

**STRENGTHENING
TERTIARY AGRICULTURAL EDUCATION
IN THE PHILIPPINES:
ANALYSIS AND RECOMMENDATIONS
FOR DESIGNING USAID/MANILA'S
AGRICULTURAL EDUCATION IMPROVEMENT PROJEC
(AEIP)**

November 1988



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PHILIPPINES: ANALYSIS AND RECOMMENDATIONS FOR DESIGNING
USAID/MANILA'S AGRICULTURAL EDUCATION IMPROVEMENT PROJECT
(AEIP)

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INTRODUCTION

The Medium-Term Development Plan (1987-1992) of the Government of the Philippines (GOP) places a high priority on developing agriculture and increasing rural productivity, employment and incomes. To this end, the Plan also emphasizes the importance of improving the quality and relevance of agricultural education and training systems.

In furtherance of the educational objective, the Technical Panel for Agricultural Education (TPAE) of the Department of Education, Culture and Sports (DECS) designed a National Agricultural Education System (NAES) -- generally referred to as "the Macro Plan." The Macro Plan envisages restructuring the course offerings of the 285 existing public and private agricultural colleges, institutes and universities. Under the Plan, government funding support to higher agricultural education would also be redirected to and concentrated on only approximately ninety of the public institutions. The institutions selected would thus become key institutions with different functions in a hierarchical pyramidal network of Provincial and Regional institutions, with the University of the Philippines Los Banos (UPLB) at its apex as a National institution. Assistance to existing institutions outside this structure would be continued only for secondary-level education.

Following some preliminary study -- including a proposal by AID consultants in March 1988 and a workshop in August -- USAID/Manila prepared a Project Identification Document (PID) in September 1988 proposing that an Agricultural Education Improvement Project (AEIP) be developed to provide some support to the Macro Plan, targetted at several of the regional-level institutions. AID/Washington approved the PID in October 1988 and authorized USAID/Manila to proceed to development of the Project Paper.

The Pragma Corporation was then contracted to provide a team of five people for about 30 days to assist in preparing a design study as a basis for USAID's preparation of the Project Paper. The time available to prepare this study has been extremely brief. Approximately two weeks were spent reviewing documentation, meeting with USAID and Philippine government officials; and making a series of brief visits to a few pre-selected institutions in Luzon, the Visayas and Mindanao which were tentatively identified as possible future regional institutions. A further two weeks were spent analyzing and consolidating the team's findings, briefing various officials and writing this report. While this time-table was tight, the team benefitted from earlier research documented by AID and other donors, as well as the USAID staff's assistance in collecting and organizing available materials for the team's use, and in facilitating appointments with appropriate government officials and college personnel.

EXECUTIVE SUMMARY

The Agricultural Education Improvement Project (AEIP) is a five-year, \$17 million (estimated) project developed to target regional-level agricultural colleges and universities in support of the Government of the Philippines Macro Plan for the agriculture education sector. The strategy and design proposed by the Team for the project consist of focusing the support on four existing regional institutions, operating in tandem with another four provincial colleges or universities which have strong potential for future regional roles. The substantive impact of the project will be in terms of eventual increased farm and agribusiness incomes in target rural areas working through increased quality of graduates and improved research and extension activities by the agricultural education institutions supported by the project.

The basic outputs anticipated for the project pertain mainly to the strengthened capacities of the target agricultural education institutions for delivery of academic, problem-oriented research and outreach services. The design also involves establishing capacities of the target institutions in selected subject areas of direct relevance to Philippine agriculture.

The proposed project design differs with the PID regarding the significance of the short-term impact expected during the five-year term of the project. This can be explained by the findings of Team in the course of its survey, that the regional system for agricultural education is not currently in place and that most of the schools identified in the PID for possible assistance have no near-term potential for regional impact. Nevertheless, this proposed design is in agreement with the PID regarding the need for proposed USAID assistance including the basic nature of such support. The Team sees a need for the Mission to make a strategic decision on the provision of this assistance for establishing improved capacities for producing agriculture graduates, research and extension instead of targetting short-term impact.

The Design Team would like to acknowledge the invaluable assistance of USAID Project Officers Jean Du Rette, Jane Nandy and Kenneth Prussner in the course of its work. The USAID Project Committee members and the DECS-EDPITAF Group provided information guidance and comments which were helpful in the conduct of the work. Finally, credit should be given to the educational administrators and faculty in the various agricultural universities and colleges who have assisted the Team in the course of its survey. Special thanks are also due to Ms. Reine Villarosa who provided baseline information, contacts and made the survey appointments for the Team -- an especially crucial help given the very limited time available for this engagement.

During the course of the study, the team noted differences in some of the assumptions upon which the PID was predicated. Although some change in AID assistance is thereby suggested, the team's judgment is that the basic need for the proposed USAID assistance is not negated: the recommendations merely modified the type and mode by which such assistance is to be provided.

1. THE PHILIPPINE DEVELOPMENT PROBLEM

POPULATION AND RURAL/AGRICULTURAL SECTOR

The Philippines is predominantly rural (about 62 percent),¹ and predominantly poor. Roughly 55 percent of its 58 million inhabitants -- somewhat more than 32 million Filipinos -- subsist on incomes that fail to meet their basic needs for food, clothing and shelter. Although the proportion of the poor has not changed much over the past twenty years, their absolute number has doubled -- primarily from high birth rates. As a result, the Philippines today has the highest level of poverty in Southeast Asia. Some 17.5 million are unable to meet even minimum needs for food alone. The bulk of these "core poor" are rural people - rice and corn farmers, coastal fishermen, plantation and other landless laborers, and kaingeros.²

The ever increasing numbers of rural dwellers threaten to exceed the countryside's current carrying capacity, as forest, waterways and fragile soils are simultaneously despoiled by a combination of casual husbandry, uncontrolled and unconcerned private interests, and lack of effective public policy.

There are essentially three root causes of Filipino poverty:-

1. Unequal asset ownership, particularly of land;
2. High population growth, especially among poor Filipino families; and
3. Low agricultural productivity.

Many rural dwellers are landless, numerous others own only small farms operating at the margin of subsistence, while large tracts belong to a few relatively wealthy individuals and corporations.

¹ The proportion of Filipino families who live in cities has edged up eight percent in 14 years -- from 30 percent in 1971 to 38 percent in 1985, as rural poverty spills over into the cities. While migration to the cities has kept rural poverty constant at 58 percent, the urban poor have steadily increased from 38 to 42 percent of the total urban population.

² I.e. itinerant "slash, burn, cultivate and move on" rural dwellers.

Population growth thus presses heavily on the limited productive land resources available. Farmland settlement density, already

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high, continues to increase. Low levels of agricultural production accentuate the problems of poverty, while the need is for ever greater productivity -- just to stay abreast of today's misery. In short, while there are many poor in urban areas in the Philippines, "rural" almost always evokes images of poverty.

The 1987-1992 Philippine Medium Term Development Plan gives primary attention to agricultural development. This is imperative if the government's objective of alleviating poverty is to be accomplished as the majority of the poor are in this sector. The government also sees the possibilities for raising the sector's past growth performance from 4.0 to 5.0 and its backward and forward linkages to the industrial sector. Planners do not seem to think the industrial sector (or any other sector) could assume a leading sector role in the intermediate future. It is therefore important for agriculture to develop. The Plan, in a sense, eclectic. It is the first planning document of a new government faced with the task of overhauling a whole economic system, raising income and employment levels, and paying a large inherited foreign debt. Major policy reforms have to be undertaken in the area of monetary policy, public finance, industrial structure (particularly pertaining to the enlarged state corporate enterprise sector and state initiated monopolies), trade and industry protection, and the distribution of social services.

The policy for agriculture is aimed at both productivity increases and a more equitable distribution of income that could bring about a substantial alleviation of poverty. Increasing productivity must come from technological improvement in existing major crops and in new ones, and from intensive higher-income cropping systems especially in non-rice areas. In the past, gains in agriculture Gross Value Added (GVA) came from input increases such as fertilizers. Both the land put to cultivation and labor input rose. Harvested area grew by 75 per cent from 1950-70 and 21 per cent from 1975-80. Since 1980, however, the harvested area has stopped increasing; and has even declined slightly. Population growth, lack of non-agricultural employment opportunities and slack technological changes in agricultural production failed to create sufficient and/or higher income employment, thus pushing people to marginal lands. They have encroached into the forest areas exacerbating the denudation of forests by loggers. Farm size declined as population and employment in agriculture grew faster than cultivated area -- their respective growth rates were 50 per cent, 36 per cent 15 per cent, between 1970 and 1985. In 1980, 23 per cent of farms were of less than one hectare size, and 50 per cent were of less than two hectares. These small farms, however, covered only 16 per cent of the total cultivated area. The large estates (with sizes

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At 640 persons per sq. km.

greater than 50 hectares) composed of about one fourth of the cultivated land, remained intact. Some of the estates hired wage labor but a large proportion were share-tenancy contracts. A similar labor situation prevails on the medium-sized farms of 10-50 hectares.

Agricultural productivity in all major crops is considered to be very low by world, and other Asian standards. Yields for selected crops are as follows:

	<u>Philippines</u> 1980's	<u>Highest Yield in Asia</u> 1974
rice	1.5 tons/ha	5.8 tons/ha (Japan)
corn	1.0 tons/ha	6.6 tons/ha (Israel)
sugar	5-6 tons/ha	8.1 tons/ha (Indonesia)
coconut	50 per tree	

Source: World Bank, Philippine Agricultural Development Strategy Paper, 1987, FAO Production Status, 1974

2. RELEVANT EXPERIENCE WITH SIMILAR PROJECTS

In the 1950s, 1960s and 1970s, USAID involvement in agricultural education focused on developing capacity at a number of institutions to provide training and undertake research in agriculture and related fields. A positive result of those efforts was the development of a basic network of institutions with some trained faculty, facilities and equipment. However, in the late 1970s and early 1980s, it was recognized that basic institution building efforts were not sufficient to address agricultural and rural development problems at the regional levels. Thus, subsequent mission focused more on adaptive research and improved hands-on training for students. The four Projects to this end, are summarized here:

1. Agricultural Research and Development Projects

Through two Agricultural Research I and II Projects (ARDP), -- from 1976 to 1985, AID provided assistance to develop adaptive research capacity at 20 institutions and incorporate these institutions in the Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development (PCARRD) research system. Although many Regional agricultural colleges developed human capacity, (Table 2.) to carry out applied research to test newly developed technologies under their respective agro-climatic conditions, budget constraints severely limited their ability to sustain or expand research activities, especially at the farm level. In the on-going Rainfed Resources Development Project, AID is providing assistance to strengthen PCARRD's capacity to establish research priorities at the national level, evaluate research proposals, monitor and assess results, and develop materials for distribution to other institutions, including agricultural colleges and universities, and farmers.

Table 2. Summary: Manpower Development ARDP I & II

	<u>M.S.</u>	<u>Ph.D</u>	<u>ST Training</u>	<u>Assisted Agencies/Centers</u>
ARDP I	247	48	93	39
ARDP II	<u>231</u>	<u>34</u>	<u>126</u>	<u>391</u>
TOTAL	478	82	229	430

These levels imply a considerable capacity to enhance research capability.

2. Agricultural Education and Outreach Project

Agricultural Education Outreach Project was designed in the early 1980s to improve practical on-farm training for students. While the AEOP experience was a small effort (six institutions), the Philippine government extended this effort to a larger number of institutions through PL 480-generated peso expenditures. A March 1988 consultants' review of this effort, indicated these lessons learned:

- (1) Faculty can work effectively with barangay residents when provided some means of transportation;
- (2) Working with crop and livestock enterprises on university farms improves student employability and entrepreneurial skills;
- (3) Non-formal skill training conducted by college faculty for farmers, rural women and out-of-school youth contributes to increased income earning capacity; and
- (4) Regional agriculture colleges with improved facilities and know-how can be effective partners with extension workers.

3. Farming Systems Research Development

The ongoing Farming Systems Research Development-Eastern Visayas Project (FSRD-EV) has demonstrated that the Visayas State College of Agriculture can work effectively with Department of Agriculture at the regional level to assist in developing technology that addresses upland farmers' problems.

The Project also demonstrated that channeling funds directly to the assisted institution is an effective model for Project implementation.

3. PHILIPPINE AGRICULTURAL EDUCATION: CONSTRAINTS AND OPPORTUNITIES

Philippine agricultural development effort is characterized by frequent reorganization and mobilization of the farm community for increased production. Technical innovations and small and large projects are reported each year, all aimed at increased production and incomes on small farms. At the same time there are some very real obstacles to development and valid reasons for shortfalls. Pest attacks and adverse weather plague Philippine agriculture in addition to man-made highly bureaucratized delivery systems. As a nation of 7000 plus islands, the Philippines must contend with high costs for communications and transportation in the conduct of agricultural production, agribusiness, and agricultural administration, extension and education. These factors also affect the profitability and progress of agriculture.

Well-meaning administrators, extension field staff, talented scientists, teachers and willing farmers are anxious to make improvements in the agricultural sector, but they are frustrated by seeing little progress, while their neighboring Southeast Asian countries achieve high rates of growth. The frustration is accentuated by the recognition that national and international agricultural research and educational institutions in the Philippines have played key roles in the development of other Southeast Asian countries. The University of the Philippines, Los Banos (UPLB) remains Southeast Asia's premier institution of higher agricultural education. The Southeast Asian Regional Center for Graduate Studies and Research in Agriculture (SEARCA) based in Los Banos, in cooperation with UPLB, has sponsored the education of many national leaders in agriculture. The International Rice Research Institute, also in Los Banos, is recognized worldwide for its contributions to rice agriculture through research and training.

The climatic impediments to agricultural production in the Philippines are real and seemingly intractable at times, when critical harvests of annual and perennial crops are destroyed by typhoons. Communications and transportation infrastructure is developing slowly, while maintenance alone is a significant burden. There is also an inherent tendency to bureaucratize and subjugate individual productive effort to group deliberations and decisions and (non-decisions).

Much can be accomplished through choices of enterprise and technology to ameliorate the effects of weather and infrastructure. Pests and disease, soil and water management and other technical areas are subject to enlightened intervention. And, if individuals can be instilled with the confidence that their knowledge and skills would make a difference, the ploy of deliberation and excessive organization will become a less formidable obstacle. In short, an approach that encourages decentralization and individual effort; that provides extension

workers with solid knowledge, skills and productive technologies; and that, more broadly, produces agricultural graduates with the confidence and determination for individual inquiry and excellence; would do much to bring change to Philippine agriculture.

Agricultural colleges and universities have a major role to play in developing and providing information to agencies responsible for disseminating technology to farms. Agricultural colleges and universities can also play an important role in analyzing the systems that deliver technology and other technical inputs, and in providing information for setting policies and organizing the agricultural development effort. When agricultural systems do not work, the university should critically examine them and assist in the formulation of effective policies and programs. Most of all, colleges should produce entrepreneurs, government officers and scientists who are equipped and determined to identify and exploit opportunities in the agricultural system.

The agricultural education system itself, however, mirrors the problems of the agricultural system as a highly fragmented, underfunded amalgam of institutions.

The agricultural institutions which were visited by the team possess and clearly articulate missions to improve standards of living in the rural sector through agricultural teaching, research and extension. A focus on small farms and the rural poor was often expressed. The mission is not new, but has both secular and religious traditions that go back at least to the turn of the century when an influx of human and financial resources associated with the American occupation following the Spanish-American War blended effectively with an indigenous aristocratic noblesse oblige and widely dispersed activities of various religious groups to establish an agricultural education infrastructure. Many agricultural schools and agricultural experiment stations were established.

Pampanga Agricultural College, Magalang, Pampanga was begun around 1900 as an experiment station, and was later made into a school. Don Severino Agricultural College was begun by Thomasites, a movement of American school teachers who came in large numbers to the Philippines in the early 1900's. Other agricultural schools visited by the team similarly possess a long history of commitment to agricultural progress.

Since the early foundation of an agricultural education infrastructure, the national drive to develop small-holder Philippine agriculture has been continually renewed by successive Philippine governments and international efforts, including land reform under President Magsaysay and succeeding Presidents. The Masagana 99 (for rice) and Masaganang Maisan (for corn), were major national programs that mobilized human and financial resources nationwide for rural development and agricultural production. Agricultural schools enthusiastically embraced these

efforts, and today reflect the essential notion of these efforts that agriculture can be "fixed" with present knowledge, if only the proper organization and approaches are put in place. The myth of the "quick fix" permeates the agricultural system, including the academic institutions.

In the Team's opinion, the major challenge for this Project is to avoid the notion of the "quick fix". It should not be seen as a new program that replaces old initiatives and that if properly implemented will show impact on agricultural production within a short period of time. Indeed this has afflicted public efforts in agriculture for several decades. The Project should instill the view that agricultural development requires sustained, long-term, deeply inquiring and innovative effort for human, physical and technological capital formation. It should emphasize the importance of individual initiative in outreach, teaching and research. Presently, the individual Philippine agricultural scientist, educator and extensionist is hidden in a maze of projects, organizations, task forces, committees and councils. Among all the institutions engaged in Philippine agricultural development, agricultural education institutions are perhaps in the best position to take the long-term view, instill the value of individual effort and make the long-term investment.

Outreach activities of the agricultural colleges appear effective in reaching farmers but they deliver little that can permanently transform the means of production. Their outreach projects revolve around present farm activities, small and temporary capital infusions that are quickly dissipated and inspire extra-effort that is also quickly dissipated. Lessons learned from the activities are not brought back to the classroom and technical problems are not brought back to the laboratory or research farm. Outreach activities are also largely independent of the educational and research process. Furthermore, outreach is largely focussed only on production agriculture, with little effort on marketing and other agribusiness, policy, and other aspects of the agricultural system. Engagement of the educational institutions with farmers in production agriculture should be strengthened by supporting these efforts through research and teaching. When technical problems are confronted, research should be conducted to solve the problems and/or technical resources brought in from other institutions that can help solve the problems. But the outreach effort should also be broadened to cover aspects of agriculture outside of production - e.g., post-harvest processing, marketing, other agribusiness and agricultural planning and policy.

Student and faculty research projects examined at the colleges mostly appeared unrelated to one another, unrelated to outreach activities, and deficient in methodology and analysis of their potential importance to agricultural development. Faculty cited suspected technical problems in soil, drainage, crop pests, and disease, animal nutrition and in other areas that they were unable to even try to solve because of inadequate resources. They suspect that there are many other problems and opportunities

that go unnoticed. There are, of course, exceptions. One institution reported success in the solution of pest problems through its research, and another had introduced an entirely new enterprise to shoreline fishermen. There are likely other such achievements that did not come to the attention of the team, but by far, the deficiencies were more obvious. But the problem remains -- rarely does academic research go to the root causes of agricultural obstacles and their solution.

Instruction at colleges is largely in the classroom, which one director of academic programs characterized as "lecture, lecture, lecture." Throughout the schools visited, deficiencies in teaching equipment, supplies and materials were cited. One school teaches micro-computer applications entirely on the blackboard because no microcomputers are available. School farms are under-utilized for teaching, and practical farm experience was almost non-existent in the curriculum, although one school did report a farm practicum near the beginning of the students' program, so that subsequent classroom lectures could be made more relevant.

The Technical Panel for Agricultural Education (TPAE) has set the minimum requirement for graduation at 147 semester hours including 6 hours for BS thesis research. Semester hour requirements at most of the colleges visited exceed this minimum. Several schools provide the option for students to participate in a practical farm experience rather than write a thesis, but the observation was made that the students with higher grades are encouraged to write a paper and those with lower grades are encouraged (indeed required in some cases) to take the practicum. Agribusiness is in the curricula but it appears oriented solely to organization and management, with little foundation in agricultural production economics, agricultural prices, or land and commodity economics. For a country in which trade is so important to agriculture, it is surprising that the economics of trade and the economics of development do not appear in the curriculum.

College curricula vary little across schools because many of the basic courses are established by the national Technical Panel. Differences occur in the content of courses in nominally similar areas, amount of time in laboratory and field experience, quality of teaching and amount and quality of practical experience, as well as in additional course work required above the minimum. There appears to be a tendency to assume that a larger number of classroom hours increases the quality of the graduate.

An analysis of one institution's curriculum whose semester hour requirements were 19 per cent higher than the Technical Panel's minimum, nevertheless only carried the student through college algebra, trigonometry and elementary statistics in all majors. Calculus and agricultural statistics were not offered. Neither was agricultural economics, rural sociology or other social science courses oriented to agriculture offered, except

possibly in a "management" course. Neither agricultural development nor agricultural policy occurred in the curriculum of these schools, or any other undergraduate curriculum examined. Crop sciences were well represented, unlike livestock sciences. The breakdown of subject matter by percentage of total semester hours was as follows:

Basic Science and Math	15%
Language (English, Filipino, Spanish)	19%
Philosophy, History, Religion	10%
Socio-Economics	7%
Agricultural Major	32%
Other agriculture	17%

The fifty-fifty split between core curriculum and agriculture was fairly typical. Crop sciences gave more courses to their majors than did animal sciences, and animal science majors took more animal science courses than *vice versa*. Crop and animal sciences majors took far less economics than economics majors took crop and animal sciences courses. Overall, from discussions and sample curricula, the Team concluded that in terms of strength in subject matter depth and number of courses offered, crop sciences programs were best, distantly followed by animal sciences, engineering, quantitative methods, economics, rural sociology and related fields, and environment/ecology, in that order.

There was no evidence that learning experiences other than classroom lectures were available to any significant extent, and the classroom experience itself is a fairly spartan affair. Little teaching equipment is available and students do not have access to basic laboratory instruments or micro computers in most instances. In summary, strengthening of quantitative methods, policy, agribusiness (especially theory foundations in production economics, agricultural prices, trade and development and livestock economics), environment and natural resources, farming systems, and other fields is urgently needed to upgrade the basic agricultural college curriculum.

OTHER DONORS

The need for a more practical education has been noted by a number of agencies, and as a result the Asian Development Bank, the Australian International Development Assistance Board (AIDAB), and the European Economic Communities are all planning projects to improve agricultural education. Their support is planned in the context of the Macro Plan for Agricultural Education described in Section 4.

Donors other than USAID will mainly support the Provincial Technical Institutes for Agriculture (PTIAs), and the Department of Education's efforts to develop some practically-oriented diploma and bachelors degree programs. Their efforts will include sizeable amounts of construction as well as curriculum

development in some technical areas. The D.A.T. (Diploma in Agricultural Technology) and B.A.T. (Bachelor's of Agricultural Technology) will prepare graduates for careers in production agriculture, the agricultural extension service and agribusiness fields. The Australian Agricultural Education Project is expected to upgrade 12 PTIA's, likely to be concentrated in regions where they have previously been involved (Regions II, VII, and X). The amount of the grant is US\$ 16.3M with \$1.5M Government of the Philippines counterpart funds.

The European Community is expected to support the upgrading of six colleges or high schools into PTIA's, again located in areas of present activity by member countries. These include schools in Aurora, Antique, Misamis Oriental, Suralla (Davao), Abra, and Ifugao Provinces. The grant for this project is expected to be \$12.5M with \$1.6M of counterpart funds. The Asian Development Bank-Oil Producing Economic Cartel countries (ADB-OPEC) Agricultural Technology Education Project (ATEP) begins in 1988 under DECS Order No. 37 s. 1988. It will assist 13 PTIA's, 7 designated regional colleges of agriculture and the national college of agriculture. Regional schools to be assisted are those in Regions III, V, VI, VIII, X, XII, and XIII, PTIA's assisted will be located in every region. The ATEP funds comprise US\$ 22.3M in soft loan funds and US\$ 2.4M GOP counterpart funds.

There will be ATEP activity at four advanced institutions that the team recommends for consideration by USAID. These are the University of Southern Mindanao, the Visayas State College of Agriculture, The Central Luzon State University and the University of the Philippines. The Team includes these schools for consideration for assistance by USAID since they have previously received USAID assistance and significant efficiencies will be realized by building on previous investments, rather than starting with all previously-unassisted institutions. Furthermore the Team considers that the Philippine government's objective of regionalization can best be served by strengthening the regional missions of these advanced institutions in a model framework which matches them with other less developed, potential regional institutions.

The Team's rationale and recommendations for USAID assistance are outlined in the next section.

A summary of the Team's findings and review of the Philippine agriculture education sector, including the recent reforms, is shown in Annex A.

4. RATIONALE FOR U.S. ASSISTANCE TO TERTIARY AGRICULTURAL EDUCATION, AND USAID PROJECT OPTIONS

Agriculture in the Philippines -- and the rural sector in general -- has tremendous latent capacity for development. Agriculture is the food producer, a provider of raw materials for processing industries, and the prime source of employment. Yet crop yields in the Philippines for basic staples such as rice and corn are far below those in neighboring countries with similar climatic and resource conditions. Consequently a sustained effort to increase agricultural productivity could have a significant impact on the incomes of those who depend on farming for a livelihood. As incomes increase, so too will the demand for consumer goods, and rural enterprises, in turn will become a major source of employment for what is now a rapidly growing -- but largely underemployed -- labor force.

As rural enterprises gain in experience and sophistication, they too will have an impact beyond their current limited bounds. The primary constraints on rural enterprise development are low demand and low labor productivity.

Agriculture is initially and fundamentally a biological science, linked to economic considerations and market forces. As such, conditions are never stable. Continuous adjustment and adaptation are necessary to adjust to the changing environment. With "traditional" agricultural production practices which do not pay attention to the need for constant adaptation, yields gradually deteriorate until they reach a very low stable state. This is the situation today for large numbers of farmers throughout the Philippines. Even where modern agriculture has been practiced in the recent past, and production increases realized, there is no plateau upon which to rest, for without constant attention, even these relatively higher productivity levels will eventually decline. Furthermore, as production and productivity rise, the impact of economics and market forces begin to be felt -- in the form of the consumer's ability to procure, availability of product at any particular time, individual preferences, and the need for improved quality control

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in the face of competition from gaya-gaya neighbors. These

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factors, plus the cost of inputs for production all impact on the farmer's ability to dispose of his/her commodity and -- given the ability -- the interest to produce more the following season. In many respects, the situation can be likened to climbing a "down escalator". Knowledge is essential to gain momentum over the stable state, but extension, adaptive research and constant attention to economics and market forces are necessary in order to maintain headway.

1
I.e. The tendency to imitate whatever someone else is doing -- without much thought (either informed awareness or intuitive recognition) as to the net impact. Gaya-gaya is symptomatic of emerging traditional farming societies and results in numerous "boom and slump" mini-disasters. For instance, an innovative farmer decides to grow (or a traditional farmer is persuaded by an extension agent) to grow tomatoes. The first season the farmer is fortunate and sells the produce at a high price. Observing their neighbor's good fortune, the next season, dozens of other farmers also grow tomatoes -- and the result is a glut which drives down the price and almost everyone loses. With no storage capacity, the crop rapidly spoils. Consequently, the following season no one is willing (or can afford) to risk growing tomatoes, the farmer misses an opportunity, the would-be consumer is deprived of tomatoes, the multiplier effect of rural enterprise is lost, there is no further expansion of the fledgling tomato industry, development does not take place, and everybody loses. If farmers make such tomato-growing decisions on their own initiative they have only themselves to blame. Worse however is when a large number of farmers are advised to do so, or even assisted by production-oriented extension agents (working to orders to fulfill nationally mandated production targets), but without a full consideration of the larger environment and particularly the economic risks. After such an experience, the extension agent is likely to receive a cool reception to future initiatives and the rural sector stagnates.

2
The costs of technical inputs -- such as fertilizers, pesticides and herbicides -- are usually far beyond the farmer's ability to control, except in a negative, production-limiting, sense: by deciding whether or not to procure them. Nevertheless factoring in the impact upon yield of these inputs -- with and without -- is critical to assessing the farmer's net profit/loss picture. Government subsidization policies for items which have an import content, while usually developed with good intent, distort the ratio of costs to particular groups, and benefits to society as a whole, but can often do more harm than good.

Higher education offers the basis for understanding, and appreciating the interaction of these complex forces, and provides the tools necessary to stay alert to -- and even master -- some of them. Education is a long-term process, however, and its immediate impact in agriculture is slow, particularly when the bulk of production is by an unschooled peasant economy as in the Philippines. In such instances, the informed, educated extension worker and individual entrepreneur both play major roles in identifying potential and then attempting to stimulate reality towards the possible. Unfortunately, as indicated in previous sections, the current state of higher agricultural education in the Philippines is beset by numerous problems. Nevertheless education is the major key to unlocking and sustaining the capacity for increased agricultural productivity over the long run. In summary, the key problems with higher education in the Philippines are:

1. There are too many agricultural colleges and universities to warrant the current and/or anticipated number of students.
2. The quality of the agricultural programs offered by almost all these institutions is inadequate.
3. Agricultural colleges and universities are unable to improve their programs without a considerable infusion of external assistance.

These problems become the economic basis for investments in agricultural education, as discussed in Annex B of this report.

Of necessity, the Philippine government (GOP) must concern itself with a national scheme to rationalize higher agricultural education. Given the limited resources available for this project, however, nationwide rationalization is too big a task for USAID to undertake unilaterally.

It would be of some help -- and undoubtedly welcomed by the GOP -- if USAID provided Program Support Assistance and merely filled some of the shortfalls in the Philippine Macro-Plan (as the GOP perceives the need), either through across-the-board budgetary support, or a combination of financial and technical assistance in certain designated categories -- such as construction, commodity procurement, participant training, specialized long and/or short-term advisors for curriculum development, research and agri-business.

The principal feature of Program Support Assistance is that it is relatively easy to provide in the first instance, and little subsequent effort is required to manage it. In situations with a heavy volume of work relative to the management staff

available, program support is an attractive option. The disadvantage of the program assistance mode is that it essentially co-mingles AID-provided resources with those of the recipient in order to accomplish a wide variety of their objectives. In essence, AID would simply make a donation to what it perceived as a "good cause." End-use accountability of program assistance is often minimal, assessment of specific impact (or cause-effect analysis is all but impossible to discern (although some macro-economic analysis is usually undertaken), and there is little if any sense of accomplishment by AID staff.

If AID adopted the program support assistance mode for tertiary agricultural education improvement in the Philippines, the likelihood is that whatever assistance was provided would be spread across some 90 provincial and regional institutions. Alternatively, it would be targetted to support six or seven specific regional institutions which were not recipients of support from other foreign donors. In the first instance, the discernible impact would be slight. In the latter case, even with little or no AID involvement in allocating or utilizing the assistance, the results -- good, bad, or indifferent -- would most likely be attributed to AID. Unfortunately, the Philippine landscape is already littered with the remnants of non-project donor provided-"White Elephants" -- such as sophisticated laboratory equipment still unpacked four years after procurement because the school cannot use it for lack of electricity. One only has to peruse a few Inspector General and/or General Accounting Office (GAO) audit reports to encounter more such instances.

Given the criticism of U.S. foreign assistance programs for lack of accountability and/or program failures, and the potential for things to go awry, either of the foregoing scenarios is highly risky and the design team does not endorse a program support approach. Nevertheless, with the recent conclusion of the Military Bases Agreement an additional workload will be forthcoming for AID in the short-term. A further increase is also foreseeable in the longer-term if the proposed "Mini-Marshall Plan for the Philippines" materializes during the next Administration. Thus, while important in perspective, close management and monitoring of tertiary agricultural education may only be of peripheral concern to the USAID Mission as an element of AID's total assistance to the Philippines. In any event, such judgment calls are not for the design team to make.

The Project Assistance mode is a lower-risk option; however it does necessitate the expenditure of additional resources for administration, monitoring and management. While some of the day-to-day operational management and implementation responsibilities can be contracted out, a direct-hire AID project officer must be assigned the responsibility for at least minimal

administrative and financial oversight -- to review the contractor's progress reports and provide administrative approval of the contractor's financial vouchers. Furthermore, in the early implementation stages of the project, considerable additional direct-hire support staff time will be required to prepare and process documentation, participate in contractor selection, and to keep AID management apprised of project progress through periodic Project Implementation Reviews.

If the project assistance mode is elected by the AID Project Committee, the design team recommends that USAID focus its attention on upgrading several key institutions into "Centers of Excellence" in terms of selective assistance to institutions in some of the following areas: faculty development, facility upgrading, provision of ancillary equipment, and technical assistance to enhance curriculum restructuring, outreach extension and applied research. Four basic options are available to USAID in this regard.

1. FILL IN THE GAPS in the Department of Education (DECS) "Macro-Plan" to rationalize higher agricultural education in the Philippines "Adopting" several institutions nominated by DECS. The design team gathered from its initial meeting that the DECS strategy at that time was to seek donor assistance to support specific colleges. Thus, AID's "schools" would be selected from those not already supported by other donors -- such as the Asian Development Bank, the Japanese, the Germans, the British, Australians, etc.
2. UNILATERAL AID SUPPORT of several institutions in which USAID has, or perceives a "Special Interest", or need. From preliminary discussions, for instance, it appears that USAID might consider providing assistance to institutions where it had previous involvement, e.g.,

ISABELA STATE UNIVERSITY

PAMPANGA AGRICULTURAL COLLEGE

DON SEVERINO AGRICULTURAL COLLEGE

UNIVERSITY OF SOUTHERN MINDANAO, and the

VISAYAS STATE COLLEGE OF AGRICULTURE

These five institutions, along with Western Mindanao State University, were visited by the Design Team. The Team applied the proposed design using these institutions as illustrative examples, without prejudice to consideration of other candidates. A summary of the Team's observations for each of these schools are presented in Annex F.

3. PAIRED SUPPORT AND NETWORK DEVELOPMENT of eight institutions which have been tentatively selected by DECS as National, Regional or Provincial "Flagship" or strong support institutions, and in which USAID also has, or perceives a special interest or need. An illustrative example may be as follows:

UNIVERSITY OF THE PHILIPPINES, LOS BANOS	with	DON SEVERINO AGRICULTURAL COLLEGE
CENTRAL LUZON STATE UNIVERSITY	with	PAMPANGA AGRICULTURAL COLLEGE
VISAYAS STATE COLLEGE OF AGRICULTURE	with	SILLIMAN UNIVERSITY
UNIVERSITY OF SOUTHERN MINDANAO	with	WESTERN MINDANAO STATE UNIVERSITY

Figure 1 shows the location of the paired sample institutions under this proposed design.

4. CLUSTER SUPPORT AND NETWORK DEVELOPMENT by expanding the number of institutions to twelve, for instance:

UNIVERSITY OF THE PHILIPPINES, LOS BANOS	with	DON SEVERINO AGRICULTURAL COLLEGE
	and	PAMPANGA AGRICULTURAL COLLEGE
CENTRAL LUZON STATE UNIVERSITY	with	ISABELA STATE UNIVERSITY
	and	DON MARIANO MARCOS MEMORIAL STATE UNIVERSITY
VISAYAS STATE COLLEGE OF AGRICULTURE	with	SILLIMAN UNIVERSITY
	and	CENTRAL PHILIPPINE UNIVERSITY
CENTRAL MINDANAO UNIVERSITY	with	UNIVERSITY OF SOUTHERN MINDANAO
	and	WESTERN MINDANAO STATE UNIVERSITY

Figure 2 shows the location of the clustered institutions under this design option.

REPUBLIC OF THE PHILIPPINES

Provincial and regional map

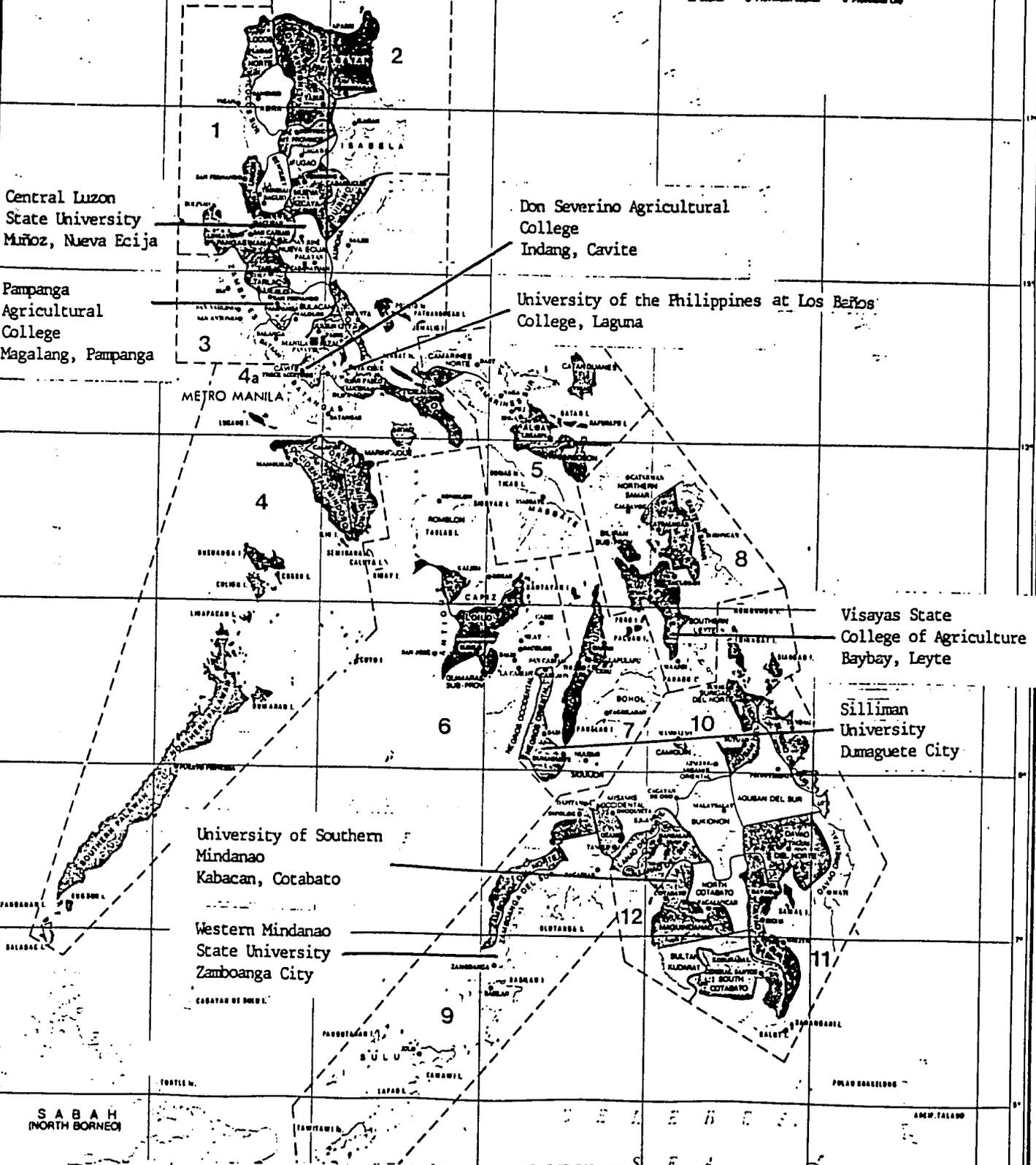
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Cartographic Design: Heinrich Engeler 1980

Scale 1 : 5,000,000

0 50 100 150 200 250 300 KM

■ Capital ● Provincial Capital ○ Provincial City



Central Luzon State University
Muñoz, Nueva Ecija

Don Severino Agricultural College
Indang, Cavite

Pampanga Agricultural College
Magalang, Pampanga

University of the Philippines at Los Baños
College, Laguna

Visayas State College of Agriculture
Baybay, Leyte

Silliman University
Dumaguete City

University of Southern Mindanao
Kabacan, Cotabato

Western Mindanao State University
Zamboanga City

Figure 1: Map of the Philippines showing location of illustrative paired AEIP Institutions (proposed design option).

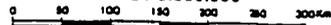
REPUBLIC OF THE PHILIPPINES

Provincial and regional map

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Cartographic Design: Heinrich Engeler 1980

Scale 1: 5,000,000



■ Capital ● Provincial Capital ○ Provincial City

Isabela State University
Echague, Isabela

Don Mariano Marcos State University
Bacnotan, La Union

Central Luzon State University
Mañoz, Nueva Ecija

Fampanga Agricultural College
Magalang, Pampanga

Don Severino Agricultural College
Indang, Cavite

University of the Philippines at Los Baños
College, Laguna

Visayas State College
of Agriculture
Baybay, Leyte

Central Philippine University
Iloilo City

Silliman University
Dumaguete City

Central Mindanao University
Musuan, Bukidnon

University of Southern Mindanao
Kabucan, North Cotabato

Western Mindanao State University
Zamboanga City

SABAH
(NORTH BORNEO)

Figure 2: Map of the Philippines showing illustrative AEIP Cluster of Institutions (another design option).

DISCUSSION

Gap Filling

Each of the foregoing options has its advantages and its down-side. "Gap filling", while the easiest to negotiate with the GOP, is fraught with pitfalls. In the first place, it could engender some inappropriate sense of "competition" between donors, as well as lay the basis for spurious comparisons of donor generosity, relative project implementation effectiveness, and "handicapping" concerns, depending upon the relative strength or weakness of the assigned institution at the outset. Such an assistance mode also implies mutual exclusivity and denies the opportunity for donor complementarity -- for instance, one may be strong in construction while another's strength may lay in technical assistance.

It also appears to the design team that the desire by DECS to establish a series of "regional institutions" is based on geographical grounds -- i.e. an institution for each of the thirteen national regions -- without regard for the actual demand-need based on population, potential student enrollments, agro-climatic conditions, or propinquity to another region's population

3

center's. In examining the available data, the Team finds no evidence that any quantitative demand studies had been conducted to support the need for thirteen regional institutions.

While the GOP rationale for establishing priorities may be perfectly valid in terms of its own national development strategy, and is not AID's prerogative to question, simply "buying-in" to the DECS priority list could leave USAID exposed to "hindsight" criticism should the facility subsequently fail to be appropriately utilized. The design team therefore recommends that USAID assiduously avoid the "Gap Filling" option.

2. Unilateral Support

"Unilateral Support" by USAID of certain selected institutions -- if acceded to by the GOP has the characteristic

3

For instance, DECS mentioned that there was no donor supporting Region XI. However, apart from the peace and order situation in that area -- Davao del Norte was indicated as the probable locus for a regional institution -- from discussions during the Teams's visit to the University of Southern Mindanao (USM) in Region IX, they and the University of Central Mindanao in Region X both currently serve as a catchment for Region XI. With declining enrollments at USM, the validity of supporting another institution in the catchment area which would draw off students should be closely examined before investment of support resources.

of increased flexibility, in that AID can develop its own criteria for selection -- easiest and fastest (or most difficult) to develop; serving the poorest of the poor, or those most likely to succeed; areas with special geographic, agro-climatic or ethnic considerations, institutional interest, type of assistance most likely to be required, former relationships, etc.; the list is almost endless. This is both an advantage and a disadvantage as AID could spend considerable time and effort, and become mired in internal debate before selecting any site at which to work. The institutions identified in this category (above) are illustrative, but by no means intended to be exclusive. The major disadvantage is the caveat "if acceded to by the GOP". If AID's selection of a particular institution clashed with GOP-perceived priorities, the project assistance to that institution (and possibly others) could easily stall.

Another drawback is that, even given acceptance by the GOP of a list of institutions -- each would likely be an isolated development task -- in effect AID would have several sub-projects without any interaction, interdependence or common linkage -- one with another. Thus the potential for any follow-on expansion, or multiplier effect would be low. For these reasons, the design team considers that the "unilateral support" approach would be a poor choice.

3. Paired Support

The "Paired Support" option combines several features of the foregoing options to offset the perceived negative effects of each. In the first instance, the institutions selected should satisfy both USAID and GOP senses of rationality. While the institutions identified above are illustrative at this juncture, they do indeed appear to accord with both DECS and USAID interests as expressed to the design team at various times during our study. Indeed, the team noted that in an earlier version of the Macro-Plan, the "lead" institutions of these pairings were pre-designated to be supra-regional, or "zonal" universities, while the "attached" institutions are high on the DECS priority list as Regional candidates. Although some of these institutions are also slated to receive assistance from other donors, by concurrently providing AID assistance to these same institutions, in the design team's collective opinion, the prospect for a successful outcome is enhanced. At the same time, in the absence of demand-need data, the design team's concern that USAID not contribute to the possible proliferation of more underutilized higher agricultural education institutions is alleviated.

Criteria for Selection: The team developed the following six criteria in selecting the foregoing illustrative institutions for pairing :

1. Lead Institutions Should Be of Regional Caliber and Status. Three or four institutions should be chosen whose present mandate, influence and function is already approximately at least at the regional level. If they are institutions which have previously received significant USAID assistance, this will be beneficial from a project cost and efficiency standpoint.
2. Attached Institutions Should Have Provincial Status but Regional Potential. Three or four institutions should be chosen whose present influence and function is presently at the Provincial level, but which have the potential for a future regional responsibility.
3. Pilot and Demonstration Suitability: The institutions chosen under the second criterion should be suitable for pairing with those chosen under the first criterion -- as models to pilot and demonstrate how regionalization may be attained -- i.e. by strengthening the lesser advanced school through leadership and resources provided by the more advanced institution.
4. Institutional Leadership & Innovation: Both institutions in each pairing should have strong, dynamic leadership and be open to innovation and to undertaking greater regional-level responsibilities. The provincial institutions should reflect strong capacities to grow in size, influence and incurring more outreach functions.
5. Geographic Distribution Based on Development Potential. The institutions selected should be distributed throughout the Philippines in regions having substantial capacities for improvement in production agriculture and growth in agribusiness development, including food processing and other post-harvest activities.
6. Research Capacity Linkages: The advanced institutions selected should receive as much benefit as possible from the Philippine Council for Agriculture and Forestry Resources Research and Development (PCARRD) and its investments in research infrastructure. To the extent feasible, the advanced schools should also be designated by PCARRD as national or regional centers for research on one or more commodities.

Considerably more effort could be devoted to developing and/or further refining more objective criteria for institutional selection. The design team considers that the level of effort required is not an effective use of its limited time. There is a wide disparity in the nature and status of the institutions visited with relatively few objective criteria that embrace them all. The Team has scanned the existing criteria but many common characteristics are either irrelevant, or so broad as to be non discriminating. In essence, each institution has its own distinctive profile and personality. Thus, in the final analysis, selections are most probably going to have to be individually-subjective rather than mechanically weighted, computed and rank-ordered against an objective and quantitative yardstick. On the other hand, whichever institution are ultimately chosen, there should be a good subjective rationale for their selection.

Consequently, the design team offers the aforementioned paired institutions as illustrative to guide the USAID Project Committee initial review with the expectation that further candidates will be proposed, defended and considered before a final choice is made. In this vein, the design team will start the process by noting one major reservation in the illustrative list; namely that the considerable potential for agricultural development in Region II -- the Cagayan Valley -- is left untapped. In the absence of other criteria, this limitation is primarily a funding issue which could be resolved by the Project Committee. The same can be said about the choice of the "pairs" in the presence of other alternative schools listed in the "clusters". For example, Silliman University would be evaluated against Central Philippines University for "potential" while Central Mindanao University will be matched to University of Southern Mindanao for "regional status".

Having identified examples of likely candidates, it should be borne in mind that "best" is a relative term. The design team visited most of these institutions and its comments (which heighten their shortcomings) are contained in Annex F.

In essence, almost without reservation, none of the institutions are currently functioning effectively at a regional (or in some cases even a provincial) level. Furthermore, even though the GOP has designated some of them as "Regional" institutions, the prospects for this occurring during the life of this project are very small. Again, while it is not AID's position to critique the GOP Macro-Plan, USAID can work effectively within that Plan, but should lower its (AID's) expectations with respect to accomplishments. In the design team's collective opinion, the lead-paired institutions do have the potential for serving a catchment area beyond the province in which it is located, but the attached-pairs will do well if they can merely enhance their status as effective provincial degree-granting institutions.

The purpose of the "pairing" is to create closer bonding -- a "support group" relationship -- between the two institutions

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for the development issues identified. Special emphasis should be made by the project to facilitate this interaction as considerable learning takes place in this manner. In effect, the lead institution is thrust into a "laboratory" role to provide "technical assistance to others. The project's expectations should be tempered, and the lead institution's rate of absorption of technical assistance and readiness for independent outreach can be judged by the assistance that it provides and the changes it can engender in the paired college.

In addition to immediate pairing, a wider "Network" is suggested throughout the entire community of AID-assisted institutions for implementation management, technical assistance, faculty exchange fellowships, programs of study, curriculum design and approaches to outreach extension and applied research. These aspects are discussed in more detail in the next section on Project Elements.

4. Clustered Support

This option is essentially an expansion of the paired support mode -- the lead institution in each instance is assigned concurrent outreach linkage responsibilities with two other (or conceivably even more) institutions. The advantages of this mode are threefold.

1. In the first instance, the multiplier effect is immediately greater as more institutions can be reached. Although the net cost will be higher -- i.e. the cost of direct assistance to four (or more) additional colleges -- the number of technical assistance advisors for the network is unchanged, thereby reducing their relatively high cost in terms of entities assisted.

2. At the same time -- as indicated in the suggested groupings of institutions -- the network can be expanded to incorporate Northern Luzon which had to be excluded under the "paired" scheme.

3. Finally, with more institutions involved, several quasi-regional sub-networks can be established within the overall project. Local support groups which can work together on common issues on a frequent basis and then meet periodically with the

4

The Team recommends that the support for the pairs be addressed at a specific set of issues rather than for the entire institution, in order to generate maximum impact.

project team, help strengthen the weaker elements and also provide role models to reinforce successes. In this manner, competitive synergy tends to be generated between all the participating organizations, heightening the prospect for an overall successful outcome.

The design team sees clustering as preferable to adding additional pairs of institutions to the project, as the latter would entail additional costly (and possibly duplicative) technical assistance and support for the lead institutions. Furthermore, additional strong candidates to take the lead role would be increasingly difficult to identify, which in turn would be reflected by a reduction in the quality of outreach to the linked institutions.

Apart from the increased cost of adding four (or even more) institutions, the major drawback that the design team sees with the clustering scheme is that it is probably too complicated to

implement during the initial stages of the project. While networking is beneficial, it takes a lot of time and effort to develop effectively, and increases both the technical outreach burden on, and the managerial complexity for, all involved. The necessity to provide support to two (or more) institutions simultaneously may tax the capacity of the lead institution. Networking is introduced as a key additive concept in the previous paired model and this may be the most a fledgling system can be expected to cope with. Thus, while "clustering" may be highly desirable for later stages of the project -- or perhaps even a subsequent follow on project -- the team does not recommend its adoption at this time.

SUMMARY AND CONCLUSIONS

The design team has explored four possible models for project design:

1. Gap Filling of the GOP Macro-Plan to support several institutions nominated by DECS.
2. Unilateral Support of several institutions in which USAID has, or perceives a "Special Interest", or need.

5

In complex development projects, implementation difficulties are almost always encountered. With the high degree of "people-oriented" development, interaction, involvement and individual performance anticipated for this project, it would be unrealistic to assume that everything will always run smoothly.

6

Development theorists identify three stages of organization and institutional growth -- "Point", "Line" and "Network".

3. A Series of Paired Institutions, with a strong institution as the lead, and the additional opportunity/responsibility to learn "on-the-job" and demonstrate its improved capacity by providing technical assistance, guidance and support to another Philippine Institution. The lead institutions also serve as the basis for a network of assisted institutions operating within specific development issue.

4. A Series of Clustered Institutions, essentially similar to the paired concept but with a relatively strong institution leading at least two others.

For the reasons stated above, the design team recommends that USAID adopt the third option -- "paired series. In any event, whichever of the foregoing models (and institutions) USAID adopts, the design team proposes that the various assistance components be developed from an analysis of individual institutional needs. While some across-the-board technical assistance can be provided in several key disciplines and developmental approaches, the current character, state and future needs of the proposed participating institutions are so different that a standardized package of assistance would not meet their needs effectively.

A "Bottom Up" strategic development plan should be prepared and a needs assessment undertaken which identifies the constraints to development for each institution to be assisted. Only when this stage has been completed can a realistic estimate be made of resources and specific assistance required by that institution. It is worth reiterating that in the project development process -- targets should be determined and allocated from this bottom up perspective -- subject to overall funding constraints. Nevertheless, for overall project design purposes, categories of assistance -- with tentative funding/support levels -- are provided for illustrative purposes using a "Top Down" perspective.

5. PROJECT ELEMENTS

This section outlines the components of a proposed project to assist eight institutions -- based on the "Paired Linkage" model -- formulated by the Design Team after rapid reconnaissance visits to several institutions, discussions with faculty and other selected individuals and scanning a considerable volume of documents.

The team emphasizes that at this juncture the proposal is more descriptive than prescriptive. Firmer data cannot be generated until a detailed "bottom up" needs assessment of the particular institutions to be assisted has been conducted and validated. Nevertheless, this "top down" approach should provide the USAID Project Committee with a useful guide to the general categories of assistance contemplated, and a "ball-park" estimate of the level of effort and other inputs considered necessary to achieve the projected results. As such, the proposal should serve as a point of departure for further discussion with representatives of the Government of the Philippines (GOP) in formulating an official Project Paper and Project Agreement for U.S. Government assistance.

A. PROJECT GOAL, PURPOSES AND OUTPUTS

The regional-level institution represents the best opportunity to introduce higher quality curricula to bolster not only the practical aspects of agricultural training but also the rigor in research and depth of knowledge required to understand and exploit the opportunities in Philippine agriculture. Regional-level institutions have a mandate to provide quality Masters degree programs, and to conduct problem-solving research. They are expected to -

1. Support the leadership and staff of the Department of Agriculture in policy formation;
2. Furnish appropriately-trained agriculturalists for the government, academic and private sectors; and
3. Generate useful technologies for application in farming, business and industry.

Since the Project design team concluded that a regional system is not currently in place and that effective regionalization cannot be attained quickly, the USAID-supported Agricultural Education Improvement Project (AEIP) will focus on several of the institutions designated by the Philippine Government as Regional-level agricultural colleges and universities, and provincial ones which have the potential for

assuming broader regional responsibilities. The Project is therefore an effort to support the "regionalization process" rather than one to create a "regional structure". To this end, using the rationale and criteria outlined in the previous Section, the Design Team tentatively selected the previously-named eight institutions for USAID support, in a Paired" mode of Lead and Associate Institutions.

The Team proposes the following goal and sub-goal for the Project:

PROJECT GOAL

ACCELERATED AGRICULTURE AND RURAL DEVELOPMENT --

To increase the contribution of farm and agrigbusiness enterprises to the Philippine Gross National Product.

PROJECT SUB-GOAL

To increase the growth and development of farm and related non-farm rural enterprises in the Philippines.

The Project has two parallel purposes flowing from the output level -- one resulting from the graduates of the eight institutions assisted, and the other from the continuing activities of the eight institutions themselves.

PROJECT PURPOSE 1

TO INCREASE THE EMPLOYMENT RATES OF HIGH QUALITY AGRICULTURAL GRADUATES and trainees of eight selected agricultural colleges and universities in agriculture-related work.

PROJECT SUB-PURPOSE 1

To increase the quantity and quality of graduates in eight selected agricultural colleges and universities.

PROJECT PURPOSE 2

TO INCREASE FARM AND AGRI-BUSINESS INCOMES in target areas.

PROJECT SUB-PURPOSE 2

To increase the quantity and quality of research and extension work by eight selected agricultural colleges and universities.

Improved outreach, extension and research activity will have some relatively short-term secondary impact as the programs

and activities of the participating colleges get underway during the latter three years of this Project. Furthermore, some students will partially benefit from the incremental improvement made, as they are implemented in each class. However, the first four year batch of students to be completely educated under the restructured curriculum will not have graduated from the assisted colleges five years after the signing of the Project Agreement. Therefore, a longer term project perspective is required to

1
realize the full benefits.

The Team proposes the following outputs for the Project:

1. Increased poor rural student ACCESS to an agricultural college education.
2. Increased Capabilities of eight selected Agricultural Colleges and Universities to perform Instruction, Research and Extension/Outreach through selective improvements in the following six areas:
 1. Faculty Development
 2. Administration
 3. Curriculum Improvement
 4. Extension/Outreach
 5. Research
 6. Facilities and Equipment
3. Increased capacities at these institutions for outreach, teaching and research in selected emerging areas of concern in Philippine agriculture.

The strategy, and proposed activities, for each of these output categories will be as indicated below.

B. PROJECT STRATEGY AND ACTIVITIES

1. STUDENT ASSISTANCE

In order to provide opportunity for otherwise academically qualified students -- but with inadequate financial resources -- to attend agricultural college, three student assistance programs will be funded by the Project:

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For this, and other reasons, the design team recommends that USAID consider extending the initial planned life of the project at seven, rather than five, years -- with the last two years essentially without expatriates or other assistance funded by USAID, except perhaps for minimal project monitoring and evaluation. However, for this illustrative design, the team has retained a five-year project horizon.

- a. On-Campus Employment
- b. On-Campus Assistantships
- c. Off-Campus Internships

On-Campus Employment A fund will be established and administered to reimburse any student (at a rate commensurate with the estimated need for subsistence and lodging) for ad hoc work performed on the campus under the direction of the administration staff or department faculty. Students should not be permitted to work more than 25 hours per week under this program. During the first semester, the program should be open to all students. After the initial semester in the program, students may only be permitted to continue in this on-campus employment program if they are in good academic standing.

On-Campus Assistantships A separate fund will be established and administered to underwrite the cost of an "appropriate number" of guaranteed semester-long part-time (up to 25 hours per week) Assistantships. Again, the amount of the stipend should be sufficient to cover the student's subsistence, lodging, transportation and some additional incentive. These, should be principally for Junior and Senior students in good academic standing, and related to various aspects of academic course work. Although the student may receive no academic credit for these duties, he/she should benefit from closer working relationship with the faculty and exposure to the teaching side of the discipline.

Off-Campus Internships Another fund should be established for all students to pursue a semester-long internship during some part of their Junior or Senior year. Where considered appropriate by the faculty, the internship may be extended for a second semester and in exceptional cases, a student may even be encouraged and/or permitted to take a second internship in a different area. The stipend should cover all the student's subsistence, lodging, transportation and other miscellaneous costs associated with the internship, as well as some additional incentive. These internships are an academic practicum -- for credit -- programs to provide the student with working experience in business, government or the community, to reinforce his/her understanding of the field. A definite study program should be prepared by the faculty advisor, and the hosting institution.

In addition to the student stipend, provision should also be made in this fund to provide honoraria to the faculty advisor and the host institution supervisor to cover the cost of additional work entailed in establishing and administering the program, as well as a modest incentive.

2. FACULTY DEVELOPMENT, PROGRAMS AND FACILITIES

a. Faculty Development

Faculty development under the Project is aimed at upgrading the teaching skills and techniques of agricultural college

faculty, improving their capabilities for supervising and conducting research of high quality and relevance to the agricultural sector, assisting them in formulating approaches to outreach and inter-institutional linkages that will make agricultural college research and teaching more effective, and increasing their own subject-matter expertise. This will be accomplished partly through techniques that employ the colleges' faculties own capacities for self-improvement through collegial interaction and individual intellectual effort and expression. This approach recognizes the substantial talent among faculty which can be utilized if supported by nominal external resources.

One-on-one counterpart relationships between technical assistants and faculty will also be utilized. Long-term advisors will be posted at or in close proximity to each of the assisted institutions. Each technical assistant will have expertise in both functional aspects (i.e. curriculum, research, outreach, facilities development and utilization, agricultural education administration and faculty development), as well as subject-matter expertise in emphasized areas (i.e. agribusiness, environment and natural resources, policy, farming systems research and extension, statistics and research methods, and general production agriculture). The effectiveness of long-term advisors will be evaluated based upon the degree to which their special expertise is imparted to faculty throughout the assisted institutional network.

Short-term technical assistance in selected fields of production agriculture (e.g. seed technology, agroforestry, pesticide residue analysis and management, forage and range development, fisheries related to agriculture, Nitrogen-fixation and other areas of biotechnology), may be utilized at specific agricultural colleges, according to need. An important aspect of short-term technical assistance will be to develop collaborative research relationships between assisted college faculty and faculty in the U.S. The purpose of this linkage is to provide collegial support to Philippine faculty who are conducting advanced applied research as its quality and impact can be enhanced by international collaboration. Such linkages should be sustainable for at least 3 to 5 years.

Training at the masteral and doctoral level will also reflect the capacity of Philippine institutions to support quality graduate studies in many fields of agriculture. Most masteral degree programs will be conducted entirely in the Philippines, depending upon the field of study; and most Ph.D. programs will be conducted through joint programs between Philippine and U.S. universities. The purpose of joint degree programs is to permit students to benefit from those Philippine educational resources that are especially suited to their needs, to satisfy subject-matter needs that cannot be met in the

Philippines, to expose students to institutions (their functions and their science) in countries outside the Philippines, and to build a basis for future international scientific collaboration. Joint Philippine/U.S. degree training will mainly be conducted in the emphasized areas of the Project including areas of special need within production agriculture.

These major efforts in faculty development will be augmented by all of the other initiatives under the Project, which are to be undertaken by, through, or with agricultural college faculty. Student internships, adjunct professorships, strengthened farm practice and outreach projects will be organized largely by the faculty, with the support and assistance of technical advisors. While many of these techniques are designed to enrich the students' learning experience, clearly they will not be effective or sustained if they have not become a part of the faculties' approaches to teaching, research and outreach. In effect, the Philippine Agricultural Education Improvement Project is a faculty development program which in turn assures quality graduates, research output, and impact on the agricultural sector.

Action Toward Faculty Development

EXCHANGE FELLOWSHIPS. Three one-year "Exchange Fellowships" will be awarded to faculty at each assisted institution in each of the three functional areas Curriculum Development and Teaching Methods, Applied Research Improvement, and Outreach and Inter-institutional Linkages. Respectively they will be called "Curriculum Fellows," "Research Improvement Fellows," and "Outreach Fellows." ("Improvement" is included in the research fellows titles to distinguish PAEIP fellows who will be responsible for improving the participating colleges' research system from conventional "research fellows" who conduct technical research.) "Exchange" is included in the formal designation to indicate that fellows will be posted at another agricultural college rather than his/her home institution during the period of the fellowship.

Faculty, or administrators with responsibility for the institutional functions of Academic Administration, Facilities Development and Utilization and Faculty Development will also be awarded the equivalent of a one 18-month fellowship per institution, in each of these three areas. These Fellows will not be assigned to other institutions because their effectiveness in innovation is likely to require an in-depth knowledge about the institution, its faculty, and the economic, social and political context of its operations. Under these fellowships, the awardees will attend workshops and interact with counterparts at other assisted and non-assisted Philippine colleges of agriculture, and at institutions outside the Philippines. They will return to their campuses, from these network activities under the Fellowship auspices to effect changes in their own organization. During the period of the fellowship including

while they are in residence at their home institutions -- Fellows should be relieved of regular responsibilities in order to focus on the institutional changes that have been planned within the Fellows' collaborative network.

The Fellowships of these awardees may be divided into segments to accommodate shorter periods away from regular responsibilities. Additionally, if necessary, the fellowships may be divided among different administrators or faculty, and may include support for counterparts from other Southeast Asian countries to work with Philippine agricultural college colleagues.

"Administrative Fellows" will focus on improvements in strategic planning; student recruitment, placement and tracking; the development of external funding sources including agricultural college foundations, grants and contracts; and administrative organization and operations that contribute to the effective inter-relationship of teaching, research and outreach. A significant period of their fellowships may be spent in the Asia Region or in the U.S. for workshops and collaborative network activities with colleagues in other countries. Administrative Fellows will comprise a collaborative network among the institutions assisted by the Project, and be supported in their efforts by a long-term technical assistant, the "Agricultural Education Administration Advisor."

The Fellowship programs will be timed such that similarly designated fellows will have the opportunity to work together on common objectives. Periodic workshops will be included in their agenda and collaboration with Asia Regional colleagues will be accommodated where appropriate and feasible. Designated advisors will support and coordinate the various fellowship programs, and provide their support to faculty outside the fellowship activity.

The fellowship activities described above total 109 fellowship-years for 8 assisted schools. About one-month of each fellowship-year will be spent by Philippine faculty outside the Philippines in Southeast Asia, or by faculty from outside the Philippines visiting Philippine agricultural colleges and universities.

JOINT DEGREE PROGRAMS. Masteral degree programs conducted jointly with U.S. universities (about 8 total scholarships) will comprise 15 months of study in the Philippines and 15 months of study in the U.S. The total 30-month period for masteral students may be reduced in the case of students having exceptional ability. Doctoral degree programs (about 16 total scholarships) will comprise 18 months of study in the Philippines and 18 months in the U.S. Any of three models may be followed:

1. Initial period in the U.S. The scholar completes most coursework in the U.S., then completes coursework and all thesis work in the Philippines. In the U.S. the

student is not enrolled in a degree program, but rather the student's course credits are transferred to a Philippine university where the student's degree is awarded.

This approach involves less effort in applying for U.S. university admission, lower cost because of less travel by U.S. and Philippine faculty, but could give rise to dissatisfaction if students do well in the U.S. and wish to complete their work for a U.S. degree. Also it does little to build inter-institutional linkages.

2. Initial and final periods in the Philippines. The student spends a short initial period in the Philippines to complete some coursework, then a full intermediate period in the U.S. where the student completes courses and obtains approval of thesis proposal, then completes thesis research, writing and defense in the Philippines and receives either a Philippine or U.S. degree. For a U.S. degree, a joint committee is formed and two or more U.S. faculty are present for the final exam in the Philippines. (Or, the student travels to the U.S. for his/her final exam, and possible revisions.)

This program is easy to organize at start-up because thesis research doesn't have to be planned and data collected. Hence less initial international collaboration is needed. It may take longer, however because of possibly slower thesis research and writing in-country, and may cost more because of more faculty and/or student travel. The U.S. university may need a strong presence in-country for thesis research, writing and examination, which may be a problem if the university does not have ample faculty in-country for other project purposes.

3. Initial period in the Philippines. The scholar completes one year of course work and field research for thesis in the Philippines, then transfers to a U.S. university to complete coursework and thesis and receives a U.S. university degree. The student is supervised throughout by a joint Philippine/U.S. committee, with the U.S. advisor traveling at least once to the Philippines, and a Philippine committee member traveling at least once to the U.S., possibly for final exam.

A student's start-up can be difficult if U.S. or Philippine supervision in-country is insufficient to assure thesis planning and data collection that will be acceptable to his/her committee. On the other hand if properly planned and supervised, this mode encourages close cooperation between U.S. and Philippine faculties and requires the U.S. faculty

to develop an appreciation for the Philippine institution and its resources. The procedure is fairly routine once the student is in the U.S. It may be faster than other approaches because data analysis and thesis writing can be conducted in the U.S. with good facilities and under continual supervision by the major professor.

In-Country Degree Programs

Recognizing the substantial capabilities within the Philippines to offer quality degree programs in a many fields at the M.S. and Ph.D. levels, the design team estimates that half of the faculty sponsored for degree programs will study in the Philippines. These will be offered at four of the assisted agricultural institutions assisted under the Project in fields of excellence at those institutions. Attention will be given to placing students at institutions where a technical advisor is in residence, whose special expertise is in the student's field of study. Tentatively, this suggests that priority will be given to placing M.S. students in agribusiness at the University of Southern Mindanao (USM), and M.S. students in farming systems at the Visayas State College of Agriculture (VISCA), M.S. students with policy specialization at the University of the Philippines, Los Banos (UPLB), and M.S. students in certain fields of production agriculture at Central Luzon State University (CLSU). Technical assistants in these respective fields, resident in proximity to the institutions, will then be readily available to serve on the respective students' committees.

Additionally, VISCA is tentatively designated as the institution of choice for in-country Ph.D. students in Agricultural Education (supported by the Curriculum Advisor), UPLB for Ph.D. students in environment and natural resources (supported by the project's technical team leader who should also have qualifications in environmental resource management), and CLSU for Ph.D. students specializing in research methods (supported by the Research Advisor).

Sixteen M.S. degree scholarships and eight Ph.D. scholarships will be offered for study in-country.

Scholarship Distribution By Field, Home Institution And Degree Granting Institutions

Two-thirds of Ph.D. scholarships, and one-third of M.S. degree programs, will be offered through joint degree programs with U.S. universities. The balance of scholarships will be for studies at Philippine universities. Fields of study will emphasize Policy, Environment and Natural Resources, Production Agriculture, Agribusiness, Research Methodology and Statistics, and Farming Systems. These are broad areas of emphasis and in most cases it will not be appropriate or possible to take a

degree precisely denoted by one of these areas of emphasis. For example, studies in the Farming Systems area are likely to comprise a major in an agricultural discipline (such as animal science, or even more narrowly, animal nutrition) but with a selection of courses chosen to provide an agricultural systems perspective. Care must be taken in planning graduate studies that the project -- emphasized subject matter areas are indeed well reflected in the course of study.

In Table 3 provided below, an illustrative distribution of scholarships by assisted institution is shown, along with level of degree and priority areas of emphasis. Generally the areas of Policy, Environment and Production Agriculture are shown as training priorities for the more advanced lead institutions, and the areas of Agribusiness, Research methods and Statistics, and Farming Systems for the associate colleges. (Agribusiness includes agribusiness as a field of agricultural economics, as well as all other post-harvest subject matter areas such as agricultural commodity processing).

Table 3
TENTATIVE SUGGESTED DEGREE TRAINING FOR PAEIP-ASSISTED
AGRICULTURAL COLLEGES & UNIVERSITIES

ACU NAME	NO. SCHOLARSHIPS				PRIORITY OF FIELDS OF STUDY					
	Ph.D.		M.S.		POL	ENV	P.AG	AG.B	RM&S	FSRE
	JT	PH	JT	PH						
DSAC	2	1	1	2	6	5	4	2	1	3
PAC	1	2	2	1	3	5	6	2	1	4
SIL	2	1	1	2	4	1	5	3	2	6
WMSU	0	3	3	0	6	5	1	3	2	4
UPLB	1	2	2	1	1	3	4	2	6	5
CLSU	1	2	2	1	2	4	3	1	5	6
VISCA	1	2	2	1	1	2	6	3	4	5
USM	0	3	3	0	3	2	5	1	4	6
TOTAL	8	16	16	8						

It is important to reemphasize that these allocations of training opportunities are purely hypothetical at this juncture, and should not be used as "quotas", "targets" or "entitlements"

or even "needs" at the respective institutions. Until a detailed individual institutional needs assessment is undertaken, the appropriate numbers will not be known. The Production Agriculture area of training emphasis in the project refers mainly to specialized fields such as seed technology, biotechnology, pesticide residue analysis and management, forage crop development, etc., and generally not the more basic fields of soils, plant science, entomology, animal husbandry, agricultural economics, etc. That is why production agriculture is shown as an area for training faculty for the more advanced institutions. Farming Systems is the comparable area of emphasis for less developed colleges, where the basic areas of agricultural sciences are well covered, but a more integrative approach is needed to further their training. The exception is Western Mindanao State University (WMSU) which indeed does require faculty training in the basic areas of production agriculture.

Areas of emphasis in training should not be construed as representing the areas of overall emphasis of the Agricultural Colleges research, teaching or outreach. Rather, the training areas represent anticipated areas of need given the present state of the school's development. These suggested areas of need require validation through further discussions with each institutions faculty and administration. The final choice of field of study by each College's participant trainees will be determined during the initial stages of project implementation.

The Project's Faculty Development program will be coordinated by a technical assistant working closely with a network of post-masteral and post-doctoral Fellows appointed for 18-month terms. One Faculty Development Fellow will be appointed from each Institution. The faculty development network will focus on validation and implementation of the plan for faculty development that has been described above. Additionally the network will organize workshops and training seminars for improvement of faculty members' teaching skills. A major concern of the network will also be the development of improved policies for promotion and tenure that will encourage quality teaching, research and outreach.

Other policies and procedures that may receive the attention of the Faculty Development Fellows include policies on faculty consulting, annual evaluation of faculty, sabbatical and study leave policies and programs, fellowship procurement for faculty development, faculty recruitment, and particularly human resource planning for the institutions, continuing responsibility of College administrators beyond the period of the project will be to plan the further development of their faculties. Such effort should be closely associated with projected directions of agricultural development of the country, and agricultural policies of the government. Faculty Development Fellows will identify methods by which Agricultural Colleges can more adequately plan the development of their institutions in coordination with government policies and programs.

Technical Assistance

Faculty Development at the assisted institutions will be supported and coordinated by a long-term technical assistant, the Faculty Development Advisor, who should also have qualifications in the Agricultural Policy subject-matter area. Faculty development at the colleges should be attuned to development of the agricultural sector and government policies. Hence responsibilities of the Faculty Development Advisor are combined with project-wide responsibility for the Agricultural Policy subject-matter area. The Faculty Development Advisor will also be the Senior Technical Team Leader (Chief of Party) for the Project, under the Project Manager.

As Faculty Development Advisor, the incumbent will coordinate all participant training, and other activities to improve faculty capabilities in in all aspects of teaching, research and outreach. In this effort, the Advisor will organize and coordinate a network of faculty and/or administrators from the institutions assisted by the project who will have on-campus responsibility for instituting policies and other actions for faculty development. While the Faculty Development Advisor will have overall responsibility for planning the academic programs and placement of all participant trainees, other Advisors under the Project will provide information and assistance with respect to their areas of expertise.

In addition, the Faculty Development Advisor will serve as a resource person projectwide, to support the inclusion of Agricultural Policy subject-matter and activities are supported in curriculum, outreach, research, Institutional administrative policies and procedures, and facilities development, as well as with in his/her own direct area of responsibility -- faculty development.

The incumbent should hold a Ph.D. in Economics or Agricultural Economics and/or otherwise demonstrate strong qualifications in the field of agricultural policy formulation and analysis. The incumbent should also demonstrate skills in faculty development and planning and be able to lead innovative programs for faculty incentives, support and retention.

As an example, the Faculty Development Advisor may be posted at Don Severino Agricultural College (DSAC), Indang, Cavite, and shall also have routine responsibilities at the University of the Philippines, Los Banos (UPLB). DSAC is about 70 kilometers from Manila and a similar distance from Los Banos. The incumbent may spend about 25% of his/her time away from the DSAC/UPLB campuses in support of projectwide responsibilities for faculty development and agricultural policy initiatives.

b. Agricultural Education Administration

Agricultural Education Administration in the project -- includes strategic planning, fundraising and development, student recruitment and achievement testing, graduate placement and tracking, alumni affairs, public relations and information, procurement of grants and contracts, budget and finance and other aspects of academic administration that are not included in the other programs (i.e. faculty and facilities development, curriculum, research and outreach). Of these, strategic planning is given greatest emphasis under the Project, but other areas -- with the exception of budget and finance will receive attention as well. Budget and financial affairs are largely administered from higher levels of the educational system, and the managerial flexibility that remains at the college level appears to be well-utilized.

Actions To Improve Agricultural Education Administration

One administrator or faculty member from each of the assisted institutions will be appointed to an 18-month term as an Administrative Fellow. Administrative Fellows will focus primarily on the process of strategic planning and on preparing strategic plans for their schools. Administrative Fellows will identify other priority areas on which they will focus during the period of their fellowships. Suggested areas of focus include student recruitment, achievement testing, and graduate placement and tracking. The establishment of student achievement testing at the end of bachelors degree studies would do much to help rationalize the agricultural educational system. An examination such as the Graduate Record Exam in agriculture for instance, would in effect establish standards among schools.

Fellowships may be divided into shorter terms than 18 months, and different faculty/administrators might participate and undertake the fellowship in different periods, depending upon the problem of focus. Administrative Fellows will remain posted to their own institutions, but will spend time away from the institution for workshops and visits to other institutions. The fellowships and other actions taken for the improvement of agricultural education administration will be coordinated by the Project Technical Team Leader, who shall also serve as the Agricultural Faculty Development Advisor.

Technical Assistance

The Agricultural Education Administration Advisor will have responsibility for coordinating efforts to improve the administration of agricultural education institutions assisted by the project, with special focus on strategic planning. The Advisor should hold a Ph.D. in agriculture, education, and have strong abilities in strategic planning, and possess the ability to lead others in their planning efforts. Qualifications and

experience in student affairs, grants and contracts procurement, university foundations and fundraising, or information and communications, would also be useful.

For example, the Agricultural Education Advisor may be co-located with the Faculty Development Advisor at Don Severino College of Agriculture, Indang, Cavite, or the University of the Philippines, Los Banos, the Agricultural Education Administrator should be filled for three years.

c. Curriculum and Teaching Methods

Curriculum and teaching methods include subject matter and its presentation to students -- whether in formal courses; practicums carried out in campus laboratories; field trips; special seminars, research and outreach projects, internships or on-the-job training on farms; agribusinesses or agriculturally-related institutions; or other learning situations. Curriculum in the Project thus comprises the total organized learning experience of students at the colleges, whether undertaken by students in the pursuit of a degree in agriculture, or of specific competencies through non-degree training programs. Teaching methods additionally include activities in the Project directed toward improving the capabilities of faculty to impart knowledge to students.

Curriculum development in the Project is directed toward broadening the modes of learning experience at the agricultural colleges relating curriculum more closely to outreach and research activities of the college, and incorporating new subject matter in emphasized areas -- such as environment and natural resources, agribusiness, Farming Systems, policy and planning, and selected fields of production agriculture. Selected fields of production agriculture that require attention at one or more of the assisted institutions include: seed technology, agro-forestry, marine and freshwater fisheries as related to agriculture, pesticide residue analysis and management, nitrogen fixation and other bio-technology fields.

Modes of Learning

Modes to broaden the learning experience of students at participating institutions will include more extensive on-farm practice by students, both on-campus and on local small and commercial farms. Some agricultural colleges already utilize this approach effectively, but most do not. School farms are generally under-utilized for teaching. Partly due to lack of equipment and supervisory faculty, a number of school farms are in poor condition or are not operated in a manner that teaches sound management principles. If students do not have the opportunity to engage in hands-on agriculture on-campus, they should do so at a cooperating off-campus farm. An objective of the Project is to assure that graduates have the requisite skills and knowledge to instill strong confidence and capability to

produce crops and livestock for themselves or potential employers. A measure of the success of this area of curriculum development should be widespread recognition in the agricultural community at large that graduates of PAEIP-assisted agricultural colleges "know how to farm."

The prominent inclusion of on-farm practical experience among the modes of education within the Project is not to imply that all students are expected to become farmers. Probably most will not. However, knowledge and skills in agriculture are a foundation for success in agriculturally-related occupations, whether science, business or government. Other modes of learning will stress off-farm experience in agriculture.

Students will be supported in undertaking internships in banks, commodity marketing and processing firms, input manufacturing and supply firms, international trade firms and organizations, national and international agricultural research organizations, regional and national planning and agricultural administration offices (within and outside the Department of Agriculture), international development and funding agencies and other organizations. Internships will be mainly aimed at learning, but offer the additional benefits of building linkages between agricultural colleges and other components of the agricultural system, and should also help students make contacts that may become useful in their future careers. Students and faculty will both be encouraged to use internship experiences to revise or augment subject matter offered in courses and to identify problems for on-campus research.

Administrators, political office-holders, businesspersons, farmers and other persons from off-campus agriculturally-related institutions will be invited to become "adjunct" faculty of the participating institutions in order to enrich teaching and thesis research. Adjunct faculty could teach regular courses, special lectures within regular courses, or a special seminar course. Adjunct faculty will also be invited to be members of student thesis committees to provide their special insight into problem identification, formulation and analysis. Adjunct faculty can also play important roles in developing internships, outreach and inter-institutional linkages, and other initiatives of the Project.

Other modes to broaden the learning experience of students include field trips, lectures or courses offered by expatriate technical assistance, personnel, and short-term workshops within and outside the Philippines to expose faculty to other teaching and learning environments.

Relating Curriculum To Research And Outreach

While some agricultural colleges carry out aggressive outreach or research programs, in most cases, research and

outreach do not contribute to education. Indeed in some instances observed, outreach or research was carried out in a manner that demonstrated principles or approaches contrary to those being taught. The modes of learning improved or introduced under the Project will be targetted to relating curriculum more closely to research and outreach.

Faculty and administrators should also institute policies and procedures that support the systematic examination of research and outreach activities to assure that they contribute directly to the subject matter content of courses, or in other ways contribute to the education of students. Faculty should also critically review their outreach and research activities -- to assure that principles demonstrated indeed reflect principles taught, or that any differences are justified. Areas of difficiencies that have been observed in this regard are incomplete accounting of costs in the operation of school farms and/or demonstration enterprises, and recommending -- technologies to farmers that are not fully tested or that probably will not be profitable.

Faculty and administrators should examine curriculum to assure that students are sufficiently exposed to literature -- on development, agricultural policy, rural sociology political science and other fields -- that will support them in formulating their own views of Philippine and world agriculture, and their personal future roles. Students should be encouraged to identify criteria by which they believe college outreach and research activities should be evaluated, and then to critically review those activities for their own learning. The purpose of this approach is for students to apply their knowledge then test their own ideas about agriculture and development. Students should be encouraged to report "lessons learned", and to report inadequacies in the learning aspects of their outreach and research.

Students should be encouraged in class discussion, reports, research papers and thesis research to critically examine not only the college's activities, but also the research, development, entrepreneurial and extension activities of off-campus institutions. The various new and strengthened modes of learning experience (farm practice, internships, adjunct faculty and other modes) will support these efforts. Thesis research particularly should reflect an increasingly broad exposure of students to agricultural issues beyond the farm boundary.

New And Strengthened Subject Matter

The Project will support the introduction or strengthening of curriculum in all assisted colleges in agribusiness, environmental protection, farming systems, policy and planning, statistics and research methodology and production agriculture. The areas of production agriculture in which the curricula will be strengthened will depend upon the specific needs of the

school, but are likely to include one or more of the following areas: seed technology, agroforestry, forage development and range management, pesticide residue analysis and management, marine and freshwater fisheries related to agriculture, nitrogen fixation and other areas of bio-technology.

Various modes of learning will be utilized to introduce or strengthen these subject-matter areas. Resource persons will figure importantly in subject-matter strengthening of the curriculum. Each project-wide area of subject-matter emphasis (environment, policy, agribusiness, farming systems, statistics and research methods, and general agriculture) will be supported by a long-term technical assistant from either the U.S. or the Philippines. The Technical Assistant for "general agriculture" subject matter will coordinate subject matter enhancement in all areas of production agriculture, however he/she will identify areas that require special expertise. Areas requiring special expertise (e.g. agroforestry, seed technology, forage and range improvement, etc.) will be covered by short-term technical assistance -- from the Philippines or the U.S. as most appropriate.

Actions To Improve Curriculum

To broaden the modes of learning, more closely relate Outreach and Research to curriculum, and to add or strengthen subject matter areas action will largely be undertaken by in-country post-masteral and post-doctoral fellows. The "Curriculum Fellows" will be guided in their work by a long-term "Curriculum Advisor." Curriculum Fellows and the Curriculum Advisor will also be assisted by short-term technical assistants as needed.

Three consecutive Fellows may be appointed from each of the assisted colleges, each for a period of one year. Each Fellow will be assigned to a college other than his/her home institution and shall be responsible for curriculum development in the various suggested aspects (broadened modes of learning, closer relationships of research and outreach to curriculum, and enhanced subject matter content). Each Fellow will be supported in this effort by colleagues at his/her assigned institution, other "Curriculum Fellows" assigned to other institutions, the Curriculum Advisor, and other short-term technical assistants, as required. Curriculum Fellows will meet periodically for workshops, discussions, and other mutual help activities. Each consecutive group of Fellows will identify objectives for their group. For example, one group may focus on broadening the modes of learning, another on the problem of relating research and outreach to curriculum, and another on subject matter enhancement.

Because of different institutional profiles and the limited number of faculty at some institutions (or other factors), the suggested plan of three one-year fellows per institution may be

modified to include fewer Fellows for longer periods, or more Fellows for shorter periods. Or, the available resources may be reorganized to provide for an Asian Regional faculty exchange for the purpose of curriculum and teaching methods improvement. One or more of the Fellowships might include time at a U.S. institution for work in the area of curriculum and teaching methods improvement. The actions taken, however, should preserve the essential notion of faculty having time away from their usual responsibilities to utilize their own, and Philippine colleagues' talents and insights for curriculum improvement.

Curriculum Fellows will constitute a network for agricultural education curriculum and teaching methods improvement. It is expected that the network will continue informally beyond the period of the Project, and possibly spread to encompass other institutions outside the project. A measure of the success of the curriculum improvement and teaching methods efforts of the the PAEIP will be the extent to which the network is sustained and spreads to other institutions.

Specific actions taken by Curriculum Fellows at their respective assigned colleges will include organizing the various modes of learning (internships, farm practice, adjunct professorships, and other learning activities), developing policies and procedures to more closely link curriculum to research and outreach, and introducing new or strengthened subject matter in the emphasized areas. The Curriculum Advisor may directly engage in these efforts, particularly when he/she has a special advantage, such as in obtaining books and other reference materials, preparing syllabuses in his/her special area of expertise, or arranging activities that involve Project funding.

Technical Assistance For Curriculum And Teaching Methods

Technical assistance for curriculum and teaching methods improvement will be a long term advisor in this field with the brief title of "Curriculum Advisor." The Curriculum Advisor should hold a Ph.D. in Education, Agricultural Education, or other agricultural field, and show strong capability for curriculum development. Demonstrated innovativeness in broadening the educational experience of students through farm practice, work/study or internship programs, and other techniques will be a key qualification.

It is desirable for the incumbent to also have capability in farming systems research; teaching or extension. The farming systems qualification is suggested to be combined with the curriculum advisor position in order to emphasize a systems approach in the development of curriculum. In addition to his/her major responsibility for curriculum improvement, the incumbent will serve as a resource person in the farming systems subject matter areas for research, outreach, faculty development, educational administration, and facilities development.

Accordingly, the incumbent will support the design and evaluation of research in the farming systems subject matter area, assist in the identification of degree trainees in farming systems, assist in the strengthening of agricultural educational administration in areas that would support farming systems research and extension, and identify needed materials and facilities in this area.

The position of Curriculum Advisor may be combined with one or more of the other areas of subject matter emphasis, if appropriate compensatory adjustments are made in the qualifications of other Advisors.

For illustration, the Curriculum Advisor may be posted at the Visayas State College of Agriculture (VISCA), Baybay, Leyte. VISCA has a national responsibility for leadership in rootcrops research and regional responsibility for Farming Systems Research. Bordering the Camotes Sea, the institution has a well-developed infrastructure, adequate laboratories and farm land. It has programs in marine science and forestry, as well as agriculture. Its immediately surrounding farming area is partly forested humid uplands. The Curriculum Advisor will spend about 25% of his/her time away from post, assisting in project-wide activities in curriculum development and farming systems.

d. Outreach and Inter-Institutional Linkages

Putting students in learning situations on- and off-campus which place real world demands upon their knowledge and performance is an essential complement to classrooms and formal laboratories. The project should therefore encourage outreach activities and the development of inter-institutional linkages between students and faculty in the farm community and agriculturally-related institutions, as well as participation by members of the community and related institutions with the college. Although there should also be some "spillover" effect in the community from this outreach effort, the primary purpose of outreach work is to aid in developing students technical skills, their abilities to identify and utilize resources in problem solving, their understanding of the agricultural environment, and their potential role in it.

Outreach and inter-institutional linkages present an ideal opportunity to initiate research at colleges, that focusses on current local problems -- on farms, in agribusinesses and in other agriculturally-related institutions. To maximize its impact, the Project will focus on outreach-driven (or "demand-driven") teaching and research. By directly participating in agricultural production with farmers, on their fields, students and faculty will gain a better awareness understanding of real problems that need to be solved, and how to approach them rather than merely "massaging" hypothetical classroom or book problems. Similarly, by participating in the work of policy makers, food processors, rural bankers, extension workers and other

agriculturally-related professionals, students and faculty should be encouraged to conduct research relevant to operational needs.

The value of college outreach programs and inter-institutional linkages should be reflected by progress in the of student attainment of skills and maturity of understanding. This will be seen directly in the achievements and behavioral patterns of students, and indirectly in the college curriculum.

Also important in assessing the impact of the participating college's outreach and linkages, is their effect on agricultural production technologies and technology delivery systems. outreach and linkages. Direct impact on production and incomes in agriculture and agriculturally-related enterprises by the educational institutions is a means to an end: improved education and research.

Positive impact by students and faculty in the outreach situations where they are placed is important as such success imparts knowledge and instills confidence in graduates that they can and should make positive changes in the agricultural sector. Changes in the welfare of the clients are also important, but as a secondary measure of the value of college outreach activities. Positive impact of students and faculty also earns support of the college from its clientele as well as fulfilling a service role.

Students in real-world situations are likely to confront problems in agricultural development that lie outside the immediate domain of production agriculture. The Project will encourage students and faculty to identify and engage in the solution of this wider set of problems. The Project will emphasize student and faculty outreach activities particularly in the areas of agribusiness, environmental protection, agricultural policy, strategic planning, and farming systems research and extension, along with problems in production agriculture.

Actions To Improve Outreach and Inter-Institutional Linkage

Actions to improve outreach and inter-institutional linkage will include student internships on farms, in agribusinesses, governmental offices and other agriculturally related institutions. Colleges will also be encouraged to appoint members of off-campus institutions as "adjunct" faculty to give seminars, serve on thesis research committees, and participate in other affairs of the college. Another important mode of outreach and interinstitutional linkage will be the training of extension workers and other persons who are responsible for agricultural development efforts. Faculty and students will also be encouraged to provide the results of their research through publication and other media to agencies that can use the information for the benefit of farmers and agribusiness. Agricultural projects in which students and faculty directly engage in technology dissemination and action research --

presently the dominant mode of the educational institution outreach -- will also be encouraged through the Project.

Improvements of outreach and inter-institutional linkages that have been described will be accomplished through long and short-term technical assistance, faculty fellowships for in-country network collaboration and self-study, degree training through joint studies at Philippine institutions and abroad, and short-term training in-country. Recognizing the significant talent that already exists in Philippine institutions, in-country post-doctoral and post-masteral fellowships will be the principal mode followed to improve outreach and inter-institutional linkages:

For the purposes of formulating an initial budget estimate, it is assumed that an average of three one-year post-masteral or post-doctoral fellowships can be utilized by faculty at each institution assisted. The fellowships will run consecutively within each institution, synchronously among assisted institutions. Each group of "Outreach Fellows" from assisted institutions will focus on a chosen set of objectives to improve outreach and inter-institutional linkage. For the duration of the fellowship, each fellow will be assigned to an institution different than his/her home institution, and shall have responsibility for bringing about improvements in outreach and extension at the visited institution. Outreach Fellows will periodically meet for workshops, be guided in their efforts by a long-term Technical Assistant provided by the Project, and participate in a final international conference on outreach and inter-institutional linkages to be held upon the completion of the full three-fellowship series.

Resources made available for the three one-year fellowships per institution may be partly reorganized to provide for time abroad, or for faculty exchange within the Asia Region for the purpose of improving outreach and interinstitutional linkages. The principle should be followed that -- given the time and resources for thought, research and interaction -- faculty are likely to identify the kinds of changes needed in outreach programs, and to make those changes. International activities within the outreach fellowship program should be designed to strengthen the self-improvement approach.

Technical Assistance

The long-term technical assistant chosen for the position of Outreach Advisor shall have dual responsibility for both the Outreach and Inter-institutional Linkage Program of the Project as a whole, as well as the agribusiness subject matter area. As Outreach Advisor he/she will have responsibility for coordinating the activities described above, as well as assuring that agribusiness subject matter is given appropriate attention in all programs of the participating institutions in the Project (i.e. Curriculum, Research, Educational Administration, Faculty

Development, and Facilities Development -- as well as his/her primary responsibility as Outreach Advisor. Although Outreach and inter-institutional linkage activities shall include persons and institutions other than those in agribusiness (i.e. government, other educational institutions, international organizations, etc.), the combination of outreach and agribusiness skills has been chosen in this instance to assure particular strength of the agricultural college outreach to the agribusiness sector.

The Outreach Advisor should hold a Ph.D., or M.S./M.A. with appropriate experience, in Business Management, Agricultural Economics, Agricultural Education or a related field and demonstrate strong abilities in Agribusiness Extension. He/she shall have primary responsibility for coordinating a collaborative network among faculty of assisted institutions to improve outreach and inter-institutional linkages of the participating colleges. He/she will guide faculty, particularly those awarded fellowships in the Outreach Program in developing outreach and inter-institutional linkages through student internships, training of extension workers, recommendations of agricultural technology and extension methodologies, publications and other media, and other modes of relating agricultural colleges to farmers and other agricultural institutions.

The incumbent will have project-wide responsibility for incorporating agribusiness subject matter in curricula, identifying faculty for degree training in agribusiness and recommending appropriate courses of study, encouraging research in the area of agribusiness, supporting emphases in agricultural education administration (i.e. strategic planning, student recruitment and placement, development of external funding, etc.) and for assuring that appropriate equipment and facilities (e.g. micro-computers and software and library materials) are developed at assisted institutions to support agribusiness teaching, research and extension.

While qualification in agribusiness is an ideal combination with outreach expertise, the Outreach Advisor may instead have subject-matter expertise in another of the emphasized subject matter areas, with appropriate adjustment in the qualifications of other Advisors.

For example, the Outreach Advisor may be posted at the University of Southern Mindanao, Kabaacan, Cotabato. The area is a major and rapidly developing region for corn and other feedgrain production as well as rubber and other tree crops. The region is ideally suited as an expansive field laboratory for the development of outreach and inter-institutional linkages and well as agribusiness activities. About one-quarter of the Advisor's time should be spent outside the region as project-wide coordinator for Agribusiness, and Outreach and Inter-institutional Linkage activities among other institutions assisted by the Project.

e. Research

Problem-solving research is encouraged by the Project and is characterized as "applied research," because usually a specific application of the research results is planned. Applied research may be undertaken under the Project to create largely new technology or to modify and/or adapt a known technology. Simple or advanced research techniques might be used, and the problems studied may range from the trivial to those so difficult as to challenge the best intellect and imagination.

Research at the agricultural colleges is needed as part of the teaching program so that students can learn to conduct research, and to contribute to curriculum by providing new or strengthened subject matter. Research is also needed at the colleges to solve problems of policy-makers, agribusinesses and farmers who are assisted through the institutions outreach programs. Outreach programs at the colleges, in turn, help redirect research at the institution toward problems that significantly affect the life and welfare of farmers and others in the area connected to agriculture. The Project is aimed at encouraging research that directly supports the college's teaching and outreach programs.

Good research is needed both to provide sound instruction, and also for the purpose of providing farmers, agribusinessmen and policy-makers sound advice. There are many areas and issues in Philippine agriculture for which science has provided few answers and/or no improvements in technology for several decades. Agricultural college faculty note, for instance, there are plant disease and animal nutritional problems on nearby farms, for which they have no solutions. Approaches to extension in the Philippines is often criticized, but few researchers have critically examined the issues and provided carefully tested alternatives. Agricultural policies are sometimes questioned but not analysed, or worse, policies are not questioned at all. Increased quality of research, both in rigor and depth, will be encouraged by the Project.

Actions To Improve Research

A one-year post-doctoral or post-masteral fellowship will be awarded to faculty of the assisted ACU's in each of three years during the Project. The awardees will be assigned at one of the other assisted institutions, and together will constitute a network for improving applied research at the participating colleges. The network will focus on increasing the quality of research (in rigor and depth) and on the relevance of research to the teaching and outreach programs of the colleges. Actions by the Fellows -- with the support of the visited institutions -- will include establishing of research policies and review procedures to establish priorities for research based on the potential impact and relevance to teaching and outreach, and to assure that quality research is conducted.

An early task of "Research Fellows" should be to conduct a review of all past research at the visited college and assess its quality and relevance to problems in the region -- production problems as well as issues in agribusiness and agricultural administration. The Research Network should also assess to what extent different research efforts have interrelated and built on one another. Such a review of past research could then be used to establish a strategic plan for future research. Students should be encouraged to choose research topics that are interrelated in a known manner so that together they comprise larger parts of a crop or animal production, marketing or processing system. In short, Fellows should encourage a "systems approach" to research.

Internships of students will also be utilized to improve research. Students will be asked to suggest critical areas of research resulting from their experiences on farms, in agricultural firms and organizations. Some internships should be undertaken at research organizations so that in a direct manner they can become aware of research issues and methodologies. Also adjunct faculty will be used to improve research relevance by asking these officers of firms and government agencies to critically review research for its relevance to their organizations. Fellows will introduce these various approaches to research improvement within their assigned college.

In addition to the exchange Fellowships that will be aimed at strengthening applied research at the colleges, another potentially influential action that will be supported by Project will be collaborative research between participating agricultural college faculty and faculty at U.S. institutions. A few selected partnerships will be identified, particularly between college faculty who have recently returned from M.S. or Ph.D. studies abroad, and one or more academic associates in the U.S., for support through the Project. The Project will provide for round trip transportation and per diem once or twice a year, for U.S. faculty to follow-up and advise on research on problems relevant to the participating college's teaching and outreach programs. When possible, travel of faculty from the U.S. will be combined with specifically identified technical assistance, or with supervision of students in the faculty development program.

Collaborative linkages between Philippine and U.S. agricultural college faculty members is important to stimulate faculty who might otherwise be isolated from colleagues in their field who were closely aware or associated with current scientific advances. The linkage can serve as a conduit for information and materials that would otherwise be unavailable. The linkages should continue for a long period of time, at least 3 to 5 years, and be supported by modest research support costs.

Short-term and long-term technical assistants in the emphasized subject-matter areas will be expected to contribute to research programs of the colleges in their respective areas of

expertise. The same technical assistants will also be responsible for supporting curriculum, outreach, faculty development, facilities development and educational administration in their respective areas of subject matter expertise. For this reason it will be important to project-wide efforts for research improvement be coordinated with the other programs under the Project, to make effective use of short- and long-term technical assistance.

Technical Assistance

A long-term technical assistant for research improvement -- the Research Advisor, shall be appointed to the Project for a period of three years. He/she will have primary responsibility for improving the relevance and quality of faculty and student research conducted at all the participating institutions. Duties of the incumbent will include developing and coordinating the network to improve applied research, which will be comprised of post-masteral or post-doctoral fellows appointed from each of the assisted schools (and assigned to another school in the network). Also he/she will coordinate U.S./Philippine faculty collaborative research, and in other ways strengthen the capacity of the assisted institutions to conduct agricultural research of high quality and relevance to current problems and opportunities on farms, in agribusiness and government institutions.

The incumbent will also have responsibility for the "environment and natural resources" areas of subject-matter emphasis. He/she will be expected to contribute to outreach improvement, curriculum development, faculty development, facilities development, academic administration (in addition with his/her primary responsibility for research improvement), in aspects that support "environment and natural resources emphasis. There are a number of fields of agricultural science in which expertise in reasearch methodology is complemented by specialization in environmental quality, for example soil science, agricultural chemistry and agricultural engineering.

The Research Advisor should have a Ph.D. in Soil Science, Agricultural Chemistry or other field in which research and analysis is combined with expertise in environmental protection, environmental toxicology, soil and water conservation or other related field. He/she should have strong capabilities in agricultural research methodology and/or research administration. A background in research farm management would also be useful.

The Research Advisor may be, for example, posted at Pampanga Agricultural College, Magalang, Pampanga. A lowland rice-growing area at the foot of Mount Arayat, the region around the school provides an opportunity for research, teaching and outreach related to both upland and lowland productions systems. The area is easily accessible and is in close proximity to major food processing, industrial and population centers.

The incumbent will also have responsibility for the "production agriculture" areas of subject-matter emphasis. He/she will be responsible for contributing to curriculum improvement, outreach improvement, faculty development, facilities development, and agricultural administration in aspects that support production agriculture. Since there are a number of areas of potential need in production agriculture, the research advisor will call upon specialized expertise as required. Based upon the evident needs already observed by the Design Team at selected agricultural colleges, these areas include seed technology, agroforestry, forage and range improvement, marine and freshwater fisheries related to agriculture, pesticide residue analysis and management, Nitrogen fixation and other areas of bio-technology.

f. Facilities Development

Facilities Development includes the establishment and maintenance of educational, research and outreach facilities at the participating colleges -- such as libraries, laboratories, instruments, machinery, farms, transportation, communications, instructional equipment, buildings and grounds. Facilities development and maintenance under the Project will focus on laboratory instrumentation, instructional equipment, libraries farm operations, and overall managerial expertise.

The purpose of laboratory development at the colleges is to assure that the analytical facilities are sufficient at each institution to carry out basic analyses typically needed in the support of outreach activities, to enable students to conduct basic experiments and investigations with their own hands that will provide them the confidence that they can solve agricultural problems through science, and to enable faculty to conduct research of a national or international standard. Most of the assisted institutions have yet to develop such facilities. The Project will encourage this standard largely through the acquisition of locally-made or locally repairable equipment, and the development of expertise in instrument repair and maintenance.

Instructional equipment is deficient at all the targetted institutions and efforts are needed to identify, acquire and repair such items as overhead projectors, slide projectors, micro-computers, copy machines, and printing equipment. Books and journals are needed for libraries but in most instances before procurement, provision needs to be made to accommodate them by additional library space and shelving. A computerized international library and documentation system such as the "Minisys" should be considered for one or two central locations, such as the University of the Philippines at Los Banos, and the Visayas State College of Agriculture. College farms are

generally not well operated and as such are poor examples for student to follow. Several multi-directional efforts are needed -- better physical and financial management, better equipment, and greater involvement of students and faculty. The project will give attention to all these aspects.

Action To Improve Facilities

An initial assessment of facilities should be made as soon as possible to identify the new equipment that will be required to put the laboratories, farms, classrooms and libraries of the participating institutions on an adequate footing. Standby electric power supply is a necessary consideration in all cases. An assessment should also be made of required renovations to support each of these facilities. For example, putting water and electricity into laboratories is necessary in some instances. Also an assessment is needed to determine what is required to put uninstalled, and broken, equipment back into service. Finally, a plan is needed to suggest how the facilities can be maintained in operating condition.

To organize and oversee improvements in college facilities, two Fellow will be appointed for a 9-month term from each institution. The Fellows for Facilities Development will receive nine-months of training in instrumentation, the Fellows in Farm Management nine-months training in experimental/instructional farm development and management. A major responsibility of the Fellows will be support actions taken as a result of the facilities assessments, including oversight of acquisitions, renovations, repairs and provisions for maintaining the facilities.

A Facilities Advisor will support facilities development and maintenance at the assisted institutions through his/her own expertise, by arranging appropriate training for faculty who are responsible for the facilities, and coordinating short term technical assistance in needed areas. Likely areas in which short-term technical assistance will be needed are in library development and instructional equipment. Additionally the Facilities Advisor will have overall responsibility for assuring that actions are taken to respond to the earlier facilities assessments.

The Project will support the acquisition, renovations and repairs of facilities as identified in the facilities assessments. Additionally, through the training of Fellows for facilities development, the Project will provide for the continued maintenance and operation of the facilities.

Technical Assistance

The Facilities Advisor will have responsibility for improvement of laboratories, experiment/research farms, libraries and overall management of facilities at assisted institutions. He/she will coordinate short-term technical assistance as needed to improve facilities at ACUS and oversee the scheduling of acquisitions, installations, renovations and repairs of facilities. He/she will coordinate the training of facilities specialists from participating institutions and assist them on the job.

The incumbent should have a minimum of a Masters degree in agricultural, civil or electrical engineering, or a field of agriculture with demonstrated proficiency in facilities development and management. Instrumentation and experimental/instructional farm development and management both have high priority, but either expertise is sufficient.

The Facilities Advisor shall, to the extent possible, also support the project-wide effort to improve research methods. For this purpose, a background in statistics and experimental plot techniques would be helpful.

For example, the Facilities Development Advisor may be posted at Silliman University in Dumaguete, Negros Oriental. He/she will spend about 30 % of his/her time at other institutions assisted by the project. The Facilities Development Advisor position will be filled for a period of three years, starting with the commencement of the project.

3. AREAS EMPHASIZED IN THE PROJECT

A number of problem or subject-matter areas will be emphasized in all the functional areas of the Project. The subject-matter emphases were selected based upon and analysis of curricula, discussions with faculty and administrators, recommendations by the PCARRD Director of Planning, and general observations by the Design Team. Emphasized subject matter areas reflect emerging areas of concern in the Philippines that require attention in outreach, teaching and research, or that have been of continuing concern but which appear weak in the agricultural college programs. While it may be self-evident how subject-matter can be given emphasis in outreach, teaching and research, it is also important that faculty and facilities development as well as initiatives in the improvement of educational administration also pay attention to the following emphasized problem areas.

a. AGRICULTURAL POLICY

Decentralization of the administration of the Department of Agriculture has been undertaken largely to allow decisions and initiatives to be better tailored to the agricultural needs of regions. Regional administrators have indicated that they need analytical and informational support at the regional and, even more, local levels. Agricultural colleges need to respond to this need through outreach, teaching and research. Initiatives were taken to establish an interregional collaborative network for policy analysis under previous USAID funding, led by the University of the Philippines, Los Banos (UPLB), but now the work needs to be continued, and to be expanded from research into teaching and outreach.

Policy analysis and outreach activity need not be undertaken only when requested, and neither should it be restricted to the Department of Agriculture. Clearly other policy making bodies, including the National Economic Development Authority (NEDA) and the Department of Education, Culture and Sports (DECS) itself influence agriculture, and such influence should be backed by the full benefit of research that can be undertaken by regional agricultural institutions. Presently it appears that only UPLB does policy research, and conducts research only for the Department of Agriculture -- and only upon request. A more pro-active approach is suggested, in the view that it is the responsibility of agricultural colleges to take a critical view of the agricultural system and to make policy recommendations -- whenever and wherever a benefit to the agricultural community is expected.

Furthermore, agricultural policies should be seen as having a close relationship with the direction of the colleges themselves. Land reform, for example, can have an important impact on the kind of training students receive, the outreach programs of the colleges and on their applied research programs. Faculty development is one of the major ways in which a college

responds to the long-term trends in the structuring the content of curriculum, outreach and applied research. For that reason, it is suggested that policy and faculty development expertise be linked together in long-term technical assistance for the Project.

Agricultural policy is considered to include the organization of public services to agriculture, planning for agriculture, current decisions that affect farmers and the rural population, trade policies, infrastructural development programs as well as fiscal and monetary policies. Any research undertaken should carry over not only into the pertinent decision-making bodies, but also into public information. Farmers and other rural occupants should know how they are affected by policies and programs of the government, and perhaps of international agencies. The agricultural colleges should be a focal point for disseminating such information and heightening public awareness -- not as spokespersons for the government, but as experts in the topics discussed

b. Agribusiness

Agribusiness includes the production, distribution, and sale of agricultural inputs including agricultural machinery; marketing, transportation, and processing of agricultural products; international brokering, contracting and trade; agricultural banking, finance, and loan administration; and many other off-farm commercial activities. With the development and growth of the Philippine economy, these activities will increase. It is already clear that fewer and fewer graduates are going into production agriculture, while the needs for agriculturalists are simultaneously increasing in agribusiness. As urban and suburban populations increasingly encroach on agricultural areas the demand for agricultural products and means of production shifts, implying the need for more agribusiness enterprises.

While agribusiness courses and majors are being incorporated into agricultural college curricula, their content needs to be strengthened with better foundations in production economics, prices, trade, development and other areas. Classroom teaching also needs enrichment through internships by students in agribusinesses and adjunct professors from agribusiness in the classroom and on student research committees. More applied research needs to be oriented to agribusiness and more of the outreach activity of the colleges directed to agribusiness. This should be accomplished in part by faculty members' and students direct contact with agribusiness firms in a research and advisory context.

In order to channel college outreach activities into agribusiness, it is recommended that the Outreach Advisor also have qualifications in agribusiness. The network of Outreach Fellows, with the assistance of faculty at their assigned institutions and the longterm technical assistant will have

responsibility for developing activities to strengthen the agribusiness component of outreach. Short-term technical assistance will also be utilized to improve special areas that cannot be met by present faculty and longterm technical assistance, such as certain post-harvest processes, food science and technology and other fields.

c. Environment and Natural Resources

With respect to environment and natural resources, the Project will mainly be concerned with issues closely related to agricultural production and agribusiness -- i.e. chiefly soil and water quality. Reflecting this focus, soil and water quality will be emphasized in all programs of the Project: -- academic administration, faculty development, facilities development, outreach and interinstitutional linkages, applied research and curriculum. The broader aspects of environment and natural resources (i.e. those not closely tied to production agriculture and agribusiness -- such as urban air pollution and disappearance of wildlife) might be incorporated into the curriculum but not necessarily the other programs.

Outreach efforts in the environment and natural resource areas might usefully focus on further development of environmental protection services -- soil conservation, environmental toxicology, pesticide residues in the food chain, inorganic fertilizer residues in water, and other factors. College laboratories could be established to conduct certain analyses for this purpose, and/or one regional or national laboratory developed for the advanced analyses necessary for adequate monitoring of the agricultural environment. Publications and other informational media for rural areas may prove important in the outreach effort with respect to environmental issues.

Consideration should be given to identifying an Applied Research Advisor who has interest and capability in the area of environmental protection. The areas are particularly compatible within the Project because of the need for a rigorous analytical approach to environmental issues. It is important that environmental concerns and studies in the Project represent good science rather than politics. An emotive, political approach could be damaging to the Philippines by diverting attention away from the substantial need for analysis in environmental protection. A combination of a strong research and environmental protection capability and interest is likely to be found among soil scientists, agricultural chemists, food scientists and other agricultural disciplines.

d. Farming Systems Research and Extension

The Department of Agriculture has recently adopted the farming systems approach in its extension and research system. Substantial strides have been made in the area through the PCARRD

"farming systems commodity, the UPLB Farming Systems and Soils Research Institute, the VISCA farming systems program (FARMI) and Siliman University's farming systems approach to teaching. Other agricultural colleges have yet to understand or employ the approach. The Agriculture Department's new initiatives suggests that the farming systems approach needs to be supported by agricultural colleges throughout the agricultural education system. Farming systems research and extension needs further strengthening at the colleges in order to provide appropriately trained graduates to the Department of Agriculture (DA), and to support the DA's efforts through applied farming systems research, and the development of effective extension methods.

Each farming systems program or project appears to develop its own definitions, philosophy and objectives of farming system research and/or extension, and this would likely be the case within this Project. The central idea that should be encouraged through curriculum development, outreach and applied research at the assisted institutions is that an examination of all the interrelated parts of an agricultural system, and how they are related, is often necessary to get at the root causes of low incomes and productivity. Also, a systems approach is needed in order to identify the most promising areas of for agricultural innovation.

It is important however in the Project that a "systems approach" not be seen as an end in itself; it should begin and/or end with innovation. Innovations are usually discrete phenomena in a small part of an agricultural system, whether in policy, production agriculture, agribusiness or the extension system. It is in designing, configuring, introducing and even understanding an innovation that a systems approach is needed. Rarely can anything that approaches a system itself, i.e. a complex of interrelated technical and institutional phenomena, be successfully invented and introduced to farmers. In short, one does not develop or introduce new systems. Rather one develops and/or introduces new technologies that are designed to bring about improvements in the existing systems.

The Design Team recommends that the Curriculum Advisor be qualified to take responsibility for the farming systems area of subject matter emphasis. Curriculum is perhaps the most critical function in which to institute the farming systems approach, both because of the potential impact of generations of students who will have gained mastery of the approach, and the substantial challenge of communicating the precepts; therefore it must be carefully done. The Design Team tentatively suggests VISCA as a particularly advantageous location at which to base the Curriculum Advisor with farming systems qualifications, because of VISCA's previous work in this area and strong interest in emphasizing curriculum development at that institution.

e. Sociology of Rural Development and Cultural Minorities

A deficiency that is often noted among agricultural graduates today -- in the Philippines as well as elsewhere -- is their inexperience in thinking about agricultural development, agriculture's role in transforming society, and their role in society. While many graduates aim to have influential roles in agricultural extension, policy, science or business, they rarely appreciate the context in which they would play that role, or even why, beyond earning an income. The purpose of emphasizing rural sociology and cultural minorities in the Project is to help students develop a better sense of why they are seeking agricultural careers and how their career are likely to affect society. Such a background will not only create a more knowledgeable graduate, but also a more productive one.

Outreach programs, the content of curriculum and the design of policy, institutional and technological innovations affect people differentially. This should be understood by those responsible for tomorrow's agriculture. Rural Sociology and related areas will support the development of such a consciousness. Differential effects of agricultural development and how it is administered on cultural minorities and majorities is a particularly important aspect of this consciousness. The typical agricultural graduate has little knowledge of cultural minorities, the technologies they might employ and how they are affected by agricultural development. In fact, more often there is surprising misinformation about the agricultural economies of cultural minorities. It is therefore recommended that the Project encourage emphasis on rural sociology and cultural minorities as a subject matter area throughout the outreach, curricula and research activities.

Western Mindanao State University (WMSU) is perhaps the least advanced of the the ACU's visited by the Design Team. It, as yet, has not developed a sound plan for its administration and development. For example, it is remote from the main campus and for that reason the agricultural faculty find themselves teaching much of the core curriculum in areas for which they have not been formally trained. WMSU is also a locale in which cultural minorities are a significant element of the student body, and an aspect in which the agricultural college's outreach and extension responsibilities will be significantly challenged. It is tentatively suggested that the Academic Administration Advisor also be qualified for work in rural sociology or a related field, to be posted in Zamboanga, at or near WMSU.

f. Production Agriculture

The focus of outreach, teaching and applied research at agricultural colleges is largely production agriculture. Elsewhere it has been suggested that the success of this Project should partly be assessed by the extent to which assisted graduates become known as persons who know how to farm.

Production agriculture must remain the core strength of agricultural colleges. Whether graduates farm or enter government, science or private enterprise they should have a solid capability in production agriculture.

Most of the agricultural colleges visited remain weak in basic areas of agriculture, with basic crop sciences appearing to be the best represented in terms of the focus of their outreach projects, senior theses, courses and number of faculty. This strength must be increased where needed, but certainly maintained throughout the system.

This Project should further assure strengthening of the agricultural colleges at the regional level in all the basic fields of agriculture including plant science, soil science, animal science (including dairy, poultry, and other livestock as applicable to the region), entomology (if not included in plant science as plant protection), range management, agricultural economics, agricultural engineering, agricultural education, and selected other fields. Plant Pathology, Agricultural Chemistry, Horticulture and other fields may be justified depending upon the region.

However in addition to these basic fields, there are emerging needs at the regional level institutions in more specialized areas such as biochemistry, seed technology, agroforestry, fisheries as related to agriculture, food science and food technology and other areas. The Project should support initiatives in these areas as needed and as the assisted institution's faculties expand and mature sufficiently to meet the needs in these more specialized areas.

The Design Team recommends that the basic and specialized fields of agriculture remain the areas of highest priority in the outreach, teaching and research programs of the assisted colleges. To coordinate the provision of needed technical inputs by short-term technical assistants, and to directly provide assistance (particularly in the basic agricultural areas), it is recommended that one of the technical assistance team be qualified as an agricultural generalist. This role might be combined with that of the Facilities Advisor, particularly if that advisor is recruited for expertise in the experimental/instructional farm development and operation. The incumbent might usefully be posted at Silliman University, or co-located with the Curriculum Advisor at VISCA.

C. PROJECT INPUTS

Approximately \$17 million of US funding are estimated for the five-year time period of the project in order to implement this project plan. The amounts in each of these categories need further validation and refinement.

TECHNICAL ASSISTANCE IN <u>Six</u> academic areas (assuming a U.S. Prime Contract, with a possible Philippine Joint Venture or sub-contract)	\$4.5 M
FACULTY FELLOWSHIPS AND OUTREACH LINKAGE NETWORKING	\$2.5 M
FACILITIES UPGRADING AND EQUIPMENT	\$5.5 M
STUDENT WORK-STUDY ASSISTANCE AND COURSE RELATED INTERSHIPS	\$1.0 M
PROJECT MANAGEMENT (assuming a U.S. Prime Contract, with a possible Philippine Joint Venture or sub-contract)	\$2.5 M
MONITORING AND EVALUATION (assuming Joint U.S. and Philippine involvement)	\$1.0 M

The detailed worksheet and assumptions for this estimated budget are contained Annex E of this Report.

D. PROJECT IMPLEMENTATION MANAGEMENT

A project of this complexity -- with a high number of different technical initiatives, as well as organizational and geographic diffusion -- requires a small but dedicated full-time central management unit to provide direction and leadership. Project management would ensure that the multiple objectives are clearly understood by all involved; that resources are provided to the right people, at the right place, in the right amount, and at the right time; that innumerable "housekeeping" details are taken care of promptly so that they do not become a burden to the advisors, faculty, fellows, and other people carrying out the technical aspects of the project; that any essential project-level negotiations, reporting and other documentation will be handled in appropriate administrative channels, and that funding and accountability will be handled effectively and efficiently with a minimum of "red tape".

The design team considered that due to other on-going work levels, the USAID direct-hire staff had reached its capacity for managing and monitoring projects. Furthermore, because of personnel ceiling levels, USAID did not consider it feasible to hire Personal Services Contractors (i.e. PSCs) to undertake this function. The Team therefore considered alternate means for managing this project. Four precepts which the Design Team adopted to guide its efforts in this regard -- decentralization, efficiency, effectiveness and accountability are summarized below:

1. Decentralization Support the Philippine Government's thrust to decentralize national and rural development activities. Strive for local autonomy and support of local initiatives, to the extent that they are consistent with the concept of a single overall project.
2. Efficiency Be responsive to support decentralized technical operations -- i.e. the participating agricultural colleges, and their technical advisors, faculty fellows and students -- to meet their resource needs promptly (particularly funding) for personnel, facilities construction and equipment, extension, outreach, research and other program activities.
3. Administrative Effectiveness Minimize the administrative involvement of (and consequent burden of the project on) the GOP and keep "red tape" to a minimum, consistent with good management.
4. Accountability Establish overall baseline data and install system and procedures to monitor the type, amount and utilization of project resources by each participating college as well as the technical progress made -- for subsequent auditing, analysis and evaluation.

In order to support decentralization and the concept of local autonomy, the authority for the majority of technical operating decisions under the project must be delegated to a manager on the spot. The role of a central management unit in a decentralized scheme is to establish overall objectives, policy and guidelines; then provide resources and "backstopping" administrative/logistical support to local managers, and let the local team get on with their job. It is worth reiterating -- in a decentralized mode, the function of central management is support, not control.

Despite the lip service currently being paid to the concept, the Design Team sees little evidence of past experience with decentralization, or readiness to change current practice in Philippine government administration. On the contrary, a tendency to excessive control and micro management at central

government levels -- through proliferation of acronymic "coordinating bodies -- appears to prevail. While program and project accountability is necessary, however, undue attention to control can stymie effective implementation. Of particular concern to the Design Team is the currently centralized control of State Colleges and Universities exercised by the government with regard to funding, and the inflexibility for its utilization after receipt.

Apart from the inadequate amount of funding received, delays in releases of the funds appropriated are a constant and continuing source of operational difficulty for the State Colleges and Universities which the team visited. Indications were that even after appropriation, approximately five percent of that amount was withheld by the central government as "mandatory reserves". Discussions with other personnel indicate that fund approvals and releases, in general, constitute a major bottleneck not only in implementing purely Philippine Government appropriated programs, but other donor, and other USAID-assisted programs as well -- particularly those projects administered by and through Central Government Departments.

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A recent World Bank Study¹ observed

In 1969, a major study was carried out by a Presidential Committee to Survey Philippine Education. One of the key recommendations of that study was to decentralize the Department of Education in order to make decision-making faster and more responsive to local requirements. . . . The system is however is still experiencing difficulties in institutionalizing these changes, and many of the organizational problems constraining the sector stem from the ongoing efforts to successfully decentralize education management.

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[emphasis ours.]

¹ Philippine Education Sector Study, Part Two. Population and Human Resources Division, Country Department II, Asia Regional, The World Bank, August 3, 1988.

²

Ibid. p.1

The Presidential Memorandum of November 4, 1987 required all departments to establish a central project group to be responsible for project development and implementation. In response to

³
the Memorandum, DECS confirmed in March 1988 that the Educational Development Projects

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Implementing Task Force (EDPITAF) will be responsible for all foreign-assisted projects in education or other areas as may be assigned by
⁵
the Secretary.

Organizational responsibilities for project development and implementation are unclear, with

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both OPS and EDPITAF mandated to carry out research and project development and both the DECS bureaus and EDPITAF involved in project management. Such an overlapping of responsibilities causes confusion and uncertainty among the groups concerned.

The recent reorganization of DECS introduced important but conflicting changes . . . Further functional duplication has resulted from the increasing involvement of the DECS bureaus in project execution, also a responsibility of EDPITAF . . . All of this highlights the lack of permanent institutional arrangements for

⁷
project development and implementation

To remedy this situation, the World Bank study team recommended that the current role of EDPITAF be transferred to DECS proper, and

creating an office or bureau of project services which would take charge of implementation, specially in procurement and disbursement. A committee to coordinate each project should be formed, comprising OPS and a relevant Bureau with the new office/bureau

⁸
as its secretariat.

3

The Department of Education, Culture and Sports.

4

EDPITAF is headed by a Director under the Office of the Secretary, and staffed by technical personnel and consultants.

5

Ibid. p.16

6

Office of Planning Service.

7

Ibid. p.27.

8

Ibid. pp. 31-32.

Although they have no direct current relationship or management responsibility for the institutions, the Team proposes to assist, EDPITAF personnel with whom the Team met during the course of this study expressed keen interest in managing this project. To this end, EDPITAF had already anticipated this role and shared with the Team a proposed organization chart -- which designated a management "box" for USAID, along with several similar boxes to represent their role in managing the projects of other donors. Furthermore, they informed the Team that they had developed a "Fast Track" system to move donor project funds to the institutions targetted. With the limited time available for this study, however, the Team was unable to discuss this system in any detail, or verify DECS/EDFITAF's project management track record, or their current capacity for managing future projects.

Certainly under the terms of a government-to-government bilateral project, the recipient government should be advised of the nature of the project's thrust, nature and levels of assistance proposed, concur in the project's objectives, and be kept informed of progress. However, given the institutional complexity of DECS, and the magnitude of its other responsibilities

which includes the management of 32,800
elementary schools, 5,430 secondary schools

9

and 1,160 colleges and universities

coupled with the findings and recommendations of the recent World Bank study, the Design Team does not see how the management of USAID's proposed project to assist eight selected institutions -- primarily through a technical assistance mode -- could be facilitated by incorporation into the EDPITAF/DECS milieu.

1. Recommended Approach

The Design Team recommends instead that an AID Direct Cost Reimbursement-type contract be entered into between USAID and another organization to manage the overall administration and financial management of the project. The management of the project, as designed, will be demanding. It will require strong administrative, financial and monitoring experience in the Philippines, or similar Third World development project management environment, and will engage several Filipinos. A possibility also exists for a Joint Venture between a U.S. and a Philippine firm. These factors suggest that potential contractors be invited to propose any configuration of organizations among bidding partners. In order to obtain the best individuals available for the task, the widest possible field should be solicited. The contract should thus be fully open and competitive to both U.S. and Philippine organizations.

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Ibid. p.6.

A similar contracting arrangement is appropriate for the technical implementation of the project. While the technical scope of the project suggests that U.S. universities (within or
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outside of the major consortia) should play a major role in implementation, a number of private U.S. or Filipino firms, or

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Private Voluntary Organizations (PVOs) could also furnish individuals with education, skills and experience such as those indicated in the project plan. Title XII universities have increasingly joined arrangements with U.S. private firms and PVOs, in recent years -- with either taking the lead role.

It is also highly conceivable that the individuals for both the overall management of the project and for the implementation of its technical components -- while with differing backgrounds -- could be acquired under a single contract. Alternately the technical aspects could be a separate sub-contract under a prime management contractor, or a Joint Venture. Such arrangements need not be restricted solely to U.S. firms.

Although a Joint Venture U.S./Philippine private firm could probably recruit appropriate technical academic specialists to perform roles outlined, it is highly likely that a U.S. Title XII Academic institution could more readily recruit appropriate academic specialists to work in this predominantly academic environment. It would also be more acceptable to the target institutions to be dealing with professors from an academic institution on the day-to-day technical level rather than with private sector contractor Consultants/Advisors. Furthermore, with an academic institution as its technical base, the potential to sustain networking with the local institution over the longer-term is much greater than with a life-of-project consultant. In this regard, the Design Team considers that the placement and management of Participant Training for faculty upgrading should also be managed within the structure proposed by the contractor - - rather than assigned to yet another contractor, or AID/W's Offices of International Training which would further reallocate the function to the U.S. Department of Agriculture.

2. Matrix Management

For initial guidance, the Design Team proposes that the overall Project Manager and staff be located in, or in close proximity to Manila -- for ease in communicating with USAID, DECS

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Such as the Western States universities' Consortium for International Development (CID)

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Such as the International Institute for Rural Reconstruction (IIRR), based in Cavite.

and other Philippine Government entities, for expediting procurement, sub-contracting, and making international travel arrangements for, and on behalf of, the participating colleges and universities. Co-location with one of the assisted institutions is not essential.

The Technical Advisor assigned to each of the participating institutions should be assigned an additional responsibility as a Sub-Project Manager -- coordinating with the overall Project Manager for administrative/logistical monitoring and support. In concert with the Government of the Philippines decentralization directive, the President of the institution to which the Sub-Project Manager is assigned should be formally delegated and designated by the GOP as the Sub-Project Manager's appropriate Philippine project counterpart individual -- to approve project documentation and to receive project funds. The team considers that the Faculty Development Advisor is the most appropriate individual to act as spokesperson for the other technical staff in dealing with en-masse with the overall Project Manager. In the event that a separate contract is negotiated for the technical assistance aspect, the Faculty Development Advisor again appears the most appropriate individual to assume the Chief of Party role.

Thus, in essence, the Technical Assistance Advisors are "Triple-Hatted as:

1. Sub-Project Manager to work with and support the President of their assigned institution in his/her management of the project.
2. Sub-Project Monitor to keep informed of all aspects of the institution's involvement in the project, and keep the overall Project Manager informed of problems and progress.
3. Technical Advisor
 - a. To directly assist their host institution to become a "Center of Excellence" in their specialty.
 - b. To support all aspects of their host institution's outreach linkage with the paired institution's faculty and staff, and particularly with respect to their own specialty -- i.e. Curriculum Development.

- c. To develop and sustain a Network of Fellow to implement their specialty -- "Curriculum Development" for example -- throughout the entire network of assisted institutions.

Although this is the Design Team's conceptual model, it will be important to provide this model to potential contractors as merely a guide allowing them to establish and further define these relationships, and their respective functions among themselves in their proposal, in order to assure that different project components are well integrated.

On-going project monitoring and evaluation should be integrated as a function of overall project management. Periodic "interim" and "impact" evaluations should be budgeted for as additional external activities. An Indefinite Quantity Contract (IQC) mode is assumed.

6. THE COUNTERPART BUDGET OF THE
GOVERNMENT OF THE PHILIPPINES (GOP)

The standard provision for project assistance in most US-Host Country bilateral agreements is that the recipient country contribute at least twenty-five percent of the U.S. foreign exchange equivalent to the project in their own funds -- in cash and/or in kind.

Given an estimated seventeen million (\$17 million) U.S. grant, the Philippine Government counterpart would amount to a minimum peso equivalent of \$4.25 million dollars.

The Department of Education (DECS) provided the design team with an estimate of the GOP counterpart that they had prepared earlier. This estimate is for a total of five million (\$5 million), allocated as follows:

1.	\$ 549,000	- Taxes and Duties
2.	\$ 780,000	- Management Cost
3.	\$ 126,000	- Supplies & Materials
4.	\$ 60,000	- Travel
5.	\$ 90,000	- Gasoline & Fuels
6.	\$ 64,000	- Transportation & Communication
7.	\$ 655,000	- Equipment & Office Furnishings
8.	\$2,676,000	- Other - In Kind

	\$5,000,000	
	=====	

In preparing this estimate, the Design Team recognizes that the GOP estimators have had to deal with the same difficulty we encountered -- i.e. having to "macro-estimate" before the details are available. Nevertheless, despite this, there are two items the Team sees as needing major revisions before a Project Agreement is reached, as well as perhaps a clearer understanding of the institution(s) to which the counterpart will be allocated.

In the first place, although "in-kind" off-set contributions are acceptable, the essence of an "in-kind" is that it should be an additive amount -- i.e. that these in-kind items would not exist if the project did not exist. In-kind items should also be identifiable and verifiable for post-audit purposes. While the Team recognizes that specification of such items is premature until the project detail is actually developed, and there is no necessary limitation on the actual amount, \$2.676 million represents more than fifty percent of the estimated GOP contribution which is a considerable amount, and should be disaggregated as soon as is feasible.

It is the Team's understanding that any foreign (i.e. U.S.) equipment imported for project use would be exempt from taxes and duties. Thus, the Team does not see the first item of \$549,000 as an appropriate one.

The other items in the proposed counterpart are all for various management and administrative costs. Again, while the Team is not aware of any restriction on the use of counterpart for these purposes, it should be clarified as to which organization(s) is(are) assumed to benefit from these funds. It appears to the Design Team that DECS has in mind this amount will be for EDPITAF use in managing and monitoring the project. The team, on the other hand, envisages that the GOP counterpart would be for use by the eight assisted institutions. Furthermore, this amount should be additive to any increase anticipated in the institution's budget as a result of the rationalization of the agricultural education system and reallocation of funding from 285 schools to about 90.

In this regard, the design team learned from the National Economic Development Authority (NEDA) that the Department of Education has not yet formally submitted its rationalization plan to be included in projected year Budgets. Thus, any such reallocation of funding will probably not occur for at least another two years.

Similarly, even if the USAID Agriculture Education Improvement Project were to be approved in the next two months, the GOP counterpart would have to run through a similar Budget review and approval process, and should not be anticipated to be available for Project use until 1991. Phasing in GOP counterpart contributions with the U.S. funding will therefore be an important aspect in the project paper preparation, but it is premature to attempt it at this time. One consideration which would assist

the project -- if it is technically feasible -- would be for the GOP to commit to picking up the recurrent costs of the project beginning in the third year, and continuing to the seventh year -- i.e. for two years after completion of the U.S. contribution.

Some of the items which the design team sees as appropriate for GOP counterpart expenditure (all or partial sharing with U.S. expenditures) would be:

1. Housing, in-country travel, transportation and per diem of expatriate Technical and Project Management personnel.
2. In-country travel, transportation and per diem, in-country fellowship expenses, honoraria, faculty salaries for new personnel, in-country conference expenses, etc. of Philippine faculty.
3. Procurement of vehicles -- buses, trucks, cars, jeepneys, motorcycles, etc. (type and quantity as most appropriate -- developed under strategic plan), gasoline, maintenance and repair costs of vehicles for each of the participating institutions.
4. Procurement of locally manufactured/imported equipment and supplies for teaching, laboratories, etc. -- including computers.
5. Construction costs of facilities.
6. Provision of funds for student work-study, assistantships and internships, and associated faculty and business honoraria.
7. International travel costs for Philippine participants to U.S. and Asian programs.

7. PROJECT MONITORING, DATA COLLECTION AND EVALUATION PLAN

A. INTRODUCTION

The progress and impact of education improvement projects are inherently difficult to monitor and evaluate on a regular and objective basis. While the inputs to support the project are easily recorded, the corresponding outputs are often not readily traceable and attributable to such project inputs. For example, libraries can be improved with acquisition of new books and titles but the corresponding benefits are difficult to identify, quantify and monitor. Furthermore, project outputs need to be related to the project's purpose. For example, the Project may provide scholarships for faculty (input) to generate trained faculty (output) but the quality of graduates and/or specific benefits from faculty research and extension have to be defined and quantified a-priori in order to monitor whether the purpose of the Project was attained.

A limited review of agricultural colleges in the Philippines indicates that most do not conduct a regular and systematic survey of either their students' background or their graduates' employment. Records of research and outreach activities also need considerable improvement in order to define objectives and assess the activities and responses of the targetted beneficiaries in the communities served. The data for regular planning of the colleges should also be expanded to include socio-economic data in the area.

To implement the Philippine Agricultural Education Improvement Project effectively, data of the administrative and primary nature are essential for progress evaluation and decision-making by project management. In addition, formal data collection methods should be installed to help ensure that data will be generated as needed. Therefore, the design team recommends that this project -

- (1) support a Project Monitoring and Evaluation Unit (PM&E) and conduct of monitoring system design, data collection, monitoring and evaluation within the project management staff, and

- (2) provide for data collection, monitoring and evaluation as described below.

B. USERS OF THE INFORMATION

The primary beneficiaries and users of the monitoring system are the project implementors at the colleges, the program or technical specialists, the overall Project Manager, the central planning unit at DECS, and USAID program and project officers.

The related evaluation system will be primarily used by Project Management, the planning unit at DECS, and USAID project officers and evaluation specialists.

With the primary involvement of the Monitoring and Evaluation specialist, these units will work with short-and long-term consultants in the actual development of instruments, installation, and operation of data collection, monitoring and evaluation systems for the project.

C. INSTITUTIONAL LOCUS

The primary responsibility for operating the data collection and monitoring system lies with the overall Project Manager. The actual operations will be conducted by the PM & E, working with the key sub-project managers at the colleges involved. The Project monitoring team consists of one management information specialist and one systems analyst. The PM & E will have the responsibility of interpreting and integrating various participating college reports, supervising the data collecting and reporting requirements, and ensuring that the guidelines on the monitoring and evaluation systems are properly followed. It will also be responsible for training the sub-project managers at the participating colleges. The staff at the colleges will be responsible for completing the required monitoring forms, preparing the reports and conducting small sample studies and case studies as required and discussed in this plan.

D. PROJECT GOAL, PURPOSE AND OUTPUT QUESTIONS, INDICATORS, AND COLLECTION METHODOLOGIES

The monitoring and evaluation specialist and the counterpart staff at the Colleges will support the information needs of overall project management and other users by responding to certain questions during the implementation of the project. These questions serve to assess the degree of achievement of the goals, purposes and outputs of the project. The corresponding indicators and data collection methods, described below, defines the monitoring and evaluation system of the project.

Project Goal and Sub-Goal. The goal of the project is to increase the contribution of farm and agribusiness enterprises to Philippine gross domestic product. A supporting sub-goal of the project is to increase the growth and development of farm and related non-farm rural enterprises in the Philippines.

A. Goal-level questions:

1. Using the geographical areas served by the Colleges as reference, has there been an increase in the contribution of farm and agribusiness output to the regional or provincial gross domestic product?
2. What is the extent of growth in farm and farm-related enterprises in these areas?

B. Indicators:

1. Increase in peso amount and in proportion of farm and agribusiness output in the gross domestic product of the region or province.
2. Increase in number and diversity of farm and farm-related enterprises in the area over time.

C. Data Collection Methodology

Data on the increase in number and types of farm and agribusiness enterprises can be gathered by extension workers for designated target areas. Additional and more aggregate data on these establishments may be available from government census. Other government agencies such as NEDA may be estimating the pesos amount of farm and agribusiness output relative to other economic units in the area. Since goal-level data are only gathered at certain intervals, the monitoring staff at the College should link up with government agencies (NEDA, NCSO, D.A.; etc.) which are already routinely gathering these data.

The College sub-project manager's monitoring staff will be responsible for collecting these area-specific data and for preparing the report. The overall Project Manager's monitoring and evaluation specialist will undertake to analyze these reports for overall project management and other users.

Project Purpose. There are two main purposes for this project. The primary purpose is to increase employment rates of graduates and trainees of selected agricultural colleges and universities in agriculture-related work. A supporting sub-purpose is to increase the number and quality of graduates from these agriculture education institutions.

The secondary purpose of the project is to directly increase farm and agribusiness incomes in the agriculture education institutions' target communities/areas. The related sub-purpose is to increase the quantity and quality of research and extension work by selected agriculture education institutions.

A. Purpose-level questions:

1. To what extent have the agriculture education institutions provided sufficient number of its graduates for employment in the agriculture sector?
2. Has there been an improvement in the number and quality of graduates of agricultural colleges?
3. Have farm and agribusiness household or enterprise incomes and production increased?
4. Has there been an increase in the quantity of research and extension work by the agriculture colleges?
5. Has the quality of research and extension projects of these Colleges improved?

B. Indicators

1. (a) Number of alumni employed in agriculture or related activities.
(b) Per cent of alumni employed in agriculture or related fields.
2. (a) Number of graduates
(b) Performance or scores in a special, post-graduation uniform examination (similar to GRE).
3. (a) Volume of production or processing classified by type of crop or agribusiness output.
(b) Millions of pesos of estimated income from farm or agribusiness outputs in target areas.
4. Number and types of technology and management practices recommended, and adopted by farmers and businesses in the target areas.

C. Data Collection Methodology

Many of the quantitative and research/extension data on purpose-level indicators are already a part of current administrative records of the Colleges. A number of data would require a realignment of the current administrative records,

e.g., by academic programs or by technical research areas. A re-examination of the record system of the Colleges along this direction should be conducted by the monitoring staff at the Colleges under the guidance of the monitoring and evaluation specialist.

Some data external to the Colleges will have to be gathered to observe other purpose-level indicators. In particular, the tracking of actual employment of graduates and trainees should be conducted by the Colleges. Small sample surveys should be conducted annually and analyzed by the appropriate office within the Colleges, with some financial and technical support from the project. The sub-project manager's monitoring and evaluation specialist will be responsible for reviewing and integrating the data for reporting purposes.

Small sample surveys should be conducted to collect data on volume and value of production/processing, and types and number of technologies or management practices recommended, and adopted by farmers and businesses. A special standardized examination, similar to the Graduate Record Exam or GRE, should be developed and administered to students at each of the Colleges to determine the learning and skill of graduates. In that manner, a basis for comparison can be made of graduates over time and across various Philippine schools. A control group design can be adopted in which the graduates from schools assisted under the project can be compared with graduates from other schools outside the project. (The same design can be used in comparing production volume and technology adoption rates between areas targetted by assisted Colleges and areas outside the project.) The monitoring staff of Colleges will be responsible for collecting, analyzing and interpreting the data and preparing a semestral report. The monitoring and evaluation specialist should prepare a consolidated and comparative analysis of College reports on a semestral basis. The specialist will also be responsible for designing, or recommending for adoption, any standardized test instrument.

Project Outputs. The outputs of the project consist of increased capabilities of selected agricultural colleges and universities to perform their instruction, research and extension functions by upgrading the following institutional aspects:

1. Administration
2. Faculty development
3. Curriculum development
4. Extension services
5. Research planning and implementation

Output-level Questions. The corresponding questions pertaining to the above outputs are as follows:

1. (a) Do strategic and action plans reflect the relevant roles of the College in its respective area?
- (b) Does the College facilitate the immediate employment of its graduates?
- (c) Are appropriate institutional policies and procedures in place?
- (d) Is there a systematic process for the recruitment of students?
2. (a) Has the number of trained faculty increased?
- (b) Has the proportion of trained faculty in emphasized areas improved?
- (c) Is there a clear promotion and tenure policy at the College?
3. (a) Has there been a re-study and improvement in the curriculum of emphasized areas?
- (b) To what extent has research and extension been incorporated in the curriculum?
- (c) Have hands-on teaching methods such as field work-study and internship been an important part of the curriculum?
4. (a) Has there been an increase in the number of farmers and barangays assisted on-farm?
- (b) Has the College increased the number and types of its external linkages?
- (c) Has there been an increase in the number of farmers and extension agents trained?
5. (a) Has a research agenda been developed?
- (b) Has the level of external support and collaboration in research projects increased?
- (c) Has the research budget as a percentage of the total budget increased?
6. (a) Are the facilities and equipment in place to support the institution's functions?

- (b) Has the utilization level of facilities and equipment increased?

B. Output Indicators.

1. (a) Strategic and action plans relevant to conditions in the area.
 - (b) Student placement and alumni employment tracking in place.
 - (c) Institutional policies and procedures in place and functioning effectively.
 - (d) Student recruitment policies and procedures in place and functioning.
 - (e) School information and communications.
 - (f) Functional system for monitoring and evaluation of students.
2. (a) Trained faculty: Ph.D., M.S., short-term training
 - (b) Number of faculty exchanges
 - (c) Faculty promotion and tenure policy in place and functioning effectively.
 - (d) Proportion of trained faculty in emphasized areas.
3. (a) Number of improved courses in emphasized areas
 - (b) Number and type of research and extension results included in courses
 - (c) Number, length of time and subject areas of field work-study and internships included in courses
4. (a) Number of farmers provided with on-farm assistance
 - (b) Number and land area of barangays assisted
 - (c) Number and types of linkages with external institutions
 - (d) Number and subject area of adjunct faculty from community institutions

- (e) Number and types of training programs held, extension agents and farmers trained.
 - (f) Number and scope of extension publications issued.
5. (a) Research agenda developed and operational
 - (b) Number of research projects, by emphasized areas
 - (c) Number of faculty and students involved in research, by emphasized areas
 - (d) Amount of research funding, in relation to the institution's total budget
6. (a) Facilities with adequate fixtures and utilities
 - (b) Number, value usefulness, and operational equipment and facilities
 - (c) Maintenance and operation expenses in proportion to total budget
 - (d) Remaining useful life (in years) of facilities and equipment

Data Collection Methodology. The wide range of possible output-level indicators calls for the need to tailor a specific set of output measures for each institution to be assisted under the project. The monitoring and evaluation specialist has the responsibility for working out the specific output indicators applicable to each institution. This will in turn depend largely on the thrust of the assistance and the administrative resources available to the institution for monitoring.

Some data will be collected from administrative records, particularly on faculty development, curriculum, system and procedures, research and facilities. External, small-sample surveys will be needed mainly for collecting extension services output data. This small-sample survey will be conducted, analyzed and reported by the monitoring staff within the College and coincides in schedule with the survey of purpose-level indicators described earlier. The monitoring and evaluation specialist is responsible for providing guidelines to the sample and survey design.

SPECIAL STUDIES.

Rapid, low-cost studies will be conducted at key stages of the project in order to support the effective monitoring by

project managers and implementors and provide an empirical basis for the subsequent mid-term and final project impact evaluations.

Review of the Institutional Impact of Research and Extension Services. This project supports research and extension services at the college with the primary purpose of improving agriculture education itself, although the impact on the community is also of considerable importance to a long-term relationship. However, usual administrative records used in monitoring, research and extension services do not necessarily capture the substantive contributions of these activities in the education process. For example, it is not sufficient that the intended facilities and expertise are put in place at the College or even that a certain number of research and extension projects have been undertaken. Annually, a review should be conducted by subject-matter specialists of the contribution of research, faculty development, facilities acquisition and extension services on the academic and service delivery roles of each participating College. This subjective assessment serves as the culminating point of the overall project monitoring function. Appropriate comparative feedback should be given each college through reports prepared by the overall Project Manager's staff. These reports will serve as part of the basis for annual joint planning by the Project Manager and sub-project managers in coordination with administrators of the College.

Special Studies on the Increase of Farm and Agribusiness Income in Target Areas. The increase in income on target areas is considered as an important benefit of the project. A periodic survey should therefore be conducted to evaluate the increase in income and production in the specific areas served by each College. The purpose is not to determine the precise farmer income or productivity but rather to assess the relative effects of the College's programs on farm and business-level income and productivity. The survey should comment on whether the College's programs appeared to have made a difference in these terms. An informal survey should be conducted annually (or by crop season) on a sample of farm households or farm businesses which have adopted technologies or management practices prescribed by the College's research/extension projects or by its graduates. A control sample of similar economic units (in areas not targetted) which have not adopted these technologies should also be surveyed. This study should be part of the College's research projects, assigned to a researcher with competence in rural sociology or agriculture economics. The data gathering techniques should be primarily observation and in-depth interviews.

Area-Specific Baseline Study. An informal, low-cost study should be undertaken as an immediate post-implementation activity. The objective is to provide an empirical baseline data of the area for the project. The study should focus on --

activity. The objective is to provide an empirical baseline data of the area for the project. The study should focus on --

- (1) the current employer types and employment rates of graduates;
- (2) profile of farm and farm-related enterprises and communities served by the College;
- (3) previous adoption rates of farm technologies and farm-related management improvement in the area, and
- (4) survey of technologies and management improvement approaches which are demanded or required in the area.

The overall project monitoring and evaluation specialist should be responsible for the design of the baseline study and coordinate with the Colleges in their actual implementation of the survey. The data gathering techniques recommended are field survey/questionnaires and guided interviews of sample employers, graduates, households, government institutions and private institutions/enterprises.

PROJECT MANAGEMENT INFORMATION SYSTEM

The preceding recommendations of a monitoring and data collection plan concentrate on the attainment of the goals, purposes and outputs of the Project. There is also a need for a management information system which will help the Project Management Team keep track of the progress of the project implementation itself and to review the cost effectiveness of the current project design. This system should enable appropriate personnel to take the necessary actions to prevent delays or costly mistakes in the project. The two usual management information system components are: (1) the administrative control system and (2) the cost effectiveness evaluation system.

Administrative Control. The objectives of a monitoring system to support administrative control are to ensure that substantial deviations from project plan are identified and corrected by management on time; and (2) pre-requisite activities are appropriately undertaken.

A. Indicators. The most important documents in administrative control consist of the revised action plan and progress reports of activities. Some indicators are:

1. Project timetable: actual versus planned.
2. Efficiency in processing commodity procurements.
3. Participant training plans versus areas emphasized by the College.

4. Progress of long-term trainees, i.e. Masters and Ph.D.'s.
5. Achievement of output targets of short-term technical assistance specialists.

B. Data Collection Method. All data should come from administrative records. The overall project and sub-project managers, with the assistance of the monitoring and evaluation specialist should be involved in preparing and analyzing these reports. The data in administrative control will also be useful in a more comprehensive process evaluation control (described later).

Cost Effectiveness Evaluation System. The objective of a cost effectiveness evaluation system is to provide the Overall Project Manager, the Sub-Project Managers and the leadership at the assisted Colleges with on-going reports on costs and benefit-cost relationships within each institution and for the project itself. This is a segmented operational evaluation approach which can potentially assist management to make better tactical decisions. For example, if benefits appear to be small relative to the inputs, alternative deployment of resources can be explored.

A. Indicators. The various indicator models are (a) simple unit cost comparison with budgets; (b) benefit to input cost ratios and (c) actual benefits before and after the assistance. While the detailed choices of indicators will depend on the assistance undertaken, some possible indicators are listed below:

1. Cost per training program type, or commodity
2. Benefits or beneficiaries to technical assistance cost: e.g.,
 - a) Research Projects to Research Adviser Cost
 - b) Curriculum Reviewed to Curriculum Adviser Cost
3. Benefits or beneficiaries to units or cost of commodities: e.g.,
 - a) Number of research staff, research projects to laboratory equipment number and percentage (#,P), computers (#,P), etc.
 - b) Number of extension projects or barangays served to vehicles (#,P)
 - c) Number of faculty or courses to teaching aids (#, P).

4. Benefits before and after the assistance: e.g.,
 - a) Library or laboratory utilization rate before and after the assistance
 - b) Number of research projects by faculty before and after training

B. Data Collection Method. The data needed for cost effectiveness evaluation are taken from administrative records and sample surveys as previously described at the purpose-and project-level outputs. The monitoring staff and the College will be responsible for analysis and reporting to the sub-project managers. The overall monitoring and evaluation specialist will consolidate the report for intra project comparisons. These data and analysis should be useful inputs to the comprehensive end-of-project impact evaluation.

ORGANIZATION FOR MONITORING AND DATA COLLECTION

The preceding discussions reflect an organization for a project monitoring system which is based on the following features:

- 1) Monitoring assists decision-making. The Project Management Specialist assists the overall Project Manager, while the monitoring unit at the College level assists the Sub-project manager.
- 2) The data collection and initial analysis are integrated into the College's administrative process. The local monitoring unit, in effect, provides technical assistance in the operation of the system and uses the Colleges data rather than generating its own.
- 3) Monitoring is focused on technical progress (relative to project purpose and outputs) as well as the effectiveness of project administration and design. The overall PM & E unit should be responsible for determining whether the project's administrative structure continues to be functional.

A summary of the monitoring responsibilities of units, data and data collection methods is shown in the table on the next page.

BUDGET

Approximately \$830,000 of the \$1.0 million designated for this project is allocated for data collection, analysis and reports, and long-and short-term technical assistance. Funding should be provided by the Government of the Philippines, through the Colleges and US A.I.D. as follows:

MONITORING ORGANIZATION AND FUNCTIONS TO SUPPORT MANAGEMENT
AT THE PROJECT AND COLLEGE LEVELS

<u>Organization Unit</u>	<u>Decisions (for Management) Monitoring Role (for M & E)</u>	<u>Data Required by Decision Makers</u>	<u>Data Collection Sources and Methods for Monitoring</u>
Management	<ol style="list-style-type: none"> 1) Project planning 2) Project control: <ul style="list-style-type: none"> o relative to planned outputs o relative to a functional structure or design 3) Resource acquisition and allocation 	<ol style="list-style-type: none"> 1) Summarized financial and technical operating data by Program/Area, per College and project-wide 2) Actual procedures followed by the College and the Project relative to design 3) Actual progress relative to timetable 	
Subject-Matter Specialists	<ol style="list-style-type: none"> 1) Assistance to Monitoring Specialist and the College in planning 2) Review of accomplishments in each area 	Technical operating results by Program/Area by AC over time	
Project Monitoring and Evaluation Specialist	<ol style="list-style-type: none"> 1) Technical assistance on monitoring system design and implementation at the College level 2) Monitoring of the logistics flow to the College 3) Monitoring of project administration process: design versus actual structure/roles and timetables 		<p>Administrative records of the Project and the College</p> <p>Field visits and consultations with the Colleges</p> <p>Reports from the Colleges</p>
Project managers and interpart administrators at the Colleges	<ol style="list-style-type: none"> 1) Detailed planning by subject matter/area 2) Application/deployment of project assistance 3) Detailed review of operating results including cost effectiveness and cost-benefit analysis 4) Exercise of administrative control 	Detailed financial and technical operating data from the College, by Program/Area	
Supporting staff of the College	<ol style="list-style-type: none"> 1) Installation and operation of administrative system for data collection and monitoring 2) Field verification of data 3) Implementation of special studies and low-cost surveys 4) Provision of data to track administrative control and cost benefit relationship 		<p>Administrative records of the College</p> <p>Field visits and consultation with AC counterpart staff</p> <p>Small sample survey</p>

Each Agricultural State Colleges

1) Staff

- o One rural sociologist or agricultural economist
- o Two extension workers to gather farm household and business data
- o One administrative staff to gather administrative data

2) Office space for the monitoring and evaluation activities of the project at the College level

Private agricultural colleges which may be selected to participate in this project will also furnish the above counterparts.

U.S. A.I.D.

- 1) Funds to support technical assistance for a Project Monitoring and Evaluation System Design and Installation.
- 2) 18 months of short-term, technical assistance in the formulation and implementation of the low-cost survey of income and employment of graduates.
- 3) Microcomputers and supplies for data storage, tabulation and reporting.
- 4) Funds to support the Colleges in small sample surveys.

PROCESS AND IMPACT EVALUATION

The evaluation for the project will consist of 2 interim process evaluations and an end-of-project impact evaluation. Guidelines for both evaluation and schedules are outlined below:

Process Evaluation. An interim process evaluation is scheduled for the end of the third year of project implementation. The main objective of this first interim evaluation is to assess the administrative process based on the project design and the actual procedures adopted by the project. The process evaluation should be conducted by an external evaluation team, supplemented by the overall project monitoring and evaluation specialist in coordination with the appropriately designated staff at the Colleges (for M & E). It is anticipated that by the end of the third year of implementation, all of the programs under the project would have been initiated and operational and the required inputs are flowing into the

beneficiary Colleges. However, outputs impact of the project would only be limited and may not yet be observable.

The data to be collected in process evaluation are the project plans, administrative records and opinions of key implementors at the project and College levels. Analysis of administrative records and interviews will be undertaken by the process evaluators. The key questions which are to be addressed are:

- (1) whether designated relationships between project management including subject matter specialists and the Colleges are working as planned;
- (2) the efficiency of the flow of funds and commodities to the Colleges;
- (3) whether the assumptions relative to the original project concept have changed drastically;
- (4) the degree of progress of key activities in the project relative to the timetable.

A second process evaluation should be conducted six months before termination of the Project -- i.e. after 4 1/2 years.

Impact Evaluation. An impact evaluation should be planned for one year after the end of the project. The primary objective of this evaluation is to determine the degree of achievement of the purposes and sub-purposes of the project. The impact evaluation should be conducted by an external short-term assistance consisting of one evaluation specialist and one agriculture economist. Appropriate coordination will be made by this evaluation team with the residual (presumably institutionalized) monitoring and evaluation staff at the Colleges.

The data to be collected in the impact evaluation are the administrative records, opinions of key implementors, employment and graduates information and income/livelihood and technology adoption data in the area. A low-cost survey should be conducted by the Colleges, with the technical guidance of the evaluation team, to gather employment and income data. The income, production and technology adoption data will be generated from samples of households/businesses in areas targetted by research and extension projects of the College and from control samples from areas which are not. The survey of employer institutions of the graduates of the College will be structured in a similar manner. The survey design will give emphasis on directional results as well as impact due to the fact that the project is still likely to be reflecting project-level output rather than the full external impact of the project. The evaluation model will take into consideration the initial baseline study of the project to derive a "with" and "without the Project" comparison. Appropriate detailed design and choice of evaluation variables

will be defined by the evaluation team at the start of this activity.

Evaluation Budget. The on-going MIS and Evaluation System will primarily be conducted by the internal staff of the project. Interim and impact evaluations will require the following support:

Each Agricultural College

1) Staff

- o One rural sociologist or agricultural economist
- o Two extension workers to gather employment, income, production and technology adoption data
- o One administrative staff to gather administrative data

2) Temporary office space for the external evaluation specialists of the project at the College level.

U.S. A.I.D.

- 1) A total of six-person months of short-term, technical assistance for one evaluation specialist and one agricultural economist (i.e. 2 people for 3 evaluations of one-month duration).
- 2) Funds to support the Colleges in small-sample surveys as indicated.

BUDGET

An Indefinite Quantity Contract for \$170,000 is allocated for process and impact evaluation.

8. PID ISSUES

A. WOMEN IN DEVELOPMENT.

WAID/Washington's world-wide programmatic concern for potential discrimination against women in the development process is shared and supported by the USAID mission. While there are distinct traditional "lead" male and "follower" female cultural role models in the Philippines, the woman is nevertheless recognized as subtly effective in her own right, and is clearly superior in family management matters -- particularly household finances.

The "WID Issue" is not perceived as an issue -- by either Americans or Filipinos, (male or female) -- in the Philippine educational environment. Agricultural institutions appear to serve men and women about equally in terms of student enrollments, and faculty gender. There appear to be few gender biases in the fields of agricultural study, with women students high in most agricultural¹ departments, except agricultural engineering. Indeed, the number of women students is remarkably higher than the number of men in undergraduate agri-extension, food technology, and development communication (a unique program at UPLB). Faculty numbers are about equally divided between men and women although some traditional bias is indicated in favor of men in the field of Agricultural Engineering. However, this appears to be a function of "self-selection" rather than denial of equal opportunity to enter the field.²

Philippine institutions in general, appear to be fairly sensitive to gender issues and have supported various research and organizational efforts focused on women. The enlightened approach to the role of women in society has permitted them to play an especially supportive role in influencing Philippine economic development. There are women's business councils and numerous studies of women's roles.

¹Per SY 1986/87 enrollment, females constitute 54 per cent in B.S. Agriculture, 65 per cent in B.S. Agriculture Education, 40 per cent in B.S. Agri-Business and 38 per cent in B.S. Agri-Engineering.

²As a total, about 47 per cent of the teachers in agricultural colleges are female.

In the agriculture sector, women are often responsible for vegetable and non-staple crop production, backyard animal production and market activities. Women usually participate in financial decisions as well as choice (and varieties) of crops to be planted, and input purchases. Early in the family cycle (while child-bearing), women are less likely than men to work off-farm, but in later stages are more likely than men to become wage earners and/or hired to work for other farmers.

The emphases on environment, agri-business, special crops, rural sociology and farming systems in this project are as likely to support the role of women in agriculture as that of men. Thus, the Design Team sees no need for concern with the "WID issue" in this project.

B. RECURRENT COSTS

Given the current state of the Philippine economy and the history of governmental support to the tertiary agricultural education sector, the concern that an effective strategy exist to sustain the recurrent operation and maintenance costs which will be generated by this project, is well founded.

This concern, is allayed to some extent by the fact that a large portion of the cost of this project is for non-recurrent items -- technical assistance, project management, monitoring and evaluation, the greater portion of faculty development programs.

Some recurrent costs will be incurred to maintain facilities (i.e. buildings and equipment), support the salaries of anticipated new faculty, and to sustain some of the personal and intra-institutional networking activities established under the project. Some continuing expenses will also be incurred if the student work-study, assistantships and internships are to be continued.

At this time, the prospective source of such funding for each institution will come from several initiatives under the project:

1. **Production Farm Management** Increased discretionary income should be realized from more effective management of existing College Farms and improved marketing of the produce. Currently, many of these farms appear to be underfunded for technical inputs, poorly managed, have low production yields and productivity rates, while much of the produce is apparently taken, retained and/or marketed by individual students, faculty and staff, and/or disposed of at relatively low costs in neighboring communities.
2. **Fund Raising Efforts** Direct requests for donations, as well as the marketing of a wide variety of college-related memorabilia -- targetted at Alumni, the Agri-business Community, and Civic organizations; as well as special college fairs and other fund-raising events directed at the surrounding community, in general.
3. **Consultancies** Some new income should be generated from proposed organized outreach consultancy activities of the faculty to the agri-business sector, through the formation of a College Agri-business Consultancy Institute.

In addition, other new income could be derived from fees and national government remittances if particular project proposals are adopted by the national government.

4. **Retention of Student Tuition Fees** New income could be derived by the college retaining student tuition fees. [Currently, such fees are merely collected and remitted to (or offset payments from) the Central Government.]

5. New and Increased Student Fees New income could be obtained by increasing student tuition and establishing other usage fees -- if item 4 above can be instituted. Currently, student tuition fees are heavily subsidized to the extent that in many instances, they are mere token payments, and nowhere near reflect the true costs of the education, or services supplied by the college. The College, under the initiatives in this Project may establish higher rates with better quality education services. Current budget regulations allow state colleges to set up and access trust funds built by the increase in student fees.

6. Increased Central Government Remittances If the DECS plan to rechannel funds to only about 90 institutions is approved, it should result in a considerable boost in income from the central government for the remaining institutions -- eight of which USAID is proposing to support under this project.

9. SUSTAINING THE PROJECT

The ultimate long-run impact of the Agricultural Education Project on the development of the agricultural sector will depend on its acceptance by the government as a component of the overall development strategy for the sector. As discussed in the Project rationale in Section 4, key state colleges and universities need to be assisted in order that they can successfully perform their educational, research and extension mandate. The basic project design contains six elements -

1. curriculum and teaching method
2. outreach linkage of college with community, and hands-on extension/internship experience for students.
3. academic administration
4. faculty development
5. facilities development
6. applied research

Some of these elements are organizational in nature and entail only modest budgetary allocation. Faculty and facilities development will require sustained budgetary support. A new curriculum with a heavier practicum content will be more costly than a purely classroom method of instruction. Practicum requires laboratory space, supplies and equipment. A part of the proposed faculty development scheme is college faculty exchange for coordination among participating institutions and enrichment of their curriculum, research and extension methods. This aspect of the Project will also require a budget for incremental living expenses, transportation and other related expenditures. An estimate of the additional budget for recurrent cost to be borne by GOP is given in Section 6 of this report.

The USAID-supported institutions which would be selected are likely to be at different stages of development. The size and quality of their faculties and laboratories vary, and their research priorities would also differ, leading to differences in the allocation of project support. Each supported institution will therefore need different levels of GOP budgetary increases. Discussed below are some problems (and proposed solutions) that the colleges may be expected to encounter in attempting to sustain the AID-related developments.

The Philippine budgetary process does not usually go through a detailed evaluation of an agency's development plans. In the

past, many budgetary increases were made across-the-board -- such as the series of across-the-board teachers salary increases made in the last two years. A much smaller budget was allocated for merit increases among the faculty.

In general the national budget for educational institutions has allocated very meager amounts for library and laboratory

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inputs . Only very broad allocative rules are applied -- such as the present rule not to approve any new educational programs in public schools, no new construction for the public sector, and similar prohibitions. Frequently, the Department of the Budget and Management has simply given every agency a uniform rate of increase in the appropriation. This process may be explained by several factors. One factor of course is political equity. A uniform budget growth has the semblance of fairness and is acceptable to the congressional majority. Another important factor is organization. Planning and budgeting at the sectoral level are not closely coordinated. This problem is particularly serious for the education sector.

Education is the largest sector as far as budget and clientele are concerned. The sector consists of a large group of private institutions which provide about half of the nation's schooling; about 85 per cent of college/university education; and a large but not well-tracked number of vocational schools. There are also about 72 state colleges and universities which were created by special law; each has its own charter and operates with some degree of autonomy. DECS exercises loose control over these two groups of institutions. DECS directly manages the public elementary schools, the national high schools and a few hundred vocational schools and colleges.

There is no detailed operational plan for vocational and higher education. The education chapter in the Medium-Term Development Plan states objectives and describes strategies, but does not describe a detailed program of implementation for the system as a whole, or for particular sectors -- except the elementary and secondary school segment which the Department of Education, Culture and Sports (DECS) runs directly. In fact DECS does not even develop an integrated budget for the various state institutions. The DECS budget request pertains only to its own area of direct responsibility, or for the administration of the Department and its own schools. Each state college and university presents its own budget request to the Department of Budget and Management (DBM).

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This has a historical basis. There was a strong political pressure to open schools at all levels in order to meet the rapidly increasing demand by students. Opening fewer better quality but well-funded schools was politically controversial. The easy compromise adopted to reallocate available funds is to open new schools and hire teachers, with not much further support.

The budget process is briefly as follows. Each agency writes out the budget for each year at the beginning of the previous year. This budget is then submitted directly to DBM. DBM conducts a series of budget hearings for each Department, constitutional office, state corporation and state college/university. Each hearing generally lasts from one half

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to two hours per agency -- not enough time for an agency to defend its programs and the Department of Budget and Management evaluates each college independently since there is no integrated education master plan. At the DBM, an analyst is assigned to each region. He/she makes recommendations with respect to budgetary requirements for various sectors of the region: education, public works, etc. This process does not allow the Department to evaluate the programs/budget of the educational institutions from a macro-perspective. It is doubly questionable whether the DBM can discriminate among these institutions in terms of their relative strengths and importance to the economy. Unless a sound workable plan for the state colleges and universities (SCUs) -- particularly agricultural SCUs -- is developed and presented as a whole to DBM, the traditional allocation process will remain in force. Furthermore, the Design Team learned that the unit within DBM that processes SCU budgets, has not yet been involved, or formally informed of the DECS Macro-Plan to rationalize higher agricultural education.

Presently, no agency has been given the responsibility for planning and coordinating state college and university

3

activities, and the Cabinet's Social Development Committee should be made aware of this very serious flaw in the planning and budgeting process for education. DECS has not been able to harness a planning staff to do this; neither does the Board of State Higher Education have the responsibility, or the ability to take on the task. The Technical Panel for Agricultural Education (TAE) of DECS performs an advisory role but is essentially an ad hoc body with little power over the independently funded state colleges and universities.

All foreign-assisted projects are coordinated by the National Economic Development Authority (NEDA). The government budgetary component of these projects are approved by NEDA as well as the Department of Finance (DOF) and the Department of Budget and Management (DBM). DBM recently created a unit to

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This is seen in the full schedule of the 1987 hearings. The hearing is rather short to allow for a thorough evaluation of an agency's plans, especially if new programs are proposed.

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The Committee consists of the heads of the Department of Labor, Education, Health, Social Welfare, Agriculture, Agrarian Reform and the National Economic Development Authority. The Committee discusses policy issues in education, employment, equity, poverty and related matters.

coordinate the government budget at the operational level and facilitate budgetary releases for the projects. Once the government commits itself to the USAID project, budgetary releases may no longer be a problem. The problem lies more with extraordinary increases that will be required to sustain the development of the recipient institutions.

The budget process creates much uncertainty in the funding of college programs. The 1987-1992 Medium-Term Development Plan, however, is granting social services the highest growth in the government budget. Education's share in the budget is targetted to increase by 50 per cent -- from 12 to 18 per cent. (The actual growth for 1987-88 and 1988-89 was 30 per cent and 37 percent respectively.) A joint effort by the Departments of Agriculture and Education to improve agricultural education is likely to find a very sympathetic NEDA/Budget hearing, given the agricultural thrust of the national plan. In fact many state agricultural colleges and universities received relatively high budget increases in the last three budget years, from 1987 to 1989.

It is expected that the smaller the required recurrent cost of the AID project relative to the absolute growth of the target institution's budget the greater the chance of the recurrent cost being sustained. Table 4 gives the budget growth of the target institutions and for other selected state colleges and universities (SCUs) in Region IV. The budget increases granted target SCUs vary widely. The University of the Philippines System (UP) obtained 20.3 percent in 1987-88 and 21.3 per cent in 1988-89. Maintenance and operating expenses (MOE) and capital outlay comprised the bulk of the new allocations. Capital outlay grew at 47.2 and 66.1 percent in the two years while MOE fell from 27.6 to 23.1 percent. In contrast to UP, the overall budget growth of Pampanga College of Agriculture was only 7.1 and 12.5 per cent respectively in the two years. Pampanga received modest increases in the two big items of personnel and capital expenditures. Don Severino Agricultural College (DSAC) did fairly well, with a high growth of 35.5 percent in 1988-89. DSAC also obtained very large increases in MOE and capital outlay. In general SCUs tend to submit large budget requests and they also generally get much less than they request.

Based on the foregoing data, colleges and universities appear able to obtain fairly large budgetary allocations if they can present a good case for their programs. On the other hand, The Department of Budget and Management (DBM) does not usually reduce "regular budget" of an agency, which consists of permanent personnel and past levels of MOE. The implication here is clear -- to build into the regular budget as much of the Personnel and MOE, as possible that the AID project helped create. Faculty and maintenance staff, as well as maintenance and supply of equipment, should all be made part of the GOP counterpart funding, as once an item becomes part of the regular budget of the institution, it is unlikely to be removed from subsequent budget.

Table 4 Budgetary Appropriations For Target and Selected other State Colleges and Universities, 1987-1989 (%)

	Appropriation 1987-88 -----	% Growth 1988-89 -----	Requested Budget Appropriation (1989) -----
<u>UP System</u>			
1. Total	20.3	21.3	-
2. Personnel	12.1	10.2	-
3. MOE	27.6	23.1	-
4. CO	47.2	66.1	-
<u>CLSU</u>			
1. Total	25.6	22.4	1.195
2. Personnel	20.4	28.2	1.036
3. MOE	40.4	17.9	1.158
4. CO	28.2	-8.0	3.000
<u>PAC</u>			
1. Total	7.1	12.5	2.448
2. Personnel	6.9	10.5	1.000
3. MOE	28.6	21.3	1.601
4. CO	2.8	12.5	7.555
<u>USM</u>			
1. Total	29.4	11.3	1.033
2. Personnel	19.6	14.1	1.023
3. MOE	39.7	25.4	1.421
4. CO	86.4	- 29.0	8.260
<u>DSAC</u>			
1. Total	12.8	35.5	2.074
2. Personnel	10.3	29.0	1.145
3. MOE	22.5	46.9	1.263
4. CO	10.7	38.7	4.383
<u>VISCA</u>			
1. Total	15.1	5.7	1.519
2. Personnel	18.7	8.9	1.116
3. MOE	10.2	14.4	1.150
4. CO	14.5	-47.3	9.550

Source: Department of Budget and Management, Expenditure Program, Fiscal Year 1989 for the Appropriations. Budget requests are from unpublished tables of DBM.

If the University of the Philippines at Los Banos (UPLB)-Agenda is followed, the budget for agricultural research should be increased rapidly and the ratio of research expenditure to output in agriculture doubled -- from 1.6 percent to 3.6 percent. The Agenda however, is not yet reflected in the PCARRD budget which has shown an irregular growth -- climbing from 82 million pesos in 1987 to 92 million pesos in 1988 then plunging to 62 million pesos in 1989. The bulge in the 1988 budget was contributed by foreign assistance, but strangely does not appear in the 1989 budget. Indeed the 1987 budget showed a large unused portion of 31.8 million pesos, leaving actual expenditure at only 49 million pesos. There thus appears to be an organizational problem in agricultural research, rather than a funding problem.

The institutions visited by the Design Team all complained about the difficulties engendered by the new system of monthly releases, in lieu of quarterly releases of funds done in the past. The DBM's Budget Office for the state colleges and universities reasoned that this should not be a problem. Before the beginning of the fiscal year, each institution is given a budget allotment, or advice of its actual budgeted expenditure for the year. In the first month (i.e. January), DBM releases treasury warrants equal to two months expenditure. Before the end of January, the agency must submit a fund release request for February, and so the process goes on. The institution should therefore have an extra month's funds which it can use for expenses unforeseen within its budget. Thus, the DBM considers that the problems the institutions are facing in their cash flow are self-inflicted and could easily be solved by better management at the institution level.

The DBM also emphasized that power, water and telephone service are "mandatory" items so no institution should be left without these basic utilities. They advised that institutions can therefore request utility connection as a matter of urgency.

10. ISSUES FOR POLICY DIALOGUE

Several aspects of tertiary agricultural education needing improvement in the Philippines are not directly addressed within the scope of this project. While project activities can identify and highlight particular problems, and work around the situation to keep the project moving, such solutions are only isolated, short-range efforts and do not resolve the underlying issues. Permanent systemic changes can only be wrought by the issuance of supporting national policy directives. Five such problem areas have already been identified in the course of this design study, the first of which the Philippine Congress already has under consideration. It is significant that three of these issues bear directly on the financial viability of the college, and two directly or indirectly on financial remuneration for faculty retention. The individual issues proposed for USAID's possible policy dialogue with the Philippine Government are as follows:

1. Rationalization and Reallocation of Funds to Priority Schools
2. Funding Flows
3. Remittances of Students Tuition and Fees
4. Faculty Promotion Policies
5. Low Faculty Salaries, and
6. Agricultural College Graduate Testing

A. RATIONALIZATION AND REALLOCATION OF FUNDS TO PRIORITY SCHOOLS

The DECS' "Macro-Plan" proposes to restructure and "rationalize the tertiary agricultural education system; terminate the national monetary support from about two hundred institutions; and rechannel that funding -- to only some ninety priority provincial, regional and national agricultural colleges.

As indicated elsewhere in this study, the Design Team is skeptical that this reallocation of funding will occur. However, if it does, it should make a significant difference in assuring that funds will indeed be available to sustain recurrent costs under the project, as well as to support the growth and development of other agricultural education institutions in the system institutions with which USAID is not involved.

B. FUNDING FLOWS

The releases of budgeted funds to agricultural colleges (as well as other governmental units) was recently changed from a

quarterly to a monthly basis and often the funds are received late. It was pointed out by some officials that the process has made it almost impossible for schools to continue agricultural activities having high variability in monthly costs. It means, for example, that feeds and fertilizers cannot be acquired in economical bulk quantities and at the time needed.

However, DBM pointed out that a system of one-month advance to these colleges makes subsequent one-month budget releases less cumbersome provided the institutions manage their finances properly. The Design Team did not have the time to verify the precise nature of the funding release issue. Nevertheless, it is clear that an interaction of factors related to DBM's requirements and timing of releases and those related to the colleges' ability to manage funds are at play. Further, discussions could lead to changes for better funding flows management.

C. REMITTANCES OF STUDENT TUITION AND FEES

Colleges currently set their own rates for student tuition and other user fees. In general, such fees are extremely low. Moreover, collecting these fees is an additional administrative burden, as the college does not get to retain the fees collected, but is required to remit them to the national government -- otherwise its allotment is reduced by the amount collected.

In the past, there has been little incentive in the system to charge more appropriate fees, or expend much effort to ensure their collection. A recent policy allowed state colleges to "keep" any increases in their tuition fees for use by the schools through Trust Funds set up for the purpose. This welcome innovation appears to have not reached its full effectiveness. The scheme should be further looked into and expanded as necessary.

D. FACULTY PROMOTION POLICIES

Promotion and tenure at many colleges is governed by Circular No. 33, established according to the recommendations by the Philippine Association of State Universities and Colleges (PASUC). This circular establishes an objective point system for promotion, tenure and merit pay raises. While no doubt well-intentioned, the system is counterproductive because in practice it effectively reduces the incentive for good academic performance by faculty beyond a certain minimal level of effort.

One schedule examined by the Design Team provided promotion points for degrees earned, publications, time on the job, and attendance at seminars and workshops. Interviews with four Full Professors revealed that the system was skewed in favor of the trivial -- i.e. attendance at seminars and workshops -- and that management of projects had contributed most to their advancement while academic performance per se were minor considerations.

None mentioned teaching or publication as having played any significant role in their advancement, although later, upon questioning, it was learned that one professor had published a book.

Another department chairman stated that the promotion policies recommended by the PASUC provided no incentives for his faculty to conduct quality research and write up the results for dissemination. The faculty could easily achieve all merit-based promotions commensurate with their degree status. Thereafter, pay increases and other recognition were only a matter of longevity. Still another faculty member commented that the promotion procedures at his institution were designed for project managers, not teachers or researchers. In every instance where there this issue was broached, it appeared that meetings, conferences and managerial activity were favored rather than scholarship.

In order to retain, and improve the quality of faculty, the promotion and tenure policies of the agricultural colleges and universities need to be reviewed and more appropriate incentives factored in to induce quality scholarship, teaching and outreach activities.

E. LOW FACULTY SALARIES

Although as a group, College faculties are comprised of some of the highest formally educated individuals in the nation, they receive relatively low salaries. Because their education and practical skills are in demand at much higher salaries in the private sector, in consulting, and abroad -- as advisors in international organizations, such individuals have little financial incentive to remain in the academic profession. Indeed, at several schools visited, there was concern that faculty was turning over at too rapid a pace, as individual commitments expired.

Although the project will provide some qualitative experiences to compensate for these low salaries, the Design Team recommends that corrective measures be instituted on a national level to improve college faculty compensation.

F. AGRICULTURAL COLLEGE GRADUATE TESTING

Quality of education varies widely among the 285 plus Philippine agricultural schools offering post-high school degrees. However, it is difficult to objectively assess the quality of these graduates. As a result, schools offering inferior education can survive in the market-place, while graduates who might receive a quality education from little-known schools are experiencing difficulty in advancing to other institutions for higher degrees and/or finding employment appropriate to their education.

To rectify this situation, nationwide testing in agriculture subject matter areas is suggested. Such a test could be compared to the Graduate Record Examination that is administered in the United States (and other countries) to students after their undergraduate level training.

The USAID-assisted Project proposes to develop and pilot-test such an examination among the participating schools under the project, and may even be able to persuade a few other schools outside the Project to take the exam for control purposes. However, to be effective in making comparative identification of students with high achievement in agricultural college, and recognizing institutions that offer a high quality education, a nationwide achievement test in agriculture and related fields would be required. A core examination in mathematics and verbal skills would be an especially useful complementary test for evaluating agricultural graduates, and might also be adopted as part of an examination for other fields.

PRE-IMPLEMENTATION ACTIVITIES

Although The Design Team has presented a broad conceptual framework for this project, a number of details remain to be filled in before the project can seriously get underway. While many of these major steps are sequential -- and have no fixed duration -- some can be accomplished concurrently. Using some "best guesses" for elapsed times, and a PERT/network analysis, the Team estimates that the project will be ready for start-up in about 18 months. The following suggested steps are outlined for the USAID Project Officer's guidance:

1. Negotiation/agreement with DECS on the project concept and major components
2. Refinement of Macro-cost elements
3. Preparation of Project Paper
4. Review and approval of Project Paper within USAID
5. Determining appropriate Conditions Precedent and Covenants
6. Preparation of Project Agreement
7. Signing of Project Agreement with Government of the Philippines
8. Selection of Philippine Agricultural Education institutions to participate in the Project
9. Fulfillment of Conditions Precedent
10. Development of Institutional Strategic Plans
11. Needs Assessment to accomplish Institutional Plans
12. Identification of Facilities and Equipment required by each institution
13. Revalidation of cost estimates
14. Development of Institutional Action Plans
15. Decision on Management/Contracting Mode

16. Decision on Technical Assistance Contracting Mode
17. Preparation of PIO/T(s) for contracting Management and Technical Assistance
18. The Contracting Process -- RFP/RFTP solicitation, review and Awarding of contract to successful bidder
19. Contractor mobilization and arrival in-country
20. ACTUAL PROJECT START-UP

D. The pre-implementation timetable is shown in Annex

12. PROJECT IMPLEMENTATION ACTIVITIES

The Design Team considered the key implementation activities for the project based on the preceding start-up period of 18 months. While this maybe a considerable lapse of time, the Team eventually recommends against a "fast track" approach in view of the importance of detailed action planning and budgeting required at the institutional level. The "fast-track" approach would require proceeding with the Project Paper and Project Agreement without the institutional plans in place. the Team considers this approach very risky.

The key activities outlined in the implementation plan (see Annex D) are as follows:

1. Sign Project Agreement
2. Contract Prelims and Process
3. Contractor mobilize in country
4. Actual project start-up
5. Review and update workplans
6. Design management information system
7. Start networks
8. Select faculty for Fellowships
9. Start exchange fellowships
10. Order equipment
11. Select faculty for 2nd Fellowships
12. Start 2nd exchange Fellowships
13. Start curriculum improvement
14. Start facilities improvement
15. Select faculty for 3rd Fellowships
16. Start 3rd exchange Fellowships
17. Start implementing outreach program

Under the recommended implementation plan, the signing of the Project Agreement is about July or August 1989. Actual project start-up is about June 1990. There are three batches of faculty fellowships to be selected in July 1990, late 1991, and late 1992. Facilities improvement begin in late 1991. Three batches of exchange fellowships will be started up from 1991 to 1993. The outreach program will be in place by 1992.

ANNEX A: THE PHILIPPINE AGRICULTURAL EDUCATION SECTOR

Education is highly prized by the average Filipino, and a college diploma is considered by most rural families as the primary means for their children to escape poverty. The Philippine Government also values higher education as a means to produce competent human resources for national economic development, and the cost of a college education is highly subsidized, making the possibility of higher education (even for the poor) considerably more attainable than winning the lottery - the other popularly-perceived road to riches.

While both potential consumers and national planners of higher education look to the same vehicle for salvation, their perspectives differ somewhat. The rural poor essentially see higher education in terms of its immediate utility as a conveyance out of rural poverty. The planners on the other hand foresee the longer-term benefits of putting the education gained to practical use. Consequently, the current Medium Term Development Plan (1987-1992) emphasizes the need to improve the quality and relevance of current education offerings. In considering assistance to the tertiary agricultural education sector, these differences in perspective of consumer and provider are critical.

For reference, the basic formal educational model in the Philippines (i.e. to the Bachelor's degree level) is a "6-4-4" level structure, as follows: -

<u>Primary</u>	6 years of Primary School -- Grades 1 through 6
<u>Secondary</u>	4 years of Secondary School (i.e. Intermediate & High School) -- Grades 7 through 10 and
<u>Tertiary</u>	4 years of College/University (through the Bachelors Degree)

Heavy emphasis is placed on vocational education in high schools, while non-formal skill training is also conducted for farmers, rural women and out of school youth by many institutions -- even at the tertiary level.

Historically, most agricultural colleges and universities were developed from high schools, and many still retain the high school as an integral part of their program as "feeder" schools (i.e. the source of future students for the college), and some as laboratory schools for practice teaching. The growth rate of these colleges has been very uneven as it depended upon the level of persuasion that could be brought to bear upon the central

support that could be garnered. Consequently, some areas of the country offer very limited opportunities for higher education in agriculture while others are more abundant; however even the most favored constituencies are only relatively -- rather than absolutely -- well endowed.

The demand for access to college-level diplomas by the rural population was a driving force and the number of agricultural colleges and universities mushroomed in the 1970's and early 1980's. This felt need was supported and sustained by the institutions themselves as faculty salaries and community prestige were both increased by institutional accession to tertiary status. Furthermore, the demand was a real one, for concurrent with the expansion of agricultural institutions of higher learning, the numbers of students increased rapidly. By school year 1979/80, enrollments had almost reached 76,000.

Today, there are 285 agricultural colleges, institutes and universities in the higher education system, of which 189 have

1
four year degree programs. Most of these institutions also have one, two or three year formal technical/vocational programs, while the other 96 have one- and two-year technical education programs.

However, the result of this rapid expansion was that the limited public funds available for higher education in agriculture had to be spread further -- thus more thinly. Furthermore, the total level of public investment in education declined from a peak of nine per cent of Gross National Product (GNP) in 1981 to only three-and-a-half per cent in 1985. Cuts were made in classroom construction, there were no real increases in compensation of teachers and other non-teaching staff, and expenditures for textbooks and other learning institutions materials were suspended. Consequently, the institutions' abilities to staff, equip, operate or even maintain physical plant were severely impaired, curtailing the existing staffs' capacities to provide a quality education.

1

In the Agricultural College system, there are essentially three sub-classifications of schools:

1. Directly Chartered and Funded by the Central Government and administered by their own autonomous board of trustees -- totalling 41 in number;

2. Unchartered, and Funded by the Department of Education, Culture and Sports (DECS) and administered by DECS -- 76 in number;

3. Privately Funded and administered -- 72 in number.

Although the agricultural colleges and universities have been given responsibility for four functions:

1. Teaching
2. Research
3. Extension, and
4. Production

for the most part, they have been narrowly focused on academic teaching. Funding for research has been coursed through various government action agencies and almost nothing has been allocated for research at the agricultural colleges and universities. Similarly, extension is the domain of other action agencies and

2

the Agricultural Training Institute under the Department of Agriculture. Thus, the colleges concentrated on the academic role but -- with inadequate funding -- simply kept faculty members in the classrooms, usually with a blackboard, but often little else. Without textbooks, practically no library or laboratory equipment, inadequately financed and supported college farms to teach practical knowledge and skills, and no contact with real farm situations in the barangays, most agricultural college programs deteriorated into "lecture and blackboard" classes, and provided little or no practical experience to students. In sum, many so-called tertiary-level agricultural colleges were -- or have become -- "diploma mills" providing the degree, but not the higher quality education which the degree was intended to represent.

As a result, the perceptions of agricultural college graduates -- particularly the poor rural students -- were not significantly changed by the education process from "peasant, or backyard farming" to "business enterprise farming"; nor the opportunity provided for them to attain skilled agricultural employment, do extension work to help farmers earn higher incomes, or even to improve the productivity of their family's farm, if they had one. In short, their college diploma turned out to be a ticket to nowhere. Many agricultural college graduates were unemployed for long periods, or eventually found clerical or menial jobs in, or outside, the agricultural sector.

By school year 1985/86, as it became evident that an agricultural college graduate was essentially unemployable in agriculture, and the government's need for extension workers also dried up, many rural parents refocused their children's ambitions towards a technical education, and the enrollment rate dropped precipitously to about 46,000. A breakdown of this 40% decline compared to 1979/80 level is shown in Table 1.

2

Formerly the Bureau of Agricultural Extension

Table 1. Tertiary Level Enrollments in Agricultural Course
1979-85

<u>Degree Status</u>	<u>1979/80</u>	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>	<u>1983/84</u>	<u>1984/85</u>
Non-Degree	11,906	11,365	10,627	9,980	10,267	8,866
Degree	60,300	53,672	47,815	40,449	33,613	34,343
Post-graduate	<u>3,716</u>	<u>1,159</u>	<u>846</u>	<u>989</u>	<u>1,227</u>	<u>2,714</u>
Total	75,922	66,196	59,288	51,418	42,107	45,923

Source: DECS and FAPE

While the foregoing general picture is a bleak, there are some bright spots. Quality programs in agriculture -- such as offered by the University of the Philippines at Los Banos (UPLB) -- are still highly regarded and sought after, and quality graduates are readily employable. Furthermore, the need for continued agricultural expertise in research, extension and agribusiness is recognized by the government and major corporate employers, although it is less evident to the general public -- particularly the rural poor. The demand for agricultural college programs also continues to be driven by four major factors: -

1. Limited space available in other college programs to meet the demand for all applicants;
2. Incessant demand for a college degree, per se, regardless of the subject area, or the quality of the program; [A diploma is still a highly prized commodity, rather than the education which it represents.]
3. Lower threshold criteria for acceptance into agricultural programs than for other courses of study;
4. Low tuition fees for agricultural state colleges and universities.

The first two factors tend to create a "spill-over" effect from the wealthy and middle-income urban classes, while the latter two continue to attract both the urban and rural poor who want a degree but who cannot avail of opportunities offered by the more expensive private schools or -- as a result of inadequate academic preparation -- compete effectively for other programs.

The demand for diplomas, coupled with the inadequate state of support to higher agricultural education institutions has continued to fuel the diploma mills. The government has initiated the following steps to rectify the situation:

1. Formation of a Technical Panel for Agricultural Education (TPAE) to analyze the situation and make recommendations for improvement.
2. Development of a so-called "Macro-Plan" -- a National Agricultural Education System (NAES) to rationalize the numbers of schools.
3. Creation of linkages between the agricultural colleges and government extension services.
4. Participation of the agricultural colleges in the National Agriculture, Environment, and Natural Resources Research and Development Network.

As early as the School Year 1983-84, the Technical Panel for Agricultural Education performed a quasi-accreditation function by publishing a set of guiding principles and minimum standards for graduate programs in agriculture, fisheries and forestry -- which prescribed academic qualifications for students, as well as instructional/curricula with supporting administrative and physical resource criteria for Masters and Doctoral level programs. Similar guidelines were also issued by the Panel for undergraduate level programs.

Systematic application and enforcement of these standards has yet to be accomplished. It is estimated that not more than a handful of institutions are in full compliance, and only about

- 13% of the chartered agricultural state colleges and universities,
- 1% of the colleges directly managed by the Department of Education, and
- 3% of independent private institutions meet even 80 percent of these minimum educational standards.

The proposed "Macro-Plan" of the Department of Education, Culture and Sports thus represents a major step towards rationalization and improvement.

The National Agriculture Education System

As originally conceived in September 1987, the National Agriculture Education System (NAES) was to realign the existing agricultural colleges and universities into an interactive four-tier hierarchical network structure:

1. One National University
2. Three Zonal Universities
3. A Regional Agricultural College in each of the 13 administrative/political region
4. A Provincial Technical Institute in each of the 77 provinces.

In effect, the national government system proposed to support only 94 of the 285 existing institutions in the future. Furthermore, the institutional functions were to be realigned so that efforts would be concentrated at each level and only certain predesignated functions would be supported. In subsequent discussions, the "zonal" classification was dropped from consideration as a separate level and merged with the regional level function.

The National University would -

1. Concentrate on post-graduate programs and curricula models.
2. Conduct basic and applied research.
3. Assist regional colleges.
4. Link with national and international agencies to keep abreast of needs and scientific developments.
5. Share expertise and facilities with the government and private sector in policy recommendations, program planning and evaluation, and staff training.

Regional Colleges should -

1. Concentrate on Bachelor of Science programs with some involvement in post-graduate and model technology coursework.
2. Focus on adaptive research needed in the region.

3. Assist Provincial Technical Institutes.
4. Link with government regional offices in planning and evaluating programs and training their staff.

Provincial Technical Institutes would -

1. Concentrate on technical courses for farming and extension work with "reasonable involvement" in selected degree and non-degree post-secondary courses.
2. Conduct pilot research and verification trials, short courses and training programs.
3. Assist provincial and municipal agriculturists in planning and evaluating programs and training technicians.
4. Assist agricultural high schools.

In addition, all institutions would serve as agricultural training centers and offer continuing adult education courses to improve attitudes towards farming and inculcate the importance of agriculture in nation-building. A schematic presentation of the Plan is shown in Figure 1.

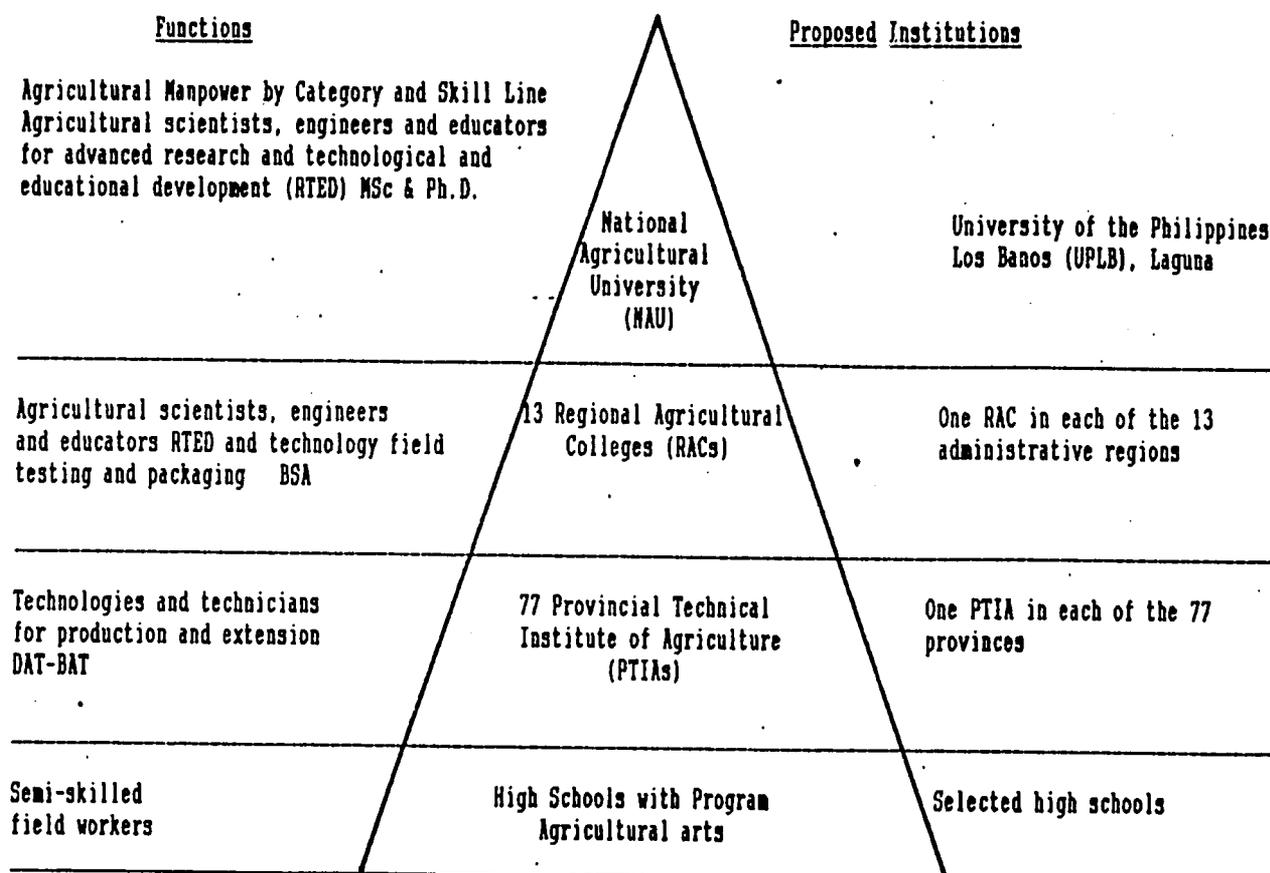
The Macro-Plan is currently under consideration by the Philippine Congress. While several elements of the plan are controversial, all indications to the design team are that a modified version is likely to be passed by the end of 1988.

CONCLUSION

The Design Team considers that the following aspects of the Macro-Plan are likely to generate major controversy:

1. Some 191 institutions immediately stand to lose national, or local private support by being excluded from participation in the National Agricultural Education System. Several institutions have already contacted their politicians and community support to oppose the plan.
2. Some 77 institutions which are included in the system as Provincial Technical Institutes and which currently offers bachelors degrees, face the prospect that their subsequent programs may be downgraded to a post-secondary Diploma or Certificate, with a consequent loss of stature, and concurrent desirability on the part of the consumer.

Fig. 1 CONCEPTUAL STRUCTURE OF THE NATIONAL AGRICULTURAL EDUCATION SYSTEM (NAES) (MACRO PLAN)



CURRICULAR OFFERINGS BY THE TYPE OF INSTITUTION

	<u>Doctorate</u>	<u>Degree</u> <u>Masters</u>	<u>Bachelors</u>	Diploma	Non-Formal <u>Training</u>
1. NAU	X	X	X (BSA)	-	-
2. RAC	*	X	X (BSA)	X (Post BSA)	-
3. PTIAs	-	*	X (BAT)	X (DAT)	X

*May be offered if accredited

3. Some 13 institutions will have to upgrade their capabilities, expand their facilities, and change their mode of operation in order to provide a regional/zonal-level perspective to meet the needs of a larger number of students and organizational clientele over a broader geographic area.
4. The "regional" institutional designation is a political/geographic one, which does not necessarily reflect the agro-climatic needs or population distribution of the country.
5. The single national level institution -- the University of the Philippines at Los Banos -- may not be willing (or able) to realign its current offerings of undergraduate programs in favor of more extensive graduate, and outreach activities to support other educational institutions.
6. A consequence of the rationalization plan is the radical (and probably politically unpalatable) step of severing the administrative, physical and faculty linkages currently existing between the agricultural colleges and their high schools -- except for retention of a "small" laboratory high school group. The disposition of facilities, and funding is also problematical.
7. The proposed Bill states that it does not intend to phase out schools, but only sub-standard programs. It is self-evident, however, that those schools which are excluded will have their government funding reduced, if not eliminated entirely. The loss of financial support will result in rapid deterioration of programs, if indeed they are not already sub-standard. Attractiveness will be further diminished by the institution's inability to offer a Bachelor's Degree Program, which in turn will further undermine the institution's capability to remain viable.

The foregoing seven points are not an argument for the status quo, nor reasons against a need for reform in the Philippine tertiary agricultural education system. Neither is the intent to diminish USAID support for the concept of a national rationalization plan per se. Nevertheless, it should be recognized that a basis for strong opposition exist to the proposed Macro Plan, and passage of the bill in its present form cannot be assured. Furthermore, given the history of administrative enforcement in the Philippines, even if rationalization legislation is passed, it is questionable whether

its tenets will be adhered to without considerable equivocation, compromise and/or numerous "case-by-case" exemptions, if not indeed blatantly ignored by individual institutions.

Nevertheless, it is the Design Team's assessment that regardless of the fate of the Macro-Plan -- the form in which it eventually emerges, or the level of subsequent implementation and enforcement -- there is sufficient justification for extending considerable levels of U.S. assistance to certain selected tertiary agricultural institutions in the Philippines.

ANNEX B: ECONOMIC ANALYSIS

1. Review of the Agriculture Sector

Since the 1960's, Philippine economic development has been slower than its East Asian neighbors. Gross National Product (GNP) growth averaged 5.6 per cent from 1960 to 1980. Growth decelerated from 1980 to 1985 reaching high negative rates of 4.8 and 5.6 in the crisis years of 1983-84 and 1984-85. Income per capita -- which already reached \$800 in 1982 -- dipped to \$580 in 1985. In all these years population growth was high, though declining slowly from 3.0 in 1960 to 2.5 in 1980. (The current estimate is 2.2.) Per capita income gains were thus slowed down by the high population rate.

After the short-lived increase in industrial growth following the adoption of the import substituting strategy in the early 1950s, growth rates averaged 6.0 per cent in the 1960s, 8.7 per cent in the 1970s. The industrial sector suffered the highest decline in Gross Domestic Product (GDP) in the 1983-85 crisis of 11 per cent and 10 per cent per year. The average annual growth for 1980-85 was -- 2.8 per cent. The incentives given to industry had a strong capital bias which resulted in its low employment (i.e. ratio of percent growth in employment to GNP). In 1970-80 employment and in 1980-85, elasticity was roughly 27%.

Agriculture, in turn, showed a slower but more stable growth: 4.3 per cent in the '60s, 4.9 per cent in the '70s and 1.7 per cent in 1980-85. Employment elasticity was 80 per cent in the '70s and 238 per cent in 1980-85.

There was little sectoral transformation over the 1960-85 period as seen below:

GDP	Industry	Agriculture	Services
1960	28.0	26.0	46.0
1971	27.9	29.0	40.9
1985	32.0	27.0	41.0

Employment	Manufacturing	Agriculture	Services & Other Sectors
1970	11.9	53.8	34.3
1978	11.5	52.8	35.7
1985	9.7	49.3	41.0

Agriculture's share in GDP remained at virtually the same level while that of industry rose only marginally from 28 per cent in 1960 to 32.0 in 1985. Because of the low employment elasticity in industry -- as exemplified by the manufacturing sector -- its employment share did not increase. Services (which include many low-productivity informal activities) absorbed some of the excess labor from both Agriculture and Manufacturing as seen in the rising trend of the Service's employment share. Service employment grew at 3.4 per cent in the '70s and at 6.3 per cent in 1980-85. Manufacturing employment, in contrast declined from 2.0 per cent to 1.1 per cent, while Agriculture grew from 3.9 per cent to 5.0 per cent. Total employment grew at the same rate as the labor force or 3.8 per cent for the whole period, 1970-85. Consequently, the unemployment problem was not reduced. The 1983-85 crisis in fact increased the unemployment rate from about 4.5 per cent in the '70s to 6.8 per cent in 1985 and 11.8 per cent in 1986. There was, moreover, an increasing rate of underemployment -- estimated to be about 10 per cent in the 70s and 22 per cent in 1985. Unemployment was found in all sectors and occupations including those with college education.

The deep recession reduced per capita income by about 16 per cent from 1980 to 1985 and increased the poverty incidence according to NEDA standards from about 45 per cent to about 60 per cent. A large percentage of the poor is found in rural areas where the incidence of poverty is higher and where the majority of the people still live.

The 1987-1992 Philippine Medium Term Development Plan gives primary attention to agricultural development. It is imperative if the government's objective of alleviating poverty is to be accomplished as the majority of the poor are in this sector. The government also sees the possibilities for raising the sector's past growth performance from 4.0 to 5.0 and its backward and forward linkages to the industrial sector. Planners do not seem to think the industrial sector (or any other sector) could assume a leading sector role in the intermediate future. It is therefore important for agriculture to develop. The Plan, is in a sense, eclectic. It is the first planning document of a new government faced with the task of overhauling a whole economic system, raising income and employment levels and paying a large inherited foreign debt. Major policy reforms have to be undertaken in the area of monetary policy, public finance, industrial structure (particularly pertaining to the enlarged state corporate enterprise sector and state initiated monopolies), trade and industry protection, and the distribution of social services.

The policy for agriculture is aimed at both productivity increases and a more equitable distribution of income that could bring about a substantial alleviation of poverty. Increasing productivity must come from technological improvement in existing major crops and in new ones, and from intensive higher-income cropping systems especially in non-rice areas. In the past,

gains in agriculture Gross Value Added (GVA) came from input increases such as fertilizers. Both the land put to cultivation and labor input rose. Harvested area grew by 75 per cent from 1950-70 and 21 per cent from 1975-80. Since 1980, however, the harvested area has stopped increasing; and has even declined slightly. Population growth, lack of non-agricultural employment opportunities and slack technological changes in agricultural production failed to create sufficient and/or higher income employment, thus pushing people to marginal lands. They have encroached into the forest areas exacerbating the denudation of forests by loggers. Farm size declined as population and employment in agriculture grew faster than cultivated area -- their respective growth rates were 50 percent, 36 per cent and 15 percent, between 1970 and 1985. In 1980, 23 per cent of farms were of less than one hectare size, and 50 per cent were of less than two hectares. These small farms, however, covered only 16 per cent of the total cultivated area. The large estates (with sizes greater than 50 hectares) composed of about one fourth of the cultivated land, remained intact. Some of the estates hired wage labor but a large proportion were share-tenancy contracts. A similar labor situation prevails on the medium-sized farms of 10-50 hectares.

Agricultural productivity in all major crops is considered to be very low by world, and other Asian standards. Yields for selected crops are as follows:

	<u>Philippines</u> 1980	<u>Highest Yield in Asia</u> 1974
rice	1.5 tons/ha	5.8 (Japan)
corn	1.0 ton/ha	6.6 (Israel)
sugar	5-6 tons/ha	8.1 (Indonesia)
coconut	50 per tree	-

Source: WB, Phil. Agricultural Development Strategy Paper, 1987, FAO Production Status, 1974

While much progress has been made in commercial farming, only bananas and prawns are produced competitively. Poultry is produced at a higher cost than Thailand. The introduction of High Yielding Varieties (HYV) in rice culture and the substantial expansion of irrigation systems raised rice productivity by almost 160 per cent in 1971 to 1985, but the yield achieved have been still much lower than in other countries including ASEAN. Irrigated area rose from 742,400 hectares to 1,232,000 hectares to 1,457,000 hectares from 1972 to 1986. The current plan is to increase irrigation to 1,663,000 hectares in 1992, at which time 53 per cent of all rice areas should be covered.

The ADB-sponsored International Food Policy Research Institute (IFPRI) 1987 study estimated the Domestic Resource Cost (DRC) of 29 crops as a basis for identifying crops for development. The study concluded that rice, corn, soybeans and cotton have a "low enough" DRC to compete with imports but not

for exports. Tobacco, abaca, garlic and onions were found to have export potential. Vegetables -- such as string beans, sweet peas, turnips, tomatoes, watermelons and pineapples, face good domestic markets and are likely to be profitable. Bananas, on the other hand, face poor world market prospects. Except for rice, corn and tobacco, all these crops are currently minor crops in the Philippines, and generally have not been given much attention in past government planning. Consequently little infrastructure, credit or research/extension support have been directed at them. Nevertheless, these crops together with fruits and coffee, have grown faster than any of the major crops over the 1972 to 1985 period -- 13.7 times in current gross value added (GVA) versus 10.9 times for rice, 10.9 times for corn, 6.8 times for coconut and 3.1 times for sugar. The share of these crops in terms of total crop GVA rose from 27 per cent to 33.6 per cent in the same years (WBPASSR Table 6).

There is some consensus on the target crops and the ingredients of agricultural strategy among the three major recent (1987) agricultural strategy reviews -- The University of the Philippines at Los Banos (UPLB)-led "Agenda for Action for the Philippine Rural Sector", the World Bank "Philippine

Agricultural Sector Strategy Review" and the ADB-IFPRI Study.¹ These studies differed mainly in focus. Both the World Bank and the UPLB placed a lot of emphasis on research and extension for improving cropping pattern and yield through more efficient input use and higher yielding seeds.

The World Bank Review considered the potential for productivity gains in traditional crops such as rice, corn and coconut -- particularly intercropping root crops and pineapple with tree crops. There is greater potential in the cultivation of non-traditional crops which IFPRI found to have low Domestic Resource Costs (DRC) and to have export potentials, namely garlic, tobacco, abaca and onions. The World Bank pointed to² tree crops and oil palm as being most promising.

¹ Started shortly after the February 1986 Revolution the UPLB Agenda had to pay much attention to policy reforms -- particularly the industrial-biased incentive system, land reform, the pricing system, and the ubiquitous coconut, sugar and other agricultural monopolies. The World Bank Review went more into sectoral targets such as irrigation and particular crops, and was particularly concerned with poverty and equity issues.

² These crops could be the subject of research and extension modeling in the ACUs.

2. Role of Agricultural Colleges.

General satisfaction was expressed by the studies with the organization, personnel and quality of research in agriculture. A large research network exists in the Philippines consisting of four national multi-commodity research centers, i.e., the four large State universities and colleges: University of the Philippines at Los Banos (UPLB), Visayas State College of Agriculture (VISCA), Central Luzon State University (CLSU) and University of Southern Mindanao (USM), seven single commodity research centers/consortia of which three are located in the States colleges, and 130 cooperating stations. These research facilities which are coordinated by sixty-two government agencies, at least 30 private corporations and three international research centers -- International Rice Research Institute (IRRI), Southeast Asia Regional Center for Graduate Studies and Research in Agriculture (SEARCA), and Southeast Asia Fisheries Development Education Center (SEAFDEC) are engaged in agriculture and related research, but not all are formally linked with PCARRD. The Department of Agriculture also created the Agricultural Research Office to coordinate, monitor and evaluate its national research network composed of Regional Integrated Agricultural Research Stations. PCARRD, a sectoral council of the Department of Science and Technology (DOST), provides funds for the government research centers as well as some assistance in personnel development. In 1985 a total of 866 researchers obtained training through PCARRD, 403 of them from the State colleges and universities. While the network is comprised of a large number of centers and stations, the SCUs have the technical capability to undertake a large proportion of the research, as they have the greatest concentration of agricultural scientists with advanced degrees, as shown in the following table:

Table 1
DISTRIBUTION OF SCIENTIFIC MANPOWER AMONG
RESEARCH AGENCY BY DEGREE,

	Total:%	MS: No	1978		Ph.D.: No.	%
			%			
SCU	83.1	448	79.2	198	93.4	
DA	6.2	46	8.1	2	0.9	
Others	10.7	71	12.1	12	5.7	
Total	100.0	565	100.0	212	100.0	

Source: UPLB Agenda, p. 491.

However, while the colleges employ as many as 83 per cent of the scientists with advanced degrees, they obtained, on average, only 35 of the national research budget and this is concentrated at only four institutions. As the lead institution, UPLB received 25 per cent of the budget allocated to universities while CLSU, VISCA and the USM collectively received another 45

percent. The remaining 30% was spread among the other 280
3
agricultural colleges.

The current national agriculture education plan aims to strengthen a larger number of institutions, especially the regional universities. According to the UPLB-Agenda, "all agricultural research of DA should be integrated into a system where research is done primarily in regional SCUs with a network of provincial colleges." The four lead institutions will continue to be research centers, especially for basic research.

Philippine government expenditure on agricultural research is very low by world and even Asian, standards. Research expenditures per Gross Value Added (GVA) in agriculture was 0.16 per cent as compared to 0.29 per cent for India, 0.44 per cent in Indonesia, 0.26 per cent in Thailand and 0.41 in Pakistan (UPLB Agenda, p. 498). Both UPLB and World Bank studies strongly recommend an increase in the budget to raise the "research to GVA" ratio to at least double its present level. Increasing the research budget would certainly help strengthen the agricultural colleges.

In 1987, the "Research to GVA" ratio allocation differed significantly across crops, as indicated below:

rice	- - - -	.36%
corn	- - - -	.22%
coconut	- - - -	1.33%
sugar	- - - -	.19%
abaca	- - - -	3.84%
coffee	- - - -	.18%
tobacco	- - - -	13.02%
cotton	- - - -	3.89%
rubber	- - - -	.71%

It is significant to note that the crops which could have benefited most from the relatively larger allocation to the single commodity research centers had the lowest growth in productivity. If the farming system approach is implemented, integrating the current single commodity research centers into the universities could significantly improve the effectiveness of research in some of these other crops and related farm activities.

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Realistically, however, with a relatively small budget to allocate, PCARRD's decision to concentrate the available funds in in few relatively strong research centers was probably the right one as it was more efficient. PCARRD's approach also supports the Team's notion of Centers of Excellence.

The State colleges and universities will be tasked to improve the effectiveness of the Department of Agriculture's extension services. There are about 16,000 extension workers under the Department of Agriculture and another 7,000 in related agricultural services under other agencies of the government. The common assessment of the extension service is that they are overstaffed with poorly-prepared and badly-paid personnel. These extension agents are provided little or no financial or physical support to carry out their fieldwork of visiting and advising farmers. Extension workers received about P1,000 per month in pay, have no transportation or meal allowances, and can offer farmers little assistance in instructional materials, higher yielding seeds, or access to stations for analysis of soil, diseases and other farm problems. Furthermore, many of the schools from which these extension agents obtained their training are of poor quality, with little or no practicum.

The Regional colleges will be tasked to provide retraining programs for extension workers. Assuming the assessment of the state of extension services is accurate, the retraining curriculum may have to contain substantial basic agricultural science courses. Further -- effective extension methods need to be developed including the currently popular "Farming System" approach.

Under the Macro Plan, the Regional colleges are to be more active participants in the nation's agricultural development effort. They will be the central research organizations of the government and will also play a major role in strengthening its extension service. There is some conflict between the "activist" role being assigned to colleges and their primary function as institutions of higher learning whose value to society largely depends on academic integrity and independence.

The colleges will have to arrive at a balance between academic and society's demands. Certainly, they cannot become extension agents; their research cannot be limited simply to visible and immediate use, and their curricula must aim for much more than technical skills training.

In short, the Design Team notes that a social demand for stronger State colleges of agriculture definitely exists. Whether this social demand for academic institutional services can be rationalized by cost-benefit criteria is an empirical question. Unfortunately, there are both measurement and data problems in conducting a cost-benefit analysis for the support to be given to these institutions. There are inherent positive externalities in educational programs which no sophisticated benefit measurement can adequately capture. Any benefit measurement would tend to be an underestimate. Increased support for research was rationalized by the UPLB-Agenda on the basis of

estimated internal rates of return (IRR) obtained in other countries. The rates obtained in the studies cited ranges from 30 to 80 per cent. For the Philippines, the internal rate of return was relatively high, approximating the higher estimates.

Under the proposed USAID Project, future research activities should be more efficiently organized as they are to be concentrated in institutions which have more qualified scientists. The research agenda will also be made more sensitive to farming needs and problems. At the same time the delivery of knowledge will also be made more effective by improving the quality of extension workers through retraining, as well as and their application of practical extension methods and approaches.

Research capacity at the colleges will have to be increased and improved via faculty development, and faculty retention programs.

As indicated earlier, a very large percentage of agricultural scientists are located in the four leading institutions. 75 percent of the Faculty with Ph.D. degree are found there -- 36 per cent in the University of the Philippines at Los Banos, 12 per cent in Central Luzon State University, 21 per cent in Visayas State College of Agriculture and 6 percent in the University of Southern Mindanao. The ratio of faculty with a Ph.D. degree was only 6 per cent in the other institutions visited by the Team, although they desire (and are working towards) a higher ratio of about 25 per cent.

As indicated elsewhere in this study, there is currently a glut of agricultural graduates, and extension workers earn less than full-time blue collar workers and other employed college graduates. A general expansion of agricultural college enrollment cannot therefore be rationalized on the basis of cost-

benefit criteria. As in other fields, the better-quality agricultural graduates from reputable institutions -- such as UPLB -- earn more than the average and experience a low rate of unemployment. Aralo and Bringas (1979) reported that all UPLB agriculture graduates found employment within 2 to 3 months after graduation. Graduates of other schools obtained jobs after 6 months.

If the faculty, library, laboratory and curriculum of leading institutions are improved, the productivity of their graduates can be expected to increase and therefore their earnings -- whether on their own farms, self-employed, in the government or in private firms. At the same time agricultural productivity per se will tend to increase as the planned infrastructure investments and rationalized pricing schemes are put in place.

1

The Higher Education Labor Market Studies show that U.P. Diliman graduates had higher employment rates and higher earnings in the fields of specialization covered.

Assuming a modest P500 per month differential between a good tertiary-level agricultural graduate and a high school graduate, the capitalized value of this income increment over life, at 15 per cent interest rate would be P40,000. A good agricultural education can therefore be rationalized if the total capital cost (including foregone income) is at most P40,000. Alternative numbers may be used such as a lower real interest rate of say 10 percent -- the opportunity rate of saving deposits. In this case the capital value would be P60,000. The Team considers these to be conservative estimates as earnings could conceivably go much higher than P500 a month.

The instructional capacity of most agricultural colleges appear underutilized. Enrollments in the agricultural sciences have been declining from around 75,000 in 1979/80 to around 45,000 in 1984/85. Consequently, the average instructional cost is high. When, and if, demand for agricultural graduates increases, enrollment is likely to rise again and average costs will fall.

Demand for good agriculturists will undoubtedly rise when extension services expand and improve. The UPLB-Agenda recommended a retrenchment of the less qualified extension workers through an accelerated retirement scheme. The Department of Agrarian Reform (DAR) and Department of Agriculture also have plans to hire more extension workers. The UPLB Agenda further recommended that the hiring criteria be based exclusively on merit rather than local political influence as often happened in the past. If this recommendation is accepted and even only partially adhered to, it would mean a preference (and therefore an increased demand) for good agricultural college graduates. The emphasis however is on the term good since, in general, employment and income depends on the quality of the training.

Estimated below are the average direct costs for those institutions which the Team commends to USAID for consideration as targets for assistance.

Table 2 Average Cost of Schooling in Selected State Agricultural Colleges and Universities and Student Faculty Ratio, 1986

	Expenditures on Personnel and O&M 000s Pesos	Enrollment	Average Direct Cost Pesos	Student Faculty Ratio ¹
UPLB (766) Combined	74,024	6,508	11,370	8.5
WMSU (275) Combined	11,846	7,154	1,656	29.2
VISCA (244) Graduate	462	116	3,980	9.0
Undergraduate	7,798	1,559	4,990	
CLSU (339) Graduate	606	195	3,100	12.6
Undergraduate	14,251	3,303	4,310	
USM Combined	7,329	2,833	2,580	10.6
DSAC				
Graduate	1,016 ²	8	127,000	18.1
Undergraduate	4,876	2,045 ³	2,380	
PAC (118) Graduate	612	70	8,740	10.5
Undergraduate	1,461	495	2,950	

NOTE

¹ Student faculty ratio is computed on the basis of total enrollment -- graduate, undergraduate and secondary.

² DSAC opened its graduate program in 1985-86 so that enrollment is still very low and average direct cost is very high.

³ Enrollment at the undergraduate fell by half in 1986-87 so that cost would have at least doubled.

Source: SCUs Annual Report. Data are actual expenditures in 1986.

These costs are very rough estimates as they do not include depreciation of equipment and buildings or administrative cost, which for some institutions constitute a high proportion of the total budget and if included, could drastically raise the average cost. Nevertheless, as a simplistic measure, from this data the proportion of administrative costs to total operating cost ranged from 8 per cent for UPLB to 43 per cent for VISCA.

Direct cost differs very widely across the leading universities. Western Mindanao State University (WMSU) has the largest enrollment but obtains a relatively small budget, thus the small per student cost of less than 2,000 pesos per year. UPLB on the other hand shows the highest average direct cost of 11,370 pesos. The average cost for undergraduate instruction (excluding UPLB) is fairly modest, ranging from P1,656 to P4,990.

Average cost is partly explained by capacity utilization which is reflected in the student faculty ratio. UPLB has only 8.5 students per faculty, Visayas State College of Agriculture 9.0 and Western Mindanao State University 29.2. By comparison the Team noted that most private institutions have a ratio of at least 30. The other factor which begs a closer look is administrative cost.

These estimates, although very rough and incomplete, give us a basis for arriving at some possible values of cost-benefit indicators, shown in Table 3 below.

Table 3. Cost-Benefit Analysis

Average Schooling Cost per year	Total Cost ¹	Monthly Increment in income due to schooling that would make the capitalized value ² equal the total cost of schooling	
		Interest rate=15%	Interest rate=10%
P 5,000	P60,000	900	600
7,500	70,000	1,050	700
10,000	80,000	1,200	800
12,000	88,000	1,320	880

¹ Foregone income or cost of board and lodging and other schooling cost are assumed to equal 1,000 pesos a month x 10 months = 10,000/year.

Total Cost = Average schooling cost x 4 years + 40,000 personal cost.

² Income/interest rate = capitalized value of benefits over life.

The figures roughly measure the absolute returns (or increase in income) due to agriculture education that must be earned in order to warrant investment at alternative or hypothetical cost and interest rates. If institutions can be made more efficient by increasing capacity utilization (i.e. enrolling more students) and economizing on administrative expenses without sacrificing of quality, net returns could be vastly increased.

The USAID support for state colleges and universities will mean additional cost and additional budget from the government to sustain the USAID investments: The effect on the rate of return will depend on two principal factors:

1. how well assistance increases the quality of education received by students, hence their productivity and earnings, and
2. whether the upgrading will attract students to the schools and lead to a lowering of their average costs.

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Life of Project: _____
 From FY 89 to FY 1994
 Total U. S. Funding \$17.0 Million
 Date Prepared: November 1988

Project Title & Number: Agricultural Education Improvement Project (492-0433)

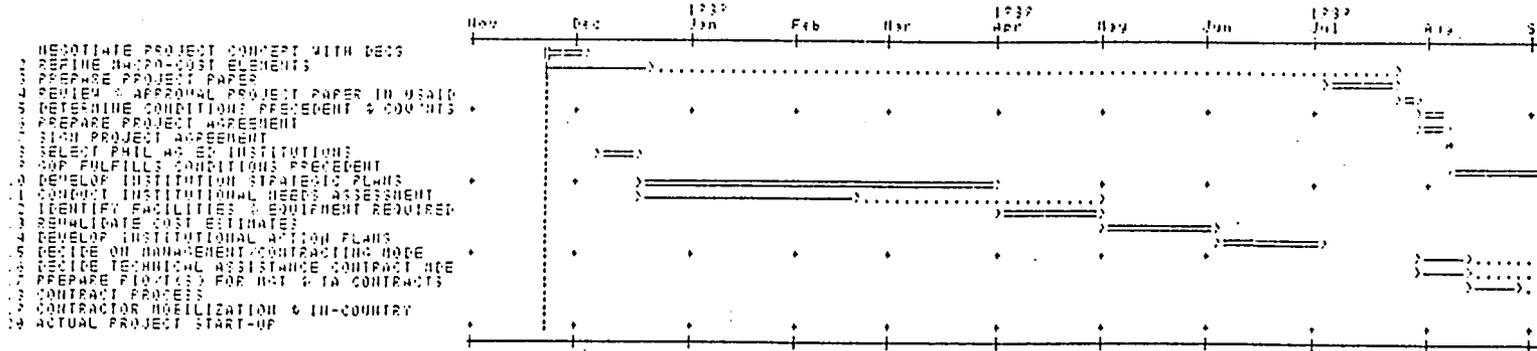
NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes: (A-1)</p> <p>Increase in contribution of farm and agribusiness enterprises to Philippine GDP</p> <p>SUB-GOAL</p> <p>Growth and development of farm and related non-farm rural enterprises in the Philippines through institutions' more skilled graduates, more appropriate technology and better training.</p>	<p>Measures of Goal Achievement: (A-2)</p> <p>Improved farm and farm-related management. Increased/improved technological adaptations in agriculture and rural enterprises.</p>	<p>(A-3)</p> <p>Annual Report by DAR and Statistics Annual Report by Project and Sample Survey</p>	<p>Assumptions for achieving goal targets: (A-4)</p> <p>Political and economic stability in target areas. Favorable rural development policy environment. Policies on distribution of income remain essentially as at present.</p>
<p>Project Purpose: (B-1)</p> <p>Purpose 1</p> <p>1. Increase farm and agri-business incomes in target areas.</p> <p>Sub-Purpose 1</p> <p>2. Increase quantity and quality of research and extension work by selected agricultural colleges and universities.</p> <p>Purpose 2</p> <p>3. Increase employment rates of graduates and trainees of selected agricultural colleges and universities in agriculture-related work.</p> <p>Sub-Purpose 2</p> <p>4. Increase quantity and quality of graduates in selected agricultural colleges and universities.</p>	<p>Conditions that will indicate purpose has been achieved: End-of-Project status. (B-2)</p> <p>1. Colleges train and educate on basis of practical, on-farm experience, management skills, etc. 2. Colleges are regularly conducting outreach activities in rural communities; colleges are conducting problem-solving research and results are recommended/adopted by area farmers; regional institutions are providing quality Ph.D./MSc education and lead research roles for provincial colleges. 3. Graduates are employed in agriculture or related work. 4. Graduates regularly perform better in standardized, GRE-type exam Colleges have the capacity to plan and adapt their programs to address priority regional/provincial needs.</p>	<p>(B-3)</p> <p>Periodic reports Field Visits Surveys</p>	<p>Assumptions for achieving purpose: (B-4)</p> <p>DECs rationalization plan is ratified by Congress. ACUS can retain quality faculty GOP can provide sufficient recurrent cost funds.</p>
<p>Project Outputs: (C-1)</p> <p>Capability of selected agricultural colleges and universities to perform instruction, Research and Outreach/Extension upgraded in -</p> <p>1. Administration 2. Faculty Development 3. Curriculum Improvement 4. Extension Outreach 5. Research 6. Facilities and Equipment</p> <p>a. Library b. Laboratory c. Experimental Farm d. Production Farm e. Transportation f. Communication Equipment</p>	<p>Magnitude of outputs: (C-2)</p> <p>1. Strategic and action plans in place; student recruitment procedures implemented; policies and procedures in place; fund raising mechanisms in place. 2. 24 PhDs; 24 MScs; 24 outreach Fellows; 27 faculty exchange Fellows; faculty promotion and tenure policies in place. 3. 2 New/restructured courses in each institution for emphasized areas; research and extension results feedback to courses. 4. 160 fieldwork-study participants; 40 internships; 1200 farmers provided with on-farm assistance; 150 barangays assisted; established linkages with 80 percent of the extension units of the Dept. of Agriculture in the regions; 64 training programs held; 1700 extension agents trained; 1000 farmers trained; 64 extension publications issued. 5. Research agents developed; 16 research projects completed in emphasized areas; 64 externally funded project requests; 24 foreign collaborative research projects and 72 extra-mural. 6. a) Volumes and value judgment of quality; b) functional; c) has in use; d) profit making; e) 80 percent vehicles operational; f) 80 percent operational, maintenance and operation funding as % of total budget increased by at least 10 percent.</p>	<p>(C-3)</p> <p>Progress reports Training reports Visits and surveys Strategy and action plan review</p>	<p>Assumptions for achieving outputs: (C-4)</p> <p>GOP institutions support increased coordination in research and education ACUS support regional development GOP pays salaries for faculty during training. Inputs and technical information can be delivered as planned and in acceptable form.</p>
<p>Project Inputs: (D-1)</p> <p>AID - US and local technical assistance, Faculty Fellowships (Joint-US-Philis) outreach linkage networking, facilities upgrading and equipment, student work study assistance and course-related internships, project management, monitoring and evaluation</p> <p>GOP - operating and support costs, in-kind contribution, tax exemptions, office space management cost/salaries</p>	<p>Implementation Target (Type and Quantity) (D-2)</p> <p>AID - Technical Assistance \$4.5 million Faculty Fellowships 2.5 million Facilities Improvement 5.5 million Student Work study 1.0 million Project Management 2.5 million Monitoring and Eval. 1.0 million \$17.0 million</p> <p>GOP - Taxes and Duties \$549,000 Proj. Mgmt cost 780,000 Supplies & materials 126,000 Operating & support costs (travel, gasoline, comm., etc.) 869,000 In-kind contributions 2,676,000 \$5.0 million</p>	<p>(D-3)</p> <p>Review of agreements, obligating and other related documents Contracts Audits Financial Reports Periodic Reports</p>	<p>Assumptions for providing inputs: (D-4)</p> <p>Project is approved and funding available and provided on schedule Contractor selection and procurement proceed on schedule. Qualified participants are nominated/selected in timely manner</p>

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ANNEX D: PROPOSED TIMETABLES

1) AGRICULTURE EDUCATION IMPROVEMENT PROJECT - PRE-IMPLEMENTATION

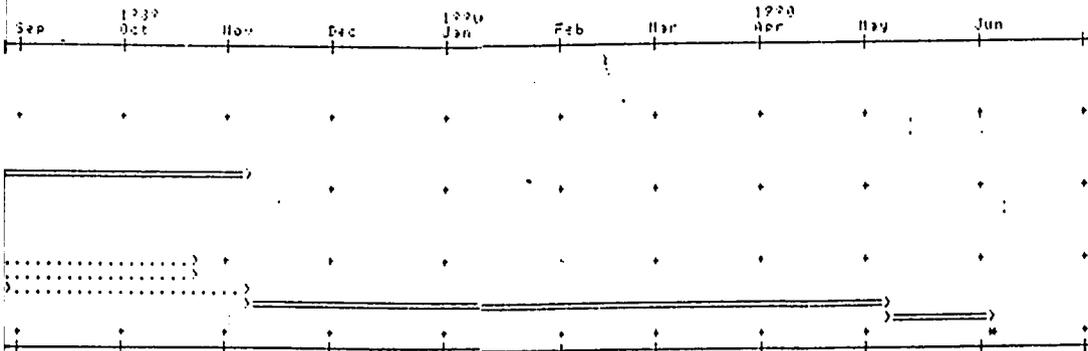
2) AGRICULTURE EDUCATION IMPROVEMENT PROJECT - PRE-IMPLEMENTATION



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AGRICULTURE EDUCATION
IMPROVEMENT PROJECT
--PRE-IMPLEMENTATION

AGRICULTURE EDUCATION
IMPROVEMENT PROJECT
--PRE-IMPLEMENTATION

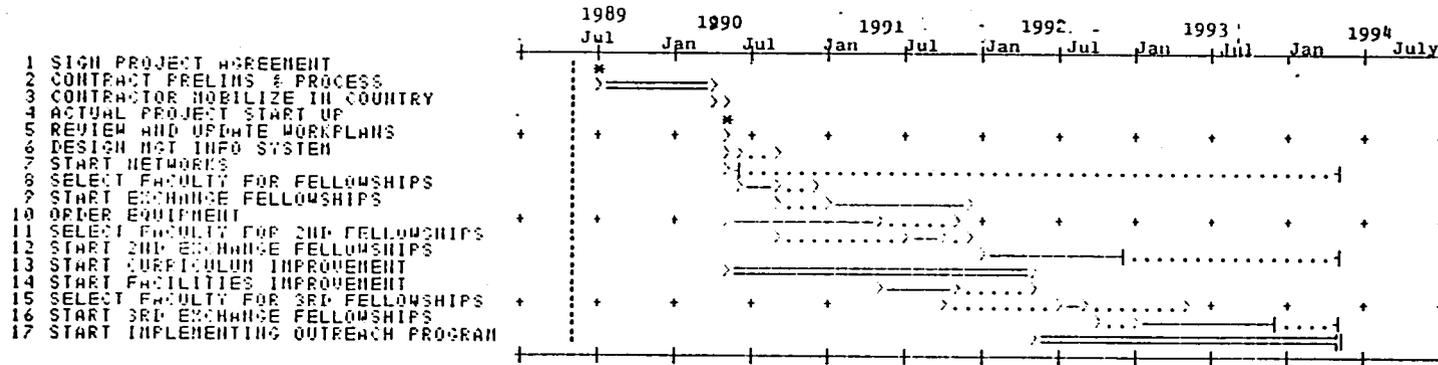


- 1 NEGOTIATE PROJECT CONCEPT WITH DECS
- 2 REFINE MACRO-COST ELEMENTS
- 3 PREPARE PROJECT PAPER
- 4 REVIEW & APPROVAL PROJECT PAPER IN USAID
- 5 DETERMINE CONDITIONS PRECEDENT & COMMENTS
- 6 PREPARE PROJECT AGREEMENT
- 7 SIGN PROJECT AGREEMENT
- 8 SELECT PHILADELPHIA INSTITUTIONS
- 9 CAP FULFILLS CONDITIONS PRECEDENT
- 10 DEVELOP INSTITUTION STRATEGIC PLANS
- 11 CONDUCT INSTITUTIONAL NEEDS ASSESSMENT
- 12 IDENTIFY FACILITIES & EQUIPMENT REQUIRED
- 13 RENALIDATE COST ESTIMATES
- 14 DEVELOP INSTITUTIONAL ACTION PLANS
- 15 DECIDE ON MANAGEMENT/CONTRACTING MODE
- 16 DECIDE TECHNICAL ASSISTANCE CONTRACT MODE
- 17 PREPARE PLOTT(S) FOR NGT 2 TR CONTRACTS
- 18 CONTRACT PROCESS
- 19 CONTRACTOR MOBILIZATION & IN-COUNTRY
- 20 ACTUAL PROJECT START-UP

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ANNEX D: PROPOSED PROJECT TIMETABLES

2) AGRICULTURE EDUCATION
IMPROVEMENT PROJECT
SUMMARY FIVE YEAR PLAN



AGRICULTURE EDUCATION
IMPROVEMENT PROJECT
SUMMARY FIVE YEAR PLAN



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ANNEX E: DETAILS OF ESTIMATED BUDGET

A. Summary Project Budget Estimate

A summary of the budget is shown here, with detailed assumptions in Part B of this Annex.

1. Technical Assistance

a) U.S. Technical Experts:

Academic Administration (2 years)
Facilities Improvement (2 years)
Research (3 years)
Faculty Development (4 years)
Outreach and Extension (4 years)
Curriculum (3 years)

Total of 18 man-years at \$173,000/year \$ 3,120,000

b) Local Experts

Total of 23 man-years at \$60,000/year 1,380,000

Total Budget for Technical Assistance \$ 4,500,000

2. Faculty Fellowships

a) Ph.D. (Joint US-PHIL) 8 Ph.D's at
average cost of \$61,000 each \$488,000

b) M.S. (Joint US-PHIL) 16 MScs at
average cost of \$41,000 each 656,000

c) Ph.D (PHIL) 16 Ph.Ds at average
cost of \$17,000 each 272,000

d) MSc (PHIL) 8 MScs at average cost
of \$7,333 each 58,670

e) Post-graduate fellowships 3-one year
outreach fellows in each of the
8 institutions at \$10,000 per year 240,000

f) Local fellowships: 109 fellowship-years
at \$57,205/year 785,330

Total Budget \$2,500,000

3. Facilities

A minimum estimate of \$411,670 is required on average for each institution (see Part (B)). On average, the Team estimates that 1 2/3 of this minimum will be required to improve facilities in each institution (8 x 1 2/3 x \$411,670)

\$5,500,000

4. Student Work-Study

a) Student Assistants: 8 schools x 165 man-semester x \$325/semester \$ 429,000

b) Internship: 8 schools x 40 man-semester x \$1,785/semester 571,000

\$1,000,000

5. Project Management .. \$2,500,000

6. Monitoring and Evaluation

a) Project Monitoring (including Technical Assistant \$ 830,000

b) Impact Evaluation 170,000

\$1,000,000

B. ESTIMATED COST PER UNIT OF PROGRAM

Cost data were derived from costs of the AEOP, costs estimated for ADB-ATEP experience of Philippine colleges of agriculture and estimates made by the Team based upon USAID and other experiences.

1. Faculty Development

a) Ph.D.

3 1/2 years US at \$30,000/year - - - \$105,000

or

3 1/2 yrs Philippines - 3 1/2 years subsistence at 3,000/yr - - \$10,500
other support 6,500

\$17,000

b) MSc

US	1 yr. U.S. at \$30,000	\$30,000
Phil.	1 1/2 yrs. subsistence at \$3,000/yr.	\$ 4,500
	Tuition & Support	1,000
	Books & Supplies	1,000
	Research Support	3,000
	Thesis Support	1,500
		----- \$11,000

2. Technical Assistance (US)

a. Long-term TA cost per year

Salary	\$144,000	
Travel	1,333	
Housing	24,000	
Transport	2,000	
Educational Allow. for dependents	2,000	\$173,333
	-----	-----

b. Long-term TA (Local)

Cost per year \$ 60,000

3. Facilities Upgrading & Equipment

- | | | | |
|----|--|---------------------------------|-----------|
| a) | Scientific Research Equipment, 8 micro-computers, food processing plant, etc. | minimum for each institution at | \$105,000 |
| b) | University/College Farm Equipment/facilities/Construction/Development, i.e. four-wheel tractor, hand tractor, etc. | minimum for each institution at | 160,000 |
| c) | Audio Visual Equipment/Facilities for teaching and extension/outreach | minimum for each institution at | 6,670 |
| d) | Written materials Production and Printing Equipment, e.g. copier, offset printer, etc. | minimum for each institution at | 25,000 |
| e) | Transportation equipment for outreach/extension, e.g. motorcycles, jeepneys, etc. | minimum for each institution at | 30,000 |

f)	Teaching Laboratory Improvement e.g. water installation, gas, etc.	minimum for each institution at	10,000
g)	Equipment/Facilities Maintenance Carpentry/Repair/Supplies/spare parts, e.g. standby generator, etc.	minimum for each institution at	50,000
h)	Library strengthening, e.g. Books, textbooks, etc.	minimum for each institution at	25,000

			\$410,000

4. Student Work-Study Assistance & Course Related Internship

a)	Student Assistant/Labor 5 to 6 mos. (1/2 yr.)	maximum of 100 hrs/month at P6.50/hr for 6 mos. (1/2 yr.)/ student	\$ 325
b)	Internship to Private/ Government offices/ Agencies/Entities, etc.	1 sem. subsistence of student trainee at P650/mo.	160
		Honoraria of 2 super- visors at P2,000/mo. for six months	1,000
		Transportation at P500/mo. for two supervisors	300

			\$1,785

ANNEX F: AGRICULTURAL COLLEGES VISITED BY THE DESIGN TEAM

1. University of the Philippines at Los Banos (UPLB)
College, Los Banos, Laguna

The University of the Philippines at Los Banos, was established as an agricultural college in 1909, and is now composed of seven colleges: the Colleges of Agriculture, Arts & Sciences, Economics & Management, Forestry, Human Ecology, Veterinary Medicine, and Engineering & Agro-industrial Technology. In addition, UPLB has a graduate school, five specialized research units, a national training center for agriculture, and a number of associated national and international agricultural organizations. UPLB has 766 faculty members, 36% with doctoral degrees, 37% with Master's degrees, and 27% with bachelor's degrees. In 1986 there were over 5,300 undergraduate students and 1,200 graduate students. Numbers of undergraduate declined to 4,600 in 1987, and still further in 1988. Graduate student numbers have remained about the same level. UPLB graduated 1,061 students in 1985-86, and 944 students in 1987-88.

A diploma and three bachelors degrees are offered in the College of Agriculture: B.S. in Agriculture, B.S. in Development Communication, and the B.S. in Food Technology. The College of Arts and Sciences offers 10 B.S. and A.B. degrees and the 5 other colleges offer 11 additional agriculture and natural resource-related B.S. degree options, the Doctor of Veterinary Medicine, and two Certificate programs. Forty masteral programs are offered as well as 19 Ph.D. programs.

The largest number of undergraduates in the University are enrolled for the B.S. in Agriculture, followed by those enrolled for the B.S. in Biology, and the B.S. Agribusiness enrollees. The B.S. in Agricultural Engineering, B.S. in Forestry, and Doctor of Veterinary Medicine programs are also large. The number of students in Agriculture have declined more sharply than total enrollment in recent years, but an analysis shows that this is largely due to establishment of new colleges from units that were formerly in Agriculture. Nearly half of the students are women, and nearly 7% are foreign students (mostly at the graduate level), coming from about 40 countries.

There is considerable concern at UPLB about the loss of faculty from several units to other national and international organizations, and the prospective retirement of a large number of faculty who were trained in the 50's and 60's. Twenty-five percent of the College of Agriculture faculty will retire in the next 15 years, and few opportunities are opening up for new faculty to train abroad. Faculty departures for other jobs aggravates the situation. Faculty development is thus a top priority at UPLB.

UPLB continues to be recognized for its accomplishments in research, with numerous recent advances in pest control, food technology, new crop varieties, and management of problem soils. Many of the innovations are considered applicable in small scale

ample technology suited to the small farmer, and that packaging and delivering the technology was the major obstacle. In 1986, 78 million pesos was designated for research, most from the general appropriation, of which only 1% was for basic research.

Future-research efforts at UPLB are aimed at sustainable productivity, energy, appropriate processing industries, environmental management, technology assessment and policy studies, equitable socio-economic systems and Philippine culture. The Design Team sees that continuing external financial and technical assistance are necessary to effectively realize these thrusts. UPLB faculty hope to meet this need partly through research collaboration with one or more U.S. universities.

UPLB's 1986 activities include training (5,500 participants in 267 training programs), 100 publications, and a number of action-oriented projects. The university's extension mission is "institutional capability development", but it's unclear which institutions. Perhaps one of the weaker aspects of UPLB's programs are its focus on itself and lack of substantial outreach motivation within the Philippines. There are some solid attempts at outreach to other Philippine institutions, but none of these appear to figure in top-level thinking as prominently as the development of UPLB itself, and its international service.

Instruction at UPLB is expected to further diversify its curriculum, largely in graduate programs. Recently increased training of students in the basic sciences is expected to continue. The impact of instruction at UPLB is likely to remain large, for it remains the institution of choice for students majoring in agriculture. UPLB's graduates are the leading component of teaching faculty at other Philippine institutions visited, and alumni occupy key positions in government.

The UPLB administration has invited a high level mission to the university to help evaluate its programs and set directions. This seems essential. The institution's faculty and facilities are under stress -- unable to maintain programs because of faculty loss and deteriorating facilities. UPLB needs encouragement to reestablish momentum and direction. The Agricultural Education Improvement Project can be particularly helpful by influencing the institution toward a more effective outreach to other Philippine agricultural education institutions.

2. Don Severino Agricultural College (DSAC) Indang, Cavite

Don Severino Agricultural College (DSAC) is a relatively small agricultural college with a total enrollment of 2036 in school year 1988-89. It sits in a 65 hectare upland site about 50 kilometers from Manila. Founded by the Thomasites in 1906 as Indang Intermediate School, over the years the school became a Rural School in 1928 providing vocational training for boys and home economics for girls; then in 1960 an agricultural high school, the Don Severino National School of Agriculture. By Congressional Act No. 3917 in 1964, the high school was upgraded to offer agricultural college level program, but like many Philippine state colleges and universities with a similar history, the Don Severino Agricultural College (DSAC) retained its lower level instructional programs. Its high school is vocationally oriented and has about 2/3 of the total enrollment. Until 1984-85, enrollment in the bachelor degree programs was totally in Agricultural Sciences:

Popular demand for agricultural-related fields pressed DSAC to open the BS Agricultural Engineering and BS Agri-Business in 1985 with 91 and 37 students, respectively. At present, the two courses has 164 students each. Other courses were likewise offered: BS in Elementary Education and BS in Education with agricultural major programs in 1987 and the BS in Biology in 1988. At the same time, the agricultural science department has experienced a drastic decline in enrollment -- from about 1,750 in 1981-82 to 705 in 1988-89. The fall in enrollment in the agricultural science programs is partly explained by the excess supply situation in the labor market for agriculturist. The Masters programs were opened in 1985-86. Enrollment started at 12, and has remained at about this level. The future growth of these programs will be determined by the success of the first batches of graduates who will then send signals to incoming students about their absolute and relative attractiveness.

DSAC has also experienced high drop out and high delinquency rates.¹ Of the 408 who enrolled first semester 1985-86, only 229 remained in the second semester 1986-87. Between 1985-86 and 1987-88, 264 out of the average tertiary enrollment of 1,116 were disqualified, and 1062 were put on warning or probation. The ratio of college graduates to total enrollment averages 10.2 per cent through 1986-87. Poverty and isolation are cited as major factors which disadvantage the students in their college preparatory education. Financial constraints are another major cause of students dropping out even though tuition fees are minimal.

There is no systematic record of career performance of DSAC college graduates. The administration reports from informal

¹

Those who fail in 3 subjects in 3 successive semesters.

Those who fail in 3 subjects in 3 successive semesters.

information sources that many remain unemployed while majority of those who have found employment work as DA extension workers, but only a small proportion went back to work on their farms

Faculty. The College has a relatively strong and dynamic faculty. Of the total 155 faculty (college and high school) in 1986-87, 11 had Ph.D. degree, 59 had MS/MA degree and 85 had BS/BA degree. (NOTE: these include the teachers in high school.) Over half of the collegiate faculty have advanced degrees. Noteworthy is a large contingent of faculty on study leave and pursuing advanced degrees in different disciplines and in different institutions. They are distributed as follows:

Ph.D. in agricultural sciences	- - - -	8
Ph.D. in related fields	- - - - - -	12
MS in agricultural sciences	- - - - -	9
MS/MA in related fields	- - - - -	18
Diploma	- - - - -	3

Five are in foreign universities: three in Germany, one in Australia and one in Thailand. When these scholars come back around 1990, there will be more than a doubling of faculty with advanced degrees. The faculty will be strong enough to assume a greater responsibility in advanced instruction and research.

Research, extension and instruction at DSAC are very much oriented to increasing agricultural productivity especially for crops and livestock adapted to the surrounding upland climate and soil. Research is mainly applied in nature and covers palpable needs. It is aimed at partial problem solving in crop production. This type of research fits in well with its extension work which is aimed at more immediate improvements in farm systems and productivity.

Leadership and Social Orientation. DSAC is led by a very socially conscious and dynamic president and its faculty appears to be imbued with a mission to make an immediate impact on their community. The traditional role of a college as a center of education seems to be sublimated in its extension role.

Library. The library is housed in a nice two storey building. Its collection consists mainly of textbooks. The few journal subscriptions stopped in 1984 when AEOP support also ceased.

The 1989-93 Plan points to the need for basic repairs and construction of physical facilities. These include repair of some buildings, fences for the experimental farms and livestock, student dormitories and student service center, repairs and extensions of rural network. There is no communication network within the campus or between buildings and stations. It has no telephone or radio system to the outside either. As per its

report, "DSAC has not really reached the minimum standard for laboratory facilities established by TPAE". (p.70 Development Plan 1987-1990)

Budget. DSAC's 1988 appropriation was P21.8 million which was only 35 percent of what it requested. This ratio (of appropriation to request) was much less than in the four preceding years. Furthermore, actual cash disbursements generally fell short of appropriation. This is partly explained by the rigidity imposed by the requirements of monthly cash releases.

3. Pampanga Agricultural College (PAC) Magalang, Pampanga

Pampanga Agricultural College (PAC) is a small but unusually active agricultural college at the foot of Mount Arayat. It has at its disposal 803 hectares of land including 135 hectares of a forest reservation. Its faculty of 139 people offer a variety of agricultural-related fields at four levels -- masteral, bachelor, associate/diploma and secondary agricultural vocational school. The total enrollment in school year 1986-87 was 1,245, of which the post secondary was slightly more than half, 98 at the masteral level, 541 at the bachelors level, 48 non-degree. In addition the college enrolls 450 trainees in its extension program, and about 50 in SAKA (Sanayan sa Kakayahang Agrikultura) a post-secondary practical training and 400 in agricultural secondary vocational training. Pampanga Agricultural College has also recently been designated by the Department of Agriculture (DA) as a center for retraining its extension workers.

Enrollment shows a U-shaped trend, declining from 1981-82 to 1983-84, but has turned upward since then. However, the agricultural sciences programs - BS Agriculture (BSA) and BS Forestry (BSF) exhibit a downtrend over the whole period, with BS Agriculture students declining from 315 to 122 and BS Forestry students from 59 to 19. The upturn in total enrollment was attributed to the opening of agricultural-related fields such as BS Agri-Economics, BS Agri-Business, BS Agri-Engineering and the teacher training courses, BSEE, BSE, BSHE. In 1986-87, less than one third of enrollment was in agricultural sciences at both graduate and undergraduate levels.

The administration states with its current staff, as many as 3,000 students can be handled in the teaching facilities. To be able to attract and accommodate more students, financial support and additional part-time faculty employment in research and extension work will be required. Student dormitories are also considered necessary since the nearest town is too small to provide an adequate number of rooms for students.

PAC attracts students from within the province (91 per cent) who come mostly from farming families. There are no systematic follow-up studies on students when they graduate. From informal feedback it appears that the majority find employment as DA extension workers, and public teachers -- both elementary and high school. Few go back to their farming families.

There are no reports on drop-outs and delinquency.

The ratio of graduates to enrollment differs by level, averaging 26.4 per cent at the undergraduate level, 21.8 per cent at the masteral level and 14.5 per cent at the secondary level for the years 1981-82 to 1984-85.. The rate of completion for

undergraduates is very satisfactory but not for the other two programs. Masteral students are mostly on a part-time basis. Many are DA extension workers and public school teachers who are unable to put in time for a faster completion of their studies. It is not known why high school students have a low completion rate.

Faculty. The faculty is generally young and enthusiastic about their work, particularly its outreach aspects. A fairly high proportion have advanced degrees -- 14 Ph.Ds, 64 MS/MA and 61 BS/BA out of 139. However, only two Ph.D degrees were obtained from UPLB or equivalent institutions; most got their degree from private institutions and some MS/MA from PAC itself.

Much importance appears to be given to extension-related projects and to attendance/participation in seminars. The leading faculty are very much involved in research and extension work. It is not clear that classroom academic work in instruction and research is given as much emphasis as extension project-type activities. Faculty promotion appears to put more weight on the latter activities. By contrast, the growing fields of Agri-Business, Agri-Economics and Agri-Engineering are relatively weak (judging from faculty educational attainment and school background) and hardly any economics or business research output was cited.

PAC has not identified any basic research component that they should conduct independently (or in cooperation with other research centers -- such as UPLB).

Library. The library is housed in a nice spacious building. There appears to be an adequate collection of textbooks for undergraduate instruction but there are few reference books. A number of journals were acquired under AEOP but subscriptions stopped when the project was completed in 1984.

PAC plans to have a central laboratory but the building is not yet hooked to electricity and water. Thus, the equipment acquired under AEOP has not been used. A large infrastructure budget will be needed to supply PAC laboratories with electricity and water.

PAC suffers the same budgetary problems as other SCUs resulting from monthly fund releases. Maintenance and operating expenses cannot be used for unforeseen repairs and other similar expenditures is exceeding P1,500. DBM approval is needed for such expenditures, which is a cumbersome process. Too little budget is allocated for library and laboratory.

4. The Visayas State College of Agriculture Baybay, Leyte

The Visayas State College of Agriculture (VISCA) was founded in 1924 as a provincial agricultural school, and upgraded in 1934 to the Baybay National Agricultural School. VISCA is located 8 kms. north of the municipality of Baybay, Leyte, along the shoreline of the Camotes Sea. It is usually reached by road from Tacloban, which is served daily by flights from Manila and Cebu City. The College has 62 has. of grounds and campus, 144 has. of cropland, 7 has. for animal projects, 140 has. of pasture, 594 has. of forest land, 109 has. of experiment station lands, and 44 has. of other land. Campus infrastructure is well-developed including staff and student housing, infirmary, student union, radio station, guest houses, various laboratories, classrooms and library.

The classrooms and laboratories are moderately well-equipped, the principal problem being inappropriate equipment in disrepair and equipment that cannot be supported by the campus electrical system. A growth chamber and a seed storage facility place an excessive drain on electrical current such that utilization of other facilities is severely hampered and affected if the equipment is operated. The growth chamber -- a vital instrument for on-going biochemistry research -- was replaced by a "homemade" facility costing P18,000. The seed laboratory has a good selection of instruments but about 75% were in disrepair. Although some vendors/representatives have inspected the broken instruments, no repairs have been made.

Deficient and intermittent electrical supply has probably contributed to some of the equipment malfunctions, and adversely affects experiments and processes that require continual electrical supply. For example, the supply of distilled water is frequently interrupted and inhibits efficient use of other instruments and staff time. A standby generator for critical instruments is badly needed. The campus appears well-equipped with micro-computers and even possess microfiche reading facilities.

The Team gathered the overall impression that the impressive infrastructure of VISCA presents major problems for maintenance and sustained operation -- a problem that could get worse. Another feature of the institution that presents a challenge is its isolation from any population centers. Essentially all housing and amenities have to be provided by the College. Students who cannot be accommodated in dormitories live off-campus in very sub-standard, poorly constructed, private housing.

Department, Centers and Their Interrelation

VISCA comprises 14 departments: Agricultural Chemistry and Food Science, Agricultural Education and Extension, Agricultural Economics and Agribusiness, Agricultural Engineering and Applied Mathematics, Agronomy and Soil Science, Animal Science and Veterinary Medicine, Arts and Letters, Development Communication, Forestry, Home Science, Horticulture, Physical Education, Plant Breeding and Agricultural Botany, and Plant Protection. Basic sciences are associated with applied sciences in the departments, facilitating their easy linkage in teaching, research and extension. Of the schools visited, VISCA presents the most coherent and integrated model of articulated fields of agricultural science, research, teaching and extension. Farming systems research and extension is a prominent aspect of VISCA's programs.

In addition to the Farm and Resource Management Institute (FARMI), other campus centers include the Center for Social Research, Philippine Root Crop Research and Training Center, Agricultural Training Institute, Regional Coconut Center, National Abaca Research Center, and the Experimental Rural High School. VISCA is designated by PCARRD as the National Center for root crops and abaca research, a regional center for coconut research, and is one of the few multi-commodity research centers in the Philippines.

Research

VISCA is internationally recognized for its advances in root crop varietal development. A number of its releases are in commercial production and are beginning to figure importantly in the Philippine exports. While no evaluation has been made of the impact of its root crop research, the Team considers one can expect that a favorable benefit-cost relationship of VISCA's root crop research to the cost of the College and its operation is achievable, even without regard for other productive aspects of the institution.

Applied research in other fields shows a sound and productive linkage between problem identification through outreach, and problem-solving through field experimentation and advanced applied research on campus. A chemical for banana ripening and control of a leucaena pest were cited as solutions to problems identified through outreach. The institution is said to be shifting over the past 5-6 years from laboratory-based research to community-based research. VISCA's emphasis is on small scale agriculture, however, President Villanueva says there is a limit to what applied research can do without basic research. This is a "struggle" because money is available only for the very applied research. Also it is difficult to balance immediate applied research and long-term research. Externally-funded projects have enabled meeting the needs of short-term problem-solving research, but long-term efforts are harder to support.

Curriculum

While outreach has effectively supported research and vice-versa, "very little" use of barangay activities is made in the curriculum. Field practice comes early in the undergraduate curriculum in order to make subsequent studies more meaningful, however, this is more in the nature of basic orientation and familiarization, and means that there is little or no opportunity for the students to apply what they subsequently learn in class. Most of the impact of outreach on curriculum is through what teachers teach as a result of their engagement in extension. At VISCA, teachers are given the freedom to develop courses as they wish. Dr. Villanueva sees curriculum development as the major area in which VISCA needs assistance. The Agricultural Education faculty is young and well-trained, and would benefit greatly from experienced technical assistance in curriculum development. Curriculum development is consciously oriented to the current perceived market for students -- especially the government.

Outreach

Extension provides an opportunity to improve research and also to link with government. However, VISCA'S extension activities do not duplicate those of the Department of Agriculture (DA). Once VISCA faculty develop and prove a model for extension, they "wish to turn it over to the DA." Hence, one of VISCA'S roles is to improve the extension methods used by the DA. VISCA trains extension workers and provide technical back-up to extension. In the view of VISCA faculty, the Department of Agriculture does not do research; the colleges do research. The colleges need the Department to extend the results of research conducted by the agricultural colleges.

Degree Programs

The following degrees are offered at VISCA:

- B.S. in Agriculture with majors in Agronomy, Soil Science, Horticulture, Agricultural Economics, Agricultural Botany, Plant Breeding and Plant Pathology;
- B.S. in Agricultural Development with a major in Agricultural Extension;
- B.S. in Agricultural Education with majors in Animal Production, Crop Production and Teaching Agriculture in Elementary Schools;
- B.S. in Home Economics with majors in Elementary Education, Secondary Education and Extension;
- Bachelor of Animal Science with majors in Animal Health and Animal Production; and,

B.S. degrees in Agricultural Engineering, Agribusiness, Forestry, Statistics, Agricultural Chemistry, Food Technology, and Development Education.

VISCA also offers the following masteral programs:

Master of Agricultural Development with majors in Agricultural Education, Agricultural Extension, Agronomy, Plant Pathology, Agricultural Economics, Language Teaching and Animal Production (also offered off-campus except without the Plant Pathology option, but including an option to major in Development Communication);

Master of Science with majors in Agricultural Education, Agricultural Extension, Plant Pathology, Plant Protection, Entomology and Agronomy.

VISCA plans to offer a Ph.D. in Agricultural Education.

The College also offers non-degree programs for the Forest Ranger Certificate and the Home Economics Technician.

Faculty

The VISCA faculty in academic departments comprises 49 Ph.D. holders in 13 academic departments and 10 Ph.D. degree holders in three centers. The Agricultural Education has 8 Ph.D. holders, followed by Plant Protection (6), Arts and Letters (5), and Plant Breeding and Agricultural Botany (4). There are 94 M.S. degree holders and 56 B.S. degree holders in academic departments. In research centers and other units there are 108 M.S. degree holders and 56 B.S. degree holders. Among these faculty are 15 who are on leave for Ph.D. studies and 25 for M.S. degree studies. Sponsors include the International Development Center of Canada, the Farming Systems Development Project, Asian Development Council, Department of Science and Technology, New Zealand, and the World Bank.

Fifty-three percent of VISCA faculty are male and 47% are female. This split is fairly constant among departments except in the Agricultural Engineering and Horticulture departments which are 80% male, and the Home Science, and Arts and Letters departments which are 90% and 73% female, respectively. Fifty-eight percent of Ph.D. degree holder are male, 50% M.S. degree holders and 52% of B.S. degree holders. In this regard, VISCA is fairly typical of other Philippine colleges in which male and female faculty numbers are about equal.

Faculty appear to be highly committed to the institution and loss of faculty to other institutions has not yet been a problem. Faculty however cite that promotion and tenure policies of the

College, adopted from the recommendation of the Philippines Association of State Universities and Colleges (PASUC)

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discourages scholarship. The system was said to have been developed largely by non-scholars to support their own advancement through such activities as workshop attendance and managerial responsibilities.

Students

In 1987-88 VISCA had 1,538 undergraduate enrolled and 150 non-degree students. Fifty-nine percent were females and 41% were males. Six percent were from Mindanao, 11% from the central Visayas and 81% from the Eastern Visayas, and the rest from scattered parts of the Philippines and other countries. The graduate school had 120 students enrolled, about half females. The number of graduate and undergraduate students dropped less than 2% from the previous year. This was more than offset by a 50% increase in non-degree students, for an overall increase of about one percent.

The largest number of undergraduates were enrolled for the B.S. Agriculture program (341), and the next highest were those enrolled for the B.S. in Agricultural Education. Approximately two hundred student were enrolled in Agricultural Engineering, Agricultural Business, Animal Science, Home Science, and Forestry.

VISCA's high school -- mostly attended by children of faculty and staff -- number 587, few of whom continue their studies at VISCA.

VISCA graduated 272 students with bachelor degrees in 1987-88, 3 magna cum laude and 23 cum laude. Less than 1% of the students were scholastically delinquent during the year. The faculty regard VISCA students on the whole as "average". The majority of graduate students are from the Department of Agriculture and Education and "are not scholarly." If VISCA had a scholarship program, faculty feel they would attract better students and more students from Mindanao. Student housing is also a serious problem.

Conclusion

Among all the institutions visited by the design team, VISCA came closest to filling the role of a Regional University that is envisioned under the DECS Macro-Plan. Faculty and administrators have a sound view of VISCA's mission and its respective role in Outreach, Research and Education.

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A reasonably capable faculty member can achieve the highest rank and salary level available through superior performance at a relatively young age. Thereafter their salaries can only increase with time. As a result, there is no incentive to publish or otherwise demonstrate superior scholarship.

5. The University of Southern Mindanao (USM)
Kabacan, North Cotabato

The University of Southern Mindanao (USM) -- formerly the Mindanano Institute of Technology (MIT) -- in Kabacan, Cotabato, (Region XII) was established as a state university in 1978. The main campus is situated on a 1,000+ hectare land grant on the national highway connecting Davao with Cotabato City, at approximately the mid-point, and about 3 1/2 hours travel time from either city by car. The university also has approximately 4,000 has of additional farm-land in Arakan Valley, which has about 1,000 has devoted to rubber and cattle ranching, but the rest is currently largely unused.

With its central location, the university draws students from both Region XII -- i.e. Sultan Kudarat, South and North Cotabato -- as well as Davao City and Davao Sur in Region XI. The majority of students, however, come from the areas of Cotabato and Davao Sur immediately adjacent to the campus.

The university has six colleges, a graduate school and a laboratory (high) school. Agriculture is one of the major programs of the university, with approximately one thousand students enrolled in a wide variety of agricultural-related disciplines, and degrees are offered at the Bachelors and Masters levels. Non-degree certificates are also offered.

Agricultural students at USM generally come from rural and lower income families in the region. Although the college is in the heart of the Muslim area, the overwhelming majority of students are Christian.¹ The National College Entrance Examination (NCEE) cut-off scores for admission to study in the College of Agriculture are the lowest in the university; consequently, the poorer students -- both financially and academically -- tend to gravitate to agricultural coursework.

The College of Agriculture offers five different bachelors degrees, five masters degree programs, a Doctor of Veterinary Medicine and three specialist/technician programs. Nevertheless, total student enrollment in agricultural programs has gradually declined over the past four years from about 1,300 to the current 1,000. The primary explanations offered for this decline are:-

¹The newly installed President of the University, Dr. Kundo Pahn, expressed to some of the visiting members of the design team that one of his objectives is to increase the number of Muslim students, and to seek ways whereby the University -- through education and outreach/extension (particularly through activities of the College of Agriculture) -- can enhance the lives of the largely-disadvantaged Muslim communities.

1. Inability of students (i.e. rural poor families) to pay for a college education;
2. Scarcity of appropriate salaried employment opportunities for agricultural graduates in either the government or the private sector; and
3. Lack of venture capital for self-employment and/or development in agri-business.

FACULTY

With 12 Ph.D's, 46 Masters and 60 B.S. level, the College of Agriculture faculty at USM is relatively large and strong. The leadership is also very dynamic and eager to strengthen and expand their offerings.

The faculty would like some expatriate technical assistance in particular areas of expertise -- both long and short-term, but only if it is truly expert. They are not interested in merely providing overseas educational experiences for U.S. graduate students-cum-faculty. They would also be interested in faculty exchanges with the University of the Philippines at Los Banos (UPLB), Central Luzon State University (CLSU) and Central Mindanao University (CMU), and possibly appropriate U.S. institutions.

FACILITIES & EQUIPMENT

The College of Agriculture facilities are old and dilapidated, office space and classrooms dark and dingy, furniture sparse and largely broken, and the laboratories are atrocious by any standard. Some other equipment (provided by donors) is stored -- essentially unusable -- because laboratory facilities lack such basic utilities as electricity, gas and water. Only the most rudimentary laboratory equipment is in use -- such as microscopes -- but is mostly inoperable for lack of maintenance, repair, and spare parts. Consequently -- if it is done at all -- basic laboratory analysis (such as of soil samples) has to be undertaken elsewhere (i.e. Davao, and often even as far as Manila) at great expense and inconvenience. Although the college offers a Doctorate in Veterinary Medicine, it has no veterinary laboratory equipment. Teaching aids consist of a few locally-improvised wall charts. No computers were available for student use.

Most vehicles are old and in poor condition, and transportation is a major constraint in simply getting to and from the classroom and production areas, as well as in conducting outreach activities.

The library has a few basic general reference books and some *ad hoc* copies of text books, but no technical

journals, and very little advanced reading material, other than locally produced reports and student theses. Most of the textual material sampled pre-dated the 1960's. The University print the results of its research activities in several of its own publications.

RESEARCH & OUTREACH

The Southern Mindanao Agricultural Research Center (SMARC) is the university's research arm, operating in coordination with the Philippine Council for Agriculture and Forestry Resources Research and Development (PCARRD). SMARC is a national research center for rubber, corn, sorghum, and other feedgrains, and a cooperating center for various other crops.

The University sees its current strength as being able to deal effectively with plantation-type agriculture, and its future direction in strengthening teaching and ties with agri-business. The faculty has a very positive hands-on, outreach-orientation. USM administers the Philippine Training Center for Rural Development (PTC-RD) and serves the four regions of Mindanao in training and re-training agricultural and rural development extension technicians and field workers of line agencies. In addition, the College of Agriculture conducts direct extension work in several nearby communities, but primarily for student practicum, and model demonstration programs.

The College of Agriculture also operates an income-producing farm enterprise which -- in addition to raising approximately 1.6 million pesos to supplement the University budget -- provides hands-on training in agriculture and allied disciplines for students, as well as offering students part-time employment opportunities.

BUDGET

The University's 1988 budget proposal -- based on its felt needs -- was for 50 million pesos. After deliberation, the annual budget approved by Congress and subsequently provided by the Department of Budget Management (DBM) was only approximately 36 million pesos. (NOTE. the government further "reserves" five percent of this amount for "other" purposes which never reaches the University). Since the budget is not disaggregated by cost centers, the College of Agriculture's portion is not separately identifiable or managed.

Delays by DBM and the banking system in transferring these funds to the University for actual use, and the government's requirement to fully liquidate each issuance or face reductions in future issuances are seen by the University staff as major constraints to effective program implementation and efficient utilization of available funds.

6. Silliman University
Dumaguete City, Negros Oriental

Silliman University in Dumaguete City is a private University founded by American Presbyterian Missionaries in 1906. The main campus is in the city proper, although the College of Agriculture is located more than a kilometer away. The University has a reputation for quality liberal arts education in the region, with increasingly strong professional degree programs in engineering, business administration and nursing.

The College of Agriculture operates two separate farms of about 20 hectares in total. The students in the College of Agriculture mostly come from Negros Island, with other from Cebu, Bohol and Northwest Mindanao. Students generally come from middle class families, with lower income students still represented under various scholarships. The National College Entrance Examination (NCEE) cut-off for admission to the College of Agriculture is 50% -- the national passing average, due to low enrollment experience.

FACULTY

The current faculty of the College of Agriculture consists of one Ph.D. and seven Masters degree holders. This is a small faculty, even though the student enrollment of 137 bachelors degree level (about 35 graduates each year) place low demand on the faculty. Moreover, rather than traditional disciplines the leadership is determined to pursue a "new approach" in agriculture education built around farm systems. Efforts have already been taken to integrate this, approach into the curriculum.

In new recent years, the faculty has undertaken some aggressive development with the help of various Australian institutions. Such assistance has enabled the faculty to focus on the new approach and provide further structure to the curriculum. Two faculty members are expected to return from Australian Universities with their Ph.D's next year. Two have already earned their Masters degree from Australia and another two faculty will pursue their Ph.D's there. The College has provided for the expected depletion of faculty under scholarships by inviting two visiting Australian faculty to handle courses and assist in implementation of the new teaching method.

The faculty at the College are primarily U.P. Los Banos and University (Diliman) graduates. A number of faculty members have also undergone further training in U.P. Los Banos and Visayas State College of Agriculture in Leyte.

FACILITIES AND EQUIPMENT

The basic science courses for the College of Agriculture are offered at the main University campus. The laboratories on this campus are well-equipped, particularly with microscopes, chemicals and laboratory supplies. Problems are encountered due to the small requirements of the laboratories for chemicals relative to the minimum order from suppliers and the long lead time for orders. A consortium of schools or institutions sharing a central supply is seen as a possible approach to the problem. Another problem is the location of chemistry laboratories underneath classrooms. The resultant fumes either disrupt classes above or and limiting certain works in the below. A relocation of the central laboratory to serve both campuses may be considered in the future.

Laboratory facilities at the College of Agriculture have few new pieces of equipment. Most laboratory equipment is not functioning due to poor working or missing parts. For example, there is no equipment for feed and soil analysis, which are needed for the outreach and teaching functions. The buildings and other physical plant facilities are in good condition. There remains a need for teaching materials such as overhead projectors. The school farm is in poor condition especially the animal facilities which need major rehabilitation. The farm itself is entirely contract managed for rice production. No mechanical farm implements are employed.

RESEARCH AND OUTREACH

The College still has a primarily teaching faculty, with little research and extension outside of student University farm projects. The University leadership plan to involve the College faculty in community outreach activities in the near future. Currently the university has formal linkages with local government and community organizations, a situation which the leadership attributes to its organization for extension work. Extension projects are currently contracted by a central unit at the University level without necessarily involving the College of Agriculture or its faculty.

The College of Agriculture sees its strength as part of a University having strong liberal arts and sciences, colleges which do an excellent job of preparing students for agricultural education. The Agricultural College leadership views its plan to integrate research and extension into its curriculum with optimism. Steps are also now taken to increase College of Agriculture faculty participation in the search and conduct of extension projects.

BUDGET

The University depends on student fees for 60 per cent of its financial support and the remaining 40 per cent from external (i.e. nongovernmental) grants. The College of Agriculture does not obtain additional funding for needs other than faculty and staff salaries and maintenance/operating expenses. University leadership has begun to allocate more funds for scholarships. At about P2,000 in tuition fees per semester and higher living costs estimated at P5,000 per semester, Silliman is already charging double that of typical U.P. Diliman programs. Scholarship assistance of some form is thus considered necessary to broaden the socio-economic base of agriculture students.

7. The Western Mindanao State University Zamboanga City

The Western Mindanao State University (WMSU) in Zamboanga City (Region IX), with a student population of about 11,000, is the biggest state run institution of higher learning outside Manila area. WMSU has two campuses. The main campus is in Baliwasan on the western sector of Zamboanga City proper and has a total land area of 10.1 hectares. The San Ramon campus of the College of Agriculture (established in 1980), is 27 kilometers from the main campus with a total land area of 20 hectares. Four hectares of the agriculture college are devoted to buildings, parade/playgrounds, etc., leaving only 16 hectares for farm use -- production and research.

WMSU is the only state university in Region IX and is expected to cater to the educational needs of the autonomous region for development. The majority of its students, however, are from Zamboanga City and the nearby provinces of Basilan and Sulu with only a trickle from other provinces within and outside the region. The faculty and student body are predominantly Christian.

The University has 10 colleges, a graduate school, five departments and five external units. With only two percent (174 students) of the total student body, the WMSU College of Agriculture is one of the smallest colleges and offers the Bachelor of Science in Agriculture (BSA) with majors in Agronomy, Soils, Animal Husbandry, Horticulture and Entomology. It also offers allied fields such as Bachelor of Science in Agribusiness (BSAB), Bachelor of Agricultural Technology (BAT), and two-year Associate in Agriculture (A.A.).

The Western Mindanao State University College of Agriculture (WMSUCA) has an administration and research building, a 10-classroom academic building, a laboratory building, a library, two men's dormitories and a women's dormitory with an estimated capacity of about 400-500 students. In addition, the College has two-room bungalows for faculty members and support personnel and a three-door two-storey apartment building for the Dean and other key college officials.

Enrollment in the College of Agriculture has shown a sharp decline from 431 in SY 1982-83 to only 189 in SY 1986-87, with only 174 (i.e. 15 student drop-out) students remaining at the end of the school year. The steep decline (in enrollment and dropouts) is attributed by the faculty to a loss of interest by students due to lack of wage employment, lack of transportation, and dire poverty (lack of money to sustain students after paying minimal tuition fee). Most of the students are children of poor farmers and other poor residents.

FACULTY

The faculty of the college is composed of 1 EdD, 8 MScs and 22 BSAs. The faculty feel that they are over-loaded with instruction leaving very little or no time for research and extension/outreach. (NOTE: They also teach about 350 college level students in teaching, and the high school co-located at the College of Agriculture campus.) They felt the need for increasing the number of faculty members and upgrading them to the level of Ph.D in Agronomy/Crop Science, Entomology, Agricultural Education/Extension and MS level in Animal Science, Soils, and Horticulture. They would like training abroad, or if locally, preferably at UPLB.

The student-faculty ratio is only 1:6. However, this does not mean quality, but inefficiency. The problem is two-fold:

1. To utilize existing human resources by attracting more and better high school graduates and;
2. To motivate the faculty to engage in research and extension and other instruction-related/improving activities.

RESEARCH AND OUTREACH

Research is another important function of a college. Since 1984, although 43 research studies were completed -- 28 in Agronomy, 10 in Animal Science and 5 in other extension education -- most of these are ad hoc students theses, and of dubious economic analytical quality for application for extension. The faculty has 11 on-going research studies.

The College's extension/outreach is basically the Agricultural Education Outreach Project (AEOP) which has Student Internship College Outreach (SICO) and Student Loan Fund (SLP) components. Through internships, some students are trained in the Barangay with farmers to apply low cost, productive, agricultural technologies directly on the farm. One of the hilly land technologies introduced was the Sloping Agricultural Land Technology (SALT) developed in Bansalan, Davao del Sur.

The results of these activities are largely undetermined as despite the ready-made forms to be filled up Project Benefit, Monitoring and Evaluation documentation has been poor. Consequently, data have not been generated for analysis to isolate lessons learned or to feedback to instruction. There are no follow-ups, or tracer studies of graduates.

FACILITIES AND EQUIPMENT

The College of Agriculture physical plant facilities -- buildings, and farm-equipment -- are relatively new. However, laboratory equipment and utilities are limited, and library shelves are practically empty. Some equipment provided by

foreign donors is also inappropriate for local needs. The school falls short of the minimum standard set by the Technical Panel for Agricultural Education (TPAE). Hence, administration and faculty efforts are being exerted towards meeting at least these criteria, but land resource limitations pose a major constraint.

The college operates a 16 has. farm both for production and research. Currently, the WMSU administration is negotiating from the Bureau of Prisons, Department of Justice for additional land to meet the minimum requirement of at least 50 hectares.

BUDGET

The proposed annual budget for the Western Mindanao State University for SY 1988-89 is about 66 million pesos. However, this amount is not disaggregated by the needs of the different colleges.

Delayed monthly releases of funds by the DBM and the practice of reducing subsequent allocation releases by the amount of unliquidated balance presents a major problem.

OTHER INSIGHTS/OBSERVATION

Several weaknesses with planning and management of agricultural education and training programs, are still apparent within WMSU. In the implementation of agricultural development programs -- AEOP for example -- efforts have been directed to skills and management constraints for reaching expected impact and productivity. However, resources have been insufficient to address these problems adequately. Despite the lack of Staff skills, and institutional capacity/capability, sporadic efforts have been made to expand agricultural education and training, but Outreach/extension activities are not sufficiently integrated and sustained with other agencies within the service area. In short, the College of Agriculture simply does not have the resources to carry out its mandate.

NEEDS

The WMSU College of Agriculture needs much assistance to bring it up to par in order to serve the people of Western Mindanao.

ANNEX G: KEY INDIVIDUALS CONTACTED

The following individuals were interviewed by members of the Design Team, either individually or severally, and were instrumental in providing most of the data for this report. Responsibility for any errors or omissions in conclusions and/or recommendation however, rests with the Team.

USAID/Manila

Mr. Malcolm Butler, Mission Director

Mr. Dominic D' Antonio, Deputy Program Officer
and Evaluation Officer

Mr. Paul Deuster, Program Economist

Dr. Jean Du Rette, Project Design & Implementation Division,
Office of Capital-Development

Ms. Pamela Klem, Economist Intern, OD/PE

Ms. Jane P. Nandy, Project Officer, Agricultural Education
Improvement, Office of Rural and Agricultural Development

Mr. Kenneth A. Prussner, Director, Office of Rural and
Agricultural Development

Ms. Reine P. Villarosa, Senior Program Specialist, Office of
Rural and Agricultural Development

Ms. Elizabeth Kvitashvili, ANE/PD (AID/Washington)

Ms. Joyce Chang, Office of Capital Development

Mr. Charles Rheingans, Chief, Rural Development Division
Office of Rural and Agricultural Development

Mr. Gary Imhoff, Chief, Project Design and Implementation
Division, Office of Capital Development

Mr. Sulpicio Roco, Program Office

Mr. Sibley Kawi, Training Division, Program Office

De La Salle University

Mr. Roberto Salazar, Researcher, Social Soundness Analysis

Mr. Romy Lee, Researcher, Social Soundness Analysis

Department Of Education, Culture & Sports (DECS)

Dr. Victor Ordonez, Undersecretary for Education
Dr. Cledualdo B. Perez, Jr., Undersecretary for Planning
Mr. Edgar Ricamonte, Agricultural Education Specialist
EDPITAF
Ms. Mila Marcos, ADB-ATEP Project Manager, EDPITAF
Dr. Nilo Rosas, Director, Bureau of Higher Education
Ms. L. de Vera, EDPITAF
Ms. E.A. Fontanoza, Asst. Project Manager
Ms. J.F. Ramirez, EDPITAF
Mr. Reynaldo Pena, Asst. Div., Chief Bureau of Higher Education
Ms. Linda Sevilla, EDPITAF
Ms. Lulu Reyes, Grants Administration, EDPITAF
Ms. Rosalinda Cajiuat, Senior Development Officer, Agricultural
Education Outreach Program (AEOP) Project
Management Office
Ms. Amelia Biglete, OIC, TPAE Secretariat

University Of The Philippines, Los Banos (UPLB)

Dr. Tirso Paris, Dean, College of Economics and Management
Dr. Blanda R. Sumayao, Chairman, Department of Agricultural
Education & Rural Studies, College of Agriculture
Dr. Ruben Villareal, Dean, College of Agriculture

Philippine Council for Agriculture, Forestry, and Natural
Resources (PCARRD)

Dr. Beatriz P. del Rosario, Director, Planning and Development
Dr. Virgilio A. Fernandez, Deputy Executive Director,
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ANNEX H: ACRONYMS

ACAP	-	Association of Colleges of Agriculture in the Philippines
ACU	-	Agricultural Colleges and Universities
ADB	-	Asian Development Bank
AERL	-	Agricultural Education Reform Law
AIDAB	-	Australia International Development Assistance Bureau
AEOP	-	Agricultural Education Outreach Project
ATEP	-	Agricultural Technology Education Project
ARDP	-	Agricultural Research Development Project
ATI	-	Agricultural Training Institute
BAR	-	Bureau of Agricultural Research
BAT	-	Bachelor Of Agricultural Technology
BDL	-	Barangay Demonstration Laboratory
BHE	-	Bureau of Higher Education
Bhe	-	Board of Higher Education
BSA	-	Bachelor of Science in Agriculture
CARL	-	Comprehensive Agrarian Reform Law
CARP	-	Comprehensive Agrarian Reform Program
CLARC	-	Central Luzon Agricultural Research Center
CLSU	-	Central Luzon State University
CMU	-	Central Mindanao University
DA	-	Department of Agriculture
DACUM	-	Developing Agricultural Curriculum
DAR	-	Department of Agrarian Reform
DAT	-	Diploma of Agricultural Technology
DBM	-	Department of Budget and Management
DECS	-	Department of Education, Culture and Sports
DOST	-	Department of Science and Technology
DRC	-	Domestic Resource Cost
DSAC	-	Don Severino Agricultural College
EDPITAF	-	Educational Development Project Implementing Task Force
EEC	-	European Economic Communities
FAPE	-	Fund for Assistance to Private Education
FSSRI	-	Farming Systems and Soil Resources Institute
FTC	-	Farmers Training Center
FYDP	-	Foundation for Youth Development Program
GIA	-	Grant in Aid
GDP	-	Gross Domestic Product
GNP	-	Gross National Product
GOP	-	Government of the Philippines
GRE	-	Graduate Records Examination
GVA	-	Gross Value Added
IFPRI	-	International Food Policy Research Institute
IRRI	-	International Rice Research Institute
ISU	-	Isabela State University
JICA	-	Japan International Cooperative Administration
MA	-	Master of Arts
MOE	-	Maintenance and Operating Expenses
MAF	-	Ministry of Agriculture and Food
MSc	-	Master of Science

NAES	-	National Agricultural Education System
NAU	-	National Agricultural University
NCEE	-	National College Entrance Examination
NEDA	-	National Economic Development Authority
NESC	-	New Elementary School Curriculum
NGO	-	Non-Government Organization
NI	-	National Income
OSY	-	Out of School Youth
PAC	-	Pampanga Agricultural College
PCARRD	-	Philippine Council for Agriculture, and Forestry, and Natural Resources Research Development
PMTDP	-	Philippine Medium Term Development Plan
PP	-	Project Paper
PRODED	-	Program for Decentralized Educational Development
PTIA	-	Provincial Training Institute of Agriculture
RAC	-	Regional Agricultural College
RIARS	-	Regional Integrated Agricultural Research System
RTS	-	Rover Team Specialist
SAKA	-	Sanayan sa Kakayahang Agrikultura (Agricultural Skills Training)
SALT	-	Sloping Agricultural Land Technology
SCU	-	State Colleges and Universities
TPAE	-	Technical Panel for Agricultural Education
SEAFDEC	-	Southeast Asia Fisheries Development Education Center
SEARCHA	-	Southeast Asia Regional Center for Graduate Studies and Research in Agriculture
SEDP	-	Secondary Education Development Project
SMARC	-	Southern Mindanao Agricultural Research Center
VISCA	-	Visayas State College of Agriculture
WMSU	-	Western Mindanao State University
UPLB	-	University of the Philippines at Los Banos
USAID	-	United States Agency for International Development
USM	-	University of Southern Mindanao

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