

I. PROJECT IDENTIFICATION

1. PROJECT TITLE: **Integrated Cereals**

2. PROJECT NO. (IN O. PPS.): **367-11-110-114**

3. RECIPIENT (Specify):
 COUNTRY: **Nepal**
 REGIONAL INTERREGIONAL

4. LIFE OF PROJECT
 BEGINNING FY: **1975**
 See Block IV, 1
 CYCLE FY: _____

5. SUBMISSION
 ORIGINAL: **5/30/75**
 REV. NO. _____ DATE _____
 CONTR./PASA NO. _____

II. FUNDING (\$000) AND MAN MONTHS (MM) REQUIREMENTS

A FUNDING BY FISCAL YEAR	B. TOTAL \$	C. PERSONNEL		D. PARTICIPANTS		E. COMMOD- ITIES \$	F. OTHER COSTS \$	G. PASA/CONTR.		H. LOCAL EXCHANGE CURRENCY RATE: S L'S (U.S. OWNED)		
		(1) \$	(2) MM	(1) \$	(2) MM			(1) \$	(2) MM	(1) U.S. GRANT LOAN	(2) COOP COUNTRY	
1. PRIOR THRU ACTUAL FY										(A) JOINT	(B) SUDGE	
2. OPEN FY 75	421	345	87	43	54	33	-	345	87	155		
3. BUDGET FY												
4. BUDGET +1 FY												
5. BUDGET +2 FY												
6. BUDGET +3 FY												
7. ALL SUDD. FY												
8. GRAND TOTAL												

9. OTHER DONOR CONTRIBUTIONS

(A) NAME OF DONOR: **See Section V. 5 of PROP**

(B) KIND OF GOODS/SERVICES: _____

(C) AMOUNT: _____

III. ORIGINATING OFFICE CLEARANCE

1. DRAFTER: _____ TITLE: _____ DATE: _____

2. CLEARANCE OFFICER: _____ TITLE: _____ DATE: _____

IV. PROJECT AUTHORIZATION

1. CONDITIONS OF APPROVAL:

AID/W agrees that the essence of the project is sound. However, there are deficiencies in the PROP, as presented in attachment A of the approval memo, that need to be addressed prior to life-of-project approval. The intent of approval of this "one year" PROP is to allow initial start-up activities as described in the approval memo on a limited funding basis. Concurrently, the Mission will strengthen PROP submitted January 1, 1975 and present AID/W a revision which will provide the basis leading to life-of-project approval. Except for 3 month PSC with IRRI no TA contracts

2. CLEARANCES will be signed until PROP has been revised and approved.

OUR OFF.	SIGNATURE	DATE	OUR OFF.	SIGNATURE	DATE
NESA/TECH	D. Steinberg		NESA/DP	F. Herder	
PPC/SC	E. Griffel	8 June	NESA/TECH/OPP	C. Antholz	6/5/75
PPC/DPPE	H. Sharlach		NESA/TECH/PSD	W. Harris	5/27/75
NESA/CA	C. Rees	June 75	NESA/CO	D. Bledt	6/5/75
NESA/CA	J. Coles				

3. APPROVAL AAS OR OFFICE DIRECTORS

SIGNATURE: **A. D. White** DATE: **11/11/75**

TITLE: **Deputy Asst. Administrator, Bureau for NESA**

4. APPROVAL AID (300 N.O. 10/31/75)

SIGNATURE: _____ DATE: _____

TITLE: **ADMINISTRATOR AGENCY FOR INTERNATIONAL DEVELOPMENT**

STAFFING POSITIONS, SCOPE OF WORK AND
DIVISION OF TIME OF CONTRACTOR EMPLOYEES
AND JC VOLUNTEERS

Project: 367-11-110-114

Integrated Cereals

1. Wheat Agronomist

The wheat agronomist will serve as a joint coordinator of the coordinated wheat improvement program which has been inaugurated by His Majesty's Government of Nepal. He will be involved with the wheat coordinator in development and conduct of the overall wheat research program with particular emphasis on adaptive trials on-farm testing, seed multiplication programs and training of research and outreach personnel concerned with agricultural development.

93p.

Although new varieties of wheat occupy approximately 70% of the wheat area in Nepal, the yields have remained low and even tended to decline. Improvements in agronomic management would appear to be a means of increasing production. Since wheat has been placed under a coordinated program in the country because of its present and potential importance, the agronomy of wheat growing must be regarded as one of the most important disciplines to be considered in wheat improvement, particularly the agronomy of the mixed cropping systems used in the hills.

Problems of agronomy appear to be more location specific than varietal adaptation and will require a more widely developed agronomic program which can quickly identify major weaknesses in the agronomic package and develop a research base which would enable the concerned officers to recommend changes in the production practices used to increase the productive capacity of the farmers. This will involve not only more complex research trials at the experiment station level but also simple trials at the farmer level.

Agronomic practices to be developed will involve irrigated and rainfed conditions, Hills and the Terai, wheat-rice rotations and the many other wheat rotations and intercrop variations involving minor crops which change from one part of the country to another.

Although strong support can be provided from CIMMYT and other national and International programs for varietal improvement, the agronomic problems to be researched will be, in many instances, those which face the Nepalese farmers and no others. The agronomist, with the experts in the other disciplines of the wheat team, together with the economists and multiple cropping staff should be key personnel

in identifying these problems and providing quick research results upon which a stronger regional and district effort can be based.

2. Maize Agronomist

The maize agronomist will serve as joint coordinator of the nationwide maize program. In this capacity, he will be jointly responsible with the maize coordinator for the development and execution of the maize research program, adaptive on-farm trial programs, seed multiplication programs, and for training research and production specialists.

Maize yields have remained static or have declined slightly in Nepal in spite of the research on varietal improvement which has extended over more than a decade. With the improvement in yield potential of the new varieties, however, changes or improvements in agronomic practices used by farmers have been slow. These need to be accelerated if maize is to continue to supply its share of the expanding demand for food.

Maize is cultivated in both the Terai and in the Hills. The Terai crop can be grown under at least three different sets of seasonal conditions - September or February sowing for production in the dry season and June sowings for the wet season. These are all generally monoculture situations where agronomic problems would be straight forward but vary according season.

In the Hills, the cropping pattern is much more complex, maize often being only one of the several crops being intercropped in the farming systems. Agronomic practices will vary tremendously depending on season, agro-physical conditions and cropping system. Agronomic research conducted by the maize agronomist together with the other disciplines available in the maize improvement program and in the integrated cereals project will enable the identification of agronomic practices which, together with the new varieties can be a part of the package approach to crop improvement at the farmer level.

Varietal improvement has been under way for some time with major emphasis being toward the terai where only 40% of the maize is grown. The continued involvement of CIMMYT in this project ensures introduction of the most recently developed pools of germplasm. The adaptation of this germplasm into suitable varieties, or even hybrids in the Terai, will be the responsibility of the Maize Agronomist and the coordinated maize team. Evaluation trials of materials developed at CIMMYT and elsewhere and an early feed back of the results obtained to the crossing program in Nepal and at

CIMMOT will enable a very rapid synthesis of selections adapted to Nepalese conditions. The precision of the evaluation process and the genetic advancement toward better adapted varieties for the varied conditions in Nepal will be determined to a great extent by the agronomic practices used. Good trials, including those on farmers land, which eliminate much of the local variability will enable the identification of new selections to be incorporated in the adapted composites. This selection process could apply to yield, to plant height, to husk protection, to maturity, and to the diseases to which the crop may be exposed.

The utilization of the different germplasm pools will enable early identification of strains which are adapted to these conditions of crop culture. This presents a distinctly different set of problems than may occur in the terai and for which different varieties may need to be developed.

Because of the open pollinated nature of the maize crop, effective seed programs need to be devised and implemented through the regional agriculture development staff in order to complete the research and research delivery system. This will require a more active role in conducting research in the rural areas and in seed production on the part of the research team than is the case with the self pollinated crops of rice and wheat.

3. Rice Breeder

The rice breeder will work as a joint coordinator of the rice improvement program. In this capacity, he would function not only as a breeder but as a joint leader of a multi-disciplinary nationwide program on rice improvement. He would be jointly responsible for planning and executing the rice research program, on-farm adaptive and regional trials and in planning for seed multiplication with the regional directors and the AIC. He would also assist in training programs for research and development personnel. The present staff encompasses the major disciplines which concern rice improvement. The expatriate would contribute to the development of a strong program based on new varieties to create the research technologies required for increased production potentials.

Because the climatic conditions of rice culture vary from tropical in the Terai to temperate in the Hills, the rice improvement program will require the development of two different sets of varieties to meet these situations. The agronomic packages will also need to vary according to these conditions as well as according to the capability of farmers and the availability of production inputs.

In many ways the research programs will require essentially two different programs - one for the Terai and one for the Hills. The means of achieving these objectives will be dependent on one primary set of personnel at Parwanipur with testing being done at centers having the necessary agro-climatic conditions to evaluate selections for these two broad sets of conditions.

The research products would fit into the expanded research-delivery system which would include the on-farm research program to be developed through the integrated cereal improvement project. These would involve the multiple cropping agronomist, the economist, the middle level research personnel at the regional centers, and production personnel who are in close contact with the farmers.

Because of limitations of manpower and the multiplicity of problems, the technical support of the International Rice Res. Instt. will be imperative to the rapid advancement which is expected and needed in Nepal's national program. Existing formal mechanisms for seed introduction and exchange will be expanded to accelerate Nepal's rice production.

IRRI's training capacity will also be used to provide training for production specialists and research scientists in order to improve the capabilities of all those involved in research and research delivery systems.

4. Multiple Cropping Agronomist

The agronomist would be associated with the multiple cropping program at Khumaltar. The objective of the multiple cropping program will be to improve the productivity of traditional farming systems and to improve the standards of living of large numbers of small farmers, many of whom are now barely at the subsistence level. To achieve these ends the research group must first understand what the farmers are doing and why they are doing it. This is no easy task for the systems are quite varied and are extremely complex, having been developed over centuries of trial and error by generations of shrewd and practical people. Having identified basic features of the farming systems, the agronomists will selectively introduce new elements (new varieties, new management practices, etc.) into the system and measure their effect in terms of direct output and the influence which they have on other parts of the system. He must then focus attention on either modifying further practices he has introduced or on dealing with new stress points which occur in the system.

Significant contributions to improving the farming systems will be expected from the primary commodity programs which deal with wheat, corn, rice, etc. The development of corn varieties better adapted to acid soil conditions could, for example, make a direct and immediate contribution to the productivity of a small mountain farm where other means of correcting the problem (up to 8 tons of hydrated lime/ha) are economically or physically impossible. The provision of virus-free seed potatoes could, to use another example, give an immediate and direct benefit in terms of yield and it could dramatically improve the out-turn from careful use of manures, organic residues and commercial fertilizers.

But the multiple cropping agronomist must focus constantly on the whole system. He must take into account the role and influence of minor crops and how they fit into the pattern set by the basic ones. Vegetable crops, pasture and forage species and other plants must be given a degree of attention.

Factors lying well outside of the environmental or biological system can influence the cropping pattern of traditional farmers and the multiple cropping agronomist and the economist must be alive to them. Social factors are among the most obvious of these and useful changes in the system will be difficult unless these factors are understood and taken into account. Changes in infrastructures can also have dramatic effects. The development of a road system or a rope-way can change the costs of inputs and the feasibility of shipping produce to market overnight. The same physical environment may still exist but the farming system can change dramatically. The multiple cropping agronomist can be particularly helpful to the small traditional farmer in efforts to exploit changes of this type.

As will be mentioned elsewhere, the multiple cropping agronomist can greatly benefit the programs by cooperating in the production training programs. He will also require the services of expert consultants and much of the consultancy time provided under the contract will focus on farming system problems. To the extent possible, the multiple cropping agronomist will draw on Nepalese talent, particularly in the social science area, but he will be able to call for special help from outside experts.

5. Agricultural Economist

The role of the economist in the integrated cereals project is one of the more challenging. He will be a production or farm management economist, an observer and evaluator of existing farming systems, a member of a diagnostic team involving biological scientists,

students of the interaction of changes in crop culture, crops, and variety with the socio-economics of the farmer, the village, and the country, and be able to project the implications of these changes into a national economic picture. All of these would not be simultaneously relevant but would require establishing priorities over time.

Since cereal production is vital to the subsistence farmer as well as to the market oriented farmer, the study of the cereals in relation to other parts of the farming systems means that the early work of the economist can make a notable contribution to the integrated cereals project and to other agricultural projects of the country.

The research input of the economist working with other disciplines would be quickly needed as new technologies are developed and introduced in order to study their value. The design of simple, on-farm research projects relating the new technologies to rural socio-economic factors will provide important feed-back information to both the biological and the social scientists.

The opportunity to relate this new project with existing activities of economists at the international research institutes will provide a unique opportunity for new information to be developed under this project.

6. Production Agronomist and Training

An experienced specialist in crop production and training is needed to help upgrade the technology delivery system of the nation's agricultural services. This individual must be strongly grounded in the agricultural sciences, in research techniques, in methods of increasing crop production and must have special capabilities in the behavioral sciences. The objective will be to develop training programs to speed up the application of technology generated within the research service and elsewhere and to assist in developing on-farm research which will feed back to the research specialists information on the applicability of research results at the farm level. Thus the delivery system will serve not only to convey new technology to the farmer but also to test it under farm conditions. He will also influence the research orientation of the project by pointing out gaps and deficiencies in the research output. The aim is to create a new breed of change agents who have the confidence, both of the farmer and the research specialist. The change agent must

recognize that he has a place in both the research function and the technology transfer system. He must understand the basics of field testing procedures and must be equally at home with practical communication techniques for dealing with farmers.

The specialist will draw heavily on the resources of the international centers to develop the training programs which are needed. The first generation of trainees probably should be participants in production training courses offered at the centers. This will help to develop a training cadre which would subsequently provide similar training within Nepal.

In the meantime, the specialist and the training system which he helps to organize will be expected to make a direct contribution to the research program quite apart from that which the individual agents will make when they have completed their training and returned to their posts. The specialist must work closely with research scientists and be fully conversant with the research results. He must study the existing farming systems as he, along with his trainees, takes steps to introduce new techniques into them.

7. Maize or Other Crop Breeder

Breeding shares with agronomy the responsibility of devising suitable packages of technology which can be placed in the hands of the farmers to increase production. Varietal improvement in maize has been under way for some time and it may be that additional assistance in maize breeding will not be required in the early phases of the project or not at all. At the end of the first year of the project, progress will be evaluated and a decision made then as to whether to bring a maize breeder into the project or not.

In the past, major emphasis in varietal improvement has been toward the Terai where only 40% of the maize is grown. Because of the cropping pattern in the hills where maize occurs as only one crop in the mixed cropping system and where soil conditions may demand tolerance to different stresses, such as acidity and aluminum toxicity, the selection criteria would probably need to be changed. This would demand specific breeding centers which could effectively enable selection of genotypes which could be suited to these conditions of crop culture. This offers to the breeders a distinctly different set of problems than may occur in the Terai and for which different varieties will need to be developed.

If the maize breeder is not required, a sorghum breeder or other expert will be added to the staff as required to produce a good, well balanced team able to work on all of the cereals within the agricultural systems of the country.

This man would especially focus on hill problems as they relate to corn, sorghum, the other cereals and the edible legumes, working to improve the available varieties so that they will fit better in small farmer agriculture.

If it is decided to bring a maize breeder into the project, he will work mainly in the hills and on problems facing the small farmers there. This would include the development of varieties having the following characteristics: short season, cold resistant, aluminum toxicity tolerant, disease tolerant or resistant, long husk cover, high yield, strong stalks, insect resistant or tolerant, good milling quality and other desirable characteristics as established by the farmers and their families.

8. Consultancies

Consultancy time has been provided to enable the rounding off of an integrated cereals program. This will mean that consultants may be needed in a number of areas of specialization.

Experiment station development has been under way for several years in various locations. Some additional help may be needed for field layout, terracing, drainage, etc. Machinery from past programs has been acquired. The provision of consultancy time which would organize the equipment repair and maintenance service divisions of the research stations could increase the effective use of the equipment available and yet to be acquired.

The multi-disciplined approach to cereal improvement is well founded in concept and experience. The implementation of the concept, in view of limited resources, will demand consultancy time in some of the other disciplines such as soil science, entomology, plant pathology, water management, agricultural engineering etc.

The seed program is expected to form an important part of the integrated cereals program by serving as a vehicle to take new varieties and technologies to the farmer. The program will be initiated and a new seed project developed by the AIC and short term consultants supplied under this project.

Given the complexity and large number of the farming systems used in Nepal and their importance to the farmers, they must be evaluated which will require specialists in a variety of disciplines as well as other crop specialists who can contribute to the identification of limiting factors of the non cereal crops in the system. Too, the economist may well find that he needs to involve additional economic expertise in order to construct experiments to get adequate data on the constraints to increased agricultural production.

Since cereal production is only one facet of agricultural production and the farming systems of Nepal, an overview of all production may be needed and past research and development efforts in agriculture may need to be reviewed.

9. Division of Time

It is expected that the members of the research team will focus much of their activity on the problems of the hill farmers. Following is the anticipated allocation of effort expected. It should be noted that since most of the wheat is grown in the Terai, this individual will devote most of his time to problems of this area. However, the other experts will divide their time equally between the two areas or focus mostly on the hills.

	<u>Hills</u>	<u>Terai</u>
Wheat Agronomist	25%	75%
Maize Agronomist	50%	50%
Rice Breeder	50%	50%
Multi-Crop Agronomist	90%	10%
Agricultural Economist	90%	10%
Production Agronomist	75%	25%
Maize Breeder	75%	25%
Consultants	<u>80%</u>	<u>20%</u>
Average	66.9%	33.1%

Therefore we expect at least two thirds of the team's collective effort to be spent in studying and solving the problems of the hill farmers.

10. Production Specialists (PCVs)

Four Production Specialists will be supplied by the Peace Corps for this project. These specialists should have a Master of Science degree in agronomy and they will work with the Regional Agricultural Development Officers. They will come to Nepal about January or February 1977 for approximately two months of orientation, language training and to familiarize themselves with agriculture in Nepal. They will then go to CIMMYT and IRRI for 3 to 4 months

of training in these research centers.

They are then to return to Nepal. First they will spend some time at the coordinated stations, reviewing the research program under way and helping the research personnel prepare tentative lists of contents for the research kits and the necessary instructions for them. As soon as these details are agreed upon by the Coordinators and the Regional Directors, the production specialists will return to their regions and begin training the Crop Specialists and other JTs and JTAs in the region. This training will involve instruction on how to conduct research, how to select farmer cooperators, how to use the research kits, how to analyze the data so that tentative conclusions can be communicated to the participators immediately, how to keep records on the research and how to send the raw data to the coordinators for final analysis.

These specialists, in company with the crop specialist will return to each coordinated station at least once or twice each year to catch up on new technology being developed and to help revise the research program to better meet the needs of the farmers in conjunction with the farmers themselves, the regional officers and the research officers. In this way, the PCV production specialists and the crop specialists will help to (1) carry research down to the farmers and (2) bring questions and problems from the farmers to the research officers at the experiment farms and (3) serve as trainers of the JTAs and JTs in conducting and reporting research being done on the rural area. It is expected that these PCVs working in the rural areas in how to conduct research trials on the farmers' land. They will also conduct courses for Vocational Agriculture Teachers, if they are interested.

It is expected these four production specialists will spend 80% of their time on working in the regions. We expect that about 60% of this time would be spent working in the hills on farmer's agricultural problems and the other 40% will be spent in the terai.

The balance of their time will be spend working at the coordinators and other experiment stations.

RUPEE - FINANCED SUPPLEMENTAL INPUTS

I. Relation to Technical Assistance

The rupee - financed supplementary inputs described in this project paper (and summarized in the table below) are designed to support and complement the technical assistance efforts in adaptive research that form the core of the project design. To a considerable extent, the rupee - financed inputs are directly complementary to dollar - financed commodity procurement.

Numerous illustrations of this principle of complementarity can be given.

1. The pilot seed plant will serve as a tool for developing experience in: techniques of seed production; methods of seed supply (in particular, control/dissemination of foundation seed, and contracting with seed producers); effective demand for pure, improved seed (including estimates of price elasticity); seed transport; on-farm storage of seed; secondary (farmer-to-farmer) distribution of improved seed; establishment of seed standards; the feasibility of vegetable and edible legume seed production. Considerable information is essential to the final design of a follow-on seed production activity. Furthermore, without a good program for producing, distributing and storing improved seed, the value of the activity proposed in this project paper is considerably reduced: The individual, improved seed variety is the initial, crucial input to most improved - farming systems.

2. Small seed units on the three research farms, used to clean and dry foundation seed produced on and around the farms, are vital to any long-term research program. In addition, facilities for long term storage of up to 50 tons of foundation seed are included in each of the three small, on-farm seed units. Without such a complex, seed cannot be stored for more than a year (and often, for a considerably shorter period). Scarce land and skills would have to be used in continually reproducing and maintaining genetic strains that could otherwise be safely stored for years. During periods when not used for research - farm needs, the small units could be used to process seed brought by neighboring farmers.

3. Small storage units in the hills are included in order to facilitate the task of seed distribution and to improve the efficiency of outlaying stations where much of the adaptive research effort will be concentrated. The units will have areas for storage of seed, fertilizers and pesticide, and farm implements. Storage of oil and oil-based products near fertilizer will not be permitted. Each unit will be located at an existing government research station, each of which at present does not have appropriate storage available. For example, at Kakani one room is available in which both seed and fertilizer may be stored: Moisture from the fertilizer contaminates the seed.

4. At present, the three research farms which double as centers for the three major cereals coordinated programs have only makeshift facilities for the maintenance and simple repair of farm machinery. (Major repairs are undertaken in the Kathmandu Valley or in Birgunj.) For example, the Parwanipur Farm has nine tractors, five threshers, vehicles, seed and lab equipment, etc. but no contiguous, enclosed area for placement of repair equipment and performance of maintenance tasks. A number of small locations are identified as maintenance/repair areas on an ad hoc basis. Available repair equipment at the three farms is inadequate, outdated, and has suffered the effects of improper storage and handling. Financial support to upgrade the stations' repair facilities and equipment constitute a rupee expenditure complementary both to dollar commodity procurement (for example, in repair of vehicles and lab equipment) and to other rupee expenditures (for example, in repair of seed house facilities).

5. Additional space for laboratories, offices and staff housing is required at Parwanipur, Rampur and Bhairawa. Parwanipur is by far the best developed, while Bhairawa is somewhat less developed than Rampur. Thus, construction at the stations will not be of identical units (except for staff quarters). At Parwanipur, a second floor will be added to the existing lab facility and office facilities will be added on to an existing building, while at Rampur a new office/laboratory facility will be constructed for the Coordinated National Maize Program, allowing the existing small office facility to revert to staff of the research station. A somewhat smaller facility will be built on the Bhairawa Farm. Construction of laboratory, office and housing facilities will be implemented as an integral part of the Integrated Cereals Project, directly in support of contract team members and the coordinated cereals programs.

SUMMARY TABLE

Rupee - Financed Supplemental Inputs

(\$'000 equivalents)

I. Equipment		
1. Pilot Seed Plant		\$ 50,000
2. Foundation seed Plants (3)		50,000
3. Maintenance/repair Workshops (3)		<u>100,000</u>
		200,000
II. Civil Construction		
1. Hill Storage (6)		68,200
2. Research Stations		
A. Bhairawa		(172,600)
i. Office/laboratory		
ii. Staff quarters (2)		
iii. Advisor's quarter		
iv. Foundation seed plant		
v. Workshop		
vi. Working shed		
vii. Trainee accommodation/ lecture hall		
B. Rampur		(62, 100)
i. Foundation seed plant		
ii. Staff quarter		
iii. Officer quarter		
iv. Workshop		
C. Parwanipur		(108,600)
i. Threshing floor with shed		
ii. Office/laboratory additions		
iii. Foundation seed plant		
iv. Storage		
v. Workshop		
	Sub-total research stations	\$343,300

3. Pilot seed plant	<u>52,200</u>
Total, civil construction	413,700
III. Research station improvements	
1. Bhairawa (land leveling, irrigation and drainage)	16,070
2. Rampur (underground pipeline and electrical system)	<u>7,230</u>
	23,300
IV. Contract support ^{1/}	330,000
V. Research/demonstration kits ^{2/}	735,000
VI. Social science research ^{3/}	<u>50,000</u>
Total	\$ 1,802,000

- 1/ See pages 29-30
2/ See pages 31
3/ See pages 31-32

Note: Total program under items I, II and III above by location as follows (\$000 equiv.):

Bhairawa	233,900
Rampur	114,600
Parwanipur	168,100
Far West Plant	102,200

II. Civil Construction

It is planned that all rupee - financed supplemental inputs will be obligated during fiscal years 1977, 1978 and 1979.

FY 1977	Rs 2,148,000
FY 1978	2,551,000
FY 1979	1,364,000
Total	Rs. 6,063,000 (\$487,000 equivalent)

Because contract team members' inputs to the technical planning process will not be available during the FY 77 HMG budgeting cycle (February - May 1976), only simple construction activities are programmed for FY 1977. Thus, office and laboratory and residential construction makes up most of the FY 77 program. Daman and Dhankuta both are located high up the first major ridge delimiting the Terai plains from the hills. They are initial sites chosen for construction of simple storage units because their locations make them good transshipment points between the research farms in the Terai and farmers in the hills, and because their altitude means lower temperatures and therefore, better seed storage conditions.

FY 1977 Construction

- I. Bhairawa
 - A. Office/laboratory building (9,100)*
 - B. Building to quarter four staff-families (2,000)
 - C. Advisor's quarter (1,800)
- II. Rampur
 - A. Completion of underground pipeline
 - B. Upgrading of electrical system
- III. Parwanipur
 - A. Threshing floor with shed (7,500)
 - B. Office/laboratory additions (6,600)
- IV. Storage (seed, fertilizer/pesticide, implements)
 - A. Daman (1,200)
 - B. Dhankuta (1,200)

Estimated FY 1977 obligation - Rs.2,148,000 N.C.

Nearly the whole of FY 77 will have been available for planning the detailed technical work associated with seed mill and long-term seed storage construction. In FY 1978, emphasis will be placed upon

* Indicative square footage given after each building.

construction of the three small seed mills on the research farms and the pilot seed plant in the Far Western Development Region. Further civil construction will be planned for the three national crop coordination centers, and two more storage units will be planned for construction in the hills.

FY 1978 Construction

- I. Bhairawa
 - A. Small seed processing unit* (3,100)
 - B. Working shed (1,500)
 - C. Completion irrigation and drainage structures
 - D. Land leveling
- II. Rampur
 - A. Small seed processing unit* (3,100)
 - B. Building to quarter 4 staff families (2,000)
- III. Parwanipur
 - A. Small seed processing unit* (3,100)
 - B. Storage (1,000; farmer's seed, fertilizer/pesticide, implements)
- IV. Storage (seed, fertilizer/pesticide, implements)
 - A. Kakani (600)
 - B. Doti (600)
- V. Far West Experimental Seed Plant* (5,000)

In FY 1979, remaining construction activities, such as staff quarters and workshops will be undertaken at each coordinated crop center along with completion of the remaining two hill - storage facilities.

*Budget excludes equipment (see sections III B and C below)
Estimated FY 1978 obligation - Rs.2,551,000 N.C.

FY 1979 Construction

I. Bhairawa

- A. Workshop Building (1,100)
- B. Building to quarter 4 staff families (2,000)
- C. Trainee accommodations/lecture hall (3,500)

II. Rampur

- A. Workshop Building (1,100)
- B. Officer's quarter (1,000)

III. Parwanipur

Workshop Building (1,700)

IV. Storage (seed, fertilizer/pesticide, implements)

- A. Jumla (600)
- B. Jiri (600)

Estimated FY 1979 obligation - NRs. 1,364,000

Obligation of rupee funds to supplement the project's technical assistance activities should be completed within three years, with all actual construction completed within five years. The obligation projections should not be made in final detail at this time, inasmuch as technical input from the contract team as to precise space and equipment requirements is desired by USAID and HMG before final designs and specifications are completed.

Estimates of obligations for civil construction given above were worked out in close consultation with Nepalese authorities, starting with a listing of priority requirements by the appropriate line officers. Commonly accepted cost factors for labor and materials (incorporating an adjustment for anticipated inflation) were applied to estimated square footage requirements, derived with the use of the attached line diagrams of standard Department of Agriculture facilities. Estimates of costs to complete land leveling and the water management system at Bhairawa, and to complete the pipeline and electrical system at Rampur were derived from joint USAID/HMG experience in developing these farms under the Food Grain Technology Project.

Standard cost factors used are as follows (NRs. square foot):

1. Simple shed erected in Terai - 50
2. Simple storage construction:

- A. In Terai - 90

- | | |
|----------------------------|-------|
| B. In hills on/near road | - 110 |
| C. In hills without road | - 150 |
| D. In very remote area | - 200 |
| E. To make space airtight* | - 100 |
3. Nepalese quarters - 100

* Each of the six storage units is to have an area approximately 15' x 20' made airtight for seed storage (additive requirement).

- | | |
|---------------------------------|-------|
| 4. Expatriate advisor's quarter | - 110 |
| 5. Office space | - 100 |

Incorporated into the contract - funding Project Agreement will be a Government of Nepal agreement to bear all costs of construction which exceed estimates made following preparation of final drawings (final cost estimates). Estimates of final costs will be developed in context of HMG/USAID/contractor evaluations of supplemental requirements (see implementation section).

III. Equipment Procurement

A. Workshops

Detailed requirements will be established by HMG in cooperation with the contract team prior to procurement of equipment for the workshops to be upgraded at the Rampur, Parwanipur and Bhairawa farms. Procurement will be undertaken only after USAID has approved the equipment lists. For programming purposes, a sum of NRs.1,245,000 (\$US 100,000 equivalent) is earmarked for workshop equipment.

B. Foundation Seed Plants

These three foundation seed houses will be built at the Bhairawa, Parwanipur and Rampur stations for the primary purpose of helping the coordinators produce, process and store foundation seed. They will be capable of drying seed at the rate of three to six tons per day depending upon its condition. Most wheat and rice seed will require very little drying at harvest although most maize seed will need some supplementary drying. All carryover maize and wheat seed will likely require some drying (down to 8% H₂O) prior to being put in long term storage.

It is estimated that 100 to 150 MT of Foundation Seed will be produced on each of the three stations each year, half of which would be carried over to the next year in the air conditioned portion of the warehouse.

The balance of the processing and storage capacity would be utilized in processing and storing seed produced by good farmers for sale to other farmers through the A.I.C. All seed would be produced and processed under the general supervision of the coordinator's office.

It should be noted that the above plant would have a total bag storage capacity of about 180M.T., about 100 M.T. of bulk storage and 50 M.T. of dehumidified storage space (bag storage).

Seed Houses - Small, for each Coordinated Station Local Construction

Processing Area - Standard one

Floor plan Warehouse type with electricity installed

Dehumidified area 400 sq. ft. x 200 Rs./sq. ft	=	\$6,400
Processing area 1,200 x 100 Rs./sq. ft	=	9,600
Bag storage area 1,200 x 75 Rs./sq. ft	=	7,200
Dust collectors - 2 ea @ \$300 ea	=	600
Holding bins - 2 each roof top @ \$800 ea	=	1,600
Site preparation	=	1,000
Shipping area and office 300 sq. ft. x 150Rs/sq.ft.	=	<u>3,600</u>

Total cost - Construction \$30,000

Equipment & Supplies

Equipment for each plant	Price
Seed cleaner	\$ 2,000
Moisture meter	180
Seed triers - 3 each	70
Grain dockage sieves	100
Seed germinator	500
Seed treater	900
platform scales	300
Elevators 2 each	1,120
Bag trucks 4 wheel - 2 each	420
Bag trucks 2 wheel - 2 each	200
Sewing machine	680
Air conditioners - 2 each	2,200

Misc. equipment - goggles, respirators, scoops, bag holders	340
Supplies - tiers, pesticides, thread, seed treatment etc.	400
Length grader	2,000
Steel grain bin w/slotted floor	1,800
Drier, oil fired portable 500,000 BTU 7½ HP motor	<u>1,200</u>
Total cost	14,410
Freight from India @ 15%	<u>2,160</u>
Total equipment	16,570 say \$16,600
Total cost of each seed house	\$46,600

C. Pilot Seed Plant

The experimental seed plant will be built in the Far West Development Region (see map, page 7). The Far West, while being less endowed in respect to agricultural resources than the other regions, is by far the best endowed area for seed production of the cereals, the edible legumes and most vegetables. In other words, if the country is to have an economical and secure seed production system, it will be founded on an irrigation-based agriculture in the dry, high valleys of the Far West.

The plant will essentially be a temporary installation to be used to test seed production procedures and practices. As soon as the seed industry is established in the Far West, it is expected that this equipment would be moved to a new site and would be replaced with larger equipment and a new seed house - the house built under this project then being used for permanent storage.

The installation proposed in this project would be able to dry 6 to 12 tons of farm seed per day and the seed cleaner would clean 3 to 5 tons of seed per hour. Up to 210 tons of bagged seed could be stored in the bag storage area, 50 tons in the shipping area and 120 M.T. in the dehumidified area, while 200 tons of bulk seed could be handled in the processing area and up to 45 M.T. in the drier bins.

Freight from India @ 15% of cost	\$6,240
Total	47,840
Contingencies - spouts, fittings etc.	<u>2,160</u>
Total cost of equipment	50,000
Total - Experimental seed house	\$102,000

IV. Financial Procedures

It is intended that all rupee - financed construction and procurement of goods and services under this project will be reflected in the regular, annual budgets of the Government of Nepal. To this end, each February - March representatives of HMG, AID and the contractor will develop a careful estimate of the coming fiscal year's rupee disbursements for project - specific procurement of construction services and materials and of equipment. The budget must be approved in the Ministry of Finance and by the Rastraya Panchayat (national legislature). Following these approvals, rupee funds for construction and commodity procurement will be obligated under Project Agreements (to be executed in October 1976, October 1977 and October 1978).

Each project agreement will incorporate an annual budget giving estimated activity expenditures by quarter. Each project agreement will require HMG to submit detailed commodity lists (prepared with the assistance of the contractor) as well as schematic drawings and estimated costs with the first request for release of funds. Upon receipt of the request for release, and following review and approval by A.I.D. of the commodity lists, drawings, and estimated costs, A.I.D. will advance sufficient funds to HMG to cover estimated costs for the first two quarters. The project agreement will require HMG to submit a detailed expenditure report for the first two quarters and documentation supporting those expenditures before the second release, which will cover the two remaining quarters of the fiscal year, will be made by USAID. The second request for release of funds to finance the remaining two quarter's estimated project costs will be supported by a detailed budget of estimated costs for the two quarters and such additional lists, drawings and cost estimates as may be required to substantiate the estimate.

Construction standards will be very basic and consist primarily of bricks and mortar. The Division of Agriculture Engineering in the Department of Agriculture maintains standardized designs for most of the construction elements and these designs have been used for many of the existing facilities. These designs will be reviewed for

adequacy for the new proposed activities and once a design and estimated cost has been approved by A.I.D., the design will not have to be approved again (unless substantially modified). It is expected that the Department of Agriculture will contract with a local A&E firm for the design and supervision of certain facilities such as the laboratory/office complexes and trainee accommodations for which designs do not exist at present. Construction will be performed by local contractors who will be selected by competitive bidding. A.I.D. will review and approve the designs and contractor selection before releasing funds to finance construction. Because the proposed construction, in most instances, will be replications of existing structures, of relatively unsophisticated design, built by local contractors in accordance with local standards using local materials, it is felt the design and supervision is within the capabilities of the Division of Agriculture Engineering. At present the Division has qualified and experienced engineers and each major research farm has an agricultural engineer assigned to the staff.

Because of the nature of the proposed construction activities, the minimum standards which will be utilized, the likelihood of replication of the same structure several times, and the relatively inexpensive cost of any individual structure, the Mission intends to ascertain the feasibility of utilizing the fixed cost reimbursable method for financing some of the proposed activities. Whether or not this method is suitable will be largely dependent on the ability of the Division of Agriculture Engineering to provide adequate supervision and inspection during the simultaneous construction of several facilities in many different parts of the country, some of which will be located in remote and isolated areas. Mission staff is not adequate to monitor wide - spread construction activities as consistent with the fixed - cost reimbursable method, so that, if the Division is not up to the task the method will not be employed. Regardless of the method of financing, construction carried out under this project will be monitored by USAID/Nepal staff, primarily through review of documents (schematics, final plans, progress reports, major contracts).

USAID/Nepal will exercise careful control over procurement by HMG of equipment for the workshops and four seed plants, not only through approval of procurement lists but also through approval of final procurement orders. Investigations carried out during project development confirm that most, if not all, equipment can be purchased on the Indian market. Any convertible foreign exchange costs of the workshops and seed plants will be met by the Government of Nepal. However, contractor funds might be used for very limited procurement of equipment to meet unanticipated requirements, due to the lengthy HMG procedures for acquiring foreign exchange which is not incorporated into the annual budget.

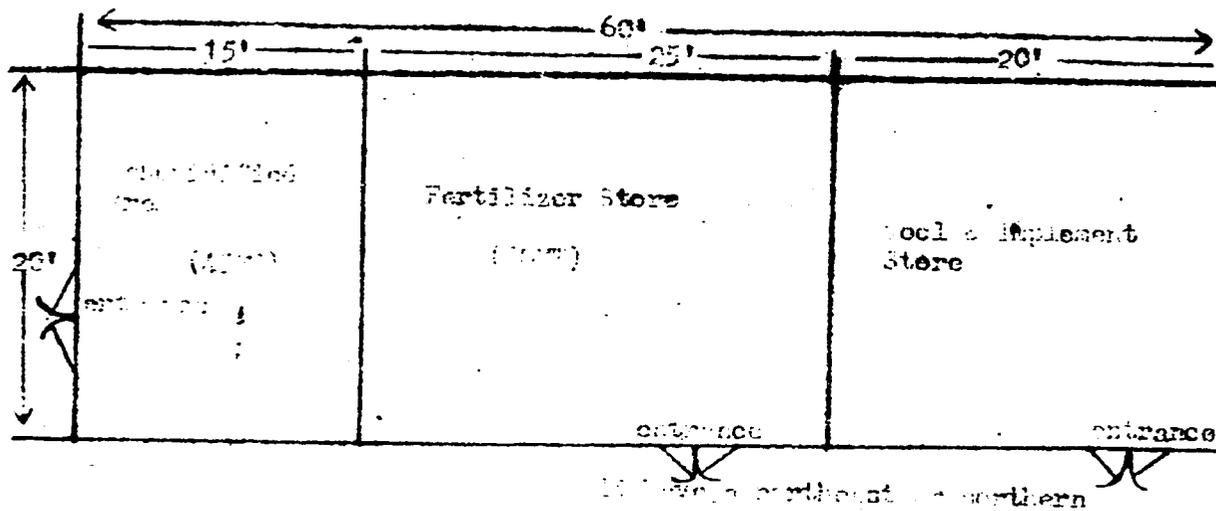
AID has made a considerable input of rupees over the years towards equipping the three research farms at Bhairawa, Parwanipur and Rampur (via the Food Grain Technology Project). Aside from contractor procurement (only with dollar funds) of commodities directly supporting contract activities (Principally vehicles and lab equipment), station requirements for equipment and supplies will be met by HMG. The exceptions, of course, are for workshops and foundation seed plants at each station, as noted above.

Obligations of dollar funds incorporated into the contract for procurement of commodities will be carried out under the general regulations of AID Handbook 11, chapter 2. Prior AID approval of contractor procurement, as usual, will not be required.

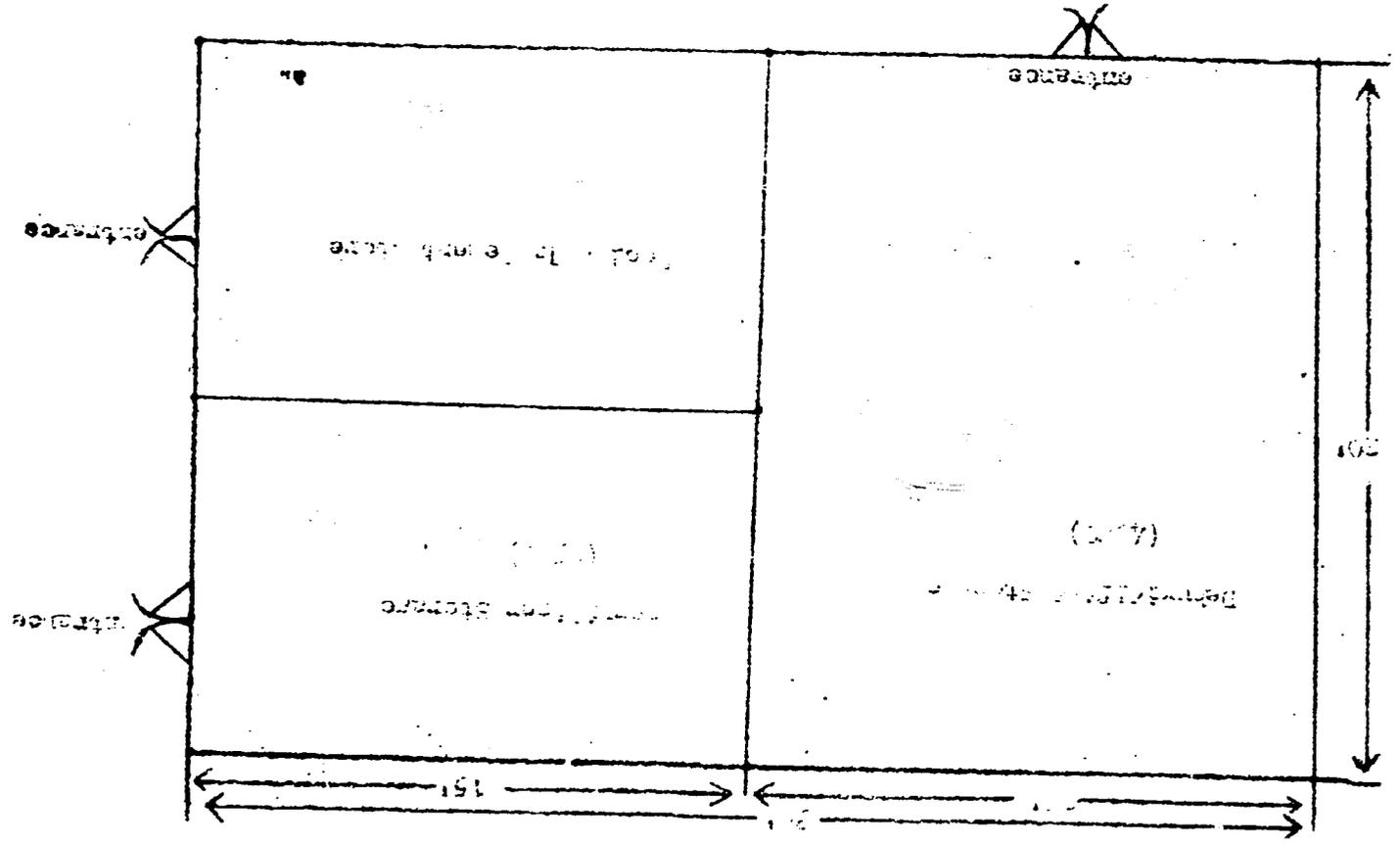
Direct USAID/Nepal procurement of goods and materials under this project will be nil. USAID/Nepal does propose to procure services directly contributing to this project for special studies (see page 30) as well as directly finance approximately two short-term participants each year. As usual, charter aircraft used by contract personnel will be contracted for directly by USAID/Nepal.

Schematic Diagram of Storage Building Type I
Bhuvan and Dhankota

scale 1" = 10'

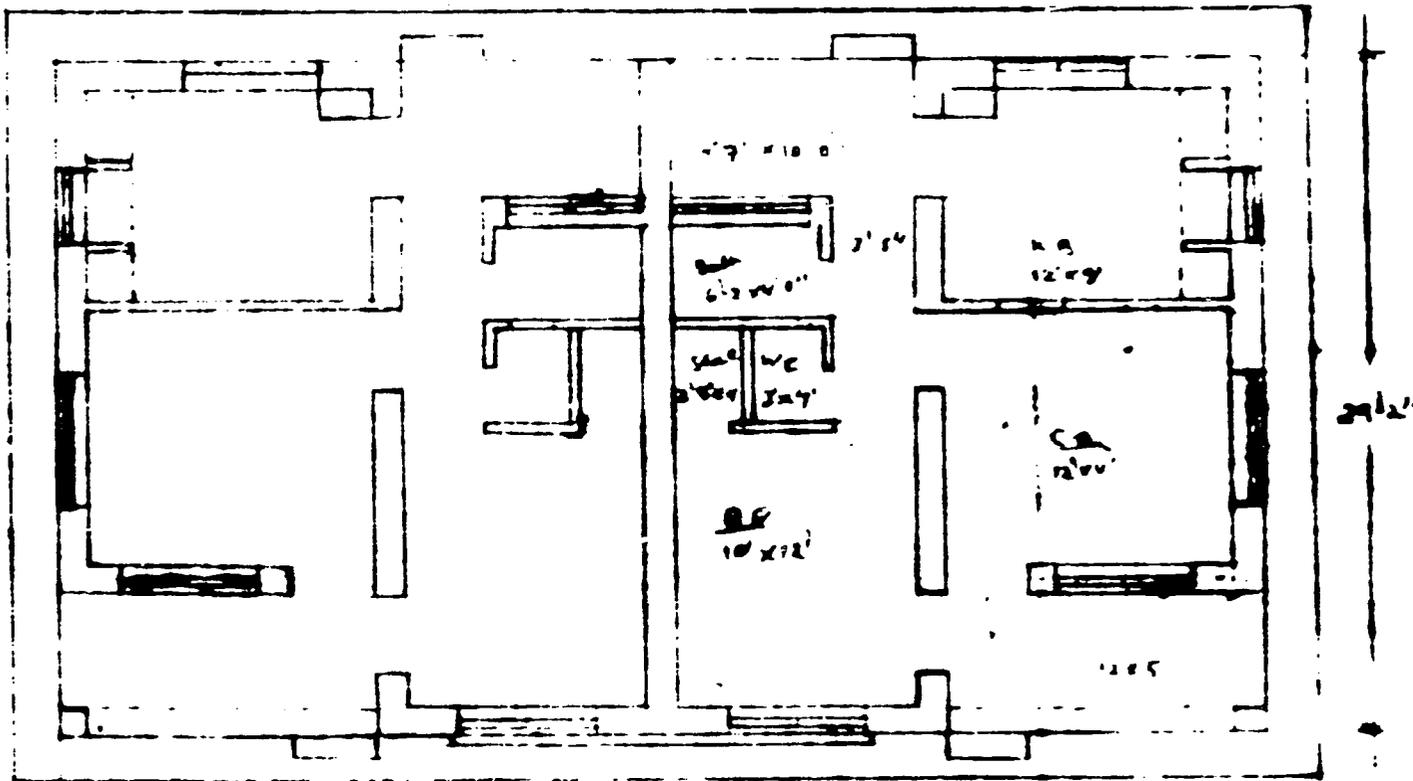


Scale 1/4" = 1'-0"



Architectural Drawing of House Plans
Date, Month, Year and Month

Plan for Typical Staff Quarters, Department of Agriculture,
Government of Nepal



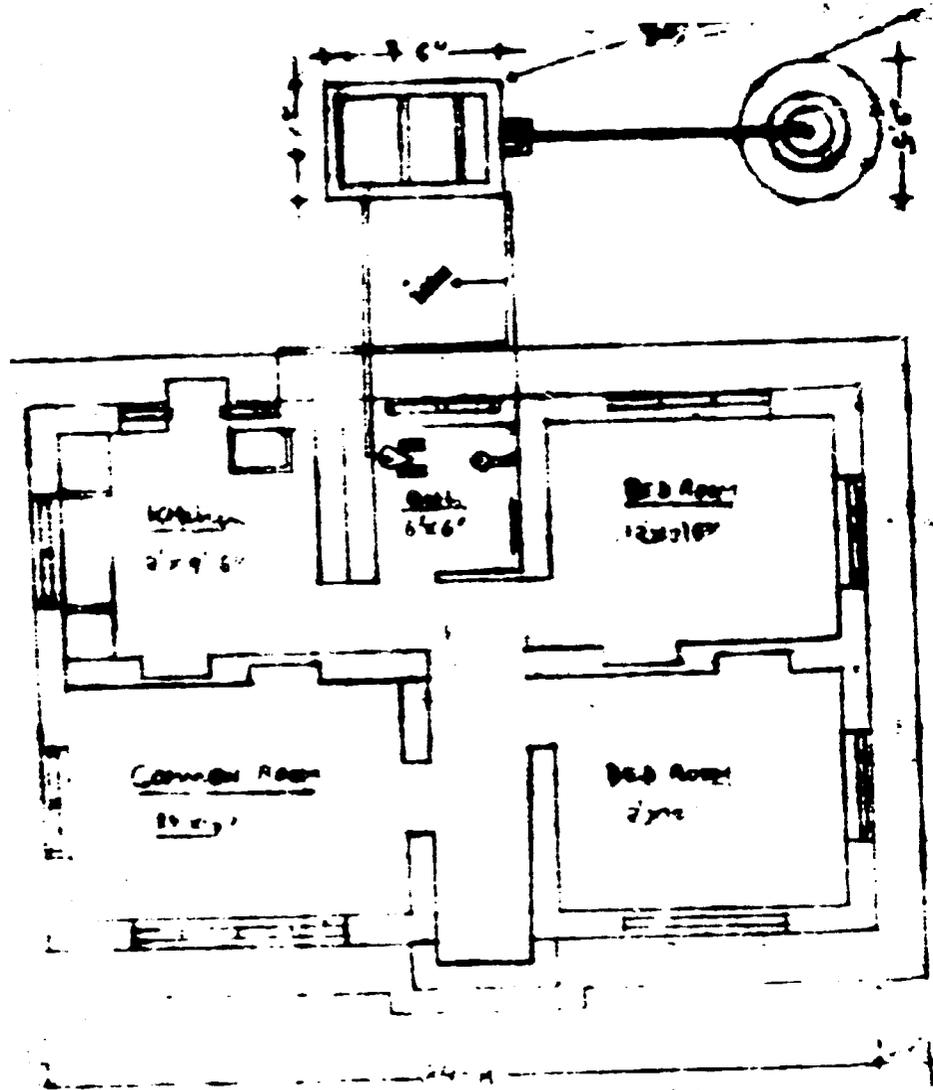
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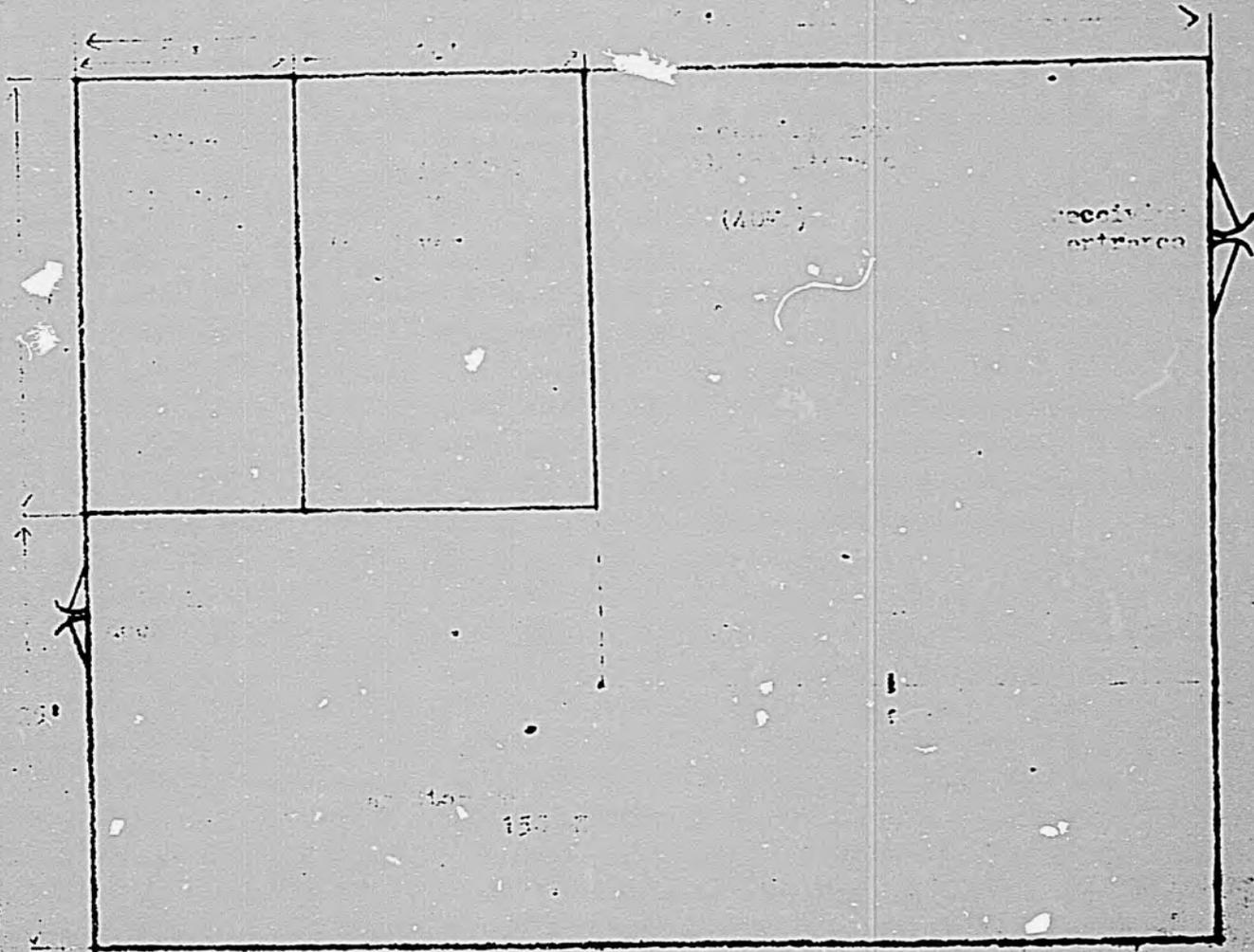
Prepared by: ASS. ARCHT. DEPT.

1955 and the type is layout
of building in the Department of Agriculture
Government of Nepal
The design is by the architect.

1955



Plan for Typical Officer's
 Quarters, Department of
 Agriculture, Government of
 Nepal



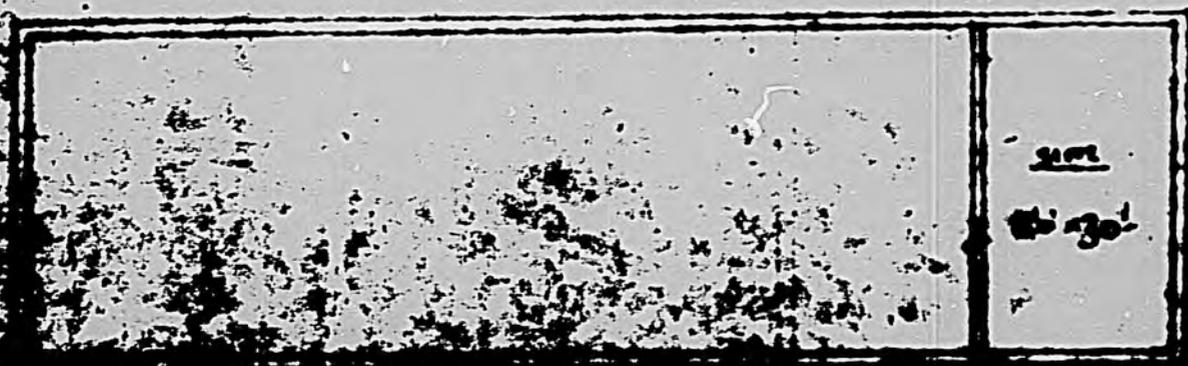
Scale 1" = 10'

plan view of [unclear] [unclear]



Scale = 1" = 10'

General Sketch for Workshop Area for the Narpur and Bhairava Research Institute

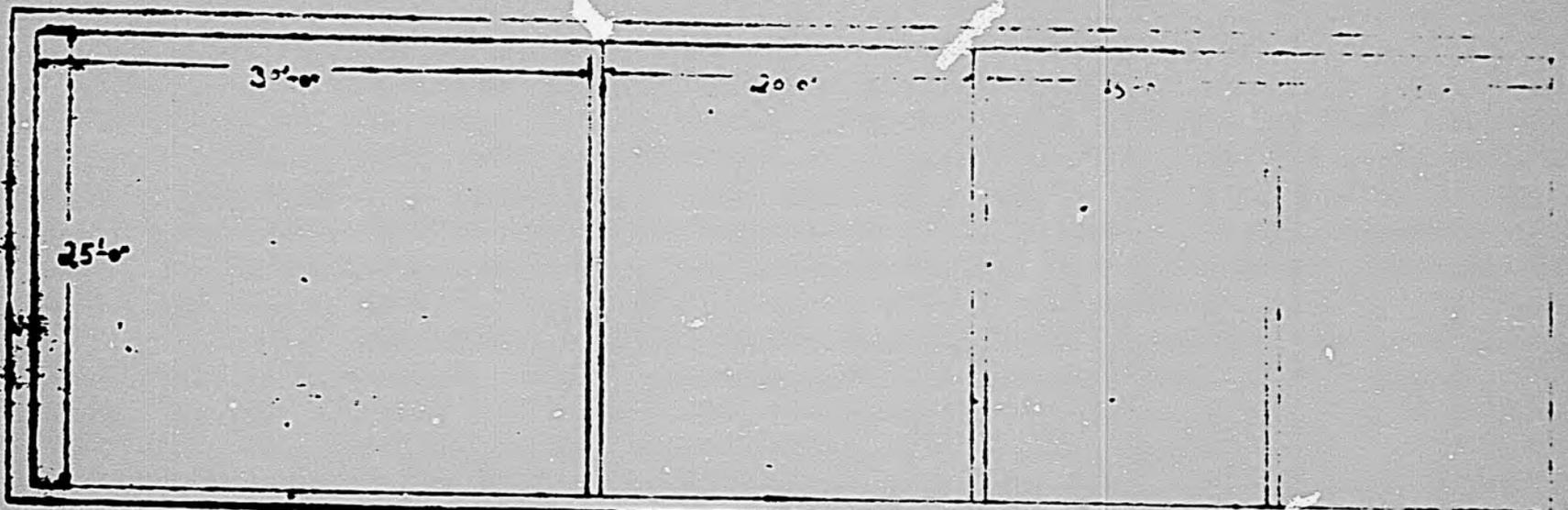


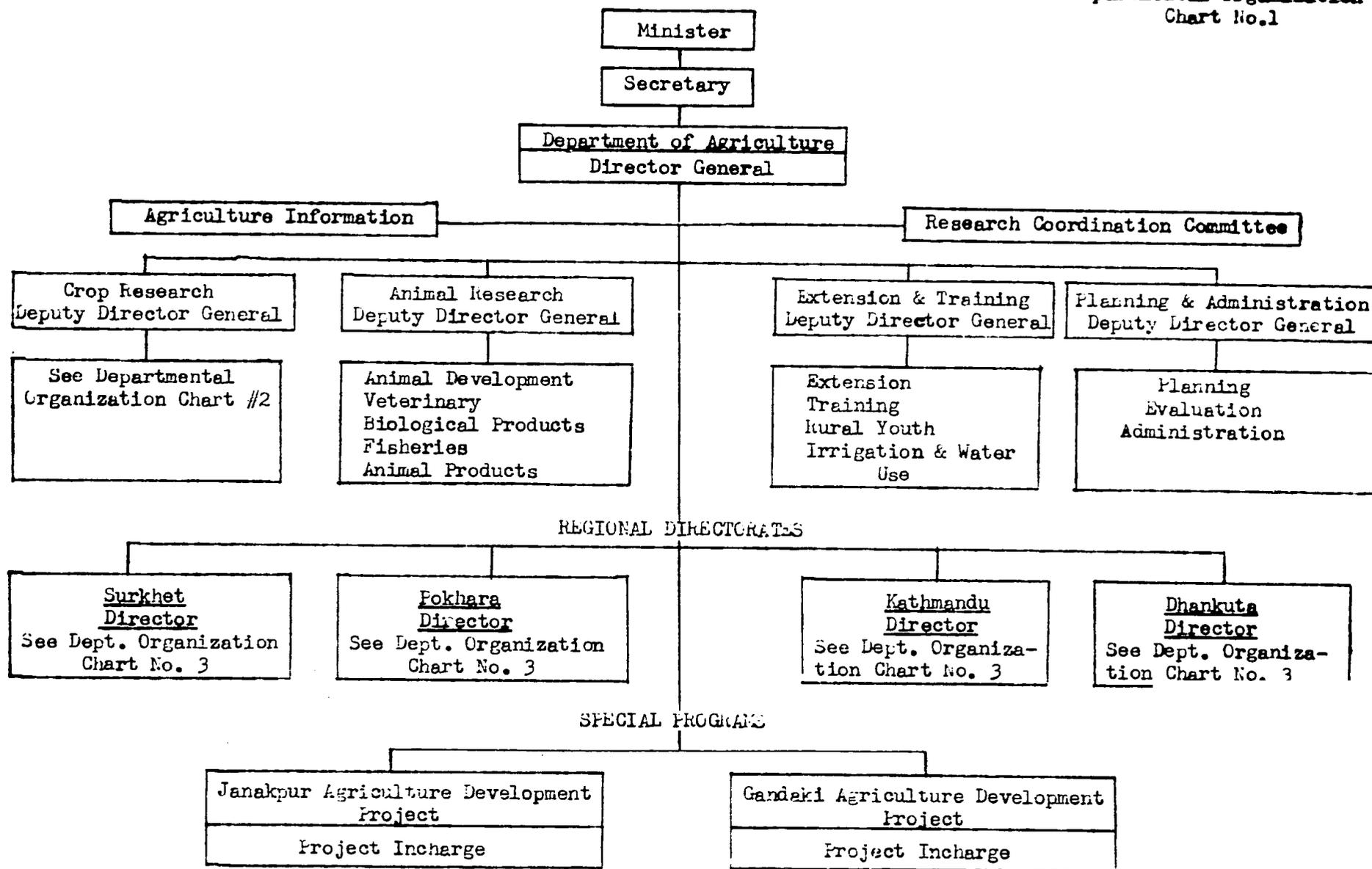
Checked by
J. P. Pradhu
Drawing

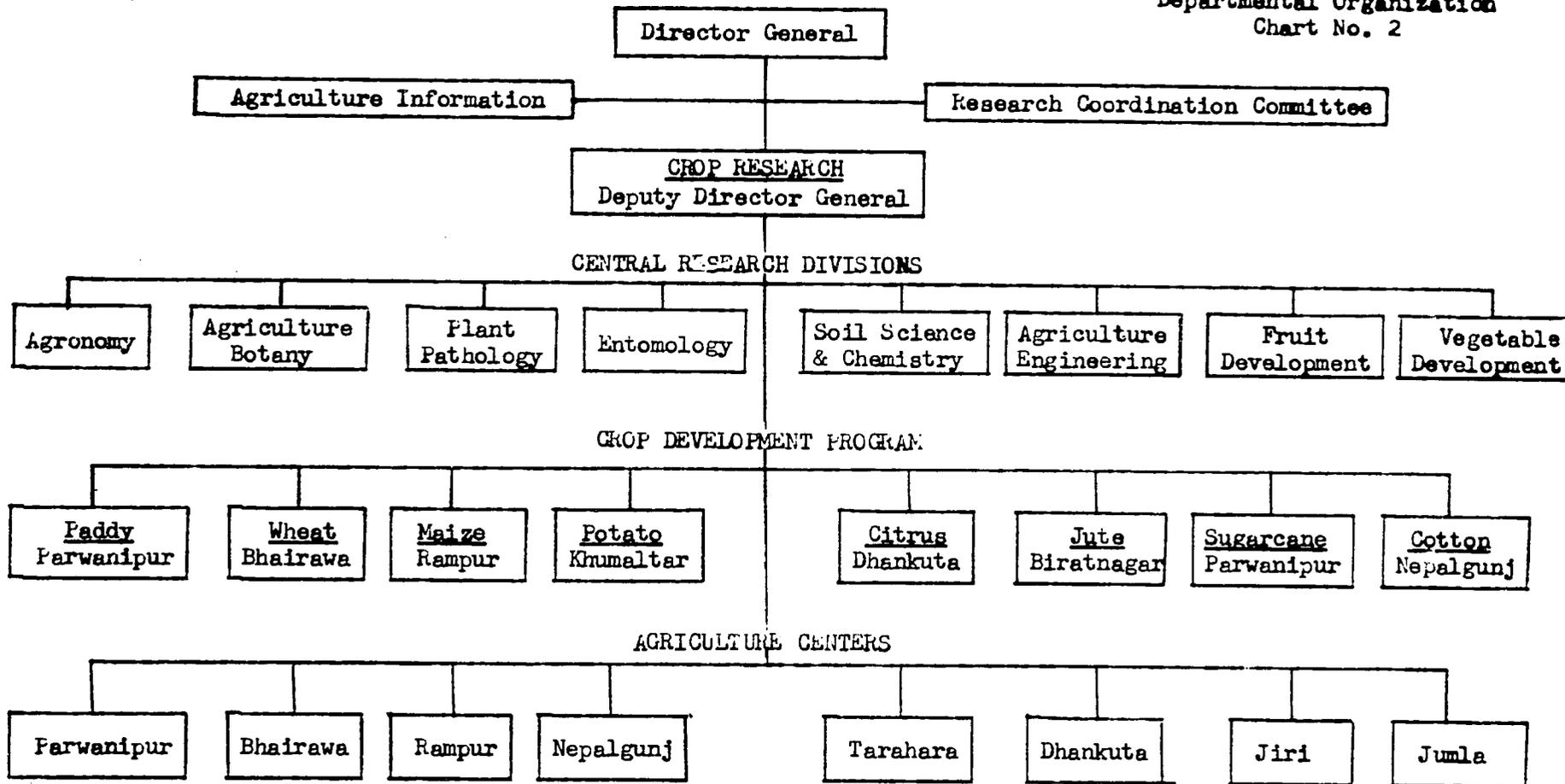
Approved by
T. B. Patil
Chief Engineer
N. S. I. R. I.
1976

R. B. Shingde

General Sketch of Main Workshop Building for Peruvian Research

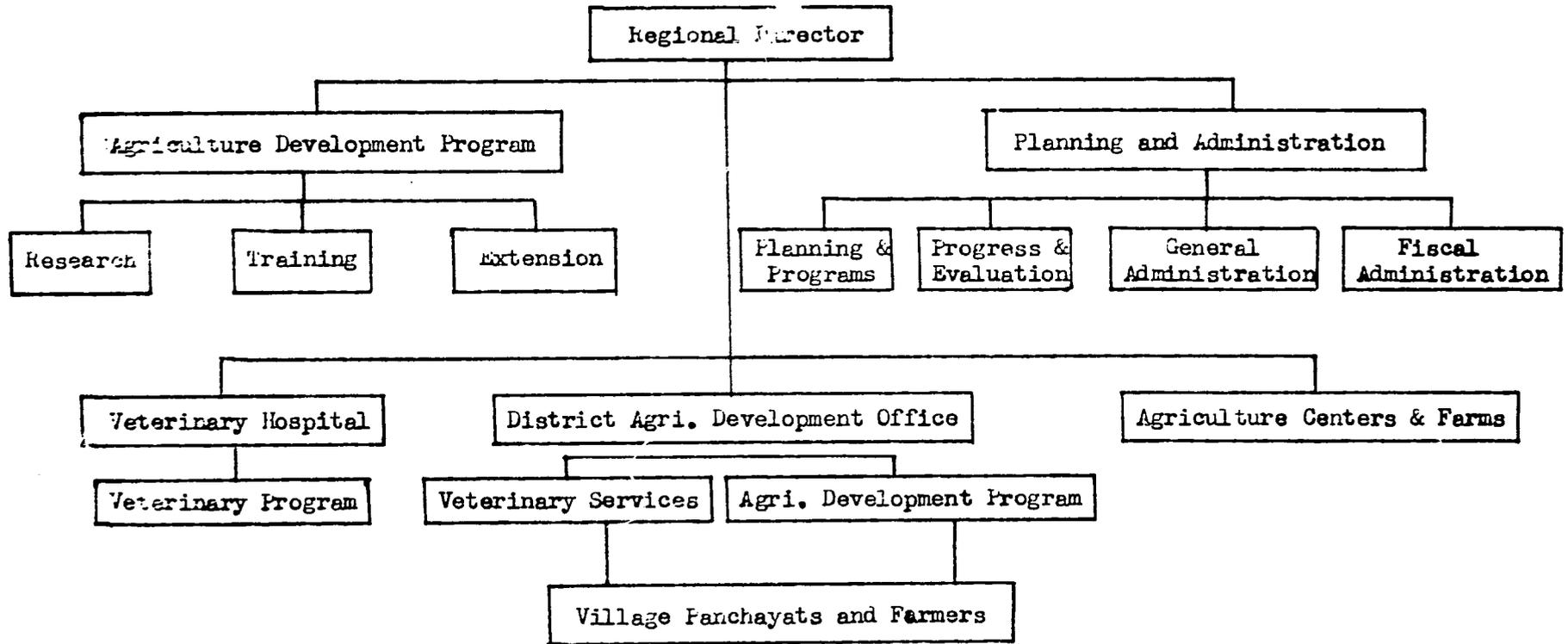


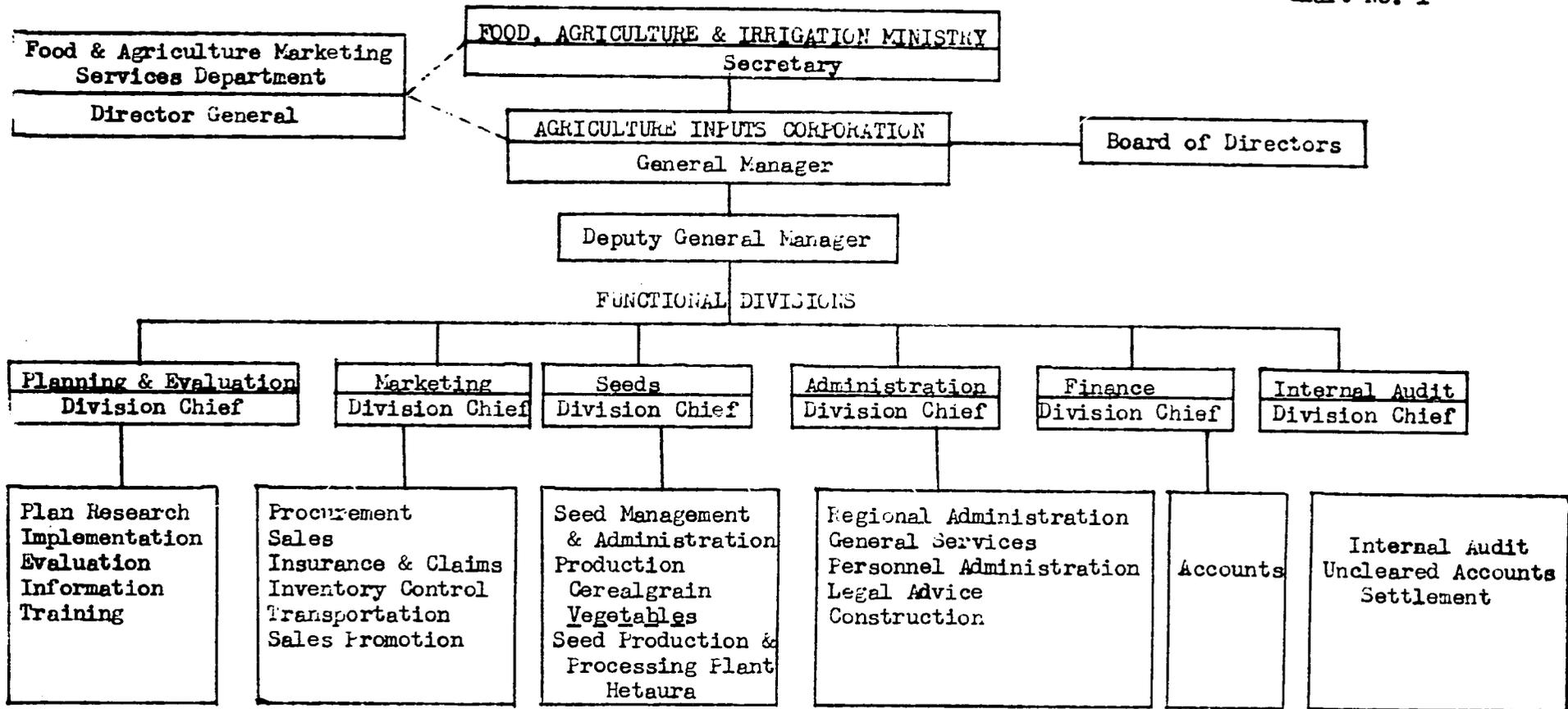




Note: All central research divisions, except Agriculture Engineering and Fruit Development, are located at Khumaltar.

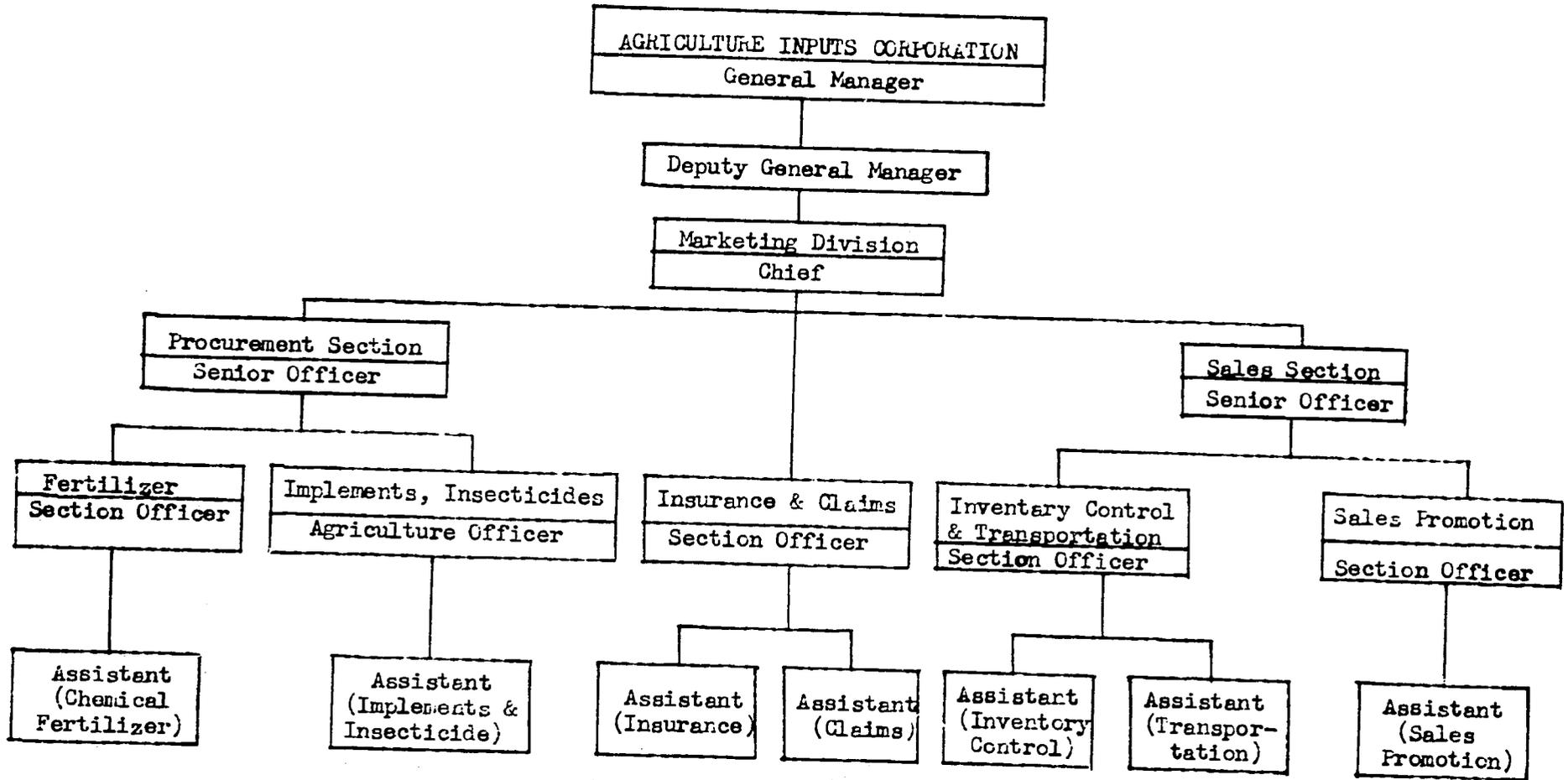
REGIONAL AGRICULTURE DIRECTORATE



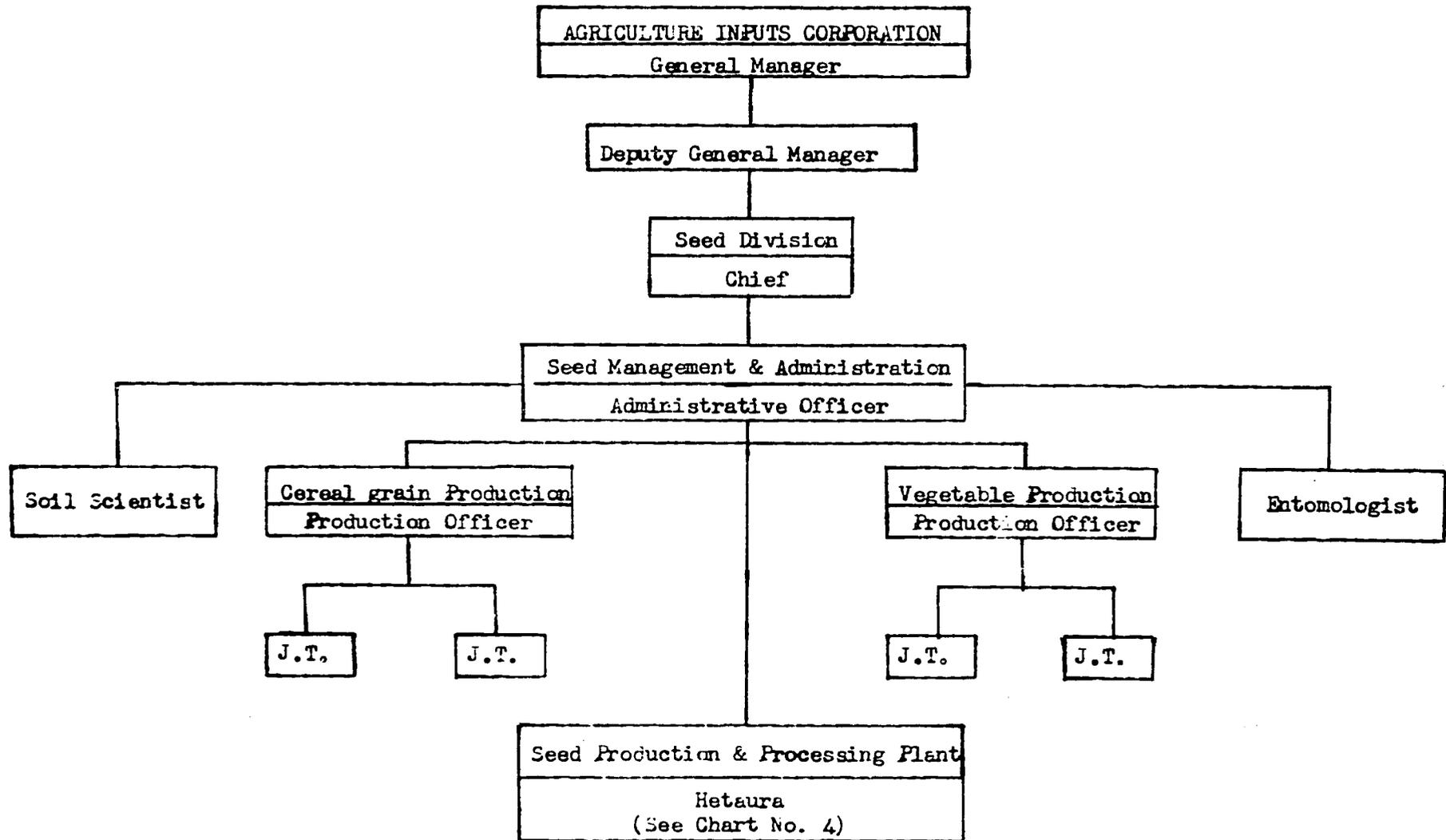


Note: Food & Agriculture Marketing Services Department Serves as liaison office between His Majesty's Government of Nepal and the Corporation.

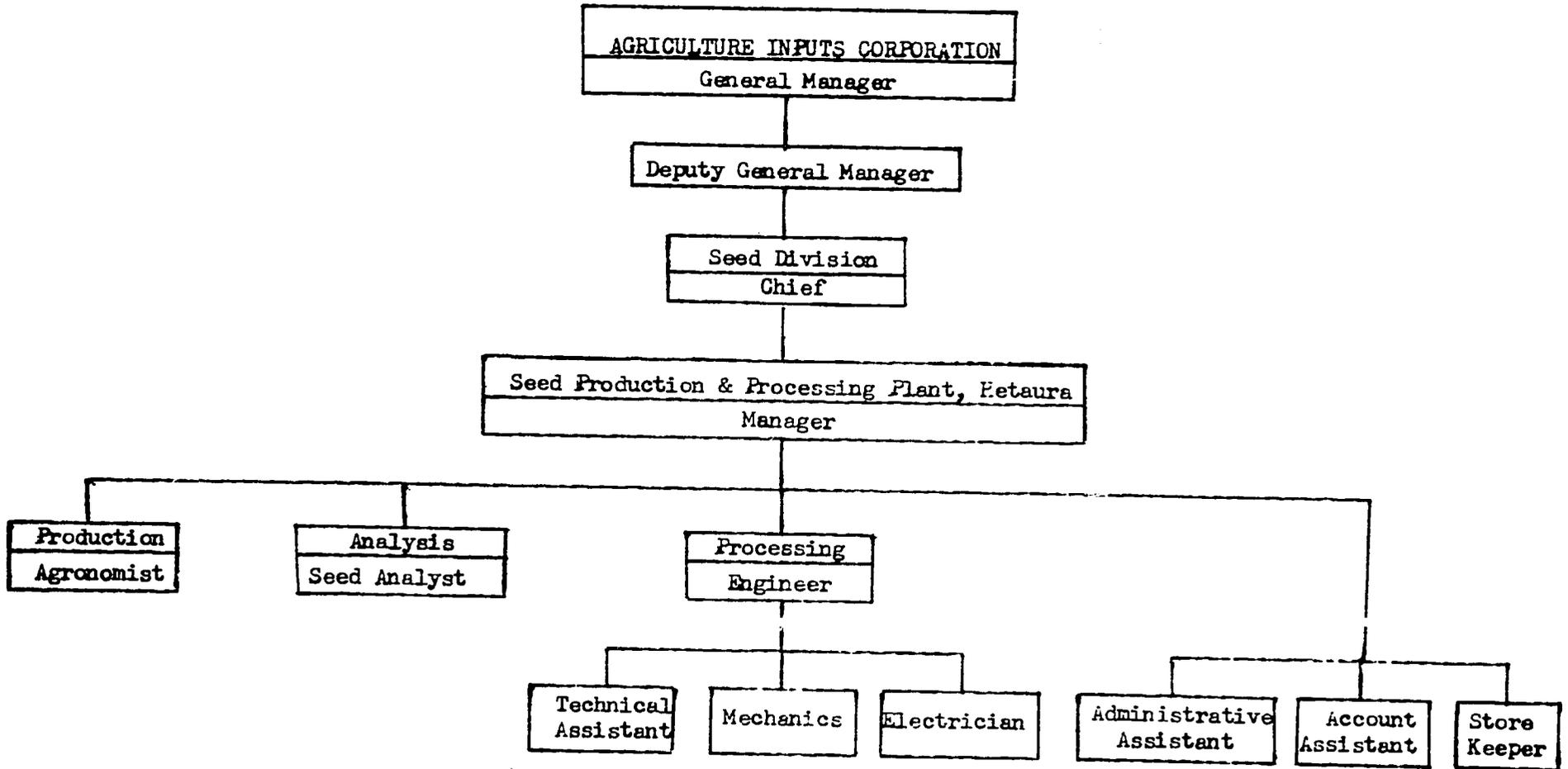
AIC Organization
Chart No. 2



Annex III
AIC Organization
Chart No. 3



USAID/AGR
4/21/76



SOLE SOURCE PROCUREMENT OF IADS

Request for Permission to Negotiate a Contract with
the International Agricultural Development Service
on the basis of "Predominant Capability":

Note: The following Justification was sent to AID/W under a memorandum, Grader to SER/GM/SD/SOD on December 5, 1975 and selection of IADS as the proposed contractor was approved and notice sent to USAID/N in State 008789, dated January 14, 1976.

JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT

Summary

I recommend that negotiation be conducted only with the International Agricultural Development Service (IADS) as an intermediary to provide the technical assistance and other services and commodities required to conduct the Integrated Cereals project in Nepal. The IADS has been set up specifically on behalf of the International Agricultural Research Institutes to serve as a negotiating-administrative agency to (A) negotiate with governments wishing to make use of the very diverse and unique crop and livestock research capabilities of the network of International Agricultural Research Institutes and to help these government plan for the best use of such services; (B) select the skills needed from the international research centers or elsewhere as available, and put them in position on the project, and (C) administer and direct the expatriate team so as to accomplish the agreed project purposes and goals.

Negotiations should be conducted with only the IADS because: (1) no other institution can provide the multiplicity of skills required, Rice, Wheat, Maize, Barley and Potato and the farming systems using them are the basic units of the projects' design; (2) no other institution is organized to provide ready access to the depth of experience represented in the various International Agricultural Research Institutes, and (3) a key element of the rationale for using the IADS has been the stress placed upon adaptive, farm oriented, agricultural research advocated by the International Agricultural Research Institutes, as opposed to the traditional tendency to compartmentalize research with very little reference to actual farming conditions.

Project Description

The purpose of the Integrated Cereals Project is to strengthen the Ministry of Food, Agriculture and Irrigation's capacity to (generate improved production technology for the major foodgrain crops and related cropping systems and (2) transfer that technology to farmers.

The project is based on a functional concept of research; i.e. outreaching adaptive research with strong linkages to the Extension Service and the farmer, both for feedback on the applicability of various technologies in order to improve research problem identification and for the promotion of acceptable technologies to increase production.

It is recognized that Nepal is a very poor country and is not presently in a position to do the basic research necessary to improve the genetic stock of the three major cereals and the minor crops grown as part of the production system. Particularly in the hills, where the most poverty-stricken farmers live, systems of intercropping and rotations are used which are found only in the Himalayan region and in a few other mountainous areas of Asia, Africa and South America.

This project is designed to test existing varieties in the farming systems used in Nepal, adapting and adopting the best ones for use by the Nepalese farmers. The farming systems used here will also be examined in detail and new inputs and other adaptations to existing systems will be tried. Every effort will be made to improve hill agriculture so that the approximately two thirds of the Nepalese population living in the hills will eat better and have a higher standard of living.

The International Agricultural Research Institutes

The first of the International Agricultural Research Institutes, the Center for the Improvement of Maize and Wheat (CIMMYT), was established in Mexico about 30 years ago. Progress was relatively slow for the first 20 years. Then the scientific breakthroughs occurred (use of the dwarfism characteristic and the breaking of the seasonality habit in wheat) which were responsible for the green revolution. These early successes encouraged the formation of other Research Centers such as the International Rice Research Institute (IRRI), the International Potato Center (CIP), the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) and others. During the last 10 years, these International Agricultural Research Centers have proliferated and grown to the extent that they now constitute a massive collection of research expertise, information

and materials on the cereals, tubers, and other crops grown in the tropics and sub-tropics that cannot be matched any place else in the world. For example, in 1974, IRRI had a Senior Scientific Staff of 37 people plus 6 scientists in the office of the director. In addition, IRRI had 19 members of its outreach staff stationed in such place as Bangladesh, Indonesia, Sri Lanka etc. All of these people were doing research on some phase of rice production and processing or on the farming systems in which rice is used. One or two scientists also had responsibilities for crops other than rice when used in the farming system under study as a companion crop or as a rotation crop with rice. IRRI has a well equipped library, excellent laboratories for all kinds of research, a large germ plasm bank and an exceptionally well qualified permanent staff. The staff, both from the point of view of national origin and experience in their home countries and because of their work at the Institute, is uniquely well qualified to backstop and support research work in Nepal and to train young Nepalese scientists.

The record and capabilities of CIMMYT are just as impressive as are those of IRRI. In maize, (corn) CIMMYT has a senior scientific staff of 20, 9 post doctoral and predoctoral fellows and an outreach staff of 12, all of whom are focusing their attention on this one crop. In wheat, there are 18 senior scientists, 4 post and predoctoral fellows, 11 research assistants and 12 on the outreach staff located in cooperating countries. In addition, there is a large staff doing research in areas that cover both crops (such as economists, general laboratory personnel working on protein and wheat quality station operations experts and information specialists). CIP and other research centers are not as yet as completely staffed as IRRI and CIMMYT, being younger institutions, but the senior staff now on board are all recognized world wide for their capabilities and the research work they have already done.

The International Agricultural Development Service

It has been recognized for several years that much of the information and new plant material developed in the International Agricultural Research Centers was not being accepted in the developing countries to the extent believed to be desirable. The Mexican wheats, of course, have spread across Asia as have the new rice varieties from IRRI. However, for one reason or another, even these outstanding contributions have not been widely accepted in much of Africa or the Americas.

Upon investigation, it has been found that local conditions are different to the extent that the new varieties or techniques are not suitable for some areas without adaptation. Tastes for food are different, resources are not available, soil conditions are such as to reduce the benefits of the new varieties, or equipment at hand will not handle them. All of these are real problems but no one was taking the lead to try to adapt the research center results to specific conditions in the developing countries.

Each of the centers then started setting up outreach programs in a number of countries to correct these deficiencies. Most of these were small efforts and administrative support usually was furnished by the local USAID or some other local institution (or else the country was far enough along the road to development that local administrative and logistical services were not required). However, with the increasing demand upon the international agricultural research centers to supply larger teams able to work in isolated areas and, particularly important, mixed teams working on several crops, the centers found that they were not equipped nor staffed to do either the negotiating needed to prepare development projects or to administer complex, multi-crop activities in the cooperating countries. In fact they were not set up to provide such service.

Recognizing this problem, the Rockefeller Foundation recently founded the IADS for the purpose of negotiating and conducting agricultural projects in less developed countries. The IADS receives requests for research and other development services from potential users of such services, such as Nepal. It makes use of its own staff plus needed staff from the research institutes to develop a project proposal. The IADS then negotiates a contract with the host government to conduct the project, making use of expert personnel assigned to it by the appropriate Agricultural Research Centers. These people are backstopped on technical aspects of the project by the parent institution from which they are drawn (i.e. CIMMYT or IRRI) but IADS will handle all administrative and logistical details and will provide the overall leadership for the project.

For the Integrated Cereals project under discussion, IADS will be expected to supply the team leader. He will be in charge of the expatriate team, will keep the team members attention focused on the farmers' real problems, will work with local government officials on all aspects of the project, will serve as liaison with the USAID on project problems and will in all respects direct the day to day activities of the team in conjunction with his counterpart. IADS will obtain through CIMMYT a wheat agronomist and two maize experts, and through IRRI a rice expert, a "mixed cropping"

agronomist and an economist. CIP, ICRISAT and other Institutes may supply short term advisors.

The Advantages of Non-Competitive Procurement of the Services of IADS for this project to AID and the GON

1. Ready access to experts in all areas of crop production from the International Agricultural Research Centers and from the world university community. For example, CIMMYT has a senior scientific staff of 20 working with maize and 18 with wheat. IRRI has a senior scientific staff of 37. Compared with an American corn belt of southern university, these men are mainly responsible for research -- no teaching, no regular extension work, and so on. Taken together, they represent a greater diversity of skills than is found in even the largest Agricultural University. In addition, because of the esteem in which these research institutions are held, they can, and do, call on U.S. universities, as well as those in other parts of the world, to supply short term experts to help solve problems when warranted.
2. World-wide technical and plant material backstopping will be available through the centers. No other institution has a comparable network upon which to draw.
3. The institutions to be involved in this project are already familiar with Nepal and have worked on similar problems in other countries. They can bring to bear an unmatched wealth of experience from these areas that can be useful in arriving at acceptable solutions to the Nepalese farmer's low yield and poor income situation.
4. The multi-disciplinary approach used by the International Agricultural Research Centers will facilitate their bringing together the expertise needed both to improve the farming systems used by Nepal's hill farmers and to develop varieties and technology better adapted to their needs.
5. Involvement with the International Agricultural Research Centers on a daily basis for four or five years will help tie the research systems of Nepal and the centers very closely together. This linkage will be very important during the years to come as a means of continuing a professional relationship between the scientists of Nepal and of the Centers and in helping the Nepalese keep abreast of the newest developments in crop production. No other institution can offer direct entry to such a network.

6. In order to secure the services of several institutions, it will be necessary for the GON to negotiate only one contract. Then IADS will negotiate the necessary sub-contracts and agreements with the International Agricultural Research Centers.
7. Since the contract will be between the GON and the contractor with AID playing the role of financier and observer, it is essential that the people and institutions involved be acceptable to the Nepalese. Responsible HMG officials have indicated that they have an extremely high regard for the capabilities of the International Agricultural Research Centers - both because of their technical excellence and because of the reputation of the individuals taking part in the research -- and have explicitly stated their desire to negotiate a contract with IADS.

Conclusion

USAID/Nepal concludes that IADS should be presented with a "Request for Proposal" in relation to the Integrated Cereals Project; that, after their Proposal is approved by the GON, USAID/N and AID/W, IADS should be selected as the prime contractor to conduct the project; and that the IADS should be asked to negotiate a contract with the GON for this purpose.

s/d
Charles R. Grader
Director
USAID/Nepal

The following message, dated the 14th of Jan. 1976 was received in response to the above justification, No State 008789.

Subject: Integrated Cereals Project, 114

1. Contracting officer, CM/ROD/ASIA/NE approves selection of International Agricultural Development Service (IADS) as proposed contractor pursuant to Handbook 11, Chapter IB2C, Subparagraphs (4) and (6).

MEMORANDUM

Page 1 of 3

TO : AA/NESA, Mr. Alfred D. White
FROM : NESA/TECH, David I. Steinberg
SUBJECT: Integrated Cereals Project/Nepal

Summary:

The intended life of the Integrated Cereals Project is five years. We request your approval of the first year of the project subject to recommendations detailed below. This will allow initial elements of the project to get underway while the PROP is further strengthened to allow final approval of the entire project.

The goal of the Integrated Cereals Project is to increase the productivity of food grain crops in order to increase food availabilities, income, and the nutritional status in Nepal. The Mission recognizes that achievement of this goal is a function of many inter-related activities. The PROP proposes to address three important elements in the continuum of activities needed for goal achievement, namely agricultural research, extension and seed industry development. The project purpose generalizes this approach as:

"To assist strengthening the Ministry of Food, Agriculture, and Irrigation's (MFAI's) capacity to:
(1) generate improved production technology for the major food grain crops and related cropping systems
and (2) transfer that technology to farmers."

Reviews by the project committee and NESA Advisory Committee generally agreed that the project correctly allocates most of the proposed resource inputs to agricultural research and the generation of improved production technology. The target institution for project resources will be the Crop Research Division of the Ministry of Food, Agriculture and Irrigation.

AID/W reviews, however, concluded that the proposed seed elements in the project should be divorced from this project and made the subject of a separate PID, and the large demonstration cum promotion activities envisioned be scaled down to a level consistent with controlled field testing needs on farmers' fields.

Our cable of March 25 (STATE 68990) conveyed these findings to the Mission and identified other areas requiring additional work and/or information. The Mission reacted on April 28 (Kathmandu 1936) holding to certain of their earlier positions which the project committee found unsatisfactory. STATE 123947 reiterated our concerns that additional work is needed on the PROP and stressed again our position on seed and production promotion/field testing.

Even with acceptance of AID/W recommendations the PROP does not stand as a self-contained document. It is PPC's view that the deficiencies are such that they cannot approve the document or the project as presently described. NESA/TECH agrees in principle with the findings of PPC. However, NESA/TECH feels strongly that the Mission has done the best they could in the development of the project and that the essence of the project is sound, i.e. emphasis on the generation of improved technology. The project committee agrees. We propose that the project be moved forward on a limited funding basis for one year. This would permit obligation of FY 75 funds for startup of institutional arrangements needed to implement the project (including bringing on board project leader but not finalizing contract for rest of TA team), and initiation of training activities. In the meantime, NESA/TECH and PPC/DPRE intend to make available to the Mission, at their request and convenience, TDY assistance to help strengthen the PROP in areas indicated in Attachment A of this memo. We believe this would require about two weeks TDY and would produce a document that could be approved for the life-of-project period, i.e., five years. AA/PPC, Eric Griffel concurs in this proposed course of action.

Therefore, we request that you authorize the plan of action as outlined in this memo and approve the initial FY 75 funding of this project for one year by signing the attached PROP Approval Form.

Attachments:

A. List of Unclear Areas
 PROP Approval Form
 STATE 68990 and STATE 132947

Clearances:

NESA/SA, J. Coles
 NESA/TECH/SPP, C. Antholt
 NESA/TECH/PSD, W. Harris
 NESA/CD, D. Tiedt
 PPC/RC, E. Griffel
 PPC/DPRE, H. Sharlach
 NESA/DP, F. Herder

Approved s/d White

June 10, 1975

STATE 128602

The following list outlines areas that are insufficiently clear or not addressed in the present Integrated Cereals Project/PROP/Nepal. Subsequent revision and strengthening of the PROP should contain as comprehensive a discussion as possible of:

1. The organization to be assisted and its plans for expansion.
2. Manpower analysis of target institutions including rationale for proposed training.
3. Coordination with other Nepalese institutions.
4. History of previous AID involvement in related activities.
5. Description of the target farmer and technologies and mechanisms for delivery of new technology to him.
6. An analysis of the demand for technology by target farmer and important constraints (marketing, credit availabilities etc.) impacting on the target farmer and his ability to adopt new technology.
7. Women and their role in the project.
8. Scopes of work for proposed TA.
9. Flow of project elements and their integration.
10. A detailed evaluation plan with supporting base line data.

LOGICAL FRAMEWORK

PROJECT TITLE: INTEGRATED CEREALS PROJECT

Annex VI

PROJECT NUMBER 367-11-110-114GOAL

To increase the average productivity of Nepal's foodgrain cropping systems, particularly on small hill farms.

MEASURES OF GOAL ACHIEVEMENT

- (1) Total hectareage where improved technology used increases from current 7% of total cultivated hectareage to 15% in terai and to 5% in the hills (approximately 8.4% of total) by 1981.
- (2) Productivity of foodgrains in areas using new technology at least 50% higher than areas using traditional methods and varieties by 1981.
- (3) New technologies introduced for hill-specific crops (e.g., potatoes, millets, forage, and high altitude rice) as well as for terai-specific foodgrains.
- (4) Food grain production in both hills and terai increasing at the rate of population growth or more (2.1%/annum).

MEANS OF VERIFICATION

- (1) Ministry of Food, Agriculture and Irrigation (MFAI) records and results of analysis done by MFAI.
- (2) - do -
- (3) MFAI records.
- (4) - do -

ASSUMPTIONS

- (1) That HMG pursues policies which provide adequate incentive (e.g., prices of inputs and final products) to make the new technology attractive to farmers.
- (2) That new varieties will be made available everywhere they are adapted.
- (3) That complementary HMG investment in agriculture (e.g., measures to intensify land use) is realized.
- (4) That farmers will adopt new improved technologies and inputs which are shown to be economic.
- (5) That farmers will be willing to cooperate in research/demonstration programs on their own farms.
- (6) That new varieties developed are acceptable in Nepal and in fact are better than

PURPOSE

To assist in strengthening MFAI's capacity to (1) generate improved production technology and inputs for the major foodgrain crops and related cropping systems and (2) transfer that technology to farmers in such a way that it is readily accepted.

END OF PROJECT STATUS

- | | |
|---|----------------------------------|
| (1) Department of Agriculture(DOA) of MFAI has effective operational linkages with the international research centers which result in continuing interchange of technologies and information. | (1) Observation |
| (2) An interdisciplinary research staff is in place in the DOA and functioning in cooperation with individual regional and district units on foodgrain and cropping systems research, development and administration. | (2) Observation and DOA records, |
| (3) A system exists within the MFAI which develops, tests, and evaluates new technologies -- all the way to the farm level. | (3) - do - |

- (7) That HMG policy remains to invest resources in the hills for social/equity purposes, although purely production/economic criteria might dictate otherwise, to encourage investment in hill specific crops.
- (8) Adverse weather does not have negative trend effect on production.
- (1) HMG supports DOA with required staffing and budgets.
- (2) HMG rules/regulations permit necessary training abroad, especially for Research Agronomists and Crop Production Specialists.
- (3) HMG commitment is strong enough to break through any bureaucratic rigidities which might impinge upon linkages between traditional research

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| <p>(4) Within the MFAI, DOA programs in foodgrains are based on farm-level programs and research priorities, and resource allocations are made as a result of analysis of farm problems in the national context. DOA is routinely disseminating information to crop production specialists, who are in turn facilitating research trials and demonstrations in farmers' fields and reporting results.</p> | <p>(4) Observation and DOA records.</p> | <p>(4) Farmers willing to participate in "feedback process".</p> |
| <p>(5) DOA is combining research on new foodgrain varieties, on optimal levels of inputs, and on ways of developing better cultural practices (including intercropping and multiple cropping) with an operational research capability emphasizing research/demonstration kits for testing different technologies and different farming systems, especially those used in the hills and in varying environments at low levels of inputs.</p> | <p>(5) Observation and DOA records.</p> | <p>(5) Development of cost effective and technically feasible technologies possible.</p> |
| <p>(6) System of on-the-job training of JTs and JTAs in new technology and use of research/demonstration kits set up.</p> | <p>(6) DOA records and evaluation of training and kit program.</p> | <p>(6) Crop Research Units, regional extension directors and Agri. Information Service agree on methods to be used to train workers.</p> |

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|--|---|--|
| (7) Major research farms/stations are operating in close collaboration with multipurpose testing/evaluation stations in all regions and ecological zones. | (7) Final report. | (7) HMG willing to commit resources to further development of Hill Agriculture. |
| (8) New technologies and varieties are being developed to meet the special requirement of small farmers so as to fit into their intensive farming systems. | (8) MFAI & AIC records & observation. | (8) Small and impoverished farmers will prefer early varieties while large farmers will seek late maturing high yielding varieties. |
| (9) Research has been completed on the domestic production, processing, quality control, and distribution of newly recommended seed varieties and a decision made as to how the seed industry is to be organized and administered. | (9) Evaluation reports. Proposal for further seed industry development (probably joint IBRD/AID). | (9) A seed processing plant has been established in the Far Western Development Region capable of producing and distributing at least 2,500 MT of good seed of recommended varieties per year. |
| (10) Capability to conduct small, agriculture-specific social science research projects enhanced in private research organizations and HMG Corporations and Departments. | (10) Evaluation reports years 2 and 4. | (10) There will be a continuing interest in agriculture-specific social science research. |

<u>OUTPUTS</u>	<u>MAGNITUDE OF OUTPUTS</u>	<u>MEANS OF VERIFICATION</u>
1. A system to combine research & extension functions at the regional level is designed and operational.	1. By end of year 1 of project.	1. Observation & contract team reports.
2. First diagnostic team studies and reports on farming systems pressure points and research priorities.	2. First studies by end of year 1 and continuing.	2. Observation and reports.
3. Catalogue of hill farming system models including complete description.	3. Approximately 6 models done by end of year 2.	3. MFAI records and special reports.
4. Regional directorate training programs for Crop Production Specialists. (Note: three groups of six each in maize/wheat, rice and multiple cropping to be trained at International Agriculture Research Institutes. Returned trainees will form nucleus of in-country training programs.)	4. FY 77-78: Programs sufficient place one Maize Prod. Spec. in each Development Region.. FY 78-79: Programs sufficient place two Prod. Spec. in each Development Region for rice, wheat, and multiple cropping (total = 24).	4. MFAI records, contractor reports.
5. DOA and Regional Directorate in-country training programs for crop-specific JT/JTAs.	5. FY 77-78: Programs sufficient place 10 maize JT/JTAs in each Development Region (total = 40). FY 78-79: Programs sufficient place 10 crop-specific JT/JTAs in each Devel. Region for rice, wheat, and multiple cropping (total = 120).	5. MFAI records, contractor reports.

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| 6. In-service retraining for all JTs and JTAs (about four weeks duration). | 6. According to the following schedule (year-end totals, cumulative): | 6. MFAI records, contractor reports. |
| | FY 77 150
FY 78 400
FY 79 700
FY 80 800
FY 81 800 | |
| 7. On-farm trials of newly adapted varieties and technologies conducted and successful innovations demonstrated. | 7. FY 77: 1,500 plots under trial
78: 4,800 " " "
79: 10,500 " " "
80: 16,000 " " "
81: 20,000 " " " | 7. MFAI/DOA/Regional Directorate records; observation on farmers land. |
| 8. Collection and testing program for existing varieties of "minor crops". | 8. By end of FY 77, programs have begun for oilseeds (mustard, nigar, sesame, groundnut, castor bean and sunflower) and pulses (pigeon pea, chick pea, mung, blackgram, soybean, and cowpea). | 8. MFAI and contractor records. |
| 9. Economic and technical analyses and evaluations of on-farm trials. | 9. During FY 78. | 9. MFAI reports. |
| 10. Development of technology packages for irrigated and dry land conditions to complement new varieties. | 10. Initial trials conducted at farm level by year 2 of project in Terai and year 3 in hills. | 10. MFAI reports and observation on farmer's land. |

11. Small quantities of seed of newly developed, selected, and tested varieties of rice, maize, and wheat (as well as "minor" food crops) that outperform traditional varieties in hills as well as Terai and for small farmers as well as large farmers.
11. (a) Acceptable varieties of maize seed (some with high lysine characteristic) ready for introduction to farmers by FY 77;
- (b) Acceptable varieties of rice seed (including high altitude varieties) available by FY 78;
- (c) Acceptable varieties of wheat seed (including rust resistant characteristics) available by FY 79;
- (d) Other new varieties of seed on continuing basis.
- (Note: The number of varieties for all crops will be dependent upon analysis of agro-climatic, soil and economic factors as well as on an element of luck and cannot be quantified in advance).
12. Interim system designed for development of quality seed production, processing, and distribution of newly released seed varieties.
12. System designed in FY 77 — prior to construction #19 below.
12. MFAI/DOA records, observation. AIC & contract team reports.

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|--|--|--------------------------------|
| 13. Temporary, experimental seed production and processing plant set up Far Western Development Region with permanent storage near by. | 13. Capacity of plant: 2,500 MT/yr. -- to be completed in FY 78. | 13. Observation. |
| 14. Trained personnel. | 14. <u>Life-of-project</u> | 14. USAID & MFAI records. |
| | M.Sc.'s -- 24 participants, (576mm)
Ph.D.'s -- 4 " , (144mm)
S-T -- 49 " , (159mm)
S-T(seed)-- 6 " , (30mm)
L-T " -- 2 " , (36mm)
L-T(Research Farm Mgt. & Operations)-5 Participant(60mm) | |
| 15. Upgraded Crop Coordinators' stations. | 15. New facilities (e.g., laboratories, office space, foundation seed facility, and staff quarters) at Rampur, Bhairawa and Parwanipur -- construction to begin in FY 77. | 15. MFAI records, observation. |
| 16. Upgraded outreach stations in hills. | 16. Storage facilities at six outreach stations. | 16. MFAI records, observation. |
| 17. Research on environmental, economic and social aspects of project. | 17. Completed in year three. | 17. Reports available. |

INPUTS

I. U.S.G.

A. Advisory Assistance, long-term

i. USAID

- 1 - Agriculture production agronomist/trainer
- 1 - Maize Plant Breeder
- 1 - Maize Production Agronomist
- 1 - Wheat/Barley Prod. Agron.
- 1 - Rice Plant Breeder
- 1 - Multiple Cropping Agron.
- 1 - Ag. Production Economicis.

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ii. Peace Corps

- 4 - Middle-level Regional Agronomists

B. Short-term Consultants (AID)

C. Participant Training (AID)

- 1. Advanced Degree Training
- 2. Short-term
- 3. Other long-term (management)

IMPLEMENTATION SCHEDULE

A. Advisory Assistance, long-term

i. USAID

- 60 mm (Sept. '76 - Sept. '81)
- 30 mm (June '77 - July '79)
- 60 mm (Feb. '76 - Feb. '81)
- 60 mm (" " - " ")
- 60 mm (Sept. '76 - Sept. '81)
- 60 mm (" " - " ")
- 48 mm (" " - Sept. '80)

ii. Peace Corps

- 24 mm each (June '77 - June '79)

B. Short-term Consultants

- 20 mm TQ - FY 77
- 55 mm FYs 78-81
- 75 mm Total

C. Participant Training (numbers of persons departing in given years)

	<u>FY 76</u>	<u>TQ</u>	<u>FY 77</u>	<u>FY 78</u>	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>Total</u>
1. Advanced Degree Training	-	3	7	8	8	2	-	= 28
2. Short-term	1	-	13	16	10	9	6	= 55
3. Other long-term (management)	-	-	3	2	1	1	-	= 7

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<u>Year of Obligation</u>	<u>FY 76</u>	<u>TQ</u>	<u>FY 77</u>	<u>FY 78</u>	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>
D. <u>Commodities</u> (AID)	D. <u>Commodities</u> (\$000 or equivalent)						
1. Dollar-funded commodities	75	-	60	60	60	43	-
2. Field trial kits (rupees)	-	21	67	146	223	279	-
3. Repair/Maint. equip. (rupees)	-	-	-	100	-	-	-
4. Seed Processing equip. (rupees)	-	-	100	-	-	-	-
E. <u>Other Costs</u>	E. <u>Other Costs</u> (\$000 or equivalent)						
1. Contract support (AID)							
A. Dollars	5	2	78	89	89	9	8
B. Rupees	66	-	66	66	66	66	-
2. Support (Peace Corps)	-	-	2	5	3	-	-
3. In-country research (AID)	-	17	17	16	-	-	-
F. <u>Rupee Supplemental Construction</u> (AID)	F. <u>Rupee Supplemental Construction</u> (\$000 or equivalent)						
1. Pilot seed plant	-	-	-	52	-	-	-
2. Foundation seed plants	-	-	-	90	-	-	-
3. Research station upgrading	-	-	159	49	84	-	-
4. Storage at outreach stations	-	-	26	18	25	-	-
II. <u>G.O.N.</u> (\$000 equivalent)							
A. <u>Commodities and construction</u>							
i. Field trial/demonstration materials							365
ii. Research station upgrading							570
B. Participant training							100
C. Subsidy to field trial program							455
D. Incremental recurrent costs							989
							<u>2,479</u>

AGK:JBabylon/hks
4/15/76

CHECKLIST OF STATUTORY CRITERIAI. COUNTRY PERFORMANCEA. Progress Towards Country Goals

1. FAA ^{§§}_{§§} 201 (b)(5), 201 (b)(7), 201 (b)(8), 208. Discuss the extent to which the country is:
 - (a) Making appropriate efforts to increase food production and improve means for food storage and distribution.
Ans. The Fifth Development Plan (1976-1980) puts major stress on increased food production and improved marketing of agricultural products.
 - (b) Creating a favorable climate for foreign and domestic private enterprise and investment.
Ans. Nepal provides tax benefits to foreigners investing in needed development projects.
 - (c) Increasing the people's role in the developmental process.
Ans. Villagers in parts of Nepal are building schools, water systems and farm-to-market roads. This is on a modest scale so far but is an appreciable start.
 - (d) Allocating expenditures to development rather than to unnecessary military purposes or intervention in other free countries' affairs.
Ans. Yes.
 - (e) Willing to contribute funds to the project or program.
Ans. The HMG will contribute \$ 2,430,000 to this Project.
 - (f) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements; and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.
Ans. The monarchical system in Nepal is gradually broadening. The HMG is allowing greater freedom of expression, although the press is still largely government-controlled. There is a Parliament with some, if limited, effective powers. Entrepreneurs operate fairly freely. The government is seeking Western advice in legal matters, taxation, finance, private enterprise, and information services.
 - (g) Responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.
Ans. The HMG has strengthened its commitment to development in recent years, and has shown a new willingness to take meaningful self-help measures in order to carry out the Fifth Five Year Plan.

B. Relations with the United States

1. FAA ^{§§}_{§§} 620 (c). Is the government indebted to any U.S. citizen for goods or services furnished or ordered where:
 - (a) such citizen has exhausted available legal remedies, including arbitration, or
 - (b) the debt is not denied or contested by the government, or
 - (c) the indebtedness arises under such government's, or a predecessor's unconditional guarantee?
Ans. No such indebtedness is known to exist.

2. FAA § 620 (e)(1). Has the country's government, or any agency or subdivision thereof:
- nationalized or expropriated property owned by U.S. citizens or by any business entity not less than 50% beneficially owned by U.S. citizens,
 - taken steps to repudiate or nullify existing contracts or agreements with such citizens or entity, or
 - imposes or enforced discriminatory taxes or other exactions or restrictive maintenance or operation conditions? If so, and more than six months has elapsed since such occurrence, identify the document indicating that the government, or appropriate agency or sub-division thereof, has taken appropriate steps to discharge its obligations under international law toward such citizen or entity? If less than six months has elapsed, what steps if any has it taken to discharge its obligations?
- Ans. No to first question. Second question not applicable.
3. FAA § 620 (j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property, and failed to take appropriate measures to prevent a recurrence and to provide adequate compensation for such damage or destruction?
- Ans. No.
4. FAA § 620 (l). Has the government instituted an investment guaranty program under FAA 211 (b)(1) for the specific risks or inconvertibility and expropriation or confiscation?
- Ans. No.
5. FAA § 620 (o): Fisherman's Protective Act of 1954, as amended, Section 5. Has the country seized, or imposed any penalty or sanction against, any U.S. fishing vessel on account of its fishing activities in international waters? If, as a result of a seizure, the USG has made reimbursement under the provisions of the Fisherman's Protective Act and such amount has not been paid in full by the seizing country, identify the documentation which describes how the withholding of assistance under the FAA has been or will be accomplished.
- Ans. No.
6. FAA § 620 (q). Has the country been in default, during a period in excess of six months, in payment to the U.S. on any FAA loan?
- Ans. No.
7. FAA § 620 (t). Have diplomatic relations between the country and the U.S. been severed? If so, have they been renewed?
- Ans. No to first question. Second question not applicable.
8. App. § 106. Describe any attempt made by the country to create distinction because of race or religion in granting personal or commercial access or other rights otherwise available to U.S. citizens generally.
- Ans. None.

C. Relations with Other Nations and the U.N.

1. FAA § 620 (i). Has the country been officially represented at any international conference when that representation included planning activities involving insurrection or subversion directed against the U.S. or countries receiving U.S. assistance?
- Ans. No, as far as known.

2. FAA ~~XX~~ ^{XX} 620 (a), 620 (n); App. §§ 107 (a), 107 (b), 116. Has the country sold, furnished, or permitted ships or aircraft under its registry to carry to Cuba or North Viet-Nam items of economic, military, or other assistance?
Ans. No, as far as known.
3. FAA § 620 (u); App. § 114. What is the status of the country's U.N. dues, assessments, or other obligations?
Ans. Nepal is not in arrears in its obligations to the U.N.

D. Military Situation

1. FAA § 620 (i). Has the country engaged in or prepared for aggressive military efforts directed against the U.S. or countries receiving U.S. assistance?
Ans. No, as far as known.
2. FAA § 620 (s). What is (a) the percentage of the country's budget devoted to military purposes, and (b) the amount of the country's foreign exchange resources used to acquire military equipment? Is the country diverting U.S. development assistance or P.L. 480 sales to military expenditures? Is the country diverting its own resources to unnecessary military expenditures?
Ans. Less than 9% of the country's budget is devoted to external defense and security purposes. Little foreign exchange is used to acquire military equipment.

ANNEX VIII

Implementation Plan for 1976

<u>No.</u>	<u>Date</u>	<u>Action</u>	<u>Agent</u>
1	4/30	Project approved.	HMG-USAID
2	5/20	ProAg and PIO/T negotiated and signed.	HMG-USAID
3	5/22	Request for a proposal issued to IADS.	HMG
4	6/1	Negotiations on team prerequisites.	HMG-IADS
5	6/20	Team prerequisites agreed upon.	HMG-IADS USAID
6	6/30	Proposal submitted to HMG & USAID.	IADS
7	6/30 & continuing	Agriculture office delegated responsibility for monitoring project.	USAID
8	7/1	Formal contract negotiations opened.	HMG-IADS
9	7/20	Draft contract reviewed and approved.	AID/W
10	7/25	Contract signed.	HMG-IADS
11	7/31	Financing request sent to USAID requesting disbursing authority.	HMG-IADS
12	7/31	IADS Office established.	IADS
13	8/10	CIMMYT-AID Contract 563 is canceled.	CIMMYT USAID-AID/W
14	8/15	USAID requests letter of commitment of AID/W.	USAID
15	8/25	Financing arrangements completed, letter of commitment opened.	AID-IADS HMG
16	8/25	Limited equipment, household furniture grant-in-aided to government for contract team use.	USAID- HMG-IADS
17	8/25	New team members arrive.	IADS-USAID HMG
18	9/1	Letter of credit opened in favor of contractor.	AID
19	9/1-15	Orientation program conducted.	IADS

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20	9/5	FY 1976 participants depart for US and third countries.	USAID-HMG
21	9/20	Research diagnostic team formed.	IADS-HMG
22	9/20	Seed consultant team arrives for two months of planning and preparation of commodity specifications; conduct training.	IADS-HMG USAID
23	9/25	Research farm building plans submitted for final approval.	HMG-IADS
24	9/30	Counterparts named for all technicians.	IADS-HMG
25	9/30	Research program starts with contract help.	IADS
26	10/10 & continuing	Contents of first research-Demonstration Kits are determined in general and tested for wheat in hills and terai.	IADS-HMG A.I.C.
27	10/15	Sites for seed houses selected.	IADS-HMG USAID
28	10/15	Building plans approved	USAID
29	10/15	Participant program for 1977 agreed upon. Note: The participant program must be started early in order to complete it by the end of the project.	IADS-HMG USAID IADS-HMG USAID
30	10/15	Construction of laboratory buildings and staff quarters starts and continues through dry season.	HMG-IADS USAID
31	11/1	Life of project and first annual program of work presented for approval to USAID.	IADS-HMG
32	11/10	Orders are placed, letters of credit opened etc. for the procurement of vehicles, laboratory equipment etc.	IADS-HMG USAID
33	11/15	Seed staff selected and training conducted.	IADS-HMG
34	11/20	Work Plans approved.	USAID

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35	12/1	Institutional arrangements of crop specialists vis-a-vis regional and research staffs set up.	HMG-IADS USAID
36	12/1 & continuing	Social science research program starts. Priorities established among hypotheses to be tested. Experimental design developed to focus on small farmers and the hills.	IADS-USAID HMG-CEDA APSC
37	12/1 & continuing	First model of a farming system prepared with recommended research activities to improve it listed.	IADS-HMG
38.	12/15	Plans for seed storage and processing house construction submitted to USAID for approval.	HMG-IADS
<u>1977</u>			
39	1/10	Contents of Research-Demonstration Kits for 1977 decided upon and orders placed with AIC to supply. Instructions under preparation.	HMG-IADS
40	1/15 & continuing	Trainees for crop specialists positions selected. On-the-job training starts.	HMG-IADS
41	1/15	AID approves seed house plans	USAID
42	1/15	Recruitment of FCVs and training program started.	HMG-PC IADS-AID
43	1/15	Seed consultants arrive.	HMG-IADS
44	1/30	Participants for FY 77 program selected.	HMG-IADS USAID
45	2/15	Commodity lists prepared. Orders placed and financial arrangements made.	HMG-IADS USAID
46	2/15 & continuing	Research started on household/farm decision making processes, participants and factors considered. Major concern at first to be crop technology/varietal preferences with focus on adoption in the hill agriculture.	HMG-IADS ADC

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47	2/15 & continuing	Language training for participants starts.	USIS-HMG IADS
48	2/15 & continuing	Training of potential seed producers starts.	H MG-AIC IADS
49	2/28	Model seed production contract developed.	HMG-IADS AIC
50	2/28	Consultants arrive to do research on seed production systems and "software."	IADS-HMG AIC
51	2/28 & continuing	On-the-job training of JTAs starts on how to do research and on use of Research-Demonstration Kits. Rice and maize featured.	HMG-IADS
52	3/1	Participants accepted by Universities for fall entrance.	HMG-IADS AID
53	4/10	Materials for FY 78 construction season procured.	HMG
54	4/15 & continuing	Training of JTs & JTAs on harvesting Research-Demonstration Kit plots and reporting results given. Kits for second rice crop in terai and multi-cropping in hills prepared and distributed.	HMG-IADS
55	4/15	First contracts let for maize and rice seed production.	HMG-AIC IADS
56	4/15	Consultants arrive to evaluate plant materials and ongoing research results on wheat.	IADS-HMG
57	4/15	P.C. technicians arrive for Orientation.	PC-IADS HMG
58	6/15	PCVs depart to CIMMYT & IRRI for a total of 3 months training.	IADS-HMG PC
59	7/1	Work starts on preparation of second annual program of work.	IADS-HMG

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60	7/31	Maize & Rice breeding materials evaluated .	IADS-HMG
61	8/1	Second annual program of work submitted to USAID for approval.	IADS-HMG
62	8/15	Program of work tentatively approved pending evaluation.	USAID
63	9/1	First annual reports for technicians and team as a whole submitted to HMG and USAID.	IADS-HMG
64	9/1	Participants depart for training in US & 3rd countries.	HMG-IADS
65	9/1 & continuing	Construction of seed houses, laboratories and other buildings financed by USAID gets underway, FY 1978 construction season.	HMG-IADS USAID
66	9/15	Research commodities begin to arrive and are installed.	IADS-HMG
67	9/15	PCVs on job in regions.	PC-IADS
68	9/15	First annual evaluation	HMG-IADS AID/W-USAID
69	9/30	Changes in annual and long term work plans agreed upon.	IADS-HMG USAID
70	9/30	Contents for fall Research-Demonstration kits agreed on.	HMG-IADS
71	9/30	Order placed with A.I.C. for Research-Demonstration Kits.	HMG-IADS AIC
72	10/15	Commodities arrive and are installed. Operators trained.	IADS-HMG AIC
73	10/15	New varieties and technology for winter crops recommended.	IADS-HMG
74	10/15	New contracts negotiated for seed wheat production.	IADS-HMG AIC
75	10/15	Plan participant program for FY 1978	HMG-IADS USAID

76	10/30	First seed processed.	IADS-AIC HMG
77	10/30	Plans for FY 79 construction submitted to USAID.	HMG-IADS
78	10/30	Contracts negotiated for seed distribution and sales.	AIC-IADS HMG
79	11/1	Drafting of country wide seed production plan starts based on research on seed production experience in small plants and Hetaura plant.	HMG-IADS AIC-USAID IBRD etc.
80	11/25	Construction plans for FY 79 approved.	USAID
81	12/1	Report prepared on first year of social science research.	A/D/C-HMG IADS

1978

82.	1/10	Contents of Research-Demonstration Kits and program for 1978 decided upon. Orders for kits placed with AIC. Training of JTAs continues.	HMG-AIC IADS-USAID
83.	1/30	Farming system research results reviewed. Three medals are due.	IADS-HMG A/D/C
84.	1/30	Participants selected for FY 1979.	HMG-IADS USAID
85.	2/10	Varietal recommendations for rice in all areas and maize for Hills made.	HMG-IADS
86.	2/15	Language training starts.	IADS-HMG USIS, USAID
87.	2/28	Review of social science research program.	A/D/C-HMG IADS-AID
88.	3/1	Proposal prepared for country wide seed production plan.	IADS-HMG USAID
89.	3/1	Participants accepted by foreign universities for fall entrance.	IADS-HMG
90.	3/10	Contracts let for rice & maize seed production.	HMG-AIC IADS
91.	4/1	Lists of commodities to be procured in FY 78 prepared.	IADS-IMG
92.	4/10	Materials for FY 79 construction season procured.	HMG-IADS
93.	4/15 & continuing	Consultants evaluate wheat breeding materials and research program.	IADS-HMG
94.	5/1	Commodities ordered and financial arrangements for importation completed.	IADS-HMG
95.	7/1	Work starts on preparation of third annual program of work and revision of long term plan.	IADS-HMG
96.	7/15	Recommendations made on wheat and maize for Terai.	HMG-IADS
97.	7/30 & continuing	Maize and rice breeding materials evaluated	HMG-IADS

ANNEX VIII

98.	7/31 & continuing	Seed processing starts (wheat-rice)	IADS AIC-HMG
99.	8/1	Third annual program of work submitted to USAID.	HMG-IADS
100.	8/15	Country wide seed proposal accepted by HMG for International financing.	HMG-IADS IBRD-AID etc.
101.	8/15	Program of work tentatively approved.	USAID
102.	9/1	Second annual reports of technicians and team as a whole submitted to HMG & USAID.	IADS-HMG
103.	9/1	Participants depart for training in US and third countries.	HMG-IADS
104.	9/1	Construction of US financed laboratories, quarters, storage buildings etc. starts.	HMG-IADS USAID
105.	9/15	Commodities begin to arrive and are installed.	HMG-IADS
106.	9/15	Second annual evaluation Judgement made on future of Research-Demonstration Kit program.	HMG-IADS AID/W-USAID
107.	9/30	Changes in annual and long term program of work agreed upon.	HMG-IADS USAID
108.	9/30 & continuing	Orders placed for Research-Demonstration Kit program.	HMG-AIC IADS
109.	10/10	Fall crop recommendations issued.	HMG-IADS
110.	10/15 & continuing	Contracts let for seed wheat production.	AIC-HMG IADS
111.	10/15 continuing	Seed processing starts - rice-maize.	AIC-HMG IADS
112.	10/15	Participant program planned for FY 1979.	HMG-IADS USAID
113.	10/30	Plans for FY 80 construction submitted to USAID.	IADS-AIC HMG
114.	11/25	Construction plans approved.	USAID
115.	12/1	Report prepared on second year of social science research.	ADC-IADS HMG
116.	12/15	Recommendations made on rice and maize	HMG-IADS

ANNEX VIII

1979

117.	1/10	Contents of Research-Demonstration Kits and program for 1979 decided upon. Orders for kits placed with A.I.C. Training of JTAs continues.	HMG-ATC IADS
118.	1/30	Participants for FY 79 program selected.	HMG-IADS
119.	2/15	Language training starts	HMG-IADS USIS
120.	2/15	Farming systems research results reviewed.	HMG-IADS AID
121.	2/28	Review of social science research program.	A/D/C-HMG IADS-USAID
122.	3/1	Participants accepted by foreign universities for fall entrance.	HMG-IADS
123.	3/10 & continuing	Contracts let for seed production of rice and maize in hills.	HMG-AIC IADS
124.	4/1	Lists of commodities to be procured in FY 79 prepared.	HMG-IADS
125.	4/10	Materials for FY 80 construction season procured.	HMG-IADS
126.	5/1	Commodities ordered and financial arrangements for importation completed.	HMG-IADS
127.	7/1	Work starts on preparation of fourth annual program of work and revision of long term plan.	HMG-IADS
128.	7/1	Far West seed plant transferred to country wide seed production project.	HMG-USAID IADS-AIC
129.	8/1	Fourth annual program of work submitted to USAID.	HMG-IADS
130.	8/15	Program of work tentatively approved.	USAID
131.	8/20	Wheat variety recommendations made.	HMG-IADS
132.	9/1	Third annual reports of technicians and team as a whole submitted to USAID & HMG.	HMG-IADS

133.	9/1	Participants depart for training in US and third countries.	HMG-IADS
134.	9/1	Construction of US financed buildings starts again to be completed by the beginning of the next rainy season.	HMG-IADS
135.	9/15	Commodities arrive and are put into place.	HMG-IADS
136.	9/15	Third annual evaluation.	HMG-IADS USAID
137.	9/30	Changes in annual and long term programs of work agreed upon.	HMG-AID IADS
138.	9/30	Seed production program expanded	HMG-AIC IADS
139.	9/30	Orders placed for Research-Demonstration Kit program.	HMG-AIC IADS
140.	9/30	Contracts let for fall seed production.	AIC-HMG IADS
141.	10/15	Plan participant program for FY 1980.	IADS-HMG
142.	11/15	Variety recommendations made for wheat and maize in Terai.	HMG-IADS
143.	12/1	Report prepared on third year of social science research (Final report of A/D/C).	A/D/C-HMG IADS

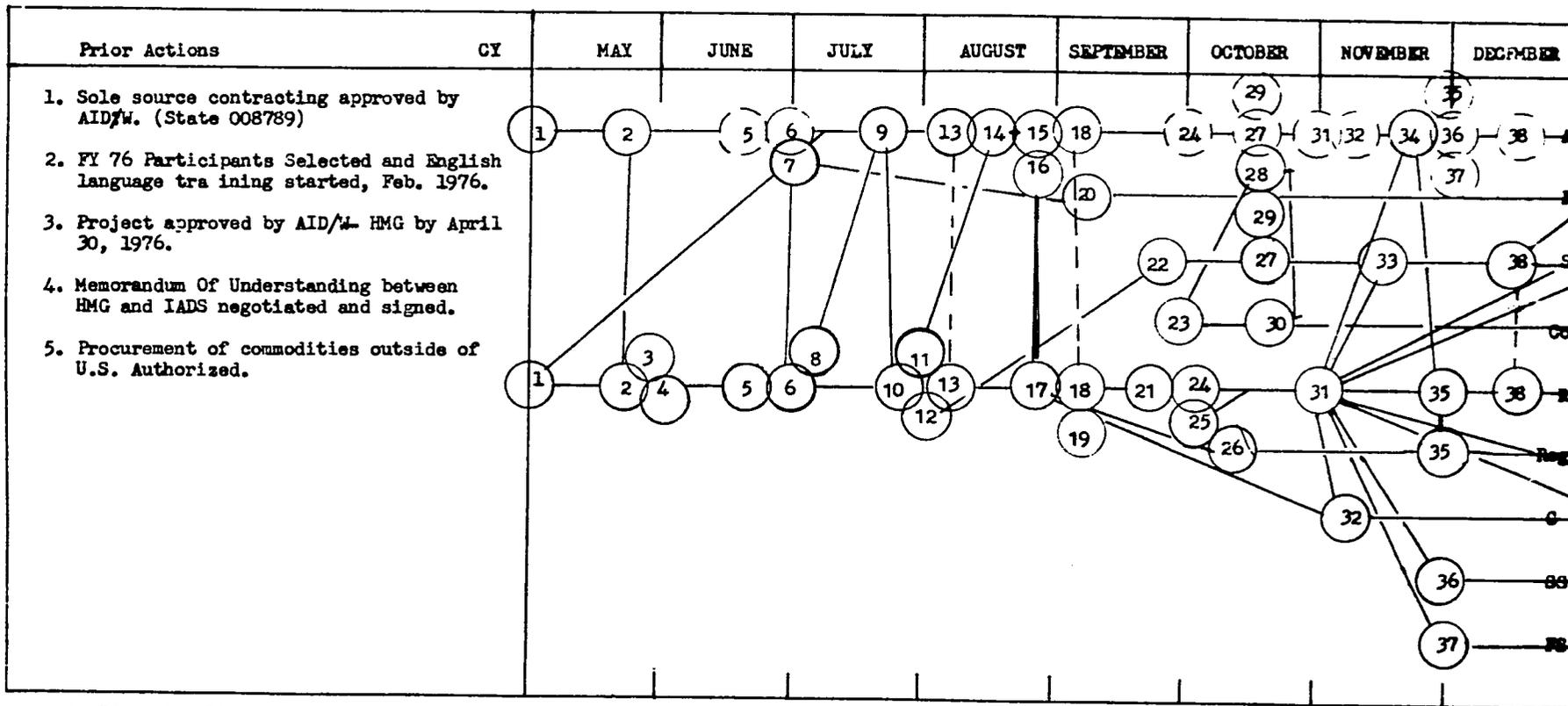
144.	1/10	Contents of Research-Demonstration Kits and program for 1980 decided upon. Order for kits placed with A.I.C.	HMG-IADS
145.	1/30	Participants for FY 80 program selected.	HMG-IADS USAID
146.	2/15	Language training starts.	HMG-IADS USIS
147.	2/15	Farming systems research results reviewed.	HMG-IADS
148.	2/28	Review of reduced social science Research program.	ADC-IADS HMG-AID
149.	3/1	Participants accepted by foreign universities for fall entrance.	HMG-IADS
150.	3/1	Recommendations made for Rice, Maize and companion crops for hills and terai.	HMG-IADS
151.	3/10	Contracts let for summer seed production.	HMG-IADS AIC
152.	4/1	Lists of commodities to be procured in FY 80 proposed.	HMG-IADS
153.	5/1	Commodities ordered and financial arrangements made for importation.	HMG-IADS
154.	6/1	Construction of AID financed buildings completed and structures turned over to new occupants.	HMG-IADS
155.	7/1	Work starts on preparation of fifth annual program of work and revision of long term plan.	HMG-IADS
156.	8/1	Fifth annual program of work submitted to USAID.	HMG-IADS
157.	8/15	Program of work tentatively approved.	USAID
158.	8/20	Wheat variety recommendations for hills made.	HMG-IADS
159.	9/1	Fourth annual reports of technicians and team as a whole submitted to USAID & HMG.	IADS-HMG
160.	9/1	Participants Depart for training in US & third countries.	IADS-HMG

ANNEX VIII

161.	9/15	Commodities arrive and are put into place.	HMG-IADS
162.	9/15	Fourth annual evaluation, Determination of future of project.	USAID-HMG IADS
163.	9/30	Changes in annual and long term programs of work agreed upon.	HMG-IADS USAID
164.	9/30	Orders placed with AIC for Research-Demonstration Kit program.	HMG-IADS AIC
165.	10/15	Participant Program (short term only) agreed on for FY 81.	HMG-IADS
166.	9/30	Contracts let for fall seed production.	HMG-IADS AIC
167.	11/15	Variety recommendations made for wheat and maize in Terai.	HMG-IADS
168.		<u>1981</u>	
168.	1/10	Regional program decided upon and kits ordered from AIC.	HMG-IADS
169.	1/10	FY 81 participants selected	HMG-IADS USAID
170.	2/5	Review of Farming systems research results.	HMG-IADS USAID
171.	2/28	Review of social science research results.	HMG-IADS A/D/C-USAID
172.	3/1	Participants accepted by institutions and on way to US & 3rd countries.	HMG-IADS
173.	3/1	Recommendations made concerning rice, maize and companion crops production in Hill and Terai.	HMG-IADS
174.	3/1	Commodities to be procured (in India only) in FY 81 listed and ordered.	HMG-IADS
175.	3/10	Contracts let for summer seed production.	HMG-IADS AIC

176.	7/1	Fifth annual technician and team report submitted to USAID & HMG.	IADS-HMG
177.	7/10	Fifth annual (Final) evaluation.	AID-HMG IADS
178.	7/31	End of US participation in Project.	HMG-IADS USAID
179.	10/31	Contractor's final report.	IADS

IMPLEMENTATION PLAN - 1976
INTEGRATED CEREALS PROJECT



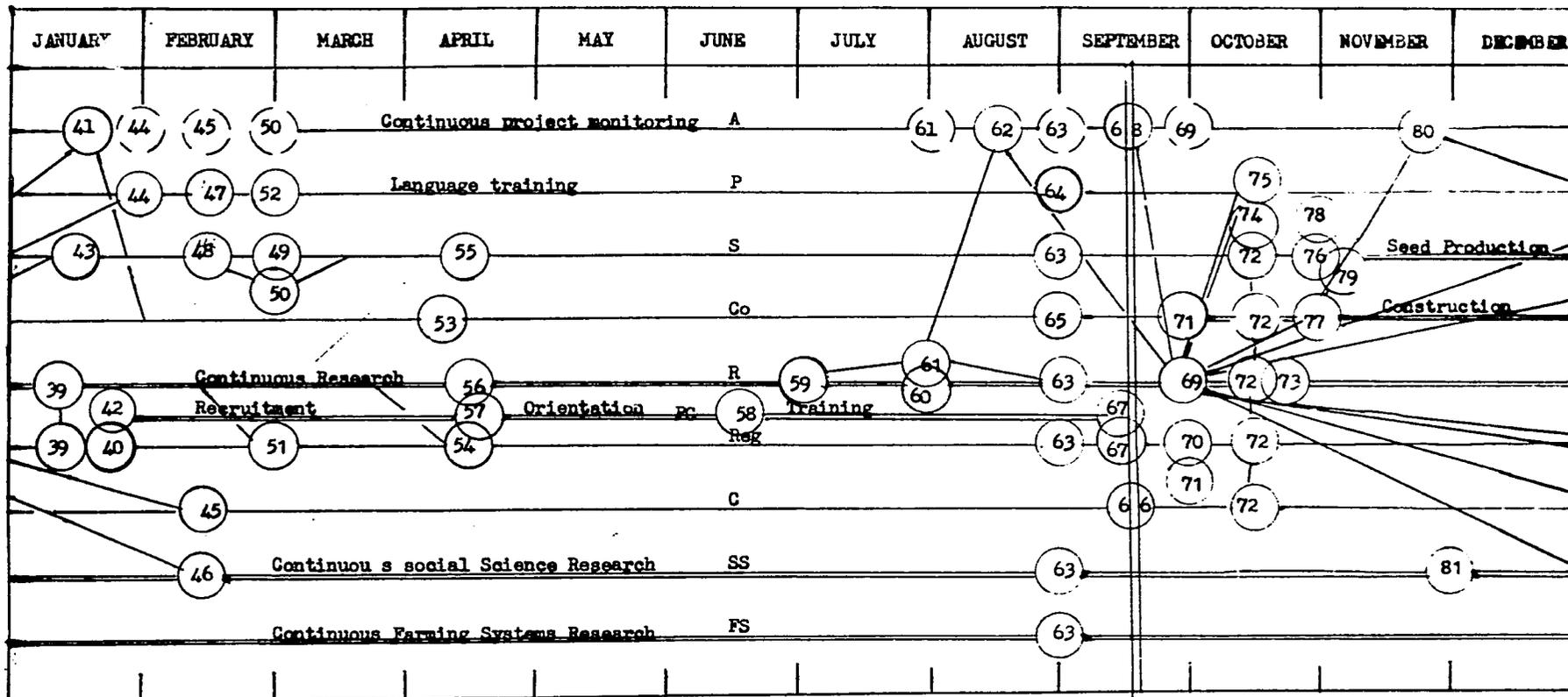
A=AID action line
P=Participants
S=Seed
Co=Construction
R=Research/Administration

FC=Peace Corps
Reg=Regional Program
C=Commodities
SS=Social Science Res.
FS=Farming System Res.

○ Action points
○ Action points which AID will monitor

--- Joint or Simultaneous Action

IMPLEMENTATION PLAN - 1977
INTEGRATED CEREALS PROJECT



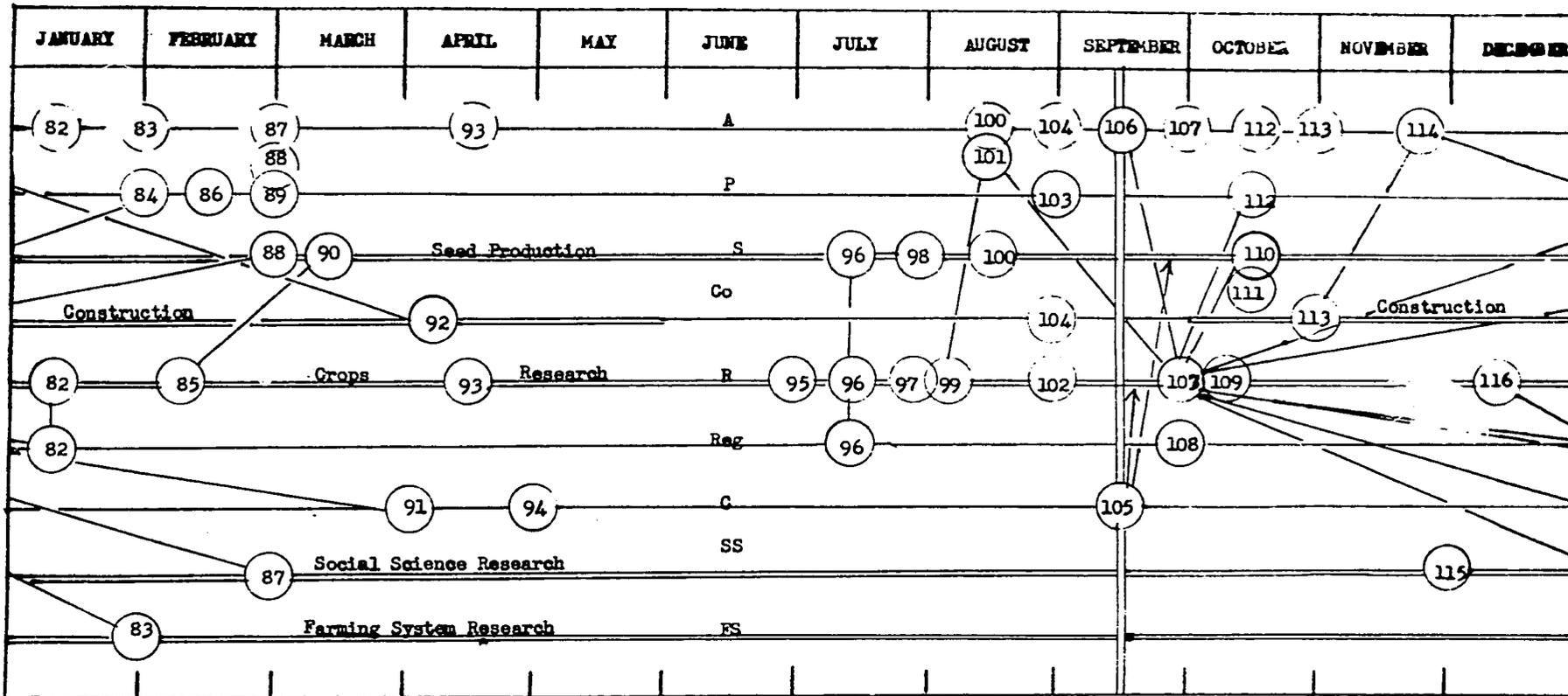
A-AID action
R-Participants
S-Seed
Co-Construction
B-Research/Administration

PC-Peace Corps action
Reg-Regional Programs
C-Commodities
SS-Social Science research
FS-Farming Systems research

○ Action points
○ Action points which AID will monitor
- - - Joint or simultaneous action
= = = Continuing activity

IMPLEMENTATION PLAN - 1978
INTEGRATED CEREALS PROJECT

ANNEX 6



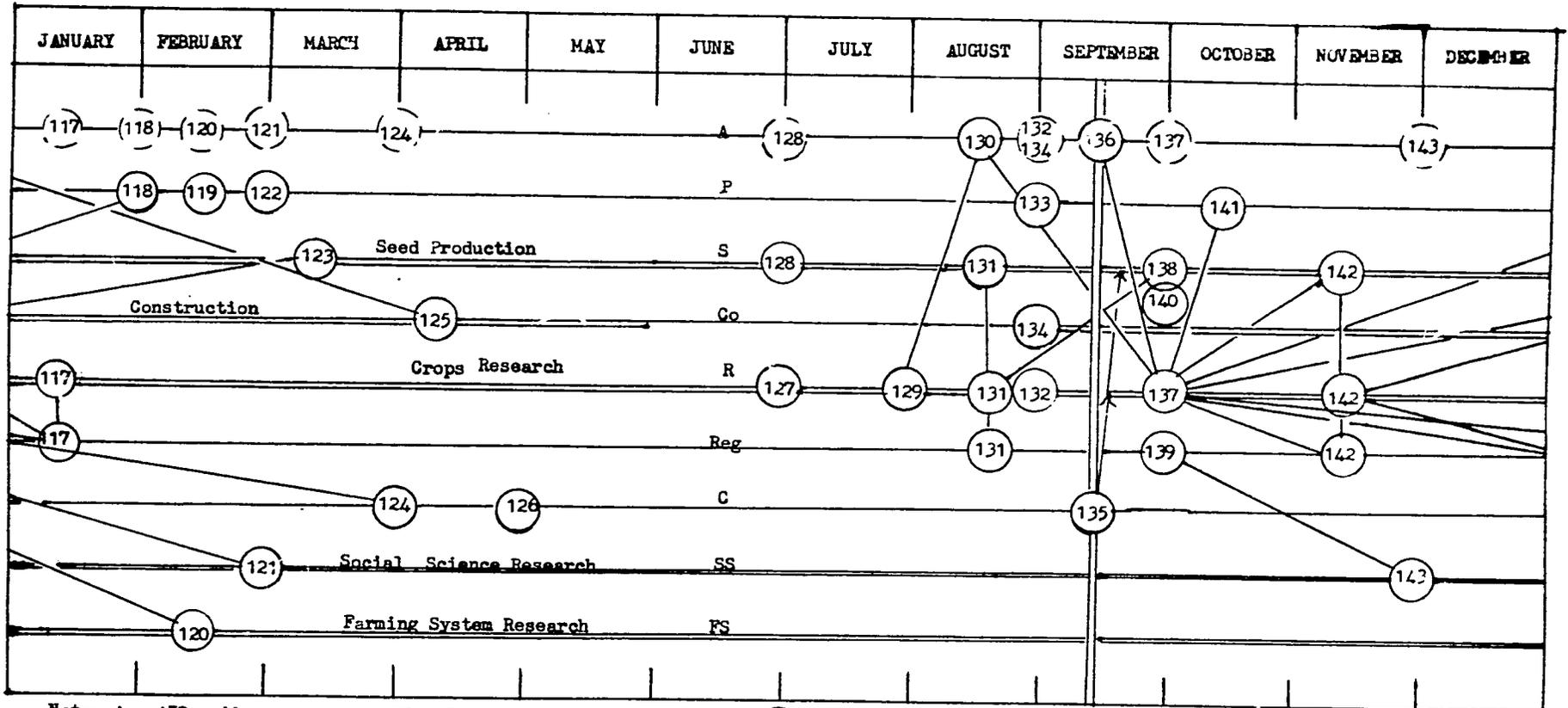
A-AID action
P-Participants
S-Seed
Co-Construction
R-Research/Administration

FC-Peace Corps action
Reg-Regional Programs
C-Commodities
SS-Social Science research
FS-Farming Systems research

○ Action points
○ Action points which AID will monitor
- - - Joint or simultaneous action
- - - Continuing Activity

IMPLEMENTATION PLAN - 1979
INTEGRATED CEREALS PROJECT

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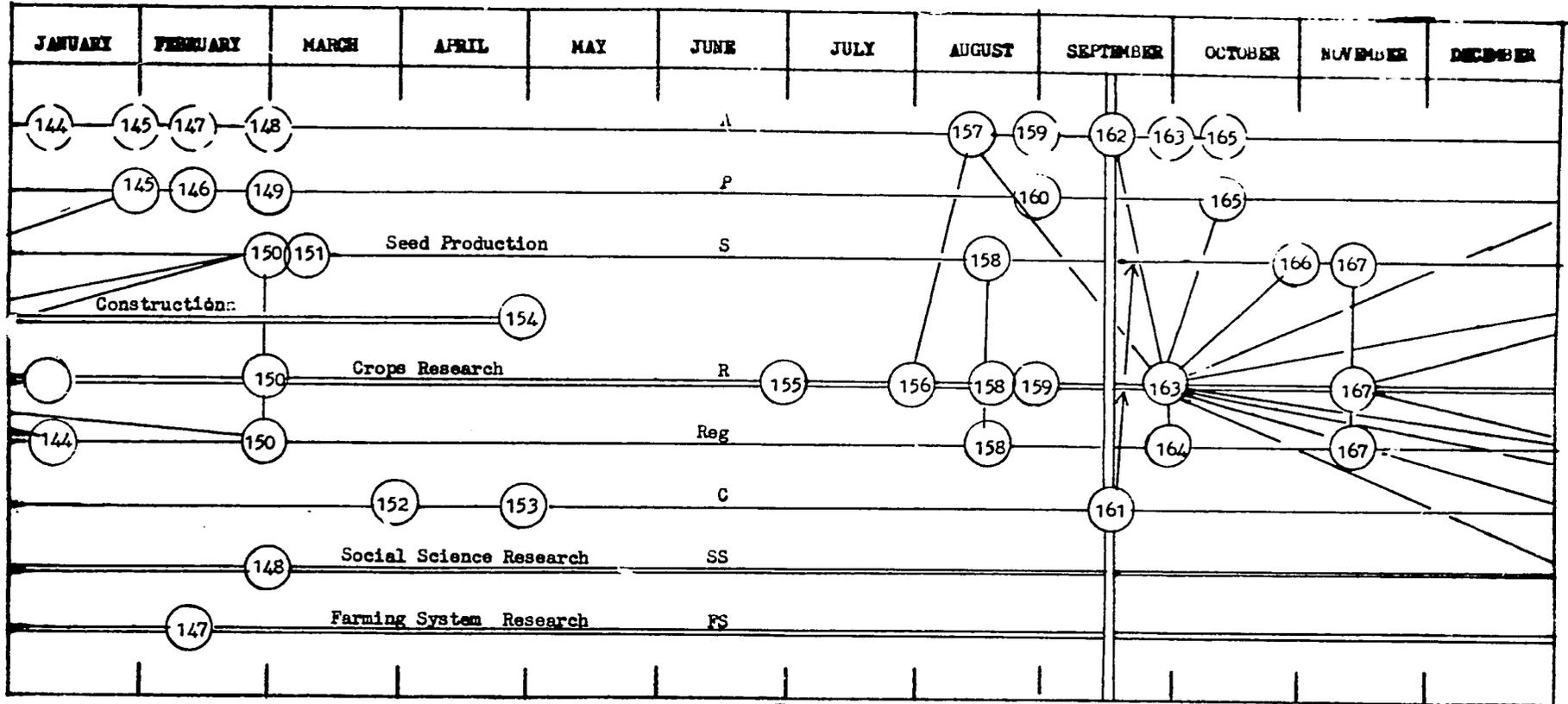


Note: A - AID action
P - Participants
S - Seed
Co - Construction
R - Research / Administration
FC - Peace Corps Action
Reg - Regional Programs
C - Commodities
SS - Social Science Res.
FS - Farming Systems Res.

○ Action Points
○ Action Points which AID Will Monitor
- - - Joint or simultaneous action
= = = Continuing Activity

IMPLEMENTATION PLAN - 1980
 INTEGRATED CEREALS PROJECT

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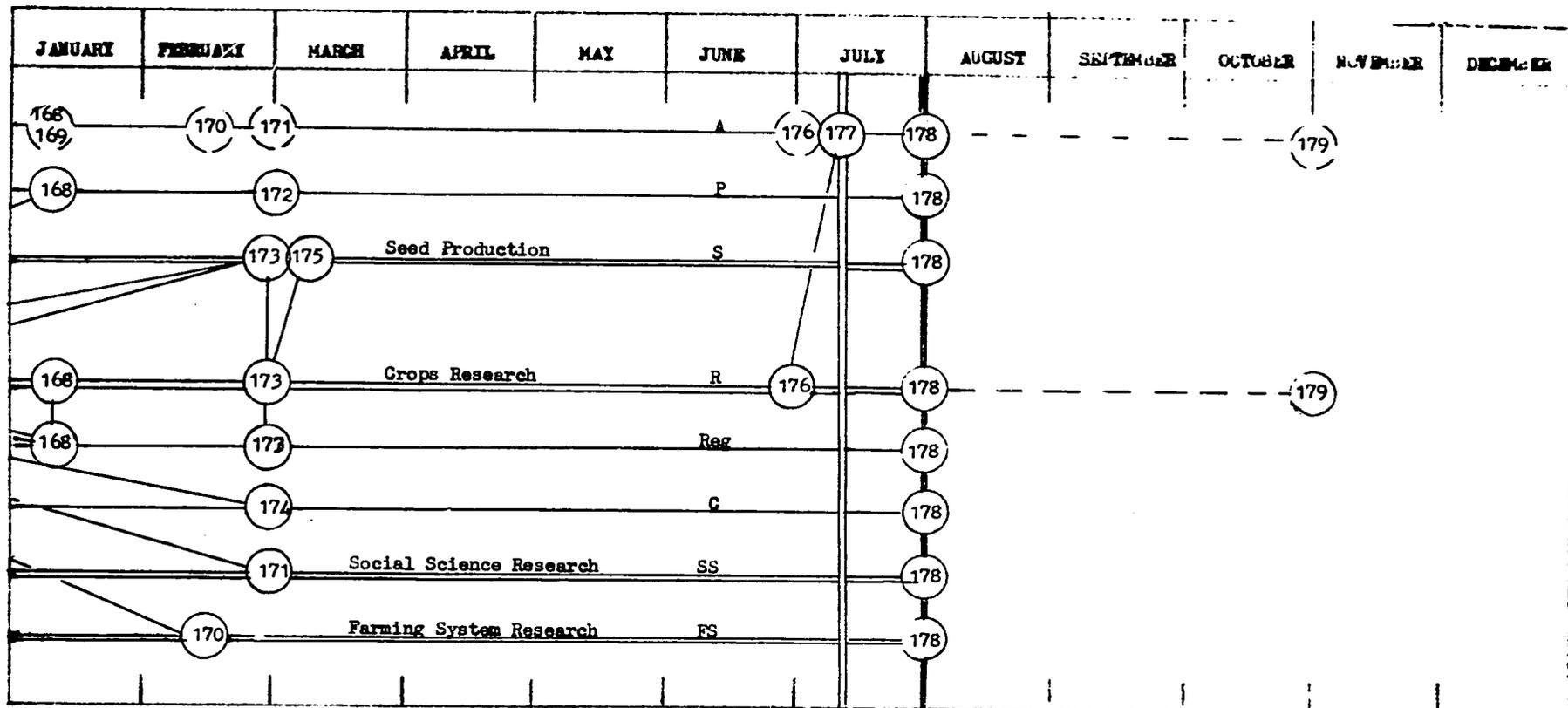
Notes: A - AID action
 P - Participants
 S - Seed
 Co - Construction
 R - Research / Administration
 FS - Peace Corps Action
 Reg - Regional Programs
 C - Commodities
 SS - Social Science Res.

○ Action Points
 ○ Action Points which AID Will Monitor
 --- Joint or simultaneous action
 === Continuing Activity

IMPLEMENTATION PLAN - 1981
INTEGRATED CEREALS PROJECT

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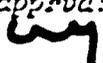


Notes: A - AID action
P - Participants
S - Seed
G - Construction
R - Research / Administration
FC - Peace Corps Action
Reg - Regional programs
C - Commodities
SS - Social Science Res.
FS - Farming Systems Res.

○ Action Points
○ Action Points which AID Will Monitor
- - - Joint or simultaneous action
===== Continuing Activity

PROJECT PERFORMANCE TRACKING (PPT) SYSTEM

Annex 8

country:	project no:	project title:	date:	X / original / / revision #	approval:
NEPAL	367-11-110-114	INTEGRATED CEREALS PROJECT	4/1/76		
<u>CPI</u>	<u>DESCRIPTION</u>	<u>1976</u>			
1.	9/30/76	Financing arrangements between USAID, HMG and IADS completed.	14.	12/15/77	Regional Research Program underway.
2.	10/15/76	Letter of credit opened in favor of IADS.	15.	12/15/77	Participant program for FY 78 planned.
3.	11/15/76	Team members arrive.			<u>1978</u>
4.	12/15/76	Long term and first annual program of work completed and approved.	16.	6/1/78	Participants selected, in language training and accepted by appropriate universities.
5.	12/15/76	Participant program for FY 1977 agreed upon.	17.	7/1/78	Variety and technology recommendations being given to farmers to try on own land.
6.	2/1/77	Commodity procurement initiated.	18.	9/15/78	Second annual reports submitted and recommendations made on new agricultural technology to be tested by farmers.
7.	3/1/77	Plans for FY 1978 construction approved and construction started.	19.	12/1/78	Revised programs of work submitted and approved.
8.	3/1/77	Research program being conducted.	20.	12/15/78	Participant program for FY 79 planned.
9.	6/1/77	Participants selected, in language training and accepted by appropriate universities.	21.	12/15/78	Seed plan for Nepal is submitted for review and approval.
10.	6/1/77	On-the-job and other training on how to conduct research and teach for JTAs and crop specialists underway.	22.	5/1/79	<u>1979</u> Participants selected, in language training and accepted by appropriate universities.
11.	9/1/77	First annual reports submitted.	23.	7/1/79	Adapted varieties and technologies being tested and approved on farmers own land.
12.	11/1/77	Construction starts for FY 78 season.			
13.	12/1/77	Revised programs of work submitted and approved as result of annual reports and evaluation.			

NEPAL	367-11-110-114	INTEGRATED CEREALS PROJECT	4/1/76	X Original	57
24.	9/15/79	Third annual reports submitted.	36.	12/1/81	Final report submitted.
25.	12/15/79	Revised program of work submitted and approved.			
26.	12/15/79	Participant program for FY 80 planned.			
		<u>1980</u>			
27.	5/1/80	Participants selected, in language training and accepted by appropriate universities.			
28.	7/1/80	Completion of construction program and facilities.			
29.	9/15/80	Fourth annual reports submitted.			
30.	12/1/80	Participant program (short term only) for FY 81 planned.			
31.	12/15/80	Revised programs of work submitted and approved.			
		<u>1981</u>			
32.	5/30/81	Last commodities procured.			
33.	6/30/81	Last participants return from training.			
34.	7/31/81	US participation in project completed. Fully functioning research system in operation.			
35.	9/15/81	Fifth annual reports submitted.			

SPECIAL EVALUATION QUESTIONNAIRE

This is a complex project dealing with several different aspects of the agriculture of Nepal. And while the mission does not presume to tell the external evaluators how to evaluate the project or what questions to ask, the questions listed below are indicative of USAID/N's concerns that the project be efficiently conducted and that it accomplish its objectives and purposes.

Questions which may be asked regarding each aspect of the project during the Special Evaluations follow:

a. Research/Outreach

1. Is the research practical for the small farmer and can he use the results? If not, why not?
2. Are the results of the research actually being transferred to the Regional and District Offices and thence to the farmers? If not, why not?
3. Is maximum use being made of the results of research done on the farmers' own land?
4. Are the linkages envisioned between research and outreach actually functioning? How can they be strengthened?
5. Is the training originally planned for the research officers still relevant? What changes should be made?
6. Is the long term scope of work being followed? The annual work plans? What changes are needed in the long term work plan?
7. Have formal linkages developed with the international agricultural research institutions as expected?
8. Are new varieties being adequately tested? Are they being introduced expeditiously? Is their introduction efficient?
9. Are the research-cum-demonstration kits being used properly? Are they the right size? Do they contain the proper ingredients? Are they effective? Would farmers pay the full cost of the kit in order to participate in the program? What changes should be made in the program?
10. Is the outreach portion of the project working properly? If not, why not? What on-the-job training needs to be given?

How can the information flows to and from the farm and the research stations be strengthened? Are the research officers and the Regional/district officers actually working together on the project?

11. What outside influences are slowing the rate of adoption of the new varieties and technologies (transportation, prices, markets, prejudices, religion, etc.)? How can these deleterious influences be counterbalanced?
12. What outside factors are speeding up the rate of adoption of the new inputs and ideas? How can they be strengthened? Would these outside influences be amenable to being researched?
13. What social science research would be useful to diffusion of the technologies developed in this project?
14. How can the research/outreach portions of the project be improved? Will the Nepalese be ready to take over the project without expatriate help when the project is finished? If not why not? What can be done to speed up their preparation so as to be able to take it over at the end of the project or does it appear that the project probably should be extended? For how long?

During the fifth year. evaluation, the following questions may be raised in addition to those listed above.

1. What has been accomplished by the project?
2. If it is recommended that the project be extended, what is recommended as the scope of work and level of effort to be undertaken?
3. Should the type of staff members supplied by the expatriate contractor be changed (e.g. an entomologist instead of an agronomist)?
4. Should the organization of the project staff be changed by HMG?
5. Should support of the project be broadened to other donors? Should USAID continue its support?

Based on the answers to these questions, the decisions can then be made by HMG and the USG as to whether to continue the project or not and in what form.

b. Seed Production

Ideally, the main function of this evaluation is to decide whether the seed industry should be organized with just a few large seed plants supplying the country's needs, whether there should be many small plants fulfilling this function or whether Nepal's needs can best be met by some other arrangement such as many small plants in the hills and a few large plants in the Terai. This decision is expected to form the basis for a much larger seed production and storage project to be developed in Nepal which might be financed by USAID alone or by USAID with other donor agencies cooperating.

It is expected that the Far Western plant envisioned in this project will be used as a research installation where many questions concerning the organization of the seed industry can be answered. Among these are the following:

1. How much effort is required to teach Nepalese farmers to produce good seed?
2. Can seed contracts be negotiated and enforced in Nepal? If not, what other course of action is open to HMG and the AIC to get seed produced?
3. How far can seed be transported to get it processed? To sell it? How far will a farmer travel to pick up seed?
4. What are the costs of seed transportation?
5. How much processing does seed need in Nepal?
6. What is required to store seed properly in the terai? The hills? for one year? for two years? for three years?
7. What level of training would be required for how many people to adequately service alternative production arrangements?
8. What kind of financing arrangements are needed?
9. How much of the processing can a farmer be expected to do? Cleaning? Drying? Treating? Packaging?
10. How can farmers be encouraged to develop a private sector seed business? How could the AIC support it? Financing? Custom processing? Supply of inputs such as bags, pesticides, information literature?

11. What are possibilities of developing an export business around the seed industry?
12. What changes in or additions to existing laws are required to support a seed industry?
13. What are the basic problems facing a seed storage program in Nepal? What basic requirements must be met to store the common seeds (wheat, rice, maize) without appreciable loss in quality for 6 months? one year? two years? three or more years?
14. How should the seed industry be organized in Nepal? Financed? Who should operate? who should store seed?
15. Other questions might deal with transporting, village production, standards, releases of varieties, restrictions on varieties in reference to areas grown, purposes (food, feed, industrial etc.)



His Majesty's Government

ANNEX X

MINISTRY OF FINANCE
KATHMANDU
NEPAL

23rd April 1976

Dear Mr. Grader,

This is with reference to your letter of 2 April 1976 concerning the draft copy of the Integrated Cereals Project Paper.

I have the pleasure to inform you that His Majesty's Government of Nepal have agreed in principle with the said project paper and hereby request you to assist necessary funding. I understand that specific project implementation will be the subject of separate project agreement signed by our two governments.

I should be grateful if you would kindly process this request for AID approval.

Sincerely yours,


Heet Singh Shrestha
Joint Secretary

Mr. Charles R. Grader
Director
USAID
Rabi Bhawan/Kalimati
Kathmandu.

I. Project Description

A. Statement of Purpose

The immediate purpose of the project is to strengthen the Ministry of Food, Agriculture and Irrigation's (MFAI's) capacity to (1) generate improved production technology for the major foodgrain crops and related cropping systems and (2) transfer that technology to farmers. This transfer of technology is an indispensable part of the larger and longer-run objective of increasing foodgrain production in the hills and the terai of Nepal.

The project is based on a functional concept of research: i.e., outreaching adaptive research with strong linkages to the Extension Service and the farmer, both for feedback on applicability to improve research problem identification and for the promotion of acceptable technologies to increase production.

The project will build upon the facilities, organization, and staff developed by His Majesty's Government (HMG) during the past decade. As presently envisaged, the project is planned over a multi year period.

B. Project Activities

1. Adaptive Varietal and Production Technology Research

The research efforts of this project are based upon a close interaction between the traditional functions of Research and Extension — with a constant feedback between the two. The project will focus on the principal foodgrains, rice, maize, and wheat, although attention will also be given to minor food crops such as millet, barley, pulses, and potatoes.

The research program will combine commodity and subject matter oriented programs into a farming systems approach. This approach will require improved problem identification: i.e., an improved understanding of farming systems in different geographic areas; improved definitions of pressure points in the system; improved identification and selection of which pressure points are researchable and potentially overcome; and improved information flows of problems needing research to the National Crop Coordination Teams.

The commodity research programs will work on components of the farming system, always trying to make the new technologies fit the system and always working to move the system to a higher level of productivity. This type of production technology research involves the economic study of production packages and

- 2 -

inputs. It combines research for developing improved varieties, for determining optimum levels of fertilization and for developing better cultural practices, including intercropping and multiple cropping, with an operational research aspect for testing the different technologies under different agro, socio, and economic conditions.

Research activities will be specified in workplans to be jointly prepared by the Contractor and HMG within 90 days of the arrival of the Contract Team Leader. In general terms, the following research activities are planned during the first year of the project:

- (a) A system will be designed to coordinate the traditional Research and Extension functions, with a two-way flow of information from one to the other. Manpower projections and training plans will also be developed for the Department of Agriculture and the National Coordinated Crop Programs.
- (b) An interdisciplinary team composed of crop specialists, a farming systems specialist, a livestock specialist, and at least one agricultural economist from the Ministry of Food, Agriculture, and Irrigation will be organized and will be sponsoring (or conducting) studies and definitions of farming systems and pressure points and setting research priorities for the National Crop Coordination Teams.
- (c) Collection and testing programs will have begun for several minor crops, barley, millet, oilseed, pulses, and potatoes.
- (d) Continued varietal research will be conducted by the Rice, Maize, and Wheat Coordination Teams — i.e., development, selection, and testing under varying conditions.
- (e) Extensive field testing and demonstrations of recommended varieties and practices under actual farm conditions will be conducted. Results will be measured by their technical and economic feasibility.

2. Research-Demonstration

As part of the improved two-way communication between the Research and Extension services, Crop Production Specialists will be assigned to the Regional Directorates. These Specialists and other staff will help to identify practical problems which require attention of the Crop Coordination

- 3 -

Teams, as well as to transmit new research developments to the district-level Extension workers. Because of resource constraints, the earliest attention will be devoted to maize improvement. Since improved seeds play an integral part in increased production this project will also develop an improved system for managing and operating a program of quality seed production by private farmers. Field "certification" will be relied upon until a "true" seed production/certification system can be developed. It is intended that a more detailed review will be made of Nepal's seed industry requirements during early FY 78. USAID participation in meeting these needs will be examined in conjunction with this review, with specific reference to additional seed processing plants and storage facilities as might be agreed upon by AID and HMG under a separate project.

Specific production activities will be described in the workplan referred to in Section I.B.1, but in general terms, the following activities are planned during the first year of the project:

- (a) The Maize Coordination Team will conduct a training program for Maize Production Specialists who will then be posted in the Development Regions. The other Crop Coordination Teams will conduct similar training programs in the following years.
- (b) The Regional Directorates, in collaboration with the Maize Coordination Team, will conduct training programs for maize-specific JTA's who will be posted in the Development Regions. The other Crop Coordination Teams will conduct similar training programs as their capability develops.
- (c) The Maize Production Specialist and maize-specific JTA's in each Regional Directorate will conduct further training programs for district-level personnel.
- (d) On-farm demonstrations, under the supervision of the Crop Production Specialists and crop-specific JTA's will be conducted.

For a more detailed description of the project, see the Integrated Cereals Project Paper.