SPECIAL REPORT

POULTRY HEALTH SITUATION IN EGYPT
(Including Pharmaceuticals, Biologicals, Vaccines, Medicants and Additives)

INTRODUCTION

The original project paper and background information on the Poultry Sector of Egypt and for the Poultry Improvement Project indicate the major thrust of the activity relating to this Task as originally outlined and as being related to the availability, production and use of pharmaceuticals, biologicals, vaccines, medicants and additives. No identification of the existence of abnormally high incidence of poultry diseases was noted as a problem. Therefore, subsequent team activity was directed not to the solution of poultry health problems, but to those relating primarily to the pharmaceuticals, vaccines, etc. themselves.

Due to those early instructions and during initial Pharmaceutical Team visits in Egypt, concentration was given to these areas. However, as this team coordinated their efforts and findings with other teams working in the hatchery, village and poultry production areas, it became apparent that the major problem was poultry health and diseases, with the pharmaceuticals, etc. situation being only a contributing factor. Therefore, prior to the second cycle of team visits to Egypt:

1. The objectives of this special task team was expanded to also include, and the identification changed to, Poultry Health.

2. The main concentration of the team was therefore redirected to the poultry disease problem, with concentrated efforts as required on the pharmaceuticals, etc. activities.

3. Team capability was expanded through the transfer of Dr. Malcolm Reid (noted poultry scientist regarding disease problems, and addition of allocated dedicated time of team members.

This report therefore encompasses the overall poultry health problem, including diseases and vaccines, etc. It contains both findings and recommendations for solution of the problems, short and long range.

While this report and its recommendations are to be reviewed by the MOA and AID, from which we request your written responses to the recommendations, the team has accelerated its consultancies to the sector regarding poultry health problems. However, the problems existing range far beyond the current capabilities of the project as it now exists, and will require further direction by the MOA and AID to provide the necessary solutions to this major problem area.

For the Team,

[Signature]

George O'Day, Project Director
SPECIAL REPORT - POULTRY HEALTH

(Including Pharmaceuticals, Biologicals, Vaccines, Medicants and Additives)

This report outlines the findings and recommendations of the special Task Team which initially concerned itself with problems relating to Pharmaceuticals, Vaccines, etc. relating to the Poultry Sector of Egypt. However, that team was expanded in January 1979 to include poultry health, and was reidentified as the POULTRY HEALTH TEAM. The conclusions of the original Pharmaceuticals Team, as well as other special Task Teams in the production, hatchery, and village areas, identified as a major significant problem the widespread existence of poultry diseases throughout Egypt.

Therefore, during the January, February and March, 1979 visits of the Poultry Health Team, in-depth concentration of effort was applied to the disease problem and a more finite understanding obtained of these problems areas, including:

1. The importance and variety of diseases present in flocks of different sectors of the poultry industry
2. Disease control measures
3. The quality and quantity of locally produced vaccines
4. The variety and availability of poultry drugs
5. The poultry diagnostic facilities available in Egypt
6. The status of pullorum-typhoid diseases.

I. IMPORTANCE AND VARIETY OF DISEASES:

It became obvious to us and to members of other teams that diseases are one of the major problems, if not the major problem, facing the developing poultry industry in Egypt. Two diseases, Newcastle and salmonellosis, including pullorum "typhoid and pentatyphoid" are the major two disease entities plaguing the industry. Obviously, other diseases exist, but are overshadowed by the devastating effects of Newcastle and salmonellosis. This disease picture is true of the three segments of the Egyptian poultry industry; namely, public, private and village flocks.

The velogenic viscerotropic neurotropic varieties of Newcastle disease (VVND) virus are prevalent in Egypt. These varieties can cause morbidity and mortality up to 100% in unvaccinated flocks. Irregularly vaccinated flocks can also suffer high morbidity and mortality. The regular use of high quality vaccines similar to those used in the Western World provide good protection against the velogenic viscerotropic varieties of the virus. Reports of good control of the disease achieved by the use of imported vaccines were heard from General Poultry Company (GPC) personnel and some owners of private flocks.
I. IMPORTANCE AND VARIETY OF DISEASES (cont'd):

Salmonellosis is apparently a real problem in flocks of different sectors. Paratyphoid infections are very common in public and private sector farms. Although no data is available on the incidence of these infections in village flocks, there is no reason to not believe that these infections are widespread in these flocks. The pullorum typhoid group of Salmonellas are prevalent in village flocks. Salmonellosis can cause morbidity and mortality of up to 100 percent in young birds; in older birds there is very little mortality, but chronic infections with S. pullorum and S. gallinarum can lead to impairment of reproduction performance.

Other diseases that are recognized on the basis of clinical signs or gross examinations are Marek's disease, lymphoid leucosis, fowl pox, gumboro, avian encephalomyelitis, and airsacculitis. The latter condition is probably caused by Mycoplasma gallisepticum and complicated by Escherichia coli. Aspegilleris, spirochetosis, coccidiosis and worm infestations are some of the other recognized problems. Although there is evidence of infection with infectious bronchitis virus, no diagnosis is made of that disease. No reports have been made in Egypt of the presence of infectious laryngotracheitis. There is always the possibility that the disease exists but has been misdiagnosed.

Generally speaking, most of the common diseases of poultry encountered in the Western World do exist in Egypt. Diseases that do not exist, or are not currently diagnosed, will probably make an appearance as soon as Newcastle and salmonellosis are brought under control. One other reason for this prediction is the free flow to Egypt of eggs and day-old chicks from Europe, where some of these so-called (nonexistent diseases) are common.

II. DISEASE CONTROL MEASURES:

As indicated in the preceding write-up, Newcastle and salmonellosis are the major diseases that an Egyptian poultry pathologist worries about. The 1978 summary of diseases diagnosed by the Central Poultry Disease Diagnostic Laboratory of the AHRI (see 070 report of February 28, 1979) indicated that Newcastle disease virus was isolated from 815 of 1,396 cases believed to be caused by virus infections. Salmonella organisms were isolated from 2,150 or 7,231 cases believed to be induced by bacterial infections. We do think that under the present circumstances this is a justifiable attitude, because of the devastating effect of these two diseases.
II. DISEASE CONTROL MEASURES (cont'd):

Vaccination schedules used for broilers in the public and private sectors vary within farms, as might be expected. The only vaccines used in broilers in Egypt are Newcastle vaccines. GPC, Ismailia, and Egypco use only imported Newcastle vaccines. Most of the private flocks are vaccinated with imported vaccines, but some still use locally produced vaccines.

Layers operations which are mostly GPC owned (with one exception we know of) vaccinate, besides Newcastle, for Marek's disease, gumboro, avian encephalomyelitis, fowl pox, fowl cholera, and occasionally for spirochetosis. Except for the spirochetosis vaccine, all the other vaccines are imported. Parent flocks are vaccinated for the same diseases as for layers.

Village flocks which are used as dual type birds are vaccinated only for Newcastle. Only locally produced vaccines are used in village flocks.

In discussions with veterinarians from GPC, Ismailia Poultry Company and Egypco and some owners of private flocks, it became apparent to us that the imported Newcastle vaccines have contributed substantially to the control of the disease. This same picture is apparently true also of imported vaccines for other diseases used in layers and parent flocks operations. Yet, the fear of Newcastle has created an interesting attitude, not based on much scientific knowledge, in the mind of the Egyptian veterinarian. This attitude is expressed in a policy of overvaccinating. As an example, Egypco vaccinates broilers at 7, 18, 28, 38, and 45 days of age. Regardless of this and other minor problems, it seems to us that imported vaccines used properly have significantly contributed to the control of diseases in public and private flocks.

The situation in village flocks is rather depressing. Essentially, the only vaccine available for this sector is the locally produced Newcastle vaccine. The above statement has to be qualified yet, because this vaccine is not always available as will be discussed later. Consequently, it can be stated that disease control in village flocks by vaccination is essentially lip service. The vaccination service for village flocks offered by the MOA veterinary clinics can be considered, in our opinion, as a point of dissemination of disease (see the enclosed report on the visit to Imbaba).
II. DISEASE CONTROL MEASURES (cont'd):

Control of diseases for which no vaccines are available, such as salmonellosis and mycoplasmosis, is another depressing subject. At the GPC and private flocks level, control is achieved by literally dumping a great variety and quantity of antibiotics and chemotherapeutic agents. These drugs are injected or mixed with water or feed and introduced to the birds throughout their lives. In village flocks the situation is even worse. The only drug that the MOA can afford to use for stocking its veterinary clinics is furazolidone and, for that matter, only very small quantities of it could be obtained.

It is one recommendation that a multifaceted approach for the control of diseases should be developed. The judicious use of drugs is useful in the short run, but in long terms such a policy is not acceptable. There is a wealth of information in the scientific literature on the control of diseases for which no vaccines are available which should be drawn upon to formulate such programs. The subject of pullorum and typhoid control will be dealt with later.

III. THE QUALITY AND QUANTITY OF LOCALLY PRODUCED VACCINES:

This subject was discussed in detail in this team's earlier report. More information was gained during this visit on the locally produced vaccines at the MOA facility at Abbasia. This information supports the two main points raised in the earlier report; namely, Abbasia is not able to meet the local demand, and the poor safety and efficacy record of the vaccines produced. The information in the following table was provided by Dr. Ismail Sabry, head of the poultry diseases and epidemics division of the MOA. The production figures in the table are in agreement with figures obtained from Abbasia. The requirements figures are debatable. It should be understood that these are the requirements of the MOA for stocking its veterinary clinics that vaccinate village flocks. Notice that the requirements in the table for the intraocular (F strain) Newcastle disease vaccine is the same as that for the intramuscular (Komarov strain). The F strain is used only for newly hatched chicks (less than one week of age). This indicates that the requirements are calculated on the basis of one F strain and one Komarov strain vaccination during the lifetime of a bird. This is simply inadequate. Obviously, it also becomes clear that the requirements figures in the table are severely undercut. There is no vaccine which will provide such lasting immunity.
III. QUALITY AND QUANTITY OF LOCALLY PRODUCED VACCINES (cont'd):

It becomes clear from these figures and from the available information on the number of poultry in Egypt that Abbasia is not capable of producing NCDV in sufficient quantity to cover local demand.

<table>
<thead>
<tr>
<th>NAME OF VACCINE</th>
<th>PRODUCTION</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newcastle (Intramuscular)</td>
<td>109,357,000</td>
<td>150,000,000</td>
</tr>
<tr>
<td>Newcastle (Intraocular)</td>
<td>84,554,000</td>
<td>150,000,000</td>
</tr>
<tr>
<td>Fowl Pox</td>
<td>8,260,000</td>
<td>10,000,000</td>
</tr>
<tr>
<td>Pigeon Pox</td>
<td>450,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Haemo. Septicaemia (Rabbits)</td>
<td>200,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Fowl Cholera</td>
<td>893,800</td>
<td>8,000,000</td>
</tr>
<tr>
<td>Duck Cholera</td>
<td>608,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Turkey Cholera</td>
<td>288,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Spirochaete</td>
<td>427,500</td>
<td>1,500,000</td>
</tr>
</tbody>
</table>

Antigens:

| B.W.D. Stained Antigen             | 334,000 doses | 10,000,000 |
| B.W.D. White Antigen               | 1,750        | 400,000     |

On the subject of efficacy of the vaccines, we were able to obtain data from one particular flock on this subject. Three month old birds from this flock were vaccinated twice for NC; once using the F strain at five (5) days of age, and another using the Komarov strain at two and one-half (2½) months of age. At 3 months of age an outbreak of NC occurred in the flock, and at that time some birds were bled and some were tested for an NCDV antibody titer. The results showed that of 22 birds examined; 6 birds had no titers, 5 birds had 1:2 titer, 5 birds had a titer of 1:4, 3 birds had a titer of 1:8, one bird had a titer of 1:16, and the last two birds had titers of 1:32. These low titers (of lack of titers) are an indication of the lack of efficacy of the vaccine.
III. QUALITY AND QUANTITY OF LOCALLY PRODUCED VACCINES (cont'd):

There are several other reports we heard about the lack of efficacy of Abbasia vaccines. There are also reports of the lack of safety of the vaccines. Several outbreaks of Newcastle were reported that occurred a few days following vaccination of birds that were previously vaccinated. As a matter of fact, we visited one of these farms that was experiencing such a problem.

As indicated in this team's previous report, the facilities at Abbasia are in such rundown condition that makes it easy to partially understand why the lack of efficacy and safety of the vaccines. One other problem with the Abbasia vaccines is the lack of a dependable source of eggs to grow live virus vaccines. For all practical purposes, the eggs currently used could be naturally infected by any number of poultry pathogens that could contaminate the vaccine. The other problem is the choice of the Komarov strain for one of their vaccines. Although this strain is supposed to be mesogeic, field observations indicate that this strain is a virulent strain. Because the demand on the locally produced NC vaccine is far exceeding production, a black market for this vaccine has been active. It was indicated to us that 1,000 doses of vaccine are being sold in the black market for LE 10. This is a substantial amount of money by Egyptian standards. This suggested to us, as well as others, that some irresponsible people are taking advantage of the situation and are overdiluting the vaccine so that they can spare 1,000 doses or more to be sold in the black market. Certainly, this is a contributing factor in the reported failure of the immunity induced by the vaccine.

The above observations concentrated mainly on Newcastle vaccine, since these are the vaccines in demand and this is the disease everybody is concerned about. The only other viral vaccine produced at Abbasia is Fowl Pox. We have not heard of any problems about the efficacy of this vaccine. However, this vaccine is also produced in non-SPF embryonated eggs, and the possibility of its contamination with other infectious agents is real.

According to GPC personnel, imported vaccines are bought on tender for approximately the same cost as local vaccines. The private sector does not have this luxury. Imported vaccines are sold to the private sector at twice the cost of the local vaccine.
III. QUALITY AND QUANTITY OF LOCALLY PRODUCED VACCINES (cont'd):

It is apparent to us that some major changes have to be made in the area of vaccine production. There are enormous gains to be made in Egypt that will cost relatively very little if a new poultry vaccine production facility is constructed. A small farm for production of SPF eggs should be part of this facility. The heads of the current poultry vaccine production units are capable people, but the younger generation needs a lot more training on vaccine production than they are currently getting.

IV. THE VARIETY AND AVAILABILITY OF POULTRY DRUGS:

Although we have seen a variety of poultry drugs advertised in Egypt, some important drugs available in the United States were not available. Examples of the unavailable products are gentamicin and lincomycin. These are very effective drugs that proved their superiority in the United States. There is also a variety of combination drugs manufactured in Europe that certainly would not be permitted in the United States. Examples of these would be combinations we have seen that contain 3 or 4 antibiotics and, for added measure, few amino acids and vitamins are added in another recipe. It was obvious to us that some of these combinations contain antagonistic ingredients and the interrelationship between other ingredients is unknown. In other words, it is an open market and everything goes. Yet, some of the ethical companies are apparently hesitant in entering this market, and those that did are selling poultry drugs as an offshoot of their human drug sales.

Imported veterinary drugs are taxed at the rate of 23% of the cost. However, it was mentioned to us by the Undersecretary of Agriculture for Animal Health that drugs imported for use by any governmental agency, such as GPC and MOA farms, are exempted from this high taxation. This policy of taxation does not lend itself to the GOE efforts to expand its human food resources. It is a very high rate of taxation that places a heavy burden on the private producers who theoretically pass it on to the consumer. As a result of this high rate of taxation, veterinary drugs are expensive; human drugs are relatively cheaper. Consequently, some private producers are buying human drugs to treat their chickens.

Most of the veterinary drugs are sold by the middlemen who are charging exorbitant prices for these drugs. We were also told of a thriving black market in poultry drugs.
IV. THE VARIETY AND AVAILABILITY OF POULTRY DRUGS (cont'd):

As far as the use of poultry drugs, this is dependent on the industry sector involved. The public sector advertises for bids, and gets the best prices. Consequently, drugs are available for this use and are definitely overused. The private sector suffers the most in this area, and we heard numerous complaints about how the middlemen are putting the squeeze on these producers. The village flock sector essentially has very little available drugs. As mentioned earlier in this report, only flurazolidone is sometimes available in the MOA veterinary clinics for treatment of salmonellosis.

V. THE POULTRY DIAGNOSTIC FACILITIES AVAILABLE IN EGYPT:

The diagnostic facilities for poultry diseases are operated by the Animal Health Research Institute (AHRI). There is one central laboratory in Cairo and 18 regional labs distributed throughout the country (see list enclosed). Three (3) more regional labs are to be in operation in 1980. Two (2) reports are enclosed on the personnel involved and some of the diseases diagnosed.

It becomes obvious to us that the diagnostic facilities are functioning below accepted standards. The central lab which is supposed to be the final referral center lacks space, equipment, reagents and expertise. Yet, it has an overabundance of personnel. It certainly is not a joke that they have so many people employed they do not have enough chairs for them.

In modern poultry diagnostics, post mortem examination is only a supplement to other lab techniques (e.g., isolation, serology, etc.) in making a correct disease diagnosis. Top of the barrel diagnosis of poultry diseases is a thing of the past; yet, this is essentially the only thing done in these diagnostic labs in Egypt. Isolation attempts are only, sometimes, done for Newcastle disease virus. We even doubt the validity of the results of this procedure, since the embryos used for inoculation do not come from Newcastle disease free flocks.

There is an urgent need for a major change in this area if the industry is to make any further progress. Control of diseases goes hand in hand with the availability of a good diagnostic service.
V. **POULTRY DIAGNOSTIC FACILITIES AVAILABLE IN EGYPT (cont'd):**

GPC has its own so-called diagnostic facility (see enclosed report on visit to Mataria). The activities of this lab fall far short of being acceptable as a diagnostic facility. This lab concentrates mainly on monitoring for NCDV and salmonellosis. An expansion of this facility and a change in its mission is being considered, which we certainly would like to see accomplished.

VI. **THE STATUS OF PULLORUM-TYPHOID DISEASES:**

These diseases are very widespread in the village flock sector. Very little data is available on the prevalence of these diseases in the private sector. In the public sector, our conversations with their personnel indicated that these diseases are under control. The workforce employed by both private and public sectors live in villages where these diseases are common; hence, it is always a possibility that these diseases can break into private and public sector flocks.

There is no cohesive control program for these diseases in the village flocks. The MOA efforts are essentially amateurish, unsustained attempts. The two current proposals for Monoufia and Kafr El-Sheik governorates are examples of this type of thinking.

We looked into the facility that produces all the pullorum-typhoid antigens produced in Egypt. The antigens produced compared reasonably well with those manufactured in the United States that we took with us to Egypt. The method of standardization of the Egyptian antigen is very crude (see enclosed report). This is done on volume basis. The laboratory needs upgrading and again personnel training is badly needed.
VII. RECOMMENDATIONS:

Vaccine Production and Poultry Diagnostics:

Our observations during the last two month visits and our extensive discussions with our colleagues from other teams and our Egyptian counterparts indicated several areas that should be urgently dealt with.

We think, and our colleagues agree, that the two major areas which should bring the best cost-benefit ratio for the Egyptian Poultry Industry are the following:

1. Establishing and equipping a new poultry vaccine production facility
2. Establishing and equipping a new poultry diagnostic facility
3. Initiation of a program to control pullorum disease.

For control of diseases there are no alternatives for excellence, and the present facilities might be actually hurting rather than helping the industry. Diseases are of major importance, and the investment in these facilities is relatively inexpensive. We strongly recommend that this proposal should be given utmost attention.

It is not the intention of this report to consider the specifications and financing of these projects, but it is obvious that the GOE will need all the help it can get from the United States in initiation of these projects. We will be ready to contribute our ideas for these projects. It should be understood that our proposal refers to two different separate physical facilities...each with its own farm to produce SPF eggs. These projects should also include an extensive personnel training program in Egypt and the United States.

Poultry Drugs:

The GOE should be encouraged to cancel or reduce the 28 percent tax levied on poultry drugs. Drug registration should be in one agency. The government should seriously consider licensing of imported poultry drugs that have been approved by the U.S. Food and Drug Administration without further testing. Drugs that have been on the market in the U.S. and Europe, and which have undergone extensive field and lab testing and for which an extensive body of published scientific literature on their efficacy and safety fall in this category. On the other hand, combination drugs for which there is no proof of efficacy on safety should be regulated.
VII. RECOMMENDATIONS (cont'd):

As suggested in our previous report, a pilot study should be initiated for the control of these diseases. This has to be a sophisticated, multifaceted, well financed, highly monitored program to ensure its success. It should be emphasized that village flocks are going to continue to suffer the 50% mortality reported earlier unless pullorum-typhoid diseases are brought under control. Again, this report will not deal with the specifics of such a program, but we will be ready to contribute our ideas for such an initiative.

It should be mentioned that during our visits (with our Egyptian counterparts and public and private personnel associated with the poultry industry), we provided advice on specific poultry health problems. We also made suggestions and recommendations on a variety of disease control programs. The recommendations listed earlier were discussed directly and indirectly with our colleagues on the other teams and with some Egyptian officials.

The control of the poultry disease problem will require both short range immediate action, as well as longer term planning and action. In preliminary discussions with United States producers of vaccines, interest was exhibited to provide limited technical cooperation, providing funding for any subsequent new facility would be available from sources other than themselves. Further investigation with such potential other sources, such as The World Bank and U.S.A.I.D indicated possible interest, but no commitment at this point, to perhaps be involved in development of necessary funding.

Finally, we recognize the fact that building new laboratories and facilities and stocking them with the most sophisticated equipment is not the answer to all problems. We certainly believe that the human factor will be quite important in any program which will bring the poultry disease problem under control. This, in turn, should improve the productivity of the poultry flocks in Egypt while reducing the current costs of production and improving the input of high quality annual protein into the Egyptian population.

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