



Mathtech The Technical Research and Consulting Division of Mathematica, Inc.

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COMPREHENSIVE
PRELIMINARY RECOMMENDATIONS

POULTRY IMPROVEMENT PROJECT

Submitted to:

MINISTRY OF AGRICULTURE
GOVERNMENT OF EGYPT

By:

MATHTECH, Inc.

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I. INTRODUCTION

The purpose of this document is to provide, in a consolidated form, the preliminary recommendations of MATHTECH's Poultry Improvement Project Team regarding the Poultry Sector of Egypt. Many of these recommendations have been outlined in the Special Reports on various poultry subsectors submitted during the past twelve months. This document interrelates and updates the initial recommendations and is intended to provide key MOA and AID personnel with the opportunity for comment and input into the final document to be submitted prior to the scheduled project completion date of September, 1980.

One of the Egyptian Government's major nutritional objectives, as stated by President Sadat, is to overcome the significant shortfall in the supply of high quality protein food available to the Egyptian population. An adequate amount of such protein is considered essential by human nutritionists and health experts for the normal development and maintenance of physical and mental health. The generally accepted worldwide standard for human intake of such high quality protein is 12 kilograms per year. The latest and most reliable figures available indicate that average per capita consumption of such protein in Egypt is approximately 4 kilograms per year. The goal recently stated by President Sadat is to overcome the existing deficiency as rapidly as possible, with an optimistic timeframe of five years, but a more realistic target date of the year 2000. Half of the 12-kilo objective (or 6 kilos) is to be derived from poultry; however, only 2 kilos currently are supplied by poultry.

If such a goal is to be reached, significant shortages and resource deficiencies must be overcome and optimum use must be made of the resources now available. The preliminary recommendations contained in this document are intended to promote the achievement of those objectives in the most realistic and cost-effective manner possible.

It is also generally acknowledged that poultry production is the quickest, most cost-beneficial way to increase the availability of high quality protein food. Within the range of poultry products, broiler (chicken) meat and table eggs are the most resource- and time-effective products. Therefore, most of the

recommendations focus on improving the production of broiler meat and table eggs. It should be noted, however, that the recommended programs will positively impact all poultry activities, and likely will benefit the livestock, dairy and primary animal feed/human food ingredient sectors to a significant degree as well.

This document is organized into three major sections: Introduction, Preliminary Program Recommendations, and General Details of Preliminary Recommendations. The budget estimates are based on a general knowledge of costs and on the costs of previous programs, rather than on a detailed analysis of all possible cost factors. However, we believe that the cost estimates provided in this report are more than adequate for preliminary planning purposes.

Three primary cost categories are noted in Section II, Program Recommendations. These include:

- * TECHNICAL ASSISTANCE, TRAINING & PROJECTS - Includes all items which might possibly be funded from sources such as AID. Wherever practical, the estimates also include budgeted amounts for equipment purchases and/or commodities too small to be included or funded from other sources, and which are otherwise essential for successful project completion.
- * COMMODITIES - Includes feed, vaccines, and other such items which would fall into funding categories such as those used by the AID-CIP program.
- * CD/DB TYPE FUNDS - Includes funds used for capital development activities such as those supported by AID-CD, World Bank, and other sources. Such funds would be used for major equipment purchase, facilities, and plants.

In reviewing the budget requirements for the latter two cost categories, it is obvious that the budgeted levels are substantial. Therefore, when reviewing these budget requests, the reader should bear in mind that a portion of such fund requirements may be available from the continuing operational budgets of

the Egyptian activities involved or from many other funding sources such as AID-CIP or CD funds, the Development Banks, or the World Bank. Therefore, for the sake of realistically assessing the cost impact of supporting the activities required to achieve the stated national goals, the reader should concentrate on the Technical Assistance, Training and Projects budget estimates rather than on the Commodity and CD/DB categories.

One will note the emphasis upon the on-site technical assistance and the training of Egyptian management personnel (public and private) components in this report. While there are well qualified Egyptian personnel in the Poultry Sector, their number is not sufficient to accomplish the stated objectives. Also, even among those who are properly qualified, deficiencies exist in their levels of current technical knowledge and modern operational techniques which cannot be overcome with short-term training. Much of the required training can be provided only in an on-the-job context, which would supplement the out-of-country training and in-country seminars. Assistance and upgrading in the technique of effective operational decision making can best be given at the decision-making point. Therefore, we have included a substantial amount of on-site, in-practice technical assistance, as well as a variety of operationally, rather than institutionally, oriented training programs. We firmly believe that these elements are essential not only to the effective achievement of the stated goals, but also for the most efficient use of the vast sums of commodity and capital expenditures required.

Exhibit I-1 on the next page is a summary of benefits anticipated to be in effect at the conclusion of the first year of the preliminary recommended programs outlined in Section II following. Achievement of such benefits is, of course, dependent upon timely coordination and implementation of these programs to coincide approximately with the conclusion of the Poultry Improvement Project; however, the benefits most likely will be more fully recognizable the following year. Maintenance of these benefits will depend upon providing sufficient continuity of relative program effort in the ensuing years.

SUMMARY OF FIRST YEAR BENEFITS

Below is a summary of principal benefits projected for the Poultry Sector of Egypt, if the preliminary program recommendations were to be implemented in the near future. Delays in implementation would, of course, change the benefit ratios because of the probable changes in the poultry sector which would occur. Please note that this summary does not list all possible benefits, just the most tangible and measureable benefits to be realized. A complete list of benefits is contained in Section II and in Exhibits II-1 and III-1 in their respective sections of this report.

IMPROVED CURRENT PRODUCTIVE CAPACITY OF DISEASE FREE HATCHING EGGS AND CHICKS:

These program elements would resolve the problems created by the native hatcheries using recycled and probably diseased village eggs for hatching, and would improve the volume and quality of disease free, genetically superior hatching eggs and healthy baby chicks supplied to the village flocks.

- . Native hatchery production is estimated at 100,000,000 chicks per year.
- . Recommended programs would improve liveability ratio by 20 % or approximately 200,000,000 chickens per year -- 50% male and 50% female.
- . This improved liveability would increase annual village poultry production as follows:

10,000,000 broilers @ 1.2 kilos each, or 12,000,000 kg poultry meat; and
10,000,000 spent fowl @ 1.5 kilos each, or 15,000,000 kg poultry meat; for
a total of 27,000,000 kg meat at a cash value of 27,000,000 LE per year.

10,000,000 layers producing an annual average of 80 table eggs each, or a
total increase of 800,000,000 table eggs at a cash value of 40,000,000 LE.

PROGRAM ELEMENTS REQUIRED: I-1 and I-3 minimum.

FEED OPTIMIZATION PROGRAM ELEMENTS:

These programs would concentrate on the coordinated improvement of feed ingredient, quality control, handling and consumption problems. The number of confined birds in Egypt is believed to be more than 72,000,000, most of which are given some type of feed ration (1,400,000 layers; 70,000,000 broilers; and 1,445,000 breeders and other per year). Average feed consumption for a flock that size is estimated at 353,000 metric tons of complete feed ration annually. Based on an average cost of \$150/MT, the projected 20% rate of improvement resulting from this option would represent an additional useable quantity of 70,600 MT/year, or a cash value of \$10,500,000 annually.

PROGRAM ELEMENTS REQUIRED: II-1 and II-4 minimum.

POULTRY HEALTH, VACCINE AND PHARMACEUTICAL OPTIONS:

Continued importation of adequate quantities of suitable quality vaccines is the most expensive way to handle the poultry health and disease control problem, especially when the basic capabilities exist in Egypt to fill her vaccine needs.

The MOA/AHRI Abbasia plant is too obsolete, underequipped, understaffed, and underbudgeted to perform that function. New facilities are needed but will require a minimum of 2 to 4 years for completion once funding is acquired. As an interim measure, our recommendation is to optimize existing capabilities while spending as little as possible to allow Abbasia to produce an acceptable quality of vaccines at its optimum capacity. As noted in previous special reports on the subject, there is a shortfall of critical vaccines of at least 100,000,000 doses per year, and probably significantly more than that (for example, Newcastle Vaccine used to treat one of the most devastating poultry disease problems affecting the Egyptian Poultry Sector). Imported vaccines cost approximately \$1.00 more per 1000 doses than locally produced vaccines. Based on 200,000,000 doses currently available from all sources, this cost difference represents a saving of about \$200,000 per year. The 20% increase in available doses if Abbasia were producing at capacity would represent an additional saving of \$60,000 annually. The major improvement, however, is the improved disease control and reduced mortality to be realized from the additional 40,000,000 doses of vaccine which would result from these recommended programs.

PROGRAM ELEMENTS REQUIRED: III-1 and III-3 minimum.

II. PRELIMINARY PROGRAM RECOMMENDATIONS

This section contains preliminary recommendations regarding the general programs the MATHTECH Team believes will be required to overcome the problems of the Egyptian Poultry Sector. They are comprehensive in that they address the overall poultry sector and its impact on the entire Egyptian economy and population, especially the poor and rural segments.

There are very strong interrelationships between the various components of the Egyptian Poultry Sector. Currently, the public sector's role (GPC and MOA) is functionally essential in providing support to the entire poultry sector -- private, rural and public. Until the private sector capabilities progress sufficiently to permit it to take over the production role, this public sector support must be continued and its effectiveness improved to avoid a possibly disastrous impact on the slowly growing private sector and the rural populations. We believe it essential that continuous technical, material and financial assistance beyond the scope of Egypt's current resources be provided for at least the next three years to meet the needs of the Egyptian population, even at the present insufficient levels of high quality protein consumption.

Because of these essential interrelationships, our preliminary recommendations encompass support to all segments of the Egyptian Poultry Sector. The recommended programs are intended to provide the most rapid cost-effective benefits, and at the same time to overcome important infrastructure deficiencies. While these poultry sector benefits are being realized, there also will be significant benefits in other major areas. Areas which will be positively affected include other meats, dairy products, cereal grains, feeds, vaccines and pharmaceuticals, and a relative easing of the hard currency needs for these sectors. We recommend that the programs address at least some of the problem areas in these other sectors since the sectors face a number of common and interrelated problems which require multi-sectoral solutions to achieve the best, and most lasting, results.

Exhibit II-1 at the end of this section outlines the comprehensive program recommendations by year for the next five years, as well as provides summaries

by project and cost category. Of primary interest is the forthcoming year since we strongly recommend that continuous support be provided to the poultry sector to prevent severe problems which might result from interrupting the current assistance.

The preliminary program recommendation costs for the first year total \$11,700,000 in addition to the previously recommended \$998,000 for Project VILPRO (Expedite). CIP and CD/DB-type fund requirements are estimated to be, at a minimum, \$12,500,000 and \$4,750,000 respectively, with maximum figures somewhat higher.

At the end of the first year of program implementation, the following benefits are projected:

- . Major progress in supplying disease free hatching eggs and baby chicks to the rural sector. Improvement potential of up to 20 percent in supplying such chicks and their subsequent maturing into edible poultry meat produced by the village flocks in the rural sector.
- . Establishment of a vital network and delivery system to increase the supply of essential vaccines to the village sector. This will serve to control the critical poultry diseases which now impact liveability in the rural flocks up to 50%.
- . Stabilization of the wholesale prices received by the private sector poultry producers. This stabilization is essential if the private sector is to be allowed to grow and expand into the desired position in the poultry sector. Simultaneously, this program will tend to stabilize poultry retail prices and thereby make poultry product available to a much larger segment of the Egyptian population.
- . A minimum 10 percent improvement in feed utilization and a minimum 20 percent qualitative improvement in feed quality should be evident after the first year, resulting in an approximate 20 percent improvement in the critical feedstuffs support needs. The primary beneficiaries of such improvements in the feed support system will be the village flocks and those hatchery/breeder farm systems which support the village flock/rural sector programs. These areas are now experiencing a critical

shortfall. Simultaneously, an approximate 10 percent improvement in the costs of feed rations and primary ingredients is projected. At the recent delivered safe Alex price of maize of 126 LE per metric ton, this 10 percent would have represented an approximate savings of U. S. \$13,230,000 for the 750,000 metric tons of maize purchased by Egypt in calendar year 1979.

- . A minimum 20 percent improvement in the quantity, and a more than 50 percent improvement in the necessary quality of vaccines produced in Egypt is anticipated. In addition, the necessary increase in the supply of imported vaccines would be provided primarily to the village/rural sector, and would represent a multifold increase of vaccine availability in areas where there has been a critical shortage in the past.
- . An improvement of at least 15 percent in the productivity ratios now being experienced by GPC. This increase should be sufficient to overcome the approximate 4,000,000 LE deficit in GPC operations during calendar year 1979.

In addition to the above measurable benefits, the following benefits also should be evident during this first year:

- . Establishment of feed inventory and formulation programs which will be available for use by the entire poultry sector of Egypt. These programs should result in optimum use of local ingredients and formulation of better balanced poultry rations at the lowest possible development cost to those in the poultry sector.
- . Establishment of in-country capabilities for poultry disease diagnosis and feed ingredient/ration analysis. These programs are essential for effective disease control and feed optimization. There also would be a significant reduction in, or complete elimination of, the purchase, receipt, and use of feed ingredients which do not meet specifications and/or poultry nutritional requirements. There currently is extremely limited inspection and quality control over purchased, received and used ingredients, as well as imported vaccines and pharmaceuticals.

- . The development and testing of corrective programs to improve sanitary conditions in the native hatcheries to minimize poultry disease transmission in the village flock sector. These programs also would include the development and testing of practical ways to improve the delivery systems of veterinary/extension services and increase the amount of vaccines/pharmaceuticals and poultry rations available to the rural sector. Such achievements would impact the MOA Veterinary/Extension Services, the governorate programs, and other support elements to the villages. Results here would have beneficial effects on Agrarian Reform, ORDEV, and present and future cooperative programs.
- . Resource allocation capabilities would be significantly enhanced through the market management, feed optimization, self-management improvement, data system, planning, and econometric model elements of the preliminary programs recommended.

The preliminary program recommendations for the first year also include necessary supplementation of programs initiated during the current Poultry Improvement Project, particularly in terms of the hatchery expansions (Inchas, Fayoum, and Sakha MOA breeder farms) and the breed testing programs of MOA, GPC, and ORDEV. Without continuation of the essential technical assistance support, these important programs most likely will decline in effectiveness.

Also, we strongly urge that other program elements recommended for the first year be acted upon to provide continuity of in-country technical assistance beyond the end of the current project in early September, 1980. Without such support, we believe that major problems in feed, poultry health, private sector development, village production, and resource utilization will develop which will serve to set back the progress to date.

Further details concerning the individual elements of the recommended preliminary programs are contained in Section III of this document. However, we deliberately kept the discussions brief to provide ease of reading and comprehension. We of the MATHTECH Team will be pleased to provide further details on the program elements and design if such clarification is needed.

PRELIMINARY PIP RECOMMENDATIONS
 BUDGET SUMMARY BY COST TYPE CATEGORY
 YEAR # 1

		T/A * TRAINING & PROJECTS	CIP ** TYPE FUNDS	CD/DB + TYPE FUNDS	TOTALS
I-1	Current Programs	400	--	--	
2	Improved Hatching Egg Quality	300	--	--	
3	Improved Production Capacity	650	--	--	
4	Optimize Native Hatchery Capability	1500	--	--	
	SUBTOTAL	2850			2850
II-1	Optimize Available Resources	1000	--	650	
2	Mill Utilization and Capacity	500	--	2000	
3	Commodity Support Program	--	30000	--	
4	Feed Management System	850	--	--	
	SUBTOTAL	2350	30000	2650	35000
III-1	Veterinary/Extension Services Eval.	600	--	--	
2	Training & Technical Assistance	800	--	--	
3	a. Equipment (CD)	--	--	500	
	b. Commodities (CIP)	--	2000	--	
	SUBTOTAL	1400	2000	500	3900
IV-1	Poultry Health: Improved Management & Utilization	1000	--	--	
2	Commodities - Import (CIP)	--	5000	--	
3	Other (equipment, etc. CD)	650	500	2600	
	SUBTOTAL	1650	5500	2600	9750
V-1	Market Stabilization	600	--	--	
2	Processing/Distribution	--	--	7500	
3	Rendering	150	--	--	
4	Increased Production Capacity	500	--	2000	
	SUBTOTALS	1250	--	9500	10750
VI-1	Sector Management	950	--	--	
2	Improved Self-Management Program	750	--	500	
3	Public Sector Conversion	500	--	--	
	SUBTOTALS	2200	--	500	2700
	TOTALS	11700	37500	15750	64950
	PROJ. EXPED./VILPRO	998	5000	--	5998
	TTL TTLS	12698	42500	15750	70948

* T/A - Technical Assistance Programs, Training & Projects

** CIP - Commodity Import Program

+ CD/DB - Capital Development/Development Bank

PRELIMINARY PIP RECOMMENDATIONS
 BUDGET SUMMARY BY COST TYPE CATEGORY
 YEAR # 2

		T/A * TRAINING & PROJECTS	CIP ** TYPE FUNDS	CD/DB + TYPE FUNDS	TOTALS
I-1	Current Programs	200	--	--	200
2	Improved Hatching Egg Quality	75	--	--	75
3	Improved Production Capacity	--	--	3000	3000
4	Optimize Native Hatchery Capability	500	--	5500	6000
	SUBTOTAL	775	--	8500	9275
II-1	Optimize Available Resources	900	--	250	1150
2	Mill Utilization and Capacity	500	--	4000	4500
3	Commodity Support Program	--	40000	--	40000
4	Feed Management System	850	--	--	850
	SUBTOTAL	2250	40000	4250	46500
III-1	Veterinary/Extension Services Eval.	--	--	--	--
2	Training & Technical Assistance	800	--	--	800
3	a. Equipment (CD)	--	--	2000	2000
	b. Commodities (CIP)	--	4000	--	4000
	SUBTOTAL	800	4000	2000	6800
IV-1	Poultry Health: Improved Management & Utilization	1000	--	--	1000
2	Commodities - Import (CIP)	--	3000	--	3000
3	Other (equipment, etc. CD)	--	--	5300	5300
	SUBTOTAL	1000	3000	5300	9300
V-1	Market Stabilization	600	--	--	600
2	Processing/Distribution	--	--	15500	15500
3	Rendering	--	--	2500	2500
4	Increased Production Capacity	500	--	4000	4500
	SUBTOTALS	1100	--	22000	23100
VI-1	Sector Management	950	--	--	950
2	Improved Self-Management Program	750	--	2500	3250
3	Public Sector Conversion	300	--	--	300
	SUBTOTALS	2000	--	2500	4500
	TOTALS	7925	47000	44550	99475

* T/A - Technical Assistance Programs, Training & Projects
 ** CIP - Commodity Import Program
 + CD/DB - Capital Development/Development Bank

PRELIMINARY PIP RECOMMENDATIONS
BUDGET SUMMARY BY COST TYPE CATEGORY
YEAR # 3

		T/A * TRAINING & PROJECTS	CIP ** TYPE FUNDS	CD/DB + TYPE FUNDS	TOTALS
I-1	Current Programs	200	--	--	200
2	Improved Hatching Egg Quality	--	--	--	--
3	Improved Production Capacity	--	--	1000	1000
4	Optimize Native Hatchery Capability	--	--	4000	4000
	SUBTOTAL	200	--	5000	5200
II-1	Optimize Available Resources	250	--	--	250
2	Mill Utilization and Capacity	--	--	3000	3000
3	Commodity Support Program	--	50000	--	50000
4	Feed Management System	150	--	--	150
	SUBTOTAL	400	50000	3000	53400
III-1	Veterinary/Extension Services Eval.	--	--	--	--
2	Training & Technical Assistance	800	--	--	800
3	a. Equipment (CD)	--	--	2000	2000
	b. Commodities (CIP)	--	6000	--	6000
	SUBTOTAL	800	6000	2000	8800
IV-1	Poultry Health: Improved Management & Utilization	550	--	--	550
2	Commodities - Import (CIP)	--	2000	--	2000
3	Other (equipment, etc. CD)	--	--	3650	3650
	SUBTOTAL	550	2000	3650	6200
V-1	Market Stabilization	--	--	--	--
2	Processing/Distribution	--	--	11500	11500
3	Rendering	--	--	2500	2500
4	Increased Production Capacity	250	--	4000	4250
	SUBTOTALS	250	--	18000	18250
VI-1	Sector Management	600	--	--	600
2	Improved Self-Management Program	750	--	500	1250
3	Public Sector Conversion	150	--	--	150
	SUBTOTALS	1500	--	500	2000
	TOTALS	3700	58000	32150	93850

* T/A - Technical Assistance Programs, Training & Projects
 ** CIP - Commodity Import Program
 + CD/DB - Capital Development/Development Bank

~~RECOMMENDATIONS~~
 BUDGET SUMMARY BY COST TYPE CATEGORY
 YEAR # 4

		T/A * TRAINING & PROJECTS	CIP ** TYPE FUNDS	CD/DB + TYPE FUNDS	TOTALS
I-1	Current Programs	--	--	--	--
2	Improved Hatching Egg Quality	--	--	--	--
3	Improved Production Capacity	--	--	--	--
4	Optimize Native Hatchery Capability	--	--	2000	2000
	SUBTOTAL	--	--	2000	2000
II-1	Optimize Available Resources	--	--	--	--
2	Mill Utilization and Capacity	--	--	3000	3000
3	Commodity Support Program	--	60000	--	60000
4	Feed Management System	--	--	--	--
	SUBTOTAL	--	60000	3000	63000
III-1	Veterinary/Extension Services Eval.	--	--	--	--
2	Training & Technical Assistance	--	--	--	--
3	a. Equipment (CD)	--	--	--	--
	b. Commodities (CIP)	--	--	--	--
	SUBTOTAL	--	--	--	--
IV-1	Poultry Health: Improved Management & Utilization	150	--	--	150
2	Commodities - Import (CIP)	--	--	--	--
3	Other (equipment, etc. CD)	--	--	--	--
	SUBTOTAL	150	--	--	150
V-1	Market Stabilization	--	--	--	--
2	Processing/Distribution	--	--	--	--
3	Rendering	--	--	--	--
4	Increased Production Capacity	--	--	--	--
	SUBTOTALS	--	--	--	--
VI-1	Sector Management	--	--	--	--
2	Improved Self-Management Program	--	--	--	--
3	Public Sector Conversion	--	--	--	--
	SUBTOTALS	--	--	--	--
	TOTALS	150	60000	3000	63000

* T/A - Technical Assistance Programs, Training & Projects
 ** CIP - Commodity Import Program
 + CD/DB - Capital Development/Development Bank

RECOMMENDATIONS
BUDGET SUMMARY BY COST TYPE CATEGORY
YEAR # 5

		T/A * TRAINING & PROJECTS	CIP ** TYPE FUNDS	CD/DB + TYPE FUNDS	TOTALS
I-1	Current Programs	--	--	--	--
2	Improved Hatching Egg Quality	--	--	--	--
3	Improved Production Capacity	--	--	--	--
4	Optimize Native Hatchery Capability	--	--	--	--
	SUBTOTAL	--	--	--	--
II-1	Optimize Available Resources	--	--	--	--
2	Mill Utilization and Capacity	--	--	3000	3000
3	Commodity Support Program	--	70000	--	70000
4	Feed Management System	--	--	--	--
	SUBTOTAL	--	70000	3000	73000
III-1	Veterinary/Extension Services Eval.	--	--	--	--
2	Training & Technical Assistance	--	--	--	--
3	a. Equipment (CD)	--	--	--	--
	b. Commodities (CIP)	--	--	--	--
	SUBTOTAL	--	--	--	--
IV-1	Poultry Health: Improved Management & Utilization	150	--	--	150
2	Commodities - Import (CIP)	--	--	--	--
3	Other (equipment, etc. CD)	--	--	--	--
	SUBTOTAL	150	--	--	150
V-1	Market Stabilization	--	--	--	--
2	Processing/Distribution	--	--	--	--
3	Rendering	--	--	--	--
4	Increased Production Capacity	--	--	--	--
	SUBTOTALS	--	--	--	--
VI-1	Sector Management	--	--	--	--
2	Improved Self-Management Program	--	--	--	--
3	Public Sector Conversion	--	--	--	--
	SUBTOTALS	--	--	--	--
	TOTALS	150	70000	3000	73150

* T/A - Technical Assistance Programs, Training & Projects
 ** CIP - Commodity Import Program
 + CD/DB - Capital Development/Development Bank

~~RECOMMENDATION III~~ RECOMMENDATIONS
 BUDGET SUMMARY BY COST TYPE CATEGORY
 SUMMARY TOTALS

		T/A * TRAINING & PROJECTS	CIP ** TYPE FUNDS	CD/DB + TYPE FUNDS	TOTALS
I-1	Current Programs	800	--	--	800
2	Improved Hatching Egg Quality	375	--	--	375
3	Improved Production Capacity	650	--	4000	4650
4	Optimize Native Hatchery Capability	2000	--	11500	13500
	SUBTOTAL	3825	--	15500	19325
II-1	Optimize Available Resources	2150	--	900	3050
2	Mill Utilization and Capacity	1000	--	1500	2500
3	Commodity Support Program	--	250000	--	250000
4	Feed Management System	1850	--	--	1850
	SUBTOTAL	5000	250000	2400	257400
III-1	Veterinary/Extension Services Eval.	600	--	--	600
2	Training & Technical Assistance	2400	--	--	2400
3	a. Equipment (CD)	--	--	4500	4500
	b. Commodities (CIP)	--	12000	--	12000
	SUBTOTAL	3000	12000	4500	19500
IV-1	Poultry Health: Improved Management & Utilization	3000	--	--	3000
2	Commodities - Import (CIP)	--	10000	--	10000
3	Other (equipment, etc. CD)	650	500	11550	12700
	SUBTOTAL	3650	10500	11550	25700
V-1	Market Stabilization	1200	--	--	1200
2	Processing/Distribution	--	--	27000	27000
3	Rendering	150	--	5000	5150
4	Increased Production Capacity	1250	--	10000	11250
	SUBTOTALS	2600	--	42000	44600
VI-1	Sector Management	2500	--	--	2500
2	Improved Self-Management Program	2250	--	3500	5750
3	Public Sector Conversion	950	--	--	950
	SUBTOTALS	5700	--	3500	9200
	TOTALS	23775	272500	79450	375725

* T/A - Technical Assistance Programs, Training & Projects
 ** CIP - Commodity Import Program
 + CD/DB - Capital Development/Development Bank

III. GENERAL DETAILS OF PRELIMINARY RECOMMENDATIONS

The individual programs listed on EXHIBIT III-1 at the end of this section were originally developed as "stand-alone" programs. That is, each program could be individually implemented and would by itself, achieve certain results. Implementation of each program without interfacing with the other programs would, of course, require added costs and support elements to achieve the goals noted. But, if the individual programs were interfaced with all other programs, then certain cost and support elements could be eliminated. Therefore, the listing of these individual program elements should be evaluated on their "stand-alone" designs rather than on the basis of interfacing with other appropriate programs.

The following brief descriptions delineate essential items which the programs are designed to achieve and which impact on, or may be impacted by, existing situations in the Poultry Sector of Egypt. These items are identified by the same designations which appear for each individual program on EXHIBIT III-1.

I - HATCHERY OPTIONS

I-1 CONTINUE CURRENT PROGRAMS

I-1.1 EXPANSION OF 3 MOA FARMS (FAYOUM, INSHAS AND SAKHA) - This program concerns continuation of support essential for completion of the expansion project for which capital goods funds have already been authorized and allocated. Because of the multi-million dollar allocation for equipment, facilities and land improvements, we believe that continued technical assistance is essential to the successful completion of this project activity. This technical assistance should be provided for at least one year beyond the current Poultry Improvement Project activity. Appropriate United States and in-country training should be provided to the Egyptian managers and operating personnel of these hatcheries. Since commodity IFB's have not appeared in the Commerce Business Daily, timeframe projections indicate that a twelve-month extension is necessary to complete installation,

training and startup activities required for operation of these expanded breeder farms and hatcheries.

- I-1.2 BREED TEST PROGRAMS - ORDEV, MOA, AGRARIAN REFORM, GPC - These breed test programs were not initiated until MOA personnel accepted the necessity for such tests as a result of their experiences in the Poultry Improvement Project Training Program after September 1979. As the findings of the Poultry Improvement Project have indicated, MATHTECH breed & genetic specialists strongly believe that the native breeds presently being used in Egypt are not as productive as imported stock currently available from developed countries such as the USA. Without continued technical assistance and support on site, it is likely that these tests will not yield the desired results.
- I-2 IMPROVE CURRENT HATCHING EGG QUALITY - This option represents an alternative to option I-3 IMPROVEMENT OF CURRENT PRODUCTIVE CAPACITIES. In this option, the intention is only to improve the sources and supply of clean hatching eggs for the native hatcheries. Observations of practices in the MOA and other breeding farms and hatcheries supplying egg and/or baby chicks to the village sector has led us to believe that a major step toward improving poultry production at the village level would be to improve the supply of disease free eggs or chicks and to eliminate the use of recycled fertile eggs from the village flocks. This improvement would require blood testing of the existing parent stock and replacement of diseased parents. It would also involve establishment of an ongoing blood testing program for poultry disease control and village productivity improvement.
- I-3 IMPROVE CURRENT PRODUCTIVE CAPACITIES - As in Option I-2, this option also has as its goal the supply of "clean" hatching eggs/baby chicks to the villages and the optimization of existing MOA farm capacities. During the Poultry Improvement Project evaluation of current hatchery/breeder farm operations, it was noted that a significant capacity increase -- in some cases up to 30 percent or more -- could be achieved easily by balancing the key limiting factors such as acquiring sufficient

laying pens to match present incubator capacities. And, rather than build new farms and hatcheries, the intent is to equip and remodel the existing farms to obtain the optimum production rates within the maximum capabilities of existing farms and hatcheries.

- I-4 OPTIMIZE NATIVE HATCHERY CAPABILITIES - While significant improvement in poultry production can be obtained through the supply of "clean" eggs and/or baby chicks, it is believed that even greater improvement can be achieved if the more finite problems relating directly to native hatchery design, construction, and operation can be resolved. The Poultry Improvement Project was not originally designed to assess these problems; therefore, a more detailed study of the problems and development and testing of corrective programs is sorely needed. In addition, recognizing the importance of the native hatcheries in the rural sector, a number of key persons in the MOA have suggested/requested guidelines for such a program. The MATHTECH team agrees on the importance of the native hatchery to the village sector, and if problems relating to these activities can be properly resolved, the team believes that significant improvements can be achieved. We also concur that, regardless of any rationale to the contrary, the native hatcheries will be a significant part of the rural component of the Egyptian poultry sector for the foreseeable future. The recommended program also includes potential enlargement of MOA farm capacities to supply the proportionately greater requirement for clean eggs for the native hatcheries' improved capabilities at program completion.

II - FEED OPTIMIZATION OPTIONS

The purpose of these programs is to make the best possible use of existing feed resources and to provide the necessary quantity and quality of feed to support a viable and dynamic poultry industry in Egypt.

- II-1 The MATHTECH team believes that up to 40% of the available feed resources currently are not being optimized. This conclusion is supported by numerous analyses of feed rations, the development of actual feed conversion ratios being experienced in Egypt, and through direct observation

by the team's feed and poultry nutrition specialists. The team believes that through improvements in quality control, ingredient testing and analysis, and a variety of other feed and poultry production management activities -- supported by a minimal amount of equipment and an optimal amount of technical assistance and training -- existing feed resources can be improved up to 40 percent during the recommended life of this program element. Included in this program are an inventory (feed ingredient) control and availability tracking system, identification and optimal use of native ingredients (such as peanut hulls, citrus shells, and other waste and/or agricultural products and by-products), least-cost and most effective ingredient/ration formulation, and use of premixes and/or concentrates to eliminate or bypass existing milling problems. Improvements obtained in this program area will benefit the entire poultry sector, with a major positive impact on rural flocks which presently lack sufficient amounts of appropriate feed.

- II-2 MILL UTILIZATION & CAPACITY IMPROVEMENT - A major problem stems from the condition and operational performance of Egyptian feed mills. Many mills are old, while others have various mechanical deficiencies which result in improper milling and formulation of feed. Therefore, even though the ingredients and formulas may be appropriate, the finished ration is improperly milled and balanced. This produces factors which result in feed waste, poor feed conversion, and losses in handling and distribution. Also, further waste results from the practice of handling all feed in bags. Storage is not carefully controlled, resulting in the deterioration of feed quality and content. The feed is accessible to rodents, pests, and birds, which not only consume some of these valuable resources but also transfer potentially hazardous diseases to the poultry flocks consuming such contaminated feed. This program includes the study and A&E development of the means by which the potential installation and use of bulk handling capabilities could be added to the Egyptian support system over a period of time.
- II-3 COMMODITY SUPPORT PROGRAM - This program supplements poultry sector needs through the AID-CIP program or another similar program to ensure the supply of adequate feed rations. This program would be reduced, and subsequently eliminated, as self-contained Egyptian capabilities developed.

II-4 FEED MANAGEMENT SYSTEM - This system is an alternative to the program outlined in II-1 above entitled Optimize Available Resources. This program only includes scaled-down technical assistance and training, feed formulation and ingredient tracking program elements.

III - VETERINARY/EXTENSION SERVICE OPTIONS

In the United States and other developed countries government-operated Veterinary and Extension Services are essential support elements to the private and rural sectors. While such services also exist in Egypt, they are drastically understaffed and underbudgeted. There is an insufficient number of poultry health stations to serve the village flocks. There are plans ultimately to establish health stations in every village, but the stations presently cover less than 10 percent of the villages with poultry units. Therefore, the village flock owner must "trial drive" his flock over long distances to obtain the necessary vaccinations and other services -- a totally unreasonable situation. Since the Poultry Improvement Project was not intended to provide an in-depth study and assessment of this essential Egyptian-MOA function, this program element is necessary to study the problems and develop and test various corrective programs. It would also provide the necessary additional outside assistance to implement this program in conjunction with existing Egyptian institutional elements such as the Governorate systems. Project Expedite/VILPRO would provide some of the means by which this could be accomplished. The necessary commodities, technical assistance, equipment, and training are included in these preliminary recommendations. Much of the recommended equipment involves the delivery and transportation systems necessary to bring the essential services to the villagers and their flocks rather than requiring the village flock owners to travel to the existing health stations.

IV - POULTRY HEALTH/VACCINE/PHARMACEUTICAL OPTIONS

Poultry disease is a major barrier to achieving optimum production and supply of poultry product in Egypt. Diseased chickens consume valuable resources, which are then simply wasted because the resources are not converted to finished edible product. Project Expedite/VILPRO contains certain elements which, if

implemented, would have a desirable impact on this major problem area. However, since VILPRO applies to only two governorates, alternate options are outlined in this program area. The first involves only additional technical assistance and training to supplement VILPRO. This option would allow appropriate effort to be extended to poultry activity areas outside the two VILPRO governorates. The second involves a program designed to provide the building of an infrastructure by which the significant existing deficiencies could be eliminated over time. Element IV-1 concerns technical assistance and training; IV-2 concerns funding by which the shortfall in vaccines and other items, particularly for the rural sector, would be overcome; and IV-3 concerns those actions necessary for Egypt to develop its own stand-alone capabilities in materials and infrastructure to control its poultry disease problems.

V-POULTRY PRODUCTION/MARKETING

As previously noted, the public segment of the Poultry Sector of Egypt provides essential support to the entire poultry sector, including the villages and the small private producers which number over 3,000 (each with a capacity of less than 5,000 broilers per cycle). Therefore, our program includes those elements necessary for improving GPC's capability to support the private and village sectors.

V-1 - MARKET STABILIZATION/REPORTING SYSTEM - The instability of the wholesale price levels received by the private poultry producers in Egypt has been a major hinderance to growth of the private poultry sector and a significant cost factor, through price and cost subsidies, to the Egyptian Government. Simultaneously, the lack of coordinated release of frozen imported poultry meat by the Ministry of Supply (with funds provided by AID-CIP) has had a major negative impact, not only on the growth of private sector production but also on the consumer's overall economic situation. These unstable conditions have resulted in significant increases in the costs of production. Whenever such instability develops, many private producers go out of business, and the prices received by village producers also deteriorate significantly. To provide the climate and conditions necessary to stimulate private sector

growth and to prevent undue hardships on the village producers, the MATHTECH team believes the market stabilization program to be of highest priority. The program elements will provide the means by which critical information on market conditions can be accumulated and utilized for production planning and resource allocation purposes. They will also provide the basis for a distribution-storage program which will interrelate product availabilities and prices at the marketplace. Existing cold storage facilities can be utilized effectively to stabilize the supply of poultry. The amount of product on the market at any given time will be controlled to prevent an over-supply of product in terms of the market's ability to remove the product. This will create market balancing conditions and thereby eliminate the opportunity for unethical food brokers to take advantage of the unbalanced market situations which have so negatively affected private sector growth and consumer prices in the past.

- V-2 PROCESSING & DISTRIBUTION - This program element provides for the construction of necessary slaughterhouse and cold storage facilities for the entire poultry sector, especially the rural and small private producers. It also includes development of less-than-whole-chicken packaging capabilities. This would allow poultry product to be sold at lower prices, and would make poultry product economically feasible for a significantly larger segment of the Egyptian population.
- V-3 BY-PRODUCTS UTILIZATION/RENDERING PLANT - This capability does not presently exist in Egypt to any measurable degree. Yet, the offals and other by-products from poultry production are valuable assets in poultry operations in developed countries. This program will provide the opportunity for by-product utilization in Egypt.
- V-4 IMPROVED PRODUCTION/SUPPORT UNITS OUTPUT - This program element primarily concerns GPC. Since GPC provides the technical and planning services for all other public and private poultry production units in Egypt, it is essential that GPC operate at optimum effectiveness. The preliminary recommended programs include sufficient on-site technical assistance in

key support and decision making functions to optimize current production capacities. Since GPC is a government unit, its production can be planned on the basis of market considerations. This planned production can balance market supplies of poultry to prevent oversupply and price deterioration problems.

VI - SECTOR DEVELOPMENT/MANAGEMENT

The purpose of this program element is to provide the skills and assistance by which the poultry sector can be managed and optimized most effectively. It includes sector management, data system improvement, improved planning capabilities, development of the necessary capabilities for self-management, and a program by which the production responsibilities of the public sector would be transferred to the private sector in a disciplined manner. If properly handled, such a transfer would not create major problems or shortages or remove the public sector's essential support for the private and village/rural sectors.

- VI-1 MARKET/SECTOR MANAGEMENT - This program includes completion and expansion of the econometric model to include all meat options and essential multi-sector items such as maize. It also entails centralization of the data necessary for good management, effective resource utilization and allocation, and significant improvement in Egyptian sectoral and resource planning. As previously demonstrated, the use of the poultry sector segment of the econometric model has significant value in planning the effective use of Egypt's relatively scarce resources in the development and verification of the related elements of Egypt's Five-Year Plan for Food Security. While a large part of this program element involves the supply of highly technical services, it also includes the necessary hardware, program design, and support elements to bring such programs into reality in Egypt.
- VI-2 IMPROVED SELF-MANAGEMENT CAPABILITIES - This program is designed to provide the necessary on-site assistance and subsequent training of key personnel in technical, as well as management, skills. At the completion of this program element, it is anticipated that the poultry sector will have "stand-alone" management capabilities.

VI-3 PUBLIC SECTOR CONVERSION TO PRIVATE SECTOR - This program concerns the transfer of production capacities to private sector operations on a disciplined basis. The current shortfall of poultry product/high quality protein food would be significantly worsened if the public sector production units were to stop production at any time. Yet, Egypt does not yet have sufficient private sector capability, or even desire, to take over the public sector production units. Market and other conditions in the Egyptian Poultry Sector currently are such that it would be extremely difficult to convince foreign investors to also take over such production units. Therefore, the MATHTECH team believes that a disciplined program, developed in conjunction with other programs to lessen or eliminate the risks to the private sector which inhibit takeover of public sector production units, must be implemented if this objective is to be reached. This will require both in- and out-of-country activity and technical assistance. The purpose of this program element is to identify the constraints to such a conversion, to develop the necessary elements by which such constraints may be overcome, and to work with private sector elements which would be involved in such a transfer.

* SUMMARY

The reader will note that additional training of Egyptian sector personnel has been included in almost every program element listed. The results achieved during the last year of the Poultry Improvement Project Training Program have been extremely good. However, the number of key persons trained during the entire Poultry Improvement Project program has not been sufficient to make any significant impact on the poultry sector as a whole. Regardless of the action taken and recommended herein, we strongly recommend that the Training Program of the current Poultry Improvement Project be extended for at least another year beyond the current project's completion date. If and when the program elements herein are enacted, the Poultry Improvement Project Training Program extension can be appropriately adjusted.

PROPOSED PROGRAM TITLES (SEE DESCRIPTION FOR GENERAL DETAILS)	SECTORS IMPACTED							BENEFITS IF PROGRAM IS IMPLEMENTED					ESTIMATED COSTS (000)						
	Poultry Production		Hatcheries (Suppliers)					YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL PROGRAM	YR 1	YR 2	YR 3	YR 4	YR 5	
	Public	Private	Private	Public	Public	Private	Other (Foreign)												Other (Local)
III VETERINARY & EXTENSION SERVICES																			
III.1 Evaluation & Needs Assessment	*	*	*	*	*	*													
III.2 Training & Technical Assistance	*	*	*	*	*	*													
III.3 Equipment & Materials	*	*	*	*	*	*													
Capital Expenditures (Transport, Health, Etc.)	*	*	*	*	*	*													
Commodities (Vaccines, Needs, Etc.)	*	*	*	*	*	*													
IV POULTRY HEALTH/VACCINES/PHARMACEUTICALS																			
IV.1 Improved Management & Utilization	*	*	*	*	*	*													
IV.1.1 Technical Assistance	*	*	*	*	*	*													
IV.1.2 Training of Personnel	*	*	*	*	*	*													
IV.2 Supply of Materials - Vaccines, Pharmaceuticals, Etc.	*	*	*	*	*	*													
IV.2.1 Self-Produced	*	*	*	*	*	*													
A. Upgrade Existing (Vaccines)	*	*	*	*	*	*													
B. Pre-Investment Study (New Plant)	*	*	*	*	*	*													
C. New Vaccine Plant	*	*	*	*	*	*													
D. New Pharmaceutical Repackaging Plant	*	*	*	*	*	*													
IV.2.2 Improved Quality Control	*	*	*	*	*	*													
A. Import SPC Eggs	*	*	*	*	*	*													
B. New SPC Farm	*	*	*	*	*	*													
C. Import/System Inspection (Labs)	*	*	*	*	*	*													
IV.2.3 Improved Disease Diagnosis (Labs)	*	*	*	*	*	*													
IV.2.4 Improved Delivery System for Disease Control	*	*	*	*	*	*													
A. Storage & Handling Facilities	*	*	*	*	*	*													
B. Poultry Health Stations - Rural	*	*	*	*	*	*													
C. Mobile Hwy. System - Rural	*	*	*	*	*	*													
V POULTRY PRODUCTION/MARKETING																			
V.1 Market Stabilization (Exporting System)	*	*	*	*	*	*													
V.1.1 Market Information System	*	*	*	*	*	*													
V.1.2 Distribution/Storage Program	*	*	*	*	*	*													
V.2 Processing & Distribution	*	*	*	*	*	*													
V.2.1 Slaughterhouse Availabilities	*	*	*	*	*	*													
V.2.2 Refrigerated/Frozen Storage	*	*	*	*	*	*													
V.2.3 Packaged Poultry Distribution to Increase No. Consumers	*	*	*	*	*	*													
V.3 By Products Utilization - Rendering	*	*	*	*	*	*													
V.4 Improved Production Unit Output	*	*	*	*	*	*													
V.4.1 Facilities/Equipment Acq. (GPC/Private)	*	*	*	*	*	*													
V.4.2 Improved Facilities/Equip. (GCC)	*	*	*	*	*	*													

