



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**AGRICULTURAL DEVELOPMENT SYSTEMS
EGYPT PROJECT**

UNIVERSITY OF CALIFORNIA, DAVIS

**AN APPRAISAL OF LIVESTOCK CONCENTRATE FEED
POLICY IN EGYPT**

by

**Ibrahim Soliman, Zagazig University, Egypt
Mousa Abd El-Azim, Ministry of Agriculture, Egypt**

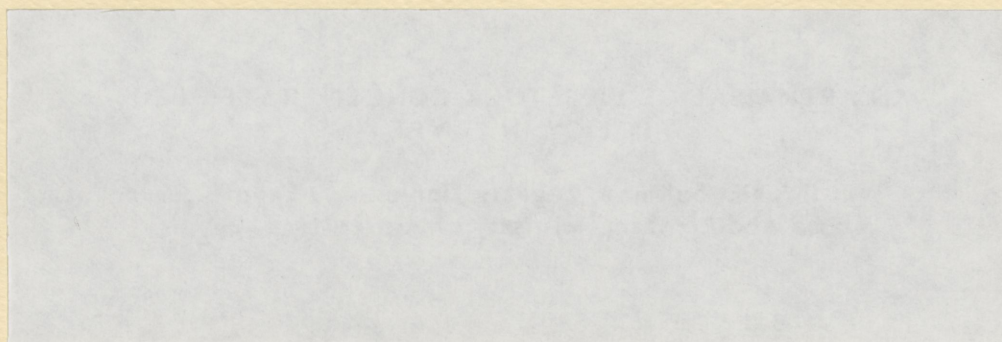
GIANNINI FOUNDATION OF
AGRICULTURAL ECONOMICS
LIBRARY

ALL 24 1983
WITHDRAWN

Econ.

WORKING PAPER

IDS / EGYPT 



**AN APPRAISAL OF LIVESTOCK CONCENTRATE FEED
POLICY IN EGYPT**

by

**Ibrahim Soliman, Zagazig University, Egypt
Mousa Abd El-Azim, Ministry of Agriculture, Egypt**

Assistance from the Agricultural Development Systems Project of the University of California, Egyptian Ministry of Agriculture, and USAID, is gratefully acknowledged, but the author is solely responsible for the views expressed in this paper.

Economics
Working Paper Series
No. 138

Note: The Research Reports of the Agricultural Development Systems: Egypt Project, University of California, Davis, are preliminary materials circulated to invite discussion and critical comment. These papers may be freely circulated but to protect their tentative character, they are not to be quoted without the permission of the author(s).

April, 1983

Agricultural Development Systems:
Egypt Project
University of California
Davis, Ca 95616

AN APPRAISAL OF LIVESTOCK CONCENTRATE FEED POLICY IN EGYPT

BY

Dr. Ibrahim Soliman and Dr. Mousa Abd El-Azim

Introduction:

Livestock concentrate feed policy in Egypt has several dimensions. These are: (1) feed mix production, (2) specification of the ingredients in the mix, (3) feed imports, (4) feed distribution and (5) feed subsidy and price policy.

This paper first examines the performance of each dimension of the policy. The second objective is to evaluate the economic return to using feed concentrate feeds in several different types of livestock activities in Egypt as an indicator of the efficiency of the scarce resources. The third objective is to evaluate the feasibility of importation of feed concentrate for livestock production in Egypt.

Feed Combination and Production:

In 1930's Professor A-Ghoniem, an animal nutritionist, first established the use of cotton seed cake as an efficient feed for livestock in Egypt. Since that date, the demand for this feed ingredient has increased rapidly. Private processing plants were established for processing feed mix in the 1950's. These plants soon added rice and wheat mill by-products to cotton seed cake to get a more balanced and economical feed concentrate mix. Since the 1960's government intervention has been, significantly, increased in this industry. Most processing plants have been

owned by the government. In 1966 a special law established procedures which gave the Minister of Agriculture authority to specify the proportions of ingredients to be utilized in the governmental feed mix.

During the 1960's and early 1970's, the amount of mix processed was largely determined by the availability of mill by-products (brans). Production of wheat bran and rice bran are determined by the area and production of both crops, as well as by grain imports. The amount of bran derived from the flour mills is based upon the bran officially specified for bread making. The percent left for feed mix ranged between 8% to 13% of wheat production. Mollases of sugar cane was also included at 2-3% in the feed mix, but its supply was not a constraint. Therefore, until the early 1970's a certain amount of the cotton seed cake produced (30%-80%) was sold as straight cotton seed cake for feeding. Even some quantities were exported before 1974, Table 1.

In 1974 the government started to import yellow corn for livestock feeding. This ingredient was added to the concentrate feed mix formula at about 20 percent on the average to substitute mainly for the cotton seed cake. Accordingly, the percent of cotton seed cake in the mix decreased from about 65% to less than 45% (Table 2). This change in the policy significantly increased the concentrate feed mix supply (Table 2). It became possible to utilize all available cotton seed cake in feed mix. Time trend analysis shows that concentrate feed mix production has increased annually by about 49,319 tons. This represents an annual growth

rate of about 10.6 percent over the period 1960-1980 (Table 1).

It should be mentioned that since the mid-1970's the government has also differentiated the mix produced into types of mix for several different purposes: concentrate feed mix for milk production, for fattening and for growing calves, in addition to the general mix for all livestock activities (Table 3). This trend in production policy aims to economize in the use of scarce resources. Also, these feed mixes include other available by-products, like linseed meal and rice-germ meal. However the availability of these by-products is limited.

In this presentation of general policy performances, the tables present cotton seed cake as an aggregate ingredient, despite its quality. Soliman (1973) reported that cotton seed cake form and quality varies greatly with the type of processing procedure. Specifically, these are cortecated and decortecated cotton seed cake. Mechanical and chemical extraction procedures for cotton seeds affect the quality of the produced cake and the yield of oil extracted.

Yellow Maize Imports:

The quantity of imported yellow corn increased gradually over the period 1974-1980. It reached 1.3 million tons in 1980. About one-third of this quantity may reach the human consumer as food, while the other two-thirds are either for livestock or for poultry consumption (Table 4).

Concentrate Feed Mix Distribution Policy:

The government annually specifies some rules for

distribution of the available quantity of concentrate feed mix. These rules change from one year to another, but their major effect has been to give priority to feedlot operations, large farms and state farms more than to any other enterprises.

Table 5 shows that the feed concentrate share of feedlot operations in total production has increased from 34.5% in 1977 to 73% of total production in 1980. The share for commercial dairy farms (all systems) decreased from about 17% in 1977 to 4.4% in 1980. The share for traditional herds (which hold the bulk of livestock) decreased from one-third in 1977 to less than 7 percent in 1980.

Competition Between Humans and Animals for Feed Use:

Due to the current subsidy of wheat, bread and flour prices for human consumption, a significant proportion of the available wheat and wheat products in the market end up as livestock feeds. For example, a survey conducted in 1981 of 20 commercial buffalo dairy herds found that on average 580 grams of bread and 125 grams of flour per head were fed daily (Abd El-Zaher, 1982, Table 4). When extrapolated for the total number of commercial dairy buffaloes in Egypt (Soliman, et. al., 1983, Table 2), this would amount to 242,500 tons of wheat equivalent annually. This would have a value of 36.4 million Egyptian Pounds, and an associated net subsidy of 24.2 million Egyptian Pounds.

Concentrate Feed Mix Price Policy:

The government distributes feed concentrate mix at

subsidized prices. The international price of feed ingredients has increased rapidly. As Table 6 shows, in 1980, the cotton seed meal price reached 2.5 times its price in 1970. The maize price was almost doubled between 1970 and 1980. The full international costs of these ingredients were taken into account (plus the processing costs) in calculating shadow prices (international opportunity costs) for the government feed mix, given in Table 7. The shadow price of concentrate feed mix reached 3 times the subsidized price at the official bank exchange rate and it reached 4 times the official price at the free market exchange rate. Although these ratios have declined somewhat since the early 1970's, there are still very large implicit subsidies in the price of feed mix.

The total subsidy to feed concentrate mix increased from L.E. 13.2 million in 1970 to about L.E. 106 million in 1980 at the official exchange rate, or L.E. 128 million at the shadow exchange rate in the same year.

Economic Return to Use of Concentrate Feed Mix:

Because of the limited available concentrate feed mix, some economic indicators are required to show the economic return to different uses of the mix. The data were obtained from sample surveys. Calculations were made on the basis of one kilogram of output. In the case of beef production it is 1 kg. liveweight for sale, while for dairy farms it is 1 kg. milk. Adjusted costs mean total average costs less the value of manure in case of beef operations and total average costs less non-milk livestock outputs in the case of dairy farms (animal work, calf crop for

sale, and net inventory change of the entire herd value and manure). A break-even partial budget analysis was used for different livestock activities which use this feed.

Table 9 shows a break-even partial budget analysis of data at domestic farmgate prices and actual milk production (not corrected for fat content). The difference is between the value of 1 kg. of output and the adjusted costs per 1 kg. of output without concentrate feed mix costs. It is valid to assume that the residual value is the return to the concentrate feed input, because management and family labour costs were imputed. This return to feed is divided by the amount of feed used to derive a return per ton of concentrate feed used.

From Table 9, at domestic prices the return to a ton of feed concentrate mix used for feed lot operations, commercial dairy buffaloes, and traditional dairy buffaloes is higher than the black (free) market price, and, obviously, both are higher than the subsidized price. The same activities give a return per 1 ton of concentrate feed mix which is higher than the international price of such feed. However, the Frisian dairy project has a return to feed concentrate feed mix per ton that is less than the black market price and the international price. The milking native cow under the traditional system and domestic prices can not give a positive return to concentrate feed mix.

From Table 9, it is clear that under the current subsidy and quota system of concentrate feed mix gives strong incentive to an active black market. This is because of the high margin between the return to feed and the subsidized price for feedlot

operations, commercial dairy buffaloes (Zaraba farms) and traditional dairy buffaloes. The demand for such feed is clearly increasing, even at black market prices, while the Frisian projects, under the contracted price of milk delivered to MISR Dairy Products Company, can not buy concentrate feed mix at international prices or even from the black market.

The black market trader obtains a margin ranging between L.E. 47 to L.E. 82 per ton of concentrate feed mix. The producer obtains a margin per ton of concentrate feed mix between L.E. 86 (feedlot) to L.E. 431 (traditional buffalo) at the subsidized prices. At black market prices the feedlot operator can obtain a return per ton of concentrate feed mix of L.E. 397, while the commercial dairy buffalo operator can obtain a return of L.E. 118 per ton. The traditional farmer would have reached a return per ton of concentrate feed mix of L.E. 349 above the black market price, if it was available for him. However, the present distribution policy gives priority to feedlot operations (Table 4), while the traditional system is neglected.

Following the same procedure of the partial budget analysis of the data, but at international prices of outputs and inputs and for 4% fat corrected milk, Table 11 shows the economic return per ton of concentrate feed mix used in different livestock activities. This economic return is compared to the international price of concentrate feed mix. The analysis in Table 11 indicates that the only livestock enterprise that gives an economic return to concentrate feed mix used higher than its international price is the dairy buffalo under the traditional system. The economic return to 1 ton of concentrate feed mix

under this system reaches L.E. 145, while the comparable international price is L.E. 111.

Table 1: Use Pattern of Cotton Seed Cake in Egypt
1961 - 1980

Year	Cotton Seed Cake Use							Concentrate feed mix Production Tons
	Production	Distributed quantity for direct feeding		Delivered Quantity for feed plants		For Storage of Exports		
	Tons	Tons	%	Tons	%	Tons	%	Tons
1961	578036	480845	83.2	97191	16.8	000	000	194383
1962	408419	305369	74.8	103050	25.2	000	000	206101
1963	571094	472277	82.7	98817	19.3	000	000	197634
1964	599399	519768	86.7	79631	13.3	000	000	159263
1965	617570	533230	86.3	84340	13.7	000	000	168681
1966	64444	518884	80.5	125610	19.5	000	000	251220
1967	547389	132088	24.1	171715	31.4	243586	44.5	264177
1968	502665	161960	32.2	210548	41.9	130137	25.9	323920
1969	508616	162136	31.9	210777	41.4	135703	26.7	324273
1970	626494	430645	68.7	195849	31.3	000	000	322930
1971	611444	408453	66.8	202991	33.2	000	000	372207
1972	599586	579894	63.3	219692	36.7	000	000	410100
1973	624789	144399	23.1	301600	48.3	178790	28.6	464000
1974	605126	215045	35.5	217920	36.0	172161	28.5	454000
1975	516199	300357	58.2	215842	41.8	000	000	549000
1976	436014	176085	40.4	259929	59.6	000	000	660000
1977	463164	184200	39.8	278964	60.2	000	000	740000
1978	460325	91094	19.8	369231	80.2	000	000	880000
1979	474400	74849	15.8	388551	84.2	000	000	1052000
1980	539823	0000	000	538823	100	000	000	1270000

Table 2: Trends in Concentrate Feed Mix Comination
For Livestock Over 1970's

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Cotton Seed Cake	65	65	65	65	48	48	45	45	45	42	40
Wheat Bran	9	16	18	18	21.5	21.5	20	26	24	25	30
Rice Bran	23	13	11	11	4.5	4.5	10	7	5	5	4
Mollases	-	3	3	3	3	3	2.5	2.5	3	3	3
Lime Stone	2	2	2	2	2	2	1.5	1.5	2	2	2
Salt	1	1	1	1	1	1	1	1	1	1	1
Yellow maize	-	-	-	-	20	20	20	17	20	22	20

Table 3: Special Feeds Mix Combination Produced In
Mid Seventies.

	<u>Dairy Feed</u>				<u>Starter Feed</u>	<u>For Fattening Feed</u>
	(1)	(2)	(3)	(4)		
Decortecated Cotton Seed Cake	-	5	-	-	20	-
Cortecated Cotton Seed Cake	40	35	-	40	-	40
Cotton Seed Cortex	-	-	40	-	-	-
Wheat Bran	13	20	9	20	10	29
Rice Bran	7	4	7	4	-	-
Maize	27	17	25	20	40	20
Rice Germ Meal	-	5	5	-	10	5
Linseed Meal	8	8	8	10	15	-
Mollases	3	3	3	3	-	3
Lime Stone	2	2	2	2	2	2
Solt	1	1	1	1	1	1
Bane Meal	-	-	-	-	1	-
Yeast Meal	-	-	-	-	1	-

Table 4: Distribution of Imported Yellow Corn,
1980.

	Quantity Tons	%
Total Quantity Imported	1,299,000	100
For Livestock Feeds Processing Plants	288,000	22.8
For General Company for Poultry Production	180,000	13.8
For Private Poultry farms (Direct)	170,000	13.1
For Poultry Farms through Governorates	166,000	12.8
Governorate Livestock & Poultry Farms	17,000	1.3
For Human Consumption	22,000	1.7
For Starch Processing Plants	360,000	27.7
Other Purposes	84,000	6.5
	12,000	0.9

Table 5. Distribution Pattern of Livestock Feed Concentrate Feed Mix in Egypt

Year	Item	Feedlots	Dairy Farms	Contracted Dairy Farms with Misr Dairy Company	Traditional Herds	Veal Calves Contracted with the Misr Meat Company	Veterinary Quarantine units	Natrun Valley	State Farms and Organizations	North Shore Region	Other Purposes <u>1/</u>	
1977	Quantity	310,000	140,000	15,000	300,000	15,000	5,000	5,000	70,000	20,000	18,000	8
	%	34.5	15.6	1.7	33.4	1.7	0.6	0.6	7.8	2.2	1.9	
1978	Quantity	458,581	72,372	15,163	144,526	6,261	2,688	3,140	65,396	29,128	2,844	8
	%	55.4	8.7	1.8	17.5	0.8	0.3	0.4	11.3	3.5	0.3	
1979	Quantity	671,546	70,170	6,723	86,760	4,749	2,065	4,795	59,829	39,600	2,264	9
	%	70.8	7.4	0.7	9.2	0.5	0.2	0.5	6.3	4.2	0.2	
1980	Quantity	793,687	47,500	2,807	72,900	6,052	3,971	3,184	92,002	41,805	26,415	1,0
	%	72.8	4.4	0.3	6.7	0.6	0.4	0.3	8.4	3.8	2.3	
Annual Average (tons) <u>1/</u>		558,453	82,510	9,923	151,047	9,140	3,431	4,030	71,807	32,633	12,381	9
Percent		59.6	8.8	1.1	16.2	1.0	0.4	0.4	7.7	3.5	1.3	
Annual Change (tons) <u>2/</u>		+124,163	-23,675	-5,158	-71,216	-2,615	-413	-80.5	+4,109	+8,069	+1,959	+
Annual Rate of Change <u>3/</u> (%)		+22.2	-28.7	-52.0	-47.1	-28.6	-12.0	-2.0	+5.7	+24.7	+15.8	

1/ Concentrated cotton-seed meal for poultry and fishery projects2/ Calculated by using the semi-average (mean) method3/ Annual rate of change = $\frac{\text{annual change in tonnage}}{\text{annual average (tons)}} \times 100$

Table 6: International Prices Per ton of Major Feed ingredients (L.E.).

<u>Year</u>	<u>Brans</u>	<u>Cotton Seed Meal</u>	<u>Maize</u>
1970	41	60	48
1971	42	64	52
1972	42	63	48
1973	61	113	69
1974	79	120	99
1975	80	105	106
1976	83	112	94
1977	85	142	88
1978	75	126	90
1979	74	129	90
1980	74	132	89

* Calculated at bank exchange rate.

Source FAO: Trade Year Book, Several Issue.

Table 7: Fixed Subsidized Price and Shadow Price of
Concentrate Feed-Mix For Livestock Feeding
(1970 - 1980)

Year	Official Selling Price (L.E./Ton)	Shadow Price (L.E./ton)	
		Bank Exchange Rate	Free Market Exchange Rate
1970	14	54.79	54.79
1971	14	58.162	58.162
1972	14	57.62	57.62
1973	14	97.6	97.6
1974	17	103.108	103.108
1975	21	99.554	99.554
1976	25	101.98	109.22
1977	25	114.29	122.48
1978	32	115.18	122.49
1979	38	117.208	135.368
1980	38	121.60	138.6

Table 8: Total Value of Subsidy in Concentrate Feed
Mix For Livestock (1970-1980)

Year	Total Feed Production Tons	Subsidy Value (L.E./Ton)		Total Annual Subsidy (L.E. millions)	
		Bank Exchange Rate	Shadow Exchange Rate	Bank Exchange Rate	Shadow Exchange Rate
1970	322.930	40.788	40.788	13.172	13.172
1971	372.207	44.162	44.162	16.437	16.437
1972	410.100	43.620	43.620	17.888	17.888
1973	464.000	83.604	83.604	38.792	38.792
1974	454.000	89.108	89.108	40.455	40.455
1975	549.000	78.554	78.554	43.126	43.126
1976	660.000	76.980	84.220	50.807	55.585
1977	740.000	89.290	97.480	66.075	72.135
1978	880.000	83.180	90.490	73.198	79.631
1979	1.002.000	79.208	97.368	79.366	97.563
1980	1.270.000	83.600	100.60	10.172	127.762

Table 9: A Comparison between Return to Concentrate Feed Mix under Different Livestock Uses at Domestic Prices and both Black Market and Subsidized price of the Feed in Egypt in 1981.

Comparative Items	Milk Production Systems				
	Feedlot Beef Operations	Frision Projects	Commercial Baffaloes	Traditional Baffaloes	Traditional Native Cattle
Current Price per 1-kg. Output (pt.)	138	18	38	23	21
Adjusted Costs at domestic prices per 1-kg Output, without Conc-Feed Mix Costs (pt.)	103.4	10.8	28.2	15.5	25.2
Return to Concentrate Feed Mix used (pt.)	34.6	7.2	9.8	7.5	-4.2
Kgs. of Conc. Feed Mix/1-kg Output	2.8	0.75	0.45	0.16	0.37
Return per 1-Kg Conc. Feed Mix (pt.)	12.4	9.6	21.8	46.9	-11.4
Return/1 ton Conc. Feed Mix Used (L.E.)	124	96	218	469	-114
Black (Free) Market Price/1-ton Conc. Feed Mix (L.E.)	85	100	100	120	120
Subsidized Price/1-ton Conc. Feed Mix (L.E.)	38	40	40	38	38
International Price of Ton of Concentrate Feed Mix (L.E.)	115	118	118	111	111

Source: Calculated From

- (1) Soliman, I: Red Meat Price Policy in Egypt, ADS-Project Working Paper No. 62, March, 1982, Tables 3 & 10.
- (2) Soliman, I, M.T. Abd El-Zaher and J.B. Fitch: Milk Production Systems and the Impact of Government Policies, ADS-Project, Working Paper No. 121, Tables 5, 6, 7, 9, 10 & 11.
- (3) Table 10, Text.

Table 10: Shadow Prices of Feed Concentrate Mix
according to Purpose of Production.

Type of Concentrate Mix	Shadow Price (L.E./Ton)	
	Bank Exchange Rate	Free Market Exchange Rate
For Livestock Fattening	115.218	132.345
For Milk Production	118.221	136.190
For all Livestock activities	111.068	127.773

Table 11: Economic Return to Different Uses of Concentrate Feed Mix
at International Prices in 1981 in Egypt.

Comparative Items	Milk Production Systems				
	Feedlot Beef Operation	Commercial Systems		Traditional Systems	
		Foriegn Breeds	Baffaloes	Baffaloes	Native Cattle
1- International Price per 1-Kg Output (pt.)	110	15	15	15	15
2- Adjusted average Costs per 1-Kg Output at international prices without Conc. Feed Mix Costs.	103.4	11.5	19.6	13.4	29.6
3- Economic Return to Conc. Feed Mix (1-2) in Piesters.	6.6	3.5	-4.6	1.6	-14.6
4- Quantity of Conc. Feed Mix/1-Kg Output(Kg)	2.8	0.77	0.27	0.11	0.33
5- Economic Return per 1-Kg Concentrate Feed Mix (Pt.) (3 ÷ 4)	2.4	4.5	-17.0	14.5	-44.2
6- Economic Return/1-Ton Concentrate Feed Mix (L.E.) (5 x $\frac{1000}{100}$)	23.6	45	-170	145	-442
7- International Price/1-Ton of Concentrate Feed Mix L.E.	115.2	118.2	118.2	111.1	111.1
8- Return per 1 L.E. of Concentrate Feed Mix Input Used (6 ÷ 7)	0.20	0.38	(-1.44)	1.31	(-3.98)

Source: Calculated From

- (1) Soliman, I: Red Meat Price Policy In Egypt, ADS-Project Working Paper No. 62, March, 1982. Tables 3 & 10.
- (2) Soliman, I, T.A. El-Zaher and J.B. Fitch: Milk Production Systems and The Impact of Government Policies, ADS-Project, Working Paper No. 121, Tables 5, 6, 7, 9, 10 and 11.
- (3) Table 10 Text.

