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The Role Of Rural Women In Labor And Decision Making For Buffalo Enterprise In Egyptian Agriculture

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Introduction

Egypt has a Comparative advantage in milk Production. Such Comparative advantage Stems mainly from buffalo milk production under the traditional small farm system. Dairy buffalo cow supplies milk at the least cost level among other systems, including cattle, when comparison is made on base of adjusted 4% milk equivalent (1 and 2) . The traditional farm system is the main milk supplies to the Egyptian market and this system holds the majority of buffalo dairy Cows (3, 4, 5, 6, 7) . Therefore, milk Production and Processing On farm is the main daily cash income.

The Egyptian traditional farm is characterized by a small land holding (more than 80% are of size class less then 5 acres). It is of a mixed agricultural enterprises (crops and livestock) . It is a family farm system , where most of labor used for livestock enterprise is form the farm- family members. A high proportion of milk products produced are home consumed (8 and 9) .

These findings refer to the importance of devoting a much more attention towards the development of the milk activity in the Egyptian village, as a main target of the integrated rural development program. The integrated rural development in developing countries has an ultimate integrated goal. This is to provide more opportunities for the farm- family labor, condition that it is accompanied with production increase and creating a higher income (8 and 9) This goal will provide incentives for rural community settlement against the migration factors to the urban centers .

Therefore, it is important to study the development performance of the small farms as socio-economic criteria, particularly, the role of milk production enterprise in family labor employment. The employment does not only, imply the explicit volume of family labor hours consumed for livestock services , it should also reflect how the milk enterprise provides a satisfactory opportunity income family labor all over the year (not for a season) .

Even though, the study emphasizes on the implications of gender, particularly, women members. on employment opportunities. Significance of women role is actually determined by her share in decision making of the income disposal, generated by buffalo milk production and processing on farm.

Griffith (10) cited that the decision making is considered as a regular procedure to reach results or judgments which are built on logical investigation of some alternatives.

Champion (11) showed that the decision maker wishes to achieve some objectives by selection among alternative strategies.

Therefore, all above issues dictated to investigate not only to investigate her share in labor use but also her role in decision-making. of the expenditure pattern of the income generated from the milk activity on the conventional Egyptian farm. Who receives this income? What are the channels through which this income is spent (Consumption versus investment and saving)? on the other hand, to cover the role of woman, the study focused upon the share of the farmer's wife, the farmer himself, both together, other adult women members and other adult men members of the household

Data Base and Methodology

The study relied upon cross section seasonal data generated from a purposive sample survey conducted in three villages of Governorates (Sharkia and Gharbia) in Egyptian Nile Delta, in the year 2003 to Cover the agricultural Year 2002. The sampling unit was the farm household (women members and farmers). The total sample size was 150 farm households, clustered into 50 ones from each village. Each village sample was stratified by farm size classes into 3 categories (Strata), less than 5 feddans, 5-10 feddans and 10 and more feddans.

The survey was conducted through a personal meetings with the target households,, particularly women members, by young educated women from selected village communities, whom were trained by the author. Therefore, social constraint of raising direct conversation with farm family members in house was alleviated .

The data of the sample survey was used to estimate the labor use for buffalo holding operations (feeding, watering, cleaning, milking and milk processing) by gender (men, women and children) and by season (winter and summer), as well as, by farm size class. The opportunity Cost (income) generated by the family labor used for buffalo enterprise on farm was estimated from the portion of net farm income as the return to family labor. It was calculated per hour of labor by season The estimated values are compared among farm size classes and then have being compared with the weighted average wage rate in the village market.

(1) Opportunity costs of labor = (return of family labor) labor hours for livestock services.

(2) Return to family labor = Net income from buffalo enterprise – imputed cost of invested capital.

(3) Net income from buffalo enterprise = Value of milk production – adjusted costs of production.

(4) adjusted costs of production = Total costs of production – Values of other buffalo products on farm.

(5) Other products of buffalo = The value of (Calf-Crop + Net inventory change of the herd + manure production)

(6) -Imputed Costs of invested capital = (fixed capital of buffalo enterprise) x interest rate in the financial market .

(7) Total Costs of production = Costs of feeds + Costs of hived labor + costs of veterinary services + the share of depreciation of buildings and equipments used for buffalo.

In order to cover the decision making pattern, a case study approach was applied. A sample survey was conducted in two other villages of the “Sharkia” Governorate. The survey was conducted in agricultural graduates, young ladies living in the same village. They applied the survey forms on the female’s head of the household. All surveyed farms were milk producers. The sample was randomly selected within each farm size class at equal number of farms from each class. The farm size classes were less than 5 feddans and more than 5 feddans. The total sample size was 175 households from the first village and 100 households from the second village. The survey forms included the expenditure items of the income generated from the milk activity on the traditional farm. The decision makings were classified into four major groups. These were food expenditure, non-food-expenditure, savings to finance agricultural production (Crops, livestock and poultry) and saving for other purposes. The relative frequencies were used to differentiate between the importance of each decision.

Some socio-economic features of the women were selected to show their impacts on the woman’s role in such decision processes. These features were the age of the woman, her period of living with the household, involvement in either farm or off-farm work and woman’s own wealth. Chi-square test for goodness-of-fit was used (12) to test the consistency of the original expected distribution of the concerned feature and the existing distribution of the same feature among the women who participated in the given decision. the relative (percentage) frequencies were used in this concern. Because the expenditure pattern includes numerous items there fore the item of the highest frequency within each concerned expenditure category was selected for chi-square test application.

Results and Discussion

Density of family labor used for milk enterprise

Surprisingly, the density of family labor per buffalo-cow decreases as farm size increases. Comparison of the data, in Table (1) shows that the density of family labor as hrs/buffalo/year was about 893 hrs, 846 hrs and 573 hrs for farm size classes less than 5 feddans, 5-10 feddans and 10 feddans and more, respectively.

Opportunity Cost of Labor among farm size classes:

For all categories of labor the average opportunity cost of labor at 2003 price level was LE 0.93 for farm class less than 5 feddans, decreased to only LE 0.04 for farm class 5-10 feddans. It was a negative value for the farm size class above 10 feddans and above. Accordingly, it is concluded that the larger the farm size , the less is the opportunity cost of labor. Such trend is valid with respect to season (Table 2) .

Opportunity Cost of Labor for Milk Processing on Farm:

A significant portion of liquid milk on conventional farm is home processed. It varies between 67% of the total buffalo milk production on farm size class less than five feddans to less than 45% on farm size class more than 10 feddans, (Table 3). The final products are, often fatless (Karish) cheese and butter. The farmers do not process cow milk by the conventional method. They prefer to use buffalo milk, because they keep most of processed products for home consumption. The conventional procedure keeps some fat content in the produced “Karish” cheese.

As shown from Table 2, the average return per hour of labor devoted for milk processing is around L.E. 9, which is much higher than the opportunity cost generated by any other operations for buffalo enterprise on farm. The return to labor use used for milk

processing in summer is higher than in winter because the prices of milk products in summer are higher than in winter (Table 4). The return to 1-hr of labor used for milk processing decreases from L.E. 10 on farm size less than 5 feddans to about L.E. 7 on farm size larger than 10 feddans (Table 2).

Share of Hired Labor:

The proportion of hired labor for buffalo enterprise in total labor use for buffalo enterprise on traditional farm increases, gradually, by farm size. It increases from 4% on farm size less than 5 feddans to 39% on farm size 10 feddans and above, (Table 2). It is concluded that the larger the share of the hired labor, as farm size increases, the less is the opportunity cost of family labor. This is because the hired labor deducts some of the gross return for labor employed for buffalo enterprise.

Opportunity cost of Labor Versus the Market Wage rate:

The comparison between results of (Table 2) and (Table 5) shows some significant evidences. Milk processing is the only operation that generates income for family labor much higher than the average wage rate in the village market. This probably a main reason behind devotion of about one-half of milk produced from buffalo for home processing

Generated income for family labor by Other operations for dairy buffalo enterprise surpasses the average market wage rate, only in winter season, and is restricted to farm size class less than 5 feddans. These results coincide with the farm performances that more than 80% of farms are within this size class and about two thirds of milk is produced in winter. In summer season and farms above 5 feddans the return to labor ranges from very low to negative value.

It is concluded that although the smaller farm uses more family labor per buffalo than the larger farms, the former recognizes higher opportunity cost of labor than the latter. The reflects higher profitability of dairy buffaloes on smaller farm size, than the larger farm. Higher profitability Per buffalo-cow on smaller farms than larger farm size is mainly due to higher milk yield, (Table 3). Even though the milk products prices are higher in summer season than winter the much higher proportion of milk produced in winter allows the farm to generates higher opportunity cost per hour of family labor in winter than in summer (Table 2)

Opportunity Cost of Rural Women:

the average share of women members of the farm household in total labor for buffalo enterprise is about 32%. While the labor hours of women per buffalo-cow decreases as the farm size increases, the correspondent hired labor increases. The women share decreases as the hardness of the operation increases. It is minimum (3%0 for cleaning the barn, 16% for feeding animals (including grazing on field). However the women share increases to 42%, 98% and 99% of the total labor hours for watering, milking and milk processing, respectively.

The high value added of milk processing on farm generates a much higher income per hour of labor. The women members of the farm-household conduct almost all such work. Therefore, Involvement of women members of the mixed traditional farm in dairy buffalo enterprise generates a very feasible opportunity income per hour of their labor, (Table 6). Whereas it is higher than average wage rate in the market for all farm size classes, the average return to all other members of the family on farms above five feddans is either zero or a negative value, (Table 5). The average return of the family labor used for dairy buffalo is always less than that return to the women members of the family for all farm classes (Table 6), it reaches zero or negative value

Expenditure Pattern of Farm income from Dairy-Buffalo Enterprise

The farm Household expenditure pattern of the income generated from the milk and milk products sale are two categories. These are consumptive expenditure on food and non food and the saving portion. The consumptive expenditure is the main proportion of the total generated income. It is on the average about 77%. The propensity to save for agricultural finance and other purposes is on the average around 23%. Savings is mainly devoted to livestock and poultry production on the same farm rather than crop production. The first village has higher expected level of income generated from milk marketing, because it is with larger holdings of milking buffaloes and closer to the urban centers and includes two milk collection points. The comparison between the two villages show that the larger the expected income level from milk marketing, the larger is the propensity to save. However, the higher expected income level from milk marketing generates a new type of saving. It is savings to finance non agricultural activity.

Role of Women in decisions on Spending the Generated income:

The position of the woman among the household structure affects her role in the decisions of spending the generated income from buffalo milk and milk products sale. In the sample there were 152 households (87%), whom the farmer's wife was also the family's head. While 12 households (7%) of the sample had the farmer's wife was not the family's head, the farmer's wife was absent among 11 households (6%) and only the man was heading the family. The comparative analysis of the results concludes that the women would loss their significance role in Decision making if the wife was not the family's head and became very weak if she was not the farmer's wife. the men role in the concerned decision making would be enlarged in the absence of the farmer's wife, even though there were other women members of the household . On the other hand, the influence of the women role in decision making is mainly towards the consumptive expenditure (food and non-food) followed by the finance of nonagricultural purposes.

Factors Affecting the Women Decision on Spending the Generated Income:

The relations between the socio-economic features of the farmer's wife and the probability to take the decision of spending the income generated from the milk marketing were investigated. According to the chi-square test, the higher the level of the wealth owned by the farmer's wife, the lower is her role in the concerned decisions. The wealth of the farmer's wife gives her a special social rank among the household's members which transfers the interest of taking decisions on spending such type of income between consumption and agricultural finance to other family members. If she is rich she becomes ,entirely, a housekeeper and involves only in the related budget decisions. The age of 30 years to 45 years old and a living period with the family between 20 to 30 years gives the farmer's wife a higher social influence upon the decision making concerned the expenditure pattern of the household earnings from milk marketing.

Table (1) Labor Use Pattern for Buffalo Enterprise on Traditional Farm

Farm Size	Labor Use	Feeding	Watering	Cleaning	Milking	Milk Processing	Total	% of hired labor
Less than 5 feddans	Women share %	16.1%	45.8%	3.2%	97.8%	97.8%	33.0%	4.0%
	total hrs/buffalo cow	327	175	233	91	68	893	
5-10 feddans	Women share %	16.0%	42.7%	3.2%	97.6%	96.9%	32.4%	10.0%
	total hrs/buffalo cow	307	171	219	85	64	846	
10 feddans and more	Women share %	16.0%	42.7%	3.2%	97.6%	96.9%	32.4%	39.0%
	total hrs/buffalo cow	208	116	149	58	43	574	
Aggregate Weighted Average	Women share %	15.9%	42.2%	2.9%	97.8%	98.6%	32.3%	2.0%
	total hrs/buffalo cow	334	187	239	93	69	922	

L.E. = Egyptian pound, where \$1 = 6.2 Egyptian pounds in 2003/2004 and 1-Feddan = 4200 m²
 Source: Calculated from: The sample Survey Data in 2003 , for the agricultural year 2002.

Table (2) Opportunity Cost of Labor Used for Buffalo Enterprise on Traditional Farm

Farm Size & Season	Labor Use	Milk Processing	Other Operations
Less than 5 feddans	Winter	9.4	1.31
	Summer	11.1	0.37
	All year	10.1	0.93
5-10 feddans	Winter	7.50	0.22
	Summer	9.4	-0.16
	All year	8.4	0.08
10 feddans and more	Winter	6.80	-0.34
	Summer	8.2	-1.02
	All year	7.1	-0.62
Aggregate Weighted Average	Winter	8.90	0.533
	Summer	9.80	0.56
	All year	8.90	0.55

L.E. = Egyptian pound, where \$1 = 6.2 Egyptian pounds in 2003/2004 and 1-Feddan = 4200 m²
 Source: Calculated from: The sample Survey Data in 2003 , for the agricultural year 2002.

Table (3) Dairy Buffalo production Performance on traditional farm

Production Criteria	less than 5 feddans	5-10 feddans	10 feddans and more	Average
milk yield per buffalo (Kg/ year)	1,362.40	1,100.00	1,040.17	1,064.66
% of summer yield	0.42	0.30	0.30	0.36
% of milk for processing	67%	51%	45%	45%

L.E. = Egyptian pound, where \$1 = 6.2 Egyptian pounds in 2003/2004

Source: Calculated from: The sample Survey Data in 2003 , for the agricultural year 2002.

Table (4) Price in L.E./ Kg of milk Product processed on farm

Season & Product	Fresh milk	Butter	Fatless Cheese
Winter	1.7	21	3
Summer	1.9	24	3.9
Average	1.8	22.5	3.45

L.E. = Egyptian pound, where \$1 = 6.2 Egyptian pounds in 2003/2004 and 1-Feddans = 4200 m²

Source: Calculated from: The sample Survey Data in 2003 , for the agricultural year 2002.

Table (5) Village Market Average Wage Rate L.E./ hour

Season and Gender	Men	Women	Children	Average
Winter	1.38	1.12	0.70	1.07
Summer	1.46	1.20	0.72	1.17
All year	1.40	1.14	0.71	1.10

L.E. = Egyptian pound, where \$1 = 6.2 Egyptian pounds in 2003/2004 and 1 Feddan = 4200 m²

Source: Calculated from: The sample Survey Data in 2003 , for the agricultural year 2002.

Table (6) Weighted Average of the Opportunity Cost of rural women Labor

Farm Size class	Labor Use	Other operations	Milk Processing	L.E/ hr of labor. as Weighted Average
Less than 5 feddans	Women share (hrs)	229	66	2.98
	total hrs/buffalo cow	826	68	1.62
5-10 feddans	Women share (hrs)	212	62	1.96
	total hrs/buffalo cow	782	64	0.71
10 feddans and more	Women share (hrs)	144	42	1.11
	total hrs/buffalo cow	531	43	-0.04
Aggregate Weighted Average	Women share (hrs)	230	68	2.45
	total hrs/buffalo cow	853	69	1.17

L.E. = Egyptian pound, where \$1 = 6.2 Egyptian pounds in 2003/2004 and 1 Feddan = 4200 m²

Source: Calculated from: The sample Survey Data in 2003 , for the agricultural year 2002.

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