

# NEED FOR FABRICATED AND PROCESSED DAIRY FOODS IN MUSLIM COUNTRIES

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## Introduction

A majority of the Muslim countries are the worst victims of grinding poverty, under-employment, malnourishment and disease. By and large they are part of the developing world and are at an early stage of development. Even though agriculture is the backbone of their economy and the principal occupation of most people, the management is grossly inefficient, its practices are primitive and the economic reward is barely at subsistence level.

These countries do not have an organized food industry as commonly found in the West. The dairy food industry is conspicuous by its absence in most Muslim countries. The per capita production and consumption of milk and milk products is among the lowest in the world. The standard of human nutrition is well below the accepted norms and this fact is reflected in high infant and adult mortality, low life expectancy, and a higher incidence of deficiency and wasting diseases.

In this paper the author surveys the current status of the dairy food industry in Muslim countries, their resource potential and ways and means of improving the level of human nutrition through increased supply of high quality fresh, fermented, or preserved dairy, non-dairy, and specialty products. A number of conventional, substitute or fabricated dairy food products have been identified and their composition and components explained. A plan of action for achieving these goals has also been recommended.

## Muslim Countries

### State of Development

Quraishi (10) has identified 46 Muslim countries: 25 are located in Africa, 20 in Asia and one in Europe. Muslim countries accounted for 19.5 percent of the area, 16.7 percent of the population but contributed only 5.3 percent of the world production of milk (10).

As a group, Muslim countries are very poor. The per capita G.N.P. (Appendices A, B) among Muslim countries ranged from \$70 for Upper Volta in Africa to

\$19,532 for United Arab Emirates in Asia. The average per capita G.N.P. during 1975 was \$527 as against the world G.N.P. of \$1,234 (10). Nearly three out of four (33 out of 46) Muslim countries averaged a per capita G.N.P. of less than the group average, and 39 Muslim countries averaged well below the world average of \$1,234.

## Vital Statistics

As a group, the Muslims of the world enjoy poor health. As many as 42 out of 46 countries had a life expectancy of below 55 years; similarly out of 50 countries with lowest life expectancy in the world, 23 were Muslim (10). In cases of infant death rate per 1000 live births, 38 out of 46 countries listed exceeded the world average of 98 (Appendices A and B).

## The Importance of Dairy Foods in Human Diet

Vickery (17) reported that nearly one-third of the world's intake of animal protein was derived from milk and milk products. Nearly one-half of the protein in beef came from dairy herds. Dairy foods are also widely recognized as a major source of calcium, buffer salts, vitamins and well balanced nutrition and hence the state of progress of the dairy industry is often used as an indicator of economic and cultural progress of any modern society.

## Dairying Resources of the Muslim World Current Status

As stated earlier, the total amount of milk produced by all the Muslim countries in the world amounted to less than 6 percent of the world total. As against the world average of over 9.5 oz. daily per capita, it was about 3 oz. for all the Muslims (Table 1). The figures for the year 1974 (4, 5) for the U.S.A. and U.S.S.R. were 21.7 and 31.1 oz. respectively. The following Table 2 sums up the picture. For details see Appendices C and D. Muslim countries converted 42 percent of the milk into butter and Ghee. (Table 1)

In 4 out of 5 countries, the per capita daily milk production was less than 5 oz. To augment their supplies, Muslim countries imported nearly \$900 million worth of butter and milk in fresh, concentrate or powdered forms during 1974 (Appendices E and F).

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TABLE 1

POPULATION, ANNUAL AND PER CAPITA DAILY MILK PRODUCTION, PER CENT MILK CONVERTED INTO BUTTER AND GHEE AND IMPORT OF BUTTER, FRESH, CONCENTRATED AND POWDERED MILK OF MUSLIM COUNTRIES OF THE WORLD DURING 1974<sup>1</sup>

Countries by Continent	#	Population (Millions)	Milk Production		Milk Converted Into Butter and Ghee (%)	Import of Milks in Various Forms (Million \$)
			Total Annual (1000 Metric Tons)	Daily Per Capita (oz)		
Africa	25	237.29	7,651	2.83	26.74	422.09
Asia	20	436.30	16,091	3.24	49.56	466.54
Europe	1	2.37	264	9.77	NA	NA
<b>TOTAL</b>	<b>46</b>	<b>676.04</b>	<b>24,006</b>	<b>3.11</b>	<b>41.75</b>	<b>888.63</b>

<sup>1</sup>Compiled from Appendices C, D, E and F.

TABLE 2  
PER CAPITA DAILY PRODUCTION OF MILK IN MUSLIM COUNTRIES DURING 1974

Amount (oz)	Number of Countries Reporting			
	Africa	Asia	Europe	Total
1	6	3		9
1 - 5	15	8		23
5 - 10	2	5	1	8
<b>TOTAL</b>	<b>23</b>	<b>16</b>	<b>1</b>	<b>40</b>

#### Technology is Available

Allowing for a minimum of 8 oz. per head per day, milk supplies will have to be increased nearly three fold in the immediate future. This challenge is within the reach of modern science and technology. The following facts should be borne in mind in formulating any short-term plan of action.

1. It is feasible for modern technology to supply increased amounts of various dairy food products in

any part of the world.

2. Dairy foods can be made from concentrated or powdered dairy or non-dairy ingredients in any country away from the dairy herd or the source of milk production.

3. The manufacture of recombined or fabricated dairy, non-dairy or specialty products for various age or need groups of population would be more economical than any imported product in the long run.

4. The nutritive quality, flavor, or mouth feel of fabricated, substitute or non-dairy products does not necessarily have to be inferior to the conventional product. In fact, the demand for substitute products such as margarine, mellorine, filled milk concentrates, coffee whiteners, filled infant formula and others is on the increase, particularly with the developed countries of the world.

#### Development Potential

In his report on the current status of the dairy industry in various Muslim and other countries of Asia and Africa, Quraishi (11) has emphasized the potential dairying resources in Pakistan, Sudan, Turkey and several other countries. In his other published papers, Quraishi (14, 15) stated that Pakistan's Zebu dairy cattle and water buffaloes were the highest milk producing stock in the tropical world.

With planning and scientific breeding, feeding and management and establishment of private or cooperative dairy farms and private or cooperative processing plants in the dairy zones of the Muslim countries, great progress could be achieved.

### **Fabricated Foods**

#### **Their Role in Bridging the Nutrition Gap**

Glicksman (6) defined fabricated foods as "foods designed to plan from individual components, natural or synthetic, to yield products having specified physical (textural), chemical and functional properties." Fabricated, also called engineered foods, could include recombined, filled, toned, double toned, non-dairy, synthetic or imitation dairy foods of liquid, concentrate or powdered forms. Fabricated foods have a great future in the developing countries of the world as they have acquired a demonstrated popularity in the developed countries for their economy, versatility, uniformity and convenience. Shukla (15) envisioned increasing popularity of fabricated foods in the world of increasing demand of nutrients and diminishing supplies of natural or conventional protein foods. LaChance (9) expressed great faith in modern food technology and its capacity to "apply scientific principles in a systematic manner for the preservation, improvement and elaboration of foods." Glicksman (6) noted that "the challenge of science lies in improving nature."

#### **Advantages of Using Fabricated Foods**

1. It is feasible to develop and market nutritionally complete foods made for specific consumer needs from different sources of proteins, carbohydrates, minerals and vitamins.
2. Fabricated foods are made of pure substances of known composition and nutrient content.
3. They are less expensive for the consumer.
4. It is possible to make a functionally and nutritionally standard product all year round.
5. All kinds of dairy foods could be fabricated away from the farm or source of milk, in non-dairy Muslim countries.
6. It would enable the use of unconventional sources of ingredients locally available such as seed proteins for preparing products locally, tailored to meet native taste and acceptance.
7. Such foods have a built in advantage of preventing mass starvation. Vickery (17) strongly recommended their manufacture in developing countries.

### **Important Fabricated Dairy Foods of Perishable Variety**

Table 3 contains a list of important conventional products and their fabricated counterparts. Margarine, coffee whitener, whipped topping, mellorine, and snack dips are mostly non-dairy analogs of natural products. Filled, toned, double-toned, imitation or synthetic milks or products have a great promise in developing Muslim countries.

**TABLE 3**  
**CONVENTIONAL AND FABRICATED**  
**DAIRY FOOD ANALOGS OF**  
**PERISHABLE VARIETY**

Conventional Dairy Food	Dairy Food Analog
Butter	Margarine
Coffee Cream	Coffee Whitener
Whipped Cream	Non-Dairy Whipped Topping
Milk	Filled Milk
	Imitation Milk
Low Fat Milk	Toned Milk
	Vegetable Toned Milk
Milk Shake	Non-Dairy Shake
	Imitation Milk Shake
Ice Cream	Mellorine
	Imitation Ice Cream
Sour Cream	Filled Sour Cream
	Imitation Sour Cream
Butter Milk	Imitation Butter Milk
Snack Dips	Non-Dairy Snack Dips

Table 6 contains a list of various ingredients used in preparing toned milk.(2)

### **Important Fabricated Dairy Foods of Preserved Variety**

Evaporated or condensed milks, whipping or coffee creams, and infant formulas are among the most important shelf stable products. All these can be fabricated from ingredients. Table 4 has a listing of conventional dairy foods and their fabricated analogs with ingredients that are added to make them. Table 6 shows the composition and ingredients used in making wole meal substitutes used as instant, lunch, snack,

**TABLE 6**  
**COMPOSITION AND INGREDIENTS FOR WHOLE MEAL SUBSTITUTE**  
**(SNACK, DIET OR HOSPITAL FOOD) AND VEGETABLE**  
**TONED MILK**

Composition	Whole Meal Substitute	Vegetable Toned Milk
Water	Filtered Water	Filtered Water
Protein	Caseinates Soy Protein Isolate	Edible Peanut Flour Standardized Buffalo Milk
Fat	Corn Oil	
Carbohydrates	Sucrose Corn Syrup Solids	Glucose Maltodextrine
Minerals	Salts of Calcium, Copper, Iron, Manganese, Magnesium, Sodium and Zinc as carbonate chloride, citrate, phosphate, iodide and sulfate	
Vitamins	Vitamin A Palmitate Ascorbic Acid Biotin Calcium Panthothenate Choline Chloride Cyanocobalamin Vitamin D <sub>3</sub> Folic Acid Niacinamide Pyridoxine HCl Riboflavin, Thiamine HCl Tocopheryl Acetate	Vitamin Premix

**Functional Ingredients:**

Stabilizer	Carrageenan	Catalase Removal	Hydrogen Peroxide
Emulsifier	Soy Lecithin	Buffer Action	Phosphate and Citrate
pH	Citric Acid/Potassium Hydroxide	Protein Isolation	Potassium Hydroxide Sulfuric Acid
Flavor	Dairy, Fruits, Nuts		

breakfast or diet food. It is also used as hospital feeding formula in the United States. See Table 5 for infant formula ingredients.

Cheese, cheese spread or cheese foods also can be fabricated as shown in Tables 7 and 4. Quraishi (12, 13) developed a cheese spread in plain and flavored varieties using a wheyless method from concentrated dairy ingredients. This prevented loss of valuable

nutrients otherwise lost in whey and doubled the yield of final product.

**Some Disadvantages**

Some workers have pointed out limitations in making fabricated dairy foods. They are:

1. Need for using nutritional or functional additives exists.

2. Loss of micronutrients such as sensitive vitamins and minerals on storage.

3. Flavor and phase instability problems.

4. Need for fortification of vegetable protein ingredients with essential amino acids.

Solutions to the above problems are available and research is continuing to find answers to them. Graham (7) reported a loss of 40, 90 and 60 percent of thiamine, B12 and ascorbic acid in canned evaporated

milk during processing, as compared with similar products as control.

#### Plan of Action

Malnutrition is a consequence of under-development even though it is a contributing factor and a drag on the potential from which better nutrition could be provided. Good nutrition is essential for the mental and physical potentials of the children, women and men.

TABLE 4  
CONVENTIONAL AND FABRICATED DAIRY FOOD PRODUCTS  
OF PRESERVED VARIETY WITH TYPICAL INGREDIENTS

Conventional Products	Fabricated Products*	
	Type	Typical Ingredients
Evaporated Milk	Recombined	Nonfat Dry Milk (NFDM)? Butter Oil, Emulsifier salts, vitamins, dairy flavor.
	Filled	NFDM, vegetable oil, emulsifier salts, vitamins, dairy flavor.
	Non-Dairy	Soy Protein Isolate (SPI), sodium caseinate or both, vegetable oil, corn syrup solids (CSS), sucrose or both, minerals, vitamins, flavor, emulsifier, stabilizer
Sweetened Condensed	Recombined	As above for Evap. Recombined with sweetener added.
	Filled	Same as for Evap. Filled, with sweetener added.
Whipping Cream	Non-Dairy	Sodium caseinate, sucrose, CSS, salt, emulsifier, stabilizer, minerals, flavor, color.
Coffee Cream	Non-Dairy	Sodium caseinate, sucrose, fat, CSS, Stabilizer, emulsifier, minerals, salts, flavor.
Infant Formula	Recombined	NFDM, Butter Oil, Lactose, stabilizer, emulsifier, salts, vitamins, trace minerals.
	Filled	NFDM, vegetable oil, lactose, emulsifier stabilizer, salts, vitamins, minerals.
	Non-Dairy (Hypoallergenic)	SPI, L-Methionine, veg. oil, CSS, sucrose, stabilizer, emulsifier, salts, vitamins, minerals.
Complete Adult Meal	Filled	NFDM, veg. oil, CSS, sucrose, salts, stabilizer, emulsifier, vitamins, minerals, flavor, color.
(As whole Meal Replacer or diet drink or breakfast)	Non-Dairy	Sodium-Calcium Caseinate, SPI, veg. oil, CSS, sucrose, salts, stabilizer, emulsifier, vitamins, minerals, flavor, color.
Cheese or Cheese Spread	Recombined	NFDM, butter oil/heavy cream, Sod. citrate, calcium chloride, rennet, lactic culture, color.
	Filled or Imitation	NFDM, veg. oil, emulsifier, sod. citrate, calcium chloride, rennet, lactic culture, color, flavor.

\*In all instances, high quality filtered water is used.

**TABLE 5**  
**COMPOSITION AND INGREDIENTS FOR REGULAR AND**  
**NON-DAIRY INFANT FORMULA**

Composition	Ingredients	
	Regular (Filled)	Non-dairy (Filled)
Water	Filtered Water	Filtered Water
Protein	Non-fat Dry Milk	Soy Protein Isolate L-Methionine
Fat	Vegetable Oil	Vegetable Oil
Carbohydrates	Lactose	Sucrose Corn Syrup solids
Minerals	Copper Sulfate Ferrous Sulfate Potassium Citrate	Salts of k, Na, Mg, Fe, Ca, Cu, Zn, as carbonate. Chloride, Citrate, Phosphate and Sulfate
Vitamins	Alpha-Tocopheryl Acetate Vitamin A Palmitate Ascorbic Acid Calcium Pantothenate Cyanocobalamin Vitamin D <sub>3</sub> Niacinamide Pyridoxine HCl Riboflavin Thiamin HCl	Alpha-Tocopheryl Acetate Vitamin A Palmitate Ascorbic Acid Biotin Calcium Pantothenate Choline Chloride Cyanocobalamin Vitamin D <sub>3</sub> Folic Acid Niacinamide Phytonadione Pyndoxine HCl Riboflavin Thiamin HCl
<b>Functional Ingredients:</b>		
Emulsifier	Glycerol Monostearate Soy Lecithin	Glycerol Monostearate Soy Lecithin
Stabilizer	Carrageenan	Carrageenan

**TABLE 7**  
**COMPOSITION AND INGREDIENTS FOR**  
**PLAIN OR FLAVORED CHEESE**  
**SPREAD (WHEYLESS METHOD)**

Composition	Ingredients
Water	Filtered Water
Protein and Carbohydrates	Nonfat Dry Milk
Fat	Vegetable Oil or High Fat Cream
Mineral	Calcium Chloride
<b>Functional Ingredients:</b>	
Emulsifier	Soy Lecithin (If vegetable oil used)
Enzyme	Rennet
Culture	Fresh Starter Culture of <i>S. Lactis</i>
Color	Cheese color
Flavor	Spice, Fruit, Meat or Nut

#### **Common Food and Nutrition Policy**

The institution of a broad-based common food and nutrition policy under a vigorous leadership on the part of all Muslim countries would be necessary for a concerted attack on the problem of malnutrition.

#### **Common Food and Agriculture Policy**

A common policy in food and agriculture will create conditions for sharing factors and products among Muslim countries. A well coordinated common food and agricultural policy among Muslim countries would also go a long way in focusing attention of Muslim governments and will raise the priority of food and agriculture sector of the economy. Quraishi (10) has discussed this at length in his paper entitled "Problems and Prospects of Coordinating Common Food and Agriculture Policies Among Muslim Countries."

Creation of a Food and Agriculture Council of Islamic Territories (FACIT) suggested by Quraishi (10) to function as the main body as a permanent arm of Muslim governments to organize, monitor, protect and promote the highest interests in the area of food and agriculture would be essential.

#### **A Task Force for Promoting Food and Nutrition**

A high powered task force consisting of eminent scientists, economists, food experts and dedicated Muslims should be commissioned to study the problem and submit a preliminary report to FACIT containing areas of short-term and long-term cooperation among the Muslim countries. The study

should also include recommendations for the following specific problems under short-term and long-term approach:

#### **Short-Term**

1. Establishment of dairy food plants in milk surplus Muslim countries such as Pakistan, Turkey, Sudan and others. Part or all of the ingredients or product needs could be met by these countries.

#### **Long-Term**

In the deficit countries, all avenues of achieving self-sufficiency will have to be explored. For developing a strong infra-structure of a sound agriculture industry, the needs of the masses whose principal occupation in farming and livestock raising, have to be protected and be revitalized. The yardstick of economic development is measured by the percent of personal consumption expenditure on food by the consumer and buyer and the per capita income of the farmer (3).

In the dairying countries of the Muslim world, planned development will be necessary to achieve maximum production potential.

Scientific education in food science and technology will have to be expanded on a large scale. A department of Food Science and Technology will have to be added to every university in the country for producing food scientists, technologists and nutritionists.

An Academy of Sciences and a Muslim Technology Bank will have to be established at a suitable center and a Research and Development Center and a Science-Technology-Industry Museum will have to be opened in each country.

#### **Conclusion**

Long-term projects or plans must include sharing of resources, in manpower, capital, management skills and dairying potential available in the Muslim world for the benefit of the Umma and the glorification of God. Close ties with friendly countries like the U.S.A. will immensely help in achieving self-sufficiency in food and agriculture in general and dairy foods in particular.

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APPENDIX A  
PER CAPITA G.N.P., LIFE EXPECTANCY, INFANT MORTALITY AND LITERACY  
RATE IN MUSLIM COUNTRIES OF AFRICA DURING 1974

Country	Per Capita G.N.P. (U.S. \$)	Life Expectancy (Years)	Infant Mortality (No./1000)	Literacy (%)
Algeria	456	51	128	19
Cameroon	220	41	137	15
Central African Republic	126	41	190	10
Chad	74	38	160	6
Egypt	250	52	103	30
Gabon	960	25	229	12
Gambia	120	41	165	10
Guinea	82	41	216	10
Guinea-Bissau	227	38	208	5
Libya	3,292	52	130	22
Mali	82	37	188	5
Mauritania	190	38	189	5
Morocco	380	53	149	14
Mozambique	240	41	165	21
Niger	97	38	200	5
Nigeria	454	37	180	25
Senegal	270	40	159	10
Sierra-Leone	190	44	136	10
Somalia	90	41	177	5
Sudan	134	49	141	38
Tanzania	127	44	163	32
Tunisia	461	54	128	32
Uganda	141	50	160	20
Upper Volta	70	38	183	21
World	1,234		98	

Source: Reader's Digest, 1976 Almanac and Yearbook, New York.

APPENDIX B

PER CAPITA G.N.P., LIFE EXPECTANCY, INFANT MORTALITY AND LITERACY  
RATE IN MUSLIM COUNTRIES OF EUROPE AND ASIA DURING 1974

Country	Per Capita G.N.P. (U.S. \$)	Life Expectancy (Years)	Infant Mortality (No./1000)	Literacy (%)
Albania	530	65	87	75
Afghanistan	88	37.5	184	8
Bahrain	1,367	47	138	40
Bangladesh	119	36	132	22
Indonesia	124	48	125	43
Iran	1,782	50	139	23
Iraq	1,463	53	99	26
Jordan	395	53	99	40
Kuwait	11,100	67	44	55
Lebanon	777	63	59	86
Malaysia	716	64	75	44
Maldives	82	NA	NA	40
Oman	1,200	46	138	5
Pakistan	140	54	132	16
Qatar	15,100	47	138	20
Saudi Arabia	6,991	42	152	15
Syria	357	49	93	38
Turkey	546	57	119	51
United Arab Emirates	19,532	47	138	21
Yeman AR	108	42	152	10
Yeman DR	99	45	80	10
World	1,234		98	

Source: Reader's Digest, 1976 Almanac and Yearbook, New York.

APPENDIX C  
POPULATION, ANNUAL PRODUCTION AND UTILIZATION OF MILK  
IN MUSLIM COUNTRIES OF AFRICA DURING 1974

Country	Population (millions)	Milk Production (1000 Metric Tons)				Utilization		Daily Per Cap. Milk Prod. (oz)
		Cow	Buffalo	Sheep & Goat	Total	Butter & Ghee (Metric Tons)	Milk Eqv. in % of Total	
Algeria	16.07	342		234	576	252	0.9	3.09
Cameroon	6.33	54			54			0.75
Cent. African Republic	1.67	28			28			0.18
Chad	4.09	81		38	119	1,868	31.4	2.55
Egypt	38.04	620	1,113	27	1,760	63,880	72.6	4.06
Gabon	0.50				NA			
Gambia	0.40	5			5			1.10
Guinea	4.31	43		7	50	109	4.4	1.02
Guinea-Bissau	0.59	8			8			1.19
Libya	2.13	17		37	54			2.22
Mali	5.62	90		75	165			2.57
Mauritania	1.29	60		84	144	381	5.3	9.79
Morocco	18.05	480		348	828	8,092	19.5	4.02
Mozambique	8.44	57		12	69			0.72
Niger	4.39	46		108	154	2,853	37.1	3.07
Nigeria	61.24	284			284			0.41
Senegal	4.34	91		18	109	381	7.0	2.20
Sierra-Leone	2.91	87			7			0.21
Somalia	3.09	82		40	122			3.46
Sudan	17.95	1,320		520	1,940	20,000	20.6	9.48
Tanzania	14.73	620		44	664	2,344	7.3	3.95
Tunisia	5.77	130		44	174	1,118	12.9	2.64
Uganda	9.56	274		10	284			2.60
Upper Volta	5.78	38		15	53	1,000	37.7	0.80

Source: Production Yearbook, 1974, Volume 28.1, FAO, Rome.

APPENDIX D

POPULATION, ANNUAL PRODUCTION AND UTILIZATION OF MILK  
IN MUSLIM COUNTRIES OF EUROPE AND ASIA DURING 1974

Country	Population (millions)	Milk Production (1000 Metric Tons)				Utilization		Daily Per Cap. Milk Prod. (oz)
		Cow	Buffalo	Sheep & Goat	Total	Butter & Ghee (Metric Tons)	Milk Eqv. in % of Total	
Albania	2.37	194		70	264			9.77
Afghanistan	18.18	310	3	254	567	7,040	24.8	2.64
Bahrain	0.24	6			6			2.19
Bangladesh	86.31	713	107	538	1,358	8,713	12.8	1.38
Indonesia	136.40	43			43			0.03
Iran	32.12	1,021	51	792	1,864	47,834	51.3	5.09
Iraq	11.16	257	37	359	653	10,160	31.1	5.13
Jordan	2.65	7		34	41			1.36
Kuwait	0.99	8			8			0.70
Lebanon	3.15	70		29	99			2.76
Malaysia	10.18	14	7		21			0.18
Maldives	0.12				NA			NA
Oman	0.75				NA			NA
Pakistan	70.57	1,396	3,982	778	6,102	200,318	65.7	7.58
Qatar	0.09				NA			NA
Saudi Arabia	8.70	32		103	135	1,227	18.2	1.36
Syria	7.08	220	1	244	465	9,000	38.7	5.75
Turkey	39.66	2,580	277	1,580	4,437	114,500	51.6	9.81
United Arab Emirates	0.15				NA			NA
Yemen AR	6.44	75		177	252			3.43
Yemen DR	1.44	6		34	40			2.44

Source: Production Yearbook, 1974, Volume 28.1, FAO, Rome

## APPENDIX E

IMPORT OF DAIRY PRODUCTS IN MUSLIM COUNTRIES OF AFRICA  
IN MILLIONS OF U.S. DOLLARS DURING 1974

Country	Dry Fresh Condensed Milk	Butter	Condensed Milk	Dry Milk	Fresh Milk	Total Import (\$)
Algeria	50.05	15.00	18.00	27.00	5.05	115.10
Cameroon	6.59	0.40	4.20	2.20	0.19	13.58
Central African Republic	0.44	0.04	0.27	0.14	0.03	0.92
Chad	0.31	0.60	0.10	0.19	0.02	1.22
Egypt	2.70	0.02	2.70			5.42
Gabon	0.69	0.50	0.42	0.14	0.13	1.88
Gambia	0.69	0.06	0.42	0.27	0.02	1.46
Guinea	0.70		0.70			1.40
Guinea-Bissau	0.55	0.13		0.55		1.23
Libya	26.10	3.50	21.00	2.50	2.60	55.70
Mali	0.48	0.55	0.45		0.03	1.51
Mauritania	1.44	0.19	1.27		0.17	3.07c
Morocco	15.26	7.96	9.54	5.72		38.48
Mozambique	3.94	0.81	0.04	3.90		8.69
Niger	0.85	0.10		0.85		1.80
Nigeria	44.73	0.70	33.12	10.85	0.76	90.16
Senegal	6.27	1.30	6.20		0.07	13.84
Sierra-Leone	4.25	0.20	2.30	1.80	0.15	8.70
Somalia	0.17	0.02	0.06	0.08	0.03	0.36
Sudan	2.60			2.60		5.20
Tanzania	8.20	0.17	3.49	4.58	0.12	16.56
Tunisia	8.00	1.70	3.00	5.00		17.7
Uganda	6.77	0.47	1.05	0.61	5.11	14.01
Upper Volta	2.00	0.10	2.00			4.1
<b>TOTAL</b>	<b>193.78</b>	<b>34.52</b>	<b>110.33</b>	<b>68.98</b>	<b>14.48</b>	<b>422.09</b>

Source: Trade Yearbook, Vol. 28, 1974.

APPENDIX F

IMPORT OF DAIRY PRODUCTS IN MUSLIM COUNTRIES OF ASIA  
IN MILLIONS OF U.S. DOLLARS DURING 1974

Country	Dry Fresh Condensed Milk	Butter	Condensed Milk	Dry Milk	Fresh Milk	Total Import (\$)
Afghanistan	0.80	0.02		0.80		1.62
Albania						
Bahrain	4.04	0.55	1.24	2.70	0.11	8.64
Bangladesh	7.30	0.01	1.30	6.00		14.61
Indonesia	34.82	6.20	25.80	8.90		75.72
Iran	8.15	12.04	0.15	8.00	0.12	28.46
Iraq	7.70	1.20	2.20	5.50		16.60
Jordan	4.54	0.30	1.08	3.46		9.38
Kuwait	13.76	1.70	3.86	9.80	0.07	29.19
Lebanon	12.51	4.10	0.50	12.00	0.01	29.12
Malaysia	59.34	14.80	6.17	52.92	0.32	133.55
Maldives						NA
Oman						NA
Pakistan	4.37	4.50	0.36	4.00	0.01	13.24
Qatar	2.34	1.60	1.30	1.04		6.28
Saudi Arabia	27.30	3.15	10.00	14.00	3.30	57.75
Syria	6.27	11.54		6.27		24.08
Turkey	0.96			0.96		1.92
United Arab Emirates						NA
Yemen AR	3.19	0.30	1.76	1.40		6.65
Yemen DR	3.51	2.71	1.50	2.00	0.01	9.73

Source: Trade Yearbook, Volume 28, 1974. FAO Rome.



"Nobility is not in the blood but in one's deeds and  
one's thought."

Al-Tabib

