American-Eurasian J. Agric. & Environ. Sci., 2 (3): 255-260, 2007
ISSN 1818-6769

Socioeconomic and Environmental Aspects of Women Labor in the Egyptian Agricultural Sector: Case Study of Sugar Crops

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Abstract: Egyptian rural Women play an important and main vital role beside men in the agricultural production. The present study aims to recognize and assess the different economic and social aspects of women's labor in the agricultural Sector especially in sugar crops production and marketing. Results. Indicated that most of Sugar beet cultivation is concentrated in Kafr El-Shiekh Governorate "lower Egypt" and the sugarcane in Qena Governorate "upper Egypt". Data also showed that women contribute to production and marketing of sugar crops, either in decision making or agricultural practices. Women's participation was more recognized in Kafr El-Shiekh (Lower Egypt) for sugar beet production than in Qena (upper Egypt) for sugar cane production. Also data revealed that the main constraints facing women in the agricultural sector is the high physical effort needed for executing agricultural operations, which is not available for women, in addition traditional customs, especially in the Upper Egypt may also limit ate women's labor. It is recommended to present special training courses for women in the agricultural field in addition to establish a Special TV channel specified in agriculture aspects such as to increase women's experience and public awareness of the importance of woman role in integrated development.

Key words: Socioeconomic aspects · rural women · sugar crops · agricultural operations · lower and upper egypt · structural and demographic factors

INTRODUCTION

Recent interest in women's work and status has resulted in increased documentation of women's participation and agricultural experience. Women play important roles in food production, natural resources management, income increasing, house management, food and nutrition security [1]. Based on analysis of household surveys, a recent document presented eight research findings showing the key and central role of women [2].

Men and women play different roles, have different needs and face different constraints. This necessitates the need, value and potential of gender-disaggregated database as a tool for the effective formulation and monitoring of agricultural and natural resource policies [3]. Integration of gender concerns in agricultural data collection was also emphasized by Tempelman [4] and gender-disaggregated statistical data for understanding the economic and social and political differences existing between men and women, ensuring that such understanding is based on facts; and planning of development programs which take the specific situation of both genders into account.

Structural factors including farm size, economic viability of farm enterprise, commodities produced and region of the country affect and explain variations in women's participation in farm tasks. Also, demographic factors including age, marital status, number of children under six, percent of the life on the farm and education have also been shown to account for variation in women's farm labor. Jones and Rosenfeld [5] analyzed farm women's participation in work and decision-making among other dimensions of farm women involvement and indicated that single women are more likely to do farm tasks as are women who are younger, have fewer children under six, have lived a greater portion of their lives on farms and have higher education.

The average value of sugar crops production for 2002-2004 period was about LE 2223 million and constituted about 2.4% of the corresponding value of total agricultural production for the same period [6].

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Sugar Produced from sugarcane was about 996 thousand ton as an average for the period 2003-2005 and constituted about 72% of the total the volume of domestic production (1384 thousand ton). Sugar Produced from sugar beets was about 388 thousand ton as an average for the period 2003-2005 and constituted about 28% of the total local production.

Self sufficiency from sugar during 2003-2005 increased from 61.2% in 2003 to about 63.2% in 2005 with an average of about 62.3% for the mentioned period [7].

The aim of the present study is to study different social, environmental and economic aspects of women labor in the agriculture sector in lower and Upper Egypt for improving their abilities. In addition to investigate the factors affecting woman participation in agricultural production in both regions under investigation.

METHODOLOGY AND SOURCE OF DATA

Secondary data are obtained from bulletins published by the ministry of agriculture and land reclamation (MALR) and reports published by The Sugar Crops council in addition to unpublished data from different sources. Field data are obtained through rapid survey and focus groups meetings in Kafr El-Shiekh governorate (60% of sugar beets area) for data concerning women's participation in sugar beets production and in Qena governorate (48 % of sugarcane area) for data concerning women's participation in sugarcane production. For each crop three focus group meetings were held in different three villages plus three individual meetings in each village. This study depended on descriptive and quantitive statistical analyses methods.

RESULTS AND DISCUSSION

Geographic allocation for Sugar Beets and Sugarcane production: Data in Table 1 indicate that Sugar beet production is concentrated in governorates of Lower Egypt in addition to middle Egypt. Where the production of Sugar beet by Kafr El-Shiekh Governorate reached 60% of the total production at national level (2.742 million ton). Dakahleya Governorate production was 21%, followed by Gharbeya and EL-Minya 6% as a mean of (2003-2005). As for Sugar beets productivity it reached 27.43 tons/feddan, in EL-Minya Governorate, while productivity reached 22.95 ton/ feddan in Gharbeya Governorate, followed by Kafr El-Shiekh Governorate "20. ton/ feddan". The average productivity ranged between a lower limit of about 16.6 ton/ feddan in El-Nobareya area (new lands) and an upper limit of about 27.43 ton/feddan in El-Minya governorate with an average of about 18.98 ton/feddan at national level over the mentioned period.

The most cultivation of sugar cane crop was found in upper Egypt where Qena Governorate considered to be the most important and superior for production of sugarcane, nearly (48% of the total production all national level), followed by Aswan Governorate producing 24.5% and EL-Minya 11.8%. There was clear difference in 2003-2005 average productivity at regional level. The average productivity ranged between a lower limit of about 49.9 ton/ feddan in Qena governorate and an upper limit of about 52.5 ton/feddan in Luxor.

Table 1: Geographic allocation for Sugar Beets and Sugarcane production areas by Governorate During 2003-2005

Sugar Beets crop					Sugar cane crop				
Governorate	Area	Productivity	Production	%	Governorate	Area	Productivity	Production	%
Kafr El-Shiekh	80.3	20.48	1645	60.0	El-Minya	37.9	50.3	1906	11.8
Dakahleya	28.6	20.16	577	21.0	Sohag	18.8	50.7	953	5.9
Gharbeya	7.2	22.95	165	6.0	Qena	155.8	49.9	7774	48.0
Behairah	3.0	16.59	50	1.8	Luxor	22.2	52.5	1166	7.2
Sharkeya	5.8	19.37	112	4.1	Aswan	78	50.9	3970	24.5
Fayyoum	4.3	17.28	74	2.7					
El-Minya	6.0	27.43	165	6.0					
El-Nobareya	3.8	16.26	62	2.3					
National Level	144.5	18.98	2772	100.0	National Level	324.2	50.0	16194	100.0

(*)Area (thousand feddan), productivity(ton/feddan), production(thousand Ton),

Source: Ministry of Agriculture and Land Reclamation (MALR), Sugar Crops Council, Report on: "Sugar Crops and Sugar Production in Egypt", 2005.

Pattern and extent of rural women's participation in sugar crops production and marketing

Contribution of women in the agricultural sector: Data presented in Table 2 indicated that women's contribution reached 54.5% calculated from the total Labor contribution in producing and marketing Sugar beet crop in Kafr El-Shiekh Governorate which was estimated by 53 men /day during the agricultural season of 2003/2004.

Also, presented data showed that the most important operations, which women participated in were the (sowing, thinning & replanting and chemical fertilizer application) with a percentage of 85.7%, 80.0% and 75% of total labor used in the three operations respectively. The least participation of women was observed in irrigation, manure application and pest control reaching 12.5%, 18.0% and 25.0% respectively. This may due to the physical effort needed by above mentioned operations.

Studying women average wages, showed that, it ranged between a lower rate of L.E 8/day in fertilizer application and harvesting and, an upper rate of about L.E 10 in output cleaning and loading, in irrigation, hoeing and pest control operations. Average women's wage in sugar beets operations is about L.E 9/ day and constitutes about 84% of the corresponding average men's rate. As a percentage of the representing men's rate, percentage ranges between 67% in Manure and 100% in sowing with an overall average of about 84% for all operations.

For the sugarcane crop which is mainly produced in the upper Egypt lands, there is a decrease in women's contribution (28%) due to the general customs and habits of the region. This doesn't facilitate nor prefer women's labor does not field work. However Women's contribution differs among operations and ranges between a lower limit of zero in irrigation and an upper limit of about 75% in Output cleaning and loading.

The women's wage is stable for most of agricultural operations reaching L.E 8/ day which is equivalent to 80% of the men wage. In the case of harvest, sometimes green tops are used as in kind wage for both hired men and women. Hired labor has the right to use the green tops for his animals or to sell it.

These results are in coincide with those mentioned by Booth [3], Tempelman [4] and Jones and Rosenfeld [5], who found that, women participation in labor supply differed by regional, economic viability and gender-disaggregated factors. Moreover the present study found that customs and habits of the region affected the women participation in labor, aet.

Participation in decision making: Data presented in Table 3 show assessment of women's contribution in making decisions for sugar beet and sugar cane production.

As indicated in Table 3, while, woman participation in making the decision of whether to cultivate sugar beets or not was about 90%. Only about 10 % of responsibility

Table 2: Level of participation in labor (worker/feddan), and wage rate, social status for women participating in sugar beets and sugarcane farm operations in, 2003/2004 season

	Sugar beets			Sugarcane		
		Women wage rate			Women wage rate	
Operation	% of women's contribution	LE/day	% of men's rate	% of women's contribution	LE/day	% of men's rate
Land, seeds preparation	-	-	-	25	8	80
Manure	18	10	67	25	8	80
sowing	85.7	10	100	30	8	80
Irrigation	12.5	10	67	-	-	-
Fertilizer application	75	8	80	10	8	100
Thinning and replanting	80	10	100	-	-	-
Pest control	25	10	67	10	8	53
harvest	40	8	80	30	8	100
Output cleaning and loading	50	10	67	75	8	80
Burning dried leafs after harvest	-	-	-	10	8	80
Total	54.5	9	84	28	8	80

Source: Field data

Table 3: Frequency of positive responses about women's participation in making decisions related to sugar beets and sugarcane production and marketing in 2003/2004 season

	sugar beets Frequency		sugarcane Frequency	
Decision level	Number	%	Number	%
To cultivate or no	45	90	8	16
Cultivation date	10	20	15	30
Cultivation method	12	24	8	16
Timing of operations	30	60	10	20
Quantity & method of Fertilizers application	22	44	5	10
Output use and marketing	5	10	5	10
Timing for Marketing	5	10	8	16
Total	50	-	50	-

Source: Field data

Table 4: Social characteristics of Women participation in production and marketing of sugar crops, 2003/2004 season

	Sugar beets Frequency		Sugarcane Frequency	
Item	Number	%	Number	%
Educational Level				
-Illiterate	27	54	34	68
-Read and write	12	24	10	20
-Before high school	7	14	6	12
-High school	4	8	-	-
Social Status				
- married	22	44	29	58
- unmarried	24	48	18	36
- divorced	4	8	3	6
Total	50	-	50	-

Source: Field data

advocates women's participation in making decisions related to sugar beets marketing.

On the other side, 30 % of responses indicated that women participate in making decisions related to time of sugar cane cultivation. However,only 10 % of responses of women participation in making decisions related to each of the following operations: fertilizers quantity & method of application and output use & marketing.

Literature indicated that women's participation in decision making do not go hand in hand with performance of tasks [8]. Although women rarely made farm management decisions alone, they were substantially involved in joint decisions with their husbands [9]. The results agree with the mentioned above Literature.

Social characteristics of women participation in production and marketing of sugar crops

Educational status: Table 4 shows the effect of marital status and education level on women participating in sugar crops production.

Table 4 indicates that, In case of sugar beets: about 54 % were in favor of the view that participating women in sugar beets production and marketing are illiterate, 24% were able to read and write, 14% were educated up to preparatory schools; and 8% of were hold higher school degree. Meanwhile, In case of sugarcane: about 68 % were in favor of the view that participating women in sugar cane production and marketing are illiterate, 20% were able to read and write, 12% were educated up to preparatory schools; and there were no woman hold higher school degree participating in sugar cane production and marketing.

As shown previously, a higher education level leads to lower participating of woman in agriculture labor.

Social status and age category: Data in Table 4 revealed that, In case of sugar beets: Participating women in sugar beets production and marketing activities are usually married "44%" unmarried "48%" and divorced "8% ". However, In case of sugarcane Participating women in sugarcane production and marketing activities are usually married "58%" unmarried "36%" and divorced "6% ".

Unmarried woman participates more than married one because of child care responsibility. Furthermore, women's participation increases in cases of divorce and householder's death.

For hired and family women labor, age of participating women ranges between 13 year in furrowing, thinning and replanting and 45 years in manure application, cultivation and output cleaning and loading.

The result agreed with those reported by Jones and Rosenfeld [5] who investigated the demographic factors including age, marital status and education on women participation in agriculture and indicated that single women are more likely to do farm tasks as are women who are younger. However the study's results gave an opposite direction with respect to education level.

Constraints to women's participation: As indicated in Table 5, interviewed people indicated that the four major constraints for women's participation in sugar beets production and marketing were the needs of high level of physical efforts (80% of responses), Lack of women's experience in activities related to sugar beets production (20% of responses), family traditions toward women's work (about 12% of responses) and being educated in high schools or college (about 10% of responses). However, interviewed people indicated that the four major constraints for women's participation in sugar cane production and marketing were the local traditions in

Table 5: Constraints to women's participation in sugar beets and sugarcane production and marketing, 2003/2004 season

	Sugar Beets Frequency		Sugarcane Frequency	
Constraints	Number	%	Number	%
Women's work is a shame	5	10	10	20
Family and local traditions	6	12	40	80
Lack of experience in sugar crops activities	10	20	15	30
Sugar crop activities need high physical efforts	40	80	12	24
Being educated	5	10	2	4
Total interviews	50	-	50	-

Source: Field data

Table 6: Impact of women's work on children

	Sugar beets Frequency		Sugarcane Frequency	
Place to leave children	Number	%	Number	%
Alone at home	6	12	7	14
With grandmother& brothers	35	70	40	80
With neighbors & relatives	5	10	3	6
With the working woman here self to the field	4	8	-	-
Total	50	100	50	100

Source: Field data

Upper Egypt (80 % of responses), Lack of women's experience in activities related to sugar beets production (30% of responses), the needs of high level of physical efforts (24 % of responses) and Women's work is a shame (20% of responses)

Impact of women's work on children: As a family worker in the small landholdings or as an assistant to her husband as the main wage-earner and householder, women have to leave their children in one of the alternative facilities Mentioned in Table 6. Indicated that, Taking children to the field in the sugarcane plantations is no longer possible but it was positively reported by about 8 % of responses in sugar beet production. The most popular alternative is to leave children with their grandmothers or elder brothers, 70% of responses in sugar beets and about 80% of responses in sugar cane.

According to the results, establishing nursery schools in the rural area may help in increasing women participating in agriculture production and marketing.

Women's contribution in agricultural production to family income: Results of the study's sample survey showed that women contribute about 9.8% of total family agriculture income in northern regions of Egypt. Through accounting opportunity costs, about 3.9% rendered by participation in field work for crops production and almost 5.9% through house keeping and management beside farm animals breeding and marketing its products. As for the Southern regions, nearly 7.6% of family income is contributed by women, of which about 3.1%come frome field work participation and nearly 4.5%from animals breeding and products marketing beside house keeping house keeping. Such results reveal the importance of rural women role in family income increase.

Environmental issues and women's role

Residues of sugar crops at field: Responses of interviewed people regarding how farmers get red of sugar beets leaves as a residue at field after harvest indicates. plough it in land after getting dried. Women's contribution is only about 20% of utilized work "In about 60% of responses". Or to use it as animal feed. Women's contribution is about 80% of utilized work in collecting and transporting it to animals house.

Green tops as a residue of sugarcane at field constitutes about 20% of total harvested quantity and trash or dried leaves (5% of the total harvest). Green tops amounted to about 2.1 million ton in year 2005. Farmers use it as animal feed at a price of L.E. 60-70 /ton. According to field meetings, women's contribution is about 73% of total work utilized in transporting of green tops from field to animal house.The dry leaves and stems have to be left over the cane stubbles (roots) to protect it from winter frost during December, January, February and early March., After that they are burnt, this burning has a biological role in the sugarcane monoculture where it Enhances and promote the germination of the sugarcane new buds and Eliminates weed population. Women contribution is about 13% of total work utilized in burning the dried leaves.

Finally the results revealed that, women participation in agriculture sector help in increasing family income and reduce the bad environmental effects of crop residues by utilizing it as animal feed or plough it in the soil.

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