

## Technical Cooperation Program at the ESP Farm

It is of great importance that the Agricultural Instruction program at the Ecole Superieure de Pedagogie be modernized and developed upon the basis of a sound plan. In order to do so, an effort has been made to outline the program which has been conducted, resources available and potential program at the school. That outline is attached.

You are requested to study the material here presented and to make suggestions as to changes required. Also, to accomplish the maximum possible for the people of Laos, it is desired that the program be a part of the total contribution undertaken by various RIG governmental agencies to the welfare of the people.

Each of the government agencies concerned are being asked to react to this proposal and to indicate how it might contribute to the goals they are working toward and how they, in turn, might be able to assist.

### I Present Program

#### A. Purpose

1. Teaching aid in agriculture
  - a. Student gardens
  - b. Student animal projects
2. Provide food for the school kitchen
3. Demonstration area for students and farmers
4. Model farm

#### B. Facilities

1. Land - 35 hectares cleared
  - a. Farm
    - (1) Cropland -  $19\frac{1}{2}$  hectares (2 irrigated)
    - (2) Fishponds - 1 hectare
    - (3) Irrigation pond -  $3\frac{1}{2}$  hectares - Maximum depth  $4\frac{1}{2}$  meters, mean depth  $1\frac{1}{2}$  meters
  - b. Garden
    - (1) Student plots - 4 hectares irrigated
    - (2) Orchards - 2 hectares irrigated
    - (3) Vegetables - 4 hectares irrigated

## 2. Buildings

- a. Workers' quarters - 5 buildings - 14 people
- b. Feed storage building - 160 sq. m.
  - (1) Areas for mixing, drying and grinding feed - 104 sq. m.
  - (2) Storage capacity - 140 cu. m.
- c. Warehouse - storage of tools, fertilizer, sprayers, etc. - 91 sq. m.
- d. Garage and machine storage - 24 sq. m. and 96 sq. m.
- e. Brooder chick housing - 400 chick capacity
- f. Hen housing - 1000 hen capacity
  - (1) Community hen houses - 5 houses of 24 sq. m. each
  - (2) Adjoining yards - 2 of 110 sq. m. each and 3 of 90 sq. m. each
  - (3) Cage laying house - 360 cages
- g. Hog housing - 22 pens - 192 sq. m.
- h. Duck housing - 48 sq. m.

## 3. Equipment

- a. Tractors
  - (1) John Deere 3010
  - (2) John Deere 3020
  - (3) International 285 - very poor condition
- b. Grain drill - John Deere 8 ft.
- c. Two row corn planter - IH (3 point linkage)
- d. Dish plow - IH 2 or 3 bottom (3 point linkage)
- e. Moldboard plow - IH 4 bottom (trailing type)
- f. Off-set dish harrow - IH (3 point linkage)
- g. Spring tooth harrow - 7 ft.
- h. Rear mounted blade scraper - 6 ft. (3 point linkage)
- i. Rotary mower - 6 ft. PTO driven (3 point linkage)
- j. Post hole digger - needs repair
- k. Deep chisel subsoiler
- l. Row crop cultivator
- m. Sickle mower IH - need repair
- n. Rice Mills
  - (1) 450 bu. capacity - new
  - (2) 100 bu. capacity - needs repair

- o. Hammer mill (PTO driven)
- p. Two gasoline driven 2 wheel garden tractors
- q. Kerosene incubators - 2 of 300 egg capacity each
- r. Irrigation equipment
  - (1) 700 ft. of various sized plastic pipe
  - (1) 700 ft. of various sized plastic pipe
  - (2) 15 "rainbird" sprinklers
  - (3) Pumps - 1 gasoline and 1 diesel (the pumps we are using now are borrowed)
- s. Hand tools and sprayers
- t. 2 tractor pulled dump scrapers.

4. Livestock

a. Swine

- (1) Yorkshire - purebred - no inbreeding

Sows	1	Small pigs	
Boar	1	Boars	7
Gilts	5	Gilts	5
Barrows	1	Barrows	7

- (2) Berkshire - purebred - 1 gilt
- (3) Duroc - purebred

Sow	1
Boar	1
Gilt	1

- (4) Crossbreds -  $\frac{1}{2}$  Duroc and  $\frac{1}{2}$  Berkshire

Gilts	2
Barrow	4

b. Poultry

- (1) Rhode Island Red - purebred - no inbreeding

Roosters	2
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- (2) Leghorns - purebred - high degree of inbreeding

Rooster	10
Hens	37
Pullet	27

- (3) Gesse - 10 heads

c. Fishponds - 3 ponds totaling 1 hectare.

C. Program

1. Livestock

a. Swine. Our breeding program consists of producing as many purebred pigs as we have space and feed. Any good breeding stocks we don't keep for our own herd is sold at the going market price to almost anyone who can't get garbage from the school kitchen. We have falsely assumed that these people have the means to properly feed and care for these pigs. These people should be given instruction in the feeding and care of hogs before they buy improved hogs that do not do well under conditions that the local breeds of hogs are used to.

Hogs that aren't suitable for breeding purposes are fattened and sold to the ESP kitchen at less than market price.

We have only bought one boar in two years but the time has come when we need to buy new stock to replace the original stock that got too old and was sold. We need new blood lines to cross with the young stock we now have if we continue breeding Yorkshire.

b. Chickens. Our breeding program is to hatch chicks for replacement. Our plan was to buy roosters of different blood lines so as not to have inbreeding. But due to poor records, management, etc. all of our Leghorns are highly inbred to the degree that they produce only 1/3 of what they should produce. The only selection has been natural selection

We have the Leghorn breed because we, in the past, were primarily interested in egg production. The eggs were sold to the workers at the ESP for less than market price. If we continue with the Leghorn breed it would be impractical to continue breeding with our present chickens because of their low productivity.

c. Geese. Goslings were purchased in Bangkok and raised for sale to the kitchen. We had difficulty in selling them because the kitchen workers said they were too hard to pick. The primary reason for keeping the geese we have now is so that people can look and marvel at these large birds.

d. Ducks. We used to have both meat and egg laying ducks. Since the people running the ESP farm at the time didn't know the difference and/or didn't care, all of the ducks were sold or given away.

e. Fish. Our fishponds have only produced about 1/5 of the fish that they should produce under the proper management. There hasn't been any disease or contamination to kill the fish but every other way of lowering production is probably present, i.e. overpopulation, predatory species, improper feeding, improper breeding, and pilferage.

We have given most attention to raising Tilapia due to their unexcelled tonnage output and ease of propagation. Common carp, catfish, and snakeheads are raised for diversification. These fish need special spawning and nursing tanks which we don't have.

Animal manure, excess garbage, and waste rice bran constitute the fish diet.

## 2. Crops and Soils

All of our farm land has been cleared from the jungle in the last six years. Most of the soil hasn't been under cultivation long enough to improve its structure and tilth. It is low in almost every ingredient necessary for good crop production. However, with the use of commercial fertilizer, green manure, etc. we have been able to improve the soil a little and raise some feed crops such as corn and sorghum. On the more errodable land we have planted Acacia and Sesbania. Since no one presently working on the ESP farm is specifically trained in soils and field crop production the results are not as good as they should be.

## 3. Irrigation

We can presently irrigate about 12 hectares of land. Two hectares are used for field crops and the rest is used for student plots, school vegetable production, and orchards. Our methods surely should use improvements to save water and labor.

## II Proposed Program

The following program is tentative until all parties concerned are in agreement of what should be done. It is a summary of the farm's potentialities under the best possible conditions.

A. Purpose

1. Teaching aid in agriculture
  - a. Student garden plots
  - b. Student animal projects

This is the primary purpose of having a farm at the ESP.

2. Demonstration area for students and farmers. This has always been one of our purposes but we haven't made any extra effort to further this purpose. However, we have always had excellent opportunities to do so because visitations to the ESP by high officials and other groups usually include a tour of our farm.

3. Experimentation

We have in the past done some field testing of fertilizer treatments, crop varieties, etc. but no records were kept. It is possible for us to run successful experiments. We would only be limited by the feeds we could use for our animal and labor costs.

4. Model Farm

This can have many meanings. We will refer to the ESP farm as being a model farm in so far as it uses modern machinery and methods and is self-sufficient. If a model farm is not self-sufficient, it is not the kind that a farmer would want as a goal for his farm. Therefore the ESP farm should try to remain as self-sufficient as possible. The limitations to self-sufficiency being experimentation and possibly demonstrations in which cost of labor is high and monetary returns low and help needed to maintain student instruction.

To keep raising food for the school kitchen as one of our goals is impractical in that we cannot but meet a fraction of the kitchen needs and products sold to the kitchen lower our self-sufficiency because the farm receive less than market price.

B. Activities

1. Livestocks

- a. Swine. We will probably continue raising hogs as we have done in the past except that we will put more emphasis on the breed of hog (Duroc) that the livestock

division of USAID/AGR and the Lao government are using in their program. In this way RIG/Ag. would not have to go to Thailand to buy breeding stock for distribution. Also any enterprising Lao farmer wanting good breeding stock wouldn't have to go out of the country. The number of hogs we raised would be limited by feed supply and housing. With higher production of our present land through irrigation, fertilization, etc. and/or more cleared land we would have more hog feed.

b. Chickens. The changes in our chicken program will be, as in pigs, to raise the breed that is in high demand by farmers and the livestock division for use in their program. The chickens would probably be Rhode Island Reds. With chickens we can produce breeding stock at the rate of 500 day-old chicks per month providing we keep our incubators operating all of the time and the buyers are prompt in picking up the chicks. Pullets and roosters could also be raised for sale.

c. Ducks. Since we have the facilities we could raise the egg laying and/or the meat type ducks. We could incubate duck eggs in the same manner as we do chickens to provide ducklings for sale and distribution.

d. Geese. We have the facilities to raise geese but they lay so few eggs and are seasonal layers making it expensive to raise geese for breeding. It is cheaper for us to buy goslings from Thailand than to hatch our own thus making it cheaper for a farmer to do the same rather than to buy from us at cost.

e. Fish. New species should be introduced to make more efficient use of the food supply. Separate inlets, spillways and drains should be constructed for each existing pond. Nursing and breeding tanks and ponds need to be built to hatch the fish eggs. With these improvements for producing fingerlings we should have more fish ponds. We have land suitable for building more fishponds but we lack the equipment to build them.

## 2. Crops and Soils

This area is where the most improvement in our present program can be made. We should, with improved methods, be able to triple present crop production. To do this we need better crop rotations, better fertilizer application, and irrigation. These things require first that soil tests and land surveys be made to determine the soil composition and the topography.

Further detailed recommendations on needs cannot be made until the tests and surveys are completed, but probably land leveling, ditch building, etc. will have to be done. The amount of extra land we could use for crop production would be limited only by the amount that we want to clear. The amount of clearing necessary would have to be decided after the number of livestock to be raised was determined and crop production potentials determined. The amount of water available for irrigation will probably not be a problem if we clean the trash out of our big irrigation pond and make it deeper to increase its capacity and develop the new fishpond area which probably has enough extra water to be used for irrigation.

C. Requirements

1. Livestock

a. Swine. As stated previously we will need new breeding stock of the breed desired by the livestock people. This will probably mean the purchase of two or three Duroc gilts or sows.

b. Chickens. We will need new breeding stock of Rhode Island Red hens and roosters. Three hundred straight-run or sexed day-old chicks is about the right number for one time in building our poultry population. Again every two months we would do the same thing until we have enough chickens to fill our housing and/or could start hatching our own chicks. When this time came we would periodically have to import new roosters so as not to have inbreeding. Since kerosene incubators are temperamental and sometimes independable we would probably need to purchase an electric incubator.

c. Ducks and Geese. If we were to start again with ducks and/or geese we would probably start in the same manner as described above for chickens.

d. Fish. New species would be purchased in Thailand and stocked. The number would depend on which species, percentage of these species wanted, pond area available and breeding facilities available.

Improvements and new construction to be made in existing ponds would include drains, outlets, and inlets for two of the ponds. Leveling and improving the pond bottoms. Building breeding ponds and nursing tanks.

Equipment and materials required for the listed improvements on existing ponds would be a bulldozer, 100 ft. of drain pipe, 100 ft. of 2 in. plastic pipe, 3 H.P. gasoline pump, lumber, and cement.

## 2. Crops and Soils

After preliminary tests and surveys are made and recommendations are made we will probably need the following.

- a. Bulldozer and land leveling equipment for clearing and leveling land and building ditches for irrigation. Bulldozer and/or scraper for cleaning out the irrigation pond and developing the new fishpond area and its irrigation potential. We should theoretically get this equipment and operators from Public Works in exchange for a new IH TD - 20 Bulldozer we ordered and they got, and IH TD - 18 and TD - 9 with parts needed for repair.
- b. Irrigation pump and plastic pipe (amount yet undetermined).
- c. Roller harrow, 8 ft.
- d. Combine harvester - 6-7 foot cut, PTO-powered, capable of handling rice, beans, and picked corn. Cost \$3,400.00.

Harvesting will be a bottleneck if it is not mechanized. Gathering all of the grain required (60 tons) by primitive methods will not be practical.

- e. Mobil feed mixer, PTO powered, 90 bushel capacity. Cost \$1,500.00. Manual labor is not dependable for mixing rations. This machine would also serve to move bulk grain from the field to the grainary, and from the feed mill to the animal pens.

## 3. Personnel

Since the farm manager and garden manager have been trained only in specific areas and know little of other areas of agriculture and since individual IVS advisors are not permanent and have different ranges of technical know-how, a permanent program of technical advice is needed. The advice can best come from the agricultural branches of the government which have specialists and experts in all of the areas of agriculture. For example, we need a regular

inspection, probably once a month, from specialists in fisheries, livestock, irrigation, agronomy, extension, farm machinery, etc. to give advice to our operation. In this way we can gain the advice needed at the ESP farm to make it a model farm without putting a variety of experts in agriculture on the ESP staff.

### III Effect of Proposed Program

#### A. On RIG/Education

The ESP would have a farm that would be more ideal for instructing students in agriculture. We would demonstrate to the students how to farm successfully with modern methods. We would have more facilities to expand the student agricultural projects. This program would provide a base to start on agricultural college, if desired, within the ESP. At present time, there isn't an agricultural college in Laos.

#### B. On RIG/Agriculture

##### 1. Livestock

The ESP would be a source of breeding stock for Lao farmers. These breeding stocks, if desired, could be used by the Lao Veterinary Service. The ESP farm could be a sight for experimentation work as well as a demonstration of modern methods of animal husbandry.

##### 2. Crops and Soils

The ESP farm could be a good place to conduct crop and/or soil experiments as well as a source of plant seeds for sale and distribution to farmers. This could be a demonstration area for crop varieties, fertilizer treatments, insecticide and fungicide treatments, etc.

##### 3. Fisheries

Our fishponds could supply fingerlings to stock fish ponds of Lao farmers as well as provide a place for experimentation and demonstration of cultured fish.

### IV Cooperative Effort Needed

#### A. General Cooperation

Everyone involved in the program must first agree that it is a good program and that it is needed. Then in conference with

everyone involved it must be decided and agreed upon what needs to be done, what can be done, and what will be done.

B. Cooperative Activities

After it has been decided what will be done, a specific detailed work plan will be needed. This plan will itemize immediately and future action listing, if possible, the number of people involved, the cost of materials needed, and dates that the action will be started and finished.

V Alternative Activities

If some aspect of agriculture is not mentioned in this outline and it is felt that we want and should expand to other areas, it is entirely possible. For example, we may want to start raising cattle on the ESP farm. If so, we simply should confer again with cooperating parties, agree upon what could and should be done, and make another plan of action.

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