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PROPOSAL FOR CONTINUING SUPPORT UNDER  
THE AGENCY FOR INTERNATIONAL DEVELOPMENT  
INSTITUTIONAL GRANTS PROGRAM

9310126

**Applicant** Prairie View A&M University

**Date:** May, 1976

**Development of An Agricultural  
Delivery System for Small  
Farmers in LDCs**

**Amount and Term  
of Proposal** \$300,000 for 2 years

**AID Sponsoring  
Technical Office** Office of Agriculture  
Bureau of Technical Assistance

APPROVAL RECOMMENDED:

APPROVED:

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Science Department

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## I. DESCRIPTION OF THE PROBLEM

In LDCs modern agricultural technology which deals with the entire infrastructure of the agricultural sector has benefited primarily the large farms and productivity on these farms has risen steadily during the past decade. However, there are millions of small farmers\* who have not benefited from this technology and as a result agricultural productivity of these farmers has remained unchanged and continues to be at a very low level and their per capita production has not materially increased since 1960. Consequently the plight of small farmers in LDCs is a perennial one characterized by (1) poor quality of food and uncertain food supply, (2) inability to produce a marketable produce, (3) chronic unemployment and, (4) a declining natural resource base for agricultural production. These situations coupled with increasing population pressures (number and aspirations) in LDCs will require greater inputs of technology and resources to raise food production on the available land lest increased malnutrition and/or overt starvation ensue.

One of the world's greatest potential resources for food production is the small farmers who in most LDCs make up 60% of the food production sector. One of the most challenging frontiers of agricultural technology is the intensification of inputs that will increase the productivity of land occupied by these farmers. However, the small farmers are in need of an appropriate technology. In fact, one major constraint to increased food production by the small farmers has been ineffective and inefficient systems for delivery of technology to them.

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\*Small farmers here refers to those operators of about 2-5 hectares of land who receive the majority of their food and income from agricultural products off this land.

Prairie View A&M University is aware that technology is available in capital and energy intensive forms, but this technology cannot be immediately introduced to the small farmers. Rather, intermediate technology should be provided, and delivered to them through suitable systems. There is a need for a viable delivery system that will bring together the technological know-how, the social institutions, and the innovative processes. This lack of suitable delivery systems for small farmers in LDCs poses a seminal and pressing problem to which Prairie View will address itself. While other groups are working on problems of soil fertility, soil survey and classification, nitrogen fixation, water management etc., Prairie View will focus on delivery systems which others can use to bring technological innovations to the small farmers.

For technology to be useful to small farmers, it must be modified and delivered through a system that will function in concert with complimentary institutions and sub-systems of which the small farmers are a part. The delivery system must also include a new focus that will facilitate their decision making capability for the management of their resources. This capability forms one of the most important bases for agricultural development in LDCs. Agricultural development should center around the farmers' problems and their endeavours and will be successful only if the farmers are the central actors and their environment is the center of the change process.

Land is a basic natural resource. The entire agricultural system of a nation depends on the productivity of the soil. The small farmer is particularly vulnerable to any deterioration of this resource. The quality of his life ultimately depends on the preservation and productive capacity of his land. Its proper use is essential to food production on a continuing basis. It is important, therefore, to develop and test a model delivery

3.

system that will bring modern soil and water management technology to the small farmers.

To accomplish this, an institution in the United States with experience in both soil management and in working with small farmers is needed to study and develop models of delivery systems in LDCs, testing the strengths and weaknesses of these systems under actual field conditions and thereby building U.S. competence in this area as a development effort. This competence to develop and implement delivery systems can be utilized by developing nations, AID and other donors to alleviate the plight of small farmers in LDCs through increased agricultural production.

## II. DESCRIPTION OF GRANTEE

### A. Existing Competence and Capabilities:

The Prairie View A&M University campus is surrounded by a high density of small farmers and it is situated on 1400 acres in the Texas Gulf Coast Prairie approximately 45 miles northwest of Houston. The university was founded in 1876 and is a land-grant, state-supported, co-educational institution. It is a part of the Texas A&M University System.

Two-thirds of Prairie View's students have traditionally come from families with low incomes. Many of these students were educationally handicapped, but they have gone on to successful careers and are now productive citizens. Thus, Prairie View A&M University serves as an access institution through which the disadvantaged enter the mainstream of life. To facilitate this mission the university has established a Performance Based Teacher Center. This center is a central reservoir for developing the necessary resources to affect changes in teaching systems to improve the learning experience of the student clientele. The Center also provides for dissemination, training, and developmental services to rural and outlying city school districts. It is concerned with needs of staff, students and community people. Feedback focuses on alternatives and services to enhance the opportunities for creating programs that stimulate students' achievement for maximum realization of their potential.

Prairie View A&M University also has a Learning Resources Center. This Center has a variety of audio-visual equipment and services available to the general university for use in instructional activities. It has classrooms and learning carrels capable of group or individualized instruction.

*Which is found in non-formal education*

Using the resources of these and other centers, Prairie View has developed simple educational methods to teach elements of land utilization and food production to indigenous farmers and technical staff in LDCs. These modules are housed in the Tropical Soils Resource Center which has been developed as a part of the 211(d) Soils Grant Program. The resources of these centers will be very useful in obtaining the education and training objectives of the proposed grant.

Agricultural research was conducted on the farm of Prairie View A&M University as early as 1889, just a year after the Texas Agricultural Experiment Station was established. A branch of the Texas Agricultural Experiment Station was established at Prairie View in 1947. Historically, agricultural research at Prairie View has been focused on the small farmers with limited resources (the university is currently studying the feasibility of establishing a Small Farm Institute). By focusing its efforts on the small farmers, Prairie View assisted Waller County in gaining the reputation for being the watermelon capital of the world in the early 1900s: This is an example of Prairie View's capability to impact the small farmers.

Research at Prairie View is multi-disciplinary and crosses departmental and college lines. For examples: Remote sensing studies for NASA involve members of the College of Agriculture working with the College of Engineering to monitor moisture and disease stress of wheat; The heavy metal pollution study involves the Plant and Soil Science Department and the USDA - Soil Conservation Service; Research on yield, and the protein and oil contents of soybeans involved the Department of Biology and College of Agriculture; Human nutrition studies involve the College of Home Economics, the Department of Biology and the College of Agriculture. The experience gained from the interdisciplinary approach should be valuable in establishing and

maintaining linkages for the proposed grant.

Under the Cooperative State Research Service, Prairie View is a partner (USDA and other Agencies) in conducting research to help solve the rural and agricultural problems of the rural poor. This research program at Prairie View has five major thrusts.

1. Human nutrition as a means of improving the quality of life of rural dwellers, particularly low-income families.
2. Determination of economic opportunities for rural families in southeast Texas to improve their incomes.
3. Factors affecting patterns of living by disadvantaged families.
4. Improvement of the environment in rural areas close to urban centers.
5. Improving critical life chances, social conditions, and economic resources of disadvantaged minority populations and communities in selected Southeast Texas Counties.

Under a previous 211(d) grant Prairie View has written a program for the inventory and retrieval of soil scientists actively involved in the tropics. This program is available as a resource for the Consortium on Soils of the Tropics, AID and other institutions and agencies in their search for competent scientists in specific fields of soils. In addition, Prairie View has developed: (1) a model for on-site evaluation of soil resource and management problems by the small farmer, and (2) an approach to agricultural development called Grass Roots Institution Development (GRID) both of which will be used as guides to develop a delivery system for small farmers in the proposed grant. The educational components of the M.S. Degree in soils prepares the international student to teach his discipline at different educational levels in his country and it trains

him to innovate and modify his area of competence to meet situations quite different from those where he obtained his education and training.

The Extension Service at the University is refining a system that has been used successfully to deliver educational assistance designed to improve the living conditions of marginal low-income people in suburban and rural areas of Texas. The key element in the delivery system is the para-professional. Employed are 17 para-professionals, supervised by 15 professional County Extension Agents in 15 Texas Counties, who provide direct one-on-one assistance to over 1100 low-income farm families.

Since the inception of this extension program in 1969, evaluations conducted in 1970 and in 1975 have indicated that 98.0 percent of the farm participants accepted the advice of the para-professional (program aide) without reservations, and over 93.0 percent of the participants were pleased with the manner in which the aide introduced an innovation. By utilizing the para-professional there was a 73.0 percent increase in the number of farm participants contacting the Extension Service for information and a 136 percent increase in the number of participants attending tours, meetings, and demonstrations sponsored by the Extension Service. The average gross income from sale of crops increased by \$478.00/yr from 1970 thru 1974 or 44.0 percent per farmer. The average income from sale of livestock products increased \$53.00/yr or 4.0 percent per farmer for the same time period. The experiences gained from this program should prove to be very useful to the proposed project, especially the concept of the para-professional.

B Evidence of Specific Interest in Problem and Long-term

Commitment to Development:

In the 1950's Prairie View conducted numerous training workshops (two weeks to six months in length) in cooperation with AID for participants

from countries in Africa, Asia, South America and the Caribbean. Several of Prairie View's agricultural faculty members coordinated both on-campus and off-campus training for the participants. The on-campus activities consisted of orientation to the United States and training in agricultural technology, such as livestock management and production. The off-campus training involved field experience with the Extension Service and other agencies and organizations in Texas and in other states including Puerto Rico. Prairie View has traditionally enrolled students from LDCs and some of these students have been channeled to Prairie View through the AID Training Office. These graduates are presently involved in tropical agriculture in their respective homelands, and Prairie View has kept abreast of agricultural development in these LDCs through these linkages.

Prairie View participated in the establishment, development and administration of Booker T. Washington Technical Institute at Harbel Liberia in the 1950's. Dr. A. I. Thomas (current Chief Executive of the University), Dr. E. B. Evans (past Chief Executive of the University) and Dr. G. L. Smith (past Dean of Agriculture) were instrumental in implementing this international program. Dr. Evans served as a State Department Point-4 consultant in developing a program for improved health conditions, livestock disease control and increased food production in North Africa and the Middle East. In addition, Dr. Evans received the 1953 Hoblitzelle Achievement Award for the advancement of Texas Rural Life. As evidence of this long term commitment Prairie View is presently supporting staff which previously had been supported through 211(d) grant funds. In addition, the M.S. Degree Program and facilities established under this grant are now competely supported by the University.

### III. PURPOSE, OBJECTIVES, AND ACTIVITIES

#### A. Purpose

The grant will allow Prairie View A&M University to mobilize its institutional capability with regards to delivery systems, thereby providing a mechanism by which modern agricultural technology and practices can be effectively adapted and utilized by small farmers in LDCs, with special emphasis on the countries in Central West Africa. A large portion of the increased capability generated by the grant will be devoted to aiding the small farmer to improve his situation. Envisioned here is an innovative system which will affect the acceptance of improved soil management practices by the farmer that remove constraints to higher food production. The system will necessitate development of educational materials, training of professionals and para-professionals, synthesizing and adapting the new technology to local conditions and developing appropriate working relationships in the LDCs.

The above is an approach which recognizes the following priorities relative to agricultural development in LDCs:

1. More immediate and direct assistance must be afforded the small farmer because his problems exist now. *Agree*
2. Development programs must consider the need, desires and aspirations of the small farmer and they must be designed to fit his ecosystem and his cultural and value systems if he is to benefit from the programs by adapting and utilizing modern technology.

3. Development must be conceived as a systems approach so that efforts to assist the small farmer will coincide with national goals and will be supported by the political, economic and educational sectors.
4. Development programs must be formulated on premises established by the social sciences as well as the experiences of previous development efforts.
5. Effective methods of non-formal education and techniques of communication must be devised to foster transfer and perpetuation of adaptive decision-making of the small farmer.
6. Development programs should be low cost and require low inputs of energy because capital is limited in LDCs.

B. Major Objectives and Activities:

The major objectives or expected outputs generated by the grant extension are grouped into the following categories:

1. Expanded Knowledge Base —
2. Education and Training —
3. Advisory Capacity —
4. Information Capacity —
5. Linkages —

Expanded Knowledge Base — To accomplish this objective, Prairie View will conduct a state-of-the-art (SOTA) study of delivery systems and develop a model for a delivery system for small farmers in LDCs.

SOTA:

The state-of-the-art study will be a keenly analytical review of knowledge accumulated by research and practice on delivery systems and efforts to deliver and it will set forth the established principles, how and where these principles can be used and identify the gaps in knowledge needing research for establishment of better principles. SOTA will be a guide on how to diagnose and solve problems in delivery with emphasis on simplicity and economy. SOTA will also serve as a guide as to what should and what should not be delivered. The state-of-the-art study will consider the traditions, cultural and value systems of the small farmers, especially the role which women and children can play in agricultural development in LDCs.

To develop SOTA would require the following activities conducted in a sequential order by the 211(d) team at Prairie View:

- a. Compiling information
- b. Evaluating and synthesizing the information
- c. Developing format of SOTA

Activities a and c will be primarily an effort of the 211(d) team at Prairie View, and they will involve travel to centers of information, compilation of information, abstracting and codification of information, and synthesis of the pertinent information. Activity b will involve a workshop which will consist of participants from AID, COST, CID and the World Bank to consolidate the information, re-evaluate the synthesis in terms of impact, and develop the outline for the documentation of SOTA.

DELIVERY SYSTEM:

An agricultural delivery system, as used here, is a subsystem of the developing social macro-system of LDCs, integrating the processes of

education and communication with adaptive research inputs to effectively transfer appropriate agricultural innovations for use, perpetuation, and modification by the small farmer. The ultimate goal is to enhance the quality of life of the small farmer by providing the intellectual and manual skills, adaptive research and infrastructure necessary to increase production.

The following inter-related components of the delivery system must be created or existing facilities appropriated for the purpose of delivery:

- a. Adaptive Research - Research from indigenous or external institutions must be modified to meet the physical and educational resources of the small farmer.
- b. Communication - This component includes inter-personal communication; media (mass media and individualized use of media), and messages communicated by formal instructional materials.
- c. Education - Although this component conveys adaptive research techniques through communication, it also denotes the infrastructure, facilities and methods for instruction and attitudinal change of subsistence farmers, change agents and teachers.
- d. Personnel - This component comprises the cadre of persons who adopt the technology, devise the messages for media, organize and teach farmers, and articulate with other social sectors to secure supports for grass roots programs.

- e. Linkages - This component represents a permanent and solidified two-way communication channel that links the delivery system to the local political and social order, government and academic institutions to provide agricultural support and an optimal agri-climate of cooperation to foster the development process.

An appropriate delivery system will initiate and foster the process by which the small farmer accepts, utilizes and perpetuates an innovation. The process by which an individual small farmer or group of small farmers proceed toward accepting an innovation may be described as follows:

- a. The process begins with awareness, in which a person has a general knowledge about a new innovation.
- b. Interest develops and the person seeks additional information.
- c. Evaluation is a weighing of the information to decide if the innovation is good for him: the conflict between his present state and the risks which will result from the change being considered.
- d. Trial in which the small farmer learns how to implement the innovation on a limited scale.

Finally, if the trial is successful, full-scale adoption occurs. Continued use and perpetuation is dependent on incentives, the material and personal rewards resulting from adoption. Therefore, successful innovation leads to future receptivity to innovation, and the experiences accrued in the process of innovating result in new skills and attitudes which satisfy the aim of personal and community development and national development.



- g. Willingness to work with participants frequently through visits, and willingness to provide assistance when requested.
- h. Influential in promoting the program, and in bringing about positive changes in knowledge, attitudes, skills and aspirations of the participants.
- i. Involved in community affairs and hold offices in community organizations.

The development of the delivery model will involve several sequential activities:

- a. The IFPP model as used by PVAMU will be carefully analyzed for inadequacies and strengths relative to use in LDCs.
- b. The IFPP model will be modified as a preliminary model for use in LDCs.
- c. The preliminary model will be further modified for use at a specific select site in an LDC.
- d. The LDC model will be tested at the select site.
- e. The tested model will be evaluated.

Inherent in the IFPP model are linkages with banks, local government agencies, agricultural agencies and educational institutions that are taken for granted in Texas but are missing in most LDCs and must be included as part of the delivery system for the small family farm in the LDC. In addition, there are disparate differences between the educational levels,

social mores and economic environment of the target population in the U.S. and in LDCs.

The model will require logistic support both at Prairie View and at the site in the LDC. This support includes professional staff, graduate students, maintenance and labor personnel. Facilities such as housing, laboratories, and farms are required as well as hard and software for the educational requirements and demonstrational inputs. In addition, travel, and communication are necessary.

Prior to modification of the delivery system for use in the specific LDC, a workshop will be held at Prairie View to develop the model through inputs from personnel associated with one or more of the following: LDCs, COST, AID, CID and the World Bank.

Modification of the model at the site will involve the cooperation of the indigenous population. Specifically, modification will involve introduction of units to fulfill the strategic components of the model. For example, if in the case of a specific site - the institutional system includes a local strong leader (perhaps, an elder) with linkage to national groups, the innovation will be channeled through this institution. If, on the other hand, the site draws its leadership from a religious component, the innovation will identify with that institution. After the model has been modified at the specific site the test will, in large part, be conducted by the indigenous staff while Prairie View A&M University personnel will assume a supporting role. Toward the end of the grant period, the model will be evaluated through a workshop comprised of personnel from COST, CID, AID and PVAMU staff.

2. Education and Training - The 211(d) team will develop an education and training program specifically addressed to problems in LDCs and focused on techniques of delivery and the selection and training of change agents in the delivery system. The education and training will emphasize non-degree and non-formal training for decision-makers and technicians from LDCs and for U.S. citizens interested in delivery of agricultural technology to small farmers in LDCs. To meet the needs of the various participants, the education and training program will be designed with flexibility in terms of the length (two days to six months) of the training. The program will also include a graduate course to be offered on campus for graduate students (both national and international) interested in delivery of agricultural technology to small farmers in LDCs.

The delivery system is concerned with modifying technology - creating linkages, training change agents and farmers and organizing communities. Some of these skills may be acquired through formal education, and some may be acquired informally from daily experience with friends and neighbors in a relatively unorganized manner. Some skills and attitudes are more easily acquired through non-formal education, organized activities which take place outside the formal educational framework.

In situations in LDCs formal education is limited and tends to maintain tradition rather than foster innovation, non-formal education has a major role to play. In these situations change in behavior can be fostered by the use of communication media. These include indigenous "role playing" folk media such as puppets, and songs, simple low-cost technologies involving printed word posters, the use of games, audio cassettes, films, filmstrips, videotaping, radio and the more sophisticated technologies of

television and satellites (when possible).

The effectiveness of the communication media depends on how the media is used and it is important that the media be used as part of the educational technology, which includes media, as well as methods for organizing these media into an integrated learning system. Educational technology must fit the purpose of the delivery system, which in turn must be in agreement with national goals. Appropriate media are needed for each stage in the process by which small farmers adopt an innovation.

The major activities to accomplish the Education and Training output include:

- a. Acquiring information and materials and structuring them into a non-degree and non-formal education and training program for paraprofessionals in LDCs.
- b. Acquiring information and materials and structuring them into short courses and seminars for professional and decision-makers from LDCs.
- c. Acquiring information and material and structuring them into a graduate course.

The information and personnel for this output will be acquired with the assistance of the following:

University of Massachusetts	AID
Michigan State University	World Bank
University of California	UNESCO
	COST and CID

3. Advisory Capacity - The grant will generate a capability at Prairie View A&M University to respond to requests of AID, national governments, educational institutions, research institutions and private

organizations for the education and training of change agents and to design and implement delivery systems for small farmers in LDCs. Additional staff members will be employed to provide release time for the 211(d) team to carry out the objectives of the grant. Members of the 211(d) team will be available for short-term (several days to one month) consulting assignments.

The activities under objectives 1 and 2 above will result in the accomplishment of the advisory capacity as defined for this grant.

4. Information Capacity - To develop an effective means for assistance in the transfer of knowledge. Prairie View will maintain an up-to-date information center in delivery of agricultural technology (soil management) to small farmers, especially in LDCs. The Center will consist of an inventory and retrieval of talent relevant to delivery, a collection of information relevant to delivery and a mechanism to disseminate information relevant to delivery. Through an information networking workshop, Prairie View will link its information center with those of COST and CID as well as of AID, FAO, and other systems in order to gain wider access to the pertinent information useful to the LDCs, donor agencies and others interested in delivery of agricultural technology to small farmers in LDCs.

The activities under objectives 1 and 2 will accomplish the information capacity, as defined for this grant.

5. Linkages and Networks - Communication and functional linkages with a network of domestic, international and LDC organizations will be established, strengthened and maintained for the purpose of carrying out the objectives of this grant and for the purpose of utilizing the institutional capability generated by this grant. Important domestic linkages include COST and CID

These two linkages along with others will be important in information exchange and dissemination, in developing cooperative programs and in collaborating in joint problem solving approaches. A strong functional linkage with an LDC will be very important in terms of a site to test the model of a delivery system for small farmers in LDCs.

To maximize utilization in LDCs the University will spend at least 2 man months per year (2 people, a month each) with AID/Washington to: (a) sufficiently understand AID short term and long term goals, (b) explain updated institutional response capabilities to the Bureaus, and (c) establish effective personal linkages with Bureau personnel.

C. Critical Assumptions

In preparing this proposal, Prairie View A&M University has made the following assumptions:

1. AID will provide the necessary financial assistance.
2. AID will be of assistance in determining alternative LDCs in which the model for the delivery system can be tested.
3. The selected LDC and the AID mission will provide assistance in selecting a local site to test the model.
4. The small farmers at the site are willing to participate in test.
5. Suitable change agents for the delivery system can be found and employed.
6. The available soil and water management technology is sufficient to test the model at the site.

7. Some form of communication system and infrastructure exist and the delivery system can be linked with it.
8. Other linkages will cooperate in securing information and data for the state-of-the-art study.

D. Financial Plan

## ESTIMATED EXPENDITURES

OBJECTIVES/OUTPUTS	1st Year		2nd Year		TOTAL
	Man Months	Est'd Cost	Man Months	Est'd Cost	Est'd Cost
1. <u>Expanded Knowledge</u> <u>Base</u>	22.2	86,200	45.0	181,000	267,200
a. Model of a delivery system	(14.2)	(39,000)	(30.0)	(157,000)	(196,000)
b. State-of-the-art of delivery systems	( 8.0)	(47,200)	(15.0)	(24,000)	( 71,200)
2. <u>Education &amp; Training</u>	2.4	14,000	2.4	8,000	22,000
a. Non-degree	( 0.8)	( 5,300)	( 0.8)	( 3,300)	( 8,600)
b. Short Courses	( 1.0)	( 5,500)	( 1.0)	( 2,500)	( 8,000)
c. Graduate Courses	( 0.6)	( 3,200)	( 0.6)	( 2,200)	( 5,400)
3. <u>Advisory Capacity</u>	-0-	-0-	-0-	-0-	-0-
a. Design Systems	-0-	-0-	-0-	-0-	-0-
b. Train change agents	-0-	-0-	-0-	-0-	-0-
4. <u>Information Capacity</u>	-0-	-0-	-0-	-0-	-0-
a. Inventory	-0-	-0-	-0-	-0-	-0-
b. Depository	-0-	-0-	-0-	-0-	-0-
c. Dissemination	-0-	-0-	-0-	-0-	-0-
5. <u>Linkages &amp; Networks</u>	0.2	8,300	0.2	2,500	10,800
<b>TOTALS</b>	<b>24.8</b>	<b>103,500</b>	<b>47.6</b>	<b>191,500</b>	<b>300,000</b>

D. Financial Plan (continued)

INPUTS	1st Year	2nd Year	TOTAL
SALARIES AND WAGES	\$ 52,000	\$ 90,000	\$ 142,000
STUDENT STIPENDS	9,000	9,000	18,000
LIBRARY	10,000	8,000	18,000
COMPUTER TIME	7,000	5,000	12,000
TRAVEL	30,000	30,000	60,000
EQUIPMENT AND SUPPLIES	12,000	10,000	22,000
OTHER DIRECT COSTS	10,000	18,000	28,000
TOTAL	130,000	170,000	300,000

**E. Alternative Funding and University Contribution**

While Prairie View A&M University strives to obtain additional sources of funding from the private sector, philanthropic organizations and federal agencies for programs designed to help people of limited resources, AID funding for the proposed grant is needed to mobilize the institutional capability for utilization on the international level at the initial states. However, the need for 211(d) funding in the subject matter area is expected to decrease as utilization of Prairie View's response capability increases. The university is expected to remain committed even after the grant expires, and the information capacity, the advisory capacity, the expanded knowledge base and the training capacity will become an integral part of the university. During the extension period Prairie View will assume (1) part or all of the salaries of personnel involved in the grant activities (2) all indirect costs of the program, and (3) the expenses of classrooms, library, laboratories, maintenance, greenhouses and field plots, office space, and administrative cost.

**IV. ADMINISTRATIVE ORGANIZATION AND GRANT ADMINISTRATION**

The University will administer the Grant through normal administrative channels and established operating procedures.

The administration of the Grant will be the responsibility of the Director who will be assisted by a Co-Director. Each of the major outputs, (State-Of-The-Art, Delivery System Model, Education and Training Packages), of the Grant will be the responsibility of a Coordinator and a Co-Coordinator. Another coordinator will be responsible for logistical support for the entire

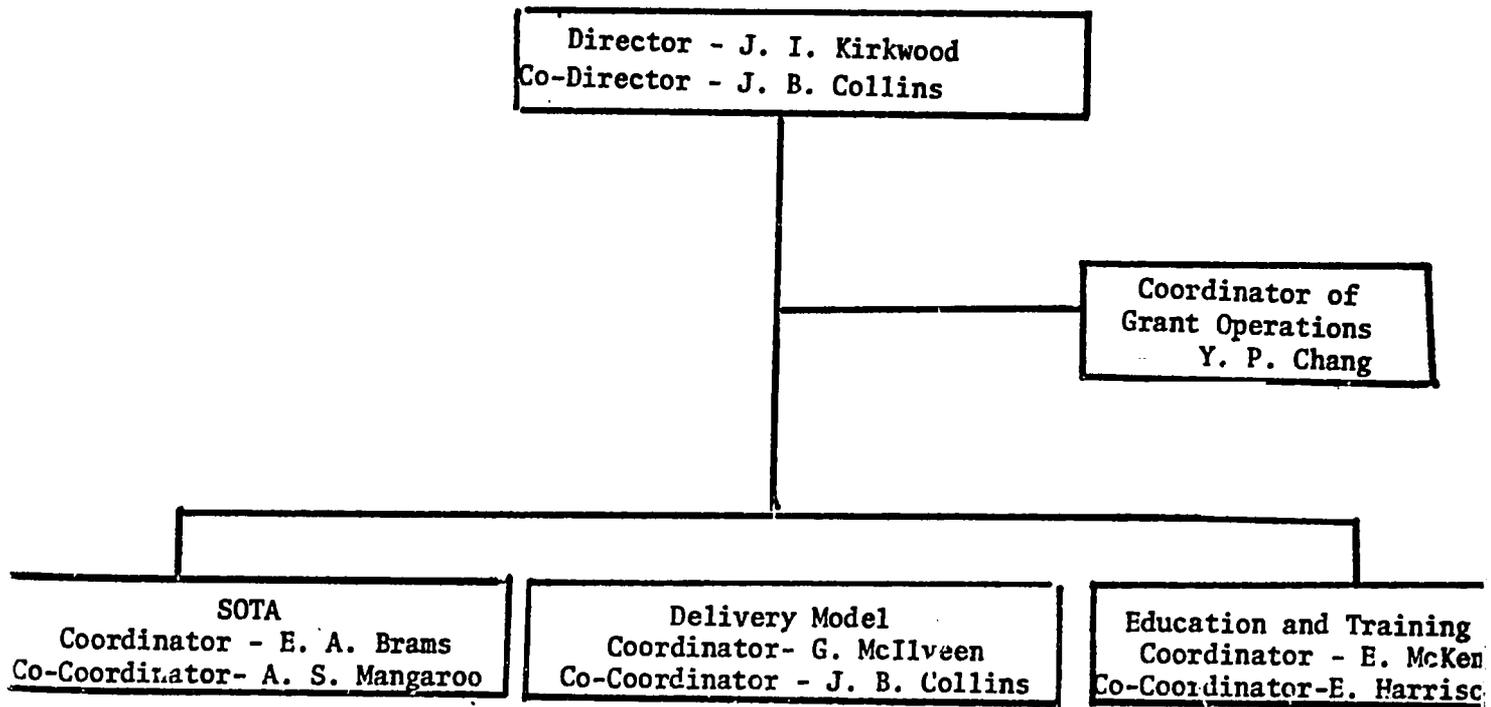
grant. The Coordinators and Co-Coordinators will be directly responsible to the Grant Director. The professional manpower to carry out the activities of the grant will consist of staff members drawn from the Soil Science and Plant Science Departments and the Prairie View Cooperative Extension Program of the Texas Agricultural Extension Service.

The University will employ two additional staff members in the Plant Science and Soil Science Departments, and the Prairie View Extension Program will employ one additional staff to provide release time for the 211(d) team to carry out the activities of the Grant

The focal point within AID for technical, substantive, and managerial aspects of this grant will be the Soil and Water Management Division, Office of Agriculture, Technical Assistance Bureau (TA/AGR). Liaison with Prairie View will be through the Grant Project Officer, Dr. Tejpal S. Gill. Contact with AID Missions will be handled through TA/AGR and appropriate Bureaus, and the University will initiate and sustain contacts with other research and educational institutions, both within the U.S. and abroad, on a direct basis.

Demand imposed on AID offices, other than TA/AGR, by management of the grant should be quite limited. Regional Bureaus and field personnel will, however, be contacted for advice and consultation on state-of-the-art, selection of site and training aspects and invited to participate in grant-sponsored activities.

GRANT ADMINISTRATION



## V. UTILIZATION

The proposed grant is a revision of the current 211(d) grant at Prairie View and is supportive of a large package of AID centrally funded activities in soil and water management in LDCs. In fact, the proposed grant is a revision toward the utilization mode and it provides for a mechanism whereby modern agricultural technology can be transferred to the small farmer in LDCs, and adapted and utilized by him to gain breakthroughs in food production. Hence, the proposed grant will help AID and other donors, LDCs and others in their efforts to improve the quality of life of the small farmer through increased food production.

To obtain appropriate inputs of technology, Prairie View will confer with North Carolina, relative to its extensive experience in soil fertility and soil testing in Latin America; Puerto Rico and Hawaii relative to the Benchmark Soils Project and tropical soil mineralogy; University of California and Oregon State relative to dry land farming; CID relative to water management; the Puebla project relative to training programs; the international institutes relative to adaptive research and outreach programs; the World Bank relative to its work with small farmers; Cornell relative to management systems for tropical soils; TVA relative to fertilizers for the tropics; University of Massachusetts and Michigan State University relative to income distribution in LDCs and other foreign and national organizations, institutes and scientists in LDCs. The information and recommendations obtained through these linkages will be synthesized and included in a delivery package for small farmers in LDCs.

One way to effect greater utilization of the capability generated by the grant is through advertising the services available. Prairie View will

accomplish this by periodically updating and publicizing its institutional capability through its information system and the information networks of others (AID, CID, COST, FAO, etc.). The linkages involved in carrying out the activities of the grant will also result in an awareness of the capability being generated at Prairie View and will help to effect greater utilization of the capability. After the grant expires, Prairie View will foster utilization of the capability generated by the grant by hosting a workshop on delivery in the U.S. Participants will include decision-makers from LDCs, representatives from AID, COST, CID, FAO, international institutes, the private sector and other foreign and national organizations, institutes and scientists in LDCs and the U.S. Requests for Prairie View's capability is expected to increase even during the period of the grant. In fact, three members of the 211(d) team have just recently returned from the Sahel where they served as consultants for Africare on soil, water and crop management as part of an integrated approach to rural development. Scope-In-Brotherhood, a religious organization based in Houston, Texas, has contacted Prairie View relative to an education and training program in soil management for small farms in Belize, Central America. A private organization (a.b.-Enterprises, Ltd.) also based in Houston, Texas has contacted Prairie View relative to soil management as part of a large beef cattle operation in Belize.

The university expects to be called upon frequently for the utilization of the capability generated by this grant. Therefore, Tables I, II and III are included to show what capabilities will be available and how the services of the university can be secured.

Table I. Plan For Utilization of Grant Outputs

Grant Output	Use Impact	Non-Use Impact	Activity	Implemented by LDC				Assisted By Donor Countries			
				Who	When	Where	Scope	Who	Scope	Mecl	
1. Expanded Knowledge Base.											
a. Delivery System	1. Increased food production and better nutrition. 2. Alternative soil and water and crop management systems. 3. Utilization of new land areas. 4. Increased decision-making ability of small farmer.	1. Starvation and poor nutrition 2. Deterioration of natural resource base for agricultural production. 3. Social unrest.	1. Design of delivery system for specific site in LDC 2. Workshop and conference on delivery.	LDC and US mission LDC and US mission.	½ yr. after grant 1-2 yrs after grant	LDCs Central W. Africa U.S.	World-wide Ditto	COST, CID AID/Wash FAO the private sector Int. Ins.	12 wks. 1 wk	GTSC/TJ TA/ARG	
b. State-of-the-art Study (SOTA)	1. Better project design. 2. Successes and failures of previous delivery efforts. 3. The requirements for delivery of soil and water technology.	1. Waste of time, efforts and funds. 2. Poor project design	Publication and distribution.	Ditto	1 yr after grant	U.S.	Ditto	AID/Wash	3000 copies	TA/AGR	
2. Education and Training: Non-formal, short courses, Graduate courses.	1. Contributes to the success in the delivery of technology to small farmers. 2. Increased decision making ability of small farmers. 3. Trained para-professionals 4. Awareness of need of small farmers.	1. Failure to deliver due to lack of trained manpower for the selection and training of change agents. 2. Failure to recognize needs of small farmers.	1. Seminar 2. Workshop	LDC and US Mission	½ yr. after grant	LDCs, M.S. PVAMU	10-25 participants	AID/Wash other donors	1-2 wks 4-6 mos	GTSC/TA Enrol In Univ.	

Table I. Plan For Utilization of Grant Outputs (continued)

Grant Output	Use Impact	Non-Use Impact	Activity	Implemented By IDC				Assisted By Donor Countries			
				Who	When	Where	Scope	Who	Scope	Mea	
	5.Trained Professional Manpower.	3.Shortage of trained professionals to implement delivery.	3.Graduate Study		Ditto						
		4.No increase in the skills and decision making ability of farmer for food production.	4.Publications								
3. Advisory capacity	1.Better project design 2.More efficient use of resources and talent. 3.Better implementation of agricultural development program.	1.Poor project design 2.Poor program implementation 3.Waste of time, effort and funds 4.Lack of awareness of relevant knowledge.	1.Conferences 2.Workshops 3.Seminar 4.Publication	LDCs, and US Missions	6 mos after grant	LDCs US	World-wide	AID,COST CID,FAO Private sector, Int.Inst., others	Continu-ous	T A	
4. Information Capacity	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Continu-ous	T A	
5. Linkages and Network	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Continu-ous	T A	

TABLE II. Institutional Response Capacity

Team Member	Field of Competence Expertise	Functions that can be performed
J. I. Kirkwood	Soil Microbiology, Soil Fertility, Soil Management.	a,b,c,d,f,g,h,i,j,t
J. B. Collins	Soil Classification, Soil Management, Land Use, Soil Survey, Soil Conservation	a,b,c,d,f,g,h,j,l,u
E. A. Brams	Soil Fertility, Soil Management, Plant Nutrition,	a,b,c,d,f,g,h,i,j,l
E. McKenzie	Biometrics, Soil Chemistry Soil Nitrogen, Plant Physiology	a,d,f,g,h,l
A.S. Mangaroo	Soil Chemistry, Soil Fertility, Soil Management, Plant Nutrition	a,b,c,d,f,g,h,i,j,u
M. Burns	Plant Pathology, Entomology Agronomic crops	a,b,c,d,f,g,h,m
Y. P. Chang	Horticultural Crops, Vegetable Crops, Rice Culture	a,b,c,d,f,g,h,m
O. E. Smith	Small Grain, Forage Crops Range and Pasture Management	a,b,c,d,f,g,h,l,m
G. McIlveen	Extension Specialist (Intensified Farm Planning Program)	a,b,c,e,f,g,i,k,m
E. Harrison	Extension Specialist (Intensified Farm Planning Program).	a,b,c,e,f,g,i,k,m
D. Seastrunk**	Assistant Director, Texas Agricultural Extension Service	a,b,c,e,f,i,k,m
W. Patterson**	Rural Sociology	b,c,e,f,g,i,m
W. Farrell**	World Geography	a,b,c,f,g,l
S. Strickland**	Agricultural Economics Rural Sociology	a,b,c,d,f,g,i,m

- \* a. Problem identification and analysis
- b. Program design
- c. Evaluation of Mission Programs
- d. Research
- e. Education, training and selection of change agents
- f. Advisory
- g. Teaching
- h. Design of alternative soil, water and crop management systems
- i. Design of delivery system for specific sites in LDCs
- j. Inventory of soil resources
- k. Extension
- l. Interpretations of natural resource inventories
- m. Implementation

\*\*These staff members are not a part of the 211(d) team, but their services would be available on a limited basis.

Table III. Mechanism To Obtain Services From  
Prairie View A&M University

Category	Assignment	Availability Notice Required
1. Retainership (sustenance)	TDY* (1 mo)	2 weeks
2. General Technical Service Contract	TDY (1 - 12 Mos.)	1 - 2 mos
3. Personal Service Contract	TDY (1-2 mos.) TDY (6 - 12 mos.)	1 - 2 mos. 6 - 9 mos.
4. Consultant	TDY ( 1 - 2 mos)	1 - 2 mos.
5. Research Contract	3 - 5 yrs.	1 yr.
6. Mini Research Contract	TDY (up to 18 mos)	3 - 4 mos
7. Basic Ordering Agreement	TDY (up to 6 mos)	3 - 4 mos.

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\*TDY - Temporary Duty

## VI. EVALUATION AND REPORTING

At the end of the first year of this grant the sponsoring technical office will conduct an on-site review of progress with particular emphasis on actual and potential utilization. Information will be developed on how the grant has been used to sustain and focus a viable institutional response capability for use by LDCs, AID and other donors. Representation from AID Bureaus will be included, particularly those interested in using the grantee's services, plus outside consultants, if necessary. The worksheets and workplans developed in preparing this grant plus the annual report and other pertinent documents will be used as guidelines in evaluating progress.

A principal issue at this review will be the additional work and funding required, if any, to complete the objectives of the grant in accordance with both the progress to date and current AID priorities.

The review will also determine what progress has been made by the grantee toward making its institutional response capabilities in the area of international development self-sustaining as such time as the grant expires.

The University will submit an annual report to the Grant Project Office upon completion of the first year's work or other mutually agreed upon period. The report will include a concise statement of accomplishments in terms of output indicators, together with recommendations and conclusions based on experience and results in accordance with published reporting guidelines. Plans for the remaining grant period and beyond will also be discussed.

Within six months after expiration of the grant, a final report will be prepared and submitted to the Grant Project Office. It will include a statement of major accomplishments under the grant in terms of each of the expected outputs.

**VII. SPECIAL TERMS AND CONDITIONS****Role of Women**

The University will arrange, whenever feasible, for participation of women in operating capacities in grant activities, e.g., in the technical staff to be utilized in the institutions' several areas of response capability.

## ACRONYMS

APL	-A Programmed Language
CID	-Council for International Development (Colorado State University, Oregon State University, Texas Tech. Univ., Utah State University, University of California at Riverside)
COST	-Consortium On Soils Of The Tropics (Cornell University University of Hawaii, North Carolina State University, University of Puerto Rico and Prairie View A&M University)
CYMMIT	-International Maize and Wheat Improvement Center
FAO	-Food and Agricultural Organization
GRID	-Grass Roots Institutional Development
GTSC	-General Technical Service Contract
IFPP	-Intensified Farm Planning Program
SOTA	-State-Of-The-Art
TA/AGR	-Technical Assistance, Office of Agriculture
TAMU	Texas A&M University
TDY	Temporary Duty
TVA	-Tennessee Valley Authority
UNESCO	-United Nations Educational Scientific and Cultural Organization

PRAIRIE VIEW A&M UNIVERSITY

A WORK-PLAN FOR  
DEVELOPING A DELIVERY SYSTEM  
FOR  
SMALL FARMERS IN LDCS

PART OF A PROPOSAL FOR CONTINUING SUPPORT  
UNDER THE AGENCY FOR INTERNATIONAL DEVELOPMENT  
INSTITUTIONAL GRANTS PROGRAM -

## PREFACE

A major constraint to increased food production by the small farmer in LDCs has been ineffective and inefficient systems for delivery of new agricultural technology. This work plan is offered by Prairie View A&M University as a means to mobilize its institutional capability to develop and implement delivery systems through which agricultural technology can be effectively transferred, utilized and adapted by small farmers in LDCs. In this way, the effectiveness of U.S. assistance in international development, can in part, be enhanced.

The work plan is divided into the five major outputs: expanded knowledge base, education and training, advisory capacity, information capacity and linkages and networks. The activities for each output are listed and followed by a breakdown of the man-months, cost and target date required to accomplish each output.

OUTPUT NO. 1

EXPANDED KNOWLEDGE BASE ACTIVITIES

A. The Delivery System - Table 1

- A1 Evaluate the delivery model used in the Intensified Farm Plan Program (IFPP) by the Prairie View A&M University (PVAMU) Extension Program of the Texas Agricultural Extension Service
- A2 Compile data from LDCs relevant to the components of the IFPP model as an activity prior to modification of the IFPP model for use in LDCs
- 2.1 Literature search
- 2.2 Conferences: PVAMU Staff, Rice Univ., Univ. of Houston, Texas A&M University
- A3 Construct a preliminary model for use in LDC  
Develop implementation plans including flow charts, staff organization, logistics and procedures -
- A4. Conduct workshops to review preliminary delivery model and project design at PVAMU  
Workshop (2 to 3 days) participants will include the following organizations and their contributions:

<u>Organization</u>	<u>Number of Personnel</u>	<u>Activity</u>
African Bureau	1	Utilization
AID	1	Objectives
Michigan State Univ.	1*	Methods

<u>Organization</u>	<u>Number of Personnel</u>	<u>Activity</u>
University of Houston	1*	Methods
GOST	1	Utilization
CID	1	Utilization
PVAMU	4	Overview

- A5 Develop working model to be tested in a selected LDC
- 5.1 Exploring alternative LDCs
- 5.1.1 Consultation with AID  
Washington meetings
- 5.1.2 Correspondence with several promising LDCs for their interest in project
- 5.1.3 Selecting the LDC where model will be tested
- 5.1.4 Negotiate with selected LDC (2 staff from PVAMU)
- (a) Visit to AID Mission
- (b) Visit to LDC Government
- (c) Visit to alternative sites within selected LDC for testing of model
- 5.1.5 Complete contract with LDC  
Collect relevant data concerning selected LDC and proposed test site(s)
- 5.1.6 Modify working model to fit the specific test site(s)

\*Paid Consultants

- A6 Model Testing
  - 6.1 Selection, training, and installation of personnel to staff LDC test site
    - (a) PVAMU - 1 Senior professional  
1 Assistant
    - (b) Indigenous - 1 senior professional.  
2 Para-professionals  
4 Assistants
    - (c) AID liaison and briefing
  - 6.2 Acquisition of supplies and equipment for model testing (logistics)
    - (a) Farm and experimental equipment
    - (b) Educational media
    - (c) Office
  - 6.3 Logistic support for personnel at test site
    - (a) Living quarters
    - (b) Accounting procedures
    - (c) Personal requirements
  - 6.4 Testing, evaluating, and modifying model
    - (a) Organizational structure
    - (b) Field operations
    - (c) Feedback procedures
    - (d) Conferences
- A7 Evaluation and synthesis of model

Workshop for review of model will comprise the following organizations and their contribution - scheduled for 3 days at PVAMU

<u>Organization</u>	<u>Number of Personnel</u>	<u>Activity</u>
LDC-Senior Staff from Site	1*	Utilization
AID	1	Utilization
African Bureau	1	Utilization
World Bank	1	Methods
COST	1	Utilization
CID	1	Utilization
PVAMU	4	Review
FAO (U.N.)	1	Utilization

7.2 Prepare and document Model

7.3 Circulate through network

B. The State of The Art (SOTA) - Table 2

B.1 Compilation of information relative to delivery systems

1.1 Visits to U.S. organizations

1.1.1 Michigan State University (Non-formal Education)

1.1.2 University of Mass (Education Media)

1.1.3 Cornell University (Institution Building-Rural Development)

1.1.4 World Bank (Grassroots Development)

1.2 Visits to International Centers

1.2.1 CYMMIT (Pueblo Project - Mexico)

*What has this  
consulting*

\*Paid Consultant

1.2.2 Taiwan (Joint Commission on Rural Reconstruction)

1.2.3 FAO (U.N. involvement in Grassroots Programs  
Rome)

1.3 Visits to Libraries

National Agricultural Library - Beltsville, Md.

1.4 Visits to government agencies in LDC

(These will be made in conjunction with model testing)

B2. Evaluation and Synthesis of Information

2.1 Use of computer programs to store and retrieve  
information, specificity titles and abstracts of  
relevant literature. -Use APL terminal and computer  
link with TAMU

2.2 Computer analysis to determine cause and effect  
relationships of successful and doubtful delivery and  
agricultural development programs in LDCs. - Use of APL  
system

B3. Development of format for SOTA

(The same workshop described for activity A4 will also  
be used to develop the SOTA format

B4 Prepare and document SOTA

OUTPUT NO. 2

EDUCATION AND TRAINING ACTIVITIES

- ✓ C. The Education and Training Program for the design and use of delivery systems to transfer technology to small farmers in LDCs - Table 3
  - C1. Acquiring information and materials to structure a non-degree training program in the utilization of delivery systems for para-professionals.
  - C2. Acquiring information and materials to structure a short course in the design and utilization of delivery systems for professional personnel involved in international agricultural assistance programs
  - C3. Acquiring information and materials to structure a graduate course in International Agricultural Development for students enrolled in M.S. degree programs at PVAMU
  - C4. Collection of course materials into a publishable form

OUTPUTS NOS. 3, 4 AND 5

3. Advisory Capacity
4. Information Capacity
5. Linkages and Network

Since the activities involved in the accomplishment of Outputs 1 and 2 will generate an advisory capacity (Output #3), and an information capacity (Output #4) no activities, man months, cost, or target dates have been indicated for these two outputs. However, the capability generated by the grant for these two outputs is as follows:

3. Advisory Capacity

D1. Capability to design and implement delivery systems for small farmers in LDCs

D2. Response capability in the selection, training and education of change agents

4. Information Capacity

E1. An inventory of talent relevant to delivery systems

E2. Depository of information relevant to delivery system

E3. System to disseminate information

5. Linkages and Network Output No. 5 - Table 3

F1. Communication and function linkages relative to delivery systems and their use in LDCs (Travel & communications)

F2. Support linkage

Table 1 - Activities, Man Months, Cost and  
Target Date For Delivery System

<u>Activities</u>	<u>Man Month</u>	<u>Cost</u>	<u>Target Date (Month After Beginning of Grant)</u>
A <sub>1</sub>	3.0	\$ 5,000	2nd
A <sub>2</sub> & 3	4.0	10,700	4th
A <sub>4</sub>	2.4	5,000	4th
A <sub>5</sub>	4.8	8,300	8th
A <sub>6</sub>	28.0	140,000	22nd
A <sub>7</sub>	2.0	27,000	24th
<hr/>			
Total	44.2	\$ 196,000	

Table 2 - Activities, Man Months, Cost And  
Target Date For SOTA

<u>Activities</u>	<u>Man Month</u>	<u>Cost</u>	<u>Target Date (After Beginning of Grant)</u>
B <sub>1</sub>	8.0	\$ 37,000	8th
B <sub>2</sub>	9.0	20,000	14th
B <sub>3</sub>	-0-	-0-	23rd
B <sub>4</sub>	6.0	14,200	24th
<hr/>			
Total	23.0	\$ 71,200	

Table 3 - Activities Man Month, Cost, Target  
 Date for Education & Training (C), Advisory Capacity (D), Information  
 Capacity (E), Linkage and Network (F)

Activities	Man Month	Cost	Target Date (Month After Beginning of Grant)
C <sub>1</sub>	1.5	\$ 8,500	24th
C <sub>2</sub>	1.4	8,500	24th
C <sub>3</sub>	1.4	2,500	24th
C <sub>4</sub>	0.5	2,500	24th
Total	4.8	22,000	-
D	-0-	-0-	24th
E	-0-	-0-	24th
F	0.40	10,800	24th
Total (C,D,E,F)	5.2	\$ 32,800	

Table 4. Time Allocated By Staff to Teaching, Research, 211(d), Extension  
And Administration

<u>I. SOILS</u>	<u>TEACHING</u>	<u>RESEARCH</u>	<u>211(d)</u>	<u>EXTENSION</u>	<u>ADMINISTRATION</u>
J. I. Kirkwood	20	25	40	0	15
J. B. Collins	25	40	35	0	0
A. S. Mangaroo	50	25	25	0	0
E. Brams	30	35	35	0	0
E. McKenzie	15	60	25	0	0
<u>II. PLANT SCIENCE</u>					
M. Burns	15	70	5	0	10
Y. F. Chang	15	60	25	0	0
O. E. Smith	40	50	10	0	0
<u>III. EXTENSION</u>					
H. Carden	0	0	0	0	100
G. McIlveen	0	0	42	58	0
E. Harrison	0	0	42	58	0
<u>IV. GRADUATE ASSISTANTS</u>					
	0	0	100	0	0