

**Report**

**Promoting Sustainable Livelihoods Through Diversifying  
Dairy in Rural Tamil Nadu**

Submitted to  
**ASSEFA Italia**

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## **1. Background**

- ASSEFA, a Gandhian Organisation, has been working for the welfare of the rural communities for the last forty one years. Livelihoods promotion is one of the main programs of ASSEFA, as it has been working with socio-economically backward families in the remote areas.

### **1.1. ASSEFA in Dairy Based Livelihoods Promotion**

- Major thrust being given to dairy based livelihoods promotion, as the target families are mostly landless, small and marginal farmers. Dairy groups with interested members have been formed in the villages. Through these group, needs based services such as support for buying animals, and quality feeds, arranging extension services, training and marketing surplus milk production have been delivered. Milk processing units are also established in the suitable locations to process and market the surplus milk.

### **1.2. Rationale of the Present Proposal**

- In the southern Tamil Nadu, ASSEFA supports nearly 10,000 families under dairy program. The surplus milk ranging from 35,000 to 40,000 litres are collected from these farmers, processed and marketed every day. However, in the on-going intervention, there were risks such as in marketing the surplus milk, especially during the flash season.
- In order to overcome this challenge, ASSEFA in collaboration with ASSEFA Italia started this program of diversifying the milk byproducts making with appropriate technology, in January 2009.

## **2. Project Objective**

- *“To promote dairy based sustainable livelihoods to the small and marginal farmers by putting up market-driven milk by-products making unit”.*

## **3. Project Locations**

- The milk by products manufacturing unit is established at Uchapatti village. This unit is expected to support nearly 10,000 dairy farmers inhabited across thirteen areas/blocks.

#### 4. Progress of the Project

- The project has been implemented with the support of professional team. The following major components, as planned, have been completed to promote dairy based livelihoods in the remote areas.
  - ✓ The necessary plants and machineries have been purchased, erected and field tested for making ghee and butter, flavoured milk and paneer products.
  - ✓ A separate team built up to manufacture and market the milk-by products.
  - ✓ The milk is procured from small and marginal dairy farmers in the surrounding areas.

##### 4.1. Milk By Products Making Units

- With the installed plants and machineries, the following milk by-products can be manufactured.
  1. Ghee
  2. Butter
  3. Flavoured Milk and
  4. Paneer
- The basic raw materials needed in making these products are
  - i. **Cream** for making **ghee** and **butter** and
  - ii. **Toned Milk** for making **flavoured milk and Paneer**.

##### 4.2. Ghee and Butter Making

- **Market Demand:** Ghee and butter are used for making sweets, manufacturing medicines and in preparation of regular food items. Of course, the percent of fat content is higher in Ghee than in butter. Generally, in rural areas, people manufacture these items manually but in limited scale. In many instances, these productions are not hygienic and they limit to self use only. These products have high demand in semi urban and cities, which can be tapped by suitable marketing network.
- **Production Process:** The cream separated from the fresh milk at the dairy processing units will be used. This contains 65 to 70 percentages of fats. After testing for the content of fat, the required cream will be placed inside the Butter Churn and make it to rotate at 25 rpm speed for 45 minutes. Once it reaches non sticky and visibly like small balls stage, needs to wash the butter with processed chill water for about 10 minutes. The butter can be packed to the required quantity.
- Otherwise, the butter can be transferred to boiler heating process for making ghee. The butter will be melted with continuous scrapping. The butter will become ghee, when it reached to 120°C for about 4-5hrs. The ghee shall be taken through filter to

get effective separation of all residues and obtain crystal clear Ghee. After laboratory testing of standards and enough settling, ghee will be filling in container and send it for marketing. The packing will be in 15ml, 50ml, 100ml, 200ml, 500ml, 1000ml, 5ltr and 15ltr.

- **Machineries/Equipments Purchased:**

- ✓ Refrigeration section
- ✓ Ghee packing machine
- ✓ Hot water line
- ✓ SS pipelines and fittings
- ✓ Transportation vehicle

- **Economics of Ghee Production:**

- ✓ Production capacity of Ghee per day : 500 kgs

*(Cream required for maximum production : 750 kgs)*

**1) Variable Cost**

- Cream cost ( for 1kg ghee production) : Rs. 200.00
- Packing cost/litre : Rs. 15.00
- Production expenses : Rs. 25.00
- Electricity Cost : Rs. 15.00
- **Total variable cost : Rs. 255.00**

**2) Fixed Cost (per day)**

- Human Resource Cost : Rs.1000.00
- Admin Cost : Rs. 250.00
- **Total Fixed cost : Rs. 1250.00**

**3) Selling price**

- Ghee price per kg : **Rs.260.00**

**4) Break even production per day**

$$= (\text{Fixed cost})/(\text{Selling price} - \text{variable cost})$$

$$= (1250)/(260-255) = \mathbf{250 \text{ kgs.}}$$

- At present, marketing network has been established to distribute the products to bulk buyers such as medicine manufacturing units, sweet making units, hotels and supermarket in twelve districts of Tamil Nadu.

### 4.3. Flavoured Milk Production

- **Market Demand:** Flavoured milk is commonly used as soft drinks in the cities and semi urban areas. Demand is high especially during the summer season i.e., from March to September. Since, it is healthy and delicious, many people including youths and school children have been attracted. Generally, this is sold in supermarket, college/school canteen, general shops, recreation centers and hotels.
- **Production Process:** The flavoured milk is prepared hygienically in different flavours, mainly badam, chocolate, cardamom, Pista and strawberry, which have good demand in the market. The following process is adopted in preparing this drink. The toned milk (*fat 1.5%, SNF 9%*) will be heated upto 70 to 80 C. The heated milk will be added with sugar along with preferred flavour such as badam, chocolate, cardamom, etc., and food grade colours and stirred well.
- Then, this will be filled in glass bottle of capacity 200ml and sealed with metal capping. The bottles will be loaded in Metal tray of each capacity 24nos. These trays will be loaded in sterilizer of capacity 500 bottles. In the sterilizer, the milk in bottles will heated at 120°C at 2kg pressure for about 20minutes. Later it is cooled down naturally, sealed and marketed.
- **Machineries/Equipments Purchased:**
  - ✓ Sterliser
  - ✓ Double Jacket pre heating vessel
  - ✓ Plastic trays
  - ✓ Bottles – 200 ml
  - ✓ Metal Tray
  - ✓ Bottle washer
  - ✓ Capping machine
  - ✓ Printing machine
- **Economics of Flavoured Milk Production:**

✓ Production capacity of Flavoured milk per day : 2000 bottles

(Milk required for maximum production : 400 litres)

#### 1) Variable Cost

• Cost of double toned milk (200 ml)	:	Rs. 2.00
• Cost of other Ingredients	:	Rs. 1.00
• Bottle cost	:	Rs. 3.75
• Production cost	:	Rs. 1.00
• Transport cost	:	Rs. 1.00
• <b>Total variable cost</b>	:	<b>Rs. 8.75</b>

## 2) Fixed Cost

- Human Resource Cost : Rs.350.00
- Admin Cost : Rs.200.00
- **Total Fixed cost : Rs. 550.00**

## 3) Selling price

- Flavoured milk per bottle : **Rs.10.00**

## 4) Break even production per day

$$= (\text{Fixed cost})/(\text{Selling price} - \text{variable cost})$$

$$= (550)/(10-8.75) = \mathbf{440 \text{ bottles.}}$$

- Marketing network is being established to distribute the products to retailers such as supermarket, canteens in schools and colleges, general shops, recreation centers and hotels. Presently, it is being distributed in seven districts.

## 4.4. Paneer Production

- **Market Demand:** Paneer is nothing but a different form of cheese. It has been used in preparing food items, mainly in hotels and during functions/parties, in urban areas. Generally, it is sold in supermarkets, general shops and shops specialized in marketing milk by products.
- **Production Process:** Double toned milk should be heated in Double jacketed vessel at 75 C using hot steams. While heating, when the milk reaches around 72 C, diluted citric acid of 1 percent solution should be added gradually. This would enable the solid milk contents to settle down at the bottom. This process should be continued for about 30 to 40 minutes periodically.
- Later, the solid contents settled at the bottom should be removed using the special pan and be subjected to pressing process to remove further moisture contents. The solid cake (raw paneer) should be immersed in chilled water for about 30 minutes for good texture. This paneer cake should be cut to the requirement and packed under vacuum after washing it.
- **Machineries/Equipments Purchased:**
  - ✓ Paneer – 1000 litres batch
  - ✓ Moisture removal presser
- **Economics of Production of Paneer**
  - ✓ Production capacity of Paneer per day : 150 kgs

*(Milk required for maximum production : 1200 litres)*

### 1) Variable Cost

• Cost of double toned milk (8 litres)	:	Rs.104.00
• Chemicals	:	Rs. 1.00
• Packing cost	:	Rs. 1.00
• Production cost	:	Rs. 3.00
• Transport cost	:	Rs. 1.00
• <b>Total variable cost</b>	:	<b>Rs.110.00</b>

### 2) Fixed Cost

• Human Resource Cost	:	Rs.350.00
• Admin Cost	:	Rs.200.00
• <b>Total Fixed cost</b>	:	<b>Rs. 550.00</b>

### 3) Selling price

• Paneer per kg	:	<b>Rs.120.00</b>
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### 4) Break even production per day

$$= (\text{Fixed cost})/(\text{Selling price} - \text{variable cost})$$

$$= (550)/(120-110) = \mathbf{55 \text{ kgs.}}$$

## 5. Benefits to the Farmers

- The project is envisaged to strengthen the on-going efforts in promoting dairy based livelihoods in southern Tamil Nadu.
- At present, nearly 10,000 small and marginal farmers inhabited across 13 areas have been supported under dairy program.
- With this initiative, the existing risk of marketing the surplus milk can be minimized, particularly during the flush season.
- More families can also be supported during other seasons by procuring their surplus milk for by-products manufacturing.

## 6. Human Resources

- A total of 24 technical and professionals have been engaged for manufacturing and marketing the milk by products. The manpower used includes

✓ Production Section	:	12 persons (5 men + 7 women)
✓ Marketing Section	:	07 persons (7 men)
✓ Transportation	:	02 persons (2 men) and
✓ Administration	:	03 persons (3 men)

- Further for marketing the by-products, distributors have been appointed at the area level. As on date, we have appointed forty seven distributors.

## 7. Financial Status

- **Proposed budget** from ASSEFA Italia                      *Euros* 40.000                      *Rs.* 2,305,000
  
- **Fund received** from ASSEFA Italia                      *Euros* 40.000                      *Rs.* 2,653,650
  - i. 29.01.2009 :    *Euros* 20.000                      *Rs.* 12,88,550
  - ii. 15.07.2009 :    *Euros* 11.896,25                      *Rs.* 8,11,979
  - iii. 15.07.2009 :    *Euros* 103,75                      *Rs.* 5,53,121
  - iv. **Total**                      :    *Euros* **40.000**                      *Rs.* **26,53,650**
  
- **Expenses** incurred
  - ✓ ASSEFA Italia funds                      :                      *Rs.* 2,653,670
  - ✓ Local contribution                      :                      *Rs.* 955,053
  - ✓ **Total Expenses**                      :                      *Rs.* **3,608,723**

- **The detailed Expenditure statement:**

Code No	Description	Unit	Budget (Rs)	Actual Expenditure		Total
				AS SEFA Italy	Local	
<b>GHEE UNIT UPGRADATION</b>						
1.01	Refrigeration Section	1	305,000	356,003		356,003
1.02	Ghee Packing Machine	1	275,000	380,240		380,240
1.03	Hot Water Line	1	40,000	44,720		44,720
1.04	Cream Separator - 500lph	3	90,000	-		-
1.05	SS Pipes and fittings	1	40,000	27,164		27,164
1.06	Lab Equipments	1	25,000	-		-
<b>Sub Total</b>			<b>775,000</b>	<b>808,127</b>	-	
<b>FLAVOUR MILK MAKING UNIT</b>						
2.01	Batch Steriliser - 500 bottle capacity	1	170,000	182,740		182,740
2.02	Double jacketed pre heated vessel	1	130,000	140,960		140,960
2.03	Plastic Tray	300	45,000	12,500		12,500
2.04	Homogenizer - 150lph	1	100,000	-		-
2.05	Bottle - 200ml	50000	125,000	143,057		143,057
2.06	Metal Tray	1	15,000	28,426		28,426
2.07	Capping Machine	2	5,000	7,800		7,800
2.08	Bottle Washer	1	25,000	20,202		20,202
2.09	Printing Machine	1	45,000	206,426		206,426
<b>Sub Total</b>			<b>660,000</b>	<b>742,111</b>	-	
<b>PANEER MAKING UNIT</b>						
3.01	Paneer - 1000ltr per batch	1	195,000	210,300		210,300
3.02	Paneer press	1	45,000	23,900		23,900
<b>Sub Total</b>			<b>240,000</b>	<b>234,200</b>	-	
<b>CONSTRUCTION, MARKET PROMOTION AND ADMINISTRATION</b>						
4.01	Transport Vehicle	1	350,000	353,337		353,337
4.02	Erection and Commissioning Charge	1	45,000	49,000		49,000
4.03	Marketing Promotional Expenses		35,000	107,123		107,123
4.04	Building Expenses		150,000	344,772	955,053	1,299,825
4.05	Co-Ordination and consulting charge		50,000	15,000		15,000
<b>Sub Total</b>			<b>630,000</b>	<b>869,232</b>	<b>955,053</b>	
<b>Grand Total</b>			<b>2,305,000</b>	<b>2,653,670</b>	<b>955,053</b>	<b>3,608,723</b>

## **8. Conclusion**

- The present support in diversifying by-products making from the collection of the surplus milk production will help in minimizing the risk involved in the on-going efforts of collecting surplus production, processing and marketing. In addition, it will also help in bringing additional farmers from the remote villages in the southern Tamil Nadu under dairy program.
- On behalf of these farmers, ASSEFA would like to thank ASSEFA Italy, especially ASSEFA Genova Groups and Province of Genova for their support to implement this initiative to help small and marginal farmers with dairy program.

**Milk By-Products Unit – At A Glance**  
**Factory Premises - A**



Factory Entrance



Main Building



Building – Over view



Building Entrance



Inside the Factory

## Plants and Machineries – B



Butter Churn



Boiler



Paneer Vat



Ghee Boiler



Cold Storage Room



Khova Pan



Sealer Machine



Ghee Filling Machine



Printing Machine



Sterilizer



Ghee Packing Machine



Vacuum Machine

## Milk By Products – C



Flavoured Milk



Ghee Products in Various Packing



Transport Vehicle