

Some  
thoughts  
on



LIBYAN  
AGRICULTURAL  
PROGRAMS

FOR

1959  
1960

SOME THOUGHTS

ON

LIBYAN AGRICULTURE

1959/1960

By

Ministry of National Economy

With the Cooperation of

Libyan-American

Joint Service

## FOREWORD

During recent months, Libyan leaders and farm people have discussed agricultural problems and needs. How can they proceed more quickly, more effectively, in building a strong agriculture, in improving the conditions of the 80 or 90 percent of the people whose welfare depends directly or indirectly on agriculture?

In the pages that follow, a few of the highlights of these discussions have been brought together. They are offered for further review, criticism, change, by government leaders, agricultural workers, sheikhs, business people, and others. If this report merely provokes the various groups concerned to discard the ideas set forth, and substitute better ones, it will have served its purpose.

At best, the ideas summarized represent only a small beginning toward Libya's agricultural planning - - - a few specific things to think about during 1959.

## I. WHAT KIND OF AGRICULTURE AND RURAL LIFE DOES LIBYA WANT?

What kind of agriculture - what kind of rural life - do Libyans want? How can they reach those goals?

To answer those questions, Libyan leaders and farmers need to think, study, talk among themselves. They need, above all, to study and build on the best in their own country. As they consider the experience of other countries, they may find somewhat different goals; and certainly different - often opposite - methods in reaching the goals. In all of those countries, they often will find divided opinions, uncertainty, even confusion. Out of those observations, Libya will need to constantly re-appraise her own objectives. She will need to keep a constantly open, exploring mind. From month to month, from year to year, problems, views, needs will change.

### What Are the Goals?

As a start toward a discussion of goals, a few specific ideas are offered. Libya's leaders and farmers may agree, or disagree with some. They will add to, or take from, the examples suggested.

### What Are the Common Goals of Government and Farmers?

Produce more food and fiber - more cereal grains, more meat, more vegetables, more fruit, more wool?

Provide more income for the farmer, so he and his family can have a better living, and to provide more business in the towns

and cities, and more income to pay for schools, medical facilities, and other services?

More water from the ground and the wadis?

Protect and improve the soil and range?

Establish definite ownership and use-rights for the land (by tribes and by individual farmers) to encourage the protection and development of the land?

Create conditions in which good farmers (and their children) will want to stay on the land rather than crowd into the cities?

Work with, and through, the tribes - or develop other forms of organization?

Develop small industries around the things farmers buy and sell?

What, in Addition, Do Farmers Want?

Acceptance, status, recognition for themselves and their families?

Advantages for their children?

Financial incentives through good prices?

A feeling of security on the land they till and graze to encourage them to follow good farming and livestock practices?

A feeling that Government leaders are interested in them, understand them, are honestly working in their interest, are willing to talk with them?

### What Are the Problems and Needs in Meeting Those Goals?

Assuming farmers and Government have decided what kind of agriculture and rural life they want, how can they reach those goals? What are the problems and approaches? They include:

Determining what agricultural products Libya needs, and its farmers can produce most successfully.

Providing farmers information on successful farming practices.

Providing tools, equipment, materials to carry out these practices?

Providing credit to buy the materials and equipment needed.

Providing better prices and other incentives, to encourage the farmer to be a better farmer.

Providing ownership, and land use-rights, to encourage farmers to work to improve their land.

The sections that follow deal with ways to meet those problems and needs.

## II. WHAT LIBYA NEEDS TO KNOW ABOUT ITS OWN AGRICULTURE

As Libya attempts to increase production, income, and living standards from its agriculture, it (just as any modern nation) must know certain things. How much agricultural land does Libya have? Now Used? Suitable for future development? What kinds of crops and livestock will it grow. How much water does Libya have underground, on the surface? Where is this water located? How much groundwater can Libya safely use - and still protect present farms, its future agriculture, and the quality of the water? How much of various farm products does Libya need? For her own use? For export markets? In short, how can Libya invest a given amount of money to produce the greatest production and income, the quickest, with the most benefit to the most people, and still protect her land and water for the future?

### SOME BASIC PLANS

A great deal of such information already is available. Much more is needed. Certain additional planning is underway. A few major steps toward planning include:

#### Previous Projects

1. Substantial amounts of scientific information gathered by the Italians, and still in libraries and files in Libya and Italy may be requested, and translated by the Libyan Government.
2. The Higgins Report prepared by the United Nations.

3. The Richards Report prepared by a U.S. study team.
4. Cyrenaica five-years agricultural plan.

#### Current and Future Projects

1. Study under sponsorship of Libyan National Bank by team of International Bank for Reconstruction and Development to be completed in fall of 1959.
2. International Agricultural Census to be made in 1960, giving Libya its most comprehensive information to date on its agriculture.
3. Numerous investigations in various stages, including such basic ones as:
  - (1) Survey in progress of amount, types, location of groundwater;
  - (2) Survey of types and amounts of land.

#### A FEW FACTS KNOWN TO DATE

Meanwhile, Libya already has some information on certain points it needs to know in planning its agricultural development. These include:

1. People - About 80 percent of Libya's people are farmers.
2. Nutrition - Limited studies and observations indicate large percentages of the rural and urban populations fall far short of enough of the right kinds of food for health and proper growth.

3. Farmer income - Farmers earn only a fraction of what they might earn with better production and marketing.
4. Trade - Libya exported LL 5,000,000 and imported LL 24,000,000 of goods, leaving a deficit of about LL 19,000,000.

The primary exports in 1956 (in order of importance) were:

<u>Product</u>	<u>Value in LL</u>
Peanuts	818,408
Scrap metal	478,951
Esparto	402,642
Sheep and lambs	307,335
Wool and hair	240,864
Hides and skins	224,522
Cattle	223,819
Sponges	187,747
Preserved fish	164,104
Camels	145,911
Castor seed	137,750
Olive oil	61,335

In other words, with the exception of scrap metal (much of it left over from the war), Libya's chief exports were agricultural products.

The primary imports in 1956 (in order of importance) were:

Meal and wheat flour	1,438,856
Machinery and appliances (electric and non-electric)	1,245,131
Automotive vehicles and parts, tires and tubes	1,206,804
Tea	865,038
Silver and Platinum	751,610
Sugar	557,657
Iron and steel	441,996
Vegetable oils	422,411

5. Schools, Hospitals, etc. - Libya currently is building many schools and hospitals, improving roads, developing other phases of modern civilization. Possibly about three-fourths of these improvements are being financed by other countries. How will Libya finance these projects in the future?
6. Sources of National Income - About three-fourths of Libya's own national income (to pay for schools, medical services, roads, etc.) comes from agriculture. If Libyan farmers could be educated - and provided enough credit - to use the best kinds of crops and livestock, and farming methods already available to them, it is estimated that they easily could double their production and income. In so doing, they would live better themselves; help pay for schools, hospitals, roads, and other services; support businesses and industries dealing in farm supplies and equipment, and the sale and processing of farm products.

### III. LEADERS STUDY THE EXPERIENCE OF LIBYA AND OTHER COUNTRIES

Libya has a core - a changing core - of persons in and out of Government who can, and do, have powerful influence on thinking and programs concerning agriculture. Because of policies in Libya prior to Independence, many of them have had only very limited opportunity to travel and observe agriculture elsewhere. It is important that these people know agricultural experience - the successes and failures - at home and in other areas. From this knowledge, they can help form sound judgments for Libya's agriculture, as well as derive stimulation and inspiration. In fact, this type of observation at home and abroad has provided the foundation for agricultural progress in many other countries.

A general plan, and schedule, of orientation should be developed for Libya's agricultural leaders.

#### Who Are the Leaders?

Orientation should be developed for persons such as:

Key agricultural officials and representatives from the Ministry of National Economy, Mazarrates of Agriculture, Agricultural Bank, Parliament, Legislative Assemblies, National and Provincial Agricultural Advisory Committees.

Provincial governors, provincial and district commissioners, and other local officials.

Sheikhs, cooperative officials.

Farmers conducting major farm demonstrations and other farm leaders.

Press and radio representatives dealing regularly with agricultural subjects.

Officials in local general agricultural committees, and advisory committees for specific projects.

#### What Kind of Orientation?

As illustrations, such orientation might include types such as the following:

1. Study trips within Libya - such as one by Cyrenaica Nazarat of Agriculture's Advisory Committee to study agricultural projects in Tripolitania . . . . Or, leaders from one of the oases visiting - and perhaps living for a while on good farms - in the coastal area.
2. Study trips in neighboring countries - such as to Tunisia to study legislation and programs to control grazing on the range -, or to Turkey, or Greece, or Iran to study agricultural extension programs.
3. Study trips to the United States - to study over-all agricultural policy and programs.

#### Conditions for Such Study Trips

When participants expect help from the Government or co-operating agencies for such observation trip, they should:

1. Have a position before they leave - and when they return - where they can make organized use of the experience obtained.
2. Have studied Libya's experience in the field concerned before going abroad.

In general, such trips abroad are useful as awards to those who have made an outstanding contribution to agricultural development of Libya.

#### IV. A FEW PRIORITY PROJECTS IN AGRICULTURAL DEVELOPMENT

As Libya studies and plans, it already pretty well knows some sound approaches to agricultural development. These include projects that can be carried out quickly and other that require a longer time.

##### SOME PROJECTS FOR QUICK RESULTS

What can Libya do to grow the most food, and earn the most money from her farms? For example, what in 1959?

Dozens of countries have struggled with that question in recent years. They have tried different approaches. Out of their experiences and mistakes, a good many agricultural leaders have concluded that the most effective plan is to:

1. Concentrate on a few things farmers can do quickly.

Here, the thought is to select first a few practices that affect most farmers - projects, on which we already have information about better methods -, something farmers can understand - something young, inexperienced extension workers can learn quickly and teach and demonstrate - something that will materially increase production and/or income - projects that will fit into a practical work schedule by seasons that the Nazarat of Agriculture and farmers can handle - projects that lay groundwork for further improvements later on.

2. Carry along, in the meantime, on projects that take a longer time.

What "Quick" Projects for 1959

Even with only limited information about agricultural possibilities and needs in Libya, a few projects appear to offer important potentials. Among these are:

1. Cereal Improvement - Most Libyans eat large amounts of barley or wheat - most farmers grow and sell these grains - , when crops are poor (as they frequently are) farmers are short of money, people are hungry, large amounts of grain are brought into the country for food. Fortunately, Libyan and cooperating agricultural agencies know how to increase yields greatly, and quickly. Specialists estimate, for example, that with better varieties already available, farmers in some areas can grow up to 40% more wheat or barley on a hectare, another 10 or 12% through seeding in rows, with additional increases possible through fertilizer. Through these methods, farmers can grow more grain, earn more money, grow as much grain as formerly on fewer hectares and save the other land for feed and other crops badly needed, sow less seed and so save grain, save time and work for other farming activities.

- a. Activities to Date - In 1958, the Tripolitania Nazaar of Agriculture, with the cooperation of FAO and the Libyan-American Joint Services carried on an extensive cereal improvement program in Tripolitania.

- b. Plans for 1959 - Cyrenaica plans to move into a similar organized program in 1959; with Tripolitania planning to continue and improve its effort.

(A further objective and need is to provide increased agricultural credit to these farmers, and to aid with a marketing program to increase farmers' returns from their grain. Steps to carry out these educational, credit, and marketing programs are discussed later.)

2. Wool Improvement and Marketing - A large percentage of farmers grow sheep and sell wool. Farmers outside the coastal area and oases - the Bedouins, the nomads of the Gebel - earn much of their cash from wool; so do businessmen in the rural areas. Libya earns through export of wool considerable income (LL 240,864 in 1956 from wool and hair) through which it buys industrial and other products abroad needed in the development of the country. Livestock men who have visited the markets for Libyan wool in Italy, report a large difference between the price that the Libyan sheep grower gets for his wool and the price at the wool plant in Italy. A good deal of the difference is due to cost of handling the wool: handling at the rural markets; hauling to Tripoli or Benghazi; shipping to Italy; handling and hauling in Italy; loss from dirt, soiled and poor grade wool, and cost of sorting and washing, wages and legitimate profits

of the men and companies that handle various phases of marketing. Farmers and business people in Libya, as well as many other countries, however, have demonstrated it is possible to get much more for their wool - and so provide farmers more money to buy tools, equipment, fertilizer to improve their farms, and to improve their agriculture, their living conditions, and the community generally. It is now proposed to extend to other communities of Libya the same kind of program, which includes:

- a. Improving the Wool Itself - Farmers in various sections of Libya have demonstrated how to produce a better quality wool, worth more money. They do it through more careful shearing, putting the fleece on a pad to avoid getting it full of sand and dirt, separating out the dirty wool (e.g., dung tags), separating out the black and brown wools from the white.

The plan for 1959 is to:

- (1) Greatly increase the educational work with farmers.
- (2) Train farmers and shearers to shear and handle the wool properly.

b. Selling the Wool for Better Prices - To encourage farmers and handlers (private and cooperative) to improve the quality and value of the Libyan wool, they must get more money for the better wool. Federal and provincial agencies are developing plans for 1959 to:

- (1) Encourage farmers to bring large lots of better quality wool to the market at the same time to be handled by private buyers or cooperatives.
- (2) Encourage additional buyers to come to the markets to promote competitive bidding (and higher prices) for the better quality wool.

c. Future Improvements in the Wool Program - In the light of experience in 1959, a team representing persons who made major contributions to the wool improvement program in 1959 will be offered the opportunity to go abroad to study markets and ways to improve the wool program in 1960. Such a group might include representatives from: Federal and provincial agricultural agencies; cooperatives; local officials and sheikhs; farmers; extension workers; private business.

3. Livestock Parasite Control - All livestock in Libya, just as in every other country, have parasites: worms of various sorts inside their bodies, and ticks and other parasites outside. These parasites cause tremendous losses through sickness and death to many animals, loss of weight, weakness of work animals. Many farmers throughout Libya have found they can control the parasites, and prevent losses, through:
- (1) Drenching (giving medicine) for parasites in the stomach and intestines; and
  - (2) Dipping or spraying to kill the insects on the outside.

They have treated many thousands of animals. Now that farmers know the value of such treatment, it is possible to develop a program so that farmers generally can treat, and cut losses. Here is a project that can benefit the masses of farmers quickly. For 1959, the plan is to:

- (1) Develop plans to teach more farmers to treat their own animals;
- (2) Organize cooperative and private supply systems to provide medicines, insecticides, and equipment for treatment.

With the development of a permanent system of parasite control to be carried on by farmers, extension workers, and private and cooperative agencies, it will be possible to use some of the money and personnel employed to date

in demonstrating parasite control and to demonstrate other important projects to improve agriculture and increase farmers' income.

SOME PROJECTS THAT TAKE A LONGER TIME

1. More Feed for Livestock - Between 70-80 percent of Libya is range country - good for livestock but nothing else. A large percentage of Libya's higher rainfall area is in this range country, and a large percentage of Libya's population lives in this area - (the nomads, the Bedouins.)

Through centuries of over-grazing, a large part of the range is hearily bare, with much of the vegetation left being poor forage plants that provide feed only from November to April. From May to October, stock are short of feed, lose weight, in some years die in large numbers. The ranges do not support as many people and livestock (and these only very poorly) as they did back in Roman times.

Livestock and crop specialists estimate that Libya could help more farmers, could increase its income more quickly, with a LL 100,000 help in restoring this range than in any other way. Or, put it in another way, they say Libya can make more additional water available for agriculture in Libya through regrassing the ranges to hold and use

(through grass)

the rain that falls than through wells, or cisterns, or dams, or dikes.

The methods are simple - but call for thought and cooperation to carry out. By far the simplest, cheapest, quickest method is to control grazing to give the range grasses a chance to recover. To do that, calls for two steps:

- a. Grow Supplementary Forage - In order to hold down grazing long enough to allow the range grasses to "come back", farmers need some other - supplementary - feed for their stock. In fact, even after the ranges recover, farmers can produce more and healthier animals, more mutton and wool, by having this extra, or supplementary, forage for the dry season from April to November.

Libya has suitable crops, adapted to various areas and conditions, to provide such extra or supplementary summer feed: Sudan grass, oats, vetch, buffel grass, alfalfa, and other crops. Livestock growers can plant these crops:

- (1) Behind the dikes and terraces in the wadis - in the thousands of dike and terrace areas they already have, or in the thousands more that can be built later; or

(2) Outside the wadis - on some thousands of hectares now used for wheat and barley, and that can be released for feed and forage as farmers increase barley yields through improved varieties and methods. (See the sections on crop improvement and extension.)

b. Regulate grazing to bring back the range - Other African and Near East countries, the United States, and other countries, have demonstrated how to make tremendous, quick improvements in their ranges through regulating grazing. This includes, holding down numbers and moving stock from area to area, depending on the condition of the forage.

What are the steps to regulate grazing? Experience in other countries suggest Libya might start by any one of a number of ways - with one effective approach being:

- (1) Getting agreement among tribes and families as to the boundaries of their land.
- (2) Passing Federal or Provincial laws to allow farmers in a particular area to agree to a plan to limit grazing, and, if they desire, to keep out livestock from other areas to protect their own ranges.
- (3) Farmers in the areas concerned (with the help of range technicians) agreeing upon numbers of livestock, and grazing regulations.

c. Re-Seeding - Some parts of the range, particularly, where the better livestock grasses have been almost or completely killed out, need to be re-seeded.

2. Catching and Using Water - Because of the limited rainfall throughout the country, Libya's agriculture depends on collecting and storing water:

- a. Water accumulated deep in the ground over the years in the coastal areas and oases, and pumped or hauled to the surface from wells to be used for irrigation.
- b. Water collected in cisterns for livestock - and behind dams, dikes, and terraces for crops - in the Gebel.

#### GROUNDWATER

Under the coastal area and oases lies water that probably has been accumulating there for centuries, with a certain amount added from year to year by the rains. Just as every drier country, Libya must protect these stores of water carefully to assure enough for continued farming in the future. Some areas already are being pumped faster than water is being returned to the ground. The groundwater level is dropping, and in some places salt water is coming in from the sea and gradually ruining the water for irrigation. In other places, the pumping apparently is at about the right rate. And in still others, there is enough water to permit additional wells.

To protect the future of agriculture in these irrigated areas, Libya needs:

1. Investigation of Supplies of Water Underground - Holes and test wells have been - and are being - dug throughout Libya to find how much water Libya has, whether the water level is going up or down, and what is happening to the quality. In 2 to 3 years, the geologists expect to complete their first over-all survey. Following that, they need to keep constant watch over present, and additional, test wells to check on what is happening to the water. When the water level drops to a dangerous level, they need to sound warnings to prevent further drilling, and over-pumping.
2. Regulations of Use - Libya, just as other countries with irrigation farming, needs to control drilling and pumping to insure fair distribution of the available water to all farmers, and to prevent damage to the supplies. Such a law is now under consideration.
3. Careful Use of Water - Of the various practices to save groundwater, one of the most important is to prevent the loss of water between the well and the crops where it is used. A recent and major step toward saving water is a project to help farmers line irrigation ditches.
  - a. Lining Irrigation Ditches - Libya has thousands of irrigated farms which produce an important part of the country's agricultural crops.

Most of these farms still have unlined irrigation ditches which lose anywhere from 25 to 80 percent of the water before it gets to the crops, depending on the kind of soil. As a result, farmers have the work and expense of pumping two or three times as much water as they use. Moreover, even though much of the water lost sinks back down to the underground water storage, each time it passes down through the soil, it absorbs more minerals (salt) and so adds to salt in irrigation supplies.

In recent years, irrigation engineers have developed low-cost methods of lining irrigation ditches to greatly reduce the water loss:

- (1) For areas with heavy, clay soils available in the vicinity, a very cheap combination of clay and gravel;
- (2) For other areas, an inexpensive cement lining, with low-cost methods of laying the lining.

An educational demonstration program on irrigation ditch lining is now underway in Tripolitania. In addition to the demonstrations, a number of farmers are now beginning to line ditches entirely at their own expense, asking only for technical guidance. The program is being extended to the Fazzan and Cyrenaica. (See sections on credit and supply-distribution systems.)

## SOIL AND SURFACE WATER CONSERVATION

A far greater opportunity to save water, and increase the amount available for crops, is to hold back rain that now runs off the bare land and off to the sea. Through building and repairing of cisterns, and dams, dikes, and terraces, it is possible to more than double the amount of water available for agriculture.

1. Cisterns - Tripolitania and Cyrenaica have thousands of cisterns - still remaining from Roman days - that could be repaired to furnish water for people and livestock; in some instances, there are suitable places for new cisterns. Repair of nearly any or all of the old cisterns would have certain advantages. People would not have to go so far for water for themselves or their stock. During drought years, water from some of these cisterns actually would reduce suffering among the people and their stock. In parts of Cyrenaica, there are areas with enough grass and forage to provide more grazing - if they had water. For those reasons, cistern repair is highly popular. But there are also disadvantages to cistern repair. Along with these thousands of cisterns, the Romans had good ranges to feed the livestock which watered there. Today, much of the range is nearly bare much of the year; and already has too many livestock for the amount of feed. Yet, when a family repairs a

cistern, they tend also to increase the number of livestock. So, the result is, more water, more livestock, less feed. In other words, in many parts of Libya, cistern repair, alone, can hurt Libyan farmers, Libyan agriculture, rather than help.

Cyrenaica, in particular, is working toward a program to balance cistern repair with livestock and livestock feed. The program includes:

- a. A plan to speed up the repair of cisterns, and at the same time cut costs;
  - b. Steps to encourage farmers asking for cistern repair help, to estimate the number of stock their range will carry; and to regulate grazing to let the grass come back; and to build dikes and terraces to grow more feed and other crops and to protect the soil.
  - c. Encouraging farmers to put more of their own money and work into cistern repair.
  - d. Developing cooperative and private services to supply materials and equipment.
2. Dams, Dikes, Terraces - For people outside the coastal areas and oases, the second biggest opportunity (range improvement is first) to increase agricultural production quickly is through building and repair of dams, dikes, and terraces. These structures collect the water running off the slopes and let it sink into the ground for crops to draw on during the dry season.

In fact, for most of the Gebel area, these structures offer the only way to provide dependable and larger areas of crop land. Behind the dikes and terraces, the Gebel farmers can grow barley and wheat, and feed, as well as vegetables and fruits to provide more and better food for their families.

The Romans built their prosperous agriculture upon thousands of dikes and terraces in the Gebel area. Through their repair and new construction, Libya possibly might double crop production in the Gebel area.

During the last two or three years, Libya has greatly speeded up building and repair of dikes and terraces. Plans are underway to further increase the work. Steps needed include:

- a. Increased educational work with farmers and the others on the benefits of dikes and terraces.
- b. Laws providing for farmers to establish rights to land they improve, and for tenants to have a fair share of the returns from their work on building and repair of these structures.
- c. Improved plans to help provide tools and equipment for the construction and repair.
- d. Help financing through credit and other steps.

## V. SOME OVER-ALL STEPS IN CARRYING OUT THESE PROGRAMS

### HOW TO HELP FARMERS IMPROVE THEIR METHODS

At the Government's experimental crop and livestock stations, you see new varieties of wheat, that produce much more grain per hectare than the farmers' varieties - sheep that produce more and better meat and wool - the use of sprays and dusts to prevent insect losses - fruits and vegetables that will help children grow bigger and healthier - many other new methods to help the farmer produce more, and earn more money. El Awelia in Cyrenaica and the Vocational Agriculture Training Center in Tripolitania are teaching these new and better farming methods to young men who will teach other young people, who will staff the Naza'ates of Agriculture and Federal Ministry, and carry on other important agricultural jobs in the future. Out on the farms, you will find a few farmers who are using at least some of these new ideas, and who are farming more successfully than their neighbors. The great majority of farmers, however, are still farming pretty much as their ancestors did hundreds and thousands of years ago. How can you encourage and teach these thousands of farmers to use these newer and improved methods? To answer that question is to provide the answer to much of Libya's future agricultural development.

Within the last 50 years or so in some countries of the world - within the last two years in Libya - Governments have found a simple but revolutionary way to encourage progress

among their farmers. Not by laws, not by force, not by punishment. Rather through the help of men who know about farming, who have studied the new methods, who go among farmers to tell and demonstrate these better methods, from the experimental stations and schools. These are the murshedine, the extension advisers. Just as in most of the other Libyan services that have grown up since Independence, many of these men are young; they still have only limited training and experience; they have much to learn. More and more, however, they will become important keys to Libya's agricultural and economic progress.

#### How Can the Murshedine Help Farmers

How can these murshedine use their limited training and experience most effectively to help farmers? What can they do in the 5, 10, 15 years needed to build up a more experienced service? As a few examples, they can:

1. Help form local committees of wheat and barley growers, of wool producers, and others to develop plans to get bigger and better yields, and more money, from these basic products.
2. Help select farmers who will take the lead in demonstrating the new methods to their neighbors.
3. Help bring these leaders together at central points for training with the agricultural specialists.
4. Help arrange for local farmers, sheikhs, merchants, and others to visit experiment stations, and other farming districts to study new and better farming methods.

5. Help arrange for farmers (especially the younger men) to live and work for a time on other farms to learn newer methods.
6. Help arrange for farmers to get together to listen to radio broadcasts, and read newspaper stories about new agricultural methods and developments.
7. Help locate successful farmers with useful stories to tell to other farmers by radio, newspapers, and otherwise.
8. Help arrange local exhibits of farm products.
9. Help arrange training for farm children.

#### How to Help the Murshedine

How can everyone interested in Libya's agriculture - government officials, legislators, local officials, merchants, others - help these Murshedine do a better job. As a few examples, they can:

1. Insist on employing only murshedine with ability to work with farmers on agricultural programs.
2. Support the idea of salaries equal to those in other jobs of equal importance.
3. Serve on advisory committees.
4. Give encouragement (through public recognition, awards, etc.) to the murshedine who do good work.
5. Provide ample training so the Murshedine year by year can become more skilled in helping farmers.

Virtually every country now working on agricultural development is moving rather rapidly into training its boys and girls in the work of the farm and home. In fact, they are now finding this youth work offers the quickest, surest, and most lasting approach to the entire country agricultural program. The reasons are simple. Children the world over take quickly new ideas, learn readily. Parents the world over want to help their boys and girls better themselves. They are willing to cooperate. When the child tries a new crop or livestock technique - and it proves better than the old method - the parent often rather quickly adopts the same new idea. As a result, new methods spread rapidly. What's more, when a boy or girl is trained, he or she soon takes over a family and farming - and puts this training to use.

A system that has spread to 60 countries - under various names and leadership - has certain basic principles:

1. A project for the boy or girl, with certain practices he or she carries out: better feeding of a lamb, raising good vegetables, planting a small plot of barley to better varieties and using improved cultural methods, canning or drying food for the dry months.
2. Help from the agricultural and home-making guidance workers in training the boys and girls.
3. Men and women in the community who give free time to working with the boys and girls on their projects.

4. Cooperation between the father and son, and mother and daughter.
5. Awards for the boys and girls who do the best work.

### Projects for Libya

A boys and girls project can be developed for every part of Libya's agricultural program. The range of project possibilities might include:

#### For Boys -

Shearing and tying a good fleece of wool, and brining it together at the same time to sell;

Growing a patch of barley with improved seed and cultural practices;

Making a sound plan to graze and improve a plot of range;

Working with water investigators in studying the groundwater supplies for irrigation.

#### For Girls -

Canning and drying food;

Growing a garden;

Raising poultry;

Making family clothes.

In addition to helping improve farming practices, this work has other advantages: helps train and encourage boys and girls to stay on the farm; provides good training for those who move into other activities; gives farm families a new self-respect.

### The Women Can Help, Too

In recent years, a rapidly increasing number of countries have extended their educational programs with farm people to include the women. They have done this for very practical reasons. They find that women contribute at least half to the country's development program - if not more. In fact, some who have studied many countries have concluded: "A country does not progress faster than its women."

The educational program with farm women includes such things as:

Growing food - including gardens, poultry, and other foods to enable the family to eat better food, to save money spent to buy food.

Canning and drying and otherwise preserving food for the dry seasons.

Nutrition - including the foods to produce and how to prepare them to improve the family's health.

Sanitation - to help prevent the diseases (especially troublesome in countries with year-around warm climates) that sap the strength and ambition of many farm people and make them seem lazy.

General farming work - because the women help with much of this work and so need to know the improved methods, and because when women are educated to better methods, they have been found to have an important influence on the men's farm practices.

Sewing - so the family can have better clothes at less cost.

Labor-saving methods - (whether washing clothes or otherwise), so the women will have time for activities mentioned earlier.

Many countries now employ women who come from farms, and who have received special training in the foregoing subjects for their agricultural and homemaking guidance staffs.

#### How to Communicate (Or "Talk") With the People

Many Libyan leaders themselves - not to mention technicians from other countries - often puzzle about how they more effectively can acquaint their farm people with new ideas; how they can get the farm families to adopt new and better methods; and how they can give their farm people a better understanding of agricultural and country needs. They are especially perplexed as to how to communicate with people who do not read or write, who live far out in the desert or the Gebel with little contact with the towns, and who have very conservative traditions. This is a question for government officials, legislative representatives, agricultural guidance workers, cooperative leaders, newspapers and radio stations, agricultural business and industrial groups, and others.

From time to time, every field of activity makes significant advances. Within the last three years, specialists in communications have made major advances in the speed and effectiveness of transmitting agricultural and homemaking ideas and information to farm people. In effect, they have made it

possible for a country to vastly speed up its agricultural development.

In this new communications technique, the technicians have drawn on, and woven together, the best ideas and methods from all fields concerned: psychology, sociology - education, agricultural guidance, industrial and vocational education and training - advertising - and certain other fields. Out of all of this, they have come up with a system that can be - and is being - adapted to languages and cultures throughout the world. In brief, the system helps:

1. "Sharpen up" specifically what you want the farmer to do, or to understand? What are the problems he must overcome to do what you suggest? How does he overcome them? Many years have been wasted and many farmers have been regarded as conservative or stupid, simply because the persons doing the teaching had not thought through these questions.
2. Who are the people who will pick up first with new ideas? How to you influence them? Who are the other types of leaders in the community whom farmers respect, and will "follow"? How do you "reach" the key people, and through them, the rest of the community?

3. What will lead the farm people to act? Interest in their children's welfare? Desire for higher income? Other factors? People in different countries and in different groups in a country react differently.
4. What are the cheapest, quickest, most effective ways to communicate with farm people: letters, meetings, bulletins, radio, newspaper, and other? What are the new techniques for using those methods?

Agricultural leaders from all parts of the world have studied this new communications system. They have included the whole range of agricultural leadership: administrators, legislators, engineers, bank and cooperative representatives, economists, extension workers, and others. All have been most enthusiastic about how the system helps them plan and explain their programs to the people with whom they deal.

The system is now being adapted to the languages and conditions of various parts of the world. It is hoped to obtain the system adapted to Arabic language and conditions in Libya. Meanwhile, specialists already are available to help develop more effective communication methods.

#### HELPING FARMERS FINANCE THEIR IMPROVEMENTS

After a farmer knows what he can do to produce more, and make more money for himself and his family - and wants to do it - how can he pay for the things he needs to carry out these improvements? Here is the second big question on Libya's agricultural development. For example, where can a farmer get the money, at an interest rate he can afford,

to buy the following items:

Improved barley and wheat seed;

A steel plow, a seeder, a scythe;

A donkey, mule, or camel he needs to pull his equipment;

Fertilizer to improve his crops, and material to kill insects;

A better harness so his donkey or camel can pull better plows;

Cement so he can fix his cistern, well, or watering trough.

#### A Gift or a Loan?

When the farmer himself does not have enough money - and most do not - he may be able to get financial help in one of two ways:

1. A Gift, Grant, or Free or Partly Free Materials from the Government - The Government may give him free seed, a plow free or at a low cost, free labor to build his dike or terrace, free cement for his cistern. These grants or gifts do help pay for things the farmer needs, but is not able to buy out of his own savings. The idea of something free may encourage him to do things he would not do even if he had enough money.
2. A Loan - When a man can, and will, get a loan for these improvements, the loan has certain advantages over the grant or gift. If a man buys a plow, or harness, with his own money (or a loan he has to pay back) he often takes much better care of it than something he receives free. Moreover, he knows he

must work harder to pay back the loan. From the public's side, it is able to help many more farmers, and improve agriculture more, through a million pounds spent on loans as against gifts and grants. After 6 months, a year, 2 years, the farmer repays the loan - and the same money can be used over and over to help other farmers - not just one farmer.

#### Who Can Furnish a Loan?

A farmer can get a loan in one or two major ways:

1. From a Merchant - So far, most farmers get loans from a merchant. In Libya, as in most other countries of the world in the early stages of their agricultural development, merchants charge high interest rates. So high, in fact, that farmers cannot afford to borrow much money. So high, that after they pay the interest, they have only limited money to buy the agricultural supplies and equipment. Many lenders, for example, may charge 50, 100, 200, or even 300 percent interest. In recent years, merchants and other private lenders have found they can help make the farmer more prosperous and lend more money, sell more equipment and supplies, earn more money themselves - if they reduce the interest rate. So merchants and other private lenders can help agriculture, themselves, and their country's development by providing better loan service to farmers.

2. From an Agricultural Bank, a Cooperative - Libya has an agricultural bank to provide cheaper loans to farmers under conditions practical for the farmer. Just as the agricultural guidance service, the bank is young. To date, it has served only a small number of farmers. But it is getting experience, is organizing to serve more. The bank, just as the merchants, however, has certain problems. For the big farmer, who comes to the bank for a big loan, lending is fairly simple. But, for the many small farmers, from widely scattered areas, wanting only a small loan, the problem is much more difficult. It is impossible for the bank, or merchant, to lend to all of these farmers at low interest rates. But there is one other important approach - through a cooperative. Here, farmers organize to give their own free time to handle the small loans, to see that farmers use them properly, to collect them - and pay back the bank. They greatly reduce the costs of lending, and borrow money at lower interest rates. The cooperative makes it practical to provide loans at a reasonable cost where otherwise this would be impossible.

#### What Kind of Guarantee?

Any merchant or bank wants a guarantee that it can recover its loan. Under conditions in Libya - with only a few farmers having a sure claim to their land, and having only limited property - providing such a guarantee is difficult. It can be done, however. For example, through:

1. "Guarantors" - merchants or others with property who agree to guarantee that a farmer's loan will be repaid.
2. A tribe that agrees to assure repayment of loans of its members.
3. A cooperative in which members agree to share part or all the cost of repayment if a member fails to pay back his loan.
4. Taking a man's wheat or barley, or wool, as security for a loan until the grain or wool is sold and the farmer can repay his loan.

Those are a few things that can be done now. Meanwhile, Libya can work toward laws that will give the farmer more definite rights to the land he farms, to the cisterns and terraces he builds, and other rights that will provide increased security for loans.

#### EFFICIENT SYSTEMS OF BUYING AND SELLING

To improve its agriculture, Libya needs an efficient system through which a farmer can buy supplies and equipment, and sell his products. Such a system also can provide jobs and incomes to many people in the towns and cities. Such a system includes:

1. Local Manufacture - Year by year, Libya will get the experience, and develop the system - to produce certain supplies and equipment more economically than it can buy them from abroad. It can start on certain simple things. For example, tools. Last year, a

Tripolitania blacksmith made a half dozen drills to seed grain in rows. There are other such tools local people can make.

2. Distribution of Supplies and Equipment - Libya can develop a system of merchants or cooperatives that can sell to the farmer at a reasonable price (at a reasonable profit to the seller) dipping material for his sheep and camels - dust for his vegetables - cement for his cisteras - picks and shovels. These can be close to, and convenient for, the farmer. They can handle materials and equipment now distributed by government agencies.
3. Selling of Farm Products - Libya can develop a system of private and cooperative selling of farm products to handle present products more efficiently - and to handle the increased volume as Libya increases its agricultural production.

#### Who Can Help Develop the System?

Who can give help in improving and developing this system of manufacture, buying and selling?

1. The individual merchant and cooperative can find out about supplies and equipment the farmer needs - including those things now being distributed by government agencies - and set up distribution points.

2. Groups of merchants and others can study the needs, and develop plans for effective distribution - and technical guidance to the farmer on the supplies and equipment.
3. The Federal and Provincial Governments can help shift distribution to private and cooperative groups, and give technical help to them in getting established.
4. An individual business man with a desire to help his country can provide leadership - with the help of his government - in developing a good system of local manufacture and supply.

## VI. AGRICULTURAL AND HOME MAKING EDUCATION

Libyans have been pretty largely cut off from the type of agricultural education open to young men and women of most other countries for many, many years. As a result, it has only a limited number of persons trained for the agricultural positions in and out of government. Probably half of such positions are still occupied by persons from other countries. These people have performed valuable service for Libya following her Independence. Some may wish to stay and work indefinitely in Libya, and Libya (just as the United States and certain other countries) may welcome citizens from other countries. It is important, however, for Libya to review carefully the number and types of persons needed in agricultural and home economic fields in the next 5, 10, 15, 20 years; and provide educational opportunities for Libyans to qualify for such positions. Such education will include:

1. Training in secondary schools and colleges within Libya. Plans here will be governed by the number of people to be trained in the various fields, and the economy and effectiveness of training in Libya compared with some other countries.
2. Training outside Libya - for at least part of the individual's education - with the length and place for education being carefully considered for each case.

(Such a plan already has been developed for horticulture in Cyrenaica).

## VII. HOW LIBYAN LEADERS CAN HELP

### WHAT CAN THE SHEIKHS DO?

The sheikhs represent by far the largest group, the group closest to the farm people, the group with the greatest potential influence to help develop a strong Libyan agriculture, the group best able to help develop a confidence among their people in their Government.

What, specifically, can the sheikhs do?

1. Study and Learn - Above all, they can study and learn ways to improve Libyan agriculture. They can:
  - a. Observe, and discuss new and improved agricultural methods at the Nazarat of Agriculture, at the agricultural experiment stations, in meetings with agricultural experts.
  - b. Travel to see successful agricultural programs in Libya.
  - c. Participate in projects to study new agricultural methods in other countries, and bring new and better methods back to their own people.
2. Help Plan - As members of general agricultural advisory groups, and special groups for cereals, wool, etc., help plan agricultural programs for their tribes and communities generally.
3. Demonstrate to their Tribes - Each sheikh has the opportunity, the responsibility, to demonstrate (on his own land) to other members of the tribe the best known

agricultural practices. The agricultural guidance workers, specialists, credit workers, and others, will help.

4. Help Organize Group Action - A tribe, as a group, can provide a kind of group action needed to carry out certain major agricultural improvement programs. For example, work out a plan to improve their wool, and sell it in uniform lots, to get better prices, to improve the range. The sheikhs can lend their influence, and work, to organize and carry out such projects.
5. Help Create Confidence in Libya - In these days when people the world over are striving to better themselves, for change, sheikhs have a particular opportunity to help bring about orderly, constructive improvements in Libya. To make their people feel that they can make their voices felt - that they can make their wishes and needs known - that they have leaders interested in their welfare - that they can help bring improvements and change. They can help provide opportunity for their tribe to make suggestions, to help select tribe members they respect as representatives to help demonstrate new methods and travel elsewhere for study.

As Libya becomes more and more self-dependent, as it finances more and more of its own development, as its agricultural leaders get more training and experience, its legislative bodies will have greater and greater responsibilities. They will need to study, and understand, the increasingly technical problems of agricultural development. What do farmers want? What kinds of agriculture are profitable in Libya. What policies and services are needed for successful agricultural development? How will Libya finance its agricultural programs? Through taxes? If so, what kinds of taxes, levied on whom? What will Libya do about the widely-used, but vigorously debated, subsidies and grants for agriculture? How can the legislative bodies gain and keep the confidence of the people in the legislators' integrity and good judgment? On the answers that legislators are able to give to those and related questions hinges much of Libya's success as a young and growing nation.

Examples of a Few Immediate Basic Questions

1. A great deal of Libya's agricultural future rests on establishing more definite rights of use and ownership to land, so a man knows what land is his, so he will have an interest in developing and protecting it. What is the practical approach to this problem in Libya?

2. Libya rapidly is coming face to face with a problem common to all countries with limited water supplies. How can water be divided fairly among all people - wealthy and poor? What kind of controls are needed to keep a few people with powerful pumps from draining away the groundwater, leaving other people with little or none, and opening the way for salt water to move in and damage or ruin the water for irrigation purposes?
3. Tunisia, Morocco and many other countries have passed laws to protect their livestock ranges from the damage that has occurred so widely in Libya? What legislation is needed, and is practical, for Libya?

Those are but a few of the many, and increasing number of, agricultural problems facing Libya.

#### How to Find the Answers?

How can legislators (members of the Parliament and the Legislative Assemblies) get background necessary for sound decisions on these and other complex questions? For example by:

1. Visiting the agricultural areas, observing problems and projects, holding meetings with farmers and local officials to get their views.
2. Asking their governmental departments to prepare technical reports and recommendations.
3. Setting up hearings in the legislative chambers, or seminars outside, to hear technical views and recommendations.

4. Using opportunities for agricultural committees to study agricultural development policies and programs - and how legislative bodies deal with agricultural problems - in other countries.
5. Coordinate their activities with educational activities of the agricultural guidance service and cooperatives. on such basic questions as land-use rights, but in such a way as to maintain completely the independence and integrity that a legislative body should have.

#### Where to Start?

By starting with someone of the foregoing or other basic agricultural policy questions facing Libya today - or with a question of how to make the agricultural guidance service a more effective link between agricultural agencies and the farmer - Libya's legislators can try our various ideas and approaches and lay its groundwork to move into other problems.

#### WHAT CAN PRESS AND RADIO DO?

A country's newspapers and radio can have a tremendous influence on how fast its agriculture develops. They provide the nerve center - the daily contact - among the hundreds of people concerned with an agricultural program: government officials and technicians, legislators, bankers and trades people, local officials, leading farmers. Moreover, they stand apart from government agencies actually working on such programs, they have a certain detachment and independence that enable them to

see and report the over-all public interest. Directly or indirectly, the press and radio also do, or can, touch large numbers of key people out on the farms.

### Some Specific Activities

The newspapers and radio stations (through various techniques of presentation) can:

1. Report the actions, and practical advice, from their government departments and legislative bodies.
2. Give background on basic problems such as land tenure or wool marketing through information from experts and observations of reports, and interviews with farmers and others.
3. Participate in surveys and reports on the various agricultural areas in the country presenting special problems, or offering opportunities for special development.
4. Report agricultural conditions and markets.
5. Report meetings and other special events.
6. Carry interviews with successful farmers both to share their experiences with others, as well as to give stimulation and encouragement to farmers and agriculture generally.
7. Bring useful reports and information from other parts of Libya, or from other countries. For example, report wool demands, markets generally, consumption, prices for Libyan wool in Libya and elsewhere as a guide to farmers in their improvement programs.

Cooperation by Agricultural Guidance Workers

The Agricultural Guidance Workers scattered throughout the country can help the newspapers and radio stations through:

1. Bringing to their attention good subjects for stories and broadcasts.
2. Extending the influence of the newspapers and radio.

For example, the advisers can

- (a) publicize agricultural broadcasts, and get people together for group listening;
- (b) post agricultural stories or pages from newspapers on bulletin boards, and read them at meetings.

WHAT CAN MERCHANTS AND INDUSTRIES DO?

Libya's merchants and other business and industrial leaders have a big opportunity to help with agricultural development - to help their farmers, themselves, their country. For a modern country's agricultural development rests upon an efficient system to distribute supplies and equipment to the farmer - and to market and process the products he grows.

What Can They Do?

As examples, they can:

1. Talk with the Nazarat of Agriculture, and others, to find out the kinds of tools, fertilizer, insecticides, and other materials and equipment farmers need, stock them. And sell these things at reasonable profits. A merchant who sells these goods at reasonable profits makes it

possible for farmers to buy more insecticides or fertilizers, to produce more, to earn more, to buy more supplies, equipment, clothes, etc., the next year.

A merchant who makes a 50 percent profit on LL 1,000 of sales earns LL 500. If he makes 25% profit on LL 3,000 sales, he earns more - LL 750. Merchants and business people both in Libya and other countries have provided many examples that this is true.

2. Establish confidence with their farmers that they are providing good quality at fair prices.
3. Charge reasonable interest rates on things the farmers buy on credit.
4. Study the kinds of insecticides and other materials a farmer needs for different purposes and advise the farmers who come to buy.
5. Serve on local committees to plan effective agricultural development in their communities.
6. Help provide awards and recognition to farmers and their families who adopt successful practices - and thereby encourage farmers, and gain their confidence.

#### How to Start

Government agencies - Ministry of National Economy, Nazarat of Agriculture, and others - can bring merchants and business leaders together to acquaint them with agricultural programs and needs.

A business leader who wishes to help his people and his country can bring agricultural business and industrial representatives together - informally, in associations - to develop specific plans of cooperation in Libya's agricultural development.

VIII. PEOPLE CAN HELP EACH OTHER

Farmers in various parts of Libya - and in various parts of Africa and Europe and the Near East - and in the United States and other countries can help each other in their agricultural development. One farmer learns quickly from seeing what another farmer does. In studying each other's methods, in helping each other, they get acquainted, become friends, and do much to promote better understanding and cooperation among the Provinces of Libya, among the countries of this part of the world, with other countries. What are some of the things that farmers - on their own, or with some help of their governments - can do: As example, they can:

1. Go as groups or individuals to study successful activities of farmers in other parts of Libya, or in other countries.
2. Have one or more of their farmers go to another area to participate with extension workers in training farmers in a new method; for example, in improved methods of shearing sheep, or tying and handling wool.
3. Exchange materials and ideas by mail.

Farmers the world over are eager for this kind of cooperation among themselves. As random examples:

1. Farmers in Tripolitania have expressed interest in getting better acquainted with those in Cyrenaica.
2. Farm leaders in Tunisia have expressed interest in exchange visits with farmers in Libya.

3. Farmers in Nevada (a State in the United States much like Libya) have expressed interest in getting better acquainted with the farmers of Libya, and finding ways they can cooperate in Libya's agricultural development.