

7.6.3 Seed Marketing Cost and Prices

The foundation and registered seed were bought or sold at the official recommended prices in the Model Areas. While the price of certified seed fluctuated by season, prices for certified rice seed and non-certified corn seed became highest at the wet season planting because the commercial production area in wet season is larger than that in dry season. The price of non-certified peanut seed became highest at dry season harvesting. High quality peanut seed can be produced from dry season cropping in the region and there is a demand for seed from outside of the region, especially from Region I. The price of certified rice seed at wet season planting was ₱ 8.5/kg and higher than the official recommended price of ₱ 8.3/kg, while at other seasons prices were lower than the recommended price. Non-certified seed prices for peanut and corn were lower than the recommended prices at all seasons. Seed prices for peanuts in the wet season planting became lower than the average farmgate prices for commercial crops. The prevailing prices of seed in the Model Areas may be summarized as follows :

Seed Crops	Highest Seed Price		Lowest Seed Price		Average Seed Price (₱/kg)	Commercial Crop Farmgate Price* (₱/kg)
	Price (₱/kg)	Month	Price (₱/kg)	Month		
Peanut (Non Certified)	11.5-20.0	April - May During Dry Season Harvesting	7.5	May - June During Wet Season Planting	10.0	10.0
Rice (Certified)/Paddy	8.5	June During Wet Season Planting	4.5	Oct. - Dec. During Wet Season Harvesting	7.5	4.1
Corn (Non-Certified)	15.7	April During Wet Season Planting	6.0	Feb. & Aug. During Wet and Dry Season Harvesting	9.1	5.3

* Annual average

Public buses were commonly used for procurement of parent seed from the stations, while joint procurement was seldom done by the provincial seed producers association or cooperatives. Transportation costs for peanuts and corn varied with the distance from ₱ 8 to 17 per 20 kg. In the case of rice seed in Region VI, cost of seed transportation is decided by the federation of seed growers associations, i.e. the unit cost is ₱ 0.15/km/45 kg and the maximum is set at ₱ 10/45 kg of which distance is equivalent to around 67 km. The costs of transportation may be summarized as follows :

Seed Crops	Origin	Destination	Transport Means	Cost (₱/unit)
Peanut	Ilagan ES	Maddela, Quirino	Bus	₱17/20 kg
Rice	Visayas ES	Each Province	Truck/Bus	₱0.15/km/45 kg ^{1/}
Corn	Davao NCC Tupi S.F	Davao City Proper	Bus	₱15/20 kg
		Koronadal	Bus	₱ 8/20 kg
		Norala	Bus	₱15/20 kg

^{1/} Including loading and unloading, maximum ₱10/45 kg decided by the Federation of Seed Growers Association in Region VI.

7.6.4 Planning and Monitoring System for Seed Production and Distribution

Regional seed production and distribution activities are planned by the regional seed coordinators on the basis of parent seed availability and the requirements of the crop production programs. While the seed production programs in Region II for peanuts and Region XI for corn did not reflect the local needs for seed production and distribution, and the production targets were usually set higher than the seed production capability of the regions. In case of Region VI, foundation rice seed was over-produced in Visayas E.S compared with the regional requirement. And the production of registered rice seed was more than the requirement of certified seed growers.

After reorganization of the DA through the decentralization policy, the coordination between the seed coordinators, the stations and seed growers seems to be weak in general. For example, production activities by the stations and seed growers, especially in the number and area of seed growers by locations and class of seed produced are not monitored well. Seed production and distribution by the stations and seed growers were not done in an orderly way, hence over production or shortage of seed arose.

Field inspectors assigned by each DA provincial office have an important monitoring role for seed production activities of seed growers. Field inspectors have to report the results of field inspection and seed stocks of seed growers for seed sampling every month to the provincial seed coordinator as well as the regional seed testing laboratory. While those reportings were not smoothly done due to shortage or no assignment of full time seed inspectors as well as lack of means of transportation for the inspectors.

The regional seed testing laboratories have a practical data consolidation function in regard to regional seed production and distribution, yet the shortage of manpower and lack of processing facilities makes timely data consolidation and analysis for the planning difficult.

At present the monitoring activities of the regional seed coordinator as well as the planning and management section attached to the regional director have to rely on the seed testing laboratory. For effective monitoring activities at the regional level, monitoring procedures need to be rationalized. Practical seed production and distribution in the Model Areas can then be prepared on the basis of a proper assessment of present situation.

7.7 Seed Growers

7.7.1 Organization and Activities

The present organizational structure of the seed producers associations in the three model regions, is based on Board of Directors, President, Vice President, Secretary, Treasurer and Auditor who are elected by the members. Similar organisational structures are found in the Maddela peanut planters cooperative and in Region XI where almost all the existing seed producers association have been converted to seed producers cooperatives. In Region VI, the rice seed producers association still exists together with a Seed Growers Federation.

These associations/cooperatives have established sets of criteria to safeguard and maintain the unity of their associations, and the criteria established by the seed producers association from the scale of the seed production area to the utilization of farm machinery and post harvest facilities clearly demonstrate their eagerness and determination to produce the desired quality seed. These criteria are observed to be almost the same in all the seed producers associations in the three model regions.

It is also noted that the frequency of general assembly meetings differs from association to association in the three model Regions. Some have them monthly and others quarterly or semi annually. It is assessed that this irregular holding of meetings among the seed producers associations would affect the needed coordination for the purpose of production and distribution of quality seeds. These associations conduct general meetings for the purpose of election of officers, financial reporting on the status of the association and information dissemination related to seed procurement and distribution. These activities would directly benefit association members in all the associations covered by the model regions.

Group activities and communication among the members is noted to be inadequate for the reason that very few of these organizations have permanent offices. At present the associations and cooperatives with permanent offices are mostly found in Region XI. This

can be attributed mainly their limited financial resources. The need for permanent offices is important to foster unity and promote coordination.

The present activities of the different seed producers associations or cooperatives are more or less of the same nature in each of the model regions. Their activities include coordination and assistance in marketing of seed produce among the members. Furthermore, the associations or cooperatives assist their members in their procurement of planting materials and also in selling them fertilizers and agrochemicals. Likewise, these cooperatives and seed growers associations also extend technical assistance to their members by conducting seminars by extension workers. These present limited activities of all the concerned seed producers associations may be attributed to the limited financial resources of the associations and also the lack of cooperation from their members.

The present number and areas for seed production of the seed growers of the three study crops differ greatly in the three model regions. It can be summarized that peanut seed growers have the least number and least area for seed production, while the rice seed growers in Region VI have the largest area and in number. Furthermore, corn seed growers in Region XI are quite low in area and in number. In terms of area of landholding it can also be summarized that peanut seed growers have the least area, while the rice seed growers have the biggest and the corn seed growers are in between. The comparisons are summarized as follows :

Item	Region II	Region VI	Region XI
Area of seed production (ha)	10	543.5	69.0
Number of seed growers	9	105	38.0
Average landholding (ha)	2.5	13.2	7.0

7.7.2 Seed Growers' Economy

The assessment on the present profitability of the three study crops among the seed growers in the model regions is mainly based on the average area of seed production, the average yield, and the current prices. The average area for seed production among the seed growers are 0.68 ha for peanut, 7.72 ha for rice and 1.42 ha for corn. Cropping intensity as shown below is highest for peanuts because intensive cropping for corn and other third crops is commonly done in dry season. The cropping intensity for rice is lowest among the three study crops due to inadequate irrigation water during the wet season in Region VI.

Item	Peanut Seed Grower (ha)	Rice Seed Grower (ha)	Corn Seed Grower (ha)
Wet Season	0.68	7.72	1.42
Dry Season	1.21	6.41	1.33
Cropping Intensity (%)	278	183	194

The following average yields of seed growers in the model regions show that certified seed yields are higher than those of registered seed in general.

Item	Peanut Seed (t/ha)	Rice Seed (t/ha)	Corn Seed (t/ha)
Wet Season:			
Registered	—	3.6	2.2
Certified	1.1*	3.6	2.8
Dry Season:			
Registered	—	3.4	2.3
Certified	1.2*	3.8	2.6

* commercial

The present crop budget is prepared both on wet season and dry season separately and is based on the current 1990 prices.

Net profit ratios for rice and corn seed production obtained by the seed growers are 1.4 to 1.7 and comparatively higher than that for peanuts. This difference is mainly due to the lower prevailing prices of peanuts which is around ₱10/kg or the same as prices for the commercial product.

Item	Unit: (₱)					
	Peanut Seed		Rice Seed		Corn Seed	
	Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season
Gross Income	12,100	12,240	24,010	22,680	29,260	30,590
Production Cost	8,245	8,160	8,910	9,315	11,160	11,170
Net Profit Ratio	0.5	0.5	1.7	1.4	1.6	1.7

The seed growers economy was also analyzed in terms of the total income derived from their farm and non-farm activities. It can be concluded that rice seed growers in Region

VI are richer compared to peanut seed growers. However, the farm income of corn seed growers is higher than that of rice seed growers. The main income of rice seed growers comes from non farm income. Comparison of total income among seed growers may be summarized as follows :

Unit: (₱)			
Item	Peanut Seed	Rice Seed	Corn Seed
Farm Income	9,485	37,355	79,875
Seed Production	7,935	28,465	37,520
Others	1,550	8,890	5,000
Non-Farm Income	9,650	66,450	11,335
Total Income	19,135	103,805	91,210

8. MODEL IMPROVEMENT PLANS

8.1 Basic Concepts for the Improvement

For formulation of the improvement plan in the Model Areas, the following basic concepts were applied :

- 1) Ilagan E.S for peanut seed, Visayas E.S for rice seed, and Davao NCC and Tupi S.F for corn seed were selected for production of their respective classes of seed in the Model Areas. Tupi S.F will cover South Cotabato Province which is producing around 80 % of the corn in Region II. Davao NCC will cover the other provinces in Region XI. Abulog seed farm in Region II is not suitable as a support station for registered peanut seed production due to its remote location from the main peanut producing areas in Isabela and Quirino Provinces. A development project in La Granja NCC for crop research and small scale farming systems development is prepared by the DA, hence the improvement of seed production and distribution functions in La Granja NCC is excluded from the Model Improvement Plan. Hence the objective area covered by Visayas E.S will be the provinces other than Negros Occidental Province which will be supported by La Granja NCC.

Class of Seed	Peanut Seed (Region II)	Rice Seed (Region VI)	Corn Seed (Region XI)
F.S, R.S	Ilagan E.S	Visayas E.S	Davao NCC*
R.S	-	-	Tupi S.F*

F.S ; Foundation seed, R.S ; Registered seed

* ; including certified seed production

- 2) In case of shortage of capacities for registered seed production in the objective DA stations, deficit registered seed could be produced by the selected seed growers under the supervision of the DA regional offices. Registered seed growers should be selected in the vicinity of the objective DA stations.
- 3) For effective seed production and distribution in the Model Areas, buffer seed storage will be indispensable. The buffer stock requirement of foundation, registered and certified seed for the objective crops is set at 100 %, 20 % and 10 % respectively according to the DA seed production program.

- 4) Seed processing plant and storage facilities to be established in the area of the objective stations will be utilized not only for the stations' product but also for the registered and buffer certified seed from the selected seed growers in the vicinity of the stations. For the proper processing of buffer certified seed, appropriate seed processing facilities should be provided and utilized by the seed growers located at other than the stations' provinces under the supervision of the DA provincial offices. Transportation facilities will be required for effective seed procurement and distribution between the stations and seed growers.

8.2 Seed Production and Distribution Plan

8.2.1 Seed Production Plan

(1) Basic Criteria for Improvement

To secure stable provision of rice, corn and peanut seed, the following improvement plan is considered :

Item	Rice Seed	Corn Seed	Peanut Seed
Seed rate (kg/ha)	45	20	100
Renewal rate (%)	20	11	10
Average yield (t/ha)			
Foundation	3.15	2.5	1.0
Registered, Certified	3.60	3.0	1.0
Buffer stock (%)			
Foundation	100	100	100
Registered	20	20	20
Certified	10	10	10

The seed rate and average yield of objective crops follow the figures in BPI program. The renewal rate is raised for rice and lowered for peanut as compared with BPI program and based on the field study.

Buffer stock is set up at 100% of required seed for foundation seed, since it is very important and the quantity required is small. For registered and certified seeds it is set up at 20% and 10% respectively though in the present program it is 15-20%. Buffer stock has to be produced each season: foundation and registered seeds should be kept for 12 months, and certified seed for at least 6 months as a reserve against crop failures due to calamities.

(2) Seed Requirement of the Model Area

The seed requirement of objective crops is estimated based on the 3 years 1987 to 1989 (1986 - 89 for peanuts) average harvested area and the basic criteria mentioned above. As for rice, the area of direct planting and transplanting is estimated at 80% and 20% of total rice growing area in Region VI respectively. The average seed rate of direct planting is set at 90 kg/ha. Moreover, 10% of certified seed shall be distributed to other regions to meet their seed shortage.

As for corn, Region XI is divided into two parts, South Cotabato which is the most productive province and the others, and the quantity of required seed is calculated separately. The planted area of hybrid corn and open pollinated yellow corn is estimated at 20% and 80% of total yellow corn planted area, and calculated required seed of open pollinated yellow corn.

For setting the renewal rate for certified seed an alternative study was made with several different figures and with consideration to the required field area, seed quantity to be stored and cultivation (See Table 8.2.1 - 8.2.3).

(3) Seed Production Target

a) Peanuts

The foundation and registered seeds required in this model region are to be produced at Ilagan E.S but about 2/3 of the required registered seed in the dry season have to be produced by selected seed growers, since Ilagan E.S does not have enough seed production fields in dry season. The peanut seed production plan in Region II is shown in Table 8.2.4.

b) Rice

Foundation and registered seeds are to be produced at Visayas E.S but about 55% of the registered seed required in dry season has to be produced by selected seed growers, since the available fields are limited in the dry season in the Visayas E.S. The rice seed production plan at the station and seed growers in this model region are shown in Table 8.2.5.

c) Corn

Davao NCC has to produce all the foundation seed required in Region XI and the registered white corn seed required in the region except South Cotabato. It has also to

produce some quantity of certified white corn seed. Manambulan S.F has to produce all the registered seed and some quantity of the certified seed of yellow and white corn required in South Cotabato. The corn seed production plan in the model region is shown in Table 8.2.6.

8.2.2 Seed Marketing and Distribution Plan

Seed storage activities according to the seed production plan in the Model Areas will be implemented in the objective stations for buffer storage and carrying over between wet and dry seasons, and at the provincial level for the buffer certified rice seed in the Region VI. Seed storage plans in the Model Area were prepared on the basis of the following conditions :

- 1) Buffer stock for foundation and registered seed requirements of peanut, rice and corn seed, which is 100 % and 20 % to the seed production respectively, will be kept at the objective stations. Buffer stock seed procured for the wet and dry seasons will be replaced by the seed newly harvested in the next same season. Old buffer stock seed can be planted as seed in the following season. The buffer requirement of 10 % of the certified peanut seed production will be kept in Ilagan E.S under the same storage and renewal operations. Surplus seed production to the requirements in the stations will be kept as a buffer stock. This surplus seed can be utilized as seed in other regions after replacement of storage. The buffer storage period of foundation and registered seed for the three crops and certified peanut seed will be 12 months at the most. Conditioned seed storage will be recommended.
- 2) Buffer certified corn seed which is 10 % of the seed production will be procured from the seed growers and kept in the Tupi S.F from South Cotabato and Davao NCC from other provinces in Region XI. Visayas E.S will store the buffer certified rice seed for Iloilo and Guimaras Provinces, while storage facilities for the other provinces ; Aklan, Capiz and Antique, will be located at the respective provinces in order to reduce the seed transportation cost. Maximum storage periods for rice and corn certified seed will be less than 8 months and 6 months respectively, hence these seed need to be stored in the improved warehouses other than the ordinary ones.
- 3) Seed for carrying over between wet and dry seasons needs to be stored in the improved warehouses, at the most for 6 months, for use in the following season.

The required capacities for buffer and carrying over seed storage as well as their storage periods in the Model Areas are shown in Fig. 8.2.1 to 8.2.3 and required capacities by conditions and purposes may be summarized as follows :

(Unit :t)

Item	Peanut Seed Ilagan E.S (Region II)	Rice Seed Visayas E.S (Region VI)	Corn Seed	
			Davao NCC (Region XI)	Tupi S.F
1. Conditioned Storage				
(1) Buffer Storage				
Foundation Seed	2.7	1.8	0.3	-
Registered Seed	5.6	26.6	4.2	6.2
<u>Certified Seed</u>	<u>26.0</u>	-	-	-
Total Capacity	34.3	28.4	4.5	6.2
2. Improved Warehouse				
(1) Buffer Storage				
Certified Seed	-	191.0	43.8	80.6
(2) Carrying Over Storage				
<u>Foundation & Registered Seed</u>	<u>22.0</u>	<u>36.3*</u>	<u>1.5*</u>	<u>1.3*</u>
Total Capacity	22.0	227.3	45.3	81.9

* ; Shortage of the storage capacities will be supplemented by using storage capacity for the buffer certified seed.

Seed marketing and distribution plans in the Model Areas as shown in Fig. 8.2.4 to 8.2.6 were prepared taking the seed production plans, seed storage plans, and locations of the objective stations, and existing and potential seed growers into consideration and summarized as follows :

(1) Peanut Seed Marketing and Distribution in Region II

Foundation and registered seed will be produced in Ilagan E.S except registered seed production in dry season. Registered seed growers of around 14 ha will be selected in the vicinity of Ilagan E.S for the supplemental production in dry season. The registered seed produced by the growers will be transported to Ilagan E.S and processed by the station's facilities. Registered seed will be distributed to the certified seed growers in Maddela, Quirino Province, where the Maddela Peanut Planters Cooperative is a most active body for commercial peanut seed production in Region II.

Buffer certified seed produced in Maddela will be transported to Ilagan E.S after semi-drying and processing. Conditioned storage facilities for certified peanut seed in Ilagan E.S might be utilized for the transit seed storage from Maddela to Isabela and Cagayan Provinces. Commercial peanut farmers in the above two provinces could get certified seed at anytime in Ilagan E.S.

Processing facilities as well as storage warehousing of certified buffer seed should be provided in Maddela and used by the seed growers under the supervision of DA Quirino Provincial Office. For effective procurement and distribution of registered seed and buffer certified seed stock between Ilagan E.S and respective seed growers, provision of transportation facilities will be indispensable.

Certified peanut seed for wet and dry season planting, 45 t and 215 t respectively, will be distributed to the commercial peanut farmers in Region II for use on 45 ha and 215 ha of peanut field during these seasons.

(2) Rice Seed Marketing and Distribution in Region VI

Foundation and registered seed will be produced in Visayas E.S except for registered seed production in the dry season. Registered seed growers of around 5 ha will be selected in the vicinity of Visayas E.S for the dry season production. The registered seed produced by the growers will be transported to Visayas E.S and processed. Registered seed will be distributed to the certified seed growers in the objective provinces other than Negros Occidental Province in Region VI. Procurement of registered seed from Visayas E.S should be jointly done by each provincial seed producers association under the coordination of regional and provincial seed coordinators.

Buffer certified seed produced in Iloilo and Guimaras Provinces will be transported to Visayas E.S after semi-drying and processing. The following buffer stock in Aklan, Capiz and Antique will be separately stored by each province under the supervision of respective DA provincial offices.

(Unit :t)			
Province	Wet Season	Dry Season	Total
Aklan	24.9	40.5	65.4
Capiz	58.9	91.2	150.1
Antique	33.2	32.0	65.2
<u>Iloilo</u>	<u>169.0</u>	<u>191.3</u>	<u>360.3</u>
Total	286.0	355.0	641.0

Processing facilities as well as storage warehouses for certified buffer seed should be provided in Aklan, Capiz, Antique and Guimaras Provinces and used by the seed growers under the supervision of the respective DA provincial offices. For the effective procurement and distribution of registered seed and buffer certified seed stock between Visayas E.S and respective seed growers, provision of transportation facilities will be indispensable.

Certified rice seed for wet and dry season planting of 3,229 t and 2,597 t respectively will be distributed to the commercial rice farmers in Region VI which will be used on 39,860 ha and 32,060 ha of rice fields in these seasons.

(3) **Corn Seed Marketing and Distribution in Region XI**

Foundation, registered and certified seed will be produced in Davao NCC and this foundation seed will be distributed to Tupi S.F. Registered seed of Tupi S.F will be distributed to the certified seed growers in South Cotabato Province, and the seed of Davao NCC to provinces other than South Cotabato in Region XI. Procurement of registered seed from the above DA facilities should be jointly done by each provincial seed producers cooperative under the coordination of regional and provincial seed coordinators.

Buffer certified seed produced in the respective provinces will be transported to Davao NCC and Tupi S.F after semi-drying and processing. Processing facilities for certified buffer seed should be provided in the five provinces other than Davao City and used by the seed growers under the supervision of respective DA provincial offices. For effective procurement and distribution of registered seed and buffer certified seed stock between Davao NCC/Tupi S.F and respective seed producers cooperatives, provision of transportation facilities will be indispensable.

Certified corn seed for wet and dry season planting of 1,244 t and 376 t respectively will be distributed to the commercial corn farmers in Region XI which will be used on 62,200 ha and 18,800 ha of corn fields in these seasons.

8.2.3 Proposed Planning and Monitoring System

For the preparation of practical seed production and distribution plan in the Model Areas, the regional seed coordinators should cooperate more closely with the objective DA stations, seed growers associations or cooperatives as well as the BPI and the breeding institutes concerned. Based on the information and data on the availability of parent seed procured from the breeding institutes, production capability of foundation and registered seed in the objective DA stations, and requirement of registered and certified seed distributed to seed growers and commercial farmers respectively, the regional and provincial seed coordinators should prepare the seed production and distribution plan in regional and provincial levels respectively. The following items will be included in the seed production and distribution plans:

- 1) seed production plans for the objective DA stations by season,

- 2) seed production plans for seed growers by season,
- 3) operation plans for seed processing and storage facilities in the DA stations and DA provincial offices introduced,
- 4) time schedule for seed procurement and distribution,
- 5) schedule for field inspection and seed testing,
- 6) recruitment and training plan for seed growers,
- 7) budget planning for seed production and distribution activities

Strengthening of monitoring and evaluation activities in provincial and regional levels will be indispensable for effective implementation of the Model Improvement Plans as well as formulation of a practical seed production and distribution plan. Monitoring and evaluation will be done by the regional seed coordinators, while the following institutes concerned should report the necessary information and data :

- 1) DA stations ;
seed production, seed procurement and distribution, seed production cost
- 2) Provincial seed coordinators ;
seed procurement from the DA stations to the provincial offices and seed distribution to seed growers, operation record of seed processing and storage facilities introduced, activities of seed growers(seed procurement, seed production, seed production cost, price of certified seed, stock of seed) through provincial seed growers associations/cooperatives, results on field inspections by field inspectors, activities of field inspectors, data on potential seed growers, extension of certified seed to commercial farmers
- 3) Regional seed testing laboratories ;
results on seed testing, evaluation of field inspection, evaluation of seed quality(seed from stations and seed growers, buffer stock seed)
- 4) Operators/engineers for seed processing and storage facilities introduced ;
operation record, seed stock, O&M cost of facilities

For the effective consolidation and evaluation of data and information collected, micro-computers should be introduced to the above institutes concerned. Data forms will be standardised and data processing time and mistakes will be reduced. Improvement of communications between the institutes concerned including the BPI Manila will be done more effectively done using facsimile machines than by telephone or radio message as at present. Extension of telephone lines to the DA stations will be required where not yet provided.

8.3 Quality Control Plan

8.3.1 Seed Inspection Services

The actual production areas and seed field areas to be inspected are as follows :

(Unit: ha)

Region	Planning Area	Actual Production Area for Objective Crops	Inspected Area (All Crops)
Region II	290 (peanut)	7 (peanut)	2,794
Region VI	6,438 (rice)	735 (rice)	1,798
Region XI	549 (corn)	19 (corn)	4,703

The points to be improved are as follows:

1. To provide retraining in seed inspection techniques for seed inspectors and to increase the number of seed inspectors.
2. To provide a kits of seed inspection devices including moisture tester, sampler etc., and as a part of strengthening the training system of seed quality control practices for the seed producer.
3. To provide a motorcycle to each unit to give mobility to seed inspectors for improving the efficiency of their work.

8.3.2 Seed Certification Services

The numbers of seed samples received and certified in the STL in 1988 and 1989, were as follows.

Region (STL No.)	1988		1989	
	Sample Received	Sample Inspected	Sample Received	Sample Inspected
Region II (No. 2)	691	3,412	2,757	5,174
Region VI (No. 9)	580	9,595	2,146	5,797
Region XI (No. 15)	390	4,182	2,321	7,562
National Total	4,514	56,311	30,690	82,405

These data show the increase in samples.

The estimated number of samples (according to the D.A. production plan) that will be brought to the STLs by the seed inspectors for testing will increase as shown in followings and may overload the STL in the peak season.

	Estimated No. of sample	No. of Seed Sample Tested (1989)			Total
		Objective seed crops	Other seed crops	Rejected seed	
Region II (Peanut) STL No.2	98	4	696	53	753
Region VI (Rice) STL No.9	1,086	559	2	44	605
Region XI (Corn) STL No.15	218	16	702	31	749

The number of samples for testing will be increased further by the project "Rice Action Program and Seed Multiplication, Production, Certification, Testing, Procurement and Distribution of Certified Corn and Sorghum Seed (open pollinated)" which commenced in 1990.

As mentioned earlier, since certification of seeds is done by part-time staff in every STL, their capacity should be strengthened by making part-time staff regular staff, and by increasing the number of seed analysts. At the same time testing equipment needs to be supplement and increased in each STL to obtain smooth certification works with the increased work load.

The increasing number of samples and results of certification must be promptly analyzed, consolidated, and then extended to the related agencies to be it useful basic data in any improvement schemes. This will require a computer with related equipment. Each STL of M.A. will have to consolidate the basic data regarding the control area of seed farms and seed processing, results of seed certification and the other analyzed results with the computer provided. Utilization of these consolidated data will require the cooperation of the other STLs or agencies related. The following improved plan for the seed certification works is proposed.

- a. To renew and newly provide seed testing equipment for each STL to improve the accuracy and efficiency of the seed testing works in anticipation of the increased number of samples for testing.
- b. To provide a computer and related equipment to analyze and consolidate the information on seed quality control.
- c. To distribute appropriate vehicles to each STL to facilitate mobility for training in the field of provincial seed inspectors in seed field survey.
- d. To strengthen the STL organization by shifting employees from part time to regular staff, or increasing the number of seed analysts.

8.3.3 Equipment to be Considered for Improving The Seed Quality Control Services

Since the STLs in the model areas are also conducting the seed testing for out of crops from the objective crops, the seed testing for objective crop might be suffered from the testing for other crops, when the testing service is busy.

So the sort and numbers of seed testing equipment proposed to the STLs in the area, are considered to be adequate for all crop seed testing conducted in all STL in the model area.

The equipment to be considered for introduction and replacement to improve the seed certification services are as follows :

Item	Region II	Region VI	Region XI	Total
Number of Seed Inspectors	24	11	14	49

a. For seed inspection services (to 49 inspectors)

- 1) Field inspection kit 1 set each
- 2) Motorcycle 1 unit each

b. For seed certification services (to 3 STL)

- 1) Moisture test equipment 1 set each
- 2) Purity test equipment 1 set each
- 3) Germination test equipment 1 set each
- 4) Seed pathology test equipment 1 set each
- 5) Data processing equipment with tag printer set 1 set each
- 6) Seed inspection vehicle 1 unit each

8.4 Facilities Development Plan

8.4.1 Seed Production Field Improvement Facility Plan

(1) Irrigation System Plan

Improved irrigation facilities are required for stabilization of the water supply to paddy fields during the dry season.

1) Requirements of Design

The unit designed water requirement for the seed production field for peanut and corn were decided on the basis of the "Recommended for Peanut 1985, Recommended for

corn 1987", issued by the "Philippine Council for Agricultural Research and Development (PCARD)". The unit water requirements for rice seed production fields were quoted from the designed water requirement of the Tigum Irrigation System. The net water requirement, irrigation method and designed diversion water for the respective farms were decided as follows :

Item	Ilagan E.S Farm	Davao NCC Farm	Visayas E.S Farm
Designed Water Requirement			
Objective Crop	Peanut	Corn	Rice
Net Water Requirement	5 mm/day	10 mm/day	
Gross Water Requirement	7.7 mm/day	15.4 mm/day	1.5 l/s/ha
Irrigation Method	Sprinkler Interval - 6 day	Sprinkler Interval - (Max) 3 day	Gravity Ponding/Continuous
Designed Diversion Water			
Objective Area	8.0 ha	10 ha	44 ha
Irrigation Area per Day	1.4 ha	3.4 ha	44 ha
Irrigation Hour per Day	6.8 ha	6.8 hr	24 ha
Irrigation Intensity	6.8 mm/hr	6.8 mm/hr	1.5 l/s/ha
Designed Diversion Water	12.0 l/s	20 l/s (35 l/s) ^{L1}	66 l/s

/1: Including distribution water for the Manambulan SF

2) Basic Plan and Proposed Facility

a) Ilagan E.S Irrigation System Plan

i) Basic Plan

- Objective irrigation area is the seed production farm block with the total area of 33 ha, which consists eight field lots.
- Irrigation objective crop is peanut.
- Seed production area per one crop season to be irrigated is eight ha which is extended two or three lots.
- Water resource is the Pinacanan River flow water.
- Irrigation term to be supplied the supplemental water requirement is during the dry season (Jan - Apr.) and in the drought year.
- Water intake and water conveyance system is pumping-pipe line system in boost by pump.
- Irrigation method is intermittent sprinkler irrigation.
- Water conveyance, lateral pipeline and irrigation facilities is traveling rotation system.
- Pump site is permanent structure and pump/engine unit is portable system.

ii) Water Intake Facility

The proposed water intake system is pumping from a proposed water intake site located on the left bank of the Pinacanan River 300 m distant from the seed production field.

The pump site will require cutting into the left bank of the Pinacanan river. Three sides of the pump site and suction pump will be protected from erosion by the steel sheet piles (U-1 type). The pump base will be positioned eight (8) m below the left bank ground level in order to create water intake capability under drought conditions. The water level in the Pinacanan river may rise. It is proposed, therefore, that the proposed pump unit be mounted on a trailer so that it can be moved whenever necessary. The main features of the proposed pump site, suction sump, and pump unit are as follows :

Designed Diversion Discharge		12.0 l/s
Location		Pinacanan River Left Bank
Diversion System		Pumping-up
Pump site	: Concrete base and 3-side enclosed by the U-1 type of steel sheet pile	4.0 x 4.0 m x 0.3 h
	Sheet pile length U-1 type	8.0 mm
Suction Sump	: Enclosed by steel sheet pile U-1 type	4 ~ 8 m, 30 m ²
Access road	: Concrete 2 m width, 17.8 m length	
Pump/Eng. Unit	: Mounted on the trailer	
Pump	: Q: 720 l/min, H: 75 m *, 1800 rpm, 25 HP, Volute pump	
Engine	: Diesel 2369 cc, 31 PS, 1800 rpm	
	* Pumping head is included at 25 m of sprinkler required head.	
Strainer	: On line mesh type	

iii) Water Conveyance Facility

The main and semi-main pipe line will be a portable system for rotational irrigation and crop rotation programs. The designed total length and specification of the proposed pipe line are as follows ;

Water Conveyance System	: Pipeline boosted by pump, portable rotation system
Main pipe	- Aluminum 4" x 8.00 L, total 1200 m

Semi-Main pipe - Aluminum 3" x 4.00 L,
total 440 m

iv) Irrigation Facility

Designed numbers of the lateral pipe lines, sprinklers, stands, and related equipment for the sprinkler irrigation were decided so as to complete the proposed rotational irrigation area each day with six blocks in the irrigated area and based on the designed irrigation interval. The space between each sprinkler is 12 m, and distance between lateral pipe lines is 16 m. The designed total length of the lateral pipe lines and sprinklers are as follows ;

Lateral Pipe	:	Aluminum pipe Dia 50 mm, unit length 6.00 m 180 pieces, total 1,080 m
Sprinkler	:	Nozzle # 30 4.0 x 2.4 105 sets
Lateral Line	:	Aluminum pipe 2" 1080 m Distance 16 m each Portable rotation system
Irrigation Facilities Sprinkler	:	Impact full cycle type Portable rotation system Distance 12 m each #30 3/4" connection Nozzle 4.0 x 2.4 105 sets 21.7 l/min
Stand	:	h: 1.0 m 105 sets

b) Davao NCC

i) Basic Plan

- Maximum objective irrigation area per crop season to be supplied with the water requirement is 10 ha. However, the objective area for the water diversion plan is 20 ha inclusive of the Manambulan sub-station field lot with the area of 10 ha.
- Irrigation object crop is corn.
- Irrigation is carried out all year round.
- Water resource is the Lipadas River.
- Diversion system is mountain stream diversion works.
- Water conveyance system is pipe line system by gravity.
- Pipe line is closed type and pressure reducing valve for keeping inside pressure of pipe below 15 kg/cm².
- Energy head of water conveyance pipeline is used to the best advantage for the sprinkler irrigation, provided pump is used occasionally as the reserve.
- Water distribution system from tank to each field block is a fixing type.

- Irrigation method is intermittent sprinkler irrigation, and lateral pipe line and irrigation facilities is traveling rotation system.
- Water supply to the Manambulan sub-station is divided to the existing farm pond in the Manambulan.

ii) Diversion Work

The proposed irrigation water diversion site is on the left bank of the Lipadas river which is about 1.5 km upstream of the Manambulan SF. The main features of the proposed diversion works are as follows :

Location	: Left bank of the Lipadas River
Diversion Works	: Mountain Stream Diversion Work Reinforcement Concrete 1 x 5 x 1 m FB screen 50 mm pitch 1 x 4 x 1 m
	Settling tank Reinforcement Concrete 0.8 x 2.0 x 1.25 m with sluice gate

iii) Water Conveyance System

Altitude difference between the designed diversion water level and the end of proposed water conveyance pipe line is 240 m approximately. The proposed pipe line will be a closed type.

In order to prevent the danger of internal water pressure increase caused by the water hammer at the emergency closure, one emergency stop valve is installed at the downstream point of 1.25 km far from water intake, at where the water is supplied to Manambulan farm. And an ordinary water supply valve is installed at the end of pipe line. However, one unit of emergency discharge valve shall be provided at the crossing point of creek near to the end of pipe line.

iv) Irrigation Facility

There will be two seed production fields at distance of 400 m from each other. Accordingly, two separate irrigation systems will be provided. Basically, the required dynamic water pressure for the sprinkler irrigation is given by help of the dynamic water pressure of the conveyanced water. The branch water distribution pipe lines for both lots are jointed to the water conveyance pipe line directly. One unit of the pump and engine is provided as reserve, and an existing farm pond also will be used for a reserve supply after rehabilitation. The main features of the proposed irrigation facilities are as follows :

Farm Pond	:	Rehabilitation of existing pond 400 m ³ reinforced concrete Water proofing concrete surface of the pond Wall raising work 0.75 H x 70 m		
Water Distribution System	:	PVC Fixing type		
		No. 11 Filed lot	:	75 mm 640 m
		No. 9 Field lot	:	75 480
		Pond to No. 9 Field lot	:	75 910
Irrigation Facilities	:	Potable rotation system		
Delivery pipe line	:	Aluminum 3"	:	160 m
Lateral pipe line	:	Aluminum 2" Distance 16 m each		
		No. 11 Lot	:	660 m
		No. 9 lot	:	504 m
Irrigation system Sprinkler	:	Impact full cycle type		
		Distance	:	12 m each
		#30 3/4"	:	Connection
		Nozzle	:	4.0 x 2.4
		For No. 11 lot	:	67 set
		For No. 9 lot	:	48 set
Pump/Engine		Q	:	500 l/min
		H	:	40 m
		Pump	:	7.5 kW
		Engine	:	Diescl
			:	10.2 HP

(2) Drainage Improvement Plan

There are areas of poor drainage in part of the seed production field at the Ilagan E.S during the wet season. Farm drains and lateral canals not only disturb free crop rotation and land utilization but also cause the drying out of the fields soil during the dry season. Accordingly, farm drains and lateral canals in the seed production will be arranged as temporary drains whenever the fields are needed in the wet season. Fundamentally, they will be backfilled in the dry season to prevent drying of the soil. Excavation of field drains and lateral canals will be made by use of a ditching machine special supplied under the "Speed product and distribution improvement model plan."

(3) On Farm Roads and Farm Road Improvement Plan

i) On Farm Road

- Taking into consideration present conditions, some parts of the seed production fields at the Davao NCC Farm will be provided with on-farm branch roads for fixing of the distribution pipe line network for the sprinkler irrigation.

- Rehabilitation and maintenance work of the on-farm roads at the each Farm will be carried out by the Farm with the use of the special supplied machine under the "seed production and distribution improvement model plan".

Davao NCC	No. 11 field lot	W = 3.0 m	l = 750 m
	No. 9	W = 3.0 m	l = 500 m
	Un-pavement earth road		

ii) Connecting Road Davao Model Farm and Manambulan SF

A connecting road between the Davao NCC Farm and Manambulan sub-station will be improved to a concrete paved road of 3 m effective width.

Effective Width	3.00 m		
Total Length	6000 m		
Concrete Pavement	Thickness		15 cm
	Thickness of subgrade course		15 cm

8.4.2 Seed Related Equipment

(1) Farm and Harvesting Machinery

The farm and harvesting machinery distribution improved plan is based on the following 5 conditions for government and private sector in the model areas.

- 1) The farm and harvesting machinery provided under ESPDP has exceeded its life span and will be worn out within a few years. So all the machinery shall be renewed.
- 2) The farms in the government sector cultivate not only the objective crop seed but also experimental crops. The distribution plan for the machinery is based on the whole cultivated area for seed production and experimental cultivation to avoid the disturbance of delayed cultivation on experimental cultivation for smooth seed production.
- 3) The machinery to be provided shall be selected from machinery which does not require any change in the present system of seed production, to avoid lowering the effectiveness of machinery newly introduced.
- 4) Machinery is most required by farms of the government sector. This machinery should be included in the project but only to the extent that it can be operated by existing skilled labour.
- 5) New farm machinery for the private sector support is basically not required, but the some seed harvesting machinery will be considered in the plan to improve seed quality of private sector.

On the basis mentioned above the improved plan is proposed as follows.

Machinery	Iligan ES	Reg. II Private	Visayas ES	Reg. VI Private	Davao NCC	Tupi ES	Reg. XI Private
Tractor (60PS)	2	--	--	--	1	1	--
Tractor (35PS)	--	--	2	--	--	--	--
Tractor (15PS)	2	--	--	--	--	--	--
Power Tiller (7PS)	3	--	2	--	2	2	--
Disc Plow	2	--	1	--	1	1	--
Scraper	2	--	1	--	--	--	--
Disc Harrow	2	--	--	--	1	1	--
Trailer	4	--	4	--	2	2	--
Rotary	2	--	2	--	--	--	--
Sprayer	10	--	10	--	10	10	--
Corn Seeder	--	--	--	--	1	1	--
Wooder	--	--	5	--	--	--	--
Thresher	2	5	2	4	--	--	--
	(peanuts)	(peanuts)					
Corn Sheller	--	--	--	--	2	1	5
Peanuts sheller	2	5	--	--	--	--	--

(2) Seed Processing Machinery and Facilities

The seed processing machinery and facilities distribution improved plan is based on the 6 conditions mentioned below.

- 1) Of the machinery provided under ESPDP, that part of the machinery which has been utilized well shall be entirely renewed, but the other machinery which has not utilized well shall not be renewed even though the life span is exceeded.
- 2) The capacity of the facilities should conform with the bigger volume of seeds either dry season or wet season which will have to be processed on the farms.
- 3) The capacity of dryers should conform to the volume of wet season seeds to be processed on the farms. But the artificial drying method recommended for the dry season seeds will minimize the sun drying method. Since the budget for the provision of fuel for dryers is always a problem, the dryers for peanuts and corn will be selected basically from dryer types using biomass such as empty corn cobs as fuel, and for the rice, rice husk as fuel.
- 4) The fuel for drying in the private sector is also one of constraints to economic seed processing. However, no suitable small scale bio-mass fueled dryer for the private sector has been developed yet, so the dryer for the rice seed requiring a small scale dryer will be a kerosene fueled type. The dryer for peanuts seed in the private sector will be selected from bio-mass fueled types because a rather larger capacity is required than for the government sector.
- 5) Private corn seed producers have recently recognized the necessity for drying seed, however the appropriate dryer is not manufactured yet. Consequently no dryer for corn seed is included in this plan.
- 6) The type and number of seed drying and processing machinery required depends on the number of varieties of seed processed.

Focussing on the above points the plan is as follows :

Machinery	Ilagan ES	Reg. II Private	Visayas ES	Reg. VI Private	Davao NCC	Tupi ES	Reg. XI Private
Dryer	3 t X1	10 t X1	2.8 t X6	2.8 t X4	1 t X1	1 t X1	-
Seed Separator	-	-	-	0.5TPH X4	-	-	0.5TPH X5
Seed Processing Plant	0.5TPH X1	1TPH X1	1TPH X2	-	0.5TPH X1	-	-

(3) Cold Storage

As shown in the improved plan for the production and distribution of seed, each farm of government sector has to store some foundation and registered seeds as buffer seed and surplus seeds for about one year. And it has to store also a part of certified peanuts seed for about one year.

Considering the above mentioned situation the improved plan for the distribution of air-conditioned storage is based on the following :

- 1) The capacity of air-conditioned storage is designed to conform to the volume of seed required for about one year storage according to the improved seed distribution plan.
- 2) The air-conditioned storage is designed to minimize the operation cost.
- 3) The types of seed stored in the air-conditioned storage will be partly foundation and registered seed of the 3 objective crops, and partly certified peanuts seed.
- 4) The storage period shall be within one year basically for each seed. However the foundation and registered seeds of peanuts may be stored over one year up to three years in accordance with the actual supply of upper class seed for which the supply is unstable.
- 5) The storage conditions are as follows.

For foundation and registered seed of peanuts	:	15°C - 40%RH
For foundation and registered seed of rice and corn, and certified seed of peanuts	:	18°C - 60%RH

The temperature of the storage room atmosphere shall be as high as possible within the above conditions to avoid getting dew on the surface of seed when the seed is taken out of the storage room.

- 6) Each storage room shall have an ante room to warm up seed without getting dew before taking out.
- 7) The storage facilities shall be divided into several rooms in accordance with the delivery schedule of seed, so that the idle storage room can be out of operation.
- 8) The storage facilities consist of heat insulated panels, unit cooling systems and dehumidifying devices.

Conditions	Ilagan ES	Reg. II Private	Visayas ES	Reg. VI Private	Davao NCC	Tupi ES	Reg. XI Private
15°C - 40%RH	45 m ³ X2	-	-	-	-	-	-
18°C -60%RH	45 m ³ +210 m ³	-	36 m ³ X3	-	22.5 m ³ X1	22.5 m ³ X1	-

(4) Seed Transportation Equipment

The government sector has to store the buffer seed of objective seed in each model area, but no farm in the government sector can produce sufficiently the required quantity for the objective model area. The deficit quantity shall be supplemented by seed produced in the private sector. In particular most of the buffer stock of certified seed shall be produced in the private sector. Since these seeds shall be gathered into the government sector facilities from the private sector, seed transportation equipment is required. For the purpose of the above improved distribution plan for seed transportation equipment is proposed on the base of following conditions.

- 1) For long distance transportation in the objective area 6 tons capacity of medium scale cargo trucks are proposed.
- 2) For medium distance 2 tons small scale cargo trucks are proposed.
- 3) For short distance transportation of seed, communication between the seed producers of government and private sector and the other small items of agricultural input 1 ton capacity of pick-up trucks are proposed.
- 4) The numbers of vehicles should conform to the seed quantity handled in each government sector farm.
- 5) Ilagan E.S as the farm for peanuts seed production and storage will have 2 sites of certified seed production in a remote area, one each medium scale cargo truck is proposed for each site.

Considering the above conditions, the plan is proposed as follows.

Class	Ilagan ES	Reg. II Private	Visayas ES	Reg. VI Private	Davao NCC	Tupi ES	Reg. XI Private
Medium Truck	2	-	2	-	1	1	-
Small Truck	-	-	2	-	1	1	-
Pick-up Truck	2	-	2	-	1	1	-

(5) Other Support Equipment

To strengthen the seed production systems in the government and private sector, an improved distribution plan for support equipment is required and proposed for the reasons given below. The equipment and basic conditions are as follows.

1) Excavator

a) Ilagan E.S

The station is located on the river side table land and the land is often flooded during the rainy season. The flood water is not quickly drained because of poor drainage systems, and causes the damage to the crops. To rehabilitate the drainage systems a machine of about 70 horse power is proposed.

b) Visayas E.S

Irrigation and drainage canals have been well provided at this farm, but the drainage canals are already superannuated and required rehabilitation. The farm is also supplied with water from the lagoon located beside the farm during dry season, but it is filled with sludge and decreasing in water holding capacity. It requires equipment to dredge the sludge during dry season. Therefore a similar machine to that for Ilagan E.S, but the swamp type, is proposed.

c) Davao NCC

The farms in this NCC have many buried rocks which disturb mechanized farming. The same type of machine as for Ilagan E.S is provided to remove these rocks and to rehabilitate the street drain.

2) Forklift

Each farm in the government sector will be provided with an improved warehouse to store a quantity of buffer stock seeds. So far the warehouse has no mechanical handling system. A forklift with about 1.5 tons lifting capacity is proposed for each farm including Tupi SF.

3) Workshop Tools

Although the level of technology for machinery maintenance at each farm in the government sector is adequate, maintenance of machinery is insufficient due to lacking or superannuation of machinery and tools for repairs. The superannuation of the machinery cannot be avoided. Since the additional machinery will be provided, one set of the repair machinery and tools such as a set of mechanics tools, electric welder, gas welder, electric power tools, lifting tools and other workshop tools are proposed for Ilagan ES, Visayas E.S and Davao NCC.

4) Improved Prefabricated Warehouse

The total of quantity of buffer certified seed will be 286 tons in the wet season and 355 tons in the dry season. This can not be accommodated in the warehouse of

Visayas ES, and it is not economical to gather them to the station. Therefore, sets of prefabricated warehouses will be provided to each of the 4 provinces except Iloilo province in Region VI to store the buffer stock of certified rice seed. On the other hand the private seed producers in Maddela Region II have to provide buffer stock of peanuts seed for storage in Ilagan E.S after drying. To support this private seed producer the same type of warehouse with Region VI will be provided in Maddela.

Since the private seed producer for 3 objective crops will be provided with some post harvest machinery, these warehouses can be utilized to accommodate this machinery. Therefore, the warehouse shall have somewhat surplus space, which will be about 700 m³ holding capacity.

To consolidate the above distribution the plan is proposed as follows.

Class	Ilagan ES	Reg. II Private	Visayas ES	Reg. VI Private	Davao NCC	Tupi ES	Reg. XI Private
Excavators	1	-	1	-	1	-	-
Forklifts	1	-	1	-	1	1	-
Workshop Tools	1	-	1	-	1	-	-
Warehouse	-	1	-	4	-	-	-

(6) Operation and Maintenance Cost

The operation and maintenance costs for the machinery will consist of fixed costs and variable costs. The fixed cost is estimated by the multiplication of initial cost and fixed cost coefficient based on considerations of depreciation, repair, capital interest and so on. On the other hand, the variable cost is estimated based on the fuel cost and lubricant cost (30% of fuel cost) for engine driven machine, and the electricity cost. The labor cost for the machinery is not considered for the estimation, because all the labor are government sector employees, they are not only working for the machinery but also other assignments. Consolidated estimation of the operation and maintenance cost is shown in below.

Item	Ilagan ES	Reg. II Private	Visayas ES	Reg. VI Private	Davao NCC	Tupi ES	Reg. XI Private
Operation and maintenance cost	₱4.347M	₱0.972M	₱8.314M	₱2.103M	₱3.053M	₱1.836M	₱0.544M

8.4.3 Buildings

The improvement plan for related buildings should be implemented on the basis of the following policies :

(1) Buildings for Seed Processing Plant

New Plants should be constructed with steel structure and by a dry construction method so as to progress the construction work and keep out moisture. The plant to process peanut seed should be newly constructed in the Ilagan Experiment Station: to process rice seed should be set up for the increased plan of seed processing plants in the Visayas Experiment Station. Plant to process corn seed should be constructed at the Davao NCC. In the Tupi Seed Farm, however, the existing Plant should be used.

(2) Seed Storage Houses

The existing bodegas are not only inappropriate facilities, but also have insufficient capacity for storage of seed planned by BPL. New seed storage houses which are water proof, damp proof, thermally insulated should be constructed in the Ilagan and Visayas Experiment Stations (Fig. 8.4.1), Davao NCC and Tupi Seed Farm. These storage houses should be designed for short-term seed storage, and air conditioned rooms for long-term seed storage.

(3) Seed Testing Laboratories

The number of samples for testing and of required personnel in the Seed Testing Laboratory at the time when target seed quantity will be attained are at present uncertain. For this, Seed Storage House which are expected to be established should be planned to include seed testing laboratories in every model region. The house should be designed for storage of 10,000 bags, the remains of samples for seed that would be stored for two years, and with air conditioning so as not to depress the germination rate of the seed. The storage house should be designed as a reinforced concrete building which would be water proof, damp proof, and thermally insulated. (Fig. 8.4.2).

Planned floor area and probable project construction cost of each building are as follows :

Item	Unit	Region II		Region VI	Region XI	
		Ilagan	Cagayan	Visayas	Davao	Tupi
Laboratory	m ²	-	201	201	201	-
	million peso	-	7.9	8.0	8.1	-
Processing Plant	m ²	520	-	660	520	-
	million peso	13.8	-	17.8	14.3	-
Storage House	m ²	660	-	1,370	350	470
	million peso	17.8	-	37.7	9.8	13.2

8.5 Cost Estimate

8.5.1 Basic Assumptions for Cost Estimate

(1) Unit Price and Foreign Exchange Rate

Unit price used in cost estimation was as of July 1990, and foreign exchange rates were as follows :

$$\text{US\$1.00} = \text{P.24.00} \quad \text{US\$1.00} = \text{¥150.00} \quad \text{P.1.00} = \text{¥6.25}$$

(2) Estimation of Construction Cost

Construction would be done by contract basis, and expenses for construction machinery would be included in the contract.

(3) Cost for Design and Supervise

For design and supervision, 10% of construction cost was added.

(4) Contingency Cost

Physical contingency was provided as 10% of construction cost for changes in construction volume. For changes in price, a price contingency was added of 5% of foreign cost and 10% of local cost.

8.5.2 Cost Estimation

The construction cost in each model areas was estimated as follows:

Construction Cost			
(Unit: '000 pesos)			
Region	Local Cost	Foreign Cost	Total
Region II	21,373	65,309	86,682
Region VI	34,477	101,814	136,291
Region XI	27,991	92,204	120,195
Total	83,841	259,327	343,168

Note: Refer to Tables 8.5.1

Design should be carried out in the first year, and construction should be done in the second year. The construction cost in each year are as follows:

Construction Cost by Year			
(Unit: '000 pesos)			
	Local Cost	Foreign Cost	Total
Peanuts			
1st year	1,644	5,225	6,869
2nd year	19,729	60,084	78,813
Rice			
1st year	2,652	8,145	10,797
2nd year	31,825	93,669	125,494
Corn			
1st year	2,153	7,376	9,529
2nd year	25,838	84,828	110,666
Total			
1st year	6,449	20,746	27,195
2nd year	77,392	238,581	315,973

8.5.3 Operation and Maintenance Cost

(1) Seed Production Cost

Cost for input seed in seed production is internal cost in the project. Seed production cost except input seeds was estimated as shown in follows :

Seed Production Cost

(Unit: '000 pesos)

	Peanut	Rice	Corn
Fertilizers	474	1,362	2,113
Agricultural Chemicals	430	690	630
Labor Cost	4,065	5,950	6,905
Total	4,969	8,002	9,648

Note: Refer to Tables 8.5.2.

In each seed farms, annual seed production cost was estimated as follows :

Annual Seed Production Cost by Farm

(Unit: '000 pesos)

Region	Farm	Production Area	Production Cost
Region II	Ilagan E.S.	16.0	80
	Seed Growers	260.0	1,292
	Sub-total	276.1	1,372
Region VI	Visayas E.S.	23.2	186
	Seed Growers	1,786.4	14,295
	Sub-total	1,809.6	14,481
Region XI	Davao NCC	6.0	58
	Manambulan S.F.	4.0	39
	Tupi E.S.	12.0	116
	Seed Growers	526.5	5,080
	Sub-total	548.5	5,293
Total		2,634.2	21,146

(2) Operation and Maintenance Cost

Operation and maintenance cost includes maintenance and repair costs for buildings and equipment, operation cost excluding seed production cost, and personnel expenses for project management including seed inspection and test.

Annual Operation and Maintenance Cost

(Unit: '000 pesos)

Item	Peanut	Rice	Corn	Total
Operation Cost				
Irrigation Facilities	51	0	19	70
Pre and Post Harvest Machinery	1,200	1,070	1,177	3,447
Quality Control Equipment	1,563	1,247	1,323	4,133
Electricity	547	495	530	1,572
Maintenance and Repairing Cost				
Irrigation Facilities	20	0	109	129
Pre and Post Harvest Machinery	1,323	2,764	1,600	5,687
Quality Control Equipment	438	349	370	1,157
Buildings	198	318	227	743
Personnel Expenses	1,536	1,581	1,275	4,392
Total	6,876	7,824	6,630	21,330

Note: Refer to Table 8.5.3 for personnel expenses.

8.6 Evaluation of the Plan

8.6.1 Financial Evaluation

(1) Evaluation for the Project Management

In order to manage the project, most part of the expenses would be paid out of the national treasury. In total and each project, financial evaluation was carried out to analyze the amount paid by the government.

According to present budgetary system, the cost for production and testing of seeds is paid by the government. Income from the sale and testing of seeds is kept in the fund and used to produce more seeds. In this evaluation, however, the project was analyzed as one business concern to evaluate financial state.

1) Income

Income of the project consists of seed sales and test, etc., and was estimated as follows :

<u>Annual Income</u>		
Region II	(Peanut)	438 thousand persons
Region VI	(Rice)	1,147
Region XI	(Corn)	777
Total		2,392

2) Cost

Financial evaluation of the project management is only for object crop seeds, therefore the cost concerning building and equipment which are used in common was allocated by share to use. The rates of cost allocation are as follows :

Rates of Cost Allocation			
	Region II	Region VI	Region XI
Farm Machine	0.15	0.53	0.32 (shared by farm land)
Building and Equipment for Seed Quality Control	0.12	0.97	0.24 (shared by samples)

Annual operation and maintenance cost consists of seed production cost, operation and maintenance cost for buildings and equipment, and depreciation cost. The following table shows the annual operation and maintenance cost in each model area.

Annual Operation Maintenance Cost				
	(Unit: '000 pesos)			
	Region II	Region VI	Region XI	Total
Seed Production Cost	80	186	213	479
Operation & Maintenance Cost	3,482	7,616	4,213	15,311
Sub-total	3,562	7,802	4,426	15,790
Depreciation Cost	5,231	8,346	5,116	18,693
Total	8,793	16,148	9,542	34,483

3) Evaluation

Seed production is conducted by the government budget because of public characteristics. To manage the project and produce the required seeds, the expenditure will exceed the income of sales and others. Even though depreciation cost is excluded, the amount shown in the following will be in deficit and be paid out of the government budget.

Annual Budget by the Government				
	(Unit: '000 pesos)			
	Region II	Region VI	Region XI	Total
Income	438	1,147	777	2,362
Expenditure	3,562	7,802	4,426	15,790
Budget Needed	3,124	6,655	3,649	13,428

The official price of seeds does not differ with class, even though the economic value increases in order of certified seed, registered seed and foundation seed. The public sector must therefore bear the cost.

(2) Financial Analysis of Seed Growers

Profitability per 1 hectare of seed growers is shown in the following table. The net income of seed production will increase 11,586 pesos for peanuts, 5,194 pesos for rice and 22,357 pesos for corn. Seed growers will make great profit despite the loss in the public sector.

The cooperation of seed growers will be needed to supply the seed required in the model areas. Profitability of seed production should be assured in order to give them the incentive for seed production. However, an appropriate profit share system should be developed to reduce loss in public sector.

Productivity in Seed Growers			(Unit: pesos/ha)
	Without Project	With Project	Increased Profit
Peanut			
Production	12,100	23,000	
Cost	8,245	7,559	
Net Income	3,855	15,441	11,586
Rice			
Production	24,010	29,880	
Cost	8,910	9,586	
Net Income	15,100	20,294	5,194
Corn			
Production	29,260	51,000	
Cost	11,160	10,543	
Net Income	18,100	40,457	22,357

(3) Financial Analysis of Ordinary Farmers

When certified seeds are supplied by the project, ordinary farmers will make a profit compared with use of commercial seeds. The increase profit per hectare is expected to be 12,548 pesos for peanuts, 3,609 pesos for rice and 3,163 pesos for corn.

Profitability in Ordinary Farmers			(Unit: pesos/ha)
	Commercial Seeds	Certified Seeds	Increased Profit
Peanut			
Production	11,200	24,000	
Cost	8,350	8,602	
Net Income	2,850	15,398	12,548
Rice			
Production	13,000	17,500	
Cost	7,540	8,431	
Net Income	5,460	9,069	3,609
Corn			
Production	12,000	16,200	
Cost	4,123	5,160	
Net Income	7,877	11,040	3,163

8.6.2 Economic Evaluation

(1) Object and Method of Economic Evaluation

The object of economic evaluation is to analyze validity of the role of peanut, rice and corn seed production in model areas from the viewpoint of national economy.

In general, cost benefit ratio, net present value and internal rate of return (IRR) are used to analyze economic viability of the development project. The annual operation and maintenance costs of this project are expected to be small compared to the initial investment cost, and the project should be compared with public investment projects. In this project, therefore, IRR was used as an indicator. The basic assumptions used are as follows :

- 1) Period for Evaluation
Period for economic evaluation is 20 years, considering the life period of facilities.
- 2) Economic Cost
 - a) Trade Goods
Economic cost of trade goods was converted from the financial cost. Direct transfer cost such as tax and subsidy were deducted, and conversion factors by the sector were applied.

	Conversion Factors
Capital Goods	0.85
Utilities	0.70
Transportation	0.70
Construction	0.80
 - b) Non-trade Goods
Economic cost of non-trade goods was converted from financial cost using standard conversion factor (0.80).

c) Labor Costs

Economic cost of unskilled labor were converted from financial cost using conversion factor for consumption (0.65).

(2) Benefit

In this project, production, post-harvest treatment, testing and storage of seeds should be improved, and production of certified seeds should increase. Therefore, final crop production should increase at the ordinary farmers' level.

Even without the project, seed production will increase through efficient utilization of the present facilities and strengthening of management systems in the public sector, because its share is only small. Among the seed growers, however, certified seed should be produced in large volumes over a huge area to meet the planned requirement in the future, but productivity is expected to be the same as at present, 0.7 ton/ha for peanut, 2.0 ton/ha for rice, 1.2 ton/ha for corn, as without project. Therefore, the effects of the project are expected to appear in the increase in certified seeds production as shown below :

Seed	Effects Certified Seed Production Increase		(Unit: ton/year)
	With Project	Without Project	Effects
Peanuts	260	175	85
Rice	6,409	3,562	2,847
Corn	1,620	632	988

For ordinary farmers, net income per hectare using certified seeds and other commercial seeds are estimated as the following in economic cost.

Crop	Net Income of Ordinary Farmers		(Unit: pesos/ha)
	Certified Seeds	Commercial Seeds	Effects
Peanuts			
Production	24,000	11,200	
Cost	7,098	6,731	
Net Income	16,902	4,469	12,433
Rice			
Production	13,755	10,218	
Cost	6,618	5,844	
Net Income	7,137	4,374	2,763
Corn			
Production	7,034	5,210	
Cost	4,045	3,032	
Net Income	2,989	2,178	811

Input volume of certified seeds per hectare is 100 kg for peanuts, 105 kg for rice and 20 kg for corn, for ordinary farmers. The effects on production increase of certified seeds per hectare are as shown in the following :

Benefits of Certified Seeds per ton	
Peanuts	124 thousand pesos
Rice	26
Corn	41

Therefore, annual benefits of the project are estimated as follows.

Annual Benefits of the Project	
Peanuts	10,540 thousand pesos
Rice	74,022
Corn	40,508
Total	125,070

(3) Cost

Project cost consists of initial investment, reinvestment, operation and maintenance cost. These costs were used in economic price converted from financial price. A part of the cost of facilities which will be used for general purposes was allocated to the object crops as in the financial evaluation.

1) Initial Investment

Initial investment includes construction cost, design and supervision cost and contingencies. Initial investments for each crop will be as shown in below.

(Unit: '000 pesos)

Kind of Seed	1st year	2nd Year	Total
Peanuts	5,120	59,374	64,494
Rice	10,146	117,727	127,873
Corn	7,973	92,425	100,398
Total	23,239	269,526	292,765

2) Reinvestment

Reinvestment will be done for machinery and equipment which have a 10-year life period, shorter than 20 years of evaluation period.

(Unit: '000 pesos)

	Peanuts	Rice	Corn	Total
Peanuts	26,430	51,692	36,162	114,284

3) Operation and Maintenance Costs

Operation and maintenance costs include the production cost of seeds, operation, and maintenance cost of facilities. The cost to each object crop is as follows :

(Unit: '000 pesos)

	Peanut	Rice	Corn	Total
Production Cost of Seeds	1,095	11,006	4,028	16,129
Operation and Maintenance				
Cost of Facilities	3,190	6,957	3,830	13,977
Total	4,285	17,963	7,858	30,106

(4) Evaluation

After completion of the project construction, benefits will appear as 50% in the first year, 80% in the second, and 100% in and after the third.

Economic internal rate of return (EIRR) is 3.3% for peanut in Region II, 32.8% for rice in Region VI, 25.3% for corn in Region XI and 24.9% for overall.

In the Philippines, the interest rate in the agricultural loan system of the government bank is 12%. The total project is viable because its EIRR exceeds 12%, which is the opportunity cost of capital. EIRRs of rice and corn project exceed the opportunity cost of capital, but EIRR of peanut only is below.

(5) Sensitivity Analysis

Sensitivity analysis was carried out to analyze risks of uncertainty on project implementation, and relationship between EIRR and risks were analyzed. Risks analyzed were decrease of benefits, increase of cost, and delay of benefit appearance.

(Unit: %)

Crop	Base	Delay of Benefit Appearance		Decrease of Benefit		Increase of Cost	
		1 year	2 years	10%	20%	10%	20%
Peanut	3.3	1.8	0.6	0.8	-	1.1	-
Rice	32.8	24.3	19.3	28.6	24.3	29.0	25.8
Corn	25.3	19.8	16.1	22.1	18.8	22.4	19.9
Total	24.9	19.2	15.4	21.5	17.9	21.8	19.9

EIRR of the total project exceeds the opportunity cost of the capital in all cases. Also, rice and corn projects are viable in all cases. But EIRRs of the peanut project are minus in case of 20% decrease of benefit and 20% increase of cost.

(6) Secondary Benefit

Benefits of the project are not only directly countable as mentioned above, secondary benefits which are difficult to count will occur as mentioned below.

1) Utilization of Surplus Seeds

In this project, seeds will be provided not only to meet the requirement in model areas, but to provide a surplus to supply other areas. These surplus seeds will contribute to increase crop production in areas receiving them.

2) Emergency Seed Supply from Buffer Stock

Buffer stock seeds will be supplied in case of natural calamities such as typhoon and draught. Effects of buffer stock will appear in areas attacked by calamities to maintain stable seed supply.

3) Development of Industries Related

To increase seed production contributes directly to the increase of crop production. Therefore, related industries of crop production, such as supplying of agricultural input and marketing of crops will be developed, and opportunity of employment will increase in these industries.

8.7 Implementation Plan

8.7.1 Organization of Plan Execution

To attain successfully the objectives of the Model Improvement Plans, an active executing body is needed. The emphasis of organizational development for the plan's execution should be put on strengthening of existing sections concerned rather than creation of a permanent new organization.

At the National Level, the BPI should be held responsible for implementation and monitoring of all activities of the Plans. The Project Office should be established at the Production Division of the BPI Head Office during the initial stage at least for five (5) years. The following staff should be assigned full-time for the effective plan execution :

- 1) Project Manager (1)
- 2) Assistant Project Manager (1)
- 3) Senior Agronomist (1)

- 4) Senior Engineer Processing Plant (1)
- 5) Senior Engineer Condition Storage Plant (1)
- 6) Seed Marketing and Monitoring Expert (1)
- 7) Financial Analyst (1)

At the Regional level, the supervision of the implementation activities of the model improvement plan will be the responsibility of the DA Regional Director. He will be assisted by two DA Assistant Regional Directors for Operations and Research for the plan execution. It is recommended that Plan Coordination Meetings chaired by the DA Regional Director be held once a month at least, in order to promote good communication among divisions and sections concerned as well as with the seed growers associations. The following staff should be assigned under the regional and provincial seed coordinators to operate seed processing and storage facilities introduced :

- 1) Seed processing and storage facilities in the stations and seed farms
 - Regional Seed Coordinator (Supervisor)
 - Senior Plant Engineer
 - Assistant Plant Engineer
 - Monitoring Officer

- 2) Seed processing and storage facilities in the provincial level.
 - Provincial Seed Coordinator (Supervisor)
 - Assistant Plant Engineer
 - Seed Marketing Officer

8.7.2 Implementation Schedule

The implementation of the Model Improvement Plan could be scheduled for seven (7) years consisting of 1) preparatory stage for one year, 2) construction stage for one years and 3) model improvement stage for five (5) as shown in Fig. 8.7.1. The preparatory stage will cover detailed survey and study for the Plan execution, preparatory work for organization set-up of the Project Office in the BPI Head Office and the organization in the DA Regional Offices, and strengthening of seed producers associations in the model areas. The recruitment of new seed growers and their training should be started in this period. Construction works could be completed within one year. The Model Improvement Plan will be implemented for

five years under the monitoring and technical supervision of the Project Office in the BPI. Major activities by each stage are summarized as follows :

(1) Preparatory Stage

a) Detailed survey and study for the Model Improvement Plans in Region II, VI, and XI :

- site selection and design for facilities in the stations and provinces concerned
- assessment of capacity and number of machinery introduced
- preparation of a organization plan for plan execution, and
- cost estimate of the detail plans.

b) Organization set-up

- organization set-up of the Project Office in the BPI
- staff arrangement in the DA Regional and Provincial Offices
- selection of registered seed growers and recruit of new certified seed growers,
- strengthening of seed producers associations/cooperatives

c) Training of official staffs and seed growers

- training for processing plant and conditioned storage plant engineers,
- training on marketing operation and monitoring procedures for experts
- training on financial management for financial analysts
- training on seed farming as well as financial management for seed growers

(2) Construction Stage

a) Construction of irrigation facilities, access road, and buildings for processing plant, storage facilities and seed testing laboratories

b) Installment of processing plant, conditioned storage plant, others

c) Distribution of other machinery and equipment

(3) Model Improvement Stage

a) Implementation of planned seed procurement, production and distribution

b) Execution of proper operation and maintenance of seed processing plant and storage facilities

- c) Procurement of buffer certified seed from seed growers concerned and proper management of buffer seed stock.
- d) Promotion of effective field inspection and seed testing activities

8.8 Recommendation

(1) Early Implementation of the Model Improvement Plans

The plans for rice and corn seed are verified herewith to be technically sound, and economically and financially feasible. Economic and financial evaluation results on the plan for peanut seed are lower compared with those for rice and corn. Taking wide-spread effects of the plan implementation and serious shortage of high quality peanut seed into consideration, the improvement plan for peanut seed is indispensable. It is highly recommended that the necessary arrangement for early implementation of the plans be taken as soon as possible.

(2) Organization Set-up and Training Execution

For the smooth and effective execution of the Model Improvement Plans, the establishment of the Project Office in the BPI as well as assignment of technical staffs mentioned before is indispensable. Also at the regional and provincial levels, the required staffs should be assigned.

Training for the technical staffs have to be programed. Practical training, i.e. on-the-job training in the proper institutes could be recommended.

(3) Implementation of Seed Related Development Plan

Early implementation of the following development plans is strongly recommended as well as the Model Improvement Plans :

- 1) Establishment of Central Seed Storage System and Facilities in the BPI Head Office for the strengthening of the BPI's coordination activities on seed procurement and distribution in the country through timely and efficient seed distribution activities and remedy for shortage of parent seed by providing buffer seed stock.
- 2) Establishment of the Central Seed Quality Control Center in the BPI Head Office in order to promote the high quality seed production and distribution in the country

through improvement of proficiency and efficiency of seed testing activities, development of appropriate seed testing technology, and strengthening the nationwide monitoring and evaluation system of the Regional Seed Testing Laboratories.

- 3) Replacement of seed processing plant in Cagayan Valley E.S.

*Feasibility Study on
Improvement of Seed Production and Distribution, and
Establishment of Appropriate Seed Storage System*

TABLES

Table 1.3.1 IMPLEMENTATION OF SITE SURVEY AND DATA COLLECTION OF EXPERIMENT STATIONS AND SEED FARMS

Region	Experiment Station, & Seed Farm	Region	Experiment Station, & Seed Farm	Study Team		Counter-naire		Questionnaire	
				Visit	Visit	Visit	Visit	only	only
CAR	Buguias/Baguio NCC Luna Seed Farm	Region VI	La Granja NCC Visayas Expt. Station /_1 Iloilo Seed Farm /_1 Guimaras Seed Farm	0	0	0	0	0	0
Region I	Dingras Expt. Station			0					0
Region II	Agricultural Pilot Center Iligan Expt. Station Cagayan Valley Expt. Station Abulog Seed Farm	Region VII	Mandaue Expt. Station Bohol Expt. Station Agricultural Productivity Center	0	0	0	0	0	0
Region III	PhilRice Central Expt. Station	Region VIII	Romualdez Expt. Station Abuyog Expt. Station Gandara Seed Farm Salcedo Seed Farm	0	0	0	0	0	0
NCR	BPI Central Office Quezon City Central Nursery			0	0				0
Region IV	Economic Garden NCC Dr M.L. Roxas Memorial Expt. Station Tiaong Expt. Station Mindoro Horticultural Center Tanay Seed Farm Palawan Seed Farm	Region IX	Ipil Expt. Station	0	0	0	0	0	0
		Region X	Dalwangan Expt. Station Bukidnon Seed Farm	0	0	0	0	0	0
		Region XI	Davao NCC Tupi Seed Farm	0	0	0	0	0	0
Region V	Bicol Expt. Station Albay Expt. Station Daet Seed Farm Virac Seed Farm	Region XII	Mindanao Expt. Station Aroman Seed Farm Kidapawan Seed Farm /_2 Amas Seed Farm /_2	0	0	0	0	0	0

Note : /_1,/_2 ; Supervised by the same superintendent as a complex

Table 3.1.1 SBED RESEARCH AND PRODUCTION FACILITIES UNDER DEPARTMENT OF AGRICULTURE

Region / Experiment Station & Seed Farm	Location		Area (ha)	Main Research/ Production Crops	Note
	Province	Municipality			
CAR					
Buguias/Baguio NCC	Benguet	Buguias	36.0	Except rice	BPI National Crop Center
Luna Seed Farm	Kalinga-Apayao	Baguio City Luna	9.4 250.7	Except rice Upland crops, others	Focused on highland agriculture DA Regional Office
Region I					
Dingras Expt. Station	Ilocos Norte	Dingras	5.0	Crops general	DA Regional Office
Region II					
Agricultural Pilot Center	Cagayan	Iguig	4.6	Paddy, others	DA Regional Office
Ilagan Expt. Station	Isabela	Ilagan	107.3	Paddy, others	DA Regional Office
Cagayan Valley Expt. Station	Isabela	San Mateo	24.4	Paddy	PhilRice Branch Expt. Station
Abulog Seed Farm	Cagayan	Abulug	26.5	Paddy, others	DA Regional Office
Region III					
PhilRice Central Expt. Station	Nueva Ecija	Munos	98.4	Paddy	PhilRice
NCR					
BPI Central Office	Manila	Malate	4.0	Vegetable & fruits	Central Research Station BPI Central Experiment Station
Quezon City Central Nursery	Manila	Quezon City	3.0	Fruit tree, others	BPI Seed Farm
Region IV					
Economic Garden NCC	Laguna	Los Banos	46.2	Except paddy & fruits	BPI National Crop Center
Dr M.L. Roxas Memorial Expt. Station	Batangas	Lipa City	48.4	Fruit tree, others	DA Regional Office
Tiaong Expt. Station	Quezon	Tiaong	49.0	Crops general	DA Regional Office
Mindoro Horticultural Center	Oriental Mindoro	Victoria	285.0	Vegetables, paddy, others	DA Regional Office
Tanay Seed Farm	Rizal	Tanay	20.5	Crops general	DA Regional Office
Palawan Seed Farm	Palawan	Puerto Princesa	68.4	Crops general	DA Regional Office
Region V					
Bicol Expt. Station	Camarines Sur	Pili	70.0	Paddy	PhilRice Branch Expt. Station
Albay Expt. Station	Albay	Tobaco	50.2	Crops general	DA Regional Office
Daet Seed Farm	Camarines Norte	Daet	56.9	Crops general	DA Regional Office
Virac Seed Farm	Catanduanes	Virac	73.8	Crops general	DA Regional Office
Region VI					
La Granja NCC	Negros Occidental	La Carlota	96.0	Crops includes paddy	BPI National Crop Center
Visayas Expt. Station /_1	Iloilo	Iloilo City	62.5	Paddy	PhilRice Branch Expt. Station
Iloilo Seed Farm /_1	Iloilo	Sta. Barbara	8.3	Crops general	DA Regional Office
Guimaras Seed Farm	Guimaras	Jordan (National Mango Research Expt. Center)	8.9	Fruit tree	DA Regional Office
Region VII					
Mandaue Expt. Station	Cebu	Mandaue	7.9	Crops general	DA Regional Office
Bohol Expt. Station	Bohol	Ubay	100.0	Crops general	DA Regional Office
Agricultural Productivity Center	Bohol	Tagbilaran	-	Paddy, vegetable	DA Regional Office
Region VIII					
Romualdez Expt. Station	Leyte	Babatngon	27.4	Crops general	DA Regional Office
Abuyog Expt. Station	Leyte	Abuyog	145.3	Crops general	DA Regional Office
Gandara Seed Farm	Western Samar	Gandara	85.0	Crops general	DA Regional Office
Salcedo Seed Farm	Eastern Samar	Salcedo	20.0	Crops general	DA Regional Office
Region IX					
Ipil Expt. Station	Zamboanga Del Sur	Ipil	24.0	Crops general	DA Regional Office
Region X					
Dalwangan Expt. Station	Bukidnon	Dalwangan	120.0	Crops general	DA Regional Office
Bukidnon Seed Farm	Bukidnon	Kibawe	30.0	Crops general	DA Regional Office
Region XI					
Davao NCC	Davao Del Sur	Davao City	1,004.9	Fruit tree crops, others	BPI National Crop Center
Tupi Seed Farm	South Cotabato	Tupi	42.0	Crops general	DA Regional Office
Region XII					
Mindanao Expt. Station	North Cotabato	Midsayap	94.1	Paddy	PhilRice Branch Expt. Station
Aroman Seed Farm	North Cotabato	Kabacan	485.1	Crops general	DA Regional Office
Kidapawan Seed Farm /_2	North Cotabato	Kidapawan	50.0	Crops general	DA Regional Office
Amas Seed Farm /_2	North Cotabato	Amas	280.5	Crops general	DA Regional Office

Note : /_1, /_2 ; Supervised by the same superintendent as a complex

**Table 3.3.1 SUMMARY OF STATIONS' SEED PRODUCTION
(1984-1988 Average)**

Crop	Kind of Seed	Harvested Area (ha)		Produced (t)		Yield (t/ha)	Approved Seed (t)		(%)
		Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	
Rice									
Lowland Rice									
	Foundation	32.7	37.0	101.5	110.1	3.0-3.1	62.9	69.1	62
	Registered	138.0	150.5	350.7	386.0	2.5-2.6	242.0	267.1	69
	Certified	34.3	48.4	77.6	112.2	2.3	47.3	68.5	61
	Good	2.6	7.1	3.9	12.9	1.5-1.8	1.2	4.1	31
	Others	2.6	7.1	3.0	8.4	1.2	0.6	1.8	21
Upland Rice									
	Foundation	1.0	3.6	1.9	6.7	1.9	1.2	4.3	64
	Registered	3.8	15.4	7.3	26.9	1.7-1.9	5.5	20.3	75
	Certified	0.7	2.6	1.1	5.4	1.6-2.1	0.9	4.5	83
	Good	0.4	2.0	0.9	1.8	0.9-1.0	0.1	0.5	27
	Others	1.7	7.5	1.0	7.5	1.0	1.0	4.5	60
Total Rice									
	Foundation	33.7	40.6	103.4	116.8	3.0	64.1	73.4	62
	Registered	141.8	165.9	358.0	412.9	2.5	247.5	287.4	69
	Certified	35.0	51.0	78.7	117.6	2.3	48.2	73.0	62
	Good	3.0	9.1	4.8	14.7	1.6	1.3	4.6	30
	Others	4.3	14.6	4.0	15.9	1.1	1.6	6.3	40
Corn									
Yellow Corn									
	Foundation	5.9	12.2	11.4	22.8	1.9	6.5	13.0	57
	Registered	33.2	72.2	55.5	110.0	1.5-1.7	38.9	77.5	70
	Certified	12.4	33.9	15.5	39.1	1.2-1.3	7.8	19.6	50
	Good	1.0	5.0	2.4	7.1	1.4-2.3	0.2	0.5	7
	Others	1.5	6.9	3.6	13.9	2.0-2.5	0.8	3.1	22
White Corn									
	Foundation	1.4	3.7	1.4	3.6	1.0	1.3	3.4	94
	Registered	5.9	17.8	9.9	25.2	1.4-1.7	7.7	19.9	78
	Certified	16.5	43.0	15.9	50.3	1.0-1.2	14.6	46.5	92
	Good	1.9	7.8	2.7	11.4	1.4-1.5	2.3	9.9	86
	Others	2.1	6.4	1.8	5.9	0.9	1.4	4.7	79
Corn Total									
	Foundation	7.3	15.9	12.8	26.4	1.3	7.8	16.4	62
	Registered	39.1	90.0	65.4	135.2	1.1	46.6	97.4	72
	Certified	28.9	76.9	31.4	89.4	0.9	22.4	66.1	72
	Good	2.9	12.8	5.1	18.5	1.4	2.5	10.4	53
	Others	3.6	13.3	5.4	19.8	1.3	2.2	7.8	40
Peanut									
	Foundation	0.8	4.3	0.2	1.0	0.2	0.1	0.4	45
	Registered	7.2	14.8	5.9	10.8	0.7-0.8	5.5	10.1	93
	Certified	4.3	11.0	4.9	9.3	0.8-1.1	3.8	7.3	78
	Good	1.9	8.2	0.8	3.9	0.4-0.5	0.7	3.2	85
	Others	6.0	26.2	3.4	14.2	0.5-0.6	1.3	5.4	38

Source : BPI Annual Report

**Table 3.3.2 SUMMARY OF GROWERS' SEED PRODUCTION
(1984-1988 Average)**

Crop	Kind of Seed	Harvested Area (ha)		Produced (t)		Yield (t/ha)	Approved Seed (t)		(%)
		Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	
Rice									
Lowland Rice									
	Registered	505.0	514.0	1,870.9	1,900.2	3.7	860.6	889.7	46
	Certified	3,339.0	3,432.0	12,171.9	12,375.0	3.6	5,477.4	5,651.9	45
	Good	166.4	214.0	434.3	654.3	2.6-3.1	156.3	240.3	36
	Others	7.6	35.5	27.4	126.5	3.6	2.7	13.0	10
Upland Rice									
	Registered	8.4	21.1	21.8	72.9	2.6-3.5	12.6	43.0	58
	Certified	9.4	34.6	33.8	120	3.5-3.6	12.5	45.1	37
	Good	0.04	0.2	0.03	0.1	0.5-0.8	0.03	0.1	100
Total Rice									
	Registered	513.4	535.1	1,892.7	1,973.1	3.7	873.2	932.7	47
	Certified	3,348.4	3,466.6	12,205.7	12,495.0	3.6	5,489.9	5,697.0	45
	Good	166.4	214.2	434.3	654.4	2.9	156.3	240.4	36
	Others	166.4	214.2	434.3	654.4	2.9	156.3	240.4	36
Corn									
Yellow Corn									
	Registered	40.0	107.1	115.4	310.3	2.9	64.6	174.0	56
	Certified	35.3	83.9	89.6	219.2	2.5-2.6	28.7	72.2	32
	Good	7.6	10.6	9.0	19.7	1.6-1.9	5.6	12.4	62
White Corn									
	Registered	19.9	49.4	42.3	75.8	1.5-2.1	19.5	35.4	46
	Certified	12.2	50.5	27.8	129.9	2.3-2.6	18.9	89.3	68
	Good	2.7	11.6	0.6	1.9	0.2	0.5	1.6	84
	Others	0.2	1.0	0.9	4.5	4.5	0.9	4.5	100
Corn Total									
	Registered	59.9	156.5	157.7	386.1	2.5	84.1	209.4	54
	Certified	47.5	134.4	117.4	349.1	2.6	47.6	161.5	45
	Good	10.3	22.2	9.6	21.6	1.0	6.1	14.0	64
	Others	0.2	1.0	0.9	4.5	4.5	0.9	4.5	100
Peanut									
	Registered	0.7	3.3	0.1	0.7	0.1	0	0	0
	Certified	1.7	4.3	1.8	4.5	1.1	0	0	0

Source : BPI Annual Report

Table 3.3.3 PERCENTAGE OF APPROVED SEED AND NET SEED YIELD (1984-1988 AVERAGE)

Seed Class	Station		Seed Grower	
	Approved Seed (%)	Net Seed Yield (kg/ha)	Approved Seed (%)	Net Seed Yield (kg/ha)
Lowland Rice				
Foundation	62	1.9	-	-
Registered	69	1.8	46	1.6
Certified	61	1.4	45	1.6
Upland Rice				
Foundation	64	1.3	-	-
Registered	75	1.3	58	2.0
Certified	83	1.7	37	1.3
Yellow Corn				
Foundation	57	1.1	-	-
Registered	70	1.1	56	1.6
Certified	50	0.6	32	0.9
White Corn				
Foundation	94	0.9	-	-
Registered	78	1.1	46	0.7
Certified	92	1.1	68	1.8
Peanut				
Foundation	39	0.1	-	-
Registered	93	0.7	0	0.0
Certified	78	0.7	0	0.0

Note: /_1: Maximum average yield

Table 3.3.4 SEED PRODUCTION AND BPI SEED PRODUCTION TARGET (1984-1988 Average)

Item	Foundation Seed		Registered Seed		Certified Seed	
	Harvested Area (ha)	Production Approved (t)	Harvested Area (ha)	Production Approved (t)	Harvested Area (ha)	Production Approved (t)
Rice Seed /_1						
Station/Seed Farm	32-37	63-69	138-151	242-267	34-48	47-69
Seed Grower	-	-	505-514	861-890	3,339-3,432	5,477-5,652
Total	32-37	63-69	643-665	1,103-1,157	3,373-3,480	5,524-5,721
BPI Target 1989	10	32	700	2,520	7,312	26,324
		(Station	478	1,721)		
		(Seed Grower	222	799)		
Corn Seed						
Station/Seed Farm						
Yellow corn	6-12	6-13	33-72	39-78	12-34	8-20
White corn	1- 4	1- 3	6-18	8-20	17-43	15-47
(Sub total)	(7-16)	(7-16)	(39-90)	(47-98)	(29-77)	(23-67)
Seed Grower						
Yellow corn	-	-	40-107	65-174	35-84	29-72
White corn	-	-	20-49	20- 35	12-51	19-89
(Sub total)	(-)	(-)	(60-156)	(85-209)	(47-135)	(48-161)
Total	(7-16)	(7-16)	99-246	132-307	76-212	71-228
BPI Target 1989	5	15	77	229	2,621	7,862
		(Station	25	73) (O.P	124	371)
		(Seed Grower	52	156) (Hyb.	2497	7,491)
Peanut Seed						
Station/Seed Farm	1- 4	0.1-0.4	7- 15	6- 10	4- 11	4- 7
Seed Grower	-	-	0.7-3.3	0	1.7-4.3	0
Total	1- 4	0.1-0.4	7.7-18.3	6- 10	5.7-15.3	4- 7
BPI Target 1989	10	10	260	260	2,600	2,600

Note : /_1 : Lowland rice seed
Source : BPI Annual Report, 1984-1988

Table 3.4.1. Location of Seed Testing Laboratory (STL) and their covered province

Region	Laboratory Number	Province	Municipality	Location	Covered Province
I	1	Pangasinan	Dagupan City	D.A. Pangasinan Provincial Office	Ilocos Norte Ilocos Sur La Union Pangasinan
II	2	Isabela	San Mateo	Cagayan Valley E.S. Malasin, San Mateo	Isabela Nueva Viscaya Quirino Cagayan Bataan
	3	Cagayan	Iguig	A.P.C.	
III	4	Nueva Ecija	Munoz	Phil. Rice Central B.S. MMRTC, Maligaya	Zambales Tarlac Nueva Ecija Pampanga Bataan
IV	5	Laguna	Los Banos	Economic Garden National Crop Center	Aurora Cavite Batangas
	6	Or. Mindoro	Naujan	Barangay Barcenaga	Oriental Mindoro Laguna
	7	Occ. Mindoro	San Jose	Mindoro Integrated Area Development Office	Occidental Mindoro Marinduque Laguna Quezon Romblon Palawan Rizal
V	8	Camarines Sur	Pili	Bicol E.S., San Agustín D.A. Region V Office	Camarines Norte Camarines Sur Albay Catanduanes Masbate Sorsogon
VI	9	Iloilo	Iloilo City	Visayas E.S. Hamungaya, Jaro	Aklan Antique Capiz Iloilo Gulmaras Negros Occidental
	17	Negros Occidental	La Carlota City	La Granja N.C.C.	
VII	10	Cebu	Mandaue City	Mandaue E.S., Estancia	Bohol Cebu Negros Oriental Siquijor
VIII	11	Leyte	Tacloban	Romualdez E.S., Babatngon	Leyte Southern Leyte
	12	Samar	Catbalogan City	Gandara Seed Farm	Samar Biliran Eastern Samar Northern Samar
IX	13	Zamboanga del Sur	Ipil	Ipil E.S.	Basilan Zamboanga del Norte Zamboanga del Sur Zamboanga City Sulu
X	14	Misamis Oriental	Cagayan de Oro City	D.A. Region X Office	Agusan del Norte Agusan del Sur Bukidnon Compostela Misamis Occidental Misamis Oriental Surigao del Norte
XI	15	Davao	Bago Oshiro	Davao National Crop Center Bago Oshiro	Davao City Davao del Norte Davao del Sur Davao Oriental South Cotabato Surigao del Sur
XII	16	North Cotabato	Midsayap	Mindanao E.S. Bual, Midsayap	Cotabato City North Cotabato Maguindanao Lanao del Norte Lanao del Sur Sultan Kudarat
Central Office Bureau of Plant Industry			Manila	Malate	NCR

Table 3.4.2 Area Inspected and Number of Inspector by Region

Region	(1) Inspected Area (Ha.)	(2) Number of Inspector	(1)/(2) (Ha.)	Quantity of approval seed (Cavan)	
				Rice	Corn
I	1,353.51	9	150.3	2,751.00	33.00
II	3,131.21	11	284.6	106,879.00	2,192.00
III	4,029.85	17	237.1	117,765.00	-
IV	1,274.72	21	48.0	977,829.00	96.25
V	1,420.72	22	64.6	39,573.00	94.00
VI	1,798.41	16	112.4	49,273.94	61.00
VII	251.55	8	31.5	6,469.00	131.36
VIII	766.91	12	63.9	13,724.50	75.00
IX	862.02	9	96.8	22,583.00	2,396.00
X	637.07	13	49.6	20,992.00	100.00
XI	4,702.99	17	276.6	57,950.00	262.20
XII	705.69	8	88.2	17,241.50	569.00
TOTAL	20,934.65	163	128.4	1,433,030.94	6,009.81

Data Source: S.Q.C.S. Annual Report, 1989

Table 3.4.3 THE NUMBER OF S.T.L. STAFF (1990)

Datas Source: S.Q.C.S. BPL.

REGION	S.T.L. NO.	No. of Staff			Total	Total No. of Samples tested (1989)
		Seed Analyst	Adm. Staff	Other Janitor/Driver.etc		
I	1	5	4	1	10	3,693
II	2	6	4	1	11	5,174
	3	4	2	0	6	3,937
III	4	8	4	0	12	14,619
IV	5	4	3	0	7	2,652
	6	4	4	0	8	306
	7	4	3	0	7	1,251
V	8	4	8	0	12	10,520
VI	9	10	1	0	11	
	17	1	1	0	2	5,797
VII	10	6	1	0	7	1,025
VIII	11	6	3	0	9	
	12	1	0	0	1	6,989
IX	13	5	4	0	9	1,602
X	14	5	3	0	8	3,111
XI	15	6	2	0	8	7,562
XII	16	3	5	0	8	5,084
CENTRAL OFFICE		11	4	0	15	9,078
CAR REGION*3		0	0	0	0	0
TOTAL		93	56	2	151	82,400

NOTE:

- *1. Lab.No.17 was established in the site of La Granja NCC.Negros Occ. in 1990,while the Lab. is operating under Lab.No.9.Visayas ES
- *2. Lab.No.12 was established in the site of Gandara SF,Samar.in 1989.
- *3. Cordillera Automous Region(CAR). Not yet established.

Table 3.5.1 EXISTING BUILDINGS FOR SEED

Region	Experiment Stations and Seed Farms	Testing Laboratories	Processing Plant	Storage Houses	Remarks
CAR	Buguias/Baguio NCC	-	-	-	
	Luna Seed Farm	-	-	0	
I	Digras Expt. Station	-	-	-	
II	Agricultural Pilot Center	0	-	-	
	Iligan Expt. Station	-	0	0	
	Cagayan Valley Expt. Station	0	0	0	
	Abulog Seed Farm	-	0	-	
III	Phil. Rice Central Expt. Station	0	0	0	
NCR	BPI Central Office	0	-	-	
	Quezon City Central Nursery	-	-	-	
IV	Economic Garden NCC	0	-	-	
	Dr. M. L. Roxas Memorial Experiment Station	-	-	-	
	Tiaong Expt. Station	-	-	-	
	Mindoro Horticultural Center	0	0	-	
	Tanay Seed Farm	-	-	-	
	Palawan Seed Farm	-	-	-	
V	Bicol Expt. Station	0	0	0	
	Albay Expt. Station	-	-	-	
	Daet Seed Farm	-	0	0	
	Virac Seed Farm	-	-	-	
VI	La Granja NCC	-	0	0	
	Visayas Expt. Station /-1	0	0	0	
	Iloilo Seed Farm /-1	-	-	-	
	Guimaras Seed Farm	-	-	-	
VII	Mandaue Expt. Station	0	-	-	
	Bohol Expt. Station	-	0	0	
	Agricultural Productivity Center	-	-	-	
VIII	Romualdez Expt. Station	0	0	0	
	Abuyog Expt. Station	-	-	-	
	Gandara Seed Farm	0	-	-	
	Salcedo Seed Farm	-	-	-	
IX	Ipil Expt. Station	0	0	0	
X	Dalwangan Expt. Station	-	-	-	
	Bukidnon Seed Farm	-	-	-	
XI	Davao NCC	0	-	-	
	Tupi Expt. Station	-	0	-	
XII	Mindanao Expt. Station	0	0	0	
	Aroman Seed Farm	-	-	-	
	Kidapawan Seed Farm /-2	-	0	-	
	Amas Seed Farm /-2	-	-	0	

Notes: 1. /-1 & /-2 : Supervised by the same superintendent as a complex

Table 6.2.1 REGIONAL SITUATION ON SELECTION CRITERIA FOR RICE SEED MODEL AREA

Region	Criteria No.								Accessibility to Other Region	Recipient of On-going Projects
	A	B	C			D		E		
	Percentage of Paddy Production (1986-1988 Ave.)	Presence of NCC or Phil Rice Branch	C-1 No. of Seed Growers 1989	C-2 Percentage of Screened Seed Production (1984-1988 Ave.) Registered Certified		C-3 Presence of Regional Seed Producers Federation	D-1 No. of Seed Inspector	D-2 Coverage Area by One Seed Inspector (1984-1988 Ave.)		
CAR	2	-	16	-	-	x	-	-	CAR, I, II	x
I	9	-	105	3	5	x	9	14	CAR, I, II, III	x
II	12	Phil Rice Branch	186	10	11	x	11	28	CAR, I, II, III	x
III	17	Phil Rice Branch Central Station	242	25	20	x	17	68	I, II, III, IV	Exist
IV	10	NCC BPI Central Office	127	15	8	x	21	13	I, II, III, IV	x
V	7	Phil Rice Branch	168	9	3	x	22	9	V	x
VI	13	NCC Phil Rice Branch	70	16	20	Exist	16	53	VI, VII, VIII	x
VII	2	-	44	3	1	x	8	6	VI, VII, VIII	x
VIII	4	-	73	4	3	x	12	26	VI, VII, VIII	x
IX	4	-	30	4	3	x	9	19	IX, X, XI, XII	x
X	4	-	96	3	5	x	13	11	X, IX, XI, XII	x
XI	7	NCC	86	6	19	Exist	17	28	XI, IX, X, XII	x
XII	9	Phil Rice Branch	90	2	2	x	8	10	XII, XI, IX, XI	x
Total	100	-	1,333	100	100	-	163	Ave: 25 ha	-	-
	Total production = 8,919,000 t			Total = 903 t				Total seed growers' harvested area = 4,029 ha		

Note: NCC; National Crop Centers under BPI

Table 6.2.2 REGIONAL SITUATION ON SELECTION CRITERIA FOR CORN SEED MODEL AREA

Region	Criteria No.								Accessibility to Other Region	Recipient of On-going Project with Same Name
	A	B	C			D		E		
	Percentage of Corn Production (1986-1988 Ave.)	Presence of NCC	C-1 No. of Corn Seed Growers 1983	C-2 Percentage of Screened Seed Production by Seed Growers (1984-1988 Ave.) Registered Certified		D-1 No. of Seed Inspector	D-2 Coverage Area by One Seed Inspector (1984-1988 Ave.)	F		
CAR	1	NCC	-	-	-	-	No report	-	CAR, I, II	x
I	2	-	5	7	17	9	3	3	CAR, I, II, III	x
II	9	-	59	10	7	11	2	2	CAR, I, II, III	x
III	*	-	15	5	-	17	<1	<1	I, II, III, IV	x
IV	6	NCC	33	5	22	21	3	3	I, II, III, IV	x
V	3	-	10	2	2	22	<1	<1	V	x
VI	1	NCC	51	38	-	16	2	2	VI, VII, VIII	x
VII	7	-	15	16	19	8	9	9	VI, VII, VIII	x
VIII	5	-	14	No report	No report	12	<1	<1	VI, VII, VIII	x
IX	5	-	31	4	22	9	3	3	IX, X, XI, XII	x
X	7	-	5	No report	No report	13	<1	<1	X, IX, XI, XII	x
XI	30	NCC	20	8	11	17	2	2	XI, IX, X, XII	x
XII	24	-	27	5	-	8	<1	<1	XII, XI, IX, XI	x
Total	100	-	285	100	100	163	Ave. = 2 ha	Total seed growers' harvested area = 291 ha	-	-
	Total production = 4,266,000 t			Total = 209 t						
	* insignificant									

Table 6.2.3 REGIONAL SITUATION ON SELECTION CRITERIA FOR PEANUT SEED MODEL AREA

Region	Criteria No.							
	A	B	C			D	E	F
	Percentage of Peanut Production (1986-1988 Ave.)	Presence of NCC	No available data for regional comparison			No. of Seed Inspector	Accessibility to Other Region	Recipient of On-going Project
CAR	1	NCC				-	CAR, I, II	x
I	21	-				9	CAR, I, II, III	x
II	48	-				11	CAR, I, II, III	x
III	3	-				17	I, II, III, IV	x
IV	4	NCC				21	I, II, III, IV	x
V	4	-				22	V	x
VI	3	NCC				16	VI, VII, VIII	x
VII	3	-				8	VI, VII, VIII	x
VIII	2	-				12	VI, VII, VIII	x
IX	3	-				9	IX, X, XI, XII	x
X	2	-				13	X, IX, XI, XII	x
XI	2	NCC				17	XI, IX, X, XII	x
XII	4	-				8	XII, XI, IX, XI	x
Total	100	-				163		

Table 6.2.4 SCORING FOR SELECTION OF RICE SEED MODEL AREA

Region	Criteria No.									Total Scoring	Candidate Region	F Screening by the Receipt of On-going Projects	Final Selection
	A	B	C		D		E						
	Percentage of Paddy Production (1986-1988 Ave.)	Presence of NCC or Phil Rice Branch	C-1 Percentage of Seed Growers Distribution (1989)	C-2 Percentage Approved Seed Production (1984-1988 Ave.) Registered Certified	C-3 Presence of Regional Seed Producers Association	D-1 Percentage of Seed Inspectors Distribution	D-2 Coverage Area by One Seed Inspector (1984-1988 Ave.)	E Accessibility to Other Region					
CAR	2	5	1	0	5	0	4	6.6	23.6	-			
I	9	5	8	3	5	6	10	8.8	59.8	*			
II	12	10	14	10	11	7	7	8.8	84.8	*	None		
III	17	10	18	25	20	5	10	8.8	118.8	*	Exist		
IV	10	10	10	15	8	5	13	8.8	89.8	*	None		
V	7	10	13	9	3	5	13	2.2	72.2	-			
VI	13	10	5	16	20	10	10	6.6	94.6	*	None	Selected	
VII	2	5	3	3	1	5	5	6.6	40.6	*			
VIII	4	5	6	4	3	5	7	6.6	47.6	-			
IX	4	5	2	4	3	5	6	8.8	44.8	-			
X	4	5	7	3	5	5	8	8.8	55.8	-			
XI	7	10	6	6	19	10	10	8.8	83.8	*	None		
XII	9	10	7	2	2	5	10	8.8	58.8	-			
Total	100	100	100	100	100	75	100	101	100				

Note: Criteria B; Exist (10), None (5)
Criteria C-3; Exist (10), None (5)
Criteria D-2; Below the average (10), Around the average (7), Above the average (4)
Criteria E; Number of coverage region times 2.2 points

Table 6.2.5 SCORING FOR SELECTION OF CORN SEED MODEL AREA

Region	Criteria No.									Total Scoring	Candidate Region	F Screening by the Receipt of On-going Projects	Final Selection
	A	B	C		D		E						
	Percentage of Paddy Production (1986-1988 Ave.)	Presence of NCC	C-1 Percentage of Seed Growers Distribution (1989)	C-2 Percentage Approved Seed Production (1984-1988 Ave.) Registered Certified	C-3 Presence of Regional Seed Producers Association	D-1 Percentage of Seed Inspectors Distribution	D-2 Coverage Area by One Seed Inspector (1984-1988 Ave.)	E Accessibility to Other Region					
CAR	1	10	0	0	5	0	4	6.6	26.6	-			
I	2	5	2	7	5	6	7	8.8	59.8	-			
II	9	5	21	10	7	5	7	8.8	79.8	*	None		
III	5	5	5	5	0	5	10	8.8	48.8	-			
IV	6	10	12	5	22	5	13	8.8	85.8	*	None		
V	3	5	4	2	2	5	13	2.2	46.2	-			
VI	1	10	17	38	0	5	10	6.6	94.6	*	None		
VII	7	5	5	16	19	5	4	6.6	72.6	*			
VIII	5	5	5	No report	-	5	7	6.6	43.6	-			
IX	5	5	11	4	22	5	6	8.8	73.8	*	None		
X	7	5	2	No report	-	5	8	8.8	45.8	-			
XI	30	10	7	8	11	5	10	8.8	96.8	*	None	Selected	
XII	24	5	9	5	0	5	5	8.8	71.8	*			
Total	100	85	100	100	100	65	100	97	100				

Note: Criteria B; Exist (10), None (5)
Criteria C-3; Exist (10), None (5)
Criteria D-2; Below the average (10), Around the average (7), Above the average (4)
Criteria E; Number of coverage region times 2.2 points

Table 6.2.6 SCORING FOR SELECTION OF PEANUT SEED MODEL AREA

Region	Criteria No.					Total Scoring	Candidate Region	F Screening by the Receipt of On-going Projects	Final Selection
	A Percentage of Paddy Production (1986-1988 Ave.)	B Presence of NCC	C No available data for regional comparison	D Percentage of Seed Inspectors Distribution					
CAR	1	10			0	6.6	17.6	-	
I	21	5			6	8.8	40.8	*	None
II	48	5			7	8.8	68.8	*	None
III	3	5			10	8.8	26.8	-	
IV	4	10			13	8.8	35.8	*	None
V	4	5			13	2.2	24.2	-	
VI	3	10			10	6.6	29.6	*	None
VII	3	5			5	6.6	19.6	-	
VIII	2	5			7	6.6	20.6	-	
IX	3	5			6	8.8	22.8	-	
X	2	5			8	8.8	23.8	-	
XI	2	10			10	8.8	30.8	*	None
XII	4	5			5	8.8	22.8	-	
Total	100	85			100				

Note: Criteria B; Exist (10), None (5)
Criteria E; Number of coverage region times 2.2 points

Table 7.4.1 Seed Certification Results of the Model Area, January - December 1989

Region SQCS	Producer/ Province	Crop	Approved Seed Class (Cavans) and Number of samples Submitted					Tagged & Sealed			
			Foundation	Registered	Certified	Good	Rejected		Total		
II PBANUT Lab.No.2 San Mateo	CVES Isabela IES-Isabela	Rice	136(9)	1361(39)	100(2)	10(1)	32(3)	1639(54)			
		Rice			20(1)			20(1)			
		Corn	259(7)	219(6)	570(10)			1048(23)			
		Mungo	6(1)	11(2)				17(3)			
		Peanut			200(4)			200(4)			
Total for Station			401(17)	1591(47)	890(17)	10(1)	32(3)	2924(85)			
P. Coop Isabela Isabela N. Viscaya N. Viscaya Quirino	Rice Corn Rice Corn Rice			1350(28)	70742(462)	3527(25)	6175(44)	81794(559)			
				25(1)	990(13)			1015(14)			
				262(6)	3992(52)	379(5)	198(3)	4831(66)			
							17(1)	17(1)			
				90(2)	2505(23)	115(1)	195(2)	2905(28)			
Total for P. Coop				1727(37)	78229(550)	4021(31)	6585(50)	90562(668)			
Total for Lab. No. 2			401(17)	3318(84)	79119(567)	4031(32)	6617(53)	93486(753)	93508		
VI RICE Lab. No. 9 Hollo	VES GES LGES	Rice	405.31(3)	1018.63(44)	62(2)		55(3)	1540.94(82)			
		Rice	156(8)				100(2)	100(2)			
		Rice		50(1)				206(9)			
		Corn		32(1)	29(1)			61(2)			
		Total for Station			561.31(41)	1100.63(46)	91(3)	155(5)	1907.94(95)		
P. Coop Aklan Antique Capiz Guimaras Hollo Negros Occ.	Rice Rice Rice Rice Rice Rice			1016(23)	5275(34)		100(1)	6391(58)			
				672(16)	5675(35)	175(1)		6522(52)			
				883(26)	4854(50)	340(4)	868(12)	6945(92)			
				268(8)	2408(28)		322(5)	2998(41)			
				2311(61)	14737(125)	1785(16)	1265(14)	20098(216)			
				237(8)	3736(36)		500(7)	4473(51)			
Total for P. Coop				5387(142)	36685(308)	2300(21)	3053(39)	47427(510)			
Total for Region			561.31(41)	6487.63(188)	36776(311)	2300(21)	3210(44)	49334.94(603)	45499		
XI CORN Lab. No. 15 Davao	TSF S. Cotabato	Rice	30(1)	452(12)	87(2)	127(3)		696(18)			
		Corn		84(6)				84(6)			
		Peanut		2.3(1)				2.3(1)			
		Sorghum		50(1)			25(1)	75(2)			
	DES D.Sur	Corn		26(1)				26(1)			
Total for Station			30(1)	614.3(21)	87(2)	127(3)	25(1)	883.3(28)			
P. Coop D. Norte D. Oriental D. Sur D. Sur S. Cotabato S. Cotabato S. Cotabato Surigao Sur	Rice Rice Rice Corn Rice Corn Cotton Rice			464(17)	15545(152)	785(17)	491(6)	17285(192)			
				564(20)	8060(90)	940(12)	72(1)	9636(123)			
				506(15)	10912(92)	1172(10)	927(9)	13517(126)			
				68.8(4)			19(1)	87.8(5)			
				971(23)	9182(121)	1072(15)	331(6)	11556(165)			
				50.4(3)	14(2)			64.4(5)			
					937(8)	3600(23)		4537(31)			
				114(4)	4726(16)	163(4)	257(5)	5260(56)			
		Total for P. Coop				2738.2(86)	49376(508)	7732(81)	2097(28)	61943.2(703)	
		Other Agency	Cotton			1462(16)		127(2)	1589(18)		
Total for Region XI			30(1)	3352.5(107)	50925(526)	7859(84)	2249(31)	64415.5(749)	65292		

Note: Data Source: Annual Report S.Q.C.S., BPI, DA 1989
CVES: Cagayan Valley Experiment Station (ES)
IES: Iigan E.S.
P. Coop: Private seed grower/producer
VES: Visayan E.S.
GES: Guimaras E.S.
LGES: La Granja N.C.C.
TSF: Tupi Seed Farm
DES: Davao N.C.C.

Table 8.2.1 PEANUT SEED PRODUCTION PLAN IN REGION II

1. FRAMEWORK FOR PEANUT SEED PRODUCTION

Item	Factor	Unit	Region II	
			Wet	Dry
A. Area to be planted		ha	4,480	21,520
B. Total seed requirement	/seed rate ; 100 kg/ha	ton	448	2,152
C. CS for next season	/renewal rate ; 10 %	ton	215	45
D. Field area for CS production	/yield ; 1.0 t/ha	ha	215	45
E. RS requirement	/seed rate ; 100 kg/ha	ton	4.5	21.5
(Buffer stock of RS)	/Percentage to E ; 20 %	ton	(0.9)	(4.3)
F. Field area for RS production	/yield ; 1.0 t/ha	ha	4.5	21.5
G. FS requirement for next season	/seed rate ; 100 kg/ha	ton	2.2	0.5
(Buffer stock of FS)	/Percentage to G ; 100 %	ton	(2.2)	(0.5)
H. Field area for FS production	/yield ; 1.0 t/ha	ha	2.2	0.5
I. Requirement of BS for next season	/seed rate ; 100 kg/ha	kg	50	220

2. PEANUT SEED PRODUCTION PLAN BY PRODUCER

Item	Factor	Unit	Season	
			Wet	Dry
I. Ilagan Experiment Station				
	Available field for peanut seed production	ha	8.0	8.0
(1) FS Production				
Field area for FS production		ha	2.2	0.6
FS production	/yield ; 1.0 t/ha	ton	2.2	0.6
(2) RS Production				
Field area for RS production		ha	5.8	7.4
RS production	/yield ; 1.0 t/ha	ton	5.8	7.4
Surplus RS to the requirement		ton	1.3	-
II. Registered Seed Growers				
RS requirement for next season in Region II		ton	4.5	21.5
RS deficit to be produced by seed growers		ton	-	14.1
Field area for RS production by seed growers	/yield ; 1.0 t/ha	ha	-	14.1
III. Certified Seed Growers				
Field area for CS production		ha	215	45
CS production	/yield ; 1.0 t/ha	ton	215	45
(Buffer stock of CS)	/Percentage ; 10 %	ton	(21.5)	(4.5)

Table 8.2.2 RICE SEED PRODUCTION PLAN IN REGION VI

1. FRAMEWORK FOR RICE SEED PRODUCTION

Item	Factor	Unit	Season	
			Wet	Dry
A. Area to be planted (Panay including Guimaras only / Commercial production area)		ha	199,350	160,330
B. Total seed requirement	/seed rate ;	ton	16,147	12,987
(Transplanting, 20% of the area)	/seed rate ; 45 kg/ha		1,794	1,443
(Broad Casting, 80% of the area)	/seed rate ; 90 kg/ha		14,353	11,544
C. CS for next season	/renewal rate ; 20 %	ton	2,597	3,229
D. CS for export to other regions	/percentage to C ; 10 %	ton	260	323
E. Total CS requirement		ton	2,857	3,552
F. Field area for CS production	/yield ; 3.6 t/ha	ha	794	987
G. RS requirement	/seed rate ; 45 kg/ha	ton	44.4	35.7
(Buffer stock of RS)	/percentage to G ; 20 %	ton	(8.9)	(7.1)
H. Field area for RS production	/yield ; 3.6 t/ha	ha	12.3	9.9
I. FS requirement for next season	/seed rate ; 45 kg/ha	kg	450	550
(Buffer stock of FS)	/percentage to I ; 100 %	kg	(450)	(550)
J. Field area for FS production	/yield ; 3.15 t/ha	ha	0.14	0.17
K. Requirement of BS for next season	/seed rate ; 15 kg/ha	kg	2.6	2.1

2. RICE SEED PRODUCTION PLAN BY PRODUCER

Item	Factor	Unit	Season	
			Wet	Dry
I. Visayas Experiment Station				
Available field for rice seed production		ha	32.0	5.0
(1) FS Production				
Field area for FS production	1/3 x area for FS	ha	0.4	0.5
FS production	/yield ; 3.15 t/ha	kg	1,260	1,580
Surplus FS to the requirement		kg	810	1,030
(2) RS Production				
Field area for RS production		ha	17.8	4.5
FS for RS production	/seed rate ; 45 kg/ha	kg	800	200
RS production	/yield ; 3.6 t/ha	ton	63.9	16.2
Surplus RS to the requirement		ton	19.5	-
II. Registered Seed Growers				
RS requirement for next season in Region VI		ton	44.4	35.7
RS deficit to be produced by seed growers		ton	-	19.5
Field area for RS production by seed growers	/yield ; 3.6 t/ha	ha	-	5.4
FS for RS production	/seed rate ; 45 kg/ha	kg	-	240
III. Certified Seed Growers				
Field area for CS production		ha	794	987
CS production	/yield ; 3.6 t/ha	ton	2,857	3,552
(Buffer stock of CS)	/Percentage ; 10 %	ton	(286)	(355)

TABLE 8.2.3 CORN SEED PRODUCTION PLAN IN REGION XI

1. FRAMEWORK FOR CORN SEED PRODUCTION

Item	Factor	Unit	Southern Mindanao except South Cotabato				South Cotabato			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Yellow	White	Yellow	White	Yellow	White	Yellow	White
A. Area to be planted (Commercial production area)										
A-1 Total area		ha	16,290	185,900	1,040	84,530	171,580	229,210	14,920	73,620
A-2 Area for hybrid variety	/percentage to A-1 ; 20 %	ha	3,260	-	210	-	34,320	-	2,980	-
A-3 Area for open pollinated variety	/percentage to A-1 ; 80 %	ha	13,030	185,900	830	84,530	137,260	229,210	11,940	73,620
B. Total seed requirement of OP var.	/seed rate ; 20 kg/ha	ton	261	3,718	17	1,691	2,745	4,584	239	1,472
C. CS for next season	/renewal rate ; 11 %	ton	2	186	29	409	26	162	302	504
D. Buffer Stock of CS	/percentage to C ; 10 %	ton	0.2	18.6	2.9	40.9	2.6	16.2	30.2	50.4
E. Field area for CS production	/yield ; 3.0 t/ha	ha	0.7	62.0	9.7	136.3	8.7	54.0	100.7	168.0
F. RS requirement	/seed rate ; 20 kg/ha	kg	190	2,730	10	1,240	2,010	3,360	170	1,080
(Buffer stock of RS)	/percentage to B ; 20 %	kg	(40)	(550)	(2)	(250)	(400)	(670)	(34)	(220)
G. Field area for RS production	/yield ; 3.0 t/ha	sq m	630	9,100	30	4,130	6,700	11,200	570	3,600
H. FS requirement for next season	/seed rate ; 20 kg/ha	kg	0.1	8.3	1.3	18.2	1.1	7.2	13.4	22.4
(Buffer stock of FS)	/percentage to I ; 100 %	kg	(0.1)	(8.3)	(1.3)	(18.2)	(1.1)	(7.2)	(13.4)	(22.4)
I. Field area for FS production	/yield ; 2.5 t/ha	sq m	0.4	33.2	5.2	72.8	4.4	28.8	53.6	89.6
J. Requirement of IS for next season	/seed rate ; 20 kg/ha	g	10.4	145.6	0.8	66.4	107.2	179.2	8.8	57.6

2. CORN SEED PRODUCTION PLAN IN DAVAO NCC AND MANANBURAN SEED FARM

Item	Factor	Unit	Davao NCC				Mananburan Seed Farm			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Yellow	White	Yellow	White	Yellow	White	Yellow	White
I. FS Production										
FS requirement		kg	1.1	7.2	13.4	22.4	-	-	-	-
For South Cotabato		kg	0.1	8.3	1.3	18.2	-	-	-	-
For other parts		kg	1.2	15.5	14.7	40.6	-	-	-	-
Total		kg	2.4	31.0	29.4	61.2	-	-	-	-
Field area required for FS production		sq m	4.8	62.0	58.8	162.4	-	-	-	-
Field area planned for FS production		sq m	20	200	200	600	-	-	-	-
FS production planned	/yield ; 2.5 t/ha	kg	5	50	50	150	-	-	-	-
Surplus FS to the requirement		kg	3.8	34.5	35.3	109.4	-	-	-	-
II. RS Production										
RS requirement		kg	-	2,730	-	1,240	190	-	10	-
Field area required for RS production		sq m	-	9,100	-	4,130	630	-	30	-
Field area planned for RS production		ha	-	1.8	-	0.8	0.1	-	0.06	-
RS production planned	/yield ; 3.0 t/ha	ton	-	5.4	-	2.4	0.3	-	0.18	-
Surplus RS to the requirement		ton	-	2.7	-	1.2	0.1	-	0.2	-
III. CS Production										
Field area for CS production		ha	-	1.18	-	2.14	1.9	-	1.9	-
CS production	/yield ; 3.0 t/ha	ton	-	3.5	-	6.4	5.7	-	5.7	-
VI. Total Area for Corn Production										
		ha	0.002	3.0	0.02	3.0	2.0	-	2.0	-

3. CORN SEED PRODUCTION PLAN IN TUPI SEED FARM

Item	Factor	Unit	Tupi Seed Farm			
			Wet Season		Dry Season	
			Yellow	White	Yellow	White
II. RS Production						
RS requirement in South Cotabato		kg	2,010	3,360	170	1,080
Field area required for RS production		sq m	6,700	11,200	570	3,600
Field area planned for RS production		ha	1.3	2.2	0.1	0.7
RS production planned	/yield ; 3.0 t/ha	ton	3.9	6.6	0.3	2.1
Surplus RS to the requirement		ton	1.9	3.2	0.1	1.0
III. CS Production						
Field area for CS production		ha	0.7	1.8	1.9	3.3
CS production	/yield ; 3.0 t/ha	ton	2.1	5.4	5.7	9.9
VI. Total Area for Corn Production						
		ha	2.0	4.0	2.0	4.0

4. CORN CERTIFIED SEED PRODUCTION PLAN BY SEED GROWER

Item	Factor	Unit	Southern Mindanao except South Cotabato				South Cotabato			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Yellow	White	Yellow	White	Yellow	White	Yellow	White
I. CS Requirement										
Total requirement		ton	2.0	186.0	29.0	409.0	26.0	162.0	302.0	504.0
CS production in the station		ton	5.7	3.5	5.7	6.4	2.1	5.4	5.7	9.9
CS to be produced by seed growers		ton	-	182.5	23.3	402.6	23.9	156.6	296.3	494.1
II. Field Area for CS Production										
	/yield ; 3.0 t/ha	ha	-	60.8	7.8	134.2	8.0	52.2	98.8	164.7
III. RS for CS Production										
	/seed rate ; 20 kg/ha	kg	-	1,220	160	2,680	160	1,040	1,980	3,290

Table 8.5.1 CONSTRUCTION COST OF THE PROJECT

unit: '000 pesos

	Peanut			Rice		
	Local	Foreign	Total	Local	Foreign	Total
Irrigation Facilities	28	4,007	4,035	0	0	0
Pre & Post Harvest Machinery	2,835	16,067	18,902	5,923	33,562	39,485
Quality Control Equipment	938	5,313	6,251	748	4,239	4,987
Buildings	12,640	26,860	39,500	19,850	43,650	63,500
Subtotal	16,441	52,247	68,688	26,521	81,451	107,972
Design & Supervising	1,644	5,225	6,869	2,652	8,145	10,797
Physical Contingency	1,644	5,225	6,869	2,652	8,145	10,797
Price Contingency	1,644	2,612	4,256	2,652	4,073	6,725
Total	21,373	65,309	86,682	34,477	101,814	136,291
	Corn			Total		
	Local	Foreign	Total	Local	Foreign	Total
Irrigation Facilities	2,879	18,865	21,744	2,907	22,872	25,779
Pre & Post Harvest Machinery	3,429	19,432	22,861	12,187	69,061	81,248
Quality Control Equipment	794	4,497	5,291	2,480	14,049	16,529
Buildings	14,430	30,970	45,400	46,920	101,480	148,400
Subtotal	21,532	73,764	95,296	64,494	207,462	271,956
Design & Supervising	2,153	7,376	9,529	6,449	20,746	27,195
Physical Contingency	2,153	7,376	9,529	6,449	20,746	27,195
Price Contingency	2,153	3,688	5,841	6,449	10,373	16,822
Total	27,991	92,204	120,195	83,841	259,327	343,168

Table 8.5.2 SEED PRODUCTION COST BY CROP

	(Unit)	unit: peso/ha								
		Peanut			Rice			Corn		
		Q'ty	Unit Price	Amount	Q'ty	Unit Price	Amount	Q'ty	Unit Price	Amount
Fertilizers										
Urea	(bag)				3	200	600	1	215	215
14-14-14	(bag)	2	237	474	1.8	237	427	6	235	1,410
16-20-0	(bag)				1.5	223	335	2	238	476
Agro-chemicals										
Insecticide	(l)	1	210	210	1.5	220	330	2	305	610
Herbicide	(l)				1.5	240	360			
Fungicide	(kg)	1	220	220						
Labor Input										
Man-day		85	35	2,975	105	35	3,675	124	40	4,960
Animal-day		14	35	490	10	35	350	27	35	945
Machine-hour		4	150	600	11	175	1,925	4	250	1,000
Total				4,969			8,002			9,616

Table 8.5.3 REQUIRED NUMBER OF PERSONNEL

	Region II	Region VI	Region XI	No. of Months	Monthly Salary (peso)
Permanent Staff	43	43	35	12	
Irrigation	0	0	0	12	2,500
Pre & Post Harvest Machinery	2	2	2	12	2,500
Quality Control	40	40	32	12	2,750
Management	1	1	1	12	5,000
Temporary Staff	11	20	14		
Irrigation	1	0	1	4	2,500
Pre & Post Harvest Machinery	6	15	10	2	2,200
Quality Control	4	5	3	6	2,500

Table 8.6.1 INCOME OF THE PROJECT

unit: '000 peso

	Quantity	Unit Price	Income
Peanut			438
Sales of FS	0	23	0
Sales of RS	13.2	23	304
Commission of RS Selling	14.0	3	42
Sales of CS	0	23	0
Commission of CS Selling	25	3	75
Charge of Machinery	25	0.15	4
Fee for Field Inspection	391	0.025	10
Fee for Seed Test	102	0.03	3
Rice			1,147
Sales of FS	1.59	9.8	16
Sales of RS	80.1	9.0	721
Commission of RS Selling	19.5	0.3	6
Sales of CS	0	8.3	0
Commission of CS Selling	641	0.3	192
Charge of Machinery	641	0.13	83
Fee for Field Inspection	3,214	0.025	80
Fee for Seed Test	1,645	0.03	49
Corn			777
Sales of FS	0.114	22	3
Sales of RS	10.2	20	204
Commission of RS Selling	0	2	0
Sales of CS	3.7	17	63
Commission of CS Selling	158	2	316
Charge of Machinery	158	1.0	158
Fee for Field Inspection	526	0.05	26
Fee for Seed Test	234	0.03	7

Table 8.6.2 ANNUAL OPERATION AND MAINTENANCE COST

unit: '000 pesos

	Peanut	Rice	Corn	Total
Operation cost of irrigation facilities	51	0	19	70
Operation cost of pre & post harvest machinery	993	1,014	1,035	3,042
Operation cost of quality control equipment	188	1,210	318	1,716
Electric charge	547	495	530	1,572
Maintenance cost for irrigation facilities	20	0	109	129
Maintenance cost for pre & post harvest machinery	1,145	2,703	1,479	5,327
Maintenance cost for quality control equipment	53	339	89	481
Maintenance cost for buildings	163	316	196	675
Personnel expenses	322	1,539	438	2,299
Total	3,482	7,616	4,213	15,311

Table 8.6.3 PRODUCTIVITY OF OBJECT CROPS IN ORDINARY FARMERS

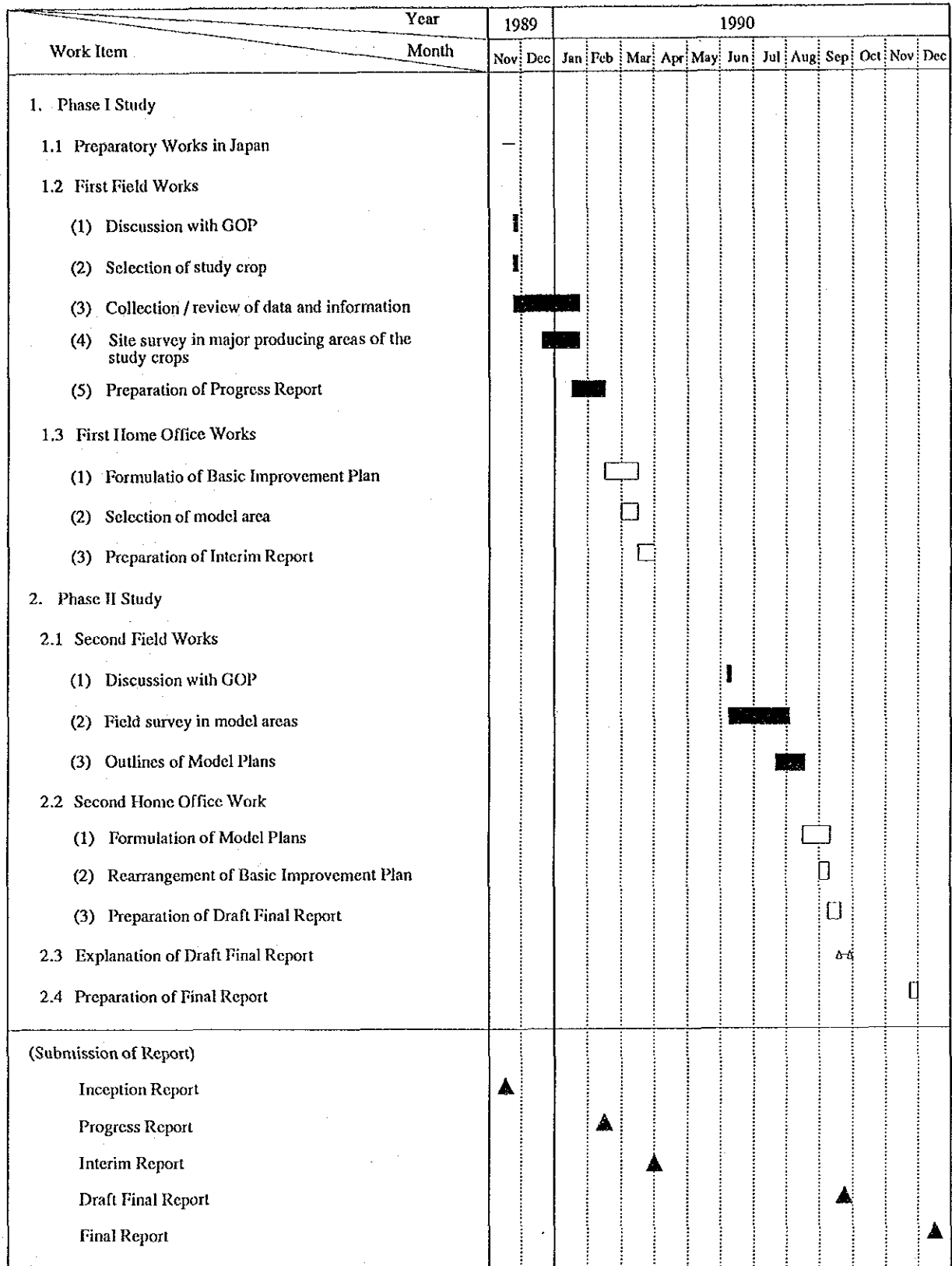
unit: peso/ha

	(Unit)	Commercial Seeds			Certified Seeds		
		Q'ty	Unit Price	Amount	Q'ty	Unit Price	Amount
Peanut							
1. Yield	(ton)	0.7	16,000	11,200	1.5	16,000	24,000
2. Production Cost							
Seeds	(kg)	167	11	1,837	110	23	2,530
Fertilizer							
14-14-14	(bag)				1	237	237
Agro-chemicals							
Insecticide	(l)	0.12	210	25	0.5	210	105
Fungicide	(kg)				0.5	220	110
Labor Input							
Man-day		134	35	4,690	120	35	4,200
Animal-day		48	35	1,680	20	35	700
Machine-hour					4	120	480
Other Cost				112			240
3. Net Income				2,856			15,398
Rice							
1. Yield	(ton)	2.6	5,000	13,000	3.5	5,000	17,500
2. Production Cost							
Seeds	(kg)	135	5	675	105	8.3	872
Fertilizer							
Urea	(bag)	3	200	600	3	200	600
14-14-14	(bag)	1	237	237	3	237	711
Agro-chemicals							
Insecticide	(l)	3	216	648	3	216	648
Herbicide	(kg)	3		675	3	225	675
Labor Input							
Man-day		95	35	3,325	100	35	3,500
Animal-day		10	35	350	10	35	350
Machine-hour		8	50	400	8	50	400
Irrigation Fee	(kg)	100	5	500	10	5	500
Other Cost				130			175
3. Net Income				5,460			9,069
Corn							
1. Yield	(ton)	2	6,000	12,000	2.7	6,000	16,200
2. Production Cost							
Seeds	(kg)	20	6	120	20	17	340
Fertilizer							
Urea	(bag)	1	215	215	1	215	215
14-14-14	(bag)	1	238	238	1	238	238
Agro-chemicals							
Insecticide	(l)				1	305	305
Labor Input							
Man-day		70	40	2,800	80	40	3,200
Animal-day		18	35	630	20	35	700
Other Cost				120			162
3. Net Income				7,877			11,040

*Feasibility Study on
Improvement of Seed Production and Distribution, and
Establishment of Appropriate Seed Storage System*

FIGURES

Fig. 1.3.1 PROCEDURE OF THE STUDY



LEGEND

— : Preparatory period ■ : Field survey period □ : Home Office Work Δ : Explanation of reports

SEED PRODUCTION STAGE

MAJOR PARTICIPATING AGENCY

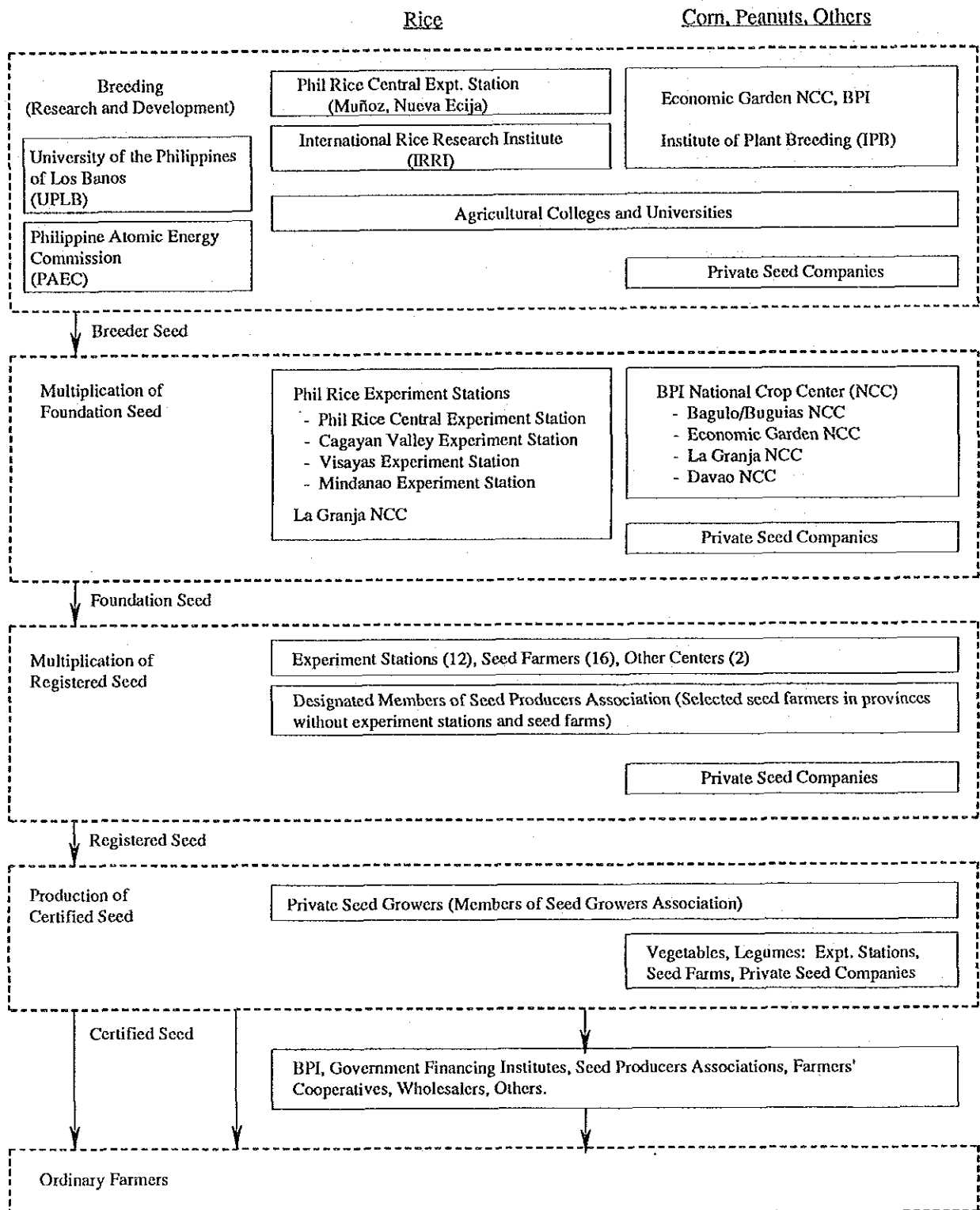


Fig. 3.1.1 OUTLINE OF SEED PRODUCTION AND DISTRIBUTION SYSTEM

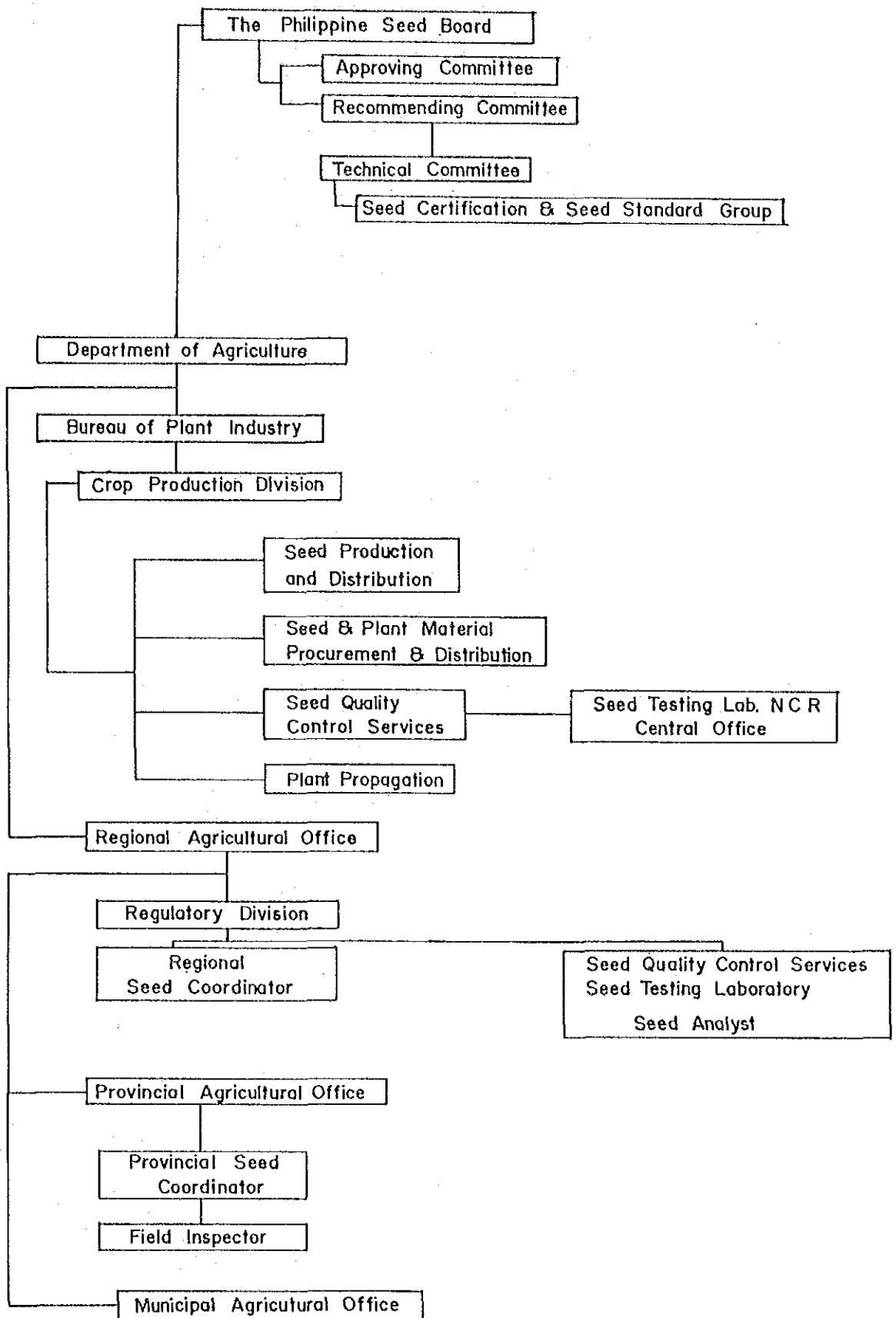
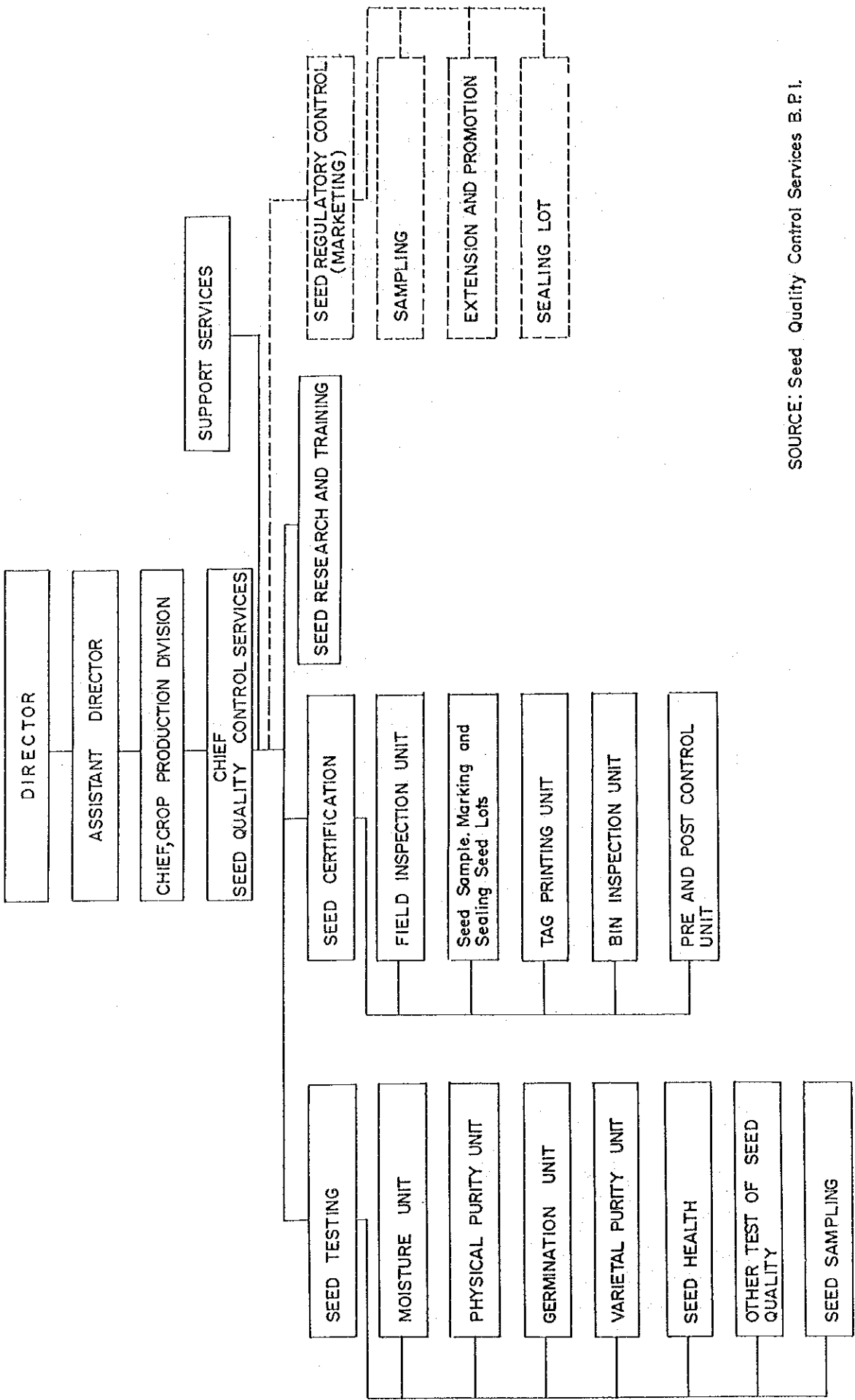


Fig. 3. 4. 1 THE RELATIONSHIP BETWEEN THE SEED QUALITY CONTROL SERVICES AND AGENCIES CONCERNED



F. 4

SOURCE: Seed Quality Control Services B.P.I.

Fig. 3. 4. 2 | SEED QUALITY CONTROL SERVICES ORGANIZATIONAL CHART

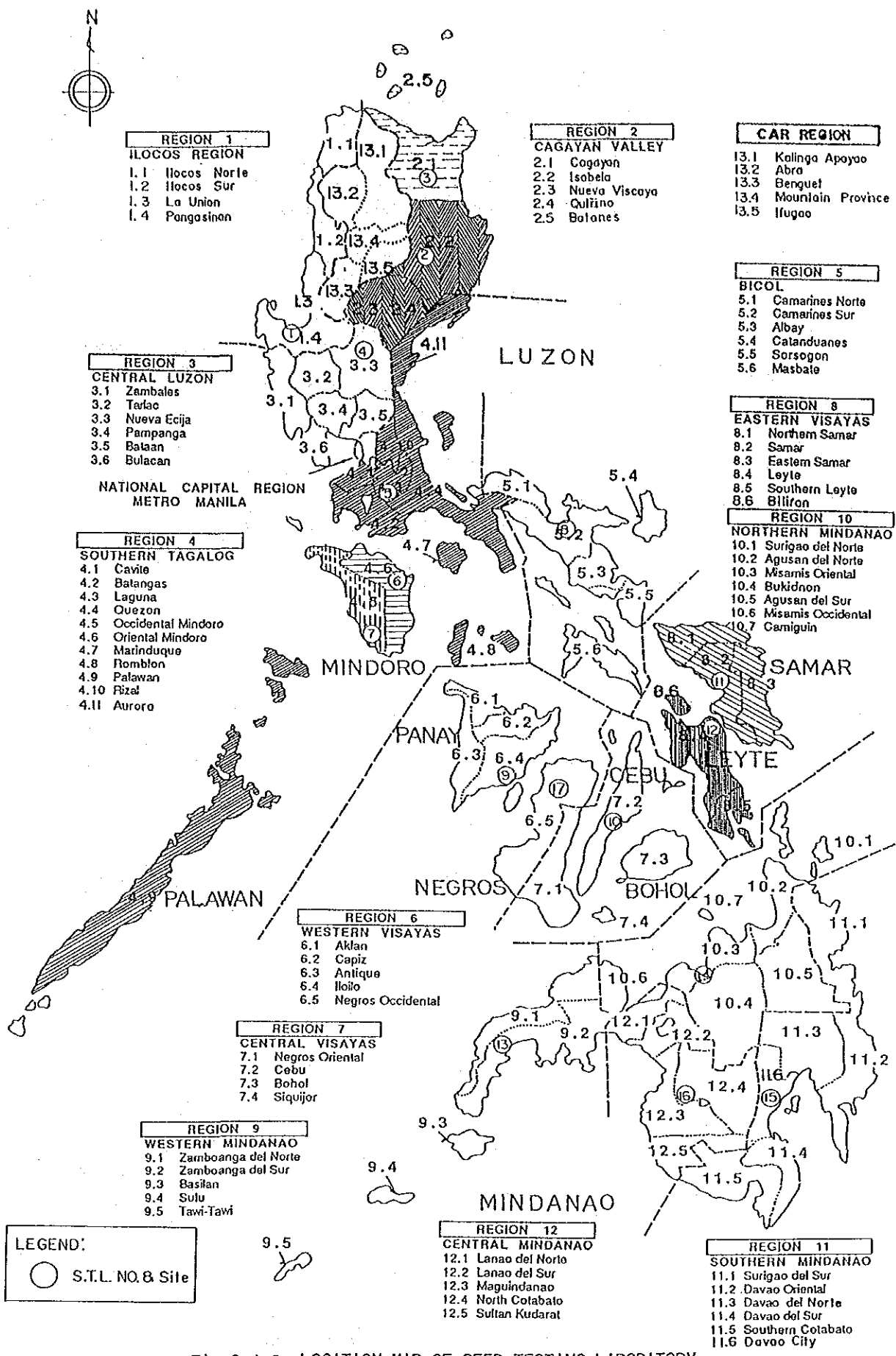
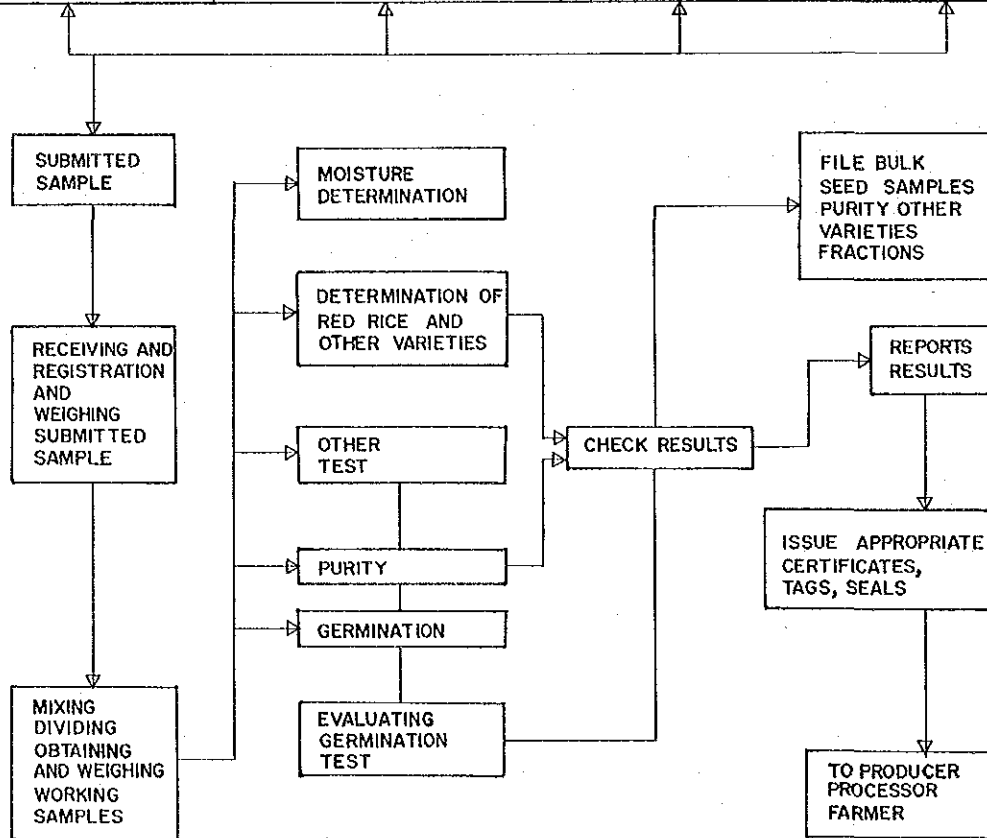


Fig. 3. 4. 3 LOCATION MAP OF SEED TESTING LABORATORY

RICE	C O R N		PEANUT
	HYBRID	OPEN POLLINATED	
1st 15-20 days after planting to determine proper planting system, (straight row planting), volunteer plants and presence of weeds	1st during the vegetative phase; to remove off-type plants & to ascertain that the minimum isolation requirement is fulfilled	1st during the silking; to rouge off-types to remove diseased plants	1st Flowering stage 30-40 days after planting to determine diseased plants, growth habit (bunchy or runner type) & color of the plants
2nd Tillering Stage to determine the presence volunteers, off-type & presence of pest & diseases	2nd during the flowering phase; 3rd 4th to ensure proper pollination & to remove plants which may show variation loss and ear characters	2nd harvesting time; to remove immature cobs and diseased infected ear	2nd Physiological maturity to determine other varieties; tests, color, pod, shape & no. of seed per pod
3rd Final field inspection 7 days before harvest to determine if the field is eligible for certification	5th during the seed ripening phase; to remove diseased plants and noxious weeds 6th before shelling to remove those seed ears which are different from the normal type	3rd processing time; to check/clean equipments	



SOURCE: Field Inspection Manual (Draft) and Seed Quality Control Services B. P. I.

Fig. 3.4.4 PROCEDURE OF FIELD INSPECTION AND LABORATORY SEED TEST

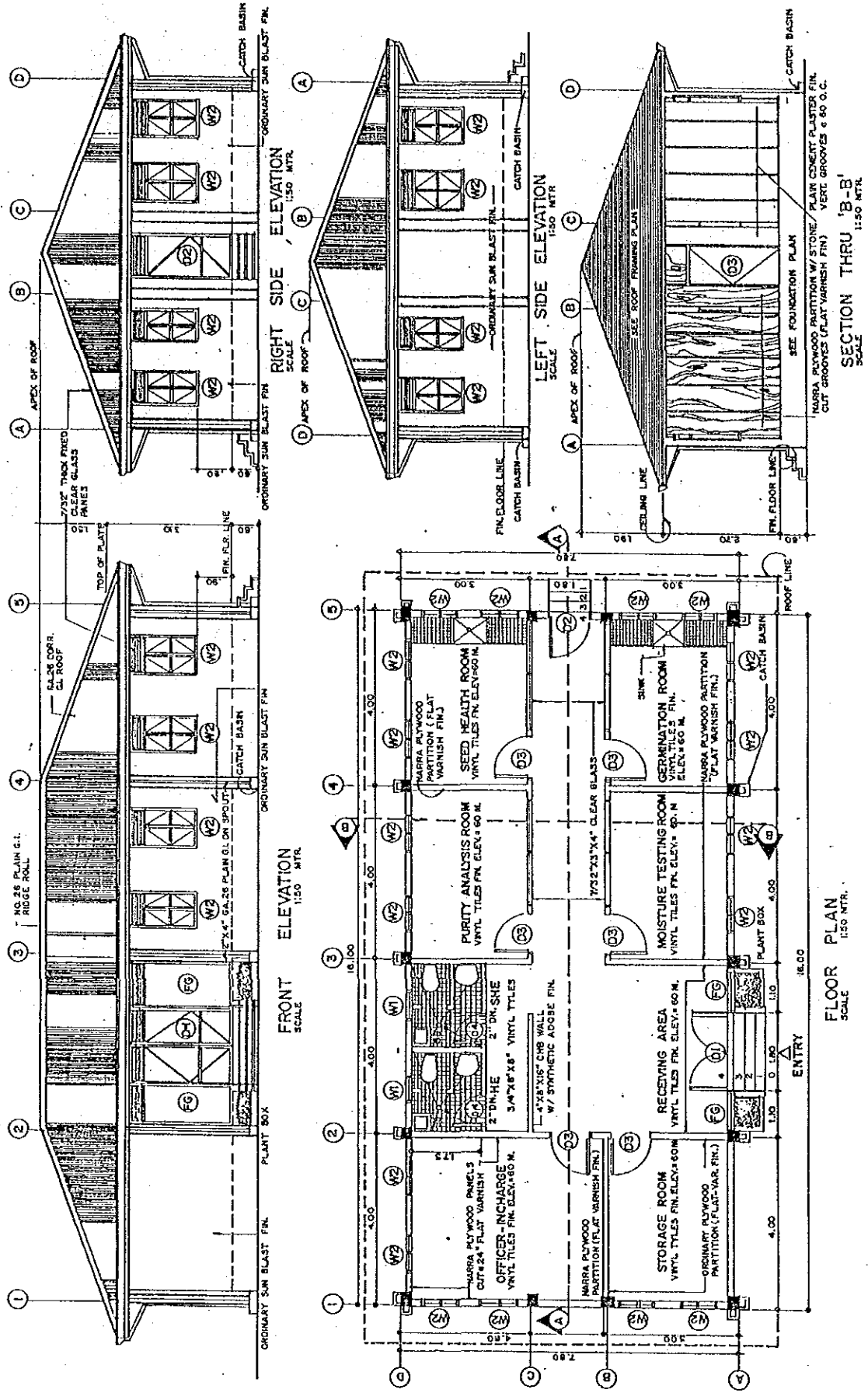


Fig. 3.5.1 EXISTING SEED TESTING LABORATORY

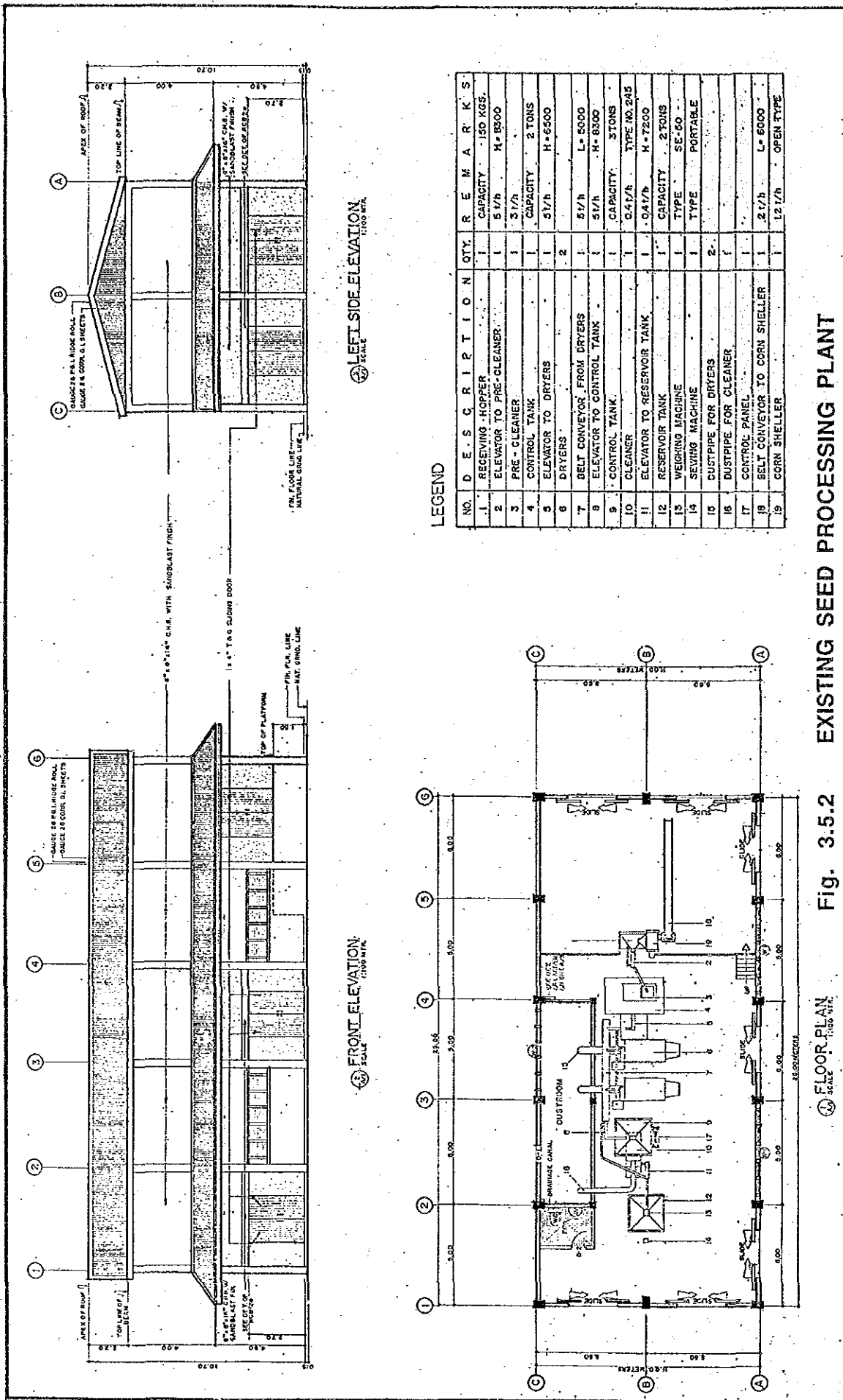


Fig. 3.5.2 EXISTING SEED PROCESSING PLANT

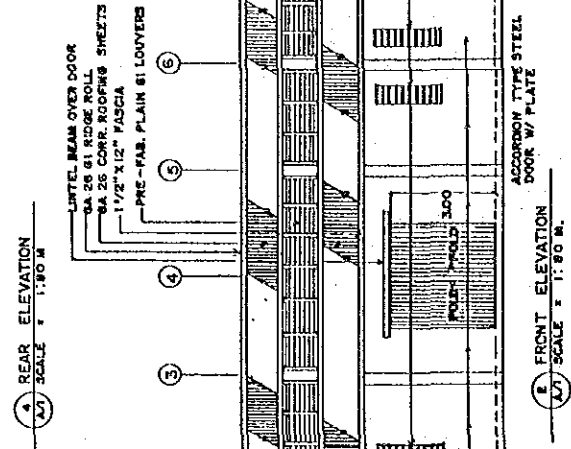
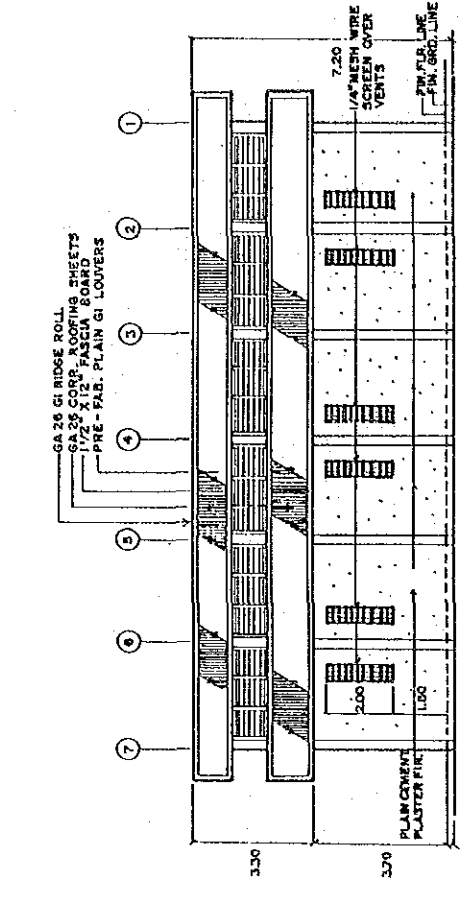
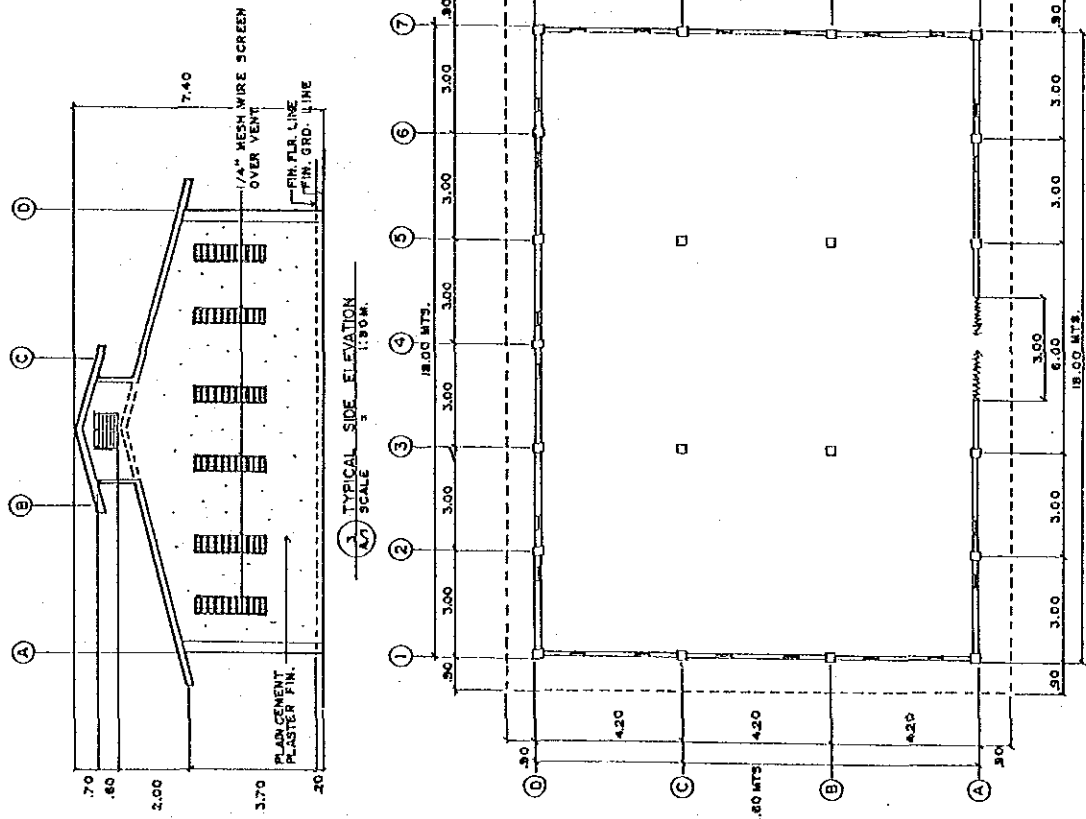


Fig. 3.5.3 EXISTING SEED STORAGE HOUSE (BODEGA)

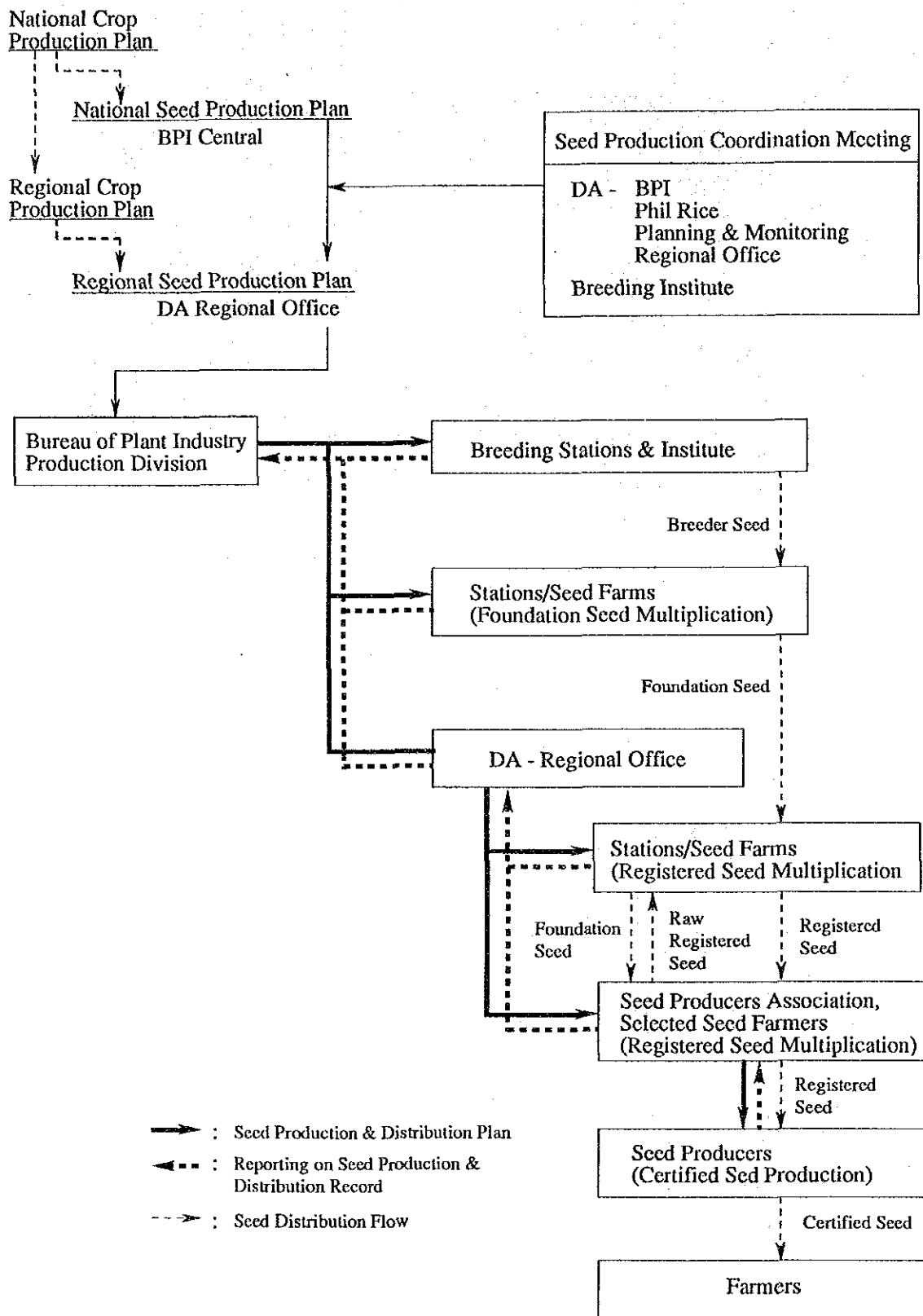


Fig. 5.2.1 PROPOSED PLANNING AND MONITORING SYSTEM FOR SEED PRODUCTION AND DISTRIBUTION

Planning & Monitoring
of Seed Production/
Distribution

Research, Varietal
Development &
Breeding

Multiplication
of Foundation
Seed

Multiplication of
Registered &
Certified Seed

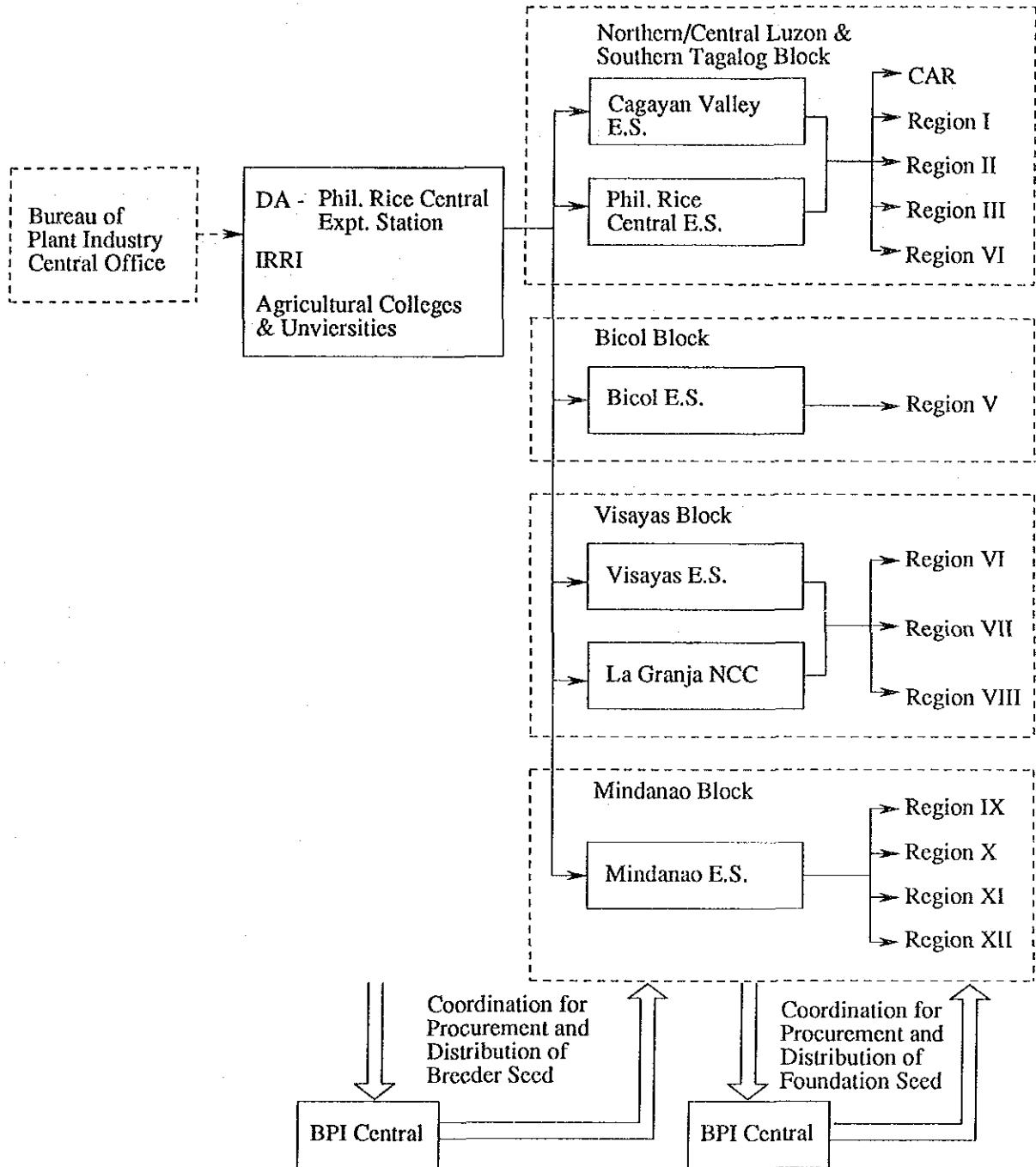


Fig. 5.2.2 PROPOSED RICE SEED DISTRIBUTION SYSTEM

Planning & Monitoring
of Seed Production/
Distribution

Research, Varietal
Development &
Breeding

Multiplication
of Foundation
Seed

Multiplication
of Registered &
Certified Seed

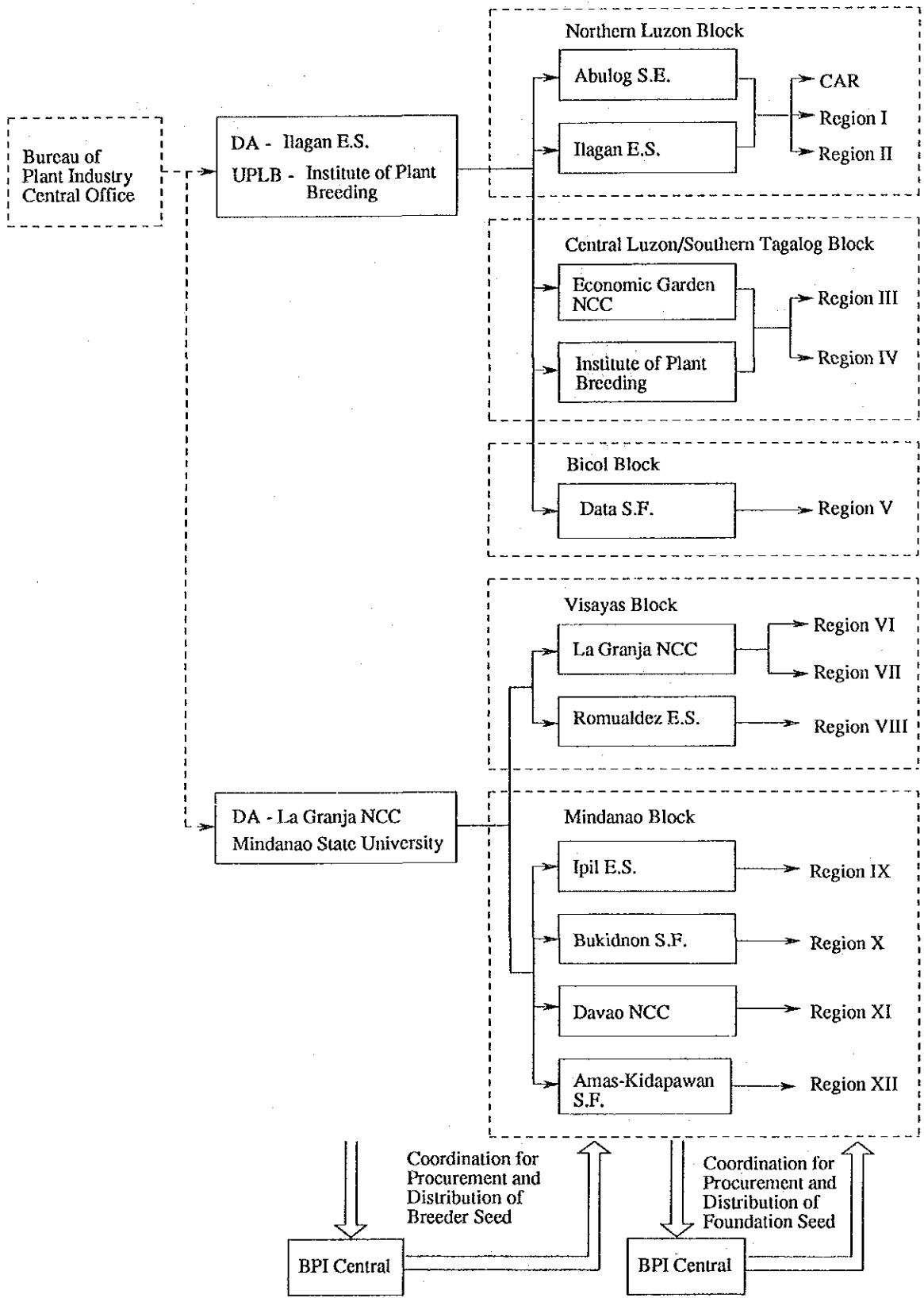


Fig. 5.2.3 PROPOSED CORN SEED DISTRIBUTION SYSTEM

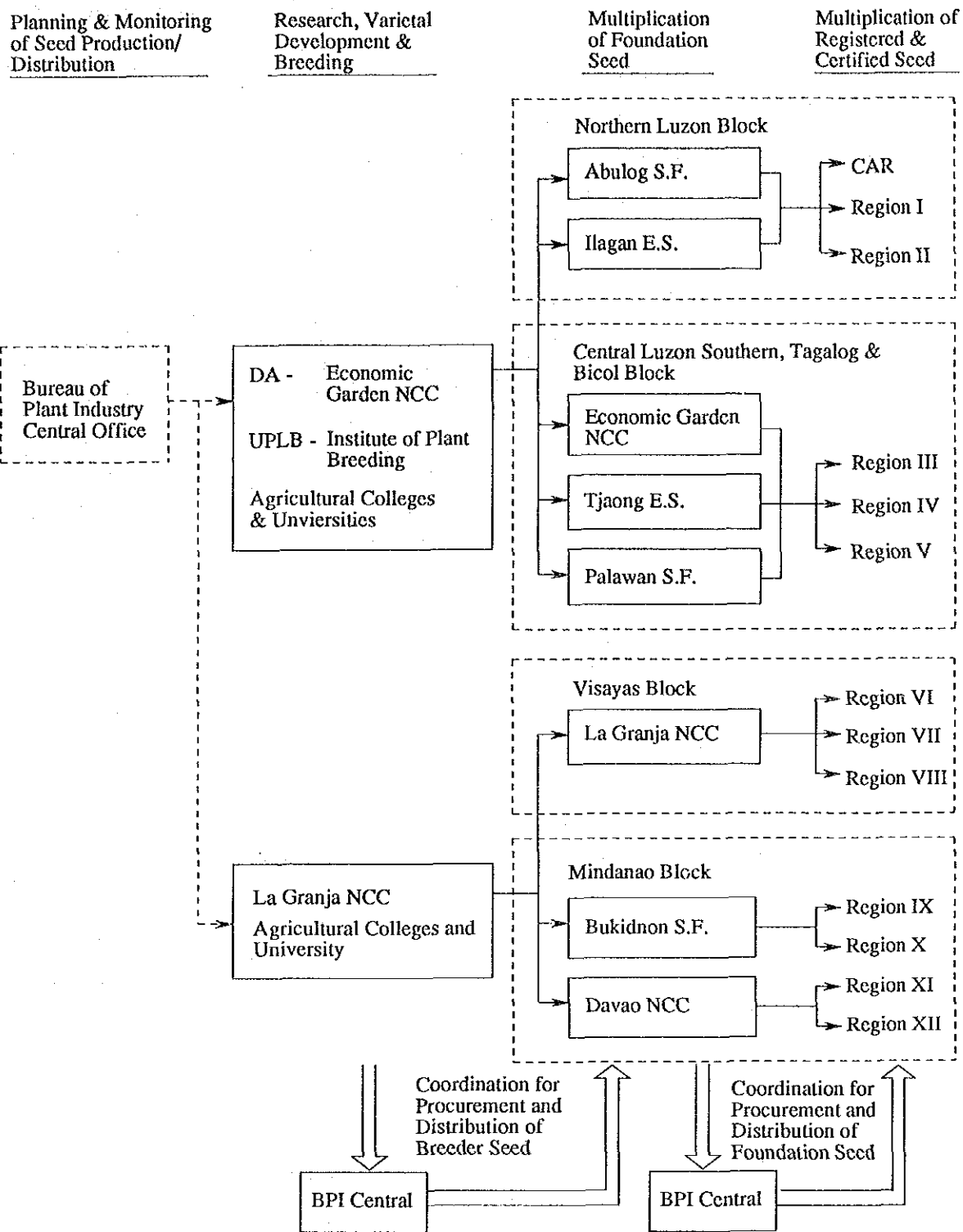


Fig. 5.2.4 PROPOSED PEANUT SEED DISTRIBUTION SYSTEM

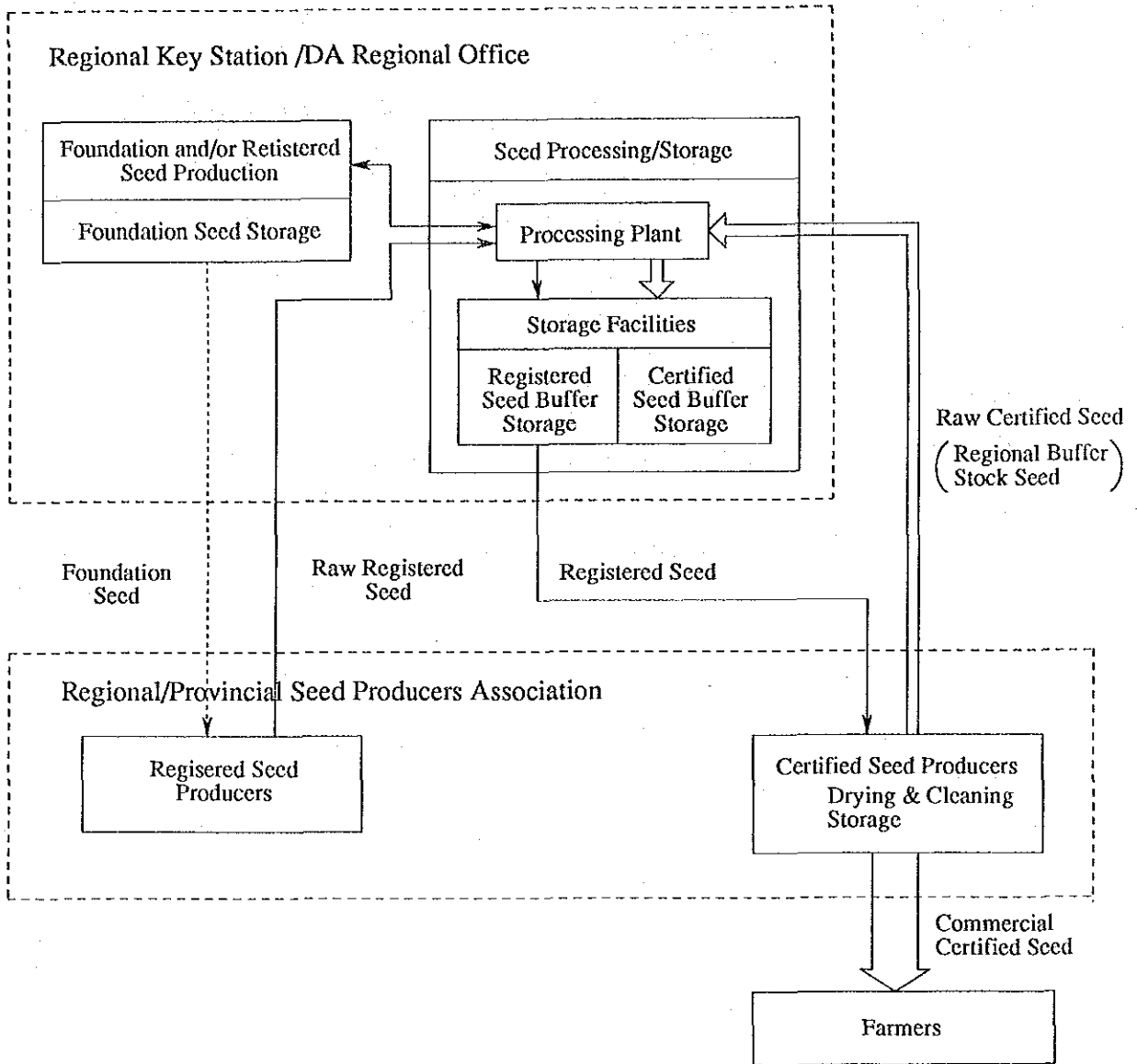
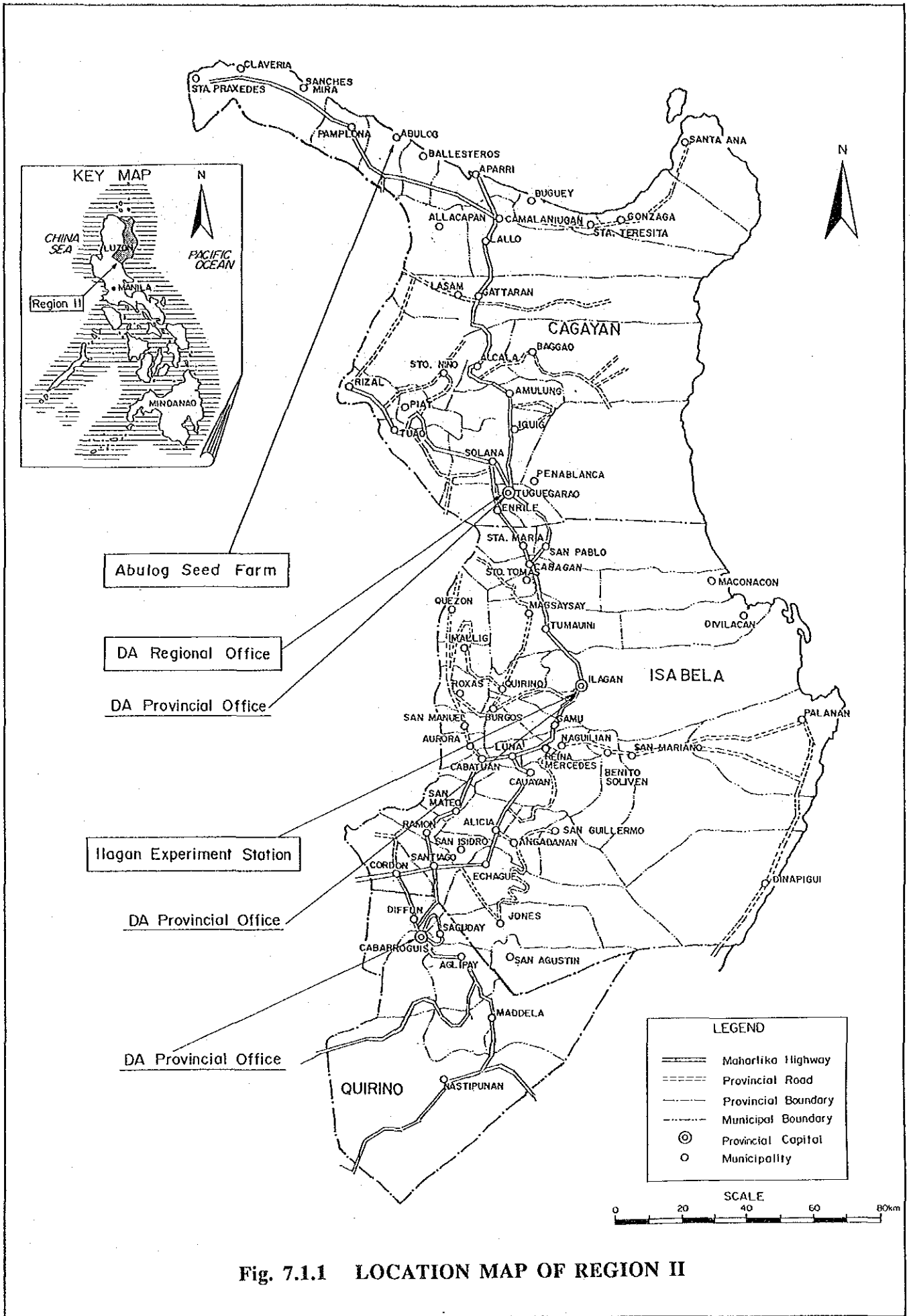
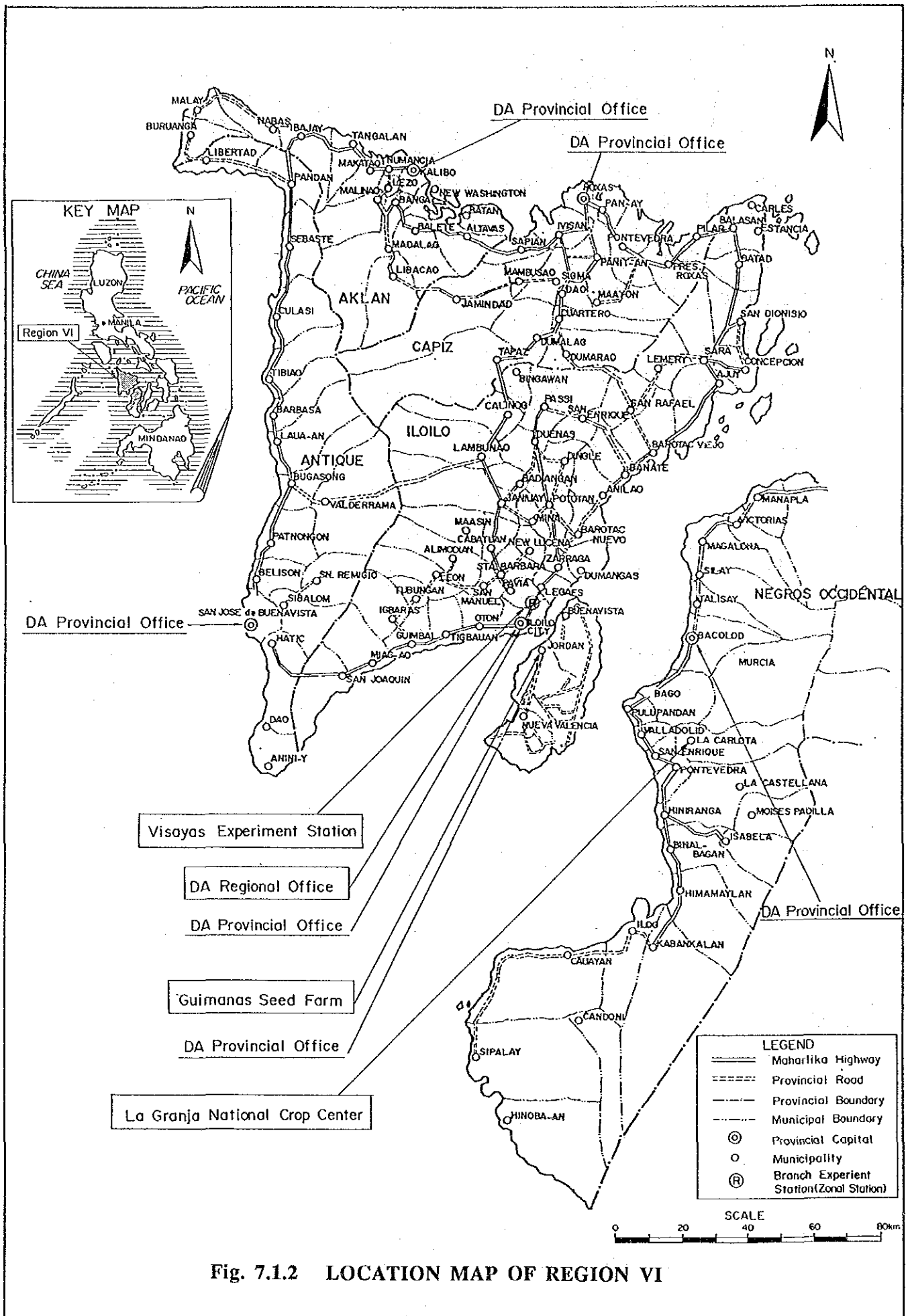


Fig. 5.2.5 PROPOSED REGIONAL SEED PROCUREMENT, STORAGE AND DISTRIBUTION SYSTEM





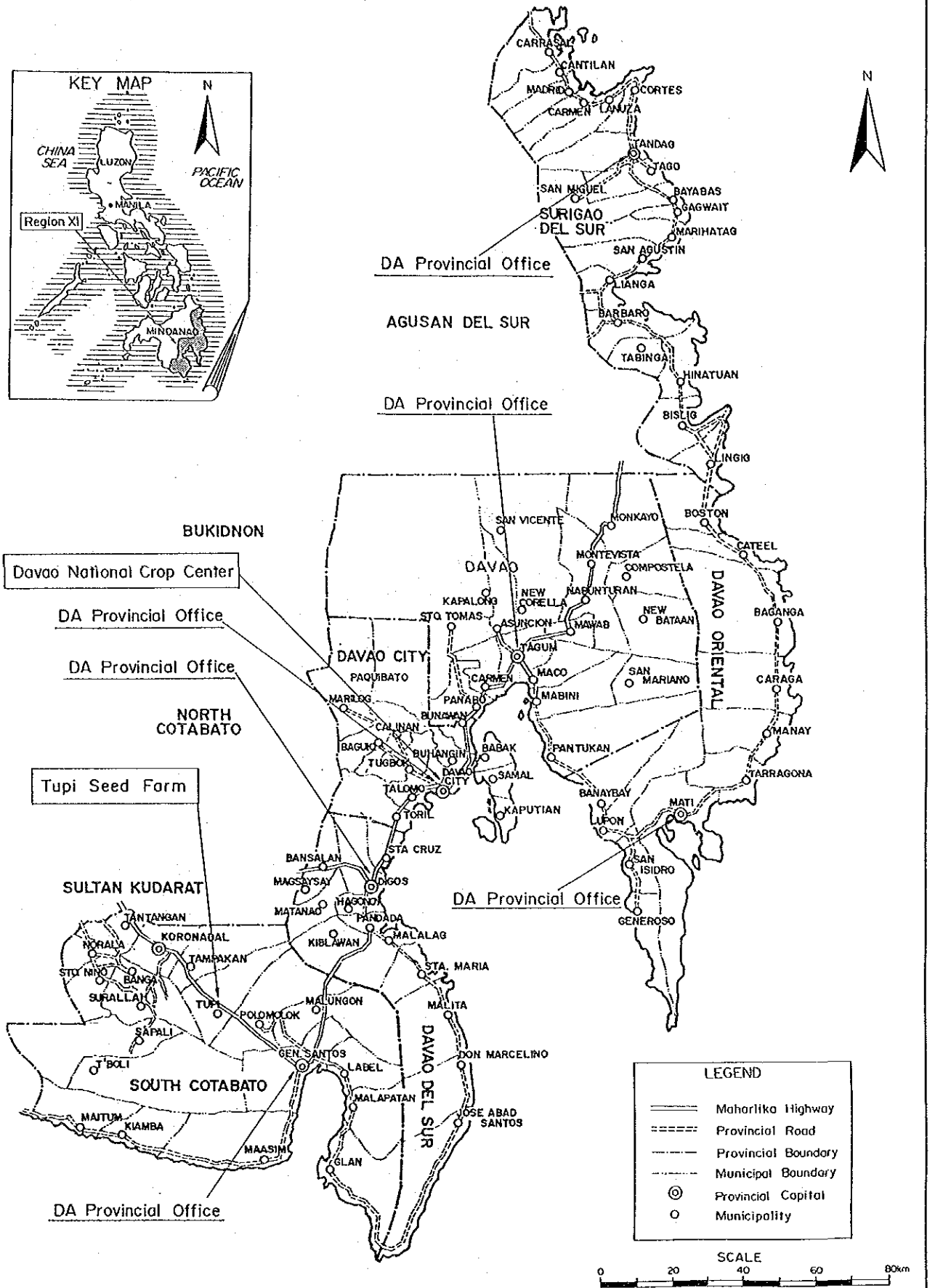
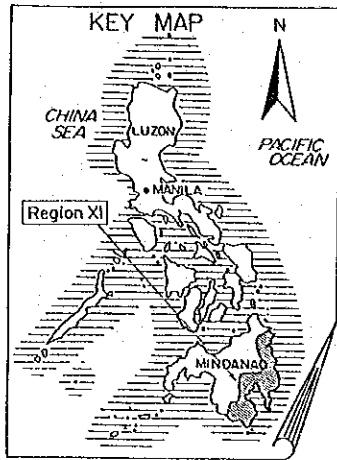


Fig. 7.1.3 LOCATION MAP OF REGION XI

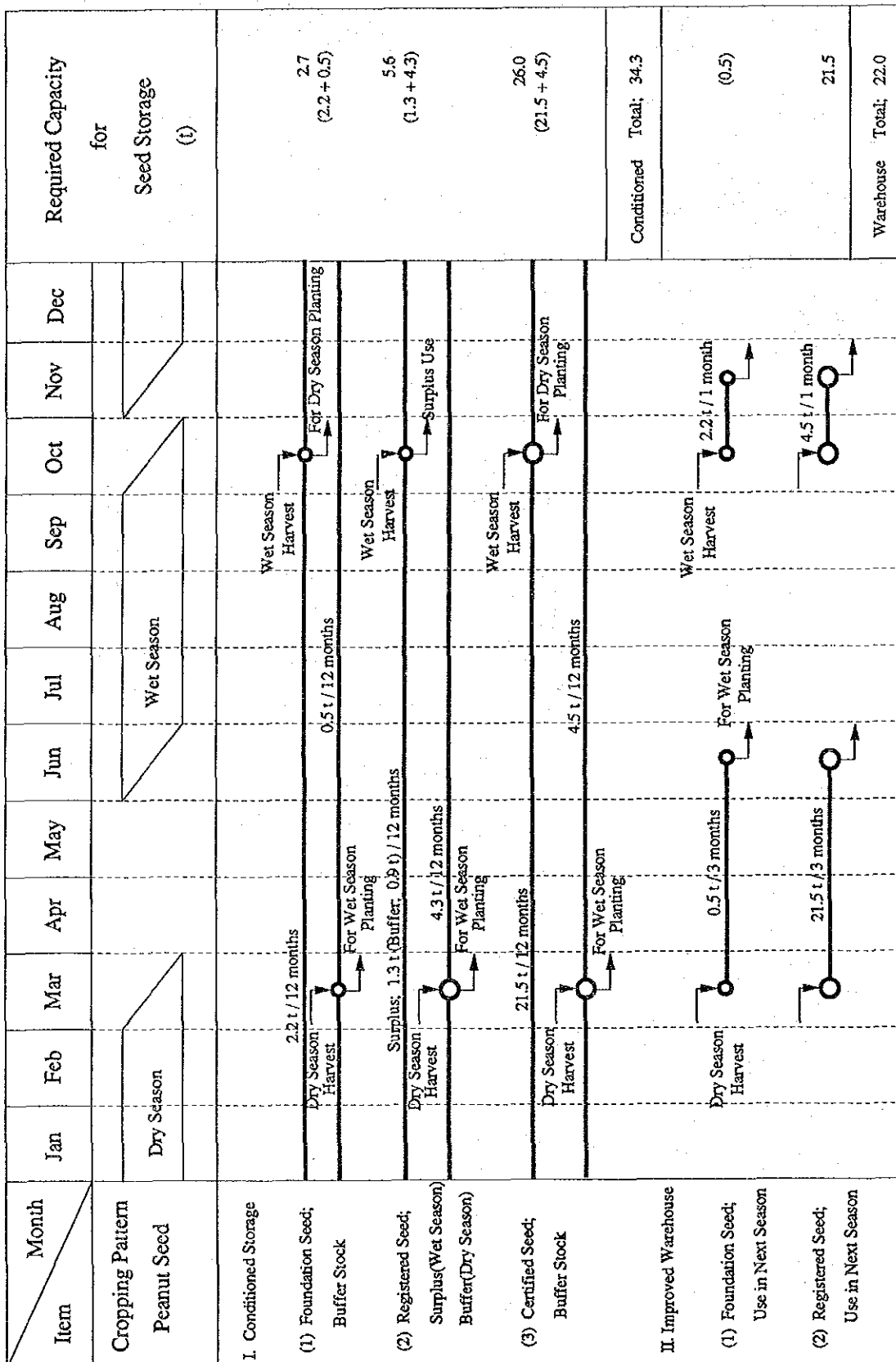


Fig. 8.2.1 REQUIRED PEANUT SEED STORAGE CAPACITY IN ILIGAN EXPERIMENT STATION

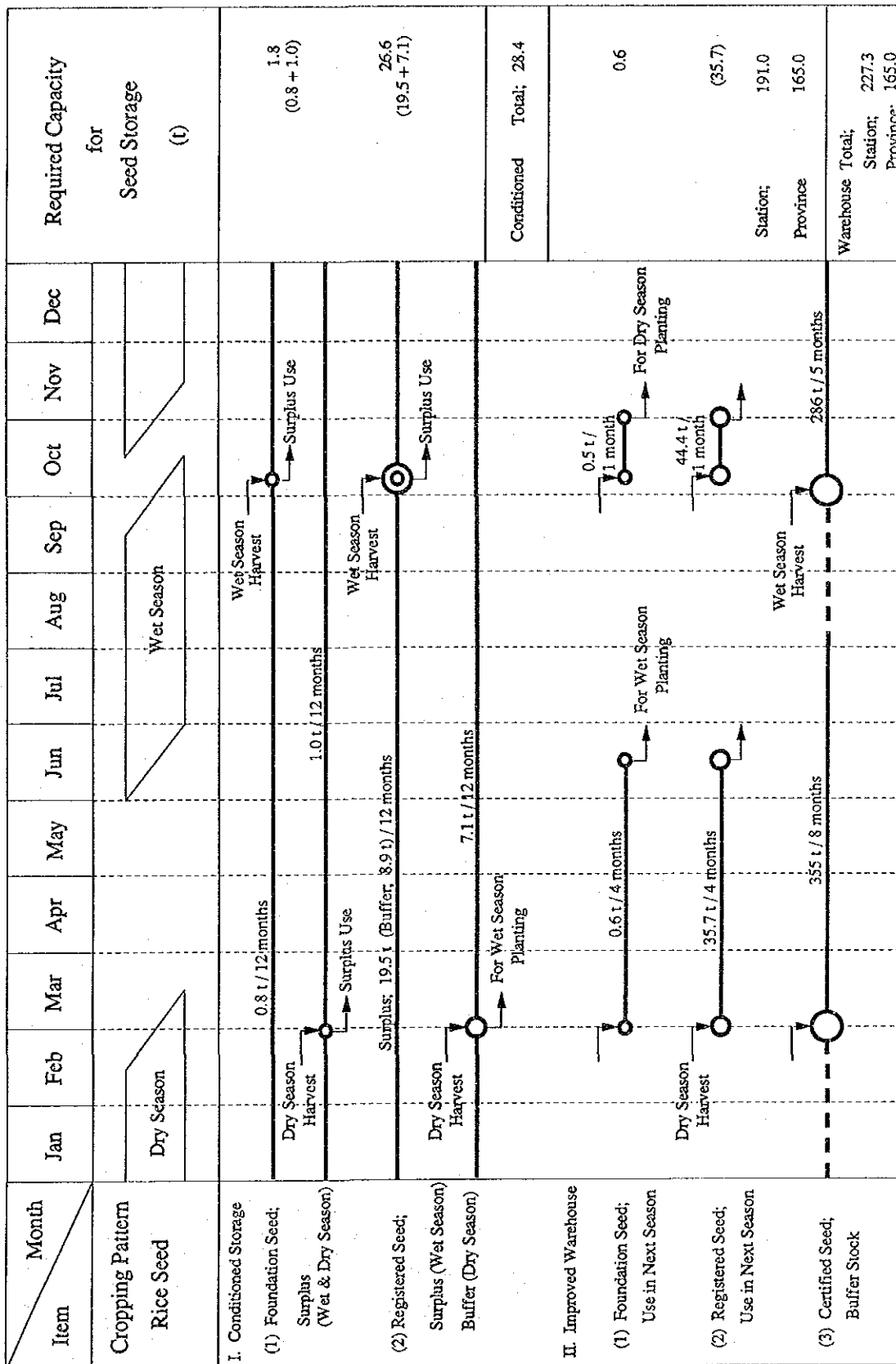


Fig. 8.2.2 REQUIRED RICE SEED STORAGE CAPACITY IN VISAYAS EXPERIMENT STATION

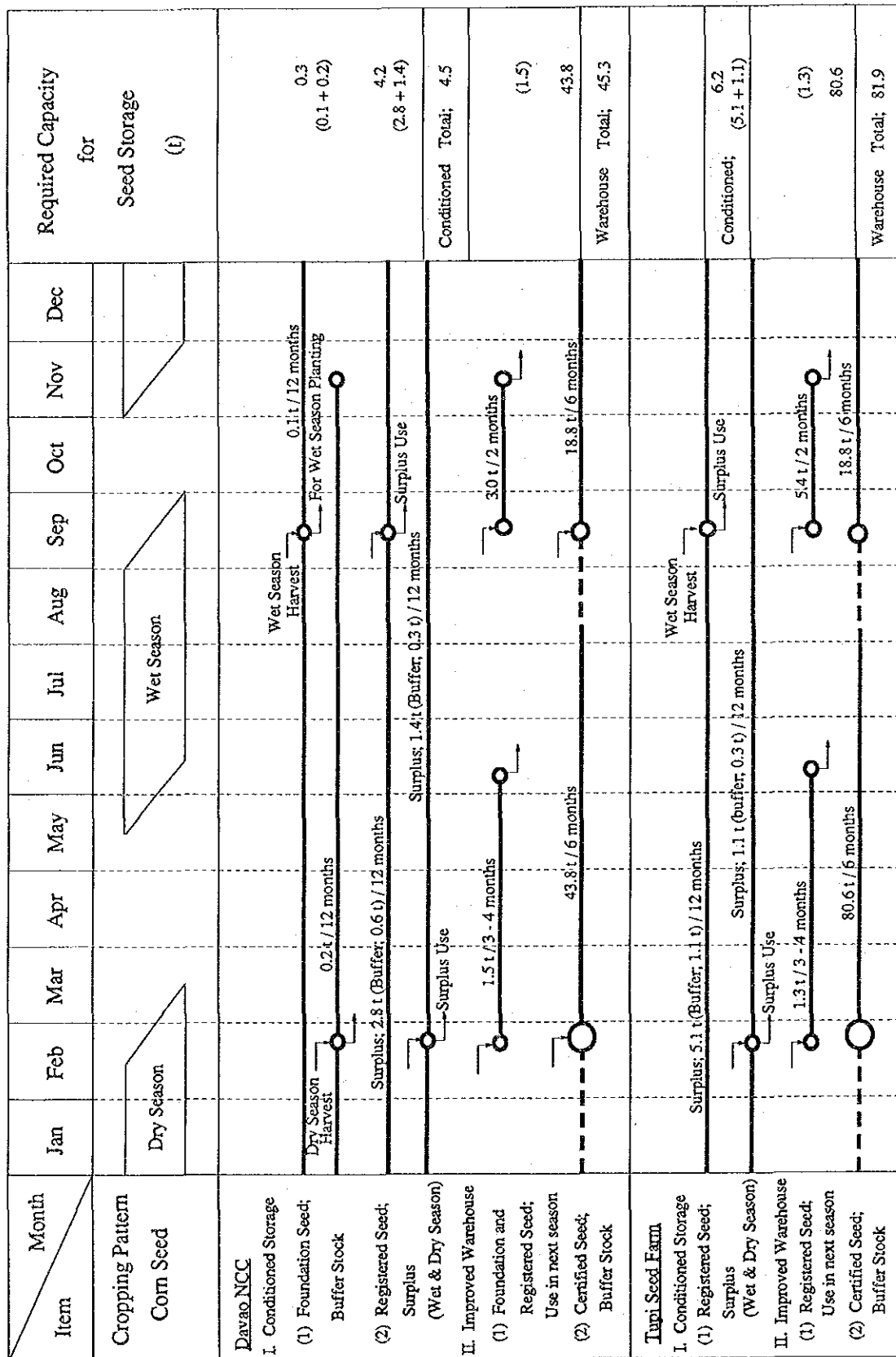


Fig. 8.2.3 REQUIRED CORN SEED STORAGE CAPACITY IN DAVAO NCC AND TUUPI SEED FARM

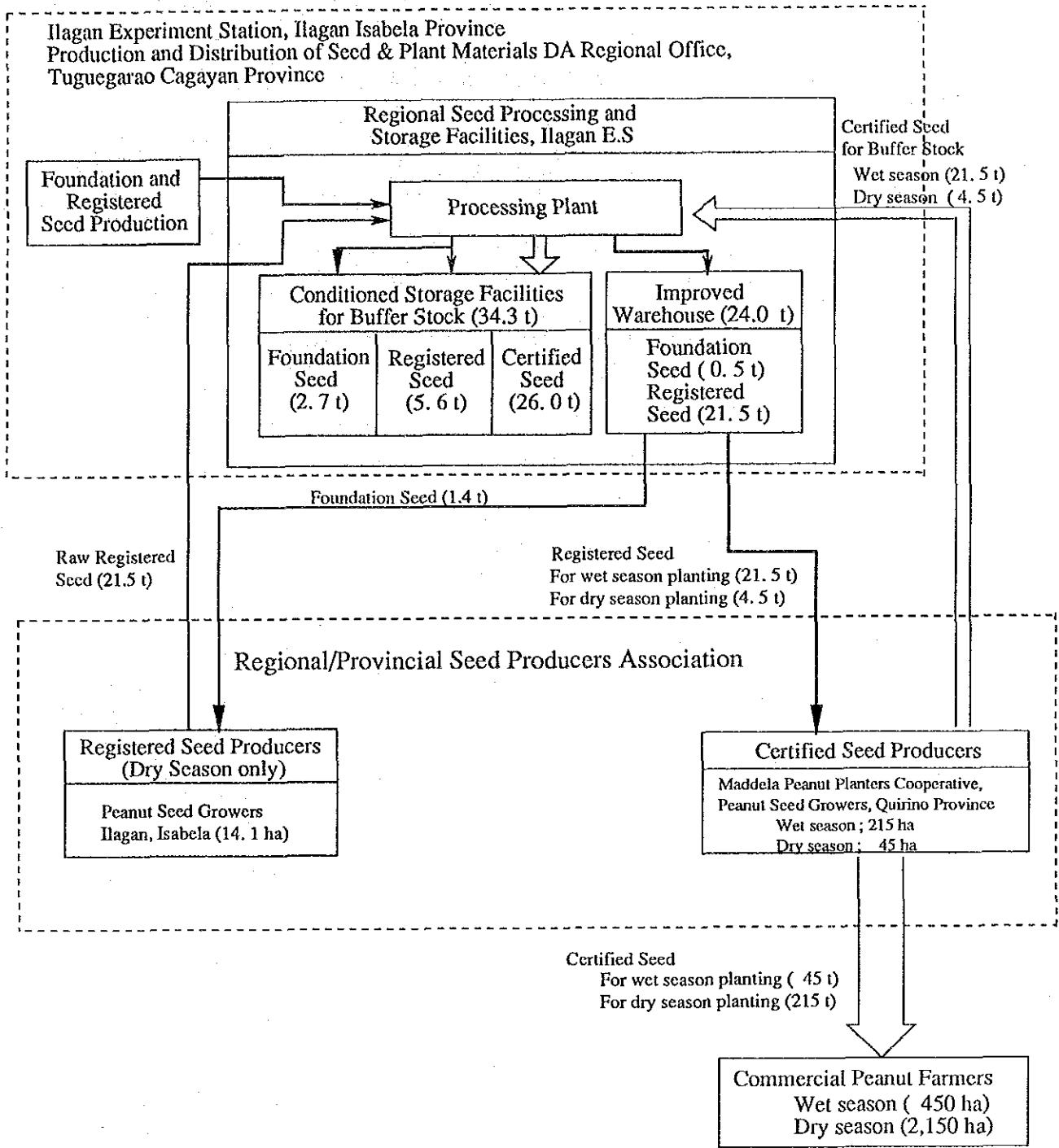


Fig. 8.2.4 PROPOSED PEANUT SEED PRODUCTION AND DISTRIBUTION PLAN IN REGION II

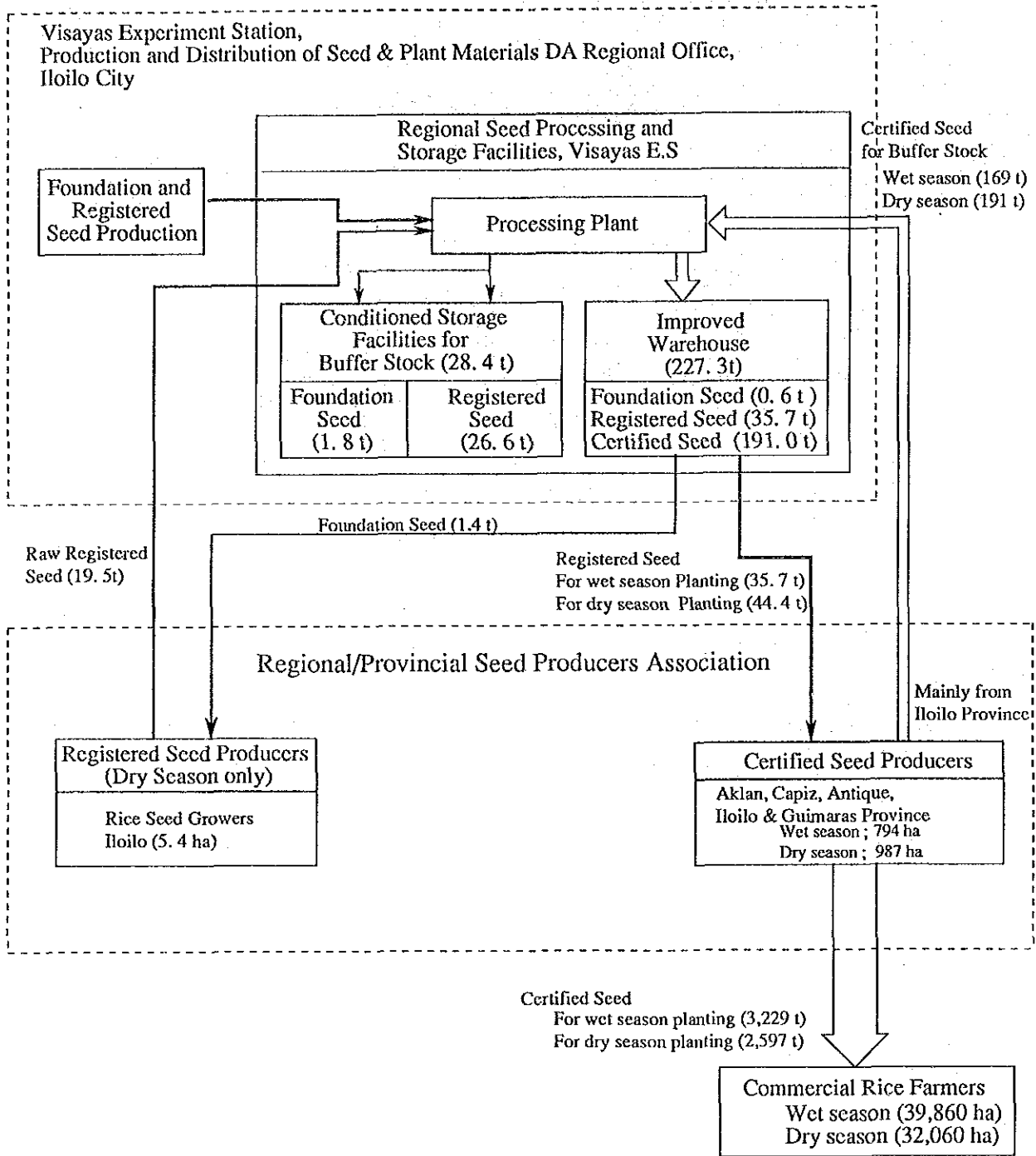
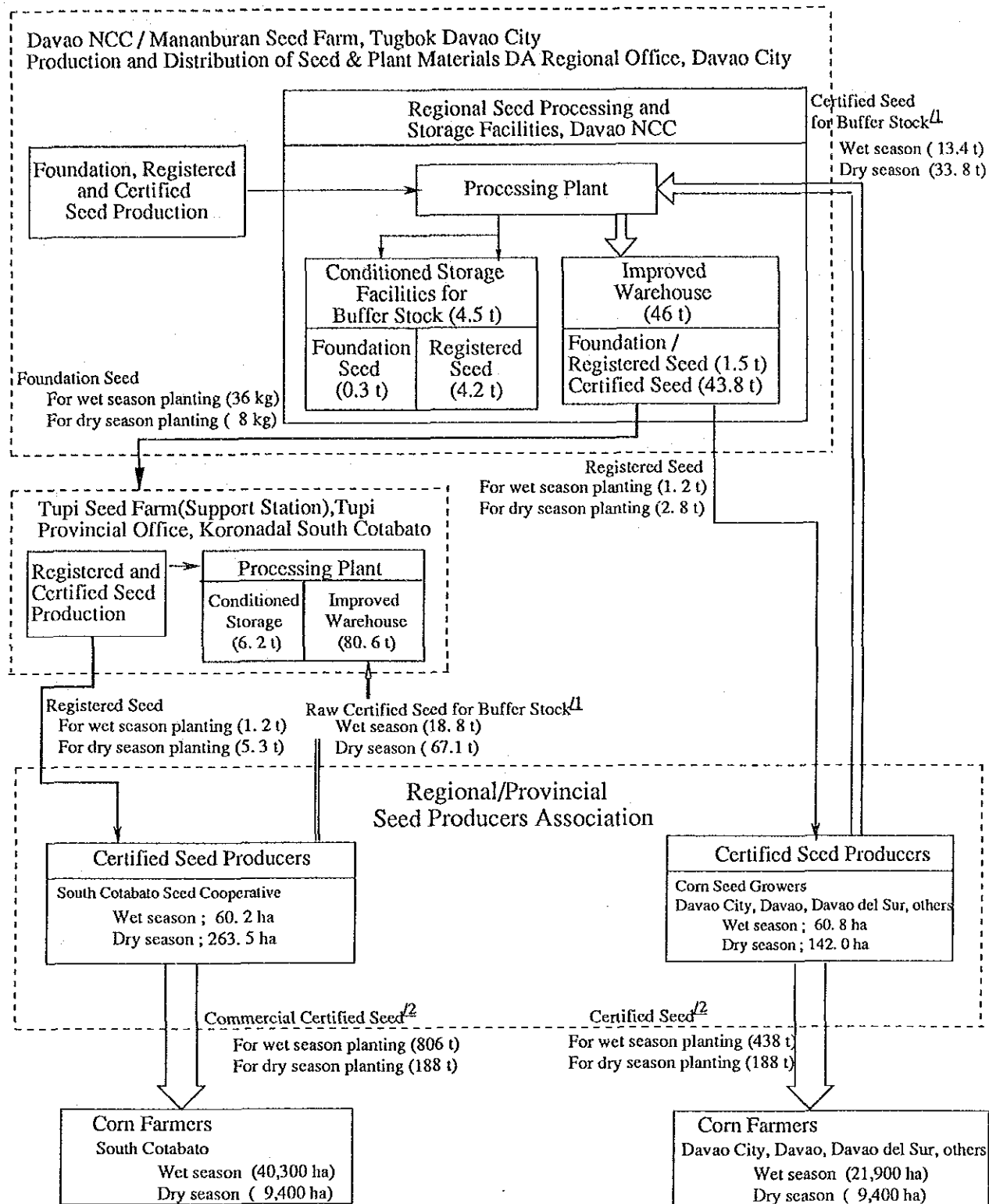
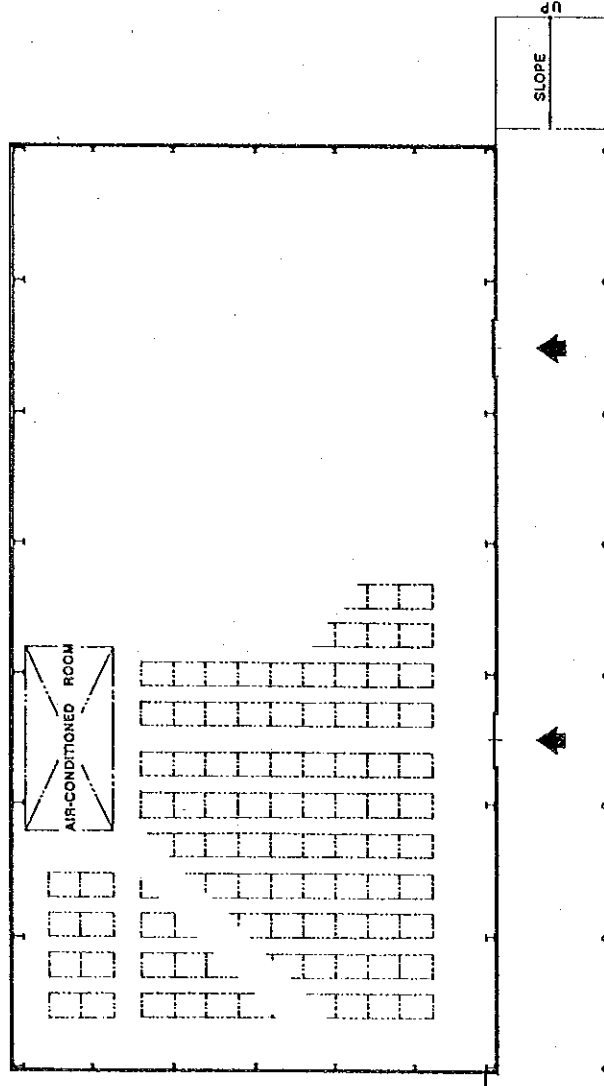
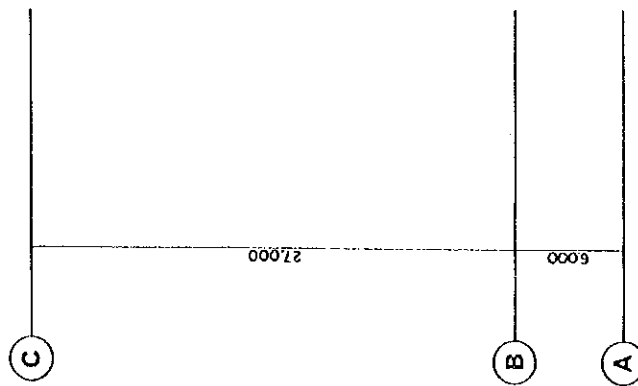
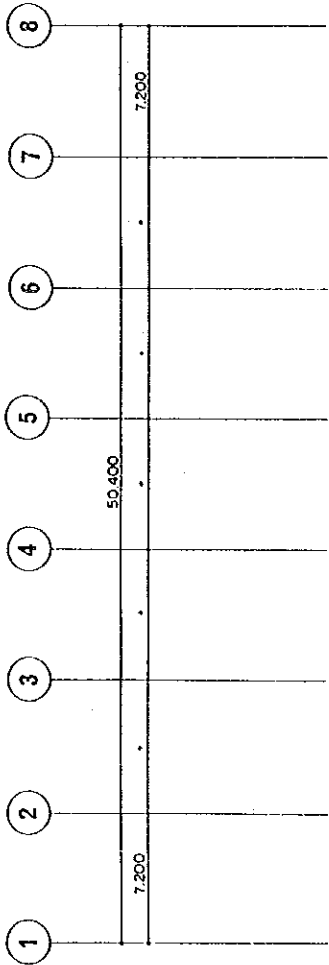


Fig. 8.2.5 PROPOSED RICE SEED PRODUCTION AND DISTRIBUTION PLAN IN REGION VI



Note: ¹ ; Excluded certified seed produced in the station
² ; Included certified seed produced in the station

Fig. 8.2.6 PROPOSED CORN SEED PRODUCTION AND DISTRIBUTION PLAN IN REGION XI



S=1:200

Fig. 8.4.1 SCHEMATIC DRAWING OF SEED STORAGE HOUSE (1/2)

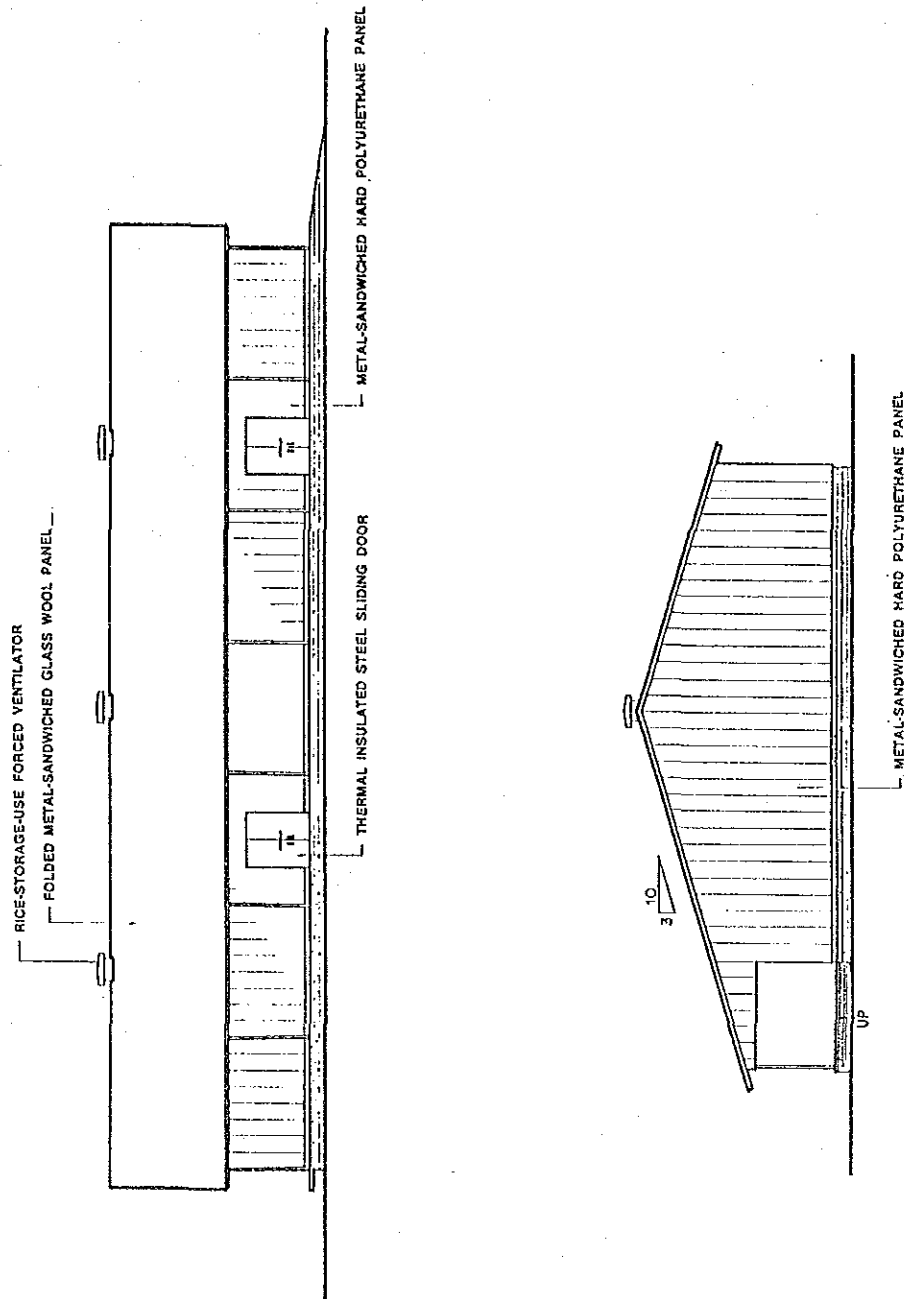
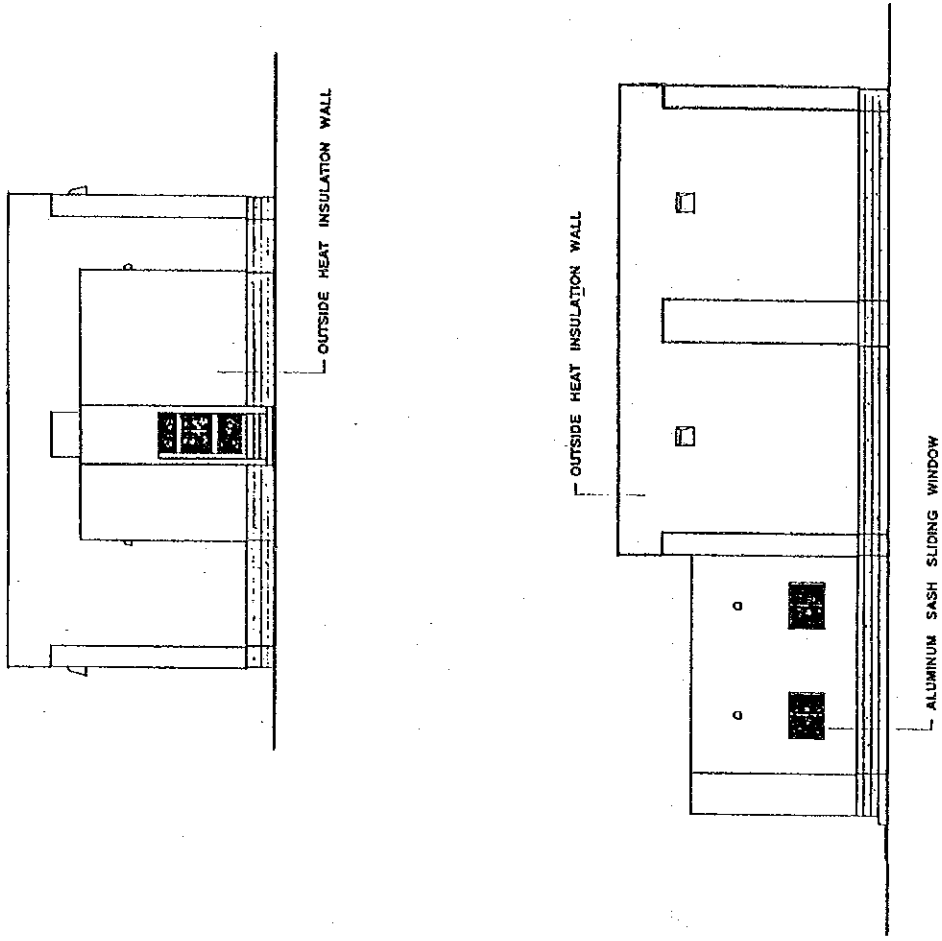
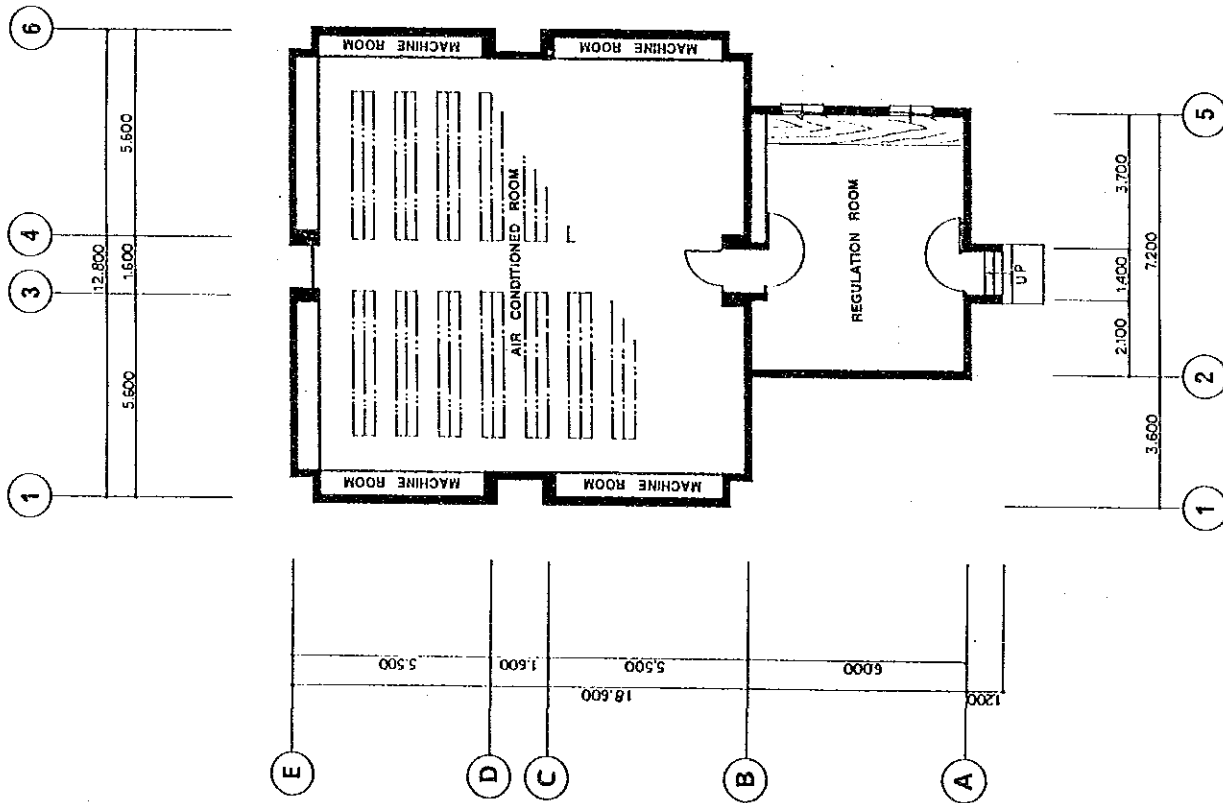


Fig. 8.4.1 SCHEMATIC DRAWING OF SEED STORAGE HOUSE (2/2)

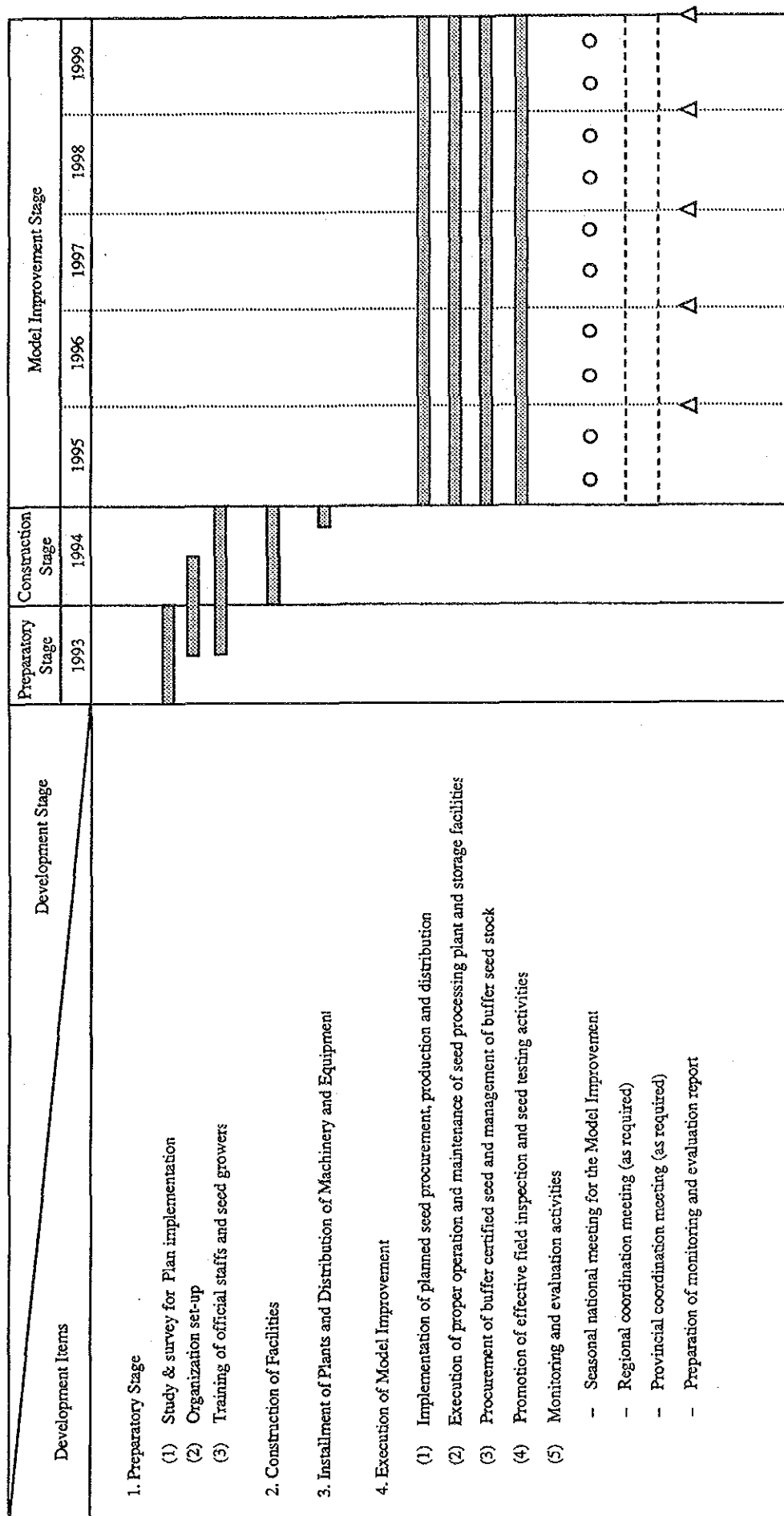
S-1:200



S = 1:100

Fig. 8.4.2 SCHEMATIC DRAWING OF SEED STORAGE HOUSE FOR STL

Fig. 8-7-1 IMPLEMENTATION SCHEDULE OF MODEL IMPROVEMENT PLAN



ATTACHMENTS

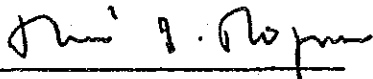
IMPLEMENTING ARRANGEMENT ON TECHNICAL
COOPERATION BETWEEN JAPAN INTERNATIONAL
COOPERATION AGENCY AND BUREAU OF PLANT
INDUSTRY, DEPARTMENT OF AGRICULTURE FOR
THE FERSIBILITY STUDY ON IMPROVEMENT OF
SEED PRODUCTION AND DISTRIBUTION, AND
ESTABLISHMENT OF APPROPRIATE SEED STORAGE
SYSTEM IN THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

JAPAN INTERNATIONAL COOPERATION AGENCY

AND

BUREAU OF PLANT INDUSTRY, DEPARTMENT OF AGRICULTURE



Mr. NERIUS I. ROPEROS
Director
Bureau of Plant Industry
Department of Agriculture



Mr. SHIGEKI SAKUHANA
Leader
Preliminary Survey Team
Japan International
Cooperation Agency

Manila, February 15, 1989

I. INTRODUCTION

In response to the request of the Government of the Republic of the Philippines (hereinafter referred to as "GOP"), the Government of Japan (hereinafter referred to as "GOJ") has decided to undertake the study on Improvement of Seed Production and Distribution, and Establishment of Appropriate Seed Storage System (hereinafter referred to as "the Study"), and exchanged the Note Verbales with GOP concerning the implementation of the Study.

Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programs of GOJ, will undertake the Study, in accordance with the relevant laws and regulations in force in Japan.

On the part of GOP, the Bureau of Plant Industry, Department of Agriculture (hereinafter referred to as "BPI"), shall act as counterpart agency to the Japanese study team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the study.

The present document constitutes the implementing arrangement between JICA and BPI under the above-mentioned Note Verbales exchanged between two governments.

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II. OBJECTIVE OF THE STUDY

The objectives of the Study are:

1. to recommend improvement for seed production and distribution, and establishment of appropriate seed storage system.
2. to study and determine the feasibility of model plans for seed production, distribution and storage system in selected areas.

III. SCOPE OF THE STUDY

The Study on rice and corn seed to be undertaken will comprise the following:

Phase I.

1. To collect the relevant data and information and to carry out the field survey on the following items:
 - (1) General condition of agriculture
 - (2) National plans for future agricultural development
 - (3) Basic policies for selected crop seeds
 - (4) Present programme for selected crop seeds
 - (5) Laws and regulations of seed breeding, multiplication, distribution
 - (6) Breeding
 - a. Major stations
 - b. Seed and varieties presently released
 - c. Breeding system
 - d. Function
 - e. Management of breeders seed
 - (7) Seed multiplication
 - a. Major stations
 - b. Seed and varieties
 - c. Seed multiplication system
 - d. Technology
 - e. Facilities and equipment
 - f. Certification programme
 - (8) Distribution
 - a. Distribution system
 - b. Related organizations and their functions
 - c. Marketing and facilities

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- (9) Trend in production and consumption of selected crops seeds in provinces
- (10) Others

- 2. Selection of model areas
- 3. Home office work to analyze data and information obtained through the Study, and to formulate effective system of seed production, distribution and storage.

Phase 2.

- 1. Supplemental study in the selected areas.
- 2. Improvement plans in the selected areas:
 - a. management of seed farms
 - b. establishment and maintenance plans of seed production, distribution and storage system
 - c. seed quality control and certification programme
 - d. implementation schedule
 - e. economic and financial evaluation on the plans prepared above

IV. WORKING SCHEDULE

The Study will be executed in accordance with the attached tentative Schedule.

V. REPORTS

JICA will prepare and submit the following reports in English to GOP:

- 1. Inception Report
Thirty (30) copies at the commencement of the first stage of the work.
- 2. Progress Report
Thirty (30) copies at the end of the field work of Phase 1 Study.
- 3. Interim Report
Thirty (30) copies at the beginning of the field work of Phase 2 Study.
- 4. Draft Final Report
Thirty (30) copies within one (1) month after the end of the second stage home office work. GOP will provide its comments on the draft final report within one (1) month after its reception.
- 5. Final Report
Fifty (50) copies within two (2) months after the reception of the comments on the draft final report.

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VI. UNDERTAKING OF GOP

In accordance with the Notes Verbales exchanged between GOP and GOJ, GOP shall accord privileges, immunities and other benefits to the Japanese study team and, through the authorities concerned take necessary measures to facilitate smooth conduct of the Study.

1. GOP shall be responsible of or dealing with the claims which may be brought by the third parties against the member of the Japanese study team and shall hold them harmless in respect of claims or liabilities arising in the course of, or otherwise connected with the discharge of their duties in implementation of the Study, except when such claims or liabilities arise from gross negligence or willful misconduct on the part of the above mentioned members.
2. BPI shall, at its own expense, provide the Japanese study team with the following, if necessary, in cooperation with other agencies concerned:
 - (1) Available data and information related to the Study
 - (2) Counterpart personnel
 - (3) Suitable office space with necessary equipment in Manila and the Study area
 - (4) Credential or identification cards to the members of the Japanese study team
 - (5) Appropriate number of vehicles with drivers.

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3. BPI shall make necessary arrangements with other governmental and non-governmental organizations concerned for the following:

- (1) to secure the safety of the Japanese study team
- (2) to permit the members of the Japanese study team to enter, leave and sojourn in the Philippines for the duration of their assignment therein, and exempt them from alien registration requirements and consular fees;
- (3) to exempt the member of the Japanese study team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into the Philippines for the conduct of the Study;
- (4) to exempt the members of the Japanese Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study
- (5) to provide necessary facilities to the Japanese study team for the remittance as well as the utilization of funds introduced into the Philippines from Japan in connection with the implementation of the Study;
- (6) to secure permission for entry into private properties or restricted areas for the conduct of the Study;
- (7) to secure permission to take all data and documents (including photography) related to the Study out of the Philippines to Japan by the Japanese study team;
- (8) to provide medical services as needed and its expenses will be chargeable on the members of the Japanese study team.

VII. UNDERTAKING OF GOJ

In accordance with the Notes Verbales exchanged between GOJ and GOP, GOJ, through JICA, shall take the following measures for the implementation of the Study:

1. To dispatch, at its own expense, the study teams to the Philippines.
2. To pursue technology transfer to the Philippines counterpart personnel in the course of the Study.
3. To provide the necessary equipment for the implementation of the Study, which will remain the property of JICA unless otherwise agreed.

VIII. OTHERS

JICA and BPI shall consult with each other in respect of any matter that may arise from or in connection with the Study.

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APPENDIX

TENTATIVE SCHEDULE

Item Month	1	2	3	4	5	6	7	8	9	10	11	12	13
WORK IN PHILIPPINES		≡≡≡					≡≡				≡≡		⊙
WORK IN JAPAN	□			▬					▬				
REPORTS		△		△			△			△			△
		Inc.R		P.R.			Int.R.			D.F.R.			F.R.

(Remarks) Inc.R.: Inception Report P. R. : Progress Report
 Int.R.: Interim Report D.P.R.: Draft Final Report
 F. R. : Final Report

⊙ Comments on D.F.R. by PHILIPPINES

≡≡≡: Field Work
 ▬: Home Office Work

ATTACHMENT - II

MINUTES OF MEETING
OF
PRELIMINARY SURVEY
FOR
FEASIBILITY STUDY
ON
IMPROVEMENT OF SEED PRODUCTION AND DISTRIBUTION,
AND ESTABLISHMENT OF APPROPRIATE SEED STORAGE SYSTEM

IN


THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

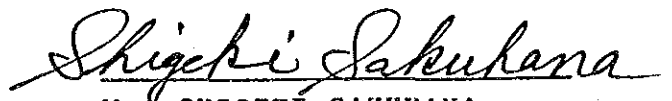
BUREAU OF PLANT INDUSTRY, DEPARTMENT OF AGRICULTURE

AND

JAPAN INTERNATIONAL COOPERATION AGENCY



Mr. NERIUS I. ROPEROS
Director
Bureau of Plant Industry
Department Of Agriculture



Mr. SHIGEKI SAKUHANA
Leader
Preliminary Survey Team
Japan International
Cooperation Agency

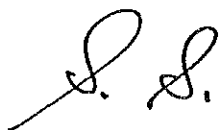
Manila, February 15, 1989

MINUTES OF MEETING

The Preliminary Survey Team headed by MR. SHIGEKI SAKUHANA (hereinafter referred to as the "Team") was dispatched by JICA from February 6 to February 16, 1989 for the Feasibility Study on Improvement of Seed Production and Distribution, and Establishment of Appropriate Seed Storage System in the Republic of the Philippines.

The Team and the authorities from the Department of Agriculture (hereinafter referred to as the "DA-BPI"), the Republic of the Philippines had a series of reconnaissance surveys, exchanged their views for the feasibility Study on the Project, and finally agreed as to the Implementation Arrangement and the salient views of the discussion as follows:

1. The DA-BPI requested that the study also include some legume and vegetable seeds.
2. The DA-BPI provide the Study Team at least one (1) vehicle with driver.
3. The DA-BPI earnestly requested JICA for counterparts to participate in the study work and observation of actual seed production, distribution and storage system in Japan.
4. The DA-BPI requested that JICA donate some equipment to be used in the study to the Philippines after the completion of the study.



IMPLEMENTING ARRANGEMENT OF THE TECHNICAL
COOPERATION BETWEEN THE JAPAN INTERNATIONAL
COOPERATION AGENCY AND BUREAU OF PLANT
INDUSTRY, DEPARTMENT OF AGRICULTURE FOR THE
FEASIBILITY STUDY ON IMPROVEMENT OF SEED
PRODUCTION AND DISTRIBUTION, AND ESTABLISHMENT
OF APPROPRIATE SEED STORAGE SYSTEM IN THE
REPUBLIC OF THE PHILIPPINES.

NEGOTIATING PANEL

Mr. Shigeki Sakuhana	Team Leader	Preliminary Survey Team Japan International Cooperation Agency
Mr. Susumu Takamichi	Member Condition Storage	-do-
Mr. Satoru Miyata	Member Seed Production	-do-
Mr. Masahiro Chihara	Member Distribution Organization	-do-
Mr. Saneyuki Okuda	Project Coordinator	-do-

PHILIPPINE TEAM

Mr. Nerius I. Roperos	Director Bureau of Plant Industry (BPI)
Mr. Augusto S. Baluyut	Assistant Director BPI
Ms. Lourdes Faustino	Program Coordinator Foreign Assisted Project Office DA

S. S.

[Signature]

Mr. Benedicto S. Caballero

Supervising Agronomist
Crop Production Division
BPI

Engr. Teresita C. Silva

Supervising Agricultural
Engineer
Agricultural Engineering
Division, BPI

Mrs. Myrna B. Landa

Supervising Planning
Officer
Planning & Management
Staff, BPI

Ms. Leonida L. Morales

Sr. Project Evaluation
Officer
Planning & Management
Staff, BPI

HP

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MINUTES OF MEETING
ON
THE INCEPTION REPORT
FOR
FEASIBILITY STUDY ON IMPROVEMENT OF
SEED PRODUCTION AND DISTRIBUTION, AND
ESTABLISHMENT OF APPROPRIATE SEED STORAGE SYSTEM

1. Date : 24 November, 1989
2. Place : Bureau of Plant Industry, Manila
3. Attendants : See Attached Sheet

4. SUMMARY OF DISCUSSIONS

The meeting was presided by Mr. Neriús I. Roperos, Director, Bureau of Plant Industry. At the request of the Chairman, Mr. Takayoshi Yamazaki, the Leader of the JICA Study Team presented the outline of the "Inception Report" and subsequent discussions were made between the Philippine Government Panel and the JICA Study Team. Both sides confirmed the following through the discussions:

- (1) The Inception Report was fully accepted by the Philippine panel.

- (2) Selection of the Study Crops

The study crops are rice, corn and peanut.

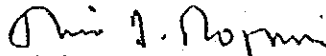
- 2.1 The Philippine Panel explained the following reasons for the selection of peanut:

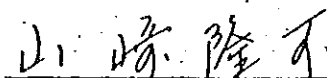
- Potential of the crop as a monocrop and as a diversified crop
- Improved varieties are available and there is a demand by users like growers and consumers
- It is an import substitute crop
- With investment opportunities
- Inavailability of quality seeds whenever farmers demand

(3) The Philippine Panel presented the criteria in the selection of the model areas and the panel noted that these criteria are similar to that stated in the Inception Report.

(4) Confirmation of the assignment of the Philippine counterpart as follows:

Mr. Benedicto S. Caballero	- Chief Counterpart
Mr. Cresencio Asuino	- Quality Control
Mr. Clarito M. Baron	- Marketing and Distribution
Ms. Teresita C. Silva	- Facilities and Machinery and Irrigation Engineer
Ms. Leonida L. Morales	- Agricultural Statistics
PhilRice Representative	- Agro-economy


NERIUS I. ROPEROS
Director
Bureau of Plant Industry
Department of Agriculture


TAKAYOSHI YAMAZAKI
Leader
JICA Study Team

LIST OF ATTENDANTS

Bureau of Plant Industry

1. Neriús I. Roseros - Director
2. Augusto S. Baluyut - Assistant Director
3. Rustica S. Bautista - Chief, Crop Production Division
4. Myrna B. Landa - Planning Officer II
5. Teresita C. Silva - Engineer IV
6. Francisca L. Tanseneco - Sr. Agronomist
7. Clarito M. Baron - Agriculturist II
8. Benedicto S. Caballero - Supervising Agronomist
9. Antonio Mercado - Consultant on Seed Production
10. Leonida L. Morales - Project Evaluation Officer II

Department of Agriculture - IADCCO

1. Zenaida Villesas - Supervising Agricultural Development Specialists
2. Lourdes Faustino - Project Officer
3. Ariodear C. Rico - Project Officer

JICA Advisory Committee

1. Shizaki Yamamoto - Coordinator
2. Satoru Miyata - Member of Advisory Committee

JICA Study Team

1. Takayoshi Yamazaki - Team Leader
2. Norio Koiba - Quality Control Expert
3. Yuichi Fukasaka - Marketing Expert

MINUTES OF MEETING
ON
THE PROGRESS REPORT
FOR
FEASIBILITY STUDY ON IMPROVEMENT OF
SEED PRODUCTION AND DISTRIBUTION, AND
ESTABLISHMENT OF APPROPRIATE SEED STORAGE SYSTEM


1. Date : 5 February, 1990
2. Place : Bureau of Plant Industry, Manila
3. Attendants : See Attached Sheet

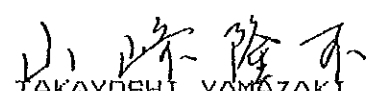
4. SUMMARY OF DISCUSSION

The persons concerned in the Bureau of Plant Industry (BPI), and the JICA Study Team headed by Mr. Takayoshi Yamazaki had a meeting which was chaired by Mr. Augusto S. Baluyot, Assistant Director of the BPI, so as to discuss the captioned Progress Report distributed to all of the attendants on February 3, 1990.

Both the BPI and the Study Team have consented with each other on the meeting to the following matters:

- (1) The BPI accepted the Progress Report basically.
- (2) The BPI was requested in writing to submit the final comments on the Report to the Study Team by February 15, 1990.
- (3) The Study Team would incorporate the comments in the Interim Report as far as possible.


AUGUSTO S. BALUYOT
Assistant Director
Bureau of Plant Industry
Department of Agriculture


TAKAYOSHI YAMAZAKI
Team Leader
JICA Study Team

LIST OF ATTENDANTS

Bureau of Plant Industry

- | | |
|---------------------------|--|
| 1. Augusto S. Baluyut | Assistant Director |
| 2. Rustica S. Bautista | Chief, Crop Production Div. |
| 3. Benedicto S. Caballero | Supervising Agricultural
Development Specialist |
| 4. Myrna B. Landa | Planning Officer II |
| 5. Josefina S. Soriano | Budget Officer IV |
| 6. Cresencio M. Aquino | Sr. Agricultural Development
Specialist |
| 7. Leonida L. Morales | Project Evaluation Officer II |
| 8. Clarito M. Barron | Agricultural Development
Specialist |

JICA Study Team

- | | |
|-----------------------|-------------------------------|
| 1. Takayoshi Yamasaki | Team Leader |
| 2. Yuichi Fukasaka | Marketing Expert |
| 3. Shoshin Konno | Agronomist |
| 4. Takashi Dhara | Irrigation & Drainage Expert |
| 5. Yoshihisa Onishi | Processing & Storage Expert |
| 6. Masatoshi Sogawa | Facilities & Machinery Expert |
| 7. Norio Koiwa | Quality Control Expert |
| 8. Fernando Antolin | Agricultural Economist |

**MINUTES OF MEETING
ON
THE INTERIM REPORT
FOR
FEASIBILITY STUDY ON IMPROVEMENT OF
SEED PRODUCTION AND DISTRIBUTION, AND
ESTABLISHMENT OF APPROPRIATE SEED STORAGE SYSTEM**

1. Date : 11 June, 1990
2. Place : Bureau of Plant Industry, Manila
3. Attendants : See Attached Sheet
4. SUMMARY OF DISCUSSIONS

The thirty (30) copies of Interim Report for the Feasibility Study on Improvement of Seed Production and Distribution, and Establishment of Appropriate Seed Storage System were submitted to the Bureau of Plant Industry (BPI) on the eighth (8) of June prior to the meeting. The meeting was presided by Mr. Augusto S. Baluyut, Assistant Director of the Bureau of Plant Industry. At the request of the Chairman, Mr. Takayoshi Yamazaki, the Leader of the JICA Study Team explained the outline of the "Interim Report" to the attendants. The Chairman asked each agency to make questions or comments on the Report and various discussions were made.

The Philippine Panel accepted the Interim Report basically. Both sides confirmed the following matters through the discussion :


- (1) The target of seed yields proposed by JICA Study Team should be maintained to the followings which are about 80 % of the potential yields of rice, corn and peanut varieties under the BPI Program :

Kind of Seed	(t/ha)		
	Rice	Corn	Peanut
Foundation	3.15	2.5	1.0
Registered, Certified	3.60	3.0	1.0


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- (2) The renewal rate of seed use for all crops set at 25 % will be adaptable to the selected model areas. The nationwide renewal rates are decided at 17 % for rice, 11 % for corn and 25 % for peanuts respectively based on the BPI Medium Term Development Plan.
- (3) The corn and peanuts should be included in the Seed Quality Control Plan showing the technical instruction for the crop improvement same as rice.
- (4) Region VII and XII should be included as the candidates for the Model Area for corn considering that these regions are potential corn producing areas of the country.

At the end of the meeting, the BPI proposed to JICA the holding of National Seminar on Seed Production and Distribution.



AUGUSTO S. BALUYOT
Assistant Director
Bureau of Plant Industry
Department of Agriculture



TAKAYOSHI YAMAZAKI
Leader
JICA Study Team

LIST OF ATTENDANTS

Bureau of Plant Industry

- | | |
|---------------------------|---|
| 1. August S. Baluyut | Assistant Director |
| 2. Rustica S. Bautista | Chief, Crop Production Division |
| 3. Benedicto S. Caballero | Supervising Agricultural Development Specialist |
| 4. Teresita C. Silva | Engineer IV |
| 5. Cresencio M. Aquino | Sr. Agricultural Development Specialist |
| 6. Leonida L. Morales | Project Evaluation Officer II |
| 7. Clarito M. Barron | Agricultural Development Specialist |
| 8. Soledad Manipon | Sr. Agriculturist |

Department of Agriculture - International Agricultural Development Cooperation Coordinating Office (IADCCO)

- | | |
|---------------------|-----------------|
| 1. Shigetaka Saburi | Advisor, IADCCO |
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JICA Advisory Committee

- | | |
|----------------------|------------------------------|
| 1. Katsumi Otani | JICA Headquarter, Tokyo |
| 2. Hiromichi Iwasawa | Member of Advisory Committee |

JICA Study Team

- | | |
|-----------------------|------------------|
| 1. Takayoshi Yamazaki | Team Leader |
| 2. Shoshin Konno | Agronomist |
| 3. Yuichi Fukasaka | Marketing Expert |
| 4. Fernando Antolin | Agro-Economist |

**MINUTES OF MEETING
ON
THE BASIC IMPROVEMENT PLAN AND
THE OUTLINE OF MODEL IMPROVEMENT PLAN
FOR
FEASIBILITY STUDY ON IMPROVEMENT OF
SEED PRODUCTION AND DISTRIBUTION, AND
ESTABLISHMENT OF APPROPRIATE SEED STORAGE SYSTEM**

1. Date : 13 August, 1990
2. Place : Bureau of Plant Industry, Manila
3. Attendants : See Attached Sheet

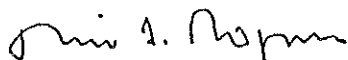
4. SUMMARY OF DISCUSSIONS

The meeting was presided by Mr. Nerius I. Roperos, Director of Bureau of Plant Industry. At the request of the Chairman, Mr. Takayoshi Yamazaki, the Leader of the JICA Study Team explained the revised basic Improvement Plan and the outline of Model Improvement Plan to the attendants. The Chairman asked the attendants to make questions or comments on the Report and various discussions were made between the Philippines' government side and the JICA Study Team. Both sides confirmed the following through the discussions:

- (1) The renewal rate of seed use that was considered to be adaptable to the selected model areas was changed from 25 % to 20 % for rice, 11 % for corn, and 10 % for peanut.
- (2) The renewal rate for peanut seed was changed from 25 % to 10 % based on the present shortage of parent seed (breeder and foundation), lack of recommended improved varieties, insufficient information on appropriate seed storage technology, inadequate government supports.
- (3) The nationwide long term target of seed renewal rates for three objective crops was set at thirty (30) % . For the achievement of the above target, the government should improve and strengthen the seed production and distribution system as well as the other agricultural support services step by step.
- (4) The outline of the Model Improvement Plan was basically approved. The direction of the organization development for the promotion, implementation and monitoring of the Model Improvement Plan should be put on the strengthening of existing

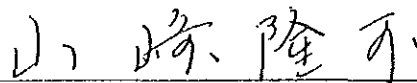
sections concerned instead of the creation of new organization. The project office should be organized both in the BPI and the objective regional levels during the initial stage at least for five (5) years.

- (5) Tentative components of Model Improvement Plan will be finally confirmed through technical justification and financial and economic evaluation in the Phase II Home Office Work.
- (6) The Basic Improvement Plan will include the establishment of Central Seed Storage Facility and Central Seed Quality Control Laboratory in order to :
 - a) strengthen the BPI's coordination activities on seed procurement and distribution in the country through timely and efficient seed distribution activities and remedy for shortage of parent seed by providing buffer seed stock, and
 - b) promote the high quality seed production and distribution in the country through improvement of proficiency and efficiency of seed testing activities, development of appropriate seed testing technology, and strengthening the nationwide monitoring and evaluation system of the Regional Seed Testing Laboratories.



NERIUS I. ROPEROS

Director of Bureau of Plant Industry
Department of Agriculture



TAKAYOSHI YAMAZAKI

Leader
JICA Study Team

LIST OF ATTENDANTS

Bureau of Plant Industry

- | | |
|---------------------------|---|
| 1. Nerius I. Roperos | Director |
| 2. Rustica S. Bautista | Chief, Crop Production Division |
| 3. Benedicto S. Caballero | Supervising Agricultural Development Specialist |
| 4. Erlinda P. Sevilla | Supervising Agricultural Development Specialist |
| 5. Benedicta D. Donato | Supervising Agricultural Development Specialist |
| 6. Teresita C. Silva | Engineer IV |
| 7. Cresencio M. Aquino | Sr. Agricultural Development Specialist |
| 8. Leonida L. Morales | Project Evaluation Officer II |
| 9. Clarito M. Barron | Agricultural Development Specialist |

Department of Agriculture

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| 1. Lourdes G. Faustino | Project Coordinator, International Agricultural Development Cooperation Coordinating Office (IADCCO) |
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JICA Study Team

- | | |
|------------------------|-------------------------------|
| 1. Takayashi Yamazaki | Team Leader |
| 2. Norio Koiwa | Quality Control Expert |
| 3. Yuichi Fukasaka | Marketing Expert |
| 4. Masatoshi Sogawa | Facilities & Machinery Expert |
| 5. Fernando E. Antolin | Agricultural Economist |
| 6. Takashi Inoue | Project Economist |

**MINUTES OF MEETING
ON
THE DRAFT FINAL REPORT
FOR
FEASIBILITY STUDY ON IMPROVEMENT OF
SEED PRODUCTION AND DISTRIBUTION, AND
ESTABLISHMENT OF APPROPRIATE SEED STORAGE SYSTEM**

1. Date : 27 September, 1990
2. Place : Bureau of Plant Industry, Manila
3. Attendants : See Attached Sheet

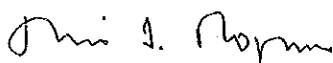
4. SUMMARY OF DISCUSSIONS

The meeting was presided by Mr. Nerius I. Roperos, Director of Bureau of Plant Industry. At the request of the Chairman, Mr. Takayoshi Yamazaki, the Leader of the JICA Study Team explained the outline of the "Draft Final Report" comprising the present condition of seed production and distribution, the Basic Improvement Plant for improvement of seed production and distribution in the Philippines, Model Improvement Plans in the selected areas, and their evaluation results to the attendants. The Chairman asked the attendants to make questions or comments on the Report and various discussions were made between the Philippine side and the JICA Study Team.

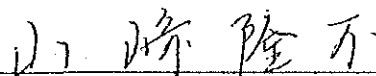
The Philippine side accepted the Draft Final Report basically. Both sides confirmed the following through the discussions :

- (1) The contents of the Draft Final Report were principally accepted by the Philippine side. However, several minor comments were made by the Philippine side as follows :
 - a) Thresher for peanut seed in the Model Improvement Plan should be changed to sheller.
 - b) Mechanical rice transplanter and harvester will be introduced in Visayas Experiment Station if they are technically adaptable.
 - c) Seed pathology tester in the Regional Seed Testing Laboratories should be a set of seed pathology testing equipment.

- (2) Both side agreed that all comments were made in the meeting and no additional comments or alternations will be made later, and Japanese side would prepare the final report taking the above comments into consideration within one (1) month.
- (3) The Philippine side strongly requested the implementation of the Model Improvement Plans as well as establishment of Central Seed Storage Facility and Central Seed Quality Control Laboratory under the Japanese assistances.



NERIUS I. ROPEROS
Director of Bureau of Plant Industry
Department of Agriculture



TAKAYOSHI YAMAZAKI
Leader
JICA Study Team

LIST OF ATTENDANTS

Bureau of Plant Industry

1. Nerius I. Roperos Director
2. Rustica S. Bautista Chief, Crop Production Division
3. Benedicto S. Caballero Supervising Agriculturist
4. Erlinda P. Sevilla Senior Agriculturist
5. Benedicta D. Donato Supervising Agriculturist
6. Teresita C. Silva Engineer IV
7. Leonida L. Morales Project Evaluation Officer II
8. Clarito M. Barron Agriculturist II

Department of Agriculture

1. Shigeki Yamamoto Advisor, International Agricultural Development Cooperation Coordinating Office (IADCCO)
2. Lourdes G. Faustino Project Coordinator, IADCCO
3. Marilou M. Velasco Japanese Desk Officer, IADCCO

JICA Advisory Committee

1. Shigeki Yamamoto JICA Headquarter, Tokyo
2. Kazuyuki Yoshioka Member of Advisory Committee

JICA Study Team

1. Takayashi Yamazaki Team Leader
2. Yuichi Fukasaka Marketing Expert
3. Takashi Inoue Project Economist



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