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LABOUR USE PATTERNS FOR LIVESTOCK
OPERATIONS ON CONVENTIONAL FARMS
WITH SPECIAL EMPHASIS ON THE WOMEN'S ROLE
IN EGYPT

BY

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INTRODUCTION

Few previous studies have been concerned with the labour use pattern in livestock production. Moreover, such work that does exist has mostly used aggregate data as a means of comparison with labour use in crop production (1, 2, 3). Furthermore, the data used related to 1976/1997. However, that work came up with a number of important indicators. It was pointed out that labour use in livestock production exceeded labour use for crop production on small farms. As farm size increased, however, crop labour use rapidly surpassed that for livestock. Even for the largest farms (over 10 feddans) total labour use for livestock was less than twice as much as the

average for the small farms. This indicated that on the smaller farms livestock production tended to absorb available family labour, thereby circumventing, in part, the land availability constraint

Examination of the contribution of each labour type by the same authors, demonstrated a major role for women in livestock production. Women provided 40% labour for livestock, whereas men provided only 2% of labour for crop production. Male farm family labour devoted only 45% of their total effort to livestock production, whereas around 95% of the "production activities" of the female family labour was accounted for by such work. This work also demonstrated that of total hired labour time only 5% was accounted for by livestock associated activity.

OBJECTIVES: DATA BASE AND METHODOLOGY

This paper deals with human labour use patterns for livestock production by type of labour (hired, family, men, women and child). Labour use is classified according to the operation: feeding, watering, cleaning the barn, milking and

milk-processing. The effects of livestock specialization (Milk producer and Non. Milk producer), farm size and region on the labour use pattern are investigated. Special emphasis was given to the role of women in dairy processing and the imputed return to such work was estimated. The sample was classified into milk producer farms (170 observations) and non-milk producer farms (43 observations). the difference in the number of observations in the two sets can be accounted for on the basis of representing reality of the distribution of the milk producer farms and the non-milk producer ones. The data was also arranged so as to take account of landless livestock holders (22 observations), small farm ($0 < \text{to } 3$ feddans, 119 observations) and larger farms (above 3 feddans, 72 observations). The role of the female labour in livestock work was then quantified.

The data used are taken from a purposive survey devoted to, livestock production, in 1981, on traditional farms. The survey included 8 villages from 4 Delta Governorates in Lower Egypt:

Sharkia, Kalibria, Menoufia and Gharbia. The study was conducted under the auspices of the Agricultural Development System Project (Ministry of Agriculture, Egypt). The total sample size was 213 farms. Exogenous weights were used to calculate the sample averages. The land holding distribution records in the same village were used to weight the sample farm size classes. The weights for landless livestock holders were derived from preliminary published tables of 1982 agricultural census. Table (1) shows the weights used in the study.

An additional purposive survey was conducted to fulfill particular objectives. A limited questionnaire was conducted in a village of the sample (Toukh El-Kharmous in Sharkia Governorate) in order to calculate the technical coefficients of the milk processing on farm. It has included the same 26 farms surveyed by the original survey.

RESULTS AND DISCUSSIONS

HIRED LABOUR CONTRIBUTION:

The hired labour contribution in livestock

production is marginal. Only 3.4% of the total labour used for livestock production is hired (Table 2). Most hired labour is used for cleaning and feeding operations, i.e. 42% and 19%, respectively (Table 3). In general, only 12% of the farms hired some labour for livestock production (Table 4). However, the probability of the farms hiring labour increases in time with farm size (Table 4). Furthermore, the level of hired labour increases as farm size increases (Table 5). Large farm means intensive crop production which absorbs most of the male labour, leaving less time for livestock production (1, 2, 3). In other words, family labour's contribution varies between 94-98%, depending upon the operation (Table 2).

AVERAGE WAGE RATES FOR LABOUR IN LIVESTOCK PRODUCTION:

It was possible to calculate the average wage rate per labour hour by livestock operation from the sample data in 1981. However, the wage rate for either milking or milk processing was not calculatable from the sample data, because

almost all labour for such operations was family labour. Secondly, when hired labour was used for milking and/or milk processing, it was as part of the regular work of the permanent hired labour force. Therefore, the wage for permanent labour should be taken as a general rate of the livestock work.

Table 6 presents the estimates of the wage rate for feeding, watering, cleaning the barn and the average wage rate of permanent hired labour for livestock production on farm. From this table it can be calculated that the average wage rate for feeding was 11 piasters per hour, for watering 8 piasters, and for cleaning 15.5 piasters per hour. It is noticed that the wage rate is positively associated with the intensity of the work. Cleaning the barn takes more effort than feeding, while the least effort is devoted to watering. The weighted average of the three operations was 12.7 piasters per hour. However, the average wage rate per hour for permanent hired labour in livestock production was only 9 piasters. In other words, it tends to be cheaper labour by operation. However, it is only large farms which can hire

permanent labour over the year as they hold relatively large number of animals.

LABOUR CONTRIBUTION FOR LIVESTOCK OPERATIONS:

Labour use per animal unit per year ranges between 580 hours, depending upon the farm activity. The average is about 840 hours (Table 7). A previous study had estimated this average to be 949 hours (1, 2, 3). However, milk producer farms use labour more intensively than non-milk producer farms (Table 7). This is not only because there is no milking and milk processing on the latter farms, but also because the milk producer farms use more intensive labour for feeding, watering and even cleaning the barn.

In general, 35% of the labour is used for feeding, 28% of the labour is used for cleaning the barn, 21% is used for watering. Milking and milk processing account for less than 17% of total labour use.

FARM SIZE EFFECT ON LABOUR USE LEVEL:

From table 8 it seems that the larger the

farm size the lower is the level of labour used per animal unit for livestock production. Landless livestock holders use 866 labour hours per animal unit per year, while for farms less than 3 feddans the level is about 848 labour hours per year per animal unit. On larger farm only 698 labour hours per year per animal unit is used.

The proportion of female labour in total labour hours is negatively associated with farm size. Landless livestock holders use 325 hours of family women labour per year per animal unit., i.e. 37.5% of total labour. On farms of less than 3 feddans this falls to 167 hours per animal unit per year with women labour (contributing 20% of total labour). On farms larger than 3 feddans women labour accounts for 133 hours per animal unit per year, i.e. 19% of the total labour.

CONTRIBUTION OF EACH LABOUR TYPE FOR LIVESTOCK OPERATIONS:

Whatever the activity, in livestock production, male labour makes the major contribution when calculated in total labour hours. Male

labour's share is 60% on milk producer farms (Table 9) and 78% of total labour for livestock production on non-milk producer farms. However, the man does more than 80% of the cleaning and feeding operations and almost nothing with respect to milking and milk processing. Male labour shares almost equally with women and child labour the watering operation on milk producer farms. Male labour does two-thirds of watering operations on non-milk producer farms. In brief, an animal unit requires 2.6 hours of human labour per day. When the man shares by 1.6 hours, the women shares by .84 hours and the children share by less than .2 (Table 9).

The women's role varies according to the nature of livestock activity on the farm. In general, her role on milk producing farms is more important than on non-milk producing farms (Fattening operations). Female labour accounts for one-third of total use for livestock on milk producing farm (Table 10), and only one-fifth of total labour on non-milk producing farms (Table 11). If the farm is more specialized in milk production the women's role may rise to 40% of

total labour. (Farms close to Tanta city sell most of their milk as fresh milk and keep more than 90% of their agricultural area for barsim production). This latter pattern is presented in Table 12.

With respect to each operation, the women does all the work for milking and milk processing. The share in the watering operation is also significant, particularly on milk producing farm (42%). The women is hard to involve in the more strong activity as the barn cleaning. Usually, the children help the men in doing such work. The children's contribution is in general, minor ranging between 3 to 6% of the total labour use in livestock production.

Several studies have shown that women play a very important role in livestock production in Egypt (1, 2, 3). Other recent studies (4 and 5) have supported these findings. They indicated that women fetch the barsim, feed the cows and buffalos, milk them, churn the milk and make cheese. However, it seems that since the work associated with livestock production, particular-

ly the processing of milk products can be carried out within the confines of the farmhouse compound, rather than in the open field, it is more sociably acceptable that women be involved.

A study on the Salameya village of Faraskur district from Domyatta Governate was made in 1983 (6). It is a commercial specialized area for milk processing. It was found that 45% of the milk supply in this village delivered to the private sector processing plants (10 in two neighbouring villages). Most of the rest is delivered to the Domyatta dairy plant. Very little proportion was processed on farm.

The Salameya village differ strongly from the above present pattern. Men, not women, are responsible for all the above mentioned activities. The cheese is processed in the small processing plants by men. The little quantity of milk processed at home is operated by the housewife. It seems that women stay around their houses. Working on the land or in milk production is highly unusual for women in this village. This is due to some factors. Most of the families are

large and therefor there is a considerable work for women to be done for their family services. Moreover, many cow heds are not near the houses as a commercial enterprising. Milk processing is mainly an industry off farm. The relatively high standard of living in Salamaneya village is probably also behind the fact that women work mainly in or around the home. Most interviewed men consider having wives a disgrace.

RETRUN TO WOMEN'S WORK FOR MILK PROCESSING;

Examination of the labour used pattern on farm showed that the labour for processing is entirely women labour of the farm family. Average hours required to process one kilogram of milk is 0.3796. Confidence limits at confidence level 95% are at maximum 0.4931 hours and at a minimum 0.2661 hours. This value is compared with the market wage rates of the other labour used for livestock operations. Once, the women of the family are exclusively the only members sharing in processing operations, the value added due to milk processing is a return to the women in these operations, keeping in mind that milk processing

on farm is considered as house keeping works, though it is an economic activity. The chart of Figure 1 summarizes the sequence of the processing operations and the associated transformation coefficients.

There are three main optional combinations: (Cheese*Cream), (Cheese*Butter) or (Cheese * Ghee). Average price of each product including fresh milk is calculated from the sample data (Table 13). Using the technical coefficients in Figure it is possible to estimate the sale value of the three optional combinations of the final products as the output of one kilogram processed milk. The two cost items of milk processing on the farm are the raw milk processing on the farm are the raw milk costs and family labour (women members of the family). Other cost items are not significant on kilogram milk base. These items are the bowl (made of mud) its cost is 0.2 L.E. and it is also durable for the whole season and the "haseera", (made of bambo) where its cost is 1 L.E. and is also durable for the whole season. Therefore, calculated other costs per 1 kg processed milk is about 0.3 P.T., i.e. a negligible value. Farm

gate price per 1 kg fresh milk is 0.25 L.E. Accordingly, to subtract the price of 1 kg fresh milk from the sale value of the finak products combination results in the value added per 1 kg fresh milk. Division of this value added over the number of the labour hours used for processing such kilogram of milk results in the value added per 1-hour of labour used.

* Table 14 presents the value added calculated per 1 kg of milk and per one hour of women's work in milk processing. It is concluded from Table 14 that the highest value added per one hour of woman's labour for milk processing is about L.E. 0.48 per hour as the return from cheese and cream followed by the return from cheese and ghee, i.e. L.E. 0.43 per hour, whereas of 1 kg fresh milk into cheese and butter provides a return of L.E. 0.34. The market wage rates of the other livestock operations are for: feeding, 11 L.E. ¥ hour, .08 for watering and .15 L.E.¥hour for cleaning. It shows that the opportunity cost of women members of the farm family in milk processing is much higher than any other operation for livestock production. However, the disposal of the

income generated from milk processing needs further investigation. Who receives this income? what are the channels through which this income is invested? who decides these channels? To cover the role of women, it means not only to investigate her share in labour use, but also her role in decision-making. Table 15 may provide some evidences in this concern. From this table the probability to process milk on farm increases as the number of the adult female members of the farm household increase.

REFERENCES

- 1) Fitch, J.B. and Ibrahim Soliman. "Livestock and Small Farmer Labour Supply". in Migration, Mechanization and Agricultural Labour Markets in Egypt. A. Richards and P. Martin eds. Westview Press, Boulder, Colorado, 1983, P. 45.
- 2) Soliman, I., J. Fitch and N. Abd El-Aziz. Economics of Livestock on Iraditional Farms. Res. Bulletin No. 679, Faculty of Agriculture, Zagazig University, Egypt, June, 1982. P.14.

- 3) Fitch, J.B. and Ibrahim Soliman. Livestock and crop Production Linkages Implications for Agricultural Policy. Econ. working paper No. 92, ADS Project, ARE Ministry of Agriculture, AID, Sept., 1982. P.7.
- 4) De Terville, D. Food Processing and Distribution Ystems in Rural Egypt: Grair., Bread and Diary Products. Cairo: Unpublished Report Financed by the Ford Foundation, 1983.
- 5) Zimmerman, S.D. The Cheese Makers of Kafs Al-Bahr. Leiden Institute for Social and Cultural Studies. 1982.
- 6) Hulsman, C. Village Development in Salameya. Unpubished M. Sc. Leiden Institute for Social and Cultural Studies, Wassenaar, August, 1984.

SUMMARY AND CONCLUSIONS

The analysis depended upon a sample survey devoted entirely to livestock production, in 1981 on the Egyptian Farms in 8 villages from 4 Delta Governorates. The results showed that the hired labour contribution in livestock production is marginal only 3.4%. The probability of farms hiring labour increase in time with farm size. The level of hired labour use increases as farm size increases. Most hired labour is used for cleaning and feeding operations. It is noticed that the wage rate is positively associated with the intensity of the work's effort. The permanent hired labour tends to be cheaper labour by operation than the average occasional hired labour.

In general, 35% of the labour is used for feeding, 28% of the labour is used for cleaning the barn, 21% is used for watering. Milking and milk processing accounts for less than 17% of the total labour use. It seems that the larger the farm size the lower is the level of labour used per animal unit for livestock production.

Male labour makes the major contribution when calculated in total labour hours in livestock production. The man does most of the cleaning and feeding operations and almost nothing with respect to milking and milk processing.

The woman's role on milk producing farms is more important than non-milk producing farms (fattening operations). Female labour accounts for one-third of total use for livestock on milk producing farms, and only one-fifth of total labour on non-milk producing farms. If the farm is more specialized in milk production the woman's role may rise to 40% of total labour.

The woman does all work for milking and milk processing. Her share in watering operation is significant, particularly on milk producing farms. She is hard to involve in the more strenuous activity such as the barn cleaning. The proportion of female labour in total labour hours is negatively associated with farm size.

The milk processing of farm is considered as house keeping work, though it is an economic

activity. The calculated value added per one hour of woman's work in milk processing showed that the opportunity cost of the rural woman in this home operation was much higher than the village wage rate in 1981. Furthermore, the probability to process milk on farm increases as the number of adult female members of the farm family increase. However, the woman's role in the disposal channels of the income generated from milk processing needs further investigation. Development of the milk processing on farm seems a promising approach for the rural woman development.

اعتمدت الدراسة علي بيانات مسح بالعينة لانشطة الانتاج الحيواني في المزرعة المصرية في عام ١٩٨١ ، وشملت العينة ٨ قري من ٤ محافظات واوضحت النتائج ضالة ما يساهم به العمل المستأجر (٢٤٪) ، وزيادة استخدام العمالة المستأجرة مع زيادة حجم المزرعة ، ويستخدم العمـل المستأجر في الغالب في العمليات الشاقة (تنظيف الحظيرة والتغذية) ويرتبط معدل الاجر طرديا مع مشقة الجهد المبذول في عملية خدمة الانجاج الحيواني ، والعمالة المستأجرة المستديمة اقل تكلفة من العمالة المستأجرة الغير مستديمة او الموسمية .

يستخدم ٢٥٪ من العمل البشري لخدمة الانتاج الحيواني في عملية التغذية ، ٢٨٪ في عملية تنظيف الحظيرة ، ٢٠٪ في عملية السقي ، واحتياجات الحلب وتصنيع اللبن تبلغ ١٧٪ . وكلما زاد حجم المزرعة تقل ساعات العمل المستخدمة للوحدة الحيوانية .

وتساهم المرأة بحوالي ثلث العمل الكلي في مزارع انتاج اللبن
بينما يقل نصيبها الي الخمس في المزارع الغير منتجة للبن (التسمين) ويزيد دور المرأة في العمل لخدمة الحيوان بزيادة تخصص المزرعة في انتاج اللبن . ويصعب علي المرأة اجزاء بعض الاعمال الشاقة مثل تنظيف الحظيرة في حين تقوم بكل عمليات الحلب وتصنيع اللبن ونصيبها في عملية سقي الحيوان له اهمية ويرتبط دور المرأة في العمل عكسيا مع حجم المزرعة . ويقوم الرجل بأجراء معظم عمليات التغذية والتنظيـف ودور الاطفال (اقل من ١٥ سنة) غير هام (٢٪ الي ٦٪ من جملة ساعات العمل لخدمة الحيوان) .

وتبين ان احتمالات تصنيع اللبن في المزرعة تزيد بزيادة عدد الاناث البالغة من اعضاء الاسرة المزرعية . وتقدير القيمة المضافة لساعة عمل المرأة في تصنيع اللبن في المزرعة اظهر فيها عملية اقتصادية ذات عائد

يفوق عدة اضعاف اجر العمل الزراعي في القرية، رغم انها تعتبر من عمليات التدبير المنزلي الريفي. وهو يلقي الضوء علي اهمية تنمية هذه الصناعة من اجل تنمية المرأة الريفية ولكن يحتاج ذلك لمزيد من دراسة دور المرأة في التصرف في الدخل المتولد عن هذه الصناعة واطاحة التصرف في هذا الدخل ، ودور المرأة في اتخاذ القرار في هذا الشأن .

Table (1): The sample: Relative weights by farm size class.

| Weights (%) | Zero | 0 < to 1 feddan | 1 < to 3 feddan | 3 < to 5 feddan | > 5 feddan | Total |
|---------------------|------|-----------------|-----------------|-----------------|------------|-------|
| - All sample | 12.1 | 34.3 | 41.3 | 8.1 | 4.2 | 100 |
| - milk producers | 10.1 | 32.0 | 44.9 | 8.7 | 4.3 | 100 |
| - non-milk producer | 21.1 | 44.7 | 25.2 | 5.5 | 3.5 | 100 |

Table (2): Contribution of hired labour in total labour use for livestock operations.

| Comparison | Feed- ing | Water- ing | Clean- ing | Milk- ing | Milk Process- ing | Total |
|-----------------------------------|--------------|---------------|---------------|--------------|-------------------------|-------|
| Hours per Animal unit per year | 293.4 | 173.2 | 234.3 | 74.8 | 64.8 | 840.5 |
| % of the hired labour | 1.9 | 2.3 | 5.1 | 4.3 | 6.2 | 3.4 |
| % of the family labour | 93.1 | 97.7 | 94.9 | 95.7 | 93.8 | 95.6 |

Table (3): Average hired labour by livestock operation.

| Hired labour | Feed- ing | Water- ing | Clean- ing | Milk- ing | Milk Process- ing | Total |
|-----------------------------------|--------------|---------------|---------------|--------------|-------------------------|-------|
| Hours per Animal unit per year | 5.5 | 4.0 | 11.9 | 3.2 | 4.0 | 28.6 |
| % of the total labour | 19.2 | 14.0 | 41.6 | 11.2 | 14.0 | 100.0 |

Table (4): Relative frequency of the farms that used hired labour for livestock operations by farm size class.

| % of the farms that hired labour out of total | Farm size class (Hectares) | | | | | Weighted and averaged |
|---|----------------------------|----------|----------|----------|-----|-----------------------------|
| | Zero | 0 < to 1 | 1 < to 3 | 3 < to 5 | > 5 | |
| Farms within a given size class | | | | | | |
| Percentage | 0.0 | 3.4 | 14 | 52 | 39 | 11.1 |

Table (5): Average costs of hired labour for livestock operations by farm size class (L.E. per Animal Unit).

| Average costs of hired labour (L.E./Animal Unit) | Farm size class | | | | | Weighted average |
|--|-----------------|----------|----------|----------|-----|------------------|
| | Zero | 0 < to 1 | 1 < to 3 | 3 < to 5 | > 5 | |
| Per Milk Buffalo | 0.0 | 3.0 | 3.7 | 4.0 | 5.5 | 3.2 |
| Per Milk Cow | 0.0 | 0.0 | 2.0 | 2.5 | 3.0 | 1.2 |

Table (6): Average wage rates of hired labour for livestock operations (1981).

| Planting/Year | Feeding operation | Watering operation | Cleaning operation | Permanent hired labour for all operation |
|--------------------------------|-------------------|--------------------|--------------------|--|
| Average wage rate | | | | |
| Hour | 1. | 8 | 15.5 | 9.3 |
| Standard deviation | (5.3) | (0.5) | (6.5) | (3.3) |
| Coefficient of variability (%) | 49% | 6.89% | 41.9% | 35.5% |

Table (7): Contribution of each operation in total labour use for livestock production.

| Item | Feeding | Watering | Cleaning | Milking | Milk processing | Total |
|---------------------------------|---------|----------|----------|---------|-----------------|--------|
| <u>Milk Producer Farms:</u> | | | | | | |
| Hours/Animal Unit/Year | 341.1 | 190.3 | 243.3 | 94.6 | 80.9 | 949.7 |
| % of total | 35.9 | 20.0 | 25.6 | 10.0 | 8.5 | 100.0 |
| <u>Non-Milk Producer Farms:</u> | | | | | | |
| Hours/Animal Unit/Year | 251.0 | 160.4 | 107.9 | xx | xx | 579.3 |
| % of total | 39.9 | 27.7 | 32.4 | xx | xx | 100.0 |
| <u>All Farms:</u> | | | | | | |
| Hours/Animal Unit/Year | 593.4 | 350.7 | 351.2 | 94.6 | 80.9 | 1520.8 |
| % of total | 39.0 | 23.1 | 23.1 | 6.2 | 5.3 | 100.0 |

11
^
10,0
9.2

Table (8): Farm size effect on labour use level for livestock operation.

| Type of labour | Landless farms | 0 < to 3 feddans | Above 3 feddans |
|----------------|----------------|------------------|-----------------|
| Man | 504.9 | 598.6 | 479.8 |
| Woman | 324.6 | 167.2 | 133.2 |
| Child | 36.6 | 82.5 | 84.9 |
| Total | 866.1 | 848.3 | 697.9 |

Table (9): Average hours of labour/per animal unit/per/day by type of labour and by operation.

| Operation | Man | Woman | Child | Total |
|-----------------|------|-------|-------|-------|
| Feeding | .75 | .15 | .04 | .94 |
| Watering | .28 | .22 | .02 | .52 |
| Cleaning | .54 | .02 | .11 | .67 |
| Milking | ... | .25 | ... | .25 |
| Milk processing | ... | .19 | ... | .19 |
| Total | 1.57 | .84 | .17 | 2.58 |

... Less than one minute/day.

Table (10): Average labour ^{use} for milk production on the conventional farm.
(Hours per Animal Unit per Year).

| Operation | Man | | Woman | | Child | | Total | | % |
|-----------------|-------|------|-------|------|-------|------|-------|-----|------|
| | Hours | % | Hours | % | Hours | % | Hours | % | |
| Feeding | 273.3 | 80.1 | 54.4 | 15.9 | 13.4 | 4.0 | 341.1 | 100 | 35.3 |
| Watering | 102.2 | 53.7 | 30.6 | 42.3 | 7.5 | 3.9 | 190.3 | 100 | 20.3 |
| Cleaning | 196.7 | 80.8 | 7.5 | 3.1 | 39.1 | 16.1 | 243.3 | 100 | 25.9 |
| Milking | 1.8 | 1.9 | 92.6 | 97.9 | 0.2 | 0.2 | 94.6 | 100 | 10.0 |
| Milk Processing | 0.8 | 1.1 | 69.2 | 98.3 | 0.4 | 0.6 | 70.4 | 100 | 7.5 |
| Total | 574.8 | - | 304.3 | - | 60.6 | - | 939.7 | | 100 |
| % | 61.2 | | 32.4 | | 6.4 | | 100 | | |

Table (11): Average labour use for livestock production on Non-Milk production farms.
(Hours per Animal Unit per Year).

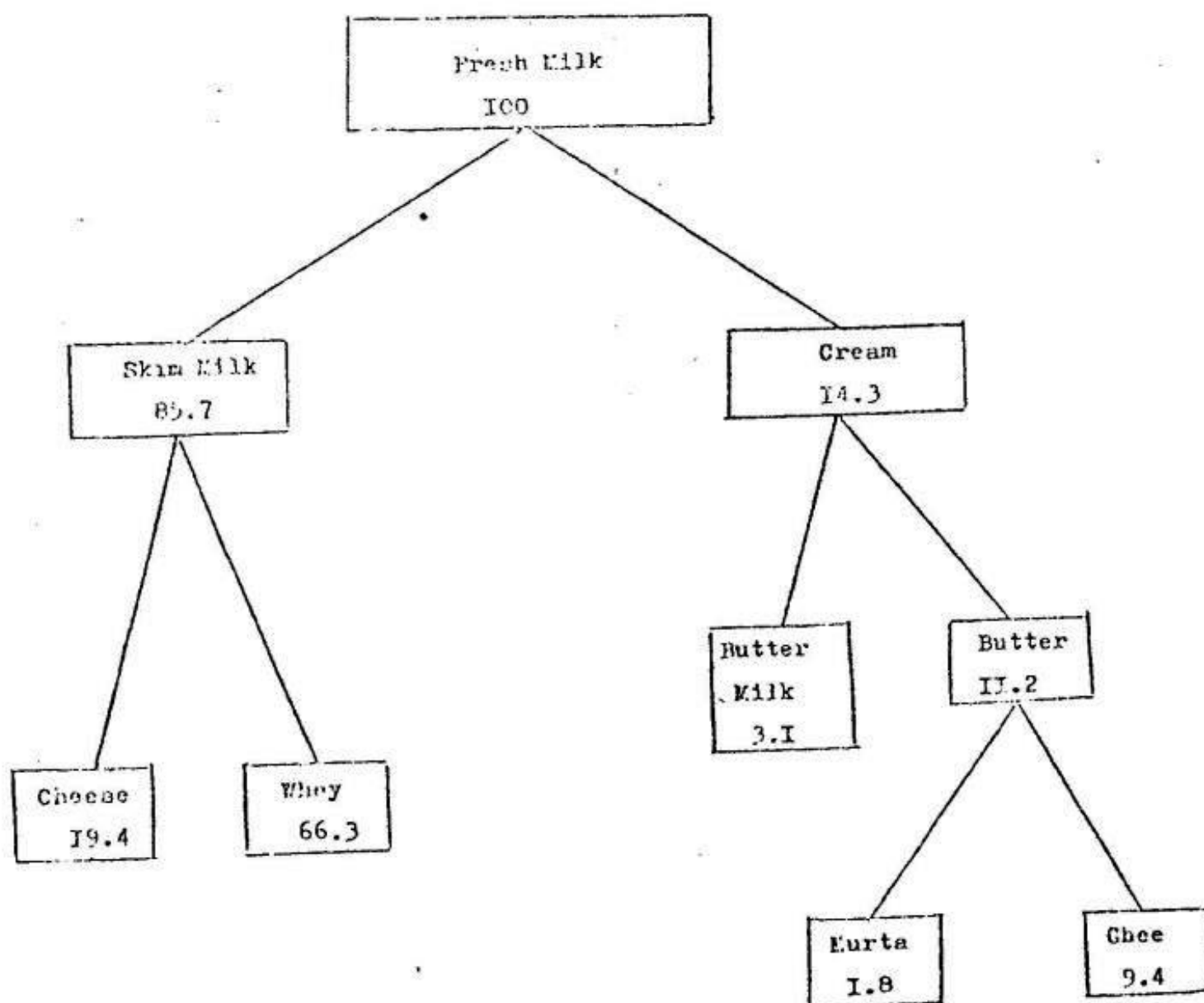
| Operation | Man | | Woman | | Child | | Total | | % |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| | Hours | (%) % | Hours | (%) % | Hours | (%) % | Hours | (%) % | |
| Feeding | 182.9 | 79.1 | 48.4 | 20.9 | 0.0 | 0.0 | 231.3 | 100 | 39.9 |
| Watering | 109.5 | 68.3 | 41.3 | 25.7 | 9.6 | 6.0 | 160.4 | 100 | 27.7 |
| Clooning | 157.6 | 83.9 | 23.4 | 12.4 | 6.9 | 3.7 | 187.9 | 100 | 32.4 |
| Total | 450.0 | - | 113.1 | - | 16.5 | - | 579.6 | | 100 |
| % | 77.6 | | 19.5 | | 2.9 | | 100 | | |

Table (12): Average labour use for livestock production on the specialized small farm.
(Hours per Animal Unit per Year).

| Operation | Man | | Woman | | Child | | Total | |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-----|
| | Hours | (%) % | Hours | (%) % | Hours | (%) % | Hours | % |
| Feeding | 234.8 | 67.8 | 100.7 | 29.1 | 11.0 | 3.1 | 346.5 | 100 |
| Watering | 144.1 | 60.1 | 62.7 | 29.6 | 4.8 | 8.3 | 211.6 | 100 |
| Cleaning | 153.0 | 87.7 | 14.9 | 8.5 | 6.6 | 3.8 | 175.1 | 100 |
| Milking | 0.6 | 0.6 | 99.4 | 99.4 | 0.0 | 0.0 | 100.0 | 100 |
| Milk processing | 0.0 | 0.0 | 92.4 | 100.0 | 0.0 | 0.0 | 92.4 | 100 |
| Total | 533.1 | — | 370.1 | — | 22.4 | — | 925.6 | 100 |
| % | 57.6 | — | 40.0 | — | 2.4 | — | 100 | — |

(1) Labor Category's Contribution to the same operation.
(2) Operation's Contribution over all Labor Category.

Fig. 1 Technical Coefficient of Milk Processing
on Traditional Farm



Handwritten notes: 100/100, 100/100, 100/100

Table (13): Average prices of milk products at farm gate in 1981.

| Milk Product | Fresh milk | Cheese | Cream | Butter | Ghee |
|------------------------------|------------|--------|-------|--------|------|
| Average price (P.T. 1 kg) | 25 | 39 | 250 | 270 | 360 |

Table (14): Calculated value added per kg of milk processed.

| Alternative final products combina- tion | Sale value/kg processed milk (LE) | Value added per 1 kg processed milk P.T.T. | Value added per hour of labour P.T.T. |
|--|---|--|---|
| Cheese+Cream | 43.316 | 18.316 | 48.251 |
| Cheese+Butter | 37.906 | 12.806 | 33.736 |
| Cheese+Ghee | 41.406 | 16.406 | 43.219 |

Table (15): The probability to process milk on farm with the No. of the adult female members of the farm family^x.

| No. Adult Females | No. Holdings | Farms that processed milk | | Farms did not process milk | |
|----------------------|-----------------|------------------------------|-----|-------------------------------|-----|
| | | No. Holdings | % | No. Holdings | % |
| None | 3 | 2 | 67 | 1 | 33 |
| 1 | 28 | 24 | 86 | 4 | 14 |
| 2 | 20 | 25 | 89 | 3 | 11 |
| 3 | 18 | 17 | 94 | 1 | 16 |
| 4 and more | 4 | 4 | 100 | 0.0 | 0.0 |

* Calculated from a purposive sub sample (4 villages) of the total sample.