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BLUE NILE INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT

Contract AID/afr-C-1582

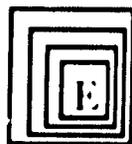
Project 650-0018

CONSULTANT REPORT ON
LIVESTOCK AND RANGE MANAGEMENT

by

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FINAL REPORT/LIVESTOCK CONSULTANT

INTRODUCTION:

The objectives of this assignment were to:

1. Start a positive action program in the project area this season.
2. To enhance the participation of nomads and sedentary farmers in project activities by demonstrating the capability of the project to carry out effective and desirable livestock programs.
3. Enhance the project's ability to serve agronomic needs through the development of an animal traction program.

Based on these objectives a detailed scope of work was developed, as follows:

1. Make recommendations to project and GOS authorities concerning the planning and implementation of cattle trails to facilitate expeditious movement of nomadic cattle into and out of the project area.
2. Plan and develop low-cost animal health (preventable disease) programs.
3. Plan and develop recommended training programs capable of being implemented this year.
4. Advise project authorities in the ordering (life-of-project) of commodities and equipment for support of the livestock and range management programs.
5. Advise and assist the project in the prompt secondment of well-qualified senior livestock officers from GOS.
6. Evaluation of current animal traction efforts in the Sudan and the setting up of similar programs at BASC and in the field, if possible.
7. Plan and implement a model demonstration livestock unit at BASC (in the field if possible) in poultry and small ruminants.
8. As time and logistics permit institute such other animal programs that are low cost, feasible, and effective.

On April 7, 1982, I started work on the above terms of reference. In the following pages each objective will be discussed separately with reference to methodology, approach, constraints, achievements and recommendations.

A. CATTLE TRAILS INTO AND OUT OF THE PROJECT AREA:

One of the major nomad problems is the establishment of a clearly marked and wider cattle route to the White Nile. The existing route has many problems. The nomads claim that the existing route is a very narrow strip running between many fields, which makes it difficult to avoid crop damage. There is also a lack of space for rest areas for both animals and people.

These constraints force nomads to speed their movement and, accordingly, reach the project area before crop harvesting. This, in turn, leads to regular conflicts with the sedentary farmers and, occasionally, bloodshed.

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The issue is an old and complicated one which started 20 years ago with the introduction of mechanized schemes in the Blue Nile Province. It has continued to grow with the expansion of these schemes into land traditionally used for grazing.

There are several tribes, coming from different dry season grazing areas, using the route.

Those using the project area are mainly concerned with the Damazin/Agadi/Gerabin/El Mazmun/El Hamarin route. The following information will be based only on the above-mentioned parts of the route.

Based on the Blue Nile Executive Council Resolution Number 824, dated October 2, 1979, a route was supposed to be established as described below:

(A) Damazin/Agadi/El Gerabin: The route will pass through Agadi State Farm and Agadi schemes up to El Gerabin.

The resolution recommended adding two kilometers to the width of the existing route. The two additional kilometers is supposed to be cut out of the Agadi State Farm and five other private schemes to the west of Agadi.

(B) Elgerabin/El Mazmun/El Hamarin: The resolution called for adding two kilometers width to the route in these areas, starting from the El Mazmun schemes. This will require adding 16 private schemes to the existing route. According to the resolution, the effected schemes will be given land elsewhere in the province as compensation.

An official letter was sent by the Provincial Executive Director to the Assistant Commissioner of the Survey Department for the execution of the resolution. No action has been taken as yet.

I made it a point to trace this letter and discussed the issue with all the departments concerned. Results of these meetings with the officials concerned are summarized as follows:

SURVEY DEPARTMENT: I had several meetings, mainly to find the above-mentioned letter, and to discuss the possibilities of executing the resolution.

It is clear that the survey department does not have authority to lay out the route before the problem of scheme relocation is addressed. They claim that they do not have the logistics and money needed for the execution of the solution.

On my request the Survey Department submitted the following budget needed to execute the resolution. This does not include money needed for scheme relocation.

Budget Requested for Route Execution:

Vehicle Rent	5400 LS
Labourers Wages	2700 LS
Field Allowance	1080 LS
Overtime	300 LS
Survey Fees	5600 LS
Support Fees	1400 LS
	<u>16480 LS</u>

This request seems a bit unrealistic to me. It is difficult to understand why someone would pay all requirements for completing the job (Vehicle rental, overtime, etc.) plus the survey fees.

In any event, if this amount were to be gotten from some source, compensation for the 21 schemes will still remain an obstacle.

MECHANIZED FARMING CORPORATION: The issue of scheme relocation was also discussed with the Mechanized Farming Corporation, which is the owner of the state farm at Agadi and the official body concerned with issuing licenses to private schemes.

The impression I have after several meetings with MFC officials is that no one in the corporation is interested in the subject, simply because the execution of this resolution will raise many legal complications. Those schemes to be confiscated have been approved and have 20-year contracts issued.

In spite of the fact that the Blue Nile Executive Council decided to substitute similar pieces of land to various scheme owners, MFC officials raised the question of money compensation to meet the expenses of clearing new land. If this compensation is paid, it would amount to at least 840,000 LS.

In my opinion, the issue can be solved if there is official interest without making any financial obligations. To those who have already cultivated their land for several years, the new land can be considered a form of compensation in itself, since it will be more fertile.

As there are also scheme owners who do not cultivate their land, such licenses can be cancelled according to the terms of the MFC contracts, providing that these owners are given other schemes in uncleared new areas.

PROVINCIAL AUTHORITIES: I met with the acting Provincial Executive Director to clarify these issues, and discussed the subject at length with him. He promised to study the suggestions.

At our next meeting, he made it clear that the issue was complicated and suggested that it was above their ability to arrive at a solution. The issue was then postponed until after a new regional government is selected, as the issue is supposed to be discussed as a part of the over-all regional agricultural development policy.

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My recommendation is to continue to follow-up and to keep on raising the problem at all levels. The nomads have to be made aware of the project's activities on their behalf.

Up to this point there have been no problems with the route between the project area and Damazin, but there is no guarantee that there will not be due to increased land use pressure.

I strongly urge that the project boundaries be defined especially in official maps (editor's note: this has been pursued). I have noticed the lack of any official document delineating the project area, and would not be surprised if licenses for new schemes are issued, thus effectively blocking the route from the project to Damazin.

B. ANIMAL HEALTH PROGRAM:

Our instructions on this subject were to plan a low-cost preventative disease program which could be implemented this season. Logistical and financial support were to come from the project, and technical support from the Animal Health Department.

The Assistant Director for Animal Health in the Central Region was contacted. We agreed that the project would provide transportation, field allowances and overtime, plus instruments needed to conduct this campaign. The objectives of the campaign were:

1. Conduct a preventative disease control program to serve both nomads and sedentary herders (vaccination campaign).
2. Logistics permitting, to collect blood and fecal samples to be examined for suspected disease in the Central Veterinary Laboratory/Soba.
3. Collect some information on animal distribution in the project area.
4. Examine the feasibility of selling recommended veterinary drugs.
5. Establish working relationships with both nomads and sedentary farmers.
6. To treat, as time permitted, any sick animals.

A team including a Veterinary officer, two vet assistants, four veterinary attendants and myself was formed. We succeeded, to a large extent, in achieving the objectives.

On the following pages, each objective will be discussed separately.

1. VACCINATION CAMPAIGN: This started on 3 May, 1982 and we returned to Damazin on 27 May, 1982.

As a stock of vaccines, we had five types, mainly T.C. against Rinderpest, antrax, black leg, contagious bovine pleuromonia; and H.S. vaccine.

The total number of animals vaccinated was 4000 cattle, mainly against rinderpest.

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Generally speaking, herders are not used to vaccinating their cattle on a regular basis against all diseases. With the exception of rinderpest, they vaccinate only when there is a particular disease outbreak. Most of them were highly interested in the rinderpest vaccine, as it needs refrigeration and that can be obtained only during such a campaign.

We did succeed in convincing some of the villagers to vaccinate their cattle against more than one disease.

Some nomads requested the purchase of different vaccines to be used when there is a need, mostly antrax and H.S. As neither vaccine needs refrigeration facilities, and their expiration dates extend through next year, we sold them the requested vaccine, after carefully explaining the method of application, dosage and expiration dates.

Herders are not used to vaccinating their sheep. We failed to convince them to vaccinate their sheep against rinderpest. They could not imagine that some vaccines could be useful for both cattle and sheep.

The number of vaccinated animals could have been much higher. Constraints were:

1. Most of the nomadic herds were outside the project area, mainly to the SE of Bikori.
2. The regional government imposed a 10 piaster tax on each vaccinated head which, when added to the cost of the vaccines, made some herders think that the cost was very high.
3. Some herders thought the campaign was a trick to count their animals for taxation purposes.

The campaign visited the following villages; in most of them we spent at least one day:

- | | | | |
|-----------------|-------------|-------------------|------------------|
| 1. Abu Gemai | 2. Dan-Dan | 3. Din-Dan Azaza | 4. Sheira |
| 5. Abu Sheneina | 6. Amardalo | 7. Ilyas | 8. Bikori |
| 9. Abu Gona | 10. Ellawa | 11. Kharen Kharen | 12. Khor Hassan |
| 13. Khor Badaga | 14. Abeigo | 15. Khor El Dom | 16. Khor el Adar |
| 17. Musfa | 18. Banat | 19. Eseil | |

In addition some small villages and nomad clusters were visited. Most of the villages were visited for the first time by such a team, and this was highly appreciated.

RECOMMENDATIONS:

1. A similar campaign should be conducted next year in the early dry season, January up to February. This should be coordinated with the regional Animal Health Authorities.
2. The next campaign has to go as far as the Quiessan and Khashan Karo areas, which, taken with the project area, make up one grazing unit.

3. Try to secure TC vaccine packed in smaller doses, i.e., 50 to 100 doses. It is very difficult to gather 200 animals in the villages, and this vaccine came packed in 200 dose ampoules.

2. BLOOD AND FECAL SAMPLES: We faced a lot of problems in obtaining the needed amounts of blood. Most animal owners refused to allow us to take the necessary amounts for significant results. Those who did, did so only after great efforts at explanation, and restricted us to one animal only.

Other limitations were the number of blood collection bottles and refrigeration facilities available to us during the campaign.

Accordingly, the collected samples were few and the information obtained, in the event of negative results, will have to be taken with a grain of salt. The presence of positive results can be taken only as an indicator.

The samples were delivered to the Central Vet Lab at Soba, with the results shown in Annex 1.

Technical officials at the CVL showed great interest in conducting such a detailed survey in the future, provided that the project assists them in logistics, mainly fuel and overtime.

Although our results for trypanosomiasis are negative, we still feel there is a need for a detailed survey, as south of the project area, mainly in the Quissan and Khashan Karo areas, is what is considered to be a trypanosomiasis area. The Fly and Trypanosomiasis Department at CVL will be glad to participate in such a survey. They asked for three drums of fuel and 500 LS to be paid in overtime.

Ticks and tick-transmitted diseases are one of the major problems in the project area. We have already made a recommendation in the previous Range, Livestock and Soil report on this problem. We hope that the recommendation can be realized. If not, some type of cooperation with the Tick Control Department has to be established.

Internal parasites are also a serious problem, especially in the river areas. Our results indicate the presence of coccidiosis.

RECOMMENDATIONS:

1. Continue cooperation with the CVL/Soba, especially in the fields of tick control, internal parasites, flies.
2. Appoint a vet assistant at the Abu Sheneina clinic with some experience in lab work.

3. ANIMAL DISTRIBUTION IN THE PROJECT AREA: As stated above, we vaccinated mainly cattle and them only against rinderpest. Most herds were either out of the project area at the time, or had already been vaccinated. Some owners did not show up. Accordingly, the figures obtained do not reflect the actual numbers. Most of the nomadic cattle, however, are concentrated at Abu Gemai, Sheira, Abu Sheneina, Amardalo and Bikori.

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As concerns the sedentary farmers, they have very small numbers of cattle compared with the nomads. In some villages, such as Kharen-Kharen, Banat, and Abu Gona, there are no cattle at all. Goats are the most important animal for the villagers.

Sheep are the dominant species in the nomadic herds. Unfortunately, they refused to vaccinate them, so no data was obtained. At the time of the campaign most of the sheep are concentrated along the river bank, with others in the Queissan area.

4. VETERINARY DRUG SALES PROGRAM: One of our targets was to test the possibility and practicality of forming a revolving fund for vet drug supply in the project area.

This was tested with four types of veterinary drugs. The project bought injectable teramycine and Gamatox powder. The Animal Health Department provided Ethidum and Nilvirm.

The teramycine sold for 5 LS per 100 doses (enough to treat four goats against carpine pleuronomia), the Gamatox powder at 10 piasters per treatment, Ethidum at 15 pt per treatment and the Nilvirm at 5 piasters a tablet.

With the exception of Nilvirm, both nomads and sedentary farmers are familiar with the drugs and their official and black market prices. Unfortunately, due to the devaluation of the Sudanese pound, the price of teramycine has doubled. This caused us some problems, as farmers remembered the old price. Although many expressed their dissatisfaction at the new price for teramycine, we sold 50% of the available quantities (200 bottles, equalling 1000 treatments for goats). Next time, as people become familiar with the new price structure, we believe that reasonable quantities can be sold.

The black market price for Gamatox is 30 pt, and we sold all that we had. Sale was restricted only to those animals which needed treatment, rather than just distributing the powder to large numbers of herders.

Ethidum is a favorite drug for both nomads and villagers. We charged only 15 pt, while the black market price is above 50 pt. The government has put restrictions on the use of this drug and it can be imported only by the GOS animal health authorities. This is due to the misuse of the drug by herders and to resistance problems. We controlled the use of it by administering it ourselves.

Nilvirm is an internal parasite control drug. The herders and villagers are not familiar with it. They use mainly Thiebenzole. In spite of this we sold more than 3000 doses.

The idea of the sale of drugs can be considered acceptable to both villagers and the nomads. Wherever we sold drugs, we spent some time explaining methods of applications, dosage and use of the drug.

While many drugs are well-known to the people in the project area, we noticed that they used very low dosages, especially in the case of teramycine. They either want to economize or believe that the recommended dosage may harm their animals. We spent a lot of time trying to correct this misconception.

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In some villages, where time allowed, we demonstrated to herders that 5cc of teramycine daily, up to four days will not cause any problems for a sick goat. Many herders think that when teramycine is applied that the animals are not supposed to drink water and eat. This wrong interpretation is being corrected through demonstrations.

RECOMMENDATIONS: Continue the vet drug sale program with more explanations and demonstrations concerning drug usage and application.

5. ESTABLISHMENT OF A WORKING RELATIONSHIP: Although all our services were charged for, most of the people appreciated them. As mentioned before, it is the first time that such a team has worked in most of the villages. Some of these villages had previously been promised such a campaign, and the fulfillment of these promises by the project had a very beneficial effect.

The only difficulty was the length of time consumed in many villages. This was mainly because the people are not familiar with such a campaign. We had to spend two days at Musfa, for example, to allow people to prepare a holding pen.

Sedentary peoples seem to be interested in constructing vaccination corrals and are willing to contribute to financing them. We recommend that the project initiate this practice.

6. TREATMENT OF SICK ANIMALS: Most of the animals treated were goats, and mainly against Carpine pleuromonia.

Many donkeys were treated for external and internal parasites, with a small number of cattle and sheep treated for internal parasites only.

C. TRAINING PROGRAM

The idea of this program is to train both nomads and settled villagers to perform simple health services, mainly preventive animal health measures, basic nutrition, and basic animal husbandry practices. We recommend three types of courses:

1. First course (to nomads): It is common knowledge that the nomads have considerable skills in the practice of animal husbandry. This information needs to be refined and improved, however. Accordingly, we have reached agreement with the vet training school at Omdurman to set up a special course for this purpose.

2. Second course: Those who perform well during the first course will be given some special training to enable them to read and write, then they will attend the regular course for the vet attendants at the same school.

3. Third course: Those who pass the veterinary attendants course can then attend the course for vet assistants, again at Omdurman.

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The case of the sedentary farmers is a little bit different. It is easy enough to find a great many interested persons who are literate, but without enough experience in animal husbandry practices.

The idea was to select some interested persons, having them trained in the project's livestock facilities, and then send them to the regular courses, beginning with the veterinary attendant course. From the start, though, it was evident that, due to the lack of facilities on site, it was more feasible this season to begin the training with the nomads only.

The three subtribes in the project area were visited and the program was discussed with them. They nominated 15 candidates and I selected 12 on age criteria.

I contacted the Omdurman Veterinary School and set the date of 15 May for starting the course. Arrangements for accommodations and train reservations were made.

On 12 May, I visited the project area to transport the candidates to Omdurman. Unfortunately only four of the lot came. Accordingly, the course was postponed until next dry season.

We informed the Omdurman Vet School and agreed that the arrangement will be valid for the future, with only two weeks notice needed.

Reasons for postponement were:

1. The timing was not appropriate. The course was supposed to last two months which meant that by the end of the course, the nomads would have left the project area. About one month of the course time corresponded with Ramadan.
2. Most of the candidates were scared of going to Omdurman, as they think that the living expenses will be very high, and that the proposed monthly compensation would not be enough.
3. There is still a lack of confidence in the project and its goals among the nomads.

In spite of all this, I think that next dry season, preferably in March, the course can be given, if some effort is exerted.

The commencement of courses for sedentary peoples depends on commencing the work at the Abu Sheneina Veterinary clinic and the other dressing units in the project area. The villagers show generally greater interest than the nomads. At the same time there are many general secondary school graduates who are looking for jobs, and such training will make for increased ability to find one.

It is important to note that the Omdurman Veterinary School and the Central Animal Health Department are interested in cooperation with the project and are willing to set up the special courses that we need at any time it is convenient for the project.

D. LIFE OF PROJECT COMMODITIES LIST

The equipment need for the various livestock programs is presented in Annex Two.

The equipment needed for range management is detailed in the Range/Livestock report, December, 1981. The only problem is that there is not enough money allocated to range equipment. This issue is supposed to be solved, or at least dealt with, during the evaluation.

As the time factor is critical at this juncture, I would advise that any items that can be found locally should be purchased.

E. SECONDMENT OF SENIOR LIVESTOCK OFFICER

A lot of effort went into this task.

The secondment procedure in Sudan is very long. First one has to find an interested candidate and obtain his agreement. The candidate will need approval for his release from the direct supervisor of his unit. Following this will be the approval of the Undersecretary of the department concerned; then the approval of the Minister, after which comes the approval of the Civil Service authority.

I followed all these procedures to obtain the secondment of Dr. Ibrahim, who had been recommended by the project. Suddenly, he was offered a better job and declined the position.

I contacted another candidate who meets the job requirements, and approval for his secondment was obtained from the undersecretary of the Department of Animal Health.

This created a problem, however, as the man selected is a very senior officer, and this raised the issue of seniority in the project, as he is senior to the project director. Another problem is that there is no post for a senior livestock officer in the GOS project budget. The only job is for a livestock officer.

According to the project agreement, the GOS is to provide the project with a livestock specialist, a livestock officer, and three veterinary assistants. This issue has to be handled, and handled soon, by the GOS project director.

Another problem, and probably the main one, is the lack of interest in the project due to what is perceived as a lack of attractive incentives.

The officials in the Department of Animal Health are now sensitive to the problems we are facing, as we brought the problem of their attention. They have promised to find someone suitable for the job.

RECOMMENDATIONS:

1. Secure the budget needed to fill all post in the livestock section, according to the PROAG.
2. Discuss the problem of incentives with GOS.
3. Write to Animal Health asking them to second people to the project.

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F. ANIMAL TRACTION

I was asked to evaluate the current animal traction efforts in Sudan and to advise the project about setting something similar up in the field and at BASC. From the beginning, it was clear that time would not permit visiting the existing centers in the south and west of Sudan.

The urgent issue is to begin an animal traction program at the project demonstration unit this season. The program needs to be tested first at the demonstration farm and then in the project area.

To meet this urgent need, we decided to second an animal trainer from the south for at least six months, mainly to train 4 people and help in testing the feasibility of the program. One these four would take on the direction of this unit later on.

The main problem was securing the animals, their feed, and a shed, as well as other facilities needed for training.

Early on, I made arrangements with the Animal Health Department in Damazin to keep the animals until the project sets up its facilities. The only conditions imposed were to purchase the animals from the animal health people, for disease control reasons, and to pay the cost of feed.

We were not, in the end, able to obtain the oxen from the center. To overcome the problem, we designed and constructed, from local materials, some small sheds at the farm. I also made arrangements to obtain two oxen from the Damazin Agricultural and Animal Production Company. On the farm, I designed and supervised the construction of the training chute. We also secured a yoke.

As we were able to obtain the secondment of the trainer, the program began. Arrangements were made to secure the needed forage until we produce our own. The Animal Health Department agreed to maintain the oxen.

The feeding program was explained to staff of the Agronomy Section.

G. MODEL DEMONSTRATION AT THE FARM

In the Range, Livestock and Soil report, the general approach to this issue was explained.

The project is supposed to develop two experimental units at the BASC; one for small ruminants, mainly goats, the other a feed lot for small-scale fattening operations. This is intended to help in developing methodology and practices that can be extend to the project area.

I found it impractical to begin action on this subject, due to lack of permanent staff, water facilities and forage at the farm.

The amounts of land needed and locations were discussed with the Agronomy Section and agreement was reached. They were also asked to conserve the forage crops this season. I also contacted the Rural Water Corporation concerning the possibility of digging a well at the site. Budget estimates

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were forwarded to the project director. The work cannot be begun until next dry season.

RECOMMENDATIONS:

1. Conserve as much as possible of this year's forage crop and crop by-products.
2. Finalize the arrangements with Rural Water Corporation for digging a well.
3. When the above are achieved, the sheds needed for the experiments can be constructed, of local materials if necessary.

H. OTHER ISSUES

During the assignment, I spent time on two other issues that need to be noted as they are due for follow-up action. They are: a land use plan for each village in the project area, and water development plans. Both issues are of vital importance for the nomads and sedentary herders.

1. LAND USE PLAN: Project authorities have not yet developed a land use plan. Although no one from the project has directed farmers to clear new land at any specific location, the lack of such directives has had negative effects. Many farmers, particularly at Abu Gemai and Din Din, cleared land in the nomad residential areas near the river bank and on slopes. Both practices are outlawed by the government.

The nomads brought the issue to light and expressed their concern, as they viewed it as a measure planned to move them out of the project area. I spent considerable time explaining the situation to them. I also contacted the Forestry Department to get them to take the initiative in correcting the situation. Their response was quite positive, and they visited the areas twice. As a compromise solution, they agreed to allow the farmers to cultivate the problem fields only this season and only with traditional tools.

I attempted to form a working group including representatives from Forestry, Range Management, Soil Conservation, Livestock and the Project.

Having contacted all the above-mentioned departments, we got agreement on the idea of making a land use map for Abu Gemai and Din Din, to be set up in consultation with both herders and farmers. The starting date was fixed. Unfortunately, with the exception of Forestry and BNIADP, there seems to be a lack of commitment to the project.

RECOMMENDATION: The land use plan must have first priority in project planning for the next dry season. I recommend the formation of a working group including the departments mentioned above and the farmers, herders, and a representative of the district council.

2. WATER DEVELOPMENT PLAN: The project lacks plans for water development within the project area. Along with Zach Lea, we had many contacts with the Rural Water Corporation staff, in order to get them to conduct a general survey

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The staff showed great interest and presented us with a work plan, but they failed to fulfill their commitment on the date we fixed for beginning operations. Their excuse was that the transfer of the resident geologist who made the agreement with us negated that agreement.

RECOMMENDATION: Contact Rural Water Corporation headquarters at national and regional levels and secure their commitment to contribute to this plan.

ANNEX 1

A) Results of Samples Examined for Trypanosomiasis

Location	S	Sample No	Results
Abu Shenina	Cattle	10	No trypan. seen
A Mardalo	"	17	No trypan. seen
A Mardalo	"	18	No trypan. seen
A Mardalo	"	19	" " "
Elyas	"	20	" " "
Elyas	"	25	" " "
Bikori	"	31	" " "
Bikori	"	33	" " "
Abiugo	"	34	" " "
Bikori	"	36	" " "

B) Results of Blood Serums Examined for Brucellosis and CBPP Complement Fixation Test.

Location		RBPT U	CBPP Complement F. Test		
			Screening at 1/10		Titre
Sheira	Nomads	Negative	4/10	AC4/10	Negative
Sheira	"	"	4/10	AC4/10	"
Sheira	"	"	4/10	AC4/10	"
Abu Shenina	"	"	2/40	AC2/40	"
Abu Shenina	"	"	4/50	AC4/50	"
Abu Shenina	Sedents	"	4/20	AC4/20	"
Abu Shenina	Nomads	"	3/20	AC3/20	"
A Mardalo	Sedents.	"	4/20	AC4/20	"
Abu Gamai	Sedents.	"	4/20	AC4/20	"
Elyas	Sedents.	"	4/10	AC4/10	"
Elyas	Nomads	"	4/80	AC2/80	"

C) Results Fecal samples examined for Internal parasite

S.No	Location	Species	Strongyle ova	Coccidia Cysts.	Fasciola ova
5	Abu Shenina	Cattle	Nil	Nil	Nil
9	Abu Shenina	Cattle	"	600	"
21	A Mandalo	Cattle	"	700	"
22	A Mandalo	Goat	"		"
23	Sheira	Cattle	"	100	"
29	Bikori	Cattle	"	1100	"
32	Kharen Kharen	Goat	"	Nil	"
	Kharen Kharen	Goat	"	Nil	"
	Abuyigo	Cattle	"	Nil	"

D) Tick Identification:

<u>Sample No</u>	<u>Results</u>	<u>Location</u>
11	Hyalomma Rufipes Amblyomma Lopidum Amblyomma Ny mph.	Kharen Kharen
12	Hyalomma Rufipes Amblyomma Lepidum Boophulus Dectoralus	Abiygo
491	Amblyomma Lepidum Hyalomma Rufipes Boophulus Dectoralus	

Amblyomma lipidum transit Th-Hytens and anaplesma inarginale.
Boophulus transmdt Sub bigemini.

Annex 2Equipment and Instruments list

No	Item	Abushenina	Kharen Kha	Abu Gamai	Total
1	Analytical Microscope	2	-	-	2
2	Staining Sets	6	-	-	6
3	Microscopic dissecting forcep	6			6
4	" " needle	6			6
5	Microscopic slides	100 Doz			100 Doz
6	Microscopic slides with central depression	10 Doz			10 Doz
7	Microscopic Cover slips ½ oz boxes	25			25 boxes
8	Cover slip forceps	6			6
9	Haemocytometer complete	6	3	3	12
10	Haemocytometer pipette	18	3	3	24
11	Mc-Master counting slides	12			12 dozen
12	Centrifuge machine, hand driven				
13	3,000 rpm.	4	2	2	8
14	Centrifuge machine, hand driven	4	2	2	8
15	8,00 rpm.				
16	Protecting Bowl and cover to use with above centrifuges	4	2	2	8
17	Centri-fuge machine electrically with speed counter	1			1
18	Centrifug tubes graduate	120	30	30	180
	" " plain	120	30	30	180
19	Instrument steriliser, portable	2	1	1	4
20	Dressing sterillser, high pressure with vacum, portable for heating on gas ring fire or oil stove	2	1	1	4
21	Portable autoclave	2	1	1	4
22	Sterliser forceps	6	3	3	12
23	Sterliser drum stand for two drums with the steritiser drums	2	1	1	4
24	Spirit lamp	6	2	2	10

No	Item	Abushenina	Kharen Kha	Abu Gamai	Total
25	Precision dispensing scale	2	1	1	4
26	Counter scale up to 4 Kg	2	1	1	4
27	Brass weight sets	2	1	1	4
28	Stethoscope	4	2	2	8
29	Chest piece for the stethoscope	2	1	1	4
30	Veterinary pleximeter	2			2
31	Veterinary officer's field kids The available at Vet. cent. supply dept. Dept. of Animal Health Ministry of Agric.	2			2
32	Bovine vaginal speculum 28 cm	3	2	2	7
33	Bovine vaginal speculum 35 cm	3	2	2	7
34	EWE Vaginal s eculum 16 cm	6	2	2	8
35	Trocar and Caunule 47.7 cm	12	6	6	24
36	Sheep trocar	12	6	6	24
37	Casting hobbles-cattle	3	2	2	7
38	Uterine tube length 440mm/5mm	6	2	2	10
39	" " double channel	3	2	2	7
40	Injection Syringe 222 cc	3	2	2	7
41	Clements ovarian cyst cathetar	3	2	2	7
42	Uterine flushing curette	3	2	2	7
43	Prolapsus uteri support	2	1	1	4
44	Obstetric outfit for cattle	2	1	1	2
45	Obstetric outfit for sheep	2	1	1	4
46	Embryotome with wire saw				
47	Threader and 1 pair of handle	2	1	1	4
48	Spare wire saw	30	10	10	50
49	Valva Suture pins	50	25	25	100
50	Needle for above	12	6	6	24
51	Weigarta Rumectomy frame	2	1	1	4
52	Wein-erls Rumectomy Vulsellum Forceps	10	4	4	18
53	Weingarts Rumectomy hook set	4	2	2	8 sets
54	Protective apron for rumenectomy	2	1	1	4
55	Teat knife	6	2	2	10

No	Item	Abshenina	Kharen Kha	Abu Gemai	Total
56	Teat Tubes	12	4	4	20
57	Calcium injection apparatus	4	2	2	8
58	Burdizzo castrator for cattle	4	2	2	8
59	Burdizzo castrator for sheep	4	2	2	8
60	Cattle hoof trimming outfit	6	3	3	12
61	Set of inter changable hoof instrument	3	3	3	9
62	Foot rot shears	6	3	3	12
63	Veterinary scalpel handle	6	3	3	12
64	Scalpel blade different size	24	6	6	36
65	Operation scissors 16.5 cm straight	6	3	3	12
66	Operation scissors 16.5 cm curved	6	3	3	12
67	Veterinary injection syringes with metal frame and glass interchangeable 2,5,19,20cc	24	12	12	48 each
68	Record hypodermic syringes 5 cc	6	2	2	10
69	Hypodermic needles lofit above different size	40Doz	20Doz	20 Doz	80Doz eac size
70	Intravenous injection appratus	6	2	2	10
71	Multiple inoculation suringe outfit	6	3	3	12
72	Spares to such syringes enough for	24	12	12	48
73	Bucket pump with Rubber stomach tube	3	2	2	7
74	Pair right and left cattle mouth gags	6	3	3	12
75	Dressing or out or syringe 85,170	3	2	2	7
76	Unbreakable dozing syringe	3	2	2	7
77	Velmelege suction and pressure pump	2			2
78	Cattle probaing 150c m long, 17 mm	4	2	2	8
79	" " 130 cm long 14 mm	4	2	2	8
80	" " 90 cm long 13 mm	4	2	2	8
81	" " 122 cm'	4	2	2	8
82	" " 18 cm long 18 mm diam	4	2	2	8
83	Balling gun diam. 22mm	4	2	2	8
84	Balling guns for sheep	4	2	2	8
85	Baling gun (capsule carrier) with diffre- nt size 12.5, 12.5 up to 38 cm	4	2	2	8 each

NO	Item	Abushenina	Kharen Kha	Abufarai	Total
86	Sheep mouth Gag.	4	2	2	8
87	Dosing syringe 60 ml.	6	3	3	12
88	Vet. clinical thermometers	30	10	10	50
89	Suture set	4	2	2	8
90	Suture needles	30	10	10	50
91	Plaster bandage scissors	6	3	3	12
92	Kidney shaped bowl 15.3-20.4cm, 25.5, 30.5cm	8	3	3	each siz.
93	Kidney shaped bowl 20.4cm, 25.5cm				
94	Lotion bowl stainless steel 15.3, 20.4, 25.5cm	6	3	3	each
95	Boiling flask 500 - 250 - 500 ml	6	3	3	each
96	Medicine dropps	12	6	6	24
97	Stainless steel Measure jug granduce 250, 500 1000 ml.	6	3	3	12 each
98	Lotion jug 2 pint, 6-8 pints	6	3	3	12 each
99	Dispensing Measures 2 oz, 4 oz, 6 oz	6	3	3	12 each
100	" " 16 oz, 20 oz, 40 oz	6	3	3	12 each
101	Pestle and mortar size (3½)in (6 in) (12 in)	3	2	2	each
102	Spirit lamp - 112 ml	6	2	2	
103	Test tubes - boxes 100 tube	5	2	2	9
104	Test tube stand	12	6	6	24
105	Instrument trays; 25.5 x 20.3 cm	6	3	3	12
	" " 35.6 x 30.5	6	3	3	12
106	Vet. operating table	1			1
107	Instrument table with bowel size 76.2 x 45.7 cm	1 2	1 1	1 1	3 4
108	Size 91.5 x 45.7 cm	1	1	1	3
109	Bowel stand - stainless steel with bowel	2	1	1	4
110	Pedal bin	3	1	1	5
111	Instrument cabinet 152 x 91.5 x 40.7 in	2	1	1	4
112	" " with storage cupboard and size (33 x 24 x 15 in) metal cupboard (33x24x15in)	2	1	1	4
113	Bull holder cadminum plated	6	2	2	10
114	Bull nose punch	2	2	2	6
115	Veterinary post mortem outfit	1			1

No	Item	Abushenina	Kharen Kha	Abu Gamai	Total
116	Milk fever outfit	3	1	1	6
117	Teat sutter	4	2	2	8
118	Dissecting farceps	12	6	6	24
119	Thorn farceps	12	6	6	24
120	Dressing forceps	12	6	6	24
121	Obstetric a rumenect arms cloves	24	12	12	48
122	Operating cloves	10	5	5	20
123	Post mortem cloves	12	6	6	24
124	Nilsen uterine tube	4	2	2	8
125	Veterinary swabbing or polypups forceps	6	2	2	10
126	Cervix dilator	3	2	2	7
127	Obstetric outfit	2			2
128	Bucket stainless steel	4	2	2	8
129	Ear marting pliers - 6 design	3	2	2	each
130	Portable scale for sheep	1			
131	Portable scale for cattle	1			
132	Mobile vaccination unit see range livestock soil report	1			
133	Village cruch see Range livestock. Dept page 4				
134	Central cruch see Range livestock. report page 32	1			
135	Holding stable at Abushenina same report p36	3	2	2	7
136	Working shed: Range livestock. Report	1	1	1	3
137	Mobile vet unit for details	1			1
	The Hofborn surgical instrument.co.ltd. Dolphin works, Margate road, broadstairs, Kent ct 10200. England				
132	Kerosine deep freezer. 100 lit	1	1	1	3
	Kerosine refrigerator 100	1	1	1	3
133	Wicks to fit both	100	50	50	200
134	Spare glass to fit above	24	12	12	48