

See Distribution

January 19, 1976

AFR/ESA, Jerry Knoll

FAA Title XII, Agriculture Research and Extension

In connection with the new Title XII legislation, attached for your consideration is a rather thoughtful discussion of application of Title XII to field programs.

The analysis was prepared by USAID/Tanzania; a Mission which included a lengthy discussion of research requirements in the Tanzania DAP. While our Tanzania Mission welcomes the resources which might be available to it under Title XII, it also offers a number of specific recommendations on how Title XII efforts can be effectively applied to field Mission and recipient country needs.

Distribution

AA/TA, Mr. Long

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UNITED STATES OF AMERICA  
AGENCY FOR INTERNATIONAL DEVELOPMENT

P. O. Box 9130,  
Dar es Salaam, Tanzania

December 12, 1975

Mr. Thomas O'Keefe  
OIC - East Africa/Regional  
Agency for International Development  
Room 4845  
Department of State  
Washington, D.C. 20523

Dear Tom:

After reading the July Senate Hearings on the FAA, especially that part of Title XII we decided to elaborate on the airgram we prepared back in September. This is prompted by our strong suspicion that the land grant colleges are going to have a lot of money to fling about and that not much will result from it.

I especially want Glen Beck (special Title XII consultant in TAB), Erv. Long and Woody Leake to have copies. And, as you know, we in the field don't think we have a chance to comment on AID policy questions and plans until after the fact. So, I even think that a paper such as this one might even go up to ExSec with the prospect of getting to Messrs Murphy or Parker. I simply don't think they are aware of some of these problems -- use your discretion on this.

Of course you will have to run off the extra copies there. I hope DS, PPC also get copies.

Happy Holidays!

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Vernon C. Johnson", is written over a diagonal line.

Vernon C. Johnson  
Director

Enclosure - 2

APPLICATION OF TITLE XII-A FIELD VIEWPOINT\*  
(Comments on Agricultural Research & Extension)\*\*

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This paper represents our Mission's second comment on the Title XII amendment as being proposed in the current Foreign Assistance Act.<sup>1/</sup> While many development problems among less developed countries (LDCs) are similar, others are significantly different. Research approaches as expected under Title XII must necessarily consider these differences. The main purpose of this paper is to review relevant problems and issues in sub-Saharan Africa, and more particularly in Tanzania, and to underscore some of the problems that land grant colleges under Title XII will find when they begin to implement programs. For guidance we have carefully read the Hearings before the Senate Subcommittee (Chaired by Senator Humphrey) on Foreign Assistance. Of special interest were comments by witnesses representing the National Association of State Universities and Land Grant Colleges.<sup>2/</sup>

The Assignment

Let us state more precisely what the land grant college community is being asked to do. This can be done by drawing from the Title XII amendment as written and by paraphrasing comments and testimony that come from the Subcommittee Hearings referenced above.<sup>3/</sup> The amendment makes clear that

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\* Reference is made to the Findley Amendment, commonly referred to as Title XII.

\*\* This paper was prepared by USAID/Tanzania. Views expressed herein are those of this Mission only.

1/ Our first comment was contained in Dar es Salaam A-46 dated 9-12-1975.

2/ Hearings, On S. 1816, Subcommittee on Foreign Assistance of the Committee on Foreign Relations, U.S. Senate, First Session 94th Congress July, 1975.

3/ Ibid.

in order to prevent famine and establish freedom from hunger, and in recognition of their demonstrated capacity and enviable service to agricultural progress in the United States, the Congress intends to utilize land grant college facilities more extensively in the field of foreign assistance. The universities would be expected to conduct program research, agricultural extension and related activities to assist in increasing agricultural production in LDCs. For its part Congress will provide mechanisms (including provision for a 7 member Board) for the universities to participate and advise in the planning, implementation and the administration of activities under Title XII. While we have full confidence in the ability of the land grant colleges to perform, numerous pitfalls must be overcome. It is our frank opinion that not only does Title XII represent new legislation, it signifies new problems and uncharted ground for the universities.<sup>4/</sup> This point will become clearer as we highlight some of these problems below.

#### PHYSICAL AND TECHNICAL PROBLEMS

We believe that one limitation which beclouds agricultural research and development in a country like Tanzania is an assumption of over-simplicity. Reference is made to a common notion that anybody can "farm", all that is needed is technical assistance and sufficient economic resources. Literature and planning materials both by Tanzanians and foreigners alike have done

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<sup>4/</sup> While we are aware and impressed with the international service record of land grant college personnel that was brought to the attention of the Humphrey Subcommittee, this participation was limited mainly to institutional development highlighted by teaching but less on research and little, if any, on extension. Title XII will require a reversal of these emphases.

little to dampen this view. We think, to the contrary, that even with the most efficient technical assistance and even if abundant economic resources are provided, there still would be unique and unsurmountable physical, technical economic and human (social) problems to research and puzzle over. By any measure Tanzania's physical agricultural problems are, and always have been, more complex than anything faced in temperate zones. Some examples can be advanced.

To begin, those unfamiliar with African agriculture easily mistake the quality of its soil. They see "green hills" and other lush native vegetation and may equate this with high natural fertility. Again looking at Tanzania, there is to be sure good land along a few small rivers, at the base of Mt. Kilimanjaro and to a lesser degree plateaus in the western part of the country. But even when we exclude certain tsetse infested areas, less than 10 percent of the land is under crops and only a small proportion of this is superior land.<sup>5/</sup> By and large most cropland in Tanzania (as in most African countries) has low to only moderate agricultural potential and many of these soils are extremely difficult to farm. Many soils in Tanzania are volcanic ash of emulsified power texture highly susceptible to wind erosion and whose surface becomes an impossible "goo" even after a mild rain. Much larger areas are thin or cracking clays and soils of lateritic texture. These latter soils are porous holding little water for plant use and because of their relatively high metal content they slow down the conversion of chemical fertilizers into plant food.

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<sup>5/</sup> Government of Tanzania Statistical Abstract for 1970.

Weather patterns also compound physical problems of farming. Unlike the U.S. where the soil is softened by winter rains and must only await warming and drying before spring planting, Tanzanian farmers must await the annual monsoon rains before planting can occur. Before the rains come the soil is brick hard and totally unmanageable with the crude tools available to farmers. But simultaneously with the rains native weeds spring up like magic. Farm labor is stretched to the utmost and becomes a constraint to the size of farm that a family can operate. In fact only 5 percent of Tanzania's land is under cultivation at any one time. The remainder is in bush fallow and temporary grazing land, uncultivated range, tsetse fly infected bush, forests, game reserves, water and wasteland. All of these physical problems have implications for research. The job becomes even more complicated and urgent when the vast insect populations and the varieties and incidence of plant and animal diseases are taken into account.

#### LABOR AND TECHNOLOGY (CAPITAL)

The implications for research as applied to labor and capital are no less impelling than when applied to physical factors of African agriculture. We discuss labor and capital jointly for, besides suitability of technology (equipment type, fertilizer mix, etc.), a most critical issue for research is the extent to which scarce capital and imported technology should substitute for plentiful labor in African agriculture. Questions of productivity, farm size, equity and employment relate to this issue.

Economists would acknowledge that an agricultural model like that of the U.S. displays size of farms and capital intensity which have little or no relevance for African LDCs. Attention is drawn instead to the economy of small scale farming around the world. While these are the people who constitute the bulk of the poor majority, data is on hand to show that under certain conditions productivity per acre on small farms can be higher than productivity on large farms and small farms can provide a tolerable level of family living. Thus by taking small scale farming (and farmers) as given and concentrating development resources on them it is assumed that both growth and equity can be complementary and can be so handled analytically.

We have mentioned elsewhere that while the feasibility of small scale farming is theoretically sound, it leaves much to be said under conditions of small scale farming in Africa.<sup>6/</sup> The popular and acceptable analytical model is that of small, labor intensive, but highly productive Asian farms in countries like Japan, Taiwan, and more recently South Korea. Miniature farms and rice paddies in these countries are managed by farmers who have been exposed to scientific farming and who possess good managerial skills. It is a matter of record that these garden-type farms out-produce larger farms per acre reversing the normal economies of scale commonly associated with industrial firms.

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<sup>6/</sup> See: Development Assistance Program (DAP) FY 76, Tanzania, Prepared by USAID/Tanzania "Agricultural Sector Assessment" P.9, January, 1975.

Couldn't the same production outcome be obtained on small farms in African countries? We, of course, have faith that it can but so far it isn't. In addition to physical problems as indicated above, African farmers have little or no formal education and their managerial abilities for intensive production have not been developed. Support systems for these farmers are very weak if they exist at all. In the absence of fixed capital such as land, semi-fixed capital in the form of tree crops (coffee, cashews), and capital in the form of livestock, the capital stock of most African farmers would consist of a small locally constructed house (where he also may store his grain) and crude hand tools.<sup>7/</sup> Their farms remain extremely small not because of land shortages, but rather because the crudeness of technology and the non-availability of other productive resources (like better tools and power) create labor shortages at peak points of the growing season ruling out the capacity to expand a family's farm beyond a few acres. When these disabilities are coupled with low yields per acre farm incomes remain correspondingly low. Thus, on the basis of per acre yields the larger African farms (with their improved equipment and management) out perform the small farms. Yield economies obtained on small Asian farms have rarely been realized in Africa. It is quite evident that improved performance in small scale farming is a product of development itself and not because farms are small.

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<sup>7/</sup> Livestock keeping (mainly cattle) varies in importance among rural Tanzanians. For some nomads their prime wealth is held in cattle, while others grow both cattle and crops. In any case cattle tending is usually competitive with rather than supplementary to crop farming.

The key point as it applies to Title XII is that no practical analytical formula for simultaneous growth and equity has been forged in most African countries. Below certain floor levels of agricultural technology and attendant management skills, only poverty exists. With land still available in many African countries the challenge for research is to develop and install a technology so that farms can be enlarged and intensified and tillage practices improved without seriously reducing rural employment. This implies some rational combination of hand operations (muscle power) with animal technologies and perhaps adaptable machine power.

#### ECONOMIC AND HUMAN(SOCIAL) CONSIDERATIONS

What is said about the physical and technical plane of small holder farming in Africa reflects, on one hand, large gaps in our knowledge. On the other hand, it underscores genuine need for an asset common to U.S. land grant colleges. Reference is made to the problem solving approach to agricultural research. This approach does not assume in advance a precise definition of problems let alone their solutions. Rather, the idea is to probe, to define and refine, to sift and winnow until a solution is found. Fortunately there already is a significant amount of odd-lot research and knowledge about the physical and technical improvements of agriculture in a country like Tanzania. Optima plant populations, spacing and water requirements have been worked out on some research stations as has much information on fertilizer application. Some of this research is used but much of it is dormant and could be reviewed, checked for reliability and made available to the extension service and Crop Authorities as a body of useful information.<sup>8/</sup>

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<sup>8/</sup> The major cash crops in Tanzania (cotton, sisal, coffee, tobacco, cashews, etc.,) are under the administrative guidance of "Authorities" or "Boards". These are parastatal bodies and are responsible for research and extension for their particular crop.

Fruitful economic research especially on food crops would, on the other hand, be harder to document and is a decidedly complicated research area because it goes to the heart of the question, what makes the African farmer tick? After considerable work by Western scholars it seems that there still is much to learn. We feel confident only in advancing a few indicators in this regard.

When the West was undertaking its industrial revolution and reorganizing its production and incentive systems accordingly, and more recently when socialist and communist countries were making significant changes in their production and distribution systems, the African farmer was still caught up in an economy based mainly on survival. Most human activities were geared to this end. In the absence of science and research, nature for the most part, was never brought under control. Under these conditions contact with organized product markets was through a few cash-export crops selected by the metropolises. Where food production was concerned, not only did the processes remain "traditional" and survival oriented, responsibility for these crops rested mainly with women rendering them even lower status since women themselves, by custom, were the most under-privileged members of the economy.

Out of the African experience there came certain unique operating characteristics, and gaps in our research knowledge. For example, one unique outcome is that food crops have been neglected along with the women who were mainly responsible for them. For another, it would seem that the colonial powers tried to adjust agriculture (especially cash crops) to the managerial capabilities of uneducated African farmers rather than up-grading their management abilities to overcome agricultural problems. It is noted, for example,

that perennial tree and bush crops such as coffee, cocoa, wild palm, cashews, bananas, and cassava do better than other crops, but these crops adapt easily and require neither intensive nor sophisticated management. Once they are planted and in place they require only limited investment and simple labor requirements. These crops help to control soil erosion, survive well in low potential soils, and are tolerant to weather extremes (i.e., drought or excessive rain). On the other hand, annual arable crops like food grains, legumes, vegetables (all most important for AID under the Congressional mandate), and cotton have to be planted, weeded and tended during short growing seasons. These crops have not done well under indigenous management. They are greatly affected by the quality and timeliness of production decisions and application of improved farm practices as well as by soil and weather conditions.

In addition there are a few crops like sisal and tea, or dairying on the livestock side which require heavy initial investment, complicated processing and sophisticated management all of which are beyond the reach of small farmers.

All of these indicators suggest fruitful areas of research pertaining to the behavior of small farmers in Africa. There are other economic indicators that should be looked at more intently. Farm prices are a case in point. When IBRD was contemplating a maize production campaign in Tanzania in early 1974, one of their conditions was that the government increase prices to maize growers by 20 percent (maize farmers are all small farmers). The

Tanzanian Government did much better and raised prices first by 55 percent then subsequently by another 45 percent. It is interesting to note what has happened to maize production before and since the price increase:

<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75</u>	<u>1975/76</u>
-----	greatly up	down	greatly down	up

The best production year on record was 1972/73 when maize prices were said to be unbearably low (before the price rise). A major drought came in 1973/74 and production went down. Then prices were increased by 55 percent but in 1974/75 production went down to a record low as the drought continued. Since maize is the staple food everyone was alarmed. The President and Prime Minister travelled throughout the country exhorting farmers to grow more maize. In an economy where ruling chiefs and elders always have been important can presidential exhortations actually stimulate effort and production? Apparently the Tanzanians think it can. In any case rains were better this past spring (1975), prices were raised another 45 percent and all indications are that production is up significantly (1975/76).

But what can we draw from these actions and outcomes? What is the incentive price for maize when such a large proportion of it is retained on the farm for food? We are by no means certain. We have a strong impression that the small food farmer's level of technology is so crude that his response capacity in any event is very limited. The supply elasticity for maize would probably be low at any price and weather indeed seems to be the prime factor in maize production. We would be first to agree, however, that the whole area of incentives needs more research.

The broader implications for Title XII are that economic and social research will be equally as important as research on physical and technological problems. The challenge is how to spread the competence of Africa's farmers more nearly over the full range of production possibilities and how to unravel the incentive factors and other economic factors that matter most.

#### OPERATIONAL OPTIONS

Our aim so far has been to draw a distinction between small scale farming (and implications for research and extension) in Africa, and the more familiar small scale farming in Asia. Any program like that under Title XII would, of course, have to take these distinctions into account. Now we wish to raise an even more critical set of questions.

Let us assume that the Title XII amendment will become part of the Foreign Assistance Act either in FY 76 or FY 77 and be funded at the scale now being proposed. Exactly what kind of program will the land grant colleges be able to launch in Africa? Who will be their institutional counterparts? What problems will they face getting into the mainstream of research and extension as intended by Congress? These are not idle questions even at this early stage of discussion and planning and much thought should be given them.

Some of us with long experience in African development draw a rather sharp distinction between development needs and functional programs. The former are rather self evident or at the most are easy to detect, while the latter require design, logistics, funding, coordination, acknowledgement of the

host country's policies and sensitivities, and agreement on what each of the parties will contribute. And, prior to any of these essentials one must have an appreciation of the state of development in the field that is being programmed.

In 1971 USAID to Tanzania financed a study on the state of agricultural research as a pre-feasibility guide for an agricultural research project which is now underway with the help of two International Research Institutes.<sup>9/</sup> As is more or less typical, it was found that agricultural research in Tanzania is organized and administered almost totally by the Ministry of Agriculture with the central administrative offices for both crops and livestock sited in Dar es Salaam. The system consisted of 11 main research stations in as many Regions (Regions are similar to States in U.S.) supported by 26 sub-stations. Basic and applied research is conducted at the main stations and field trials are further conducted at the sub-stations. The most urgent research problems found by the study were put into a brief summary as follows:

1. Each research station functions as an independent institution with little effective coordination of research between them.
2. Present staffing is so deficient that half of the scheduled positions are vacant. Those on duty may lack research experience or competence and there is too much dependence on expatriates who come to Tanzania for short (two to four years) periods making for disrupted research when they leave.
3. Continuity of research is not only broken when expatriate officers depart but also by transfers of Tanzanian scientists to other stations or positions. Research quality is poor.
4. Reporting of research progress and findings is very deficient. It is very difficult to evaluate research when progress reports may be two or more years in arrears.

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<sup>9/</sup> See: H. B. Sprague et. al., Agricultural Research Needs in Tanzania, Agency for International Development, Washington, D.C., April, 1971. This project is being assisted by CIMMYT and IITA.

Since 1971 there have been some changes especially in coordination. This makes for better exchange of research findings. On the other hand the state of physical plant and research equipment, staffing deficiencies, lack of continuity and research reporting are still very weak and should be high on the priority list for support and improvement. Another element which has not changed, and is not likely to change soon, is administrative responsibility. Agricultural research in Tanzania and almost all African countries is projectized under government, thus the first option that land grant colleges must weigh is whether and how they can find a meaningful role in a Ministry's agricultural research program.

The advantages of functioning as part of government's research program are, 1) a head-start rather than trying to start building a system from scratch, 2) direct entry to villages which also is government responsibility, and 3) built-in government support.

It may mean on the other hand that the foreign colleges must function more as research firms or institutes and less as land grant colleges with institutional characteristics and research methodologies of their own.

The immediate alternative to conducting research directly under government is to support and expand the agricultural research capabilities of Agricultural Colleges in Africa. There are two basic problems, however, that the land grant colleges would have to contend with. First, the historical function of a university under British or French systems (main colonial powers), and of systems in LDCs since independence is significantly more narrow than that of U.S. Land Grant Colleges. Nowhere, for example, have universities

been prime movers in research. They have had even less association with agricultural extension. Therefore, this most obvious and perhaps preferred option by U.S. land grant colleges will have to be weighed with extreme care. If the U.S. land grant colleges rush to assist agricultural colleges in host countries in preference to government bureaus and research stations, will they simultaneously isolate themselves from the mainstream of development activity and from the villages where the small farmers live and work? These risks will have to be considered notwithstanding some obvious advantages of launching research under Title XII through host country universities.

A third option that may be feasible is to manage agricultural research through a government supported parastatal research institution. The British established parastatal companies and institutions to conduct much of their colonial business and the Tanzanians for one have expanded this concept to include almost every phase of development endeavor. While a parastatal company in Tanzania has ties to government (and Party) through a functional Ministry, it has its own charter, general manager or director and managing board. For the most part, it makes its own decisions (which to varying degrees are coordinated with the parent Ministry) and is responsible for the success, or failure, of its operations. Such a National Agricultural Research Center with appropriate branches over the country was strongly recommended by the USAID sponsored team which studied research needs in Tanzania.<sup>10/</sup> This could partially relieve government of direct day-to-day responsibility for agricultural research while adhering to realities of the situation in a country like Tanzania.

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<sup>10/</sup> Ibid.

A fourth and final option, or rather a precondition for any good research and extension program in Africa is to zero in on training as a first order of business. During AID's 20-odd years experience in Africa the two most repeated problems or limiting factors to development have been listed as, 1) lack of trained agricultural manpower and, 2) lack of data on which to base decisions and policy. These constraints are just as strong in 1975 as they were in earlier years. Nowhere, of course, are they more glaring and more of a restraint than in an area like research. As we have emphasized elsewhere that there can be mutual benefit from a research dialogue between U.S. and LDCs, but the fact is that all the current research strength lies with the U.S. Thus, it would be easy to bias Title XII research toward land grant college campuses and to function overseas mainly through "consultants".<sup>11/</sup> This would be a major mistake and every safeguard against it should be taken. The core research and extension programs under Title XII must be sited in host countries, and they should begin with large participant training programs.

It would, therefore, be fruitful to initiate Title XII work in Africa with Trainee Selection Teams. They would explain their programs to governments and negotiate all cost components in advance with the view of selecting in-service officers who had earned B.S. agricultural degrees (especially in U.S.)

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<sup>11/</sup> Op. Cit. A-46 dated 9-12-1975

and whose performance merited M.S. and Ph.D degrees. Research procedures, techniques and research reporting should be given special attention. Beyond this the search for trainees could dip to middle level agricultural manpower (less than degree holders) who have shown promise, and subsequently the search could go to the brightest among secondary school graduates and among science degree holders in non-agricultural fields such as botany and biology. Again these young men and women should enter upon degree and graduate training courses as soon as possible and should be permitted to go as far up the ladder as their abilities will carry them.<sup>12/</sup> Materials for dissertations should be gathered in home countries and travel to and from the U.S. and the host country should be covered as part of training costs. Subsequently work careers would be launched around the research that went into dissertations.

By the time that training was well underway, problems like those presented in the several options above would have been considered and some of the unique problems that we referred to earlier may have been better defined.

#### CONCLUDING REMARKS

We have expressed the view in this paper that if Title XII proposals are fully approved, land grant colleges will face unfamiliar problems and

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<sup>12/</sup> One of the popular concerns about long-term training is the idea that the trainee will lose touch with his home based problems; is reluctant to return home; and if he does he avoids being posted on remote up country posts. There probably are grains of truth in these allegations, but they have not been closely documented to our knowledge. In any case the record of returnees to Tanzania is very good.

challenges that are more complicated than anything encountered in their home states. It is our view that the physical and technical problems, as difficult as they are, can gradually be solved through the genius of problem solving research as typified by U.S. land grant colleges. The social, political, economic and human dimensions which deal with farmer behavior will be more complicated. We also have emphasized the hard decision of where in a country like Tanzania would one attach a program like Title XII? Programs of agricultural research and extension are divided between the Ministry of Agriculture and the Prime Minister's Office and the Regional Development Officers, the latter in conformance with the decentralization of all planning and most program execution from the Central Government to the Regions, Districts and Villages. These are all government bodies. Should Title XII programs tie to government's on-going activities or should they attach to the local agricultural college with the view of building from the ground up and proving that colleges can, in fact, take the lead in agricultural research. We also offered a third option of a new Research Center with sub-stations of parastatal type which would detach itself operationally from government but retain government's direct responsibility for funding and coordination with other on-going programs. Continuous feedback between the research stations and the field could, therefore, be maintained.

Finally a few subsidiary points may be offered. First, any new donors like land grant colleges as a group must be aware, of course, that there already

are on-going projects and programs in African LDCs (some in fact by land grant colleges) and that there are certain lines of responsibility, methods and approaches for giving and receiving assistance. Obviously many of these will have to be taken as given. It will not be simple for example for an institution of the U.S. (e.g., land grant colleges) to carry equal weight as would, in this case, AID itself. Thus, coordination between the expeditors of Title XII and U.S. overseas Missions will have to be mutually accommodating and agreeable. We also consider it an absolute requirement that certain host government actions must be taken before any new programs can function to maximum advantage. Tanzania, for example, has restructured rural development around a program of villagization called "ujamaa" (family-hood) which clearly sets out the direction and courses of action to be taken. Most African countries have not laid out a clear sense of direction for its development. Moreover, most of these countries including Tanzania need to more clearly define research guidelines and responsibilities. The same is true for extension.

Lastly, we raise an observation and a reminder. From the literature it can be observed that an analysis of agricultural failures tends to follow the discipline and the interest of the investigator whether a plant scientist, economist, behavioral scientist, engineer; or cooperative, fertilizer industry or land grant colleges. These separate claims to solution must, of course, be put in balance. Our reminder is simply that agricultural

development in Africa (and elsewhere) involves a process and a costly one at that. One-factor solutions whether research or extension simply are insufficient. They must interact and be mutually supportive of and by other factors. However, mobilizing all of the factors that are necessary for agricultural development by governments that are themselves poor and weakly staffed compounds the problem for African countries. Small farmers in Japan and Taiwan have access to good support systems -- credit, dependable in-put delivery systems, dependable markets, efficient cooperatives, subsidies and other incentives and such supports as an extensive system of infrastructure. A country like Egypt which also exhibits high yields among small farmers has some of these factors and in addition, perhaps, the world's richest soils. And in the U.S., the fertilizer firms, seed firms, agricultural machinery outlets, repair shops, cheap fuel, supportive institutions, and government support have all done their share for agriculture boom along with the enormous contribution made by land grant colleges themselves. We have made clear above that many of these mutual support factors are just beginning to emerge in most of Africa. Sustained program support and underwriting the costs for these support factors must parallel the work intended under Title XII.

We are hopeful that a paper of this kind will be helpful to those most concerned with the formulation and the implementation of Title XII. We have no doubt whatsoever but that land grant colleges can make an outstanding contribution to agriculture development in Africa and we welcome them aboard.

12/11/75