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Evaluation
Poultry

CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

SPECIAL EVALUATION

PP 2

POULTRY DEVELOPMENT PROJECT
279-0019

July 1, 1980

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POULTRY DEVELOPMENT PROJECT 279-0019

Daniel Andrews, Keith Roberts, Patrick Morris
July 1, 1980

13 Summary

The Poultry development project was approved on February 18, 1975. The Project agreement was signed May 19, 1975. The project was planned to last three years with a total US contribution of $1.1 million and a YARG contribution of $143,000. The project was amended several times during its life. Final US contribution was just under $2 million and the YARG contribution reached $674,000. The final termination date was extended by one year. The project was turned over to the YARG in May 1979.

The project was originally conceived to increase the production of poultry and eggs in Yemen. The two major objectives of the project were to: (1) Demonstrate the technical feasibility of small-scale flocks including both egg and broiler units, and (2) Build the base for a technical poultry support unit in the Ministry of Agriculture. Because other donors and commercial operators began to move into broiler production and because the broiler industry grew at a much more rapid rate than was originally anticipated, the project was changed early on to concentrate on egg production.

The stated project goal of increased production of poultry and eggs in Yemen has been generally achieved. This is especially true of increased poultry meat production. Egg production has

grown slowly because the original economic factors upon which the project was based changed radically over the life of the project. The cost of chicken feed now makes locally-produced eggs more expensive than imported eggs. The project expected that locally produced sorghum could be included in the feed ration to keep feed costs down. However, present sorghum prices cannot compete with imported feed. There is a question then whether there is an economic base for a national expansion of egg production in Yemen at this time. The economics of production favors poultry meat over eggs.

The project purpose of demonstrating the economic and technical feasibility of poultry production practices was largely achieved. The two centers at Sana'a and Taiz confirmed the hypothesis that an egg producing enterprise for the small farmer sector was feasible in the Yemen environment.

Practically all of the proposed project outputs were achieved or over-achieved. More physical facilities were built than were originally contemplated. While the project had initial delays, the two demonstration centers were completed almost on schedule. The research facility successfully established the breeds of chicken adaptable to the Yemen environment. Rations were formulated and tested. Management systems were adapted and applied to Yemen conditions. Products from the centers--chickens and eggs--were sold or distributed in excess of those contemplated in the original project design. The training program was completed substantially as planned and the project was successfully transferred to the Ministry of Agriculture in May, 1979. Since the transfer, the contractor has continued to provide TDY technical assistance to the

MOA with funds unused by the project at time of transfer. While there was an initial deterioration in project activities after the transfer, there are signs that the MOA is now taking renewed interest in the project.

14 Evaluation Methodology

The purpose of this evaluation was to measure the progress made by AID Poultry Project 279-0019 during the period May 1975 through May 31, 1979. The primary methods used to prepare this report were: A study of all project documents available through the AID office in Sana'a including a selected list as given in the attached reference Appendix A; personal interviews with MOA personnel and their administrative advisors in Sana'a and Taiz; interviews with the poultry project managers on site at Sana'a and Taiz; visits with an Yemeni Agri Director in Mabar and a World Bank Credit Manager in Taiz. Visits were made to 12 cooperator egg farms or family units in Beni Hashish, Mabar, Sana'a and Taiz. Interviews were conducted with both private and public supported project managers in both the Sana'a and Taiz areas. The names and locations of those interviewed are given in appendix C.

15 External Factors

Socio-economic: The period 1976-79 witnessed an expanding money supply derived through the remittances of Yemeni laborers working in foreign countries. These remittances financed greatly increased food imports including poultry and eggs. Lack of labor and the increased money supply have caused local grains to increase in price until they now equal or exceed the price of imported complete poultry diets. This was not foreseen by the original projects.

Host Government Priorities: The Yemeni government now places high priority on the resolution of ground water resources. Recent indiscriminate drilling and pumping of wells by private individuals jeopardized a major national asset. At the beginning of the poultry project the government placed high priority on determining if poultry and eggs could be economically produced locally and improve nature diets which were deficient in animal protein. Commercial enterprises are providing large scale poultry meat production, answering the meat question in the affirmative. Eggs can be produced locally at competing prices but are presently less profitable than poultry meat production. USAID transferred and the MOA/YARG accepted the completed poultry project centers at Sana'a and Taiz on June 30, 1979. The official ceremony was conducted August 5, 1979, thus establishing the responsibility with the host government for their continuation.

Validity of Assumptions: The original log-frame correctly determined that poultry and eggs would be in great demand and that farmers would start to grow poultry for profit. They underestimated the tremendous demand which has supported the rapidly expanding domestic broiler industry and the many-fold increase in imports of poultry meat and eggs. Poultry meat was the second largest and birds (chicks) and eggs the 11th largest agricultural import in 1978.

Locally produced feedstuff has been unable to meet demand and imported complete diets are more economical than native grains. The assumption that the cost/price ratio of poultry and eggs would allow a profit and provide incentive was correct to a degree. However, limitation of capital, trained personnel on the one hand and the business acumen of the Yemeni on the other has caused them to concentrate almost entirely on broiler production with its rapid turnover of product and the opportunity of premium prices. Egg production consists almost entirely of the small flocks started through the poultry projects. The face severe market price competition from imported eggs and a complete absence of quality consciousness on the part of the consumer.

16 Imputs

Inputs anticipated in the beginning of the project included long and short - term technical assistance, participant training, commodities, construction and other costs to be financially provided by AID. The YARG contribution was to be made mostly in personnel and other costs.

The total costs of projected AID inputs amounted to approximately $1.1 million for the 4-year contract. By the end of the contract almost $2.0 million had been spent. The additional $0.9 million was added by amendment to the contract and was well documented.

The YARG costs of inputs anticipated in 1975 approached $143,000. By 1979 the YARG had contributed roughly $674,000. The 1980 budget was about $445,000. The PROP prepared in 1975 anticipated 67 PM of long-term technical assistance and 18 PM of short-term technical assistance. By project termination time in 1979, 83 PM of long-term and 18 PM of short-term TA time was spent on the project. Participant training support expected in 1975 amounted to 92 PM. By 1980, 96 PM were accounted for. Financial support for anticipated contribution, commodity purchases and other AID costs was adequate. Two building sites (Sana'a and Taiz) and MOA personnel were provided by the YARG.

. Some delays in commodity shipments and MOA personnel appointments slowed activities, but did not cause default on final output achievement. During the first two years, commodities were often late in arriving. This was especially true for chicks, feed and equipment. Construction was also delayed because of labor and commodity aquisition problems. However, the team solved these problems and all anticipated inputs were in place by the end of project time.

The team arranged to purchase feed from the Yemen Dutch Poultry Project. Chicks were imported with the larger shipments brought in by Nasser and Son.

Veterinary services were provided by the British Veterinary Team. We feel that Cal Poly team should be commended for establishing workable relations with other donor-assisted projects. Had these services not been available the poultry project would have had to increase its own investments substantially or faced serious delays.

17 Outputs

The inputs were adequate to achieve the EOPS and Outputs described in the PROP prepared in late 1974 and signed in early 1975. A revision of the log-frame in September 1975, provided more specific output magnitude. The outputs for both are included in Table 1 along with achievement estimate. Comments on short falls will foll the Table.

TABLE 1. OUTPUTS ANTICIPATED AND REALIZED, 1975-79

Outputs	Anticipated at Beginning	Realized at Ending
1. 2 operating demonstration training farms	Sana'a 4 laying houses 3 brooder houses 1 utility building 1 storage office bldg. 1 feed building Taiz 2 laying houses 1 brooder house 1 utility buildng 1 storage office bldg. 1 feed room	 4 laying house,1 cage facility 4 brooder houses 1 utility building 1 storage office bldg. 1 feed building 4 laying houses 3 brooder houses 1 utility building 1 storage office bldg. 1 feed room
2. Research capabilities on housing, breeds, rations and management.	Established at both centers	Established at both centers
3. Products sold at both centers by June 1979	110,446 doz-eggs $140,078 2,000 cull hens 3,400 2,686 end inventory 7,870 12,600 broilers manure 240 Total $193,168	Approximately achieved except as noted later.
4. Training program completed for both centers	2 proj. managers 2 technicians 2 national advisors 1 disease tech. 25 extension workers 130 farmer-growers	2 proj. managers 2 technicians 2 national advisors none MOA did not make extension workers available 67+ farmer-growers
5. Project transfer to MOA in 1979 (implied)	Transfer made	Transfer made

Comments on Table 1

Outputs 1 The Sana'a center was to be operational in July 1975 and fully completed in June 1977. It was completed in September 1977. The Taiz center was to be operational in January 1976 and fully completed by December 1977. It was completed in April 1978. In Taiz original specifications were exceeded by 2 additional brooder houses and 2 additional laying houses. The short falls in time were due to input aquisition problems. Still the contractor should be commended for the successful achievement of these outputs.

Output 2: The team successfully used the facilities and program to determine the feasibility of establishing a poultry industry for small-flock producers. The facilities met the peculiarities of the Yemen environment, breeds of chickens were tested and found to be adaptable to the Yemen environment, breeds of chickens were tested and found to be adaptable to the Yemen small farm management. Rations using imported concentrate and local grains were formulated and tested with positive, but questionable economic results. Management systems were tested and modified for use in Yemen. The team should be commended for their vision and the degree of success in achieving their output.

locally produced feed economically practicable

Output 3: It is impossible to know the exact quantities of products sold, given away, used in research, etc. but eggs, hens and inventories were approximately as anticipated. If any variance from original projections existed it was on the plus side because of the additional laying houses built at Taiz. One major program adjustment was made. Commercial interests expanded large scale broiler operations to the point that by mutual agreement of the contractor, USAID/Yemen and the MOA, the broiler phase was dropped from the project. Cooperation between the project and the broiler industry was favorable to the project.

Commercial interest upset feed

Broiler producers Mr. Sallak and Mr. Omeri, brought in chicks for the project with their air shipments. Private sector involvement

Output 4: The training program was completed as planned except for the number of farmer-growers and extension personnel trained. After the program was underway, it became apparent that just placing birds on farms was not enough. The team wisely required cooperative farmers to participate in formal center training programs for 5 days. This action slowed the willingness to participate. Before the formal program, training at the farm in a more informal situation was done with spotty success. After the change in 1978, 38 farmers took the center courses, 3,190 pullets were distributed to 67 farmer-growers and 446 roosters were distributed to an unknown number of farms located in villages at greater distances from the center. These were to improve back-country farm flocks. No firm results are available at this time.

Although the out of country training program was mostly completed as planned, the end results were not as assumed. One of the 2 project managers managers has left the project. Two trained and expected-to-be MOA advisors left the project for higher paying commercial-sector jobs. One was placed in another MOA position. A disease technician as such was not trained because of the excellent services available through the British Veterinarian Project and their trained personnel. None of the 25 people to receive training in extension were trained because the MOA could not find personnel to assign to the project. At the present time the MOA has a trained poultry specialist at Sana'a and another at Taiz. Any reduction in training capabilities was either changed after the project got underway or occurred because the original assumptions concerning MOA's ability to provide the

necessary incentive to keep trainees in the Ministry did not hold. The evaluation team feels that output achievement for this project was remarkable and reflects the wisdom displayed during the planning as well as during the implementation stage.

Output 5 (implied): The project was transferred to the MOA during May and June 1979, and official ceremonies were completed on August 5, 1979. Since that time problems in management and level of program development have arisen as would be expected. However, at this time (June 1980) center managers and MOA decisions seem to be solving problems in a way to encourage expansion of farmer participation. (See Annex B for recommendations for AID/CID assistance to the MOA.)

18 Purpose

The project's purpose was:

"Establish and demonstrate economic and technically feasible poultry production practices."

The degree that outputs were achieved lead directly to the achievement of the project purpose. The establishment of two proposed research and demonstration centers--Sana'a and Taiz--confirmed the hypothesis that an egg producing enterprise for small farmers was feasible in the Yemeni environment. These two centers continue to attract interest among farmers who are looking for supplemental enterprises for their small farms or from remote villagers who want small flocks (3-5 hens) within the village home sites. The spread effect has reached into broiled production on relatively small scale operations, also, even though the project eliminated broiler production from its program because of the similarity of chick rearing methods and general housing

requirements in broilers. Even though the MOA has severe manpower shortages, it has made wise decisions since the transfer in 1979 concerning management policy showing that it acknowledges the importance of the project.

19 Goal

The project Goal was:

"Increased production of poultry and eggs in Yemen."

The high level of purpose achievement leads to a limited achievement of the project goal at this time. The project increased poultry and egg production on at least 70 farms during the life of the project. That means that unknown numbers of neighbors of these farmers had more poultry and eggs to eat than before the project, and that the 70 farmers had more income, either in money or kind, than before. The spread effect is impossible to measure precisely but the fact that many producers have continued, often expanding and diversifying their poultry enterprise speaks well for the project. Other producers both experienced and those requesting initial information continue to visit the center. The MOA has been able to maintain farmer interest. There has been a phenomenal increase in poultry meat production in the country. This can be attributed principally to the companion Dutch-Yemeni sponsored project and other commercial ventures which concentrated on large-scale productions of broilers and the British Veterinary team concentrating on animal diseases associated with poultry. The USAID project concentrated on improving living standards of the poor through the introduction of chickens for egg production. All of the expatriate agencies cooperated and complemented the growing poultry field. The time was right for large increases in poultry production for meat. Egg production continues to face still

competition from imports. The question, unanswered by this evaluation is whether, under present economic circumstances, there is any justification for stimulating egg production on small farms on a national basis. There is little question but what layers can succeed in a few years on large farms.

20 Beneficiaries

The greatest short-term impact of the project has been on the 70 or more cooperator farms. An additional source of income was developed that did not require additional high priced labor. In some cases where women had an interest, they and the children made the major input into the small poultry flock. In these cases (number unknown at this time) egg production was a supplemental enterprise. For 2 known cases near Sana'a farmers expanded flock size and diversified into broilers because of the training received through the project. Other family members and neighbors to cooperator farms were benefited because of additional eggs and poultry meat available to them. Rooster distribution from the project into more distant locations has had an unknown effect on quality of farm flocks. The impact cannot be factualized at this time, and it may not become obvious for some time in the future.

The beneficial impact on the total population and egg import substitution is miniscule at this time. It is certainly overshadowed by the phenomenal growth in commercial broiler production during the project years. However, it has demonstrated to a part of the small farm sector that it can improve its economic and dietary positions through raising small layer flocks of good quality chickens. In time, eggs produced on small farms could make an impact on egg import substitution since there are about 800,000 small farms.

Even though the training phase of the project has not accrued to the direct benefit of the project to the degree anticipated, at least 2 trainees are working in the private poultry sector, 2 are acting as extension specialists, 1 is a broiler plant manager and others will remember their training and use it in indirect ways.

21 Unplanned Effects

Trainees did not return to the project with the exception of Mr. Abdul Karim Aboutaled who is manager of the Sana'a center. Mr. Abdullah Al-Rahoami, trained in Cairo, was assigned to the Extension Service. Mr. Mohammad Abdullah Al-Heleli, trained in Texas, was assigned by the MOA to a World Bank project. Mr. Hassan M. Al-Fasail, trained at Houston State, position unknown but presumed to be in the private sector. Mr. Mohammad Ali Al-Kohleni is training at Cal Poly, a position will be determined when he returns. At least 2 (surely more) cooperator farmers have included broiler production and chick distribution to their poultry activities.

22 Lessons Learned

1. Effect of unpredictable macro-factors on project feasibility.

The project originators did not predict the large-scale migration and remittances phenomena which turned many of Yemen's routine economic projections on their head. The economic conditions existing at the beginning of the project--low cost sorghum, high-priced imported eggs--were changed abruptly in 1976 when lack of labor and large-scale remittances increased the money supply and drove up local prices, including sorghum. Even though imported complete poultry diets replaced locally produced feeds at a cost savings, locally produced eggs in many areas became more expensive than imported eggs. As long

as the situation continues, there is unlikely to be a sizeable expansion in local egg production. This is a dramatic illustration of the effect of macro-economic events on project implementation. Macro-factors and macro-projections must be given attention in project planning at the micro-level.

2. Best use of capital.

Yemeni, choosing poultry as their field of investment, are smart enough to place their limited capital where it will make the most return with the least amount of risk and effort. Broilers, with a two month turn around period, fit local religious and service customs and demand premium prices. Fresh farm eggs are not yet appreciated by local customers and involve more risk of capital.

3. Priority.

One should not expect top-priority response on a mid-priority project from a government with severely limited resources.

4. Material vs. mental change.

It is easier to build material objects such as chicken houses and equipment than it is to train the people to understand and maintain them.

5. The people.

The Yemeni are proud, courteous, fun-loving people who are experiencing fantastic cultural change. They, at the village level, need time to appreciate and understand such simple things as the difference between the modern day commercial laying hen and their primitive bantams. People living in a stone building designed thousands of years ago without water or sewer connections and serviced by streets laid out for donkeys should not be expected to appreciate or understand modern feeds and feeding techniques or light and temperature control.

6. The women's role:

Farm women's response to raising flocks of commercial egg birds is as varied as in other cultures. The care they give the chickens depends upon what they understand and care about doing. Good masters or mistresses have good flocks. Unfortunately the opposite is also true. While it may take special approaches to reach the Yemeni women who tend the poultry flocks of various sizes, the problems of acceptance will be more economic than social.

23 Special Comments and Remarks

This project has been reviewed within the approved outline which does not lend itself well to external circumstances, that is, either a goal is met or it isn't, the appraisal of success or failure is yes or no. The project as conceived by AID and completed by Cal Poly was excellent. It was in tune with the times. Differences in opinion regarding small vs. large farms as expressed by AID and the MOA were healthy. Both sides have many valid points.

Evaluation based upon the basic contract completion by Cal Poly and AID and acceptance of the poultry project centers at Sana'a and Taiz by the MOA scores the poultry project high on achievement of material things. It was unfortunately limited in its powers of self perpetuation. Since that time the MOA has taken steps to strenghten and utilize men and materials. The decision by this review team to elect to send only a few man months of temporary assistance to this project within the next year is based upon the conviction that the MOA will be successful and will gain strength in conducting its own program.

As the MOA determines the major role it wishes to associate the developing or guiding their fledgeling poultry industry, CID can provide technical expertise to assist them. The initial project did not address itself to improving the role of women. That subject was referred to later. In our opinion the role of woman did not enter as a factor of any significance. Individuals who like poultry will care for them within the framework of their society. If the family including the women, can be convinced that poultry will provide extra income which may be used to better their lives, then the social change will likely take place. On some small farms women have the major responsibility for production, on others men do most of the work. The trend in poultry management sex roles has not been estalbished at this time. However, commercial size operations are dominated by male managers.

ANNEX A

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A Partial List of People Interviewed During the Period

May 22 to June 26, 1980

Ministry of Agriculture - Gov. Yemen Arab Republic

Mohammed Sharafadin - Acting Director Gen. of Agri.
Abdulla Zabarah - Director Gen. Livestock MOA
Dr. Mustafa El-Mobasher - Advisor Livestock IBRD
Dr. Sid Ahmed Al-Shafir - Advisor Livestock SURDP
Yahya Shuga - Director Gen. Agri Sana'a Goveernorate
Abdul Karim Abou Taleb - Poultry Project Supervisor, Sana'a
Ahmed Al Sabry - Ext. Spec- SURDP Poultry Project Proj. Taiz

Commercial Poultry

William Whitterman (Mgr.) - Dutch-Yemen poultry Co. Sana'a
Ahmed Sama Mounib - Production Mgr. Sheba Poultry Co. Sana'a
(interview included Gen. Mgr. and Sales Mgr)
Abdula and Mohammed Omeri - Omeri Poultry, Sana'a
Ahumid Nasser - Nasser & Sons, Sana'a
Abdul Majid Kasim (Mgr.) - Al-Gend Poultry Farm, Taiz
Abdu Kawi Ahmed (Asst. Mgr.) - Al-Gend Poultry Farm, Taiz
Abd Abid (Credit Mgr.) - Taiz World Bank

Other Expatriates

Wally Swanson, American Save the Children
Director, British Veterinarian Team
Dr. Arthur Jensen, Ibb School Co-Director
Dr. Hamid (DVM), Ibb School Livestock Instructor
Nasser Rohaiem, Ibb School Agronomist
Dr. Mucid, Ibb School Horticulture

Ahmed Logman - Mabar, Laying flock
Ahamid Medini - Mabar, Agri Director
Abdul Thor - Yarim, broiler grower
Hag Gassm Negeim - Yarim, broiler grower
Abdula Moou Fadal - Beni Hosysh, Layers & broilers
Ali Abdid - Road to Saada, Layers

ANNEX B

Recommendations

The Evaluation Team makes the following recommendations to USAID/Yemen and CID concerning the Poultry Project:

1. Postpone for one year the decision to become involved in another long-term small-farm poultry project.

Since the project was transferred to the MOA in May-June, 1979, the MOA has made some decisions that indicate serious intent to make the project work. Among the decisions made are:

a. Poultry extension specialists (2) have been placed in Sana'a and Taiz to work with the producers and the project centers.

b. The MOA has recently re-established the bird and feed price subsidies which were dropped shortly after the transfer of the project to the MOA. The subsidies amount to 1 YR/kg. for feed and about 15 YR/bird. This action indicates a continued interest in expanding the project influence.

c. The MOA has kept both Sana'a and Taiz centers staffed and operating.. Admittedly, the level of operation has sagged since the transfer, but it is our opinion it is gaining strength at this time.

We suggest that it might be a mistake for AID to step in so soon with another long-term, sizeable program now. Delaying the decision for another year will give the MOA a chance to develop its skills in managing and extending such a project on their own.

2. Make available some short-term assistance to the project as needed during the next year.

Three technical people for one month each for two and 2 months for one should be funded through the CID Core Subproject. Two would come in January and February, 1981. Their principle assignments would be related to technical problems such as housing, bird care, extension methods, project management, etc. A related assignment would be to closely examine the economics of small-farm egg production in Yemen under present economic conditions. Are there localities in the country where local eggs cann compete in price with imported eggs? are there alternative feeds or feeding practices which can bring down the cost of local egg production? What benefits flow from the presently subsidized program? Do these benefits justify the investment? Should AID encourage the YARG to continue small-flock egg production? Their tour report should contain their personal evaluations and recommendations.

The third short-term expert should come in July or August, 1981. His primary assignment should be to evaluate the project since its transfer to the MOA in 1979. On the basis of his analysis, he should recommend whether or not there was a need for USAID/Yemen to remain involved in the project and to what degree. The approximate costs for the three-man program as explained above are developed in the following table:

Agricultural Development Support (Project 279-0052)

Core Subproject

1-TDY Personnel Costs--Poultry

Item	1981 Jan	Feb	July	Aug	Total
1- Poultry Specialist, 1 PM @ $3,000	3,000				3,000
2- Poultry specialist, 1 PM, @ $3,00		3,000			3,000
3 - Poultry specialist, 2 PM @ $3,000			3,000	3,000	6,000
4- Subtotal	3,000	3,000	3,000	3,000	12,000
5- 3% Merit Increase Factor	.03	.03	.03	.03	
6- Merit Increase	90	90	90	90	360
7- Subtotal	3,090	3,090	3,090	3,090	12,360
8- Fringe Benefits, 16.6 %	513	513	513	513	2,052
9- Sunday Premium, 5%	154	154	154	154	616
10- Subtotal	3,757	3,757	3,757	3,757	15,028
11- Inflation Factor	.07	.07	.07	.07	
12- Inflation Adjustment	263	263	263	263	1,052
13- Subtotal	4,020	4,020	4,020	4,020	16,080
14- 5% Contingency	201	201	201	201	804
15- Total TDY Costs	4,221	4,221	4,221	4,221	16,884

2- TDY Travel and Transportation Costs

Item	1981 Jan	Feb	July	Aug	Total
1- Round Trips @ $3,000	3,000	3,000	3,000		9,000
2- Per Diem @ $138	4,278	4,278	4,278	4,278	17,112
3- Subtotal	7,278	7,278	7,278	4,278	26,112
4- Inflation Factor	.10	.10	.10	.10	
5- Inflation Adjustment	728	728	728	428	2,612
6- Subtotal	8,006	8,006	8,006	4,706	28,724
7- 5% Contingency	400	400	400	235	1,435
8- 4% Campus Overhead	320	320	320	188	1,148
9- 12% CID G & A	961	961	961	565	3,448
10- Total TDY T & T Costs	9,687	9,687	9,687	5,694	34,755
11- From 1 (15)	4,221	4,221	4,221	4,221	16,884
12- Total Costs (10) + (11)	13,908	13,908	13,908	10,915	51,639

ANNEX C

Personal Report
Daniel K. Andrews
July 1980

I have enjoyed this assignment tremendously. I especially appreciate the humor, honesty and courtesy of the Yemeni. The point may be taken that USAID should have kept a visable profile in the development of the rapidly expanding broiler industry and thus shared more fully in the real success story. Realizing in part the pressures of the 1976-1979 period, I understand why broilers were omitted and the more difficult role of establishing small egg production flocks continued. It was in keeping with the edict of AID to help the "poorest of the Poor." Recent discussion with Ministry of Agriculture people indicate that they prefer to keep the poultry centers concentrating on egg production and pullet rearing. The poultry project as designed demonstrated the technical feasibility of small scale 100-300 bird laying flocks and transferred two operating technical support facilities to the MOA YARG.

I believe that future assistance to the MOA poultry program should include broiler production techniques as well as egg production husbandry. Poultry per se is growing. The MOA should consider their leadership role as including both poultry meat and eggs and utilize the poultry centers as regional information headquarters. Discussions to this effect with top ministry officials revealed that they prefer to keep layers and broilers completely separate. Considering the thinness of their poultry resources they may be correct. However, my personal opinion is that USAID should include

plans to help the MOA train the Plant supervisor and Poultry specialist further in the areas of chick management as it pertains to both layers and broilers. Hopefully the young extension agents in the field can be included in special poultry management classes under US trained poultry specialists.

I am in agreement with the AID decision that it was time to turn the Poultry Project 019 over to the MOA. The MOA now needs time to establish personnel and ongoing programs utilizing the poultry centers at Sana'a and Taiz. In keeping with this idea the team suggested that CID supply two specialists and one other affiliated resource person for a total of four months time during the next year. The results can then be re-evaluated near the end of 1981.

The single biggest need of the poultry producers in Yemen today

Personally, I see an immediate and serious shortage of qualified poultry disease technicians. The broiler producers need more specialized veterinary care; hatcheries are being built and plans are pending to bring in breeder flocks to supply their eggs. Commercial egg production units are being considered. Small flock owners may suffer severe economic loss. All of these units are at the mercy of various poultry diseases. These can be tested for, eliminated, vaccinated against or treated. I propose that the CID and/or AID poultry teams work with the MOA, private poultry industry units and expatriates to assist the British Veterinary Laboratory in staffing their excellent existing laboratory with two or more poultry trained personnel. I suggest that a plan be proposed so that pledges and funds may be obtained to hire an experienced avian disease specialist, a poultry pathologist and a

college trained laboratory assistant. The British Laboratory has the facilities, and they express willingness to share these facilities as they lack funds to hire the necessary personnel. The need is there and an excellent opportunity is provided for a cooperative effort.

Such a laboratory facility could be utilized as a base to provide elementary or more advanced training in disease diagnosis and treatment. Classes could be tailored to fit the needs of selected extension agents, peace corps workers, private industry teams or groups of local poultrymen. I further believe that the poultry diagnostic laboratory staff proposal could be justified under present USAID concepts of helping underpriviledged nations develop the capacity to feed themselves and improve their diets through the utilization of locally produced poultry meat and eggs.

Both the short-term and long-term views are positive. Cost is minimal considering the benefits provided. The equipment and buildings are in place. It has been successfully done before in other countries. Quick and accurate diagnosis and treatment of disease is as vital to the poultryman of all sizes as is the presence of financing which allows him to expand.

Thoughts on Subsidized Poultry and Feed

1. At the present time the MOA is planning to release six week old pullets vaccinated and debeaked, to small flock owners at 10 YR each. I have great concern for the welfare of these birds. Six week old pullets need good care for another four months before they become layers. They need booster shots plus additional vaccinations on schedule and in proper dosages.

They need balanced diets and careful attention to disease control. Many recipients of these young birds will be unaware of and unable to meet these requirements.

2. I should like to see the MOA continue to make available four or five month old Leghorn pullets. Twelve week old pullets maybe to work compromises. Five month old pullets cost about 32 YR plus labor. I would recommend that future advisory teams support the sale of four or five month old birds at a slight subsidy to sell for approximately 80% of all variable costs. This type of subsidy should be short-term, limited to new producers and somewhat adjusted to the distance involved. Hopefully, in the future a private started pullet business might evolve as more laying flocks are established.

3. Subsidized feed prices at 2YR/kg rather than the going rate of 2 1/2 to 3 YR/kg should be a fair incentive to encourage more distant farmers with transportation problems. Such a subsidy would figure out to be between 20 and 25 YR/year per hen if the lower feed cost is figured and 40 to 50 YR/year per hen at the higher price. Observations and interviews indicate considerable feed waste is common. It is better to teach thrift than grant subsidies. Also in this respect the Poultry Center at Sana'a should get out of the rehandling feed and let the poultry growers get their feed direct from the Dutch Yemen Poultry Project. A list of names and their numbers of birds can be used to check who is entitled to subsidized feed prices. As each laying hen eats between 40 and

45 kilos of prepared feed per year and heavy birds eat up to 50 kilos, the accumlative cost of maintaining a subsidized feed rpice is excessive. Again only new flocks should be subsidized or those at extreme distances.

4. It is probably wise to continue to place small numbers (3-5) of pullets with interested families in small villages as this places the improved laying hen where the need is greatest. I do see a real problem in maintaining any reasonable type of feed support system. Hopefully a few of these people with better facilities will expand their flocks and establish themselves as backyard poultry keepers for their respective areas.

Other Management Observations

1. The present practice of keeping hens at the center for a two year laying period is more expensive than the practice of replenishing the flock each year. Old hens bring sufficient prices that new pullets can be economically justified. Force molting is not practical for people of this education level.
2. The present practice of having both dual purpose breed and Leghorns should be reviewed. The red hens are apparently heavy eaters under existing conditions. At local feed prices, it may be better to find a good strain of bantams for the village people to cross on to their native strains. A small strain of leghorn is probably the best bet for the Poultry Project Center to review.

3. I favor the encouragement of the 200 to 300 size laying flock for serious minded egg producers. Their farm site should be well planned and accessible by a good road. Laying flocks placed between several villages will have better egg markets than those restricted to only one small village.
4. More work should be proposed on less expensive housing. Colony type lath or bamboo type slat houses or raised cages should be considered. If housing costs can be lowered, more families will become interested. A family can more easily feed a laying hen an adequate diet than they can afford to build a stone house for her. Some of these villages may have abandoned buildings which could be cheaply renovated.
5. The poultry centers should have more contact with their cooperators. They should have an organized systematic ongoing training program for the poultry flock owners--particuarly those with more than 100 hens. They need programs teaching the fundamentals of record keeping. They should explore the joint purchase and delivery of feed. The frequency of egg collection, storage, handling and sales information is necessary so that they may build local sales and "push" fresh eggs.
6. Community meetings should be planned so that interested farmers can be made aware of the requirements of a poultry farm before they erect any buildings. Cost and return estimates can be discussed for both broilers and eggs. As interest develops, subject matter topics can be expanded and varied.
7. The function of the extension arm of the Sana'a poultry project needs to be reviewed. Extension people play a very important

role in providing contacts and in carrying educational material and services to the new or prospective flock owners. They also need transporation.

8. The supervisor-manager of the Sana'a poultry project center needs support in selecting, introducing and perpetuating a reasonably simple record system by which production as well as financial information may be obtained. Personnel management also appears to be a problem.
9. The Sana'a and Taiz poultry centers are good facilities. The laying flock inventory within Yemen is extremely small. It appears to me that the MOA will have trouble keeping the present poultry centers purposefully active unless they receive assistance in planning for the future. They could for example at very little cost plan, advertise and conduct training schools for interested poultry growers or specialized schools for the scattered extension agents which are joining the MOA field services. They need the equivalent of an USAID log frame and financial budget plan for the next 5 year period.
10. Village flocks need small flock owner clubs where the ladies can pool information in a systematic fashion and with a definite program of information. It would have to be a show and tell type of program as very few can read or write. This should not distract from its goal as quite complicated messages can be delivered with pictures or contrasting chickens.
11. The area around larger cities can be expected to support a few larger laying flocks, 500-1,000 size to begin with, as growing numbers of people become familiar with fresh egg quality.

This group may form the nucleus of a Yemen egg producers association. They will require guidance and information. Both groups, small family flock owners and small commercial flock owners, will take time to form.

12. The value of poultry manure is presently being completely ignored by all the native poultrymen I have contacted. None of them had any idea of its value or how to apply it even though some did use commercial fertilizer. Again a new native product is available for use and experimentation.

13. Census--while census taking is not a management suggestion it is on my list as beneficial and necessary for the growing industry to consider. Extension can offer very effective assistance in this task.

In closing, I want to express thanks to the various CID and AID personnel whom I have met. I have been impressed by the sincerity of their efforts.