (Remans 2009).

The authors have the view that this distinction could be attributed to the colonial introduction of the cash economy in African agricultural production, which has tended to favour men and reinforce the gender norms that assign to women the responsibility of feeding their menfolk and families, while men have the responsibility of providing a cash income. However, the situation is not always rigid, because, in spite of women mainly growing food crops for household consumption, if there is any marketable surplus,

women sell this at the market to supplement household needs. This position is supported by World Bank (2012), which indicates that the distinction between men's and women's tasks is gradually becoming blurred. There are very few tasks that are done exclusively by men, such as in the clearing of fields. Women perform all the tasks on their plots, from sowing and weeding, to harvesting. They may be given some assistance from men in clearing and preparing the land for cultivation. On men's plots, women provide help by weeding, harvesting, sowing, etc. This is further elaborated by FAO (2008) who explains that gender roles and responsibilities in subsistence economies in most of Africa are dynamic; they change with new economic situations. One of the important changes noted in the first decade of 21st century, especially in Southern Africa, is the increased participation of women in agriculture, men migrating to work outside of agriculture.

Johnson (2007) argues that in most parts of Southern Africa, the distinction between crops is not always very clear, especially in the case of maize, a staple crop in most countries of the region, as well as being a cash crop. With the introduction of high-yielding varieties of maize, these high yielding varieties tend to be seen as men's crops, while local varieties are women's crops. This pattern has been observed in various parts of Malawi, Mozambique, Zambia, and even South Africa, where indigenous varieties of maize are woman's crops, while hybrid varieties are cash crops cultivated by men. The logic is the same: high-yielding varieties provide a large amount of marketable surplus, which allows men to provide cash income; while women continue with varieties that provide enough for subsistence consumption. Stevenson (2012) observed that most of agricultural research and extension is concentrated on the high-yielding varieties. Gasson (2007) discusses the issue of female-headed households in Southern Africa by stating that the proportion of female-headed households has been surging significantly since the 1990s. However, the paper argues that the majority of these are *de facto*-headed households; the situation arises as male heads migrate in search of other income-earning opportunities (Mokoena 2008).

Leeuw (2009) argues that household headship plays an important role in agricultural productivity in Southern Africa including South

Africa, to the extent that, due to their small size, female-headed households tend to be less productive than male-headed households. This could be attributed to shortage of labour especially in peak seasons.

Hyzer (2008) indicates that the issue of gender and land access is critical in all regions of the continent, despite the various constitutional and land-reform policies which have taken place in Africa. Women's access to land, and the security of women's land tenure affects overall agricultural productivity. In most of Africa, traditionally, land may be allocated through lineage or village heads. This is a model which still persists despite increasing private or state ownership of land. In patrilineal lineages, women have access to land through male relatives. For example, in some ethnic groups such as the Wazigua in Tanzania, women cannot inherit land. They are granted food plots by their husbands, however, they are not allowed to plant cash crops. The authors argue that overall, women's access to land in African societies is relatively restricted. Even in cases where the law, including the constitution, protects women's rights to land, traditional customs inhibit their access and control over land. In most of the Southern African tribal societies, single women can gain access to land through their fathers, brothers, or uncles. However, upon marriage in African patriarchal communities, women's access to land held by these relatives is lost, as they are expected to have access to land through their husbands. Generally, women tend to have smaller land-holdings and less fertile plots (FAO 2008).

The issue of gender and control over land is also an important factor in agricultural research and policy, because it tends to impact on gender differences in investments in land made by men and women. Kotane (2009) observed in Limpopo Province that an African woman who may have obtained land through her husband may be hesitant to invest in technology if she perceives her marriage to be unstable.

Johnson (2007) discusses the issue of gender and technological development in Southern Africa, including South Africa. She argues that, according to the agricultural intensification hypothesis, as the population pressure increases and agricultural production moves away from a more traditional practice to a more tool-based or mechanised (use of plough) farming, the role of women in agriculture declines. The authors hold

the view that this decline in the women's role, including their indigenous knowledge-systems is more in relative terms than in absolute terms. This is because, with increased capital intensification, such as the increased use of tractors and ox-driven implements, acreage increases. This implies that women have to do more weeding and harvesting and have to shoulder the increased work of caring for domestic animals, thus, more labour is demanded from women. The authors also argue that the use of modern technology by women subsistence farmers, such as chemical fertilizers and pesticides, depends on availability and the farmer's resources to purchase. As women subsistence farmers generally have less access to cash and credit, they are less likely to purchase and use modern technologies. Moreover, the authors argue that, despite the agricultural extension service having made a significant impact on productivity and output, most women farmers in South Africa tend to have limited access to extension services. They continue to depend on their community-based knowledge-systems for agricultural production because it is affordable and easily accessible.

The authors hold the opinion that another significant factor reducing women's efficiency and productivity on their plots is lack of access to credit. Credit is important for securing fertilizer, improved varieties of seeds, and other technology on farms. Most women farmers are not able to obtain credit without a male guarantor or without a husband's assistance. The disparity between who farms and who receives inputs, credit, etc. is owing to institutional barriers and social constraints. The perception that women produce crops for subsistence and not for the market, women's less secure land tenure and provision of credit through organizations geared towards men, affects the provision of credit to women farmers. Concerning output and income control from agriculture, Stevenson (2012) states that, in spite of both women and men being responsible for selling the cash crops along with some help from other household members, most rural women in Southern Africa, including South Africa, do not have much control over their income, thanks to patriarchy. The rural households and marketing institutions work within a wider framework of patriarchal systems that are tilted in favour of men's control of major household resources. Mufamadi (2006) elaborates that the lack of visibility of women's contribution and

participation in agriculture stems from the patriarchal norms which make African rural women's contribution to the household or the subsistence sector – “non-economic or non-market activity”. Secondly, the decision-makers continue to regard women as home producers or assistants on farms and not as farmers on their own merit.

METHODOLOGY

The study is based mostly on the examination of secondary sources pertaining to the research problem in the provinces of Eastern Cape, Kwazulu-Natal, Limpopo, Mpumalanga, and North-West in South Africa. According to Howell (2004), secondary data refer to information gathered by someone other than the researcher conducting the current study. In this study, the sources included past research studies conducted within the indicated provinces, periodicals, internet sources, government and non-governmental publications related to the research problem. As a result of the comprehensive nature of the study, the researchers took the following advantages of secondary sources: these were appropriate and adequate for drawing conclusions; their access was cheaper than obtaining primary data; the time involved in researching secondary data was much less than that needed to complete primary data collection. The study was aware of the limitations of using secondary sources which include the fact that the sample used to generate the secondary data may be small to support any generalizations. The data could also be general and vague for any decision-making.

Specifically, the study sought to answer the following questions: (i) What role does gender play in the use of indigenous agricultural knowledge-systems of South Africa?; (ii) How does gender influence access to agricultural research and technology for sustainable community livelihood in South Africa?

The following section presents and discusses the study findings.

RESULTS AND DISCUSSION

Gender and African Indigenous Farming Systems

An examination of secondary sources from the provinces of Eastern Cape, Kwazulu-Natal, Limpopo, Mpumalanga, and North-West in

South Africa revealed that gender plays an important role in African indigenous farming systems of South Africa. In her study on gender and farming systems in three provinces of South Africa, that is North-West, Limpopo, and Kwazulu-Natal, Leeuw (2009) observed that rural women in these provinces played a central role in household and community agricultural activities. They were invariably responsible for the food and nutritional needs of their household, demonstrating a wide knowledge of species such as *Cucurbitapepo*, *Capsicum annum*, *Colocasia esculenta*, *Ipomoea batatas* and *Vigna unguiculata*, used as vegetables. Many of these species were found in most of study provinces (Hyzer 2008).

In subsistence agriculture, which was mostly based on local knowledge, women were involved in almost all aspects of farming, that is from seed selection, planting, harvesting, weeding, winnowing, to grain storage. They could name all the plants grown in the local environment, and could recount their farming requirements with regard to soils, water, and so on.

Sichona (2009) shows that, in the arid and semi-arid farming areas of Northern Cape Province, African women farmers had a multidimensional role in household and community food-security. They preserved biodiversity, using their specialized knowledge of traditional food-plant species for nutritional food-security. They also showed a wide knowledge and skill on the use of indigenous knowledge related to animal husbandry, owing to being responsible for collecting fodder for the animals, milking the cattle, and collecting, drying, and using cow dung for energy purposes. Peege (2012) reveals that in North-West, Kwazulu-Natal and Limpopo-, African rural women did not only play a major role in small-scale farming, but were the “backbone” of subsistence agriculture for food-security. She found that they contributed between 60 and 85% of the total farm work, although this varied according to ecological regions and cultural groups.

In his study on gender, indigenous knowledge (IK) and division of labour in agricultural production in the North-West Province, Webb (2008) reveals that an understanding of the role of gender and the way it affects the intrinsic value of local knowledge-systems is critical to the appreciation, interpretation, and dissemination of IKS. This is based on his observation that, owing to gender differentiation and spe-

cialisation, the IK and skills held by rural women in the province often differed from those held by men. This impacted on the patterns of access, use, and control, while resulting in differing perceptions and priorities on the use of IK. It also influenced the way in which IK was passed on to future generations. Boys were engaged in male-dominated agricultural activities such as clearing fields; while girls mostly worked at the female-dominated agricultural activities, which included selection of seeds, sowing, planting, and more.

Mufamadi (2006) compares the gender and rural division of labour in subsistence agriculture in Limpopo and KwaZulu-Natal Provinces. He observed that gender-related division of labour was very common in the rural areas of these provinces. Men usually took the responsibility for land-preparation, and ploughing. Women undertook the collection of fodder and feeding livestock, kitchen-gardening, collection of organic fertilizer and manure, and for fertilising the crops. Women were also involved in farm maintenance, seed-bed preparation, sowing, planting, weeding, seed selection, threshing, harvesting, food transportation, food processing and water collection. Mokoena (2008) categorises rural women in the North-West Province according to their decision-making power and agricultural labour input:

- ♦ *de jure* female-headed farm household, that is, the male partner is permanently absent owing to separation or death;
- ♦ *de facto* female-headed farm household, that is, the male partner is temporarily absent, often as a result of male labour migration;
- ♦ female farm partner, that is, joint decisions are taken, usually with husband; majority of time spent on farming activities;
- ♦ female farm worker, that is, active in farming activities, but having less decision-making power;
- ♦ female agricultural labourer.

Karim (2008) and Badenhorst (2011) observed that in Limpopo and Mpumalanga provinces the roles of men and women in farm management and decision-making were proportional to their labour inputs. Men were usually solely responsible for labour allocation, and choice of crops, seeds, and fertiliser, and decisions regarding the sale of vegetable products. Dak and Jain (2009) explain that, in most of the predominantly rural provinces of South Africa, owing to

cultural factors women have still limited ownership or control of land. This is in spite of the gender equality stipulated by the post-apartheid constitution (1996). The prevalent patrilineal system meant that the man was considered the head of the family or household, as far as outside contact and financial decisions were concerned.

Holcombe (2009) and Mokoena (2008) argue through their observations in the North-West and Mpumalanga provinces, respectively, that one of the consequences of male migration in South Africa is the exacerbation of the perception that men are the only productive members of society. They state that in South Africa, as in most other African countries, men are culturally perceived as having the main productive role, while women play a triple role. The women have a productive role, a reproductive or domestic role, and they have community management responsibilities. However, in contrast to men's productive role, which brought in a cash income, and was 'visible', the role of women was rarely given much recognition. Hyzer (2008) elaborates that although they contributed substantial labour input into rural subsistence activities, their work was generally perceived as "unproductive". Their unpaid reproductive and community engagement roles were seen as "natural", and hence the contribution was unrecognised as part of the GNP.

The study was also interested in establishing the issue of gender access to agricultural services, this being one of the factors which tend to be neglected in agricultural research for sustainable household and community livelihood (Williams 2009).

Gender and Access to Agricultural Services and Resources

The results are based on examination of previous studies conducted in the provinces of Eastern Cape, KwaZulu-Natal, Limpopo, Mpumalanga, and North-West. Peega (2012) investigated gender access to agricultural services in the Limpopo Province. Her study examined the following services: agricultural extension, community participation, and training and finance. Men overwhelmingly dominated access to agricultural and veterinary services; gender differences were common at the level of participation in community activities in which men were dom-

inant at community meetings, training and study tours. With studytours involving traveling away-from home, male domination was found to be predominant. Similarly, access to financial resources was also dominated by men. Women were considered generally illiterate, having limited access to information, and unable to access collateral loans because they owned no assets.

Ncube (2009) investigated gender roles in the ownership and control of production and household resources in Mpumalanga and the Eastern Cape Provinces. The study shows relative male domination (> 60%) in crops and off-farm related income, while females were relatively dominant (72%) in income from small animals. Off-farm income typically came from household members working for either the government or non-governmental services, running small businesses, or casual farm-work. Off-farm income provided a valuable source of cash to many rural households in the province. The study revealed that income generated from off-farm employment was strongly controlled by men. Women's ownership and control of income generated from cash crops and large animals was almost non-existent. This aspect requires further research so as to obtain a detailed picture of the situation involving increasing poverty among rural women in South Africa including those participating in agricultural activities. The following section discusses the issue of rural women farmers, their indigenous knowledge and agricultural research.

Rural Women Farmers and Indigenous Knowledge in Agricultural Research

This section is based on the argument that, given the rich agricultural knowledge had by African rural women in South Africa as the main subsistence producers, one would expect them to play a centre stage in agricultural research. However, in her study on rural women and indigenous food-security in Mpumalanga province, Wood (2009) found that all the 52 women farmers interviewed expressed the view that they had never participated in any agricultural related research in which their local knowledge of agriculture was requested. There was little effort by researchers and agricultural extension officers in the province to understand the local conditions facing women subsistence farmers, including the way their local knowledge of agri-

culture influenced and supported agricultural production for sustainable community and household livelihood.

For this reason the paper argues that the marginalisation of indigenous agricultural and other forms of community-based knowledge - systems held by rural women in South Africa, makes IKS an underutilised resource in the development process of the continent. This is because a country's ability to build on and mobilise the knowledge systems available among the largest proportion of its people - the women, for socio-economic development, is as essential as the availability of physical and financial resources. Recognition that learning from the people who possess and use local knowledge for livelihood creates an understanding of local conditions, and provides an important context for activities designed to help such people. Moreover, adapting modern farming technological practices to the local settings and experiences of rural women helps to improve the impact and sustainability of these technologies, including research (Food and Agriculture Organisation 2011; World Bank 2012).

The above argument is supported by Sichona (2009), who observed in Eastern Cape Province that most agricultural research and extension programmes had had a limited impact on local community livelihood, because they had been inappropriately designed. They failed to recognise and address the social and cultural issues which affect rural women as the main subsistence agricultural producers, depending mainly on their indigenous knowledge and innovation systems. They also failed to take into consideration the socio-economic conditions under which rural women lived and worked. As a result of this, the research and rural development programmes tended to attract only minimal participation of the main agricultural producers in the rural areas, that is, rural women.

Mofokeng (2008) observed that more than 70% of the rural women in small-scale agriculture in Northern Cape and North-West provinces did not have the opportunity to participate in agricultural research activities, including discussions with researchers and extension workers. They also expressed the concern that agricultural training was rarely appropriate and relevant for their living conditions, because the training courses provided were too long, or too far away. They also indicated that the technologi-

cal information and packages provided were not appropriate to their local experiences/conditions; as they were not affordable, they were not sustainable.

The above experience is elaborated by Stevenson's (2012) study in North-West Province which shows that even some of the male subsistence farmers in the province expressed the opinion that the modern technologies brought into the local communities were not relevant and appropriate to local conditions. They were not affordable, given the high unemployment situation among the rural people, especially women subsistence farmers. Most of the small farmers continued using their local agricultural knowledge and technologies.

Peega's (2012) experience in Limpopo Province showed that, despite subsistence agriculture in the province supporting the livelihood of more than 60% of the rural population, most of the small-scale farmers, regardless of gender, still used traditional manual practices. She states that modern agricultural technologies promoted in the rural areas of the province by government agricultural extension officers did not take into account the fact that rural women in the province have traditionally been involved in agriculture, however, the scale and range of their responsibilities had increased. The feminisation of agriculture in the province and other rural areas in the country had been rapidly enhanced by the massive labour migration from rural areas, mostly of men (De Vries 2008). Lebogang's (2010) experience in KwaZulu-Natal Province shows that the limitations associated with the participation of rural women as informants in agricultural research were compounded by the dearth of female researchers and extension workers in the province. For instance, between 2002 and 2011 less than 6 % of the agricultural extension officers in the province were female (World Bank 2012).

The study discovered that gender-specific priorities and preferences are not the only factors that mask gender-specific knowledge domains, including the marginalisation of indigenous agricultural knowledge of the women farmers. As in most other African countries, rural women's knowledge and power in South Africa was often articulated only through men. Mofokeng (2008) observed in the North-West and Northern Cape provinces, that the presence or absence of their menfolk at the time of research

and development discussion influenced the resultant effect on the information communicated. This must be taken into consideration. However, the study argues that the degree to which rural women farmers are subjected to social pressure to conform to the male way of thinking, communicating only what is expected rather than having the freedom to express their own opinions, varies between and within communities, depending upon various socio-economic conditions, such as cultural group, age, social status, and so on. This contention is supported by Peega (2012), who states that, when it comes to research participation, African rural women in South Africa, as with their counterparts in other African countries, for cultural reasons, are often shy with strangers, and reluctant to speak openly in front of men. For example, based on her gender study in Limpopo Province, Wood (2006) observed that respondent female farmers communicated different information when questioned by a female researcher, than when questioned by male researchers.

Karim (2008) observed in Mpumalanga province that the demands of African rural women and men as subsistence farmers differed, including the use and interpretation of IKS in agricultural production. She therefore urges researchers and development agencies to consider these factors in agricultural research and extension work. She suggests that agricultural research and training could reduce poverty in the rural areas, if authorities were able to generate and disseminate technologies which were specifically targeting the challenges faced by poverty-stricken, small-scale farmers, most of them being women.

Owing to gender division of labour in society, women subsistence farmers have different technological needs. For instance, research and development could focus on inventing small equipment and machines that would mechanise subsistence farming, from sowing to harvesting, to the post-harvest processing. For example, the traditional way of husking finger millet, with a pestle and mortar, commonly used by most African rural women in the arid areas of the country such as the North-West, Limpopo and Northern Cape provinces, were labour-intensive and time-consuming. A de-husking machine could, therefore, significantly save their time and energy.

Kotane (2009) emphasises that researchers in rural communities should also consider that there are aspects of agricultural production that

are peculiar to rural women farmers as opposed to men. For example, in the limited rice-growing areas of Limpopo Province, she found that, in choosing rice varieties, men cared more about increasing yields and production, while women farmers also considered taste, smell, and ease of threshing and cooking. Badenhorst (2011) has expressed the opinion that recognizing and promoting the needs of rural women subsistence farmers, including their indigenous agricultural knowledge, through research, could result in a higher rate of uptake of a modern technology, and more benefit from the technology for the household and community at large. Moreover, in most rural areas of South Africa, women have lower levels of formal education than men. This implies that the success of any new invention depends on the empowerment of women, and on their training and access to appropriate and relevant information (Gasson 2009).

CONCLUSION

The point of departure in this study was that African rural women in South Africa are central to subsistence agriculture for household and community sustainable livelihood. As a result of limited access to financial resources, modern technology, extension services, and other production resources, including land, most of their agricultural practices still depend on indigenous knowledge and technology systems. Moreover, the impediments to rural women's empowerment encompass their lack of access to decision-making processes, and their low participation in local governance. Therefore, understanding this role of rural women in agriculture and associated indigenous knowledge –systems, including the way it impacts on agricultural research for sustainable community and household livelihood, is an important challenge for policymakers, researchers, development agencies, and other stakeholders. This contributes to the limited impact of agricultural research recommendations on rural development. It is on the basis of these considerations that the paper recommends the following:

RECOMMENDATIONS

The following recommendations are made from the study:

- ♦ Researchers, policy makers, and development agencies should take seriously the varying roles played by rural men and women in rural social production including agriculture; and the way in which these positions influence the interpretation and use of IKS in agriculture.
- ♦ Efforts should be made by policy makers and other stakeholders to ensure that agricultural research and training contribute to the reduction of rural poverty and to the agricultural development of small-scale farmers, of which the majority are women. This could be done by generating and disseminating appropriate technologies which are specifically targeting indigent women farmers.

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