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SOCIO-ECONOMIC FACTORS AFFECTING THE DECISION OF INVESTMENT IN DAIRY BUFFALOES ON THE CONVENTIONAL EGYPTIAN FARM

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INTRODUCTION:

Some recent studies have shown that the buffalo not only produces more than two-thirds of the milk production in Egypt, but it also has the highest efficiency in milk production among the other types of animals (native cattle or Friesian). Conventional mixed farms produce crops and livestock for both home consumption and sale. These farms hold most of the livestock population, including buffaloes. Buffalo milk production under such a system is economically efficient. Development of milk production from the Egyptian buffaloes permits Egypt to approach international comparative advantage in this vital animal protein source [1&2]. Nevertheless, there is a tendency to expand the Friesian dairy herd. Field observations show that the conventional holder insists on keeping dairy buffaloes with Friesians, and in many cases he is not ready to replace the buffalo on his farm for the purchased Friesian.

Towards establishment of a developmental programme, concerning the dairy buffaloes in the conventional mixed farming system, it is important to determine the variables that affect the farmer's decision to invest in dairy buffaloes, with special reference to the mixed investment (buffaloes with Friesian). However the social variables have important role in the Egyptian farm family decision, particularly in the livestock [3]. Accordingly, the social as well as the economic variables are considered in this study.

DATA BASE AND METHODOLOGY:

The present study has two objectives. First to identify the major social and economic variables that affect the farmer's decision to hold dairy buffaloes. The second one concerns the socio-economic variables which determine the mixed holding of both dairy Friesian and buffaloes on farm. A sample survey included 100 conventional farms with dairy animals from an Egyptian Village (Tokh El-Karamous, Sharkia Governorate, East of Delta). It was conducted in March, 1984. The farms were selected randomly within each of the following farm size class: Landless, less than 3 feddans; and 3 feddans and more, as 15, 45 and 40 observations, respectively. However, a second purposive survey was conducted in April, 1984 to include the Friesian holders, because the breed does exist on some conventional farms in certain rural areas in Egypt. This second survey was conducted for three adjacent villages belong to a district called "Mashtool El-Sook" in Sharkia, Governorate. The sample size was 28 farms. Although, 17 sampled farms were with pure Friesian cattle and 11 were with cross-breed (Friesian X Native Cows) the analysis treated all as Friesian holders, with or without dairy buffaloes.

Each concerned variable in the study was expressed by a set of questions in the survey. The weighted average of the positive answers of the farmers were considered as a score index, which showed the relative importance (percentage) of the social or economic variable in the farmer's decision.

ROLE OF DAIRY BUFFALOES IN HERD STRUCTURE:

The conventional farm is identified by a small land area. According to the preliminary data of the 1982 agricultural census in Egypt, the average farm size and the average holding size of the buffaloes are 2.62 feddans and 0.78 head, respectively, in lower Egypt. In upper Egypt, the average farm size and buffaloes holding size are lower, i.e. 2.06 feddans and 0.6 head, respectively. From the census it is deduced that a round 12.6 percent of the total livestock holdings are landless with buffaloes and cattle. This result provides evidence that the decision to hold buffaloes is not, entirely, associated with agricultural land holding.

Whereas, the 1982 census shows that the total number of buffaloes is less than the cattle population, the cross-section data of the march, 1984 sample survey, indicates that the number, of dairy buffaloes per farm is larger than the number of native dairy cows (Table 1). The larger the number of animals per holding larger is the number of dairy buffaloes. The sample survey data showed also that 91 percent of the sample holdings hold buffaloes (32 percent with only buffaloes and 59 percent with both buffaloes and native cattle). 68 percent of the sample holdings are with native cattle (9 percent hold only native cattle). On the average, dairy buffaloes represent two-thirds of the total dairy animals on the conventional farm.

SOCIAL AND ECONOMIC OBJECTIVES IN THE FARMER'S DECISION TO HOLD DAIRY BUFFALOES:

The conventional farm household may hold the dairy buffaloes or the native dairy cows for either economic, social or subsistence objectives. The economic objectives are either to increase the farm household's income or to provide opportunities for the family labour particularly women [4]. The subsistence objectives are to provide food products (mainly milk and milk products) for home consumption, to provide animal power for farm operations and to provide organic fertilizer input for crops production on the farm. The social objectives are either social prestige or rural traditions. Table 2, presents the relative weight for each objective in the decision making process with respect to holding a dairy buffalo or a dairy native cow.

Concerning the dairy native cow the farmer's objectives can be ranked in an descending order as follows: (i) Social prestige, (ii) rural traditions, (iii) organic fertilizer production, home-consumption of milk and increasing the farm family income, (iv) animal power input, and (v) providing opportunities for family labour.

With respect to the dairy buffaloes the farmer's objectives can be ranked in a descending order as follows: (i) Social prestige, (ii) home consumption of milk and to increase the farm income, (iii) traditions and organic fertilizer input, (iv) animal power for farming and (v) to provide opportunities for family labour.

However, to increase family income and to use milk for home consumption have much more importance in the decision to hold a dairy buffalo than to

hold a dairy native cow. Other studies confirm the higher yield of milk and butterfat of the buffalo than the native cow, and also that the sale price of the buffalo milk is higher than the native cow milk. The buffalo milk provides higher yield of the milk products processed per unit of fresh milk [1].

Previous research work [4&5] showed that holding buffaloes and cattle on the farm provides better opportunities for the family labour employment. They calculated the total family labour devoted for the livestock operations and the imputed value added per one hour of the family labour used in these operations. These research works depended on surveys made in 1977 and 1981. However, the present work from the survey data of 1984, did not show such high importance of the employment objective in the farmer's decision to hold dairy animals. There are two possible reasons that may explain this behaviour. Probably, the farmer consider this objective, implicitly, when he decides to raise the family income by holding a dairy animal. It is also possible that increasing out-migration and switching of agricultural labour to off-farm activities have reduced the importance of this objective. However, if the second reason is valid, it will vanish, in near future, because of the 4 current evidences that the out-migration trend decreases and the labour return home is increasing.

PERIORITYTIES AMONG ECONOMIC OBJECTIVES FOR HOLDING BUFFALOES:

As shown earlier (Table 2) in this study, the objective to increase family income is much more important in the decision to hold a dairy buffalo than to hold a native dairy cow. However, there are two main productive purposes that may share in the income generating function. These are, either to produce milk or meat. Meat production means to produce either feeder or fed calf. The weight of each purpose in the farmer's decision is presented in table 3. The comparison is made between buffaloes and native cows, according to land holding size and the number of animals in milk per farm. Feeder calf production comes first, in the case of the periorities of the farmer who hold a native cow. However, the landless dairy cow holders give more weight to milk production, whereas the small land holdings give equal weights to fattening and milk production and fattening has higher weight than milk production on larger farms.

The farms of large area have opportunity to expand the fodder area and therefore are able to raise calves up to heavier weights. The larger farm size can hold a larger number of calves. Accordingly, they are able to be under the feeder calf insurance programme, which allows them to get subsidized concentrate feed mix (Cotton seed cake, brans, corn and molases) [6]. On the other hand, there is a relative scarcity of feeds on the small farm, and evidently the priority is given to milk production as the most efficient way to use available feeds [6].

With respect to buffaloes, milk production, always, recieves the first periority, inspite of the holding size. Apparently, the larger the holding size, the higher the importance of milk production purpose (Table 5). Calf fattening has much less weight in the farmer's decision to hold a dairy buffalo.

The differences in periorities reported in the survey appear to reflect some known differences in market conditions. Beef has the first share in total

red meat supply in Egypt. The consumer prefers the buffalo veal and pays a higher price for this type but not for older fed buffalo calf [7]. The farmer saves his scarce feed for milk production where higher sale price of buffalo milk accompanied by higher efficiency of the feed utilization, probably influence his decision. Simultaneously, he gets high sale value for his newly born calf, without bearing the risk of fattening. These evidences show the socio-economic constraints that face the proposed programme to expand the buffalo veal fattening.

It is important to mention that in spite of the high importance of the social and subsistence objectives in the farmer's decision to hold a dairy animal, the economic objectives in terms of selling milk can be increased significantly if there is high level of production per farm and there are available marketing incentives [8].

THE SOCIO-ECONOMIC FEATURES OF FRIESIEN HOLDINGS VERSUS MIXED HOLDINGS (FRIESIEN AND BUFFALOES):

Before investigating why the farmers persist in keeping the buffaloes when they have opportunities to hold the Friesien, it is important to know who those farmers are. It is noticed from the sample data that 61 per cent of the Friesien holders also hold buffaloes (Table 4). Those who hold both types have larger farm size (7.61 feddans) than those with only Friesien (3.39 feddans). Those farmers who hold both Friesien and buffaloes cultivate larger berseem area. In spite of their larger berseem area, they have to purchase, berseem from off-farm more frequently than those who raise only Friesien. This phenomenon, shows that the persistency of the farmers to hold both types on the same farm expand the demand for feeds, particularly berseem, while there is a current feed shortage in Egypt. Surprisingly, both groups (with only Friesien and with both types) have attitudes toward expansion in buffaloes. Therefore, it is required to change such attitude, otherwise, there will be feed crisis. Both groups are not different in either the age or the education level of the farmer.

MAJOR FACTORS AFFECTING THE DECISION TO HOLD DAIRY BUFFALOES WITH FRIESIEN ON THE FARM:

The farmer is familiar with the benefits of holding a Friesien cow or cross-breeds on his farm as shown from table 5. His decision in this concern is built first on the high milk yield, secondly, because he depends upon his neighbours success in raising this breed, and thirdly because he has enough area to cultivate berseem. Available funds and existence of an active market for this breed is also important. The current price policy and concentrate feed mix quota distribution system give some priority to the farmers who have Friesiens [6]. Not only does it make feed available for the Friesien, but also it gives some opportunity to provide the concentrate feed mix at subsidized price to the dairy buffaloes on the same farm. Accordingly, the Friesien holders give some attention to this advantage as shown from table 5. It should be mentioned that the current quota system does not provide concentrate feed mix at subsidized price to the farmers holding only buffaloes, who have less than five animals.

However, the farmers have no plans to replace their dairy buffaloes for the new purchased Friesien, because of some important reasons, they raise

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(Table 6). They prefer to hold buffaloes because (1) the buffalo's milk is mainly for home consumption and the friesien milk is for sale, (2) they expect higher yield of the milk products from processing the buffalo milk, (3) while they can use the dairy buffalo for animal work it is not viable for friesien, (4) the buffalo milk has higher sale price as a result of the consumer taste, (5) if the buffalo milk is mixed with friesien milk it gets higher quantity at moderate butterfat percentage which results in higher income than producing and selling only the friesien milk.

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Table 1: Relative Importance of Dairy Buffaloes in Total herd on the Conventional Farm.

No. Animals per farm	No. Farms	Total No. Animals *	No. of Animals in Milk				
			Total Native		Cows		Buffaloes
			Head	%	Head per farm	%	
1	11	11	11	0.0	0.0	100	1.0
2	22	44	22	31.8	0.35	68.2	0.75
3	22	66	42	40.5	0.77	59.5	1.13
4	19	76	40	30.0	0.68	70.0	1.47
5	28	140	95	36.8	1.25	63.2	2.14
Sample	100	391	210	33.81	0.71	66.19	1.39

* native cattle and Buffaloes.

Source: Sample Survey, of March 1984.

Table 2: Priorities of the Social and Economic Goals That Determine The Decision of The Farmer To Hold Native Dairy Cows or Dairy Buffaloes.

Social and Economic Goal	Dairy Native Dairy	
	Cows	Buffaloes
% of Positive answers*.....	
Social prestige	98	97
Traditions	78	79
Home-consumption of Milk	56	84
To Increase the farm family income	54	82
A source of the organic fertilizer	58	78
As animal power input for farming	45	49
Providing better opportunity for familylabour	6	9

* Total No. of farms are 100

Source: Sample survey of March 1984.

Table 3: Priorities of the Productive Purposes in Raising Native Dairy Cows and Buffaloes According to Land Holding Size and No. of Animals in Milk.

Comparative Item	Cows		Buffaloes		Total No. of Farms
	Calf Fattening	Milk Production	Calf Fattening	Milk Production	
.... Percentage of Positive Answers					
Land Holding Size (Feddans)					
Landless	27	40	47	74	15
Less than 3	36	36	51	80	45
3 and more	70	48	48	98	40
Animals in Milk (Head)					
One	31	28	49	74	39
Two	55	45	42	89	38
Three and more	69	61	56	96	23
Total Farms	49	42	48	85	100

Source: Sample survey of March, 1984.

Table 4: Socio-Economic Features of The Friesien Holdings Versus Mixed Holdings (Friesien and Buffaloes).

Socio-Economic Feature	Mixed Holding (Friesien + Buffaloes)	Holding Only Friesien
.... No. of Holdings		
Total No. of Holdings	17	11
The holder has off-farm work	3	1
Cultivated berseem on the farm is not enough	7	2
Attitudes of the holders toward future Investment:		
Expantion in only Friesien	6	6
Expantion in only Buffaloes	5	3
Expantion in Friesien and Buffaloes	1	1
Expantion in Notive Cattle	1	0.0
No. Expantion in the future	4	1
.... No. Animals		
Friesien per farm	2.88	2.51
Buffaloes per farm	2.17	0.0
.... Feddans		
Average farm size	7.61	3.39
Average Area of Berseem per farm	3.83	2.51
..... Years		
Holder's Age	45.3	45.7
Average education years	5.6	5.4

Source: Sample Survey, of April 1984.

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Table 5: Major Factors Affecting the Decision Purchasing Friesiens to be Raised on the Same Farm With Dairy Buffaloes.

Factor Reported by the Farmer	Relative* Importance
Dairy friesien has high milk yield	94.7%
Successful experience of the neighbours	47.7%
Availability of the Green fodders	42.1%
Friesien holding allows to get subsidized concentrate feed mix for the buffaloes, too	15.8%
Available opportunities to hold friesiens	17.9%

* Total No. of Surveyed farmers = 28.

Source: Sample survey of April 1984.

Table 6: Major Factors Affecting the Decision of not Replacing Buffaloes for Friesiens and the Persistence to hold Both Types.

Factor Reported by the Farmer	Relative* Importance
Buffalo milk is for home-consumption	88.2%
Buffalo milk is more efficient for processing	76.6%
Using buffaloes for animal work is more viable than friesiens	26.1%
Buffalo milk has the highest market price	42.9%
To mix the buffalo milk with the friesien milk forgetting higher revenue	17.6%

* 28 farmers surveyed.

Source: Sample survey of April 1984.