Extension Education
Reshaping African Universities and Colleges for the 21st Century

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Extension Education: Reshaping African Universities and Colleges for the 21st Century

Proceedings of the Workshop on Bringing African Universities and Colleges More into Agricultural Development, held in Accra and Cape Coast, Ghana, 4-6 September 2000

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The workshop sponsors: The Centre for Applied Studies in International Negotiations, established in 1979 at Geneva, Switzerland, is a private, nonprofit foundation dedicated to helping resolve problems in a wide range of areas, including trade, the environment, agriculture, health, and human rights. The Sasakawa Africa Association and the Global 2000 Program of The Carter Center are joint sponsors of the Sasakawa-Global 2000 agricultural projects in sub-Saharan Africa. The primary aim of those projects is to promote more effective transfer of improved technology to small-scale farmers. Both the Sasakawa Africa Association and the Global 2000 Program were established in 1986, the former by the Nippon Foundation, Tokyo, and the latter by The Carter Center, Atlanta, Georgia, USA.

Abstract: This publication is the thirteenth proceedings of a series of workshops that address measures for improving sub-Saharan Africa's food security and other issues relevant to economic progress in the region. The chapters cover efforts to ensure that extension practitioners are properly trained to become effective facilitators of change at the farmer level. The chapters highlight steps certain African universities and colleges are taking to reform their agricultural education and extension curricula to make them responsive to the training needs of farmers, rural development organizations, and agribusinesses. Another issue explored is how networking among the participating African agricultural universities and colleges is creating strong pan-African academic partnerships to develop training programs for agricultural extension staff. Finally, the rising wave of institutional reform within agricultural universities and colleges is examined.

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Foreword

Investments in agricultural education and human resource development are prerequisites to achieving sustained agricultural and economic development and food security in Africa. In particular, the role of field staff—mid-career extension workers—is critical and becoming ever more so due to the increasing complexity of agricultural problems. One of the major challenges facing Africa today is to ensure that extension practitioners are well trained to enable them function effectively as facilitators of change at the farmer level.

The Sasakawa Africa Fund for Extension Education (SAFE), a pioneer agricultural curricula reform and institution-strengthening initiative, was launched a few years ago by the Sasakawa Africa Association in collaboration with the Winrock International Institute for Agricultural Development and with funding from the Nippon Foundation of Japan. SAFE is working with selected African universities and colleges to reform their agricultural education and extension curricula in order to make them responsive to the training needs of agricultural sector clients—farmers, rural development organizations, and agribusinesses. It is also fostering networking among the participating African agricultural universities and colleges with the aim of building strong pan-African academic partnerships to develop training programs for agricultural extension staff. Finally, SAFE is bringing about broad institutional reform within agricultural universities and colleges themselves.

The principles of the SAFE approach can be adapted to many African countries. The challenge is to get other potential partners (i.e., national governments, NGOs, the private sector, as well as the donor community and technical assistance agencies) on board to support this or similar approaches. Workshop 2000 was meant to debate with such stakeholders the potential of the SAFE or similar approaches to reforming agricultural education in sub-Saharan Africa, and to enhance networking between and among agricultural universities and colleges.

The University of Cape Coast, which has been the very first one to open up to a SAFE program, hosted the second part of the workshop and we would like here to thank very warmly Messrs. Samuel Kwesi Adjepong, the Vice-Chancellor, and Mensah Bonsu, the Dean of the School of Agriculture, for their hospitality. The close links between SAFE and the University of Cape Coast are further illustrated by the conferment of honorary doctoral degrees on Messrs. Norman E. Borlaug, President of the Sasakawa Africa Association and Yohei Sasakawa, President of the Nippon Foundation.

Finally, I would like to emphasize that the success of any workshop is the result of the effort and dedication of numerous people working behind the stage. I am thinking more particularly about the directors of the country programs and their staff on whom we rely heavily for contacts, local links and, above all, field visits. I also want to express my gratitude to Chris Dowswell, Deola Naibakelao as well as to Moses Zinnah and all his colleagues at Winrock and Cape Coast, who were instrumental in setting up and finalizing the program and in running the Workshop at the University of Cape Coast. To Benedicta Appiah-Asante who opened many doors in Ghana, to Gertrude Monnet, Frederica Quartey, William Quartey and Jeni Akar, who, among others, saw to the smooth running of Workshop 2000, I say thank you. I also want to acknowledge the important work of Joe Kwarteng, the editor of this volume.

Jean F. Freymond
Director, CASIN
Geneva

Glossary

AET	Agricultural Education and Training
AKIS	Agricultural Knowledge and Information Systems
B.Sc.	Bachelor of Science
FAO	Food and Agriculture Organization of the United Nations
MOFA	Ministry of Food and Agriculture, Ghana
NGO	Non-governmental organization
SAA	Sasakawa Africa Association
SAFE	Sasakawa Africa Fund for Extension Education
SG2000	Sasakawa-Global 2000
UCC	University of Cape Coast
USAID	United States Agency for International Development
VoAg	Vocational Agricultural Education

Meeting Summary

Opening Statements

Samuel Adjepong

In his opening statement, the vice chancellor of the University of Cape Coast (UCC), Samuel Adjepong, said universities had important roles to play in national development, particularly in developing responsive training programs for various sectors of the economy. He regretted that many African universities were preoccupied with the need to uphold "academic rigor" at the expense of offering responsive programs that dealt with the real needs of the larger society within which they were based.

Adjepong said UCC launched the Sasakawa Fund for Extension Education (SAFE) in response to a request from the Ministry of Food and Agriculture (MOFA) to design and offer a need-based B.Sc. Degree program in Agricultural Extension for extension staff in Ghana who possessed Diploma and Certificate credentials. He said these levels of extension staff were targeted for the program because they constituted more than 85% of the field staff of the extension services in Ghana, and provided the best opportunity to yield substantial payoffs in both the short-term and long-term.

The uniqueness of the SAFE program at UCC, according to Adjepong, was the supervised enterprise projects (SEPs) component. He explained that after a period of training on the university campus, students returned to their work environments in the field to undertake a 4- to 6-months duration off-campus SEPs. He said the SEPs facilitated experiential learning as well as linkages between the major subsystems of the agricultural knowledge system namely: the farmer subsystem (including agribusiness), the extension and education subsystem and the research subsystem. Adjepong emphasized that it was the SEPs component of the SAFE initiative that made it different from the other existing academic programs in the university.

The vice chancellor said the program was enhancing UCC's visibility outside the walls of the university and that the lecturers associated with the program now got great exposure to the farming communities across the country through the off-campus SEPs. Such exposure, he said, enabled them to match theory with real-life experiences in the diverse contexts of the agricultural sector in Ghana. Concluding, Adjepong expressed the hope that the workshop would give fresh impetus to the efforts aimed at bringing many African Universities and colleges into the enterprise of developing the human resource base for advancing and maintaining agricultural growth in Africa.

Yohei Sasakawa

In his opening remarks Yohei Sasakawa, president of the Nippon Foundation, expressed his pleasure with the fact that many people were beginning to share his belief that agriculture was the single most crucial element in national development efforts and thus the key to the development of African nations. He referred to the success of the Sasakawa Global 2000 project in Ghana and pointed out that the project could not have succeeded without the hard-working extension staff. He regretted that not enough effort was put into re-training these extension workers to make them more effective in their jobs.

Yohei Sasakawa was happy to note that the SAFE program, started at UCC in 1992, had achieved its objective of training agricultural extension staff in Ghana and noted that similar SAFE program efforts were also training people in Ethiopia, Uganda and Tanzania. He emphasized the need to nurture people with talent and capability who could work in the field with farmers.

J. H. Owusu-Acheampong

J. H. Owusu-Acheampong, Ghana's Minister of Food and Agriculture, noted that one of the fundamental constraints to food production and food security in sub-Saharan Africa was the inadequate and inappropriate training of agricultural extension staff, He said that this situation was responsible for the lack of the kind of farmer education that could lead to the integration of innovations into farming systems. To remedy the situation Owusu-Acheampong called for the strengthening of the capacities of African universities and colleges to enable them develop responsive, demand-driven programs. The agriculture Minister was pleased that the Sasakawa Africa Association (SAA) had, since 1993, been assisting the Ministry of Food and Agriculture (MOFA) to improve the technical and human relations skills of extension staff through a program at the University of Cape Coast. He also commended more recent efforts by SAA to improve technical staff through a similar program at the Diploma level at the Kwadaso Agricultural College in Kumasi, Ghana.

The Minister urged participants to have honest exchanges of ideas and come up with pragmatic and strategic recommendations that would enable universities in Ghana and other African countries to develop responsive programs to help bring about sustainable agricultural development.

Ekow Spio-Garbrah

In his opening statement, Ekow Spio-Garbrah, Ghana's Minister of Education, observed that the theme for the workshop—Bringing African Universities and Colleges more into Agricultural Development— was very important because the foundation of the economies of the countries in sub-Saharan Africa was essentially based on agriculture. He pointed out that the stark reality facing Africans was that in the midst of plenty—the vast stretches of forest lands and soils rich with mineral and other natural resources—Africa still had 50% of its population living in absolute poverty. Owing to this reality, Spio-Garbrah said there was the need for African universities and colleges to play more proactive roles in the process of ensuring sustainable agricultural development on the continent.

Spio-Garbrah noted that while technological development in agriculture was changing rapidly, the men and women who worked with our peasant farmers lacked training opportunities to develop the necessary technical and human

relations skills that would enable them to cope with the changes taking place in this new millennium. He was happy to learn that several universities and colleges in Africa, including the University of Cape Coast and the Kwadaso Agricultural College in Ghana, were revising their curricula in order to make them responsive to the needs of the various clients in the agricultural sector, including the staff who work with our farmers in Africa. Spio-Garbrah urged the universities and colleges that offered innovative agricultural extension training programs to take time to document their experiences in the form of case studies which clearly pointed out the strengths, weaknesses, problems or challenges in running such programs. Such case studies, he said, would provide vital information for program improvement and also give insights to guide other universities and colleges who might be interested in offering similar programs. Concluding his address, Spio-Garbrah called for a policy framework that would enable and facilitate a linkage of university courses to realities outside the university.

John Evans Atta Mills

The Vice-President of the Republic of Ghana, His Excellency John Evans Atta Mills, delivered the opening address for the workshop. After expressing his gratitude for the opportunity to address the workshop participants he asked for a minute's silence to be observed in memory of the late Ryochi Sasakawa through whose efforts and financial support the Sasakawa Global 2000 agricultural initiative was launched in sub-Saharan Africa. Recalling the tremendous impact the SG2000 program has had in Ghana, the Vice President acknowledged the important roles played by Yohei Sasakawa, President of the Nippon Foundation; Norman Borlaug, President of the Sasakawa Africa Association, and Jimmy Carter, former president of the USA and President of the Carter Center in Atlanta, USA in SG2000 programs in sub-Saharan Africa.

Vice President Mills said the role of Africa's universities should be to develop training programs that were responsive to the rapidly changing needs of the African continent. Such training programs, he said, must prepare graduates to go beyond production agriculture and embrace other off-farm career opportunities such as marketing, processing, food distribution systems, and consumer concerns about cost, quality, and the environmental effects of agricultural systems. The Vice President added that the training programs of Universities should also enable the graduates to face the realities of their own environments and make positive changes within their societies, including the willingness to work in fields with farmers in their difficult circumstances. He drew participants' attention to the importance of hands-on practical training, particularly off-campus activities involving community-based problem-solving, and said this must be given more attention in the training of agriculturists in our universities and colleges.

Vice President Mills praised the leadership of the University of Cape Coast for agreeing to collaborate with the MOFA, SAA, and Winrock International to offer the innovative SAFE program and was gratified to learn that universities and colleges in other African countries, including Burkina Faso, Ethiopia, Mali, Nigeria, Tanzania and Uganda had adopted the UCC model in designing training programs for mid-career agricultural extension staff in their respective countries.

The Vice President expressed his belief that in order for African universities and colleges to make meaningful impact on agricultural development, there was the need for strategic alliances and partnerships among governments, public and private institutions and organizations, donor agencies and technical assistance agencies. He added that where there was a common vision and committed leadership, partnerships were sure to succeed. Considering the high caliber of the participants, Vice President Mills was convinced that the discussions at the workshop would be fruitful and hoped the recommendations that would emerge from the workshop would be translated into practical action.

Why Rural Human Resource Development Matters

Delivering the keynote address, Edward Schuh stated that universities in Africa had a significant role to play in many dimensions of rural human development. He said this role was played through the direct production of some of the human capital critical to the development of agriculture and the rest of the economy and also through the provision of leadership for lower-level human resource development institutions. Beginning with formal education, he said the cognitive skills developed by formal schooling contributed to production in a number of ways: firstly, it made workers more productive in physical terms; secondly, it enabled farmers to make more efficient use of the resources available to them; thirdly, it enabled farmers to correctly decode new production technologies; and fourthly, it improved the entrepreneurial talents and allowed such entrepreneurs to take advantage of economies undergoing changes to garner personal gains in income. He added that vocational or applied skills developed through vocational training were also very important in raising the productivity of labor in agriculture.

Touching on the role of the household, Schuh pointed out that a great deal of development—including the development of cognitive and vocational skills—took place in the household. He regretted that this education often went unrecognized and indicated that the higher the level of education and training of members of the household the greater their contribution to the production and development of these skills in the household. Continuing, he addressed the training of cadres or extension field staff and the issue of competitiveness in the international economy.

Schuh said that an important way for universities and colleges to contribute to rural human development was by training the cadres or staff for a modern agriculture. He noted that while Africa had some fine colleges and universities, not many of these had taken on the responsibility of being change agents in society in the same way land grant universities did in the USA. He explained that with their threefold mission of teaching, research and extension, land grant universities played the role as one of the great engines of economic growth in the United States. He recalled that the essence of the land grant concept was the sense of institutional mission of providing higher-level education to the sons and daughters of farmers and industrial workers. Explaining that he was not trying to make a case for the land grant concept in Africa, he regretted that this concept was still not widely adopted in other countries, where, he noted, higher-level education tended to be reserved for the sons and daughters of the elite. He observed that the functions of teaching, research and extension tended to

be located in different ministries in Africa, but emphasized that the important thing was for the functions to be integrated irrespective of where they were located.

Schuh stated that it was important for African universities and colleges to be on the cutting edge of knowledge, and to transmit new knowledge from the frontier of knowledge and at the same time make sure that the knowledge provided was relevant to the problems of African societies. Observing that colleges of agriculture were typically organized around the biological and other agricultural disciplines, he emphasized the importance of the social sciences and called for collaborative endeavors between strong disciplinary departments to solve problems. He noted that the private sector had an important role to play in attaining the goals of research, education and extension and called for a strengthening of the linkages between these sectors and also for closer co-operation between non-governmental organizations and the universities.

On the issue of competitiveness in the international economy, Schuh observed that human development was critical to closing the gap between Africa and the rest of the world in the level of their capita incomes. Referring to the division of labor and specialization as key to raising productivity and thus to being competitive in the international economy, he said universities played a special role in helping a country to gain international competitiveness.

Extension Human Resource Survey in Africa

Presenting the results of a Human Resource Survey of Agricultural Extension Workers in sub-Saharan Africa, Alex Carson, the immediate past Dean of The School of Agriculture, University of Cape Coast, reported that there was a lack of current and accurate data on the human resource situation of agricultural extension workers in Africa. He said that while there was a general agreement that there was a need to bolster agricultural extension to enable it to continue to play its critical role in agricultural and rural development in sub-Saharan Africa, extension organizations were not able to cope with the emerging challenges they faced owing to poorly trained, poorly equipped and inadequate numbers of extension staff who were currently working in these extension organizations.

Carson presented data on the staffing situation in selected countries in sub-Saharan Africa and noted that some of the key factors related to the human resource situation of agricultural extension staff included:

- a lack of proper needs assessment to determine the actual manpower needs in agricultural extension of the country and the capacity of agricultural colleges and universities to offer responsive programs to meet those training needs
- a lack of reliable data on extension staff in the private sector including non-governmental organizations (NGOs)
- a lack of strategic national training policies in most sub-Saharan African countries.

Two of the important conclusions drawn by Carson from the results of the survey were that: 1) the number of agricultural extension staff in African countries was grossly inadequate and that there was a need for each country in sub-Saharan Africa to develop and implement strategic national policies on agricultural extension training and staff development to fulfill agricultural and rural development objectives, and 2) agricultural faculties and colleges should be proactive in revising their curricula and teaching

methodology to respond to the training needs of the country.

Carson stated that overcoming the many challenges facing the agricultural sector in sub-Saharan Africa depended mostly on well-trained, well-equipped and adequate numbers of agricultural extension workers who possessed the technical knowledge and human relations skills, and the commitment needed to create real change, He concluded that agricultural colleges and universities and public and private sector agencies could and should take on the responsibilities of helping to foster the training of change agents who would possess the capacity and commitment to facilitate sustainable agricultural and rural development in sub-Saharan Africa.

Agricultural Education in Africa: Managing Change

Charles Maguire delivered a paper titled "Agricultural Education in Africa: Managing change." He observed that African universities had achieved much in a short time, but faced a serious risk of losing their influence on the higher education of Africa's youth in view of increased enrollment and declining budgets. He said the mandates given to these institutions at independence—and the ensuing higher education policies—required assessment as a result of changes in the world, in Africa, and in the universities themselves.

Maguire noted that agricultural education faced a variety of challenges and dilemmas, but observed that there were also new opportunities and possibilities. He outlined the problems facing agricultural education to include:

- isolation of the agricultural university from other parts of the university system
- lack of communication with the employers of the graduates of the university
- poor practical skills
- decreased funding as urban focus gathers strength
- weak connection with other parts of the agricultural education system—colleges, vocational schools, farmer training networks
- high unemployment of graduates from the university, often due to lack of relevance of curriculum
- failure to attract the best quality students from secondary schools

In addition to these problems Maguire indicated that it was important to be conscious of other changes that impacted on agricultural education and presented further challenges to its relevance. These challenges, he said, included:

- The shift in focus from agriculture to rural development
- Globalization
- HIV-AIDS
- Biotechnology
- Urbanization
- Information technology

Maguire stated that we had reached a point in agricultural education where demands for change from outside our institutions were numerous and strong and it was therefore critical that decisions were made on how to respond. He noted that in most parts of Africa food security was still a critical issue and therefore food production would continue to be a major focus of universities and other agricultural education institutions for some time to come. Citing bureaucratic, political and societal barriers to change, he acknowledged that change could be difficult even for the most enthusiastic and committed university leader. He observed that public sector agricultural education institutions were not always autonomous enough to make the bold and rational decisions required to effect improvements in the way they operated. He addressed enroll-

ment, programming and financing as three areas where many agricultural universities lacked control.

Touching on successful African examples of institutional change, Maguire mentioned the University of Cape Coast in Ghana and Bunda College of Agriculture in Malawi as notable examples. He noted that the University of Cape Coast in Ghana had successfully launched a program whereby mid-career extension staff could bridge the artificial gap between the technically qualified and experienced person and the academically educated professional. He said the program had attracted the attention of national and international organizations and institutions because of its leadership in launching an innovative education program and that it had been of particular benefit to the UCC by enhancing its visibility in the country and in forging and strengthening the university's relationships with MOFA, farmers, extension staff, NGO's and District Assemblies. Even though the SAFE program was relatively young, Maguire observed that some important lessons were emerging:

1. Partnerships were necessary to solve the complex task of training agricultural extension staff in sub-Saharan Africa.
2. Failure of past efforts to establish sustainable and effective extension systems in sub-Saharan Africa was largely due to organizations and agencies working alone and fragmenting the process of building capacity.
3. Partnerships between the SAFE program and a wide range of donor agencies, organizations and institutions would be needed to make the program sustainable.

Admitting that change agents could feel isolated at the beginning of the process of institutional reform, especially when all members of the community were still to be convinced of the soundness of the change program or its chances of success, Maguire encouraged them not to feel alone, but to seek support from a number of groups and entities seeking answers to the problems and challenges posed by the evolving nature of agricultural education. He listed some of these groups to include: The Global Consortium of Higher Agricultural Education and Research; The Organization for Economic Cooperation and Development; FAO) The World Bank through the Agricultural Knowledge and Information Systems; and The Kellogg Foundation.

On partnerships, Maguire said that the review of the problems and additional challenges facing African agricultural education systems strongly indicated that no single entity could solve the problems related to the relevance, quality and sustainability of the programs alone. Agricultural education institutions and systems would have to reach out to the broader education system and partner with science, economics, sociology, environment, engineering, education, health and business departments to design and offer education programs which would attract good-quality students and make an impact on rural development. He said partnerships would also have to be forged with donors, NGOs and the private sector for, as well as contributing in an intellectual way to education and training, these stakeholders were employers of the output from the system. Emphasizing that the time to start change was now, Maguire concluded that while there were many experienced and well-meaning individuals, organizations and firms who could offer advice on how best to bring about change in African agricultural universities and agricultural education systems, the responsibility for initiating the process rested with the faculty and administrators

of agricultural education systems and that it called for vision and leadership.

The SAFE Initiative

Speaking on the challenges and opportunities facing the Sasakawa Africa Fund for Extension Education (SAFE) initiative, Deola Naibakelao, Director of Sasakawa Africa Association in Africa, drew participants' attention to the fact that one of the major pre-requisites for enhancing the pace of agricultural development and food security in sub-Saharan Africa was human resource development, especially of farmers, researchers and extension workers. He observed, however, that poor training, especially of field level extension staff, was one of the major factors limiting agricultural development in sub-Saharan Africa.

Naibakelao said that the SAFE initiative was launched by the Sasakawa Africa Association in 1991 to tackle the problem of poor training of extension staff. He said that the initiative had the following complementary aims:

- to create training opportunities for mid-career extension staff, both male and female, who possess certificates and diplomas in agriculture and related fields to improve upon their technical and human relation skills
- to reform agricultural extension curricula in selected agricultural universities and colleges, and assist them in the acquisition of relevant instructional materials
- to foster networking among agricultural universities participating in the SAFE initiative with the aim of building strong pan-African academic partnerships for developing responsive training programs for agricultural extension staff
- to train agricultural extension leaders for extension organizations in sub-Saharan Africa
- to bring about institutional reform within agricultural universities and colleges, not only in terms of the development of responsive agricultural extension curricula, but also the reform of the institutions themselves

Naibakelao stated that the SAFE curriculum reform approach emphasized experiential learning because the approach was guided by the principle that "experience is the best teacher." To nurture the philosophy of experiential learning, he said the SAFE initiative has placed great emphasis on a 5- to 8-month practical, off-campus, farmer-focused Supervised Experience/Enterprise Projects (SEPs).

Touching on challenges and opportunities, Naibakelao said some of the challenges facing the SAFE program included:

- the lack of a clear extension training policy in many African countries
- inadequate number of well-trained and experienced teaching staff in the area of Agricultural Extension in most agricultural universities and colleges in sub-Saharan Africa.
- low number of women extension staff and little understanding of their training needs
- lack of strong partnerships between donors and the various stakeholders or actors involved in extension activities.
- financial constraints
- problems of sustainability
- lack of committed leadership with a clear vision of training mid-career professionals.

On opportunities, Naibakelao said there was a general appreciation among the donor community for the need to form partnerships in developing, funding, implementing, monitoring and evaluating innovative and cost-effective extension programs. He also noted that the trend toward privatization and decentralization

in sub-Saharan Africa also presented new opportunities for program diversification to meet the needs of new clientele.

Concluding, Naibakelao noted that there was an urgent need for systemic change in the agricultural education system on the continent. He observed that the environment in which extension organizations operated was rapidly changing and called for a continuous improvement in the manner in which extension staff were trained to enable them respond to the new challenges brought about by the changes.

Task Force Reports

Roger Steele of Cornell University provided a summary of four task forces which were set up to deliberate on important issues related to the workshop. Pertaining to what they considered to be the most significant messages heard at the workshop, the task forces generated eight key ideas, four of which were:

- Every university or college must be willing to leave its "ivory tower" and seek to be more demand-driven. In particular, they must seek to make their training more relevant to extension workers.
- Every university or college curricula must be dynamic and adaptable in order to meet the changing needs of agricultural extension, but the changes should not jeopardize the quality of higher education.
- All universities or colleges must discover ways to effectively partner with various levels of government and private sector for the new programs to be viable and sustainable.
- Children and women must be made central in these and all agricultural development approaches.

With respect to what they considered to be significant issues that were yet to be fully addressed, among the most troubling issues mentioned were:

- It has been very difficult for some universities and colleges to find sufficient funding to start SAFE-type programs, and others are struggling to locate sufficient resources for effective continuation of existing programs.
- Despite some progress, there is still a serious gender imbalance in agricultural education and extension.
- Universities and colleges need more staff in all areas relevant to training of extension workers. These staff must be qualified and equipped to make the training more relevant to client needs.
- Focusing on mid-career improvement does meet an urgent short-term need for more effective extension workers, but, on the other hand, does not do enough to address broader challenges for pre-service preparation of future agricultural workers.

The task force groups discussed the potential roles and strategies for national organizations, bilateral and multilateral organizations, and NGOs and the private sector.

Some of the potential roles and strategies that were identified for *national organizations* included:

- playing an advocacy role to promote support for responsive agricultural education programs
- providing appropriate policies
- providing scholarships, study leave and other forms of financial support
- employing graduates and ensuring adequate conditions of service
- assisting with formalizing field activities between ministries and universities or colleges
- participating actively—through the Ministry of Education—in the curriculum development, monitoring, and evaluation processes in collaboration with other partners
- promoting the incorporation of agricultural education into primary and secondary school curricula

- encouraging universities and teachers' training colleges to start training more teachers in the subject matter content of agriculture and pedagogy so secondary and primary schools would have an appropriate cadre of qualified professional teachers
- providing infrastructure (especially housing) to universities for new demand-driven programs
- promoting partnerships and interactions between universities and NGOs to encourage more responsive programs and NGO funding
- securing sufficient finances for start-up and operation of mid-career training programs

The potential roles and strategies identified by the task force groups for *bilateral* and *multilateral organizations* included:

- funding proposals for agricultural education and extension programs, particularly those proposals that arise from participatory strategic planning processes that have involved their own representatives
- playing a key role in facilitating dialogue between stakeholders and ensuring that agricultural education is seen as a priority at the highest levels of national government
- encouraging and enabling an increase in the number and quality of human resource needs assessments, tracer studies, and other forms of analysis that will represent the needs of people at the community level

The task force reports indicated that *NGOs* and *the private sector* could be more involved in the decision-making process in universities and colleges by providing information on training needs with the intention of improving relevance and by serving on councils and curriculum planning and review bodies. Potential roles identified for NGOs and the private sector included:

- role as clients or potential employers
- role as collaborators (for co-teaching, joint research, extension, demonstrations, etc.), including planning, implementation, monitoring, and evaluation
- role as hosts for students during SEPs activities
- role as sponsors of components of the program (e.g., their staff, students, trainers)
- role as providers of grants, endowment etc.
- role as promoters of the program (e.g., brokerage and lobbying roles).
- role as users of knowledge provided by universities and colleges

Steele observed in his concluding comments that universities and colleges which decided to be more responsive to community demands would require a significant change in orientation and a shift in momentum. He noted that those academic communities which decided to move closer to farmers and consumers would face seemingly insurmountable obstacles including passive and active resistance from many arenas and considerable new investment and reallocation of existing resources. He added that academic staff would have to be provided with appropriate incentives and then be enabled and empowered to move some of their pedagogic activities off the campus and closer to communities.

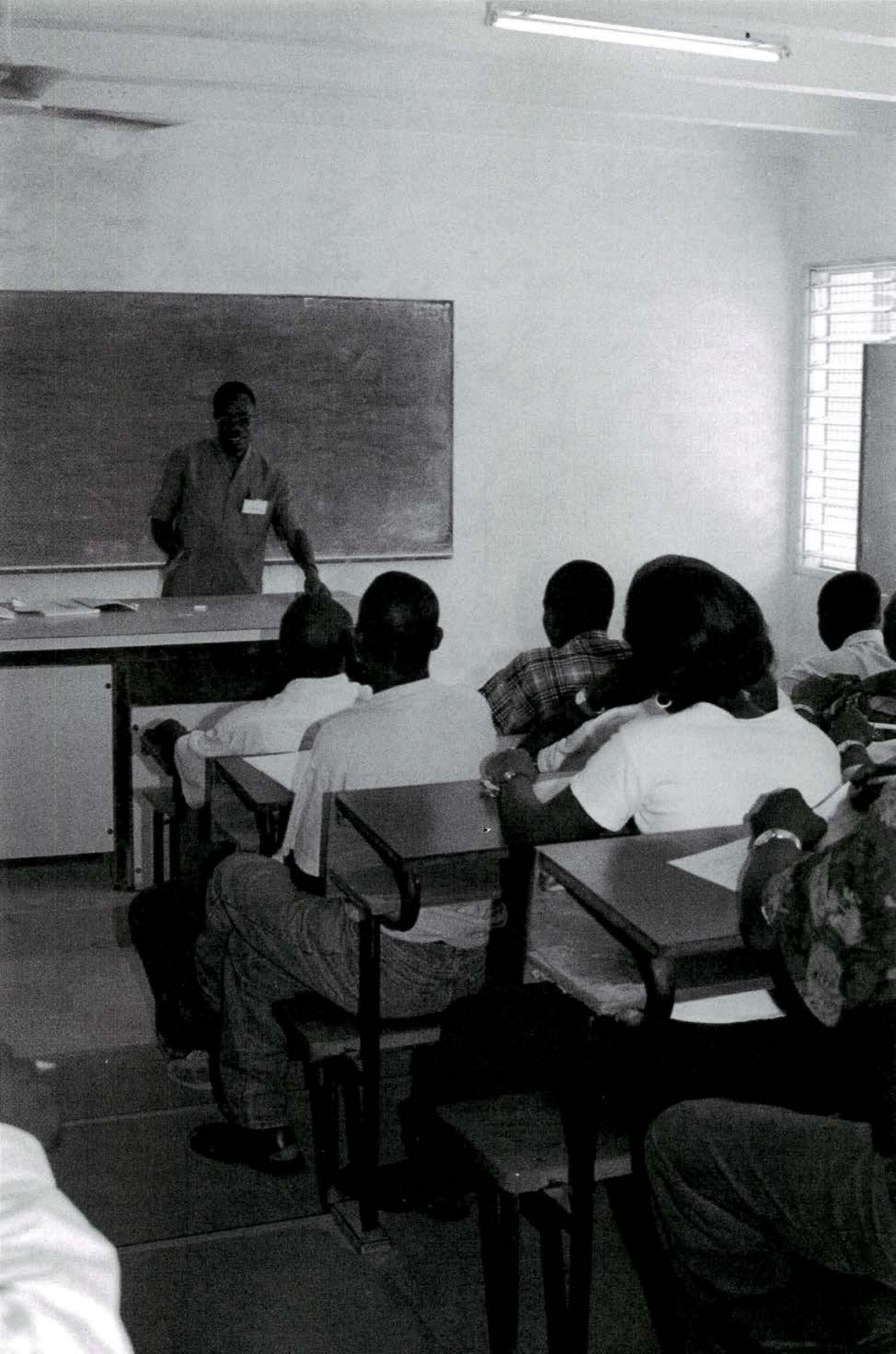
Steele drew attention to a pertinent call by workshop participants to universities and colleges to change their approach to teaching from the lecture approach to a more practical, problem-based, and multidisciplinary approach in their effort to produce better graduates for the world of work. He noted that, overall, the workshop participants applauded the remarkable efforts that have been made

through SAFE-type initiatives in Ghana and elsewhere. They also enthusiastically endorsed the continued experimentation, innovation, and implementation of new mid-career initiatives in other countries and their respective institutions.

Concluding Remarks

In his concluding remarks Norman Borlaug, president of the Sasakawa Africa Association, shared some of his experiences in agricultural development over more than five decades with participants. He recounted how earlier efforts in Mexico had initially focused on research and later, through the effort of the scientists, evolved to have an extension component. Describing his early experiences in India and Pakistan, Borlaug observed that there was little or no communication between research and extension back then, and noted that this state of affairs had hindered the transfer of technology. Warning of opposition to change, he recalled that even back then there were problems and opposition to the development effort that had to be overcome. Touching on current opposition to change, he cited biased press reports and expressed concern about current over-exaggerated news media reports about the effects of fertilizer use and the way fertilizers, which are plant nutrients, are unfairly lumped by the media in the same category with insecticides, fungicides and herbicides, which are toxic chemicals selected to control certain organisms.

Borlaug lauded the SAFE program and all who had worked hard to make it succeed, and encouraged all to continue with the effort to build responsive programs.



Welcoming Address

Samuel Kwasi Adjepong

The theme "Bringing African Universities and Colleges more into Agricultural Development" is most appropriate considering the fact that agriculture is the trump card of the economies of most developing countries, particularly those in sub-Saharan Africa. As the Executive head of an African university which has set the pace in institutional strengthening and capacity building in agricultural extension, I could not help but feel delighted and privileged to give an opening statement. For obvious reasons, my statement will tend to focus on UCC's contribution to agricultural development through its innovative training program for mid-career agricultural extension staff. I therefore crave your indulgence.

Universities have important roles to play in national development, particularly in developing responsive training programs for various sectors of the economy. They have a duty to develop training programs that match their curricula with the actual work environment their students will find when they leave the institutions. There seems to be skepticism as to whether the curricula of most African universities, especially agricultural universities and colleges, address the actual problems faced by rural dwellers most of whom are farmers. Many African universities are preoccupied with the need to uphold "academic rigor" at the expense of offering responsive programs that deal with the real needs of the larger society within which they are based.

To address the problem of the lack of responsive training programs for mid-career agricultural extension staff in Africa, Sasakawa Africa Association (SAA) launched the Sasakawa African Fund for Extension Education (SAFE) in 1992 in collaboration with Winrock International Institute for Agricultural Development, a non-profit, non-governmental organization based in Arkansas, USA. This initiative seeks, in the long term, to bring about reform within African universities, not only in terms of the development of responsive agricultural extension curricula, but also the reform of the institutions themselves. Thus, the SAFE initiative strengthens the in-country capacity of African universities as adaptable organizations, capable of developing client-focused training programs, and mobiliz-

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ing internal and external resources to sustain the programs. Another dimension of the initiative is to encourage African universities and colleges to forge partnerships with other local and international institutions and agencies.

The SAFE program was launched at the University of Cape Coast (UCC) in October 1993, in response to a request from the Ministry of Food and Agriculture (MOFA) and with support from SAA, Winrock International and Sasakawa-Global 2000. The Ministry requested UCC to design and offer a need-based B.Sc. Degree program in Agricultural Extension for mid-career extension staff in Ghana who possessed Diploma and Certificate credentials. These levels of extension staff were targeted for the program because they constituted more than 85% of field staff of the extension services in Ghana, and provided the best opportunity for both short-term and long-tern development of high-quality staff for field work. Besides, these extension staff would not be looking for jobs upon completion of their studies as they would be on study leave from the Ministry and NGOs and therefore would return to their place of work upon the completion of their studies.

The uniqueness of the SAFE program is that it is largely based on off-campus supervised enterprise projects (SEPs). After a period of training on the university campus, students return to their work environments to undertake a 4 to 6 month off-campus SEP. The SEP facilitates experiential learning as well as linkages between the major subsystems of the agricultural knowledge system, namely: (1) the farmer subsystem, including agribusiness, (2) the extension and education subsystem, and (3) the research subsystem. The SEPs component of the SAFE initiative is what makes it different from other existing academic programs in the University.

The program is enhancing UCC's visibility outside the walls of the university. It is also forging and strengthening the University's relationships with MOFA, farmers, agricultural extension staff, NGOs, and District Assemblies in Ghana. The UCC lecturers who are associated with the SAFE program now get greater exposure to the farming communities across the country through their involvement, as supervisors, of the off-campus SEPs. The involvement of the lecturers in the SEPs serves as a means of enabling them to match theory with real-life experiences in the diverse contexts of the agricultural sector in Ghana.

The experiences that have been gained over the past 7 years in the implementation of the program have posed a few challenges and these, I must say, were vaguely foreseen at the inception of the program. They include the need for:

- a re-orientation of staff (both teaching and non-teaching) of the University's School of Agriculture to enable them to better appreciate the benefits of the new system
- continuous monitoring and documentation of the program's impact
- gender mainstreaming through the admission of more females into the programs
- building partnerships with groups, both public and private, to help accelerate the spread of the benefits of the program

I must add that UCC, with the collaboration and support of the SAA, Winrock International and MOFA, has come a long way in confronting these challenges in order to increase the impact and sustainability of the program.

It is in the light of the above that we at the UCC very much value our relation-

ship with MOFA, SAA and Winrock International. Indeed we are still working on forging partnerships with other institutions and agencies such as FAO, the Canadian International Development Agency, the African Development Bank, the International Fund for Agricultural Development, the German Development Cooperation, the United States Agency for International Development and the World Bank.

It is our hope that this workshop will give a fresh impetus to the efforts aimed at bringing many more African Universities and colleges into the enterprise of developing the human resource base for advancing and maintaining agricultural growth in Africa.

Introductory Comments

Yohei Sasakawa

It is my utmost pleasure to be given a chance to speak in front of you today. There are three reasons why I am so pleased. First, many people are beginning to share what has long been my personal belief: that above all else, agriculture is the single most crucial enterprise in all of sub-Saharan Africa, and thus the key to the development of African nations. Second, the methods we have employed to dramatically boost the productivity of African agriculture are at least being widely recognized by many. Third, it's because I am speaking to you here in Ghana, the very first country where the Sasakawa Global 2000 program was launched 14 years ago, and where the Sasakawa Africa Fund for Extension Education (SAFE) program was initiated in 1992 at the University of Cape Coast.

When my late father, Ryoichi Sasakawa, held the first Conference on African Famine in Geneva in 1985 immediately after the famine tragedy in Ethiopia, most people were not enthusiastic about the future of agriculture on this continent. But we were of a totally different opinion. We were convinced that since this was a continent where more than 70% of the total population worked in agriculture, it would not be possible to meet the goal of sustainable development without improving agriculture. To state it briefly, we believed there would be no happiness in Africa until all the empty stomachs were filled. And so in 1986, the year following the Geneva Conference, we launched our first SG2000 project aimed at dramatically increasing the productivity of the sorghum and maize harvests here in Ghana under the strong leadership of Dr. Norman Borlaug.

Today some African leaders of vision, who are exemplary in their open-mindedness, share our development goals. These include President Rawlings of Ghana, President Obasanjo of Nigeria, Prime Minister Meles of Ethiopia, former President Soglo of Benin, and others. They have all come to understand that the starting point for better lives is agriculture. When I met with President Obasanjo in Nigeria last March, I made him a proposition, "Let us work together to organize an agricultural summit meeting in the coming year to tackle possible ways to further increase productivity in the agricultural sector." President Obasanjo

Yohei Sasakawa is the President of The Nippon Foundation.

immediately said, "Yes" to this proposal, and preparations are now underway, led by Mr. Jean Freymond, Director of the Center for Applied Studies in International Negotiations (CASIN). If the summit takes place, and I am sure it will, I can think of no better way to commemorate a new millennium on this continent.

This change in policy priorities in Africa is one reason that I am so happy today. A further cause for my happiness can be attributed to Dr. Norman Borlaug. His method of doubling or even tripling agricultural productivity has been proven to work in Africa. I will not go into detail since it has been so brilliantly exhibited in many places already. It was Dr. Borlaug's philosophy of "going from the laboratory into the field" that fueled the success of our SG2000 project. The success was supported by the efforts of dedicated country directors and hard working extension workers in the 11 countries.

Now, let me focus on another prospect—capacity building in the agricultural sector—which makes me happy, and which also is the objective of today's workshop. I have already pointed out that without the hard-working extension people, our program could not have succeeded. But in the past, not much effort was put into re-training these people to a higher level of knowledge and skills. Also, there has been much discussion about the damage that "brain-drain" imposes on many African nations, but this discussion has almost never resulted in concrete suggestions to change the situation. The SAFE program was designed and implemented to solve some of these long-standing problems with frontline extension staff. The program started here in Ghana at Cape Coast University in 1992 and expanded to three other universities in the years that followed. Now we have 216 graduates with a BS-equivalent degrees who have returned to the field. The number of these students currently studying in Ghana, Ethiopia, Uganda and Tanzania is 252. This an amazing achievement!

Our work is based upon the principle that the development of Africa must be attained through the self-help efforts by the African people themselves. For this, we need to bring out the talent and capability of people in Africa. We need to nurture people with talent and capability who, at the same time, can work in the field with farmers sharing the burden and sweating at work together. We need more talented, knowledgeable and trained people who, rather than confining themselves to ivory towers, "go from the laboratory into the field," as Dr. Norman Borlaug says.

There is a saying in Asia, "If your plan is for 1 year, plant crops; for 10 years, grow trees; but if your plan is for 100 years, educate the people." We have here a plan for both 1 year and 100 years. But even without waiting for those 100 years to pass, I am sure that we will see our efforts bear fruit on this remarkable continent.

In conclusion, I would like to convey three messages here. First, agriculture is the most important industry in Africa. Second, the methodology is already there. All we need is the political will to actualize it in the field. And third, the education and training of people is the most crucial factor in implementing this process. Let us move on. Let us put our energies together. Let us work together for the bright future of all African countries.

Opening Statement

J. H. Owusu-Acheampong

The theme of the workshop, "Bringing African Universities and Colleges more into Agricultural Development," is very dear to my heart. The economies of Ghana and a majority of the countries in sub-Saharan Africa are based on agriculture. Agriculture and its allied services constitute the main occupation of the people of Africa.

One of the fundamental constraints of food production and food security in sub-Saharan Africa has been the inadequate and inappropriate training of agricultural extension staff. Many studies, including those by FAO, point out that 56% and 32% of the estimated 150,000 extension staff in Africa possess academic qualifications at secondary and intermediate levels, respectively. It is also estimated that the ratio of extension staff to farmers is about 1:2000. Due to this situation, the effective education of our subsistence farmers that could ensure the integration of innovations into their farming systems is lacking.

Technological changes in agriculture are accelerating rapidly and getting more complex. However, our extension staff—the men and women who work with farmers at the field level—lack the necessary skills in agricultural production and extension communication to cope with these changes. Therefore, it is very important to strengthen the capacities of African universities and colleges to develop responsive, demand-driven curricula at all levels.

To improve the technical and human relations skills of our extension staff, the University of Cape Coast in collaboration with the Ministry of Food and Agriculture, the Sasakawa Africa Association and Winrock International Institute for Agricultural Development, developed and launched an innovative B.Sc. Agricultural Extension program in 1993. Sasakawa Africa Association has provided technical and financial support to this program since it was launched in 1993 under the Sasakawa Africa Fund for Extension Education (SAFE).

I am especially pleased to inform this body that in 1999 SAA also began to assist the Ministry of Food and Agriculture in the implementation of a similar SAFE program at the Diploma level at Kwadaso Agricultural College in Kumasi.

It is my understanding that the Diploma program at the Kwadaso Agricul-

J. H. Owusu-Acheampong is Ghana's Minister of Food and Agriculture.

tural College is an offshoot of the B.Sc. Agricultural Extension program at the University of Cape Coast and is, therefore, affiliated to the University of Cape Coast. I am also informed that the University of Cape Coast will be awarding the diplomas to graduates from the Kwadaso program.

At this moment, when most of the universities in Ghana are doing away with their diploma programs in agriculture, it is most opportune for our Ministry to run this diploma program at the Kwadaso Agricultural College to ensure regular supply of qualified sub-professional officers to the sector. It is envisaged that the Kwadaso program is a prelude to the turning of all agricultural colleges in the country into diploma awarding institutions in conformity with the Government's education reform policy.

I cannot complete my speech without paying glowing tribute to our partners—the University of Cape Coast, Sasakawa Africa Association and Winrock International Institute for Agricultural Development—for the diverse ways they have contributed toward the development and implementation of the Agricultural Extension program at both the University of Cape Coast and Kwadaso Agricultural College.

It is my pleasure to announce that since the launching of the Degree program in 1993, 76 graduates have benefited from it and are now serving the nation. Currently, there are 78 students studying at the university for the B.Sc. degree in Agricultural Extension while 35 students are studying for Diplomas in Agricultural Extension at Kwadaso Agricultural College.

The University of Cape Coast must be praised for being responsive to the training needs of our Ministry and for taking the risk to offer such a program. The dedication of the Vice-Chancellor and the staff of the University of Cape Coast contributed immensely toward the success of the program. Without the substantial financial and logistical support from Sasakawa Africa Association and the technical support of Winrock International, the programs could not have been implemented at both institutions in Ghana. I therefore entreat all the partners to continue working together as a team to achieve the noble objectives of the program.

I am convinced that this group of national and international experts will have honest exchanges of ideas at this workshop and come up with pragmatic and strategic recommendations that will enable our universities in Ghana and other African countries to develop responsive programs to help bring about sustainable agricultural development and improve upon the lives of our people.

Opening Statement

Ekow Spio-Garbrah

Nothing is more gratifying than the commitment on the part of the Sasakawa African Association and this impressive galaxy of agricultural experts, eminent scholars, seasoned agronomists and policy makers to rededicate themselves to the task of harnessing the vast agricultural resources of the African continent to end the hunger and economic misery which millions of Africans face.

To all participants, delegates and friends of Ghana and indeed of Africa who have come from far and near, let me say *Akwaaba* to Africa's most hospitable nation. You are welcome to Ghana's tourist attractions, particularly the ancient forts with their famous European-built slave dungeons, the beautiful waterfalls, the vast stretches of sandy beaches, and above all the friendliness of the people.

This Workshop, "Bringing African Universities and Colleges more into Agricultural Development," could not have been organized at a more auspicious time. We are in an era when Africa, in spite of its vast agricultural and human resources, is said to have 37 of the world's 48 poorest countries. In the midst of plenty—the vast stretches of forest lands and soils rich with mineral and other natural resources—Africa has 50% of its population living in absolute poverty. This is the stark reality that we face as Africans.

The theme of this workshop is therefore very important because the foundation of the economies of the countries in sub-Saharan Africa is essentially based on agriculture. Owing to this reality, our universities and colleges should play more proactive roles in the process of ensuring sustainable agricultural development on the continent. The other sectors of our continent's economy cannot develop at an accelerated pace unless agriculture is well developed.

Agriculture, in addition to providing food for a nation's population, also plays very critical roles in job and employment creation, poverty alleviation, industrialization, political stability and good governance. A hungry man, it is said, is an angry man. Ghana has committed itself to the task of becoming a middle-income country by the year 2020. Making this vision a reality will depend upon our ability to develop the agricultural sector as the backbone of the economy. This demands a policy framework which

Ekow Spio-Garbrah is Ghana's Minister of Education.

addresses technological needs, injection of capital, training programs, efficient use of research findings and data and review of curricula to make them relevant and responsive to the nation's needs.

As my colleague, the Minister of Food and Agriculture, has already pointed out in his statement, technological development in agriculture is changing rapidly and getting more complex. However, the men and women who work with our peasant farmers lack training opportunities to develop the necessary technical and human relations skills to enable them to cope with the changes taking place in agriculture in this new millennium. Even in the few cases where training opportunities are available, the curricula are mostly theoretical in nature and not responsive to the work environment in which they find themselves after the completion of their studies.

One way of addressing this problem is to ensure that the farm remains an indivisible unit. It is a fact that most secondary and tertiary institutions in Africa occupy vast acres of land that students and teachers could utilize for agricultural production as part of agricultural training to help subsidize the costs of feeding students. Along this vein, it is important for agricultural universities and colleges to seek a good balance between theory and hands-on practical activities in their training programs.

I am happy to learn that several universities and colleges in Africa, including the University of Cape Coast (UCC) and Kwadaso Agricultural College in Ghana, are revising their curricula in order to make them responsive to the needs of the various clients in the agriculture sector, including the staff who work with our farmers in Africa. This is highly commendable.

Unlike basic education programs that are supply-driven, agricultural extension programs are largely voluntary and demand-driven. Therefore, the extension training programs being offered in our universities and colleges must take on life-long learning orientation and focus on distance education opportunities for extension staff who may wish to take university and college courses by distance education.

One of the problems of the institutions of higher education in Africa is their lack of attention to the need to document and disseminate their experiences. Without proper documentation and sharing of experiences gained, it is difficult to make claims to the success or impact of programs. In this vein, it is absolutely necessary that lecturers and researchers find time to visit pre-tertiary institutions to give talks on their research findings and the success stories behind the programs they are running. Workshops could be organized for teachers of these institutions to update their professional skills and knowledge and also help them educate their students on some of the new programs being offered in tertiary institutions.

I wish to urge the universities and colleges that are offering innovative agricultural extension training programs to take time to document their experiences in the form of case studies which clearly point out the strengths, weaknesses, problems or challenges in running such programs. Such case studies would provide vital information for program improvement and also provide useful insights to guide other universities and colleges that may be interested in offering similar programs.

I am especially pleased to learn that the innovative programs in agricultural education are not focused solely on university degrees but also on the diploma

level at the agricultural colleges. The majority of the extension staff in Africa are certificate holders who need to be upgraded to the diploma level. Let me commend the Ministry of Food and Agriculture for taking this bold step to run a diploma program in agricultural extension at Kwadaso Agricultural College to ensure regular supply of sub-professional officers to the sector. We all hope that the new diploma program at Kwadaso Agricultural College will be a prelude to the turning of all agricultural colleges in the country into diploma awarding institutions in conformity with our Government's education reform policy. We will work with the Ministry of Food and Agriculture to make this policy a reality.

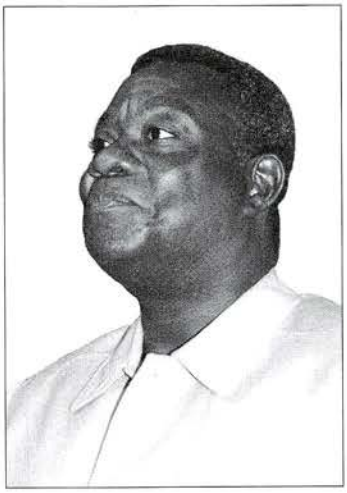
Beyond this collaboration, there ought also to be a policy framework that enables and facilitates a linkage of university courses to realities outside the university i.e., industry, commercial production, packaging etc. This makes it pertinent for private farming companies to offer students an opportunity for field trips, study tours, weekend excursions, or better still, internships, attachments, work-study arrangements or vacation employment.

Agriculture is not just about gaining knowledge in the subject, undertaking research and developing curricula, it is practically about producing enough food for the people. Africans need nutritious and well-balanced food at affordable prices. The hoe and the cutlass can no longer be used to feed the teeming population of the continent. The time has come for African agricultural engineers to put a stop to the clamor for advanced technology produced elsewhere. Conscious efforts must be made to develop simple but efficient, reliable and affordable agricultural implements as has been done in India and China. These two countries have succeeded in developing technologies that contribute immensely to feed their people. While globalization will definitely encourage the importation or use of technologies developed elsewhere, we must strive to internalize and domesticate these technologies for effective agricultural development and food production.

Let me end my address by taking this opportunity to extend my sincere thanks and appreciation to the University of Cape Coast, Sasakawa Africa Association and Winrock International Institute for Agricultural Development for being responsive to the training needs of our nation in the field of agricultural extension and for providing leadership for other universities who have launched similar programs. I hope all the stakeholders will continue to work together in partnerships to achieve the objectives of the program.

Opening Address

John Evans Atta Mills



Before I continue, please rise and join me to observe a minute's silence in memory of a good friend of Ghana, the late Ryoichi Sasakawa, through whose tireless efforts and financial support the Sasakawa-Global 2000 agricultural initiative was launched in sub-Saharan Africa.

The SG2000 programs have had a tremendous impact in Ghana since they started in 1986. I am convinced that if the late Mr. Sasakawa were here today, he would be pleased to see the progress being made in agricultural development in Ghana and the other countries where SG2000 has intervened.

We are honored to have in our midst today two very special people who are no strangers to Ghana. The first is Mr. Yohei Sasakawa, the President of Nippon Foundation of Japan. As the President of the Nippon Foundation, he has continued to commit his energy and financial resources to the SG2000 programs and other humanitarian works begun by his late father, Ryoichi Sasakawa. The second person is Dr. Norman Borlaug, the eminent world agricultural scientist, Nobel Laureate, father of the Green Revolution in Asia and also President of the Sasakawa Africa Association. Dr. Norman Borlaug has devoted most of his energy in his retirement years to providing leadership for the effective implementation of SG2000 programs in sub-Saharan Africa. We are fortunate to have with us such distinguished individuals and their associates who share our common commitment to improving agricultural and rural development in Africa.

As you are aware, the SG2000 initiative in Africa is a partnership between the Sasakawa Africa Association (SAA) in Tokyo, Japan and the Global 2000 program of the Carter Center in Atlanta, USA. SAA is responsible for program management while Global 2000 provides the enabling policy and political environment to underscore the SG2000 program activities. I therefore wish to take this opportunity to also acknowledge the role of the former President of the United States of America, Jimmy Carter, in establishing the SG2000 program in Africa. President Carter, another longstanding friend of Ghana, has been working selflessly to uplift the disadvantaged in Africa, particularly in the areas of food security, housing,

John Evans Atta Mills is the Vice President of the Republic of Ghana.

primary health care and good governance.

It is most encouraging to see a wide range of eminent national and international experts at this workshop to share in the deliberations and exchange ideas on the role of African universities and colleges in agricultural development.

Our universities and colleges must develop training programs that are responsive to the rapidly changing needs of the African continent. Gone are the days when universities and colleges offered programs merely for the sake of intellectual development or safe desk jobs. Agricultural universities and colleges must offer programs that prepare graduates to go beyond production agriculture and embrace other off-farm career opportunities such as marketing, processing, food distribution systems, and consumer concerns about cost, quality, and environmental effects of agricultural systems. Such training programs should also enable the graduates to face the realities of their own environment and make positive changes within their societies, including the willingness to work in fields with farmers in their difficult circumstances. Hands-on practical training, particularly off-campus activities involving community-based problem solving must be given more attention in the training of agriculturists in our universities and colleges.

When the SG2000 programs were initiated in Ghana in 1986 the emphasis was mainly on assisting small-scale farmers to obtain improved yields in food crops, especially maize and sorghum through improved seeds and simple but effective farming techniques. The human resource development component, especially the training of our extension staff—the men and women who work with farmers at the field level—was not emphasized. This was later perceived as a major missing link in the SG2000 initiative. Therefore, in 1991 SAA, in collaboration with Winrock International Institute for Agricultural Development, launched the Sasakawa Africa Fund for Extension Education (SAFE) to correct this shortcoming in the SG2000 programs. The SAFE program provides assistance to selected agricultural universities and colleges in sub-Saharan Africa in reforming their agricultural education and extension curricula in order to make them responsive to the training needs of agricultural sector clients—farmers, rural development organizations, and agribusiness. SAA also fosters networking among the participating African agricultural universities and colleges with the aim of building strong pan-African academic partnerships to develop responsive training programs for agricultural extension staff.

Ghana was the first country to benefit from the SAFE program. A B.Sc. program in agricultural extension was initiated at the University of Cape Coast in 1993 and a Diploma program was launched at Kwadaso Agricultural College in Kumasi in 1999. The program at Kwadaso is affiliated to the University of Cape Coast from where diplomas will be awarded to the graduates from the Kwadaso program. Some of our universities in Ghana initially resisted the idea of offering this special program for our mid-career extension staff for fear of lowering their academic standards. The University of Cape Coast agreed to collaborate with the Ministry of Food and Agriculture, SAA, and Winrock International to offer this innovative program. I wish to take this opportunity to commend the Vice-Chancellor of the University of Cape Coast, Prof. S. K. Adjepong, and his staff for taking the risk in offering such an innovative and demand-driven training program in Ghana.

It is gratifying to learn that universities and colleges in other African countries,

including Burkina Faso, Ethiopia, Mali, Nigeria, Tanzania, and Uganda, have adopted the University of Cape Coast model in designing training programs for mid-career agricultural extension staff in their respective countries. These are concrete examples of how African universities and colleges can become more closely involved in agricultural development. Even though there are only a few African countries currently offering innovative training programs for mid-career agricultural extension staff, I believe that there will be a visible and significant change in the near future. Many revolutions around the world began with a minority of people who had a clear vision and were committed to make that vision work.

The majority of our people reside in the rural areas and depend mainly on agriculture for their livelihood. The problems of the rural areas are multi-faceted and diverse, including problems of food insecurity, poor housing, a high incidence of preventable diseases, and high illiteracy rates. This is why the government of Ghana has devoted considerable attention to agriculture and rural development and infrastructure during the last two decades.

Our Medium-Term Agricultural Development Strategy (MTADS), for example, placed emphasis on institutional strengthening, investment in rural infrastructure, efficient agricultural research and extension services, promotion of market-oriented agriculture, biodiversity and efficient management of natural resources. While the review of the impact of the MTADS may be mixed, it has drawn national and international attention to the need to invest more in agriculture and rural development as a means of bringing about sustainable development in Ghana.

Our universities and colleges should develop new and more responsive programs or revise existing programs in order to make them multi-disciplinary and responsive to the needs of our societies. Multi-disciplinary programs are the trend of the future because they offer students a wide range of opportunities to deal with the complex and rapidly changing world in which we find ourselves in this new millennium.

From the list of workshop participants, I note that there are Vice-Chancellors and Deans of Faculties of Agriculture from several reputable African universities and colleges attending this workshop. I urge you, both individually and collectively, to use this time to take stock of your various training programs and see how they can be made more responsive to the changing needs of our respective countries.

I strongly believe that in order for African universities and colleges to make a meaningful impact on agricultural development there must be strategic alliances and partnerships between governments, public and private institutions and organizations, donor agencies and technical assistance agencies. Governments cannot do it alone, especially given the difficult economic circumstances in which we all find ourselves. Where there is a common vision and committed leadership, partnerships are sure to succeed. The success of the joint SG2000 and SAFE programs between the government of Ghana on the one hand and SAA, Global 2000 and Winrock International on the other, provides an outstanding example of fruitful collaboration.

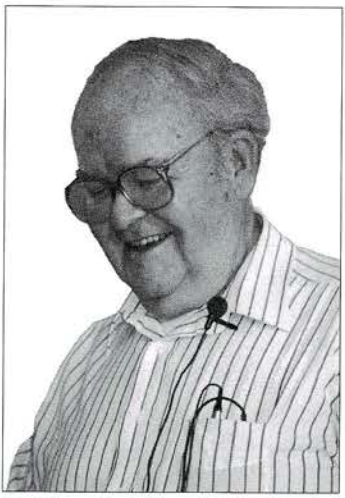
I am pleased that this important international workshop is being held in Ghana in recognition of our humble efforts to improve upon the living conditions of the people in our country and the African continent. In the light of the high caliber of the participants at this workshop, I am convinced that you will have

fruitful discussions and that the conclusions and recommendations that will emerge from this workshop will be translated into practical action. On this hopeful note I now have the honor to declare this international workshop open.

KEYNOTE ADDRESS:

Why Rural Human Development Matters

G. Edward Schuh



I have set my sights rather broadly in terms of the assignment that has been given me. I realize that the title of the Workshop addresses the issue of bringing African universities and colleges more fully into the process of agricultural development. I also realize that the descriptive material for the Workshop gives a lot of attention to the training of extension agents. However, the title of my paper is much broader than that, and I have thus cast my net amply.

Universities in the region have a significant role to play in many dimensions of rural human development. In addition to playing an important role in the direct production of some of the human capital that is critical to the development of agriculture and the rest of the economy, they also have a responsibility to provide the leadership for the development of lower-level institutions that provide education and training and thus engage in human development more broadly. That leadership role is not always an easy role to play, especially when the educational institutions are bound up in complex bureaucratic arrangements.

An important part of my remarks will focus on the various forms of human capital and on how it contributes to the development and modernization of agriculture. That will, of necessity, entail a discussion of the formal educational and vocational systems, as well as vocational training in the region. However, given that human development also involves the adequacy of health and nutrition, I will have some brief comments on those issues. In addition, my agenda will include the role of the household in human development and what we might do to strengthen the capacity of the household to produce human development and human capital. It will also go as far as to discuss the role of the universities and colleges in promoting the division of labor and specialization that is so essential for economic development.

Formal Education and Agricultural Development

A useful place to consider the importance of human development is with formal

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education or schooling. Empirical research has shown us that education and the cognitive skills it helps to develop contributes to production in a number of ways. First, we have learned that workers with more formal schooling were more productive in physical terms, independently of any other change the increased schooling might bring about. The late Zvi Griliches documented this with his work on the aggregate production function for U.S agriculture. In that work he showed that the coefficient for the variable measuring education was exactly the same as the coefficient for the physical measure of labor in the sector. That meant that increasing the level of schooling of the agricultural labor force had the same effect as increasing the number of workers in the sector. That was a very important finding, for it documented in an important way the importance of education in improving the quality of the labor force.

A second dimension to the contribution of education is that it enables the farmer to make more efficient use of the resources he has available to him or her, including his own labor. It is the cognitive skills that the individual acquires from schooling that enables him or her to bring about this increase in efficiency. An important issue in this case is that as long as traditional production techniques are being used, there is little to be gained, in this sense, from the additional education. The techniques of production will be unchanging, and there will be little to be gained from re-organizing the resources used in production. Once new technology is available, however, the need to combine the available resources in new ways will be important. If the farmer does not learn how to recombine his resources the potential gains from the new technology will be lost.

There is a corollary here that is very similar to that associated with making more efficient use of the resources at hand. As long as there is no new production technology being made available to the producer the returns from this contribution of education will be rather low. However, as more new production technology is made available, the rate of return to education from this contribution will be higher. This complementary relationship between education and new production technology is very important. It probably explains why at early stages of development it is difficult to see why investments in education are important, at least from an economic perspective.

A third contribution of education or formal schooling relates to new production technologies that are produced from agricultural research programs and that need to be decoded by farmers if they are to use it. The cognitive skills developed by formal schooling are critical to this decoding. The cognitive skills, however, include more than literacy and the ability to read the instructions on the new packages. It includes the ability to gain understanding of how the new technology contributes to production, and the need to learn how to adapt it to the local conditions on the individual farm.

Finally, Professor Schultz had enormous insight in teaching us about entrepreneurship and disequilibrium economics. Under this rubric, the role of cognitive skills again comes to the fore. Moreover, we come back to what happens when an economy begins to experience change, either from the introduction of new production technology, or from changes in the economy or other sources. These changes, or these shocks, create disequilibria in the economy, since the adjustment process will tend to lag behind that required from the original shock. Cognitive skills enable individuals to exploit

these disequilibria, and to garner personal gains in income from so doing. Note, however, that it isn't just the individual that benefits. Society as a whole benefits from making a more efficient use of the resources. Furthermore, note that an important component of the benefits we refer to from exploiting these disequilibria is derived from entrepreneurship. Many have argued that one cannot teach entrepreneurship. However, developing cognitive skills can certainly make existing entrepreneurial talents more effective.

Related Issues

There are two related issues that can be considered at this point in my remarks. So far I have concentrated on the role of schooling and formal education and its contribution to agricultural development. However, schooling has another important contribution to make. As I have argued elsewhere, if agricultural modernization is successful, a significant share of the agricultural labor force will have to seek employment elsewhere if it is to earn incomes comparable to what labor earns elsewhere in the economy, and if the process of modernization is to be sustained. An important role of education and schooling is to help prepare members of the important contributions in terms of alleviating rural poverty.

Ironically, this is a two-edged sword. As noted above, education and schooling raises the productivity of labor in agriculture. In the first instance, that increases the demand for those commodities. The increase will thus tend to drive down the price of the commodity, and in turn, will reduce the demand for labor. Hence, in effect the labor is driven out of agriculture by what takes place in the commodity markets. This mechanism makes the education of the rural population all the more important.

Finally, there is the issue of vocational training. In a sense, this is the corollary of formal education and schooling and the importance of cognitive skills. While recognizing the importance of vocational training, I have not given it a large role in my remarks because in practice it is difficult to separate the development of cognitive skills and vocational skills from each other. In fact, there is a continuing controversy in the education field over whether the two can in fact be separated. For now, I would just say that these vocational or applied skills are terribly important in raising the productivity of labor in agriculture, and that the development of vocational skills are equally important in preparing the rural population for employment in the non-farm sector.

The Role of the Household

A great deal of human development takes place in the household, although development economists have been slow to recognize that. When we think about human development, however, we are aware of the production of children in the household, the provision of adequate nutrition to provide for strong, healthy bodies and minds, including cognitive skills, and the importance of good health, yet we don't always recognize the role of the household in producing it, or of making it possible.

Even less seldom is it recognized that a great deal of the development of cognitive and vocational skills takes place in the household, the development of these skills takes place almost every day in the life of a household, and the "teacher" typically involves almost all members of the household. In fact, there is another important complementary relationship that takes place here. The higher the level of education and training of members of

the household the greater will be their contribution to the production and development of these skills in the household. Some of the evidence for this point is that the eventual success of children is determined in large part by the education of the caring parent, which tends to be the woman.

There is another important issue, however, and that involves the importance of the time constraint in the household. Our general failure to recognize that the household is equivalent to a firm producing goods and services for the members of the household causes us to neglect the productivity of time in the household as critical for the women in the household. In the case of farming, the woman typically does a lot of the work on the farm, which is in addition to the time spent in household activities.

There is an important dynamic that takes place in the household that needs to be given more attention. Under a rather wide range of conditions in sub-Saharan agriculture the man leaves the household to take employment elsewhere in the non-farm sector. That requires that the woman play a more important role in the farm activities. With time limited to 24 hours a day, that means that often the time of the woman is pulled away from the household activities, which as I have argued, is importantly engaged in the production of the human capital for the family.

Two things are important in this context, and yet are typically neglected in development programs. The first is the importance of the production technology used in the household. Agricultural developers tend, appropriately, to put a lot of attention on the availability of new production technology for the production of the farm commodities. Less seldom do they recognize the importance of a suitable new production technology for the household. If that new technology were made available, it would not only relieve the drudgery of much of the work the woman typically does in the household, it would also raise her productivity so that time would be released for giving more attention to the production of the human capital.

The related issue is the neglect of providing education for the women and girls in the household. Given that the woman is responsible for most of the effort devoted to the production of the human capital in the household, she needs the cognitive skills for these activities in the same way they are needed in the production of the farm products. She needs to decode the household technology, and if she is the person responsible for the farm production activities, she needs it for decoding the technology for the farm unit as well. Moreover, if she has the literacy and cognitive skills, she can read and provide improved health and improved nutrition.

Finally, there has been a recent trend toward having female extension agents because of the important role African women play in agricultural production. An equally strong, and perhaps even stronger case can be made for extension agents who teach the women more about the household technology. This would include knowledge on health, sanitation, nutrition, and the ability to make more effective use of their time.

Universities and Colleges

Africa has some fine colleges and universities, and some of them have scientists and other knowledge agents who are close to the frontiers of knowledge. Not many of these colleges and universities however, have taken on the responsibility of being change agents in society. One of the great engines of economic growth in the United

States has been the land grant universities, with their triple mission of teaching, research, and education. Although limited in the beginning to state-supported public universities, the concept of the land grant mission has spread, and today one seldom finds a university, private or public, that does not have the main elements of the land grant university as the basis of its programs.

At the same time, the essence of the land grant concept, and one that is neglected today even in universities identified as land grants, is the sense of institutional mission those universities originally had. They were created with a mission of providing higher-level education to the sons and daughters of farmers and of industrial workers. That was a revolutionary concept at the time, and one that is still not widely adopted in other countries, where higher-level education tends to be reserved for the sons and daughters of the elite.

The second mission of the land grants, added decades later, was that of research—the production of new knowledge. The addition of that mission made the universities a dynamic force in society. The important point is that this mission had a problem-solving dimension to it, one that helped make the universities powerful agents for change and development. Then later, it was realized that if the new knowledge was to be effective it had to be extended to the private sector, and in particular to the producers.

The genius of this system was two-fold. The first was the sense of mission these universities were given. The land grants were to be agents of change, and to help solve the ever-changing problems of society. The second element of genius was the integration of the three functions in one institution. The complementarities among the three functions are great, and the integration of the three functions in the same institution has been an efficient way of delivering the three services.

My point is not to make the case for the land grant concept in Africa, although I think it has much to offer to Africa countries. The key element is to link the three functions, or to integrate them, even though each function may be embedded in separate organizations or institutions.

When we think about a university or college we tend to think first about the education of students. There are many things we could discuss about this, but the main thing I would like to emphasize is the importance of transmitting new knowledge form the frontier of knowledge, while at the same time making sure that the knowledge provided is relevant to the problems of society. It is easy for academic faculty to think that the university or college is there to serve their interests. The truth of the matter is that the universities, especially public universities, are there to serve the needs of the student, and the society at large.

A second point I want to emphasize is the importance of the social sciences to the problems of modern society. Colleges of agriculture are typically organized around the biological and other agricultural disciplines. The social sciences tend to come off third or fourth in the line of priority, and then only with modest and weak investments.

The related point is the importance of melding together the various subject matter disciplines in the college of agriculture in multi-disciplinary cooperative efforts, independently of whether one is considering teaching, research, or extension. There are very few problems in today's world that can be solved by knowledge from only one discipline. The challenge is to have strong disciplinary departments, while at the same time

engaging them in collaborative endeavors.

In making the above points I do not want to leave the impression that the universities are the only institution in society capable of producing new knowledge and transmitting it to the members of society, either to the youth or the adults. The private sector has an important role to play in each of the three basic functions. Moreover, many of the goals or criteria I have discussed above will be more easily attained by close cooperation between the private sector and the universities, and between the non-governmental organizations and the universities. My perception is that these links are fairly weak in Africa, and that in some cases such linkages tend to be controversial.

Training the Cadre

An important way that universities and colleges contribute to rural human development is by training and serving the cadres for a modern agriculture, or for modernization of agriculture. We will be spending a lot of time in this workshop addressing the problems of training the extension agents, and those are important issues. However, I believe we need to be thinking more broadly than that. For example, there is the recurrent and pressing problem of credit for a modern agriculture. I am always surprised at how seldom we address the problem of providing the skilled cadre needed for the credit system, both in local banks and credit agencies and in the larger bureaucratic infrastructure of the banking system. The cadre for these agencies, be they private or public, need training in management, economics, and the institutional arrangements, as well as in the basic agricultural skills. The lack of such training and education for the cadre of the credit system is sorely lacking and must be provided if we are to address the improvement of human welfare in Africa.

The related point is the lack of training in modern management for agriculture, and for the private and public sector that serves agriculture. In addressing this issue, I am reminded of how agricultural economics was born in the United States. Early in the last century the colleges of agriculture and the extension systems were made up for the most part of the agronomic and agricultural disciplines. However, people began to realize that the main management problems that farms were facing were those involving the economic management of their resources. This problem was first recognized in departments of agronomy. These departments, for their part, created small units of farm management to address this problem. Since there was no research being done on these issues, the agronomists conducted surveys of farmers as the means of identifying the best practices for earning income being used on farms. The extension staff themselves distributed that knowledge to the other farmers.

Later, the importance of marketing was recognized. That led to the creation of small marketing units in departments of economics. Eventually, it became recognized that these two separate fields had some relationship with each other, and the two units were joined to create departments of agricultural economics. In effect, the universities were responding to the needs of society, as should have been expected of a land grant university.

Let me conclude this section by emphasizing the key role that universities and colleges play in rural human development in African countries. They should make every effort to be on the cutting edge of knowledge, and in the same way, make every effort to transmit that knowledge to the citizens of their countries, to train the cadres needed for modernization, and to

use the knowledge available to address the pressing problems of African society.

Competitiveness in the International Economy

African countries tend to lag behind countries in other parts of the world in the level of their per capita incomes. Human development in the various ways identified above is critical to closing the gap between Africa and the rest of the world. In this section I want to discuss how human development can contribute to closing the gap in ways not identified above.

Adam Smith taught us in his Magna opus of 1776 on The Wealth of Nations that it was the division of labor and specialization that was critical to garnering increases in per capita incomes. Recall, that he was writing at a time in which technical change as we understand it today was only minimal, yet countries still experience increases in per capita income. Specialization and the division of labor were his explanations for this phenomenon.

In today's world, we tend to put the emphasis on the production and adoption of new production technology as the engine of economic growth. However, Smith's propositions about specialization, and especially about specialization among members of the labor force, are still pertinent. A little reflection will persuade one that everything I have said about education, schooling, and vocational training is pertinent to gaining more specialization and thus more division of labor. I emphasize this because it calls attention to the sense in which human development can be an engine of economic development, and in the context of this Workshop, agricultural development.

More recent developments in the field of economic development make an additional important point. Allyn Young has revitalized Adam Smith's basic point by calling attention to the division of labor and specialization among *sectors* of the economy. From his perspective, the engine of economic growth is the spinning off of specialized sectors of the economy to produce the inputs needed by the more basic sectors of the economy as it grows. In fact, he argues that this process can be a powerful driving force impelling economic growth forward.

This insight gains special power when it is used to connect what we know about international trade and about economic development. With that connection, we can understand how specialization in specific economic activities can help make a country more competitive in international markets and thus make international trade a powerful source of economic growth and development. This is the lesson of the Asian Tigers and their great success in closing the gap between their per capita incomes and those in the developed countries.

A couple of things are worth noting. First, it is the division of labor and specialization that is the key to raising productivity and thus to being more competitive in the international economy. This emphasizes again the importance of human development as an important means to economic growth. Second, the universities play a special role in helping a nation to gain the sectoral specialization that is so important to helping a country gain international competitiveness more generally. It is through the research that they and the private sector undertake that produces the new production technology, as well as the skilled manpower, that is so critical to specialization and, in turn, international competitiveness.

In closing this section, I find it difficult to leave the subject without mentioning one of Professor Schultz's great insights.

He argued that the ultimate specialization and division of labor in a society takes place in the universities. As we think about the role of the universities and colleges in promoting agricultural development in this workshop we might think about this issue of dividing up the task and specializing in ways that will take advantage of the comparative advantage individual countries and universities already have.

Some Concluding Comments

The title of my presentation advised me to address the issue of why rural human development matters. I have not dwelled on why agricultural and rural human development matters in my remarks, in large part because it should be obvious when so many of Africa's resources are in agriculture and when such a large share of the African consumer's income goes for food. Instead, I have focused on why human development in general matters.

It has not been possible to cover all that could have been covered under the topic given me in the time allowed me. However, I hope I have shed some light on why human development, in all its various dimensions, and at all its various levels, truly matters. I hope I have also given sufficient attention to the fact that it is when an economy starts to grow and change that human development surfaces as the critical issue. In other words, human development is the sine qua non of the dynamics of economic growth and development. The reason we are at this Workshop is to help promote that growth and development.

Human Resource Survey of Agricultural Extension Workers in Sub-Saharan Africa

Alex G. Carson

The agricultural sector in sub-Saharan is faced with many challenges, including food insecurity, inefficient use of available agricultural innovations, very high cost of agricultural inputs, slow take-off of knowledge-intensive farming systems, very high cost of agricultural produce, degradation of the environment due to pressure on the land and a rapidly growing population. A key factor in dealing with these challenges is the need for systemic changes and adaptations in agricultural education. This need for transformation places tremendous responsibilities on the agricultural education institutions, both within the public and private sectors.

Agricultural extension has emerged as the main organization dealing with human resource development and technology transfer to farmers in developing countries around the world. There is a general agreement that agricultural extension must be bolstered to enable it continue playing this critical role in agricultural and rural development in sub-Saharan Africa. However, numerous studies have pointed out that extension organizations are not able to cope with the emerging challenges they face owing to poorly-trained, poorly-equipped and inadequate numbers of extension staff who are currently working in these extension organizations (Crowder, Lindley, Bruening and Doron 1998; FAO 1990, 1991, 1996, 1998a, 1998b; Kwarteng, Zinnah and Ntifo-Siaw 1998; Qamar 1998; Rogers 1996; Zinnah, Steele and Mattocks 1998). This problem is exacerbated by other critical factors, including:

1. There is the lack of up-to-date data on human resource development needs in many African countries. This results in poor policy on the actual training needs and often gives rise to the failure to provide the needed resources to make training programs functional.
2. The absence of systemic revitalization of the curricula of most agricultural colleges and universities which would make them responsive to the new requirements and demands of the rapidly changing work environment of extension staff.
3. The lack of awareness or absence of a credible mission statement, well-developed strategy and sound management in

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agricultural colleges and universities.
4. Poor network mechanisms that could speed up the exchange of ideas on innovative educational practices, lessons and models to create responsive institutional change.
5. The lack of a consensus about the appropriate model of extension that should be used resulting in continuous shifts from one model to the next without carefully considering their human resource implications. Different extension models have different human resource needs in terms of the required number and educational level of extension staff.
6. The current trend toward privatization and decentralization does pose new training challenges for extension staff in terms of their numbers, education level and specific types of training required.

Human Resource Situation of Agricultural Extension Workers in Africa

There is a lack of current and accurate data on the human resource situation of agricultural extension workers in Africa. Since earlier efforts to compile data on the status of agricultural extension staff worldwide (Swanson, Farmer and Bahal 1990; FAO 1991), there has not been further in-depth work on the status of the staffing situation of agricultural extension workers in sub-Saharan Africa. Therefore, it is difficult to give any precise account of the current human resource trends such as: (1) the down-sizing or up-sizing of extension staff, (2) extension worker to farmer ratio, (3) educational qualification and training needs, (4) professional status, (5) the proportion of female extension staff and gender-related training needs, and (6) staff stability. The most recent reports by FAO (1990; 1991) on extension staff estimate that there are about 600,000 extension workers worldwide serving about 1.2 billion people who are economically active in agriculture. About 150,00 of these extension workers are based in sub-Saharan Africa. Tables 1 and 2 provide snap shots of the staffing situation in selected countries in sub-Saharan Africa. These are the countries in which Sasakawa-Global 2000 has agricultural development programs in collaboration with ministries of agriculture and private organizations, including local and international NGOs.

Table 1. Total number of extension staff differentiated by gender in selected African countries.

Country	Male	Female	Total
Benin	1,889 (92%)	165 (8%)	2,054
Burkina Faso	N/A	N/A	1,989
Eritrea	483 (79%)	127 (21%)	610
Ethiopia	12,991 (77%)	3,918 (23%)	16,909
Ghana	3,614 (88%)	490 (12%)	4,104*
Guinea	1,223 (95%)	65 (5%)	1,288
Malawi	2,288 (86%)	365 (14%)	2,653
Mali	N/A	N/A	3,016
Mozambique	665 (95%)	35 (5%)	700
Tanzania	N/A	N/A	7,000
Uganda	1,563 (82%)	332 (18%)	1,895

Sources of data: Achuonjei et al. (1997); Aralamon et al. (1999 & 2000); Bekuretsion, H. (2000); FAO (1990 & 1991); Gebre, T. (2000); Mallet (2000); Nhancale, (2000); Qamar (1998); Valencia (2000); Zinnah, Bekele, Beshah and Korara (1995).

*About 500 are in the Head Offices of the Ministry of Food and Agriculture.

The following is a list of key factors related to the human resource situation of agricultural extension staff in sub-Saharan Africa. These factors were derived from a synthesis of previous studies (Crowder, Lindley, Bruening and Doron 1998; FAO 1990, 1991, 1996, 1998a, 1998b; Kwarteng, Zinnah and Ntifo-Siaw 1998; Qamar 1998; Rogers 1996; Zinnah, Steele and Mattocks 1998).

- Lack of proper needs assessment to determine the actual manpower needs in agricultural extension of the country and the capacity of agricultural colleges and universities to offer responsive program to meet those training needs.
- Lack of reliable data on extension staff in the private sector including non-governmental organizations (NGOs). FAO (1990) estimates that about 86% of the extension organizations in the world are funded and organized by government ministries or related institutions while the remaining 14% of extension services in Africa are provided by the private sector, including national and international NGOs, farmer groups, self-help groups, and commodity organizations. However, there are no accurate data on the number, gender, and educational levels of these private sector extension staff.
- Lack of strategic national training policies in most sub-Saharan African countries.
- Agricultural colleges and universities lack clear objectives, mission statements, target groups that should be served, the type of jobs for which the students are being trained and the extent to which their curricula need to be revised to meet the rapidly changing demands of the agricultural sector.
- Low number of qualified staff, the majority of whom are poorly trained and ill equipped to effectively carry out their tasks.
- The majority of extension staff (about 80%) possess only secondary school and intermediate level diploma and certificate credentials.
- Very few female extension staff (about 11% or less).
- Very wide variation in the structure of the educational systems in the Francophone and Anglophone countries in Africa.
- Structural adjustment programs being promoted by the International Monetary Fund and the World Bank to "restructure" the economies of countries in sub-Saharan Africa have reduced the main roles of extension and research services to techni-

Table 2. Number of extension staff by educational qualification in selected African countries.

Country	Secondary school level or lower	Intermediate level (diploma & certificate)	Undergraduate degree or equivalent	Post-graduate degree	Total
Benin	1,702 (79%)	203 (9%)	55 (3%)	194 (9%)	2,154
Burkina Faso	N/A	N/A	N/A	N/A	1,989
Eritrea	115 (19%)	321 (53%)	137 (22%)	37 (6%)	610
Ethiopia	550 (3%)	15,033 (89%)	1,326 (8%)		16,909
Ghana	Nil	3,396 (83%)	592 (14%)	139 (3%)	4,104*
Guinea	294 (23%)	424 (33%)	568 (44%)	2 (<1%)	1,286
Malawi	Nil	2,565 (97%)	53 (2%)	35 (1%)	2,653
Mali	N/A	N/A	N/A	N/A	3,016
Mozambique	100 (14%)	567 (81%)	30 (4%)	3 (<1%)	700
Tanzania	N/A	N/A	N/A	N/A	7,000
Uganda	Nil	1,618 (85%)	261 (14%)	16 (1%)	1,895

Sources: See table 1.

*About 500 are in the Head Offices of the Ministry of Food and Agriculture.

cally facilitative and qualitative roles, and have tried to divest the important roles of input supply, credit, and seed production and multiplication to the private sector. The structural adjustment programs have, to some extent, reduced the number of extension staff in the public sector due in part to the decline in the level of state expenditure in most African countries. Owing to the reduction in the level of state expenditure in the agricultural sector, governments have been unable to hire additional extension staff to provide needed extension services to the large number of farmers.

Implications of the Staffing Situation of Agricultural Extension Workers in Africa

- The number of agricultural extension staff in African countries is grossly inadequate in terms of the ratio of extension staff to farmers. Therefore, each country in sub-Saharan Africa should develop and implement strategic national policies on agricultural extension training and staff development to fulfill agricultural and rural development objectives. Such policies should be supported with the needed resources to ensure that they are successfully implemented.
- There is the need for systematic, rather than an ad hoc, formulation, monitoring, evaluation and revision of curricula for training of extension staff. This should be based on proper training needs assessment to determine the extension manpower needs of the country.
- Agricultural faculties and colleges should be proactive in revising their curricula and teaching methods to respond to the training needs of the country. This will help to produce graduates who are able to perform their tasks without costly additional training.
- There is the need for leaders of agricultural colleges and universities who are capable of formulating a clear vision for training and cultivating a flexible interdisciplinary approach to education to address the complex and changing needs of the agricultural sector.
- Graduates from universities and colleges in Africa are no longer guaranteed automatic job placements in the public sector upon the completion of their training programs. One of the main avenues for employment is the private sector, including NGOs. However, these employers are demanding graduates with diverse skills that go far beyond the traditional skills in crop and animal production. They are demanding agricultural graduates who also have skills in communication, critical thinking, and entrepreneurship and management. Agricultural universities and colleges must respond to these emerging demands.
- There is the need for partnership in developing, co-financing and implementing extension training programs, involving diverse national governments and donor and technical assistance agencies, in order to increase program impact.

Conclusion

Education is a capital—it is a human capital. It is a necessary investment. Investment in agricultural education institutions where human resources are developed represents the best hope for achieving sustainable agricultural and rural development. Sustainable agricultural and rural development is knowledge intensive and education is a key factor in fostering, generating and reproducing knowledge. Overcoming the many challenges facing the agricultural sector in sub-Saharan depends mostly on well-trained, well-equipped and adequate number of agricultural extension

workers who possess the technical knowledge and human relations skills, and the commitment needed to create real change. Agricultural colleges and universities and public and private sector agencies can and should take on the responsibilities of helping to foster the training of change agents who would possess the capacity and commitment to facilitate sustainable agricultural and rural development in sub-Saharan Africa.

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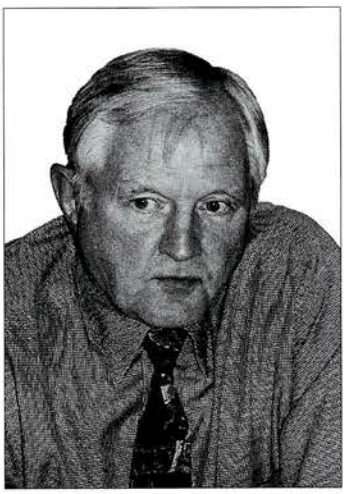
Agricultural Education in Africa: Managing Change

Charles J. Maguire



The situation confronting agricultural educators everywhere may be summed up in the phrase: "Adapt or Perish" (Wallace 1997).

Change is a fact of life. When we look around us at our families and friends, at our towns and farms, our sources for information, and our choice of consumer goods we notice that very little remains static. Change is also a fact of life in the world of academia even if the pace is slow. We have reached a point in agricultural education where the demands for change from outside our institutions are numerous and strong and it is critical that decisions are made on how to respond. This conference provides the opportunity to examine what is happening in the world of agricultural education, gain a better understanding of problems, imperatives, solutions, and most importantly, create the resolve to return home with the courage and the determination to do something positive about the challenge of change.

Change and African Universities

By international standards African Universities are very young, dating from the 1960s when the independence movement began to gain momentum. The African universities have achieved much in a short time but now with increased enrollment and declining budgets there is a serious risk of universities losing their influence on the higher education of Africa's youth. Africa's universities currently stand in crisis at a pivotal point in their development. The mandates given at independence—and ensuing higher education policies—now require reassessment as a result of changes in the world, in Africa, and in the universities themselves (Saint 1992). What are some of the main problems in African universities?

- enrollments are often greater than the capacity of universities to handle
- unsustainable patterns of expenditure for higher education
- decline in the quality of education
- declining relevance to national needs (Saint 1992)
- exodus of teaching and research staff to areas of higher pay and better conditions
- too many universities in certain countries that cannot be sustained with existing budgets
- poor linkages and lack of communica-

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tion with employers of graduates from the universities

Change and Agricultural Education

Worldwide, agriculture has had an amazing success record. Despite serious droughts which plague parts of Africa, Australia and the Americas; despite floods and storms; despite the ravages of pests; and an exploding increase in population, the production of food has never been better. We have defeated the threat of mass starvation predicted by Malthus who lived from 1766 to 1834. Success has been assured by the scientists, teachers, and extension workers who discovered, transmitted and disseminated vital technological findings to the farming public. Yet, there is a constant pressure on the universities and other education and training institutions to adjust to the realities of change. As with so many aspects of development, agricultural education in Africa (and elsewhere) now faces rapid and often perplexing changes in the environments in which it exists. It faces a variety of challenges and dilemmas, but also of new opportunities and possibilities. (Oniang'o and Eicher 1999).

Some of the problems confronting agricultural education are:

- isolation of the agricultural university from other parts of the university system
- lack of communication with the employers of the graduates of the university—the market
- poor practical skills
- decreased funding as urban focus gathers strength
- weak connection with other parts of the agricultural education system—colleges, vocational schools, farmer training networks
- high unemployment of graduates from the university, often due to lack of relevance of curriculum
- failure to attract the best quality students from secondary schools

Taken together, these problems present a formidable barrier to effective education. Fortunately, few universities have to deal with all at the same time. However, it is likely that if agricultural education systems do not produce employable graduates at all levels they risk becoming irrelevant as educational institutions. This is happening already and can be seen in declining enrollments, lower quality of students/trainees at entry and, of course, the high level of unemployment among graduates especially from university level agricultural institutions. There is, however, another observation that suggests that alliances should not only be made with future employers of graduates but with other educational institutions. It is not uncommon to see private sector jobs in agriculture and agribusiness filled by graduates of other disciplines who are better skilled in the social aspects of rural development. The agricultural research system is a good example of a changed situation. Scientists now working in agricultural research come from a wide range of disciplines, rather than from agricultural education as was traditionally the case (Falvey, Maguire 1997). It is a common observation that, in the private sector, a failure of an institution to recognize market needs will cause it to lose customers, profits and indeed, may end in its closure. In the public sector things are different. "Public sector institutions are not subject to the kind of market forces that govern the life of a firm. This fact is particularly true of agricultural universities, most of which are public institutions. In the absence of conventional market pressures, what might serve to ensure that the university addresses

important social needs innovatively and responsively? Or, put in a more crudely negative sense, how does the university avoid stagnating and becoming irrelevant?" (Hansen 1990)

Major Change Influences on Agricultural Education in the New Century

In most parts of Africa food security is still a critical issue and therefore food production will continue to be a major focus of universities and other agricultural education institutions for some time to come. The delivery of quality education and training is, as we have seen, a major challenge in view of higher student intakes, decreasing levels of funding, and loss of key experienced teaching and research staff. However, it is important to be conscious of other changes that impact on agricultural education and present further challenges to its relevance.

- the shift in focus from agriculture to rural development
- globalization
- HIV-AIDS
- biotechnology
- urbanization
- information technology

From Agriculture to Rural Development

One of the current challenges to agricultural education is how to meet the challenge of providing education and training for rural development rather than for agriculture alone. It is clear that the older curriculum that concentrated on production agriculture is no longer able to produce educated people who can deal with the wider problems of rural development.

The threat of global starvation that spurred the green revolution and established conventional high input-high output farming as the most effective way of getting acceptable yields has eased in many parts of the world. The focus of development has turned from agriculture to rural development recognizing that conventional farming was beginning to produce many undesirable side effects such as soil degradation, erosion, polluted water, and, with irrigation, high salinity of soils. The term rural development recognizes the linkages between agriculture, natural resources, human settlements, and biodiversity. It further recognizes that sustainable development requires the cooperation and inputs of other sectors such as infrastructure, education, health, and energy. It is now evident that the sustainable development of the rural areas will depend on non-farm employment in addition to agriculture.

In order to bring about significant change, reformers of agricultural education institutions or systems must appreciate the complexity of the environment in which a shift in focus from agriculture to rural development would take place. Within the rural development universe there are attractive and compelling activities which can be added to or incorporated into traditional agricultural education programs but many times these are selected not from a clear understanding of their place in that universe but for other reasons. Bawden (1998) offers a diagrammatic explanation of how the agricultural education and training (AET) system fits into the complex rural development system and how both of these systems are influenced by the wider environment in which they exist.

First, agricultural education is viewed not from a single perspective such as higher, secondary, vocational or adult but as a system. The AET system can be viewed as being composed of four interrelated sub-systems (Fig. 1).

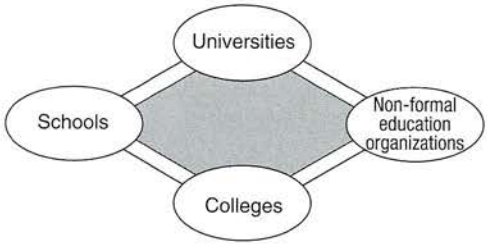

Figure 1. The AET system and its component sub-systems.

The AET system is itself a sub-system of the higher order (agriculturally focused) system (or bounded network) of rural development (Fig. 2) which includes the clientele, organizations and institutions in both the private and public sectors, and both non-government organizations (NGOs) and community-based organizations.

The complexity of the term Rural Development can be appreciated when it is understood that each of the other sub-systems in the rural development system is also comprised of a complex set of interconnected elements. The clientele sub-systems, for instance, can be seen to comprise seven interconnected sub-sub-systems (Fig. 3).

The Public Sector sub-system, meanwhile, has sub-sub-systems concerned with policy, infrastructure, research, development, and extension while the Private Sector comprises financial institutions, input companies, marketing companies, manufacturing companies, the media, etc.

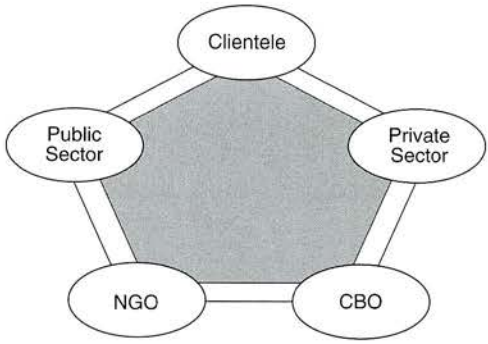

Figure 2. The AET system as a sub-system of the rural development system.

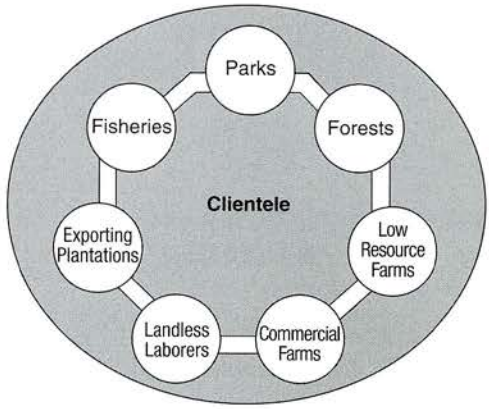

Figure 3. The clientele sub-system of the natural resource component of the rural development system.

The whole Rural Development System meanwhile, with all these component sub-systems, itself operates within an environment of immense complexity which is characterized by a host of factors which can influence, and be influenced by, the rural development system (Fig. 4).

Globalization

Globalization is a topic that is very much in the news. There is considerable confusion associated with globalization with both dire and favorable predictions applied to agriculture and to small farmers in particular. Governments need the advice of economists who can deal with agriculture and the macroeconomic situation in an integrated world for each country must understand the implications of World Trade Organization rules and regulations, make its case internationally, and formulate appropriate national policies. The agricultural universities are the logical places to house expertise on this topic to provide education for undergraduate and post-graduate students, and to inform societies at large.

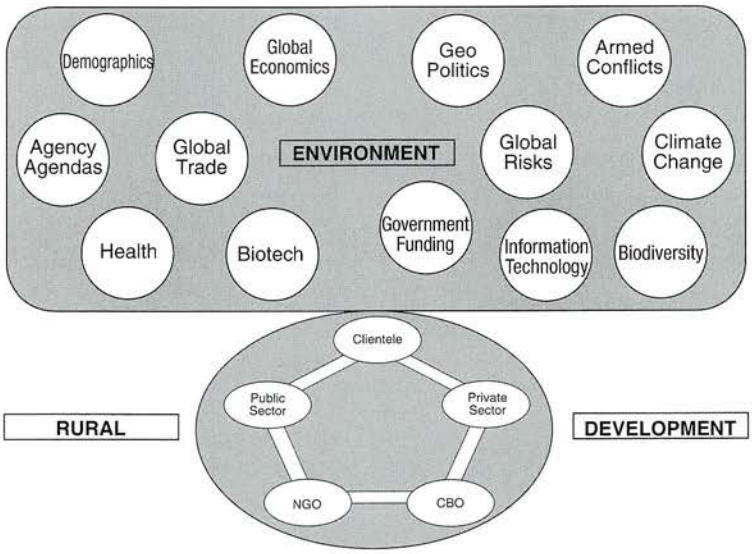

Figure 4. The rural development system and aspects of the environment in which it must operate.

HIV/AIDS

HIV/AIDS is a topic that is of particular importance to agriculture and rural development. The impact of the epidemic on rural populations is well known, especially on the capacity of farming families to carry out essential operations. The consequences of AIDS for female members of farming populations are devastating and many families are dragged into poverty. The impact of the epidemic on the professional agricultural workforce is also severe and causes the loss of experienced scientific and extension capacity. Agricultural educators need to analyze the challenges posed by this phenomenon and to make institutional changes to meet the replacement human resources needs and to provide the education and training required by those left behind in the rural areas.

Biotechnology

Biotechnology offers mankind the promise of improved and high producing crops and animals but is controversial for a number of reasons. There are those who are concerned that biotechnology in the form of genetically modified organisms can have serious consequences for man and for the flora and fauna of the world (see Box 1); and others who worry that a small number of global companies will hold the patents for the most important products of biotechnology and force farmers to pay dearly for seeds, improved animal strains and for certain inputs. These viewpoints have to be weighed against the scientific evidence, for propo-

Box 1: **A Concerned Public**

"Critics assert that genetic engineering introduces into food genes that are not present naturally, cannot be introduced through conventional breeding and may have unknown health effects that should be investigated before the food is sold to the public. But there is a broad scientific consensus that the present generation of GM foods is safe. Even so, this does little to reassure consumers. Food frights such as 'mad cow' disease and revelations of cancer-causing dioxin in food have sorely undermined their confidence in scientific pronouncements and regulatory authorities alike."—*The Economist*, June 19, 1999.

nents of biotechnology believe that the only way to feed a growing world population is to use the products of biotechnological research.

The agricultural universities must join with other scientists including human and animal nutritionists and with sociologists to provide decision-makers and the public at large with answers to the perplexing questions raised by this promising scientific advance.

Urbanization

All countries have experienced the migration of rural people to urban centers. The reasons are many and logical. Urban centers create more job opportunities and have easier access to services such as health and education, and recreational facilities. It has always been the ambition of farming families to educate their children so that they can attain a better standard of living away from the farm and from rural areas. This is an unstoppable tide but it does have implications for agricultural education. Do agricultural universities have the capacity to analyze the impact of rural to urban migration on the capacity of farming families to produce sufficient food for themselves and the market? Have universities the capacity to devise off-farm employment possibilities for rural populations that decide to stay behind? Do agricultural universities seek technological and farming systems alternatives for either ageing farmers or for gender-skewed farming populations? Are universities analyzing the impact of rural-urban migration on rural poverty?

Information Technology

A commonly used phrase these days is, "we live in an information age." Companies and educational institutions commit large sums of money to knowledge management, and the internet has revolutionized the speed, content and cost of sharing information. E-Commerce is a new term applied to the way in which companies and ordinary people buy and sell goods and services internationally on the internet from their offices and homes. The value of this type of commerce has grown from insignificant amounts to billions of dollars in just a few years and the growth is expected to continue. Universities need rapid and cheap access to the vast sources of information in education, science and technology if the quality of their programs is to be relevant in to-day's world. Farmers increasingly have access to electronic information even in remote areas. It is hard to find a farm household in many countries where there is not a radio, a television and a VCR. Village internet terminals are appearing with access to market and weather information and it is obvious that even in the small-scale farming sector the flow of information will grow from the present trickle to a flood. What is the state of information technology in African agricultural universities? How readily can teachers and researchers access the world-wide web? How easily, reliably and cheaply can they use the telephone? How many programs or courses are enriched by materials or direct inputs from educational and scientific institutions outside the Province, the State, or the Country? A description of the difficulties in tapping into the information age from Malawi may apply elsewhere in Africa.

In this day and age, communication is a key to effective teaching, research, and administration, but the level of communications technology in Malawi is still lagging behind international standards. Coupled with this problem are the high cost rates for telephone and other related services. For example, telephone charges from the United States to Malawi can be as

low as US$0.50 per minute, yet calling the USA from Malawi can cost up to US$3.00 per minute. This limits the acquisition of research data and other pertinent information for effective university teaching, hence retarding research and development in Malawi. This scenario is true also with other research and development equipment and services such as computers and the internet. (Kasomekera 1999).

The change influences cited above, and others, pose a threat and a challenge to agricultural education institutions. Although the task of improving the basic conditions and quality of undergraduate degree programs is a daunting challenge in itself, the new influences cannot be ignored.

Agricultural Education Systems

It is becoming increasingly difficult to view agricultural education from the perspective of the university or the diploma granting college or the farmer's training center alone. We are accustomed to thinking about the university as the center of the education system and indeed we should, for African universities will be the primary source of human capital for agricultural research agencies as well as the source of future academic staff members (Oniang'o and Eicher 1999). However, the graduates of the university are influential in many ways in the staffing, management, funding, and operation of the Colleges, training centers, research centers, and extension services suggesting that education and training is part of a system that serves the agricultural sector. Increasingly, the pressure is on for the system to serve not only agriculture but the needs of the broader rural sector. Many countries now use the term AET for the agricultural education and training system that stretches from adult rural education to the university. There has been an academic cultural problem with forming alliances with diploma granting colleges or institutes, a cultural problem that continues to extension and adult education. There is now a realization that this segregation is detrimental to the development of agriculture. This is brought home to educators by the increasing influence of agribusiness.

The Demand for Technicians

Thirty years ago at the World Conference on Agricultural Education and Training, the importance of technical level manpower was stressed (FAO, UNESCO, and ILO 1970). The observations made then are still relevant. "The people who receive intermediate training will be working essentially in the field, the laboratory, the workshop and in storage and processing plants, and community services, rather than in predominantly clerical duties. They must form the link between the findings of research and technology and their practical application in more efficient agricultural production. In many countries, rural development is seriously hampered by the shortage of adequately trained people at the intermediate level, but there are few developing countries which have solved satisfactorily the problem of producing adequate intermediate staff in both numbers and quality." In many parts of the world agricultural sector entrepreneurs are not farmers. Many are businessmen and women who see profitability in farming or agro-enterprises. They need to buy the skills required to make these ventures work. Where can such skilled persons be found? They are rarely in our system's university-level institutions and certainly not in the academic secondary education programs. The supply of technicians is from Polytechnics, Colleges or Institutes which offer diploma (non-degree) programs that

should produce a person with the theoretical and practical background and skills to enter an agribusiness situation with confidence and success. Another source of such personnel is the vocational agricultural education program of the classical USA type. Typically, farmer's sons and daughters entered vocational agriculture programs and added to their theoretical knowledge base, acquired skills and participated in the running of projects such as growing a crop or raising animals. These practical exercises, similar to those described at the University of Cape Coast, were closely supervised by teachers and managed by the student in a business-like manner. The vocational agriculture programs produced a competent and confident person who could successfully enter the farming profession or obtain employment in agro-industry or other endeavors. Is it too much of a leap of imagination to see a direct link between university degree programs and research activities and the tertiary non-degree institutions and adult non-formal education?

Meeting the Challenge of Change

Initiating change can be difficult even for the most enthusiastic and committed university leader. There are many bureaucratic, political and societal barriers to change that can defeat even the most innovative and enthusiastic change agent. It is only fair to recognize that public sector agricultural education institutions are not always autonomous enough to make the bold and rational decisions required to effect improvements in the way they operate. Hansen (1990), notes three areas where many agricultural universities lack control:

Enrollment: Where admission policies are usually controlled by outside government agencies, which frequently encourage rapid increases in enrollments without ensuring funding increases to accommodate expanding numbers. This has led to situations where facilities and faculty support are inadequate and the quality of education has suffered, in some instances quite dramatically.

Programming: In many cases, curriculum policy is under the control of a central outside agency, which leaves the university or other education and training institutions little if any latitude or incentive for undertaking curriculum innovation.

Financing: Most universities have very little direction over the structure of their finances. In most cases, the levels of student subsidies, fees, and faculty salaries are regulated by an outside agency, budgetary flexibility is limited, and, normally, income earned by the university must be returned to the Government treasury.

Agents of change have to deal with the expectations of major stakeholders. Politicians typically view investments in agricultural education as a short-term proposition. Since their terms of office are limited to 3 or 4 years they desire and expect results in that time frame. Parents of students, and the students themselves, also have a short-term horizon limited to the length of the degree program. It is left to the administrators and faculty to take the long view and try to progressively build a sustainable institution that reflects quality and relevance to stakeholder needs. This has to be achieved while satisfying the expectations of those stakeholders with short-term horizons.

Does this mean there is nothing agricultural educators in the public sector can do to bring about change? If we remain isolated within our system we can achieve little. Only by looking outside, by understanding the dynamics of the newly

defined more encompassing sector and by forming alliances with institutions and individuals who already have access or the means to accessing policy makers can we make a difference. However, this will not come easily. It will take courage, it will take arguments based on well-documented facts and, above all, it will take commitment to our profession, which, despite its importance, is not always recognized for its vital role in the development of the rural sector (Maguire 1999).

Successful African Examples of Institutional Change

It is heartening for change agents to review successful examples of change at African universities. In Ghana, the University of Cape Coast has successfully launched a program whereby mid-career extension staff can bridge the artificial gap between the technically qualified and experienced person and the academically educated professional. The program was launched in 1993 with the assistance of a Japanese non-governmental organization, the Sasakawa Africa Association which had created the Sasakawa Africa Fund for Extension Education (SAFE). The program is aimed at extension staff who possess Diploma or Certificate qualifications and comprise about 85% of extension field staff in Ghana. At its inception the program comprised two tiers: a basal 4-year post-Certificate degree program and an upper-tier, 2-year post-Diploma degree program. Both led to a B. Sc. Degree in Agricultural Extension. In 1999, a 2-year post-Certificate program leading to a Diploma in Agricultural Extension was launched at the Kwadaso Agricultural College leaving the University of Cape Coast to concentrate on the 2-year post Diploma Degree program. A unique feature of the SAFE program is the off-campus supervised enterprise projects (SEPs) which runs for 4 to 6 months after the participant has had a period of training on campus. The SAFE program is supported by the Ministry of Food and Agriculture (MOFA), farmers, extension workers, and the University of Cape Coast. Sasakawa Africa Association and Winrock International played a facilitating and brokering role in the development of the program. The SAFE program has been of particular benefit to the UCC by enhancing its visibility in the country and in forging and strengthening the university's relationships with MOFA, farmers, extension staff, NGOs, and District Assemblies. The University has attracted the attention of national and international organizations and institutions because of its leadership in launching an innovative education program.

Of course the program is not without problems, the most pressing being the need to provide funding for supervision of the field-based SEPs projects conducted by the participants. At a time of decreasing support for agricultural education this poses a serious threat to sustainability of the program. There is still a need to convince administrators and academic staff that the SAFE program offers substantial benefits to the university and that lessons from the program may be used to improve the design and implementation of new and existing programs in the institution as a whole. The availability of qualified and committed core staff is essential for the long-term sustainability of the program, however, with alternative employment offering better salary and benefit conditions, retaining good staff poses a continuing problem.

Lessons Learned

Even though the program is relatively new some important lessons are emerging:

- Partnerships are necessary to solve the

complex task for training agricultural extension staff in sub-Saharan Africa.

- Failure of past efforts to establish sustainable and effective extension systems in SSA was largely due to organizations and agencies working alone and fragmenting the process of building capacity.
- Partnerships between the SAFE program and a wide range of donor agencies, organizations and institutions will be needed to make the program sustainable (Adjepong 1999).

Bunda College

Another successful change initiative is illustrated in the case of Bunda College of Agriculture, Malawi. The College was established in 1966 by the Ministry of Agriculture using a grant from the United States. The first student intake numbered 35. In 1967 the College was incorporated into the University of Malawi.

The College has had dual lineage since 1967, conducting all administrative business with the Ministry of Education through the University Central Office, and executing all technical matters with the Ministry of Agriculture. The early main focus of Bunda College was to train agriculturists who could meet the needs of small-scale farmers and to conduct research that could improve small-scale productivity (Kasomekera 1999). In the early 1970s the University of Malawi and the Malawi Government decided that Bunda College had to expand to a student population of 364 by 1980 to meet the high demand for agricultural technical personnel. The College set in motion a localization program that aimed to have 92% local staff in place or 32 out of a total staff of 36. This was considered a very important concept that preserved academic staff capacity. In 1999 the local staff stood at 98% of the total, two-thirds of which had doctoral degrees. The 1976 to 1981 expansion project changed Bunda College from a small college to a medium college by Southern African standards. It had attained the critical mass necessary to embark on local consolidation. Infrastructure improvement brought laboratories, lecture theatres and offices, and senior and support staff housing. Kasomekera notes that at the end of this development phase, Bunda College had successfully redesigned its curriculum to train researchers, planners, and extension personnel at diploma and degree levels. Part-time masters and doctoral programs were offered to deserving candidates, and the college had embarked on various research projects in agriculture.

Challenges and Opportunities

Between 1981 and 1990 no significant growth was recorded. The absorptive capacity of the market for Bunda graduates began to weaken and employment trends changed from the former 70% to government to 40% while 60% were employed by the private sector. This was a period of reflection at the College which sought a balance that would satisfy the demands of the new employers and attract donors to fund infrastructure development. This was a shift away from the traditional dependence on government for funds. The college decided to identify its strengths and weaknesses through a series of consultative workshops and conferences in which alumni were invited to critique the curriculum and suggest improvements. These led to three areas of concern: (1) Bunda produced generalists that had to be retrained for specialized areas; (2) the Bunda graduate lacked management skills and was not able to perform in the private sector; and (3) graduates did not have the skills to run commercial agricultural enter-

prises. The outcome of this review was a new curriculum introduced in 1986 that allowed students to take common courses in the first 2 years and then specialize. By the time the first graduates from the new curriculum came on the market the college was gaining recognition not only in Malawi but in the whole Southern Africa region. Kasomekera notes that the transition from government-initiated to locally-mobilized development is very critical because, in most cases, the same leadership which has seen government initiate development has to accept the fact that government's priorities have shifted.

Bunda College realized that the recipe for development would depend on a number of principles that included:

- redefining the curriculum to meet prevailing government policy and the needs of the private sector
- carrying out aggressive outreach activities to inform all potential funding agencies about the potentials of the institution and the major constraints preventing optimal operation
- building institutional confidence among staff so that they were able to articulate the vision and commitment of the institution in national and regional development
- conducting a thorough goal-setting exercise for all departments and faculties, and ranking these goals at the departmental, faculty, and college level so that potential funding agencies could choose areas of assistance
- engaging in continuous dialogue with donors and government to keep up with their areas of interest and procedures for project preparation and presentation
- instituting a staff appraisal system that was objective, transparent, and consistent in order to reward high performers, but at the same time encouraging below-average staff

Bunda College, from the beginning, had a program of public relations beginning with an annual field day for local farmers, donor representatives and government officials. The cost of this was not sustainable and after trying a bi-annual event the field day was dropped. It was replaced by an activity, "Getting to Know Bunda," which targeted selected potential donors and policy makers who were invited to spend a day at the college to examine the research and teaching activities. A new principal introduced a door-to-door approach to "sell" the idea of support for a Center for Agricultural Research and Development at the college. The principal also used his good political connections to make the college's needs known. The door-to-door donor sensitization was systematically executed with well-articulated goals and objectives.

In 1992 a new principal, Zachary M. Kasomekera, requested all Heads of Departments to prepare 10-year plans, which indicated past achievements, existing underutilized human capacity, and major constraints. The plans clearly defined goals and objectives for each department, from which college-wide priorities were drawn up. The development of institutional goals and priorities was seen as a necessary condition for attracting donor funding.

The problem of obtaining funding for new programs was overcome in the case of the Master Science in Animal Science by using German support and making the program a regional one. Its success led to a regional program in aquaculture that formed the basis of a Japanese aquaculture project. The college has been the venue for regional programs on tissue culture, agroforestry, and environmental policy. Most donors regard the regional approach as viable in terms of demand for human capacity and cost effectiveness.

A draft strategic plan has been drawn up for the college. The plan states that the mission of Bunda College, as an educational institution of higher learning in agriculture and natural resources in Malawi, is to advance and promote knowledge, skill and self reliance for:

- sustainable food production and utilization
- improving income, food security and nutrition of rural and urban populations
- conservation and management of biodiversity, natural resources and the environment; through the provision of information, teaching and training, research, outreach and consultancy in response to national and global needs

Looking to the future Bunda College sees a participatory approach to curriculum development and empowerment of graduating students to embark on self-employed agricultural business ventures with limited reliance on wage employment. This approach calls for re-engineering not only the curriculum but also the lecturers, who should place more emphasis on real-life agricultural problems that can be solved using alternative approaches.

Lessons from Bunda College

- Bunda College suffers from common constraints. There is the pressure to enroll more students than can be effectively served and the danger of overcrowding and the erosion of educational standards; the college is subject to political pressures and to the rules and regulations of government relating to issues such as fees; teaching staff are not well paid and many are tempted to leave and take more lucrative posts elsewhere; and the unavailability of effective communications hinders teaching, research and administration.
- The experience of Bunda College offers valuable lessons to other colleges and universities especially in Southern Africa. The most powerful lesson is that it is necessary to clearly articulate institutional goals and objectives that can be used to solicit assistance from government and donors.
- Institutional capacity is a very important prerequisite to sustainable development and donor support. It is critical to impress upon government and donors that the institution can manage and administer resources. A disappointed government or donor is a fatal liability to a young institution, and all efforts should be made to live up to the expectations of these funding sources.
- Leadership skills are a necessary ingredient to mobilizing institutional development. The best leadership recognizes the strengths and weaknesses of the institution and its personnel and is able to delegate effectively. It is important to appoint local staff to leadership positions for they often have a clearer understanding of the potential of the institution.
- To achieve development goals the institution must have the ability to identify government policies of the day relevant to the institution, and to identify prevailing donor areas of interest. Institutional development can only be supported if it is in line with current government policies and/or donor priorities.

The Bunda College case is inspirational for those who work in universities or colleges and who see the need for change. The key ingredient in Bunda's success is undoubtedly the quality of leadership that was seen in each of the principals between 1966 and 1999. Each brought to the institution his own brand of inspiration and continued the forward movement of the change initiative.

A Network for Change

Change agents can feel isolated when they begin the process of institutional reform especially when all members of the community are still to be convinced of the soundness of the change program or its chances for success. Change agents should not feel alone for there are a number of groups and entities seeking answers to the problems and challenges posed by the evolving nature of agricultural education. These bodies can be approached for answers to problems and for advice related to the lessons of change. A selection of these groups and entities are as follows.

The Global Consortium of Higher Agricultural Education and Research was founded in 1998 with the goals of fostering global cooperation for the improvement of higher education and research for agriculture as a prerequisite to solving the food security and environmental problems confronting our world. The consortium aims to serve institutions with programs in agriculture, veterinary medicine, and natural resource management, including the biological, physical and social sciences dimensions of these fields. The consortium founders designed it to be helpful to institutions worldwide which are working to make significant reforms in their systems of higher agricultural education.

The Standing Forum for Discussion on the Integration of Agricultural Education in the Americas sponsored by the Inter-American Institute for Cooperation on Agriculture was established in 1999 with a conference at the Organization of American States in Washington D.C. The purpose of the Forum is to help position agriculture and, in particular, agricultural and rural education and training, on the work agenda of political and financial entities and to support modernization efforts and facilitate integration among institutions and countries.

The Organization for Economic Cooperation and Development can be contacted for support related to Agricultural Knowledge Systems (AKS). The AKS encompasses Agricultural Research, Extension, and Higher Education.

FAO has an ongoing program on agricultural and rural education and training particularly concerned with the need for reforms and well reasoned responses to the pressures of change.

The World Bank through the Agricultural Knowledge and Information Systems (AKIS) thematic group in the Rural Family has been working for a revival of interest in agricultural and rural education since 1998. AKIS sponsored an international workshop at the World Bank in late 1999 with the theme: Education for Agriculture and Rural Development: Identifying Strategies for Meeting Future Needs. The Workshop identified a number of Researchable Questions that needed to be answered if the donor community was to make a case for future investments in agricultural education systems.

A number of bilateral donors have been active in supporting innovative agricultural education projects over the past 10 years and were identified by Willett (1998). The Kellogg Foundation has provided support to the US Land Grant Universities in positioning themselves for the future and, in parallel, has supported a process of reform in secondary agricultural education (vocational agriculture) programs.

Donors and Agricultural Education

For too long the focus of international donor agencies has been on elements of the AET system. The World Bank, in the 26 years between 1963 and 1989, supported agricultural education in 67 of its 135

higher education projects. As a 1992 World Bank Review notes, agricultural colleges and universities were among the first education institutions to receive Bank assistance, and the Bank itself was among the earliest multilateral donors to support these institutions. Bank assistance was based upon the need to supply technicians to support the science-based agriculture, which was to play such an important part in increasing food security and promoting economic development. Governments looked to these higher education institutions to produce the technical personnel, managers, teachers, researchers, and extension workers required to staff agricultural agencies. It is now clear that the emphasis of these investments was on an element of the system, the higher education element, but not on the system itself. Willett (1998) noted in his review of agricultural education support by the World Bank and other donors in the decade 1987–1997, that past investment tended to emphasize bricks and mortar, hardware and faculty overseas training to build AET programs focused on state-led support services for much broader, multi-disciplinary systems approach. New generation AET projects need to develop human capacity, not just for production agriculture, but for environmentally and socially sustainable development throughout the rural sector, engaging more diverse, rural sector-related systems through a multiple field of partners and stakeholders.

Partnerships

The review of the problems and additional challenges facing African agricultural education systems strongly indicates that no single entity can solve the problems of relevance, quality, and sustainability alone. Agricultural education institutions and systems will have to reach out to the broader education system and partner with science, economics, sociology, environment, engineering, education, health and business departments to design and offer education programs which will attract good quality students and make an impact on rural development. Partnerships will also have to be forged with donors, NGOs, and the private sector for, as well as contributing in an intellectual way to education and training, these stakeholders are employers of the output from the system.

Finally

There are many experienced and well-meaning individuals, organizations and firms who can offer advice on how best to bring about change in African agricultural universities and agricultural education systems but, at the end of the day, it is the institutions themselves that must take the initiative. In doing so, two important elements are necessary: vision and leadership. Bawden (1998) identifies weak leadership and inappropriate conceptual maps for the development process as a

Box 2. **Institutional Change and Growth**

"Reform in any university anywhere in the world cannot occur unless there is a vision passionately believed in and furthered by leaders. If we want change or reform, it will not happen causally or simply by its bubbling up within a university. There may be ferment for change and a desire for adaptation. But change will not occur unless there are leaders willing to step up and step out and provide direction and articulate a vision that can unite men and women to work for needed change, building on the accomplishments of the university and its history, but pointing unequivocally to the future." (Magrath 1999)

cause of crisis in AET systems and in the broader domain of agriculture and rural affairs. He indicates that in the past the AET system emphasized providing skilled manpower for techno-scientific production agriculture to assure food security. Now the emerging focus is on developing and promulgating an environmentally sustainable, socially equitable, and ethically defensible agricultural development process that fosters the well being of rural communities and of the biophysical and socio-cultural environments in which they live. To deal with this complex situation Bawden suggest that leaders of AET systems will need to learn how to envision plausible futures. He stresses that one vision of the future is not enough and that a number of scenarios should be considered. Magrath (1999) stresses the leadership element that was identified in the case of institutional change and growth at Bunda College of Agriculture (see Box 2).

It is clear that the responsibility for initiating the change process rests with the faculty and administrators of agricultural education systems. Leadership is expected from the agricultural universities and time is running out before alternative sources of relevant education and training gain strength and credibility. The time to start the change process is now!

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The SAFE Initiative: Challenges and Opportunities

Deola Naibakelao

No country has developed without a strong agricultural base to provide food security for its citizenry. Owing to this reality, the SG2000 initiative was launched in 1986 to help assist farmers and sub-Saharan African governments to reduce poverty, enhance food security and protect the natural resource base through the accelerated adoption of productivity-enhancing agricultural technologies. The SG2000 initiative is a partnership of two organizations: Sasakawa Africa Association (SAA), whose President is Nobel Laureate Dr. Norman Borlaug, and the Global 2000 program of the Carter Center, whose Chairman is former United States President, Jimmy Carter. Funding for SG2000 programs comes from The Nippon Foundation of Japan, whose President is Mr. Yohei Sasakawa.

One of the major prerequisites for enhancing the pace of agricultural development and food security in sub-Saharan Africa is human resource development, including educated farmers, researchers and extension workers. However, poor training, especially of field level extension staff, is one of the major factors limiting agricultural development in sub-Saharan Africa.

The Sasakawa Africa Fund for Extension Education Program

As a means of tackling the problem of poor training of extension staff, SAA launched the Sasakawa Africa Fund for Extension Education (SAFE) in 1991. The SAFE program is geared toward assisting selected agricultural colleges and universities in sub-Saharan Africa to develop responsive programs to train agricultural extension staff. The program is being implemented in collaboration with Winrock International Institute for Agricultural Development, ministries of agriculture and agricultural colleges and universities in selected African countries, including Ethiopia, Ghana, Tanzania and Uganda. A number of agricultural colleges and universities in Burkina Faso, Nigeria, and Mali are also making plans to launch similar SAFE programs.

The SAFE initiative has the following complementary aims:

1. To create training opportunities for mid-career extension staff, both male and female, who possess certificate and

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diploma qualifications in agriculture and related fields and are already working in the field to improved upon their technical and humans relation skills.

2. To reform agricultural extension curricula in selected African agricultural universities and colleges, and assist them in the acquisition of relevant instructional materials.

3. To foster networking among the participating African agricultural universities and colleges with aim of building strong pan-African academic partnerships for developing responsive training programs for agricultural extension staff.

4. To train agricultural extension leaders for extension organizations in sub-Saharan Africa. This does not necessarily imply training extension staff to occupy high positions within the extension organization, but more importantly, to help them develop new positive attitudes toward their work and responsibilities, and to become systems thinkers, catalysts, facilitators, and effective managers of change within their extension organizations.

5. To bring about institutional reform within African agricultural universities and colleges, not only in terms of the development of responsive agricultural extension curricula, but also the reform of the institutions themselves. Thus, the SAFE initiative strengthens the in-country capacity of these training institutions to be flexible organizations, to develop client-focused training programs, to acquire relevant core instructional materials in agricultural extension and related fields, to mobilize internal and external resources to sustain the programs, and to forge partnerships with other local and international institutions and agencies.

The SAFE curriculum reform approach is guided by the principle that "experience is the best teacher." The approach, therefore, emphasizes experiential learning—the combination of theory, experience, critical reflection and practice. Experiential learning is emphasized because it provides learners with the opportunity to develop lifelong learning skills and builds their confidence and commitment, so that they can work with farmers in participatory ways.

As a means of nurturing the philosophy of experiential learning, the SAFE initiative places great emphasis on the off-campus, farmer-focused Supervised Experience/Enterprise Projects (SEPs) component of the training program. Under this component students who have had a prescribed period of training on the college or university campus undertake 4- to 8-month off-campus field-based experiential programs. The SEPs component of the SAFE initiative is what makes it different from other existing academic programs in the participating colleges and universities.

The SEPs provide opportunities for academic staff to assess the relevance and effectiveness of their teaching and to identify other opportunities for learning. The college or university is brought closer to farmers and issues pertaining to the farming sector thereby ensuring that the curriculum remains farmer-focused. Because the SEPs are based on farmer-level situations they are inevitably multidisciplinary. The SEPs, therefore, provide an opportunity for disciplinary specialists to work together in seeking solutions to farmer-based problems.

The choice of topics for each SEP is highly influenced by the beneficiaries—farmers, employers or sponsors of the students and the students themselves. Apart from having direct input into the design of the projects and in the testing of the technologies involved, farmers are brought in direct contact with the univer-

sity, thereby providing them with an opportunity to influence the design of curriculum at the university.

Challenges of the SAFE Program

1. The lack of a clear extension training policy in many African countries often creates ambiguity about the range of issues related to the development and implementation of effective training programs, including the number of extension staff that should be trained, the selection of those to be trained, and the financial and human resources required to implement the training.
2. Location of intermediate agricultural training institutions under the Ministry of Agriculture while the degree-granting agricultural training institutions are under the Ministry of Education. This leads to confusion over the objectives and financing of various levels of agricultural extension staff.
3. Inadequate number of well-trained and experienced teaching staff in the area of Agricultural Extension in most agricultural universities and colleges in sub-Saharan Africa, including the participating universities and colleges in the SAFE initiative. The future in terms of increasing the number of teaching staff in African universities and colleges is bleak, especially in the light of ageing staff and the lack of motivation for younger staff to take up the available teaching positions.
4. Financial constraints affect effective implementation and sustainability of the SAFE program, which is field-based and focuses on experiential learning, and therefore requires steady funding. Funds are needed for students' off-campus SEPs and transportation and per diem for the supervisory staff. Program ownership and sustainability demand that adequate annual budgetary allocations should be made support of the program, especially the off-campus SEPs.
5. Lack of responsive curricula with more technical subjects at the expense of the equally important social science subjects such as adult education, extension methodology, program planning and evaluation, communication, gender issues, and critical thinking skills. The content of current training programs is mostly theoretical and not client-focused.
6. Low number of women extension staff and little understanding of their training needs. This results in poor formulation of training programs.
7. Lack of strong partnerships between donors and the various stakeholders or actors involved in extension activities: A number of actors are involved in agricultural extension activities in sub-Saharan Africa, including public agencies (ministries of agriculture and education, universities and colleges), farmer organizations (e.g., cooperatives and associations), non-governmental organizations (NGOs), private service providers (e.g., input suppliers and purchasers of agricultural produces) and donors. Even though their roles and capacity vary, each of them has a critical role to play in the development and implementation of responsive extension training programs in order to reflect the needs of societies. Agricultural universities and colleges can, and should help in facilitating partnerships or collaboration between these important actors.
8. A training institution offering responsive programs may find it difficult to cope with the requests from the clients to send their staff to pursue the program once people realize its potential. The training institution and its supporting donor agency (e.g., SAA) may get overwhelmed with requests that they cannot meet. To solve this problem there is the need to multiply the number of programs and institutions in order to cope with the

growing demand. But multiplying the number of programs and institutions requires additional funds. The challenge is to determine how these additional demands will be funded by diverse agencies including bilateral, donor and technical assistance agencies.

9. Problems of sustainability: The problem of sustainability is not limited to finance, but also the equally important issues of: (a) poor post-training work environment of graduates that may discourage potential candidates from pursuing the course, (b) the lack of qualified teaching staff, and (c) poor working conditions of teaching staff which may create a danger of the program reverting to the traditional theoretical program.

10. Lack of committed leadership with a clear vision of training mid-career professionals. Without good leadership it becomes impossible to ensure the smooth implementation of innovative training programs.

It is probably apparent that there are no surprises in the list of challenges or constraints presented. Many studies have pointed out these constraints (Breth 2000, 1999; FAO 1997, 1996, 1990; Kwarteng, Zinnah and Ntifo-Siaw 1998; Lindley 2000; Neuchatel Group 1999; Qamar 1998; Zinnah and Naibakelao 1999; Zinnah, Steele and Mattocks 1998). Besides, the majority of the participants at this workshop are quite familiar with most of these constraints. The Vice-Chancellors and Deans at this workshop are probably struggling with some of these challenges.

Opportunities

First, there is currently a general appreciation among the donor community for the need to form partnerships in developing, funding, implementing, monitoring and evaluating innovative and cost-effective extension training programs. Partnership is now seen as the key toward optimizing and improving extension training programs so as to enhance the performance and competence of agricultural extension staff. Such an appreciation among the donor community is a good signal that there is hope for pluralistic funding of extension programs in sub-Saharan Africa and provides an opportunity for future improvement in the training of agricultural extension staff.

Second, the trend toward privatization and decentralization in sub-Saharan Africa presents new opportunities for program diversification to meet the needs of new clientele. When the SAFE initiative was launched in 1991 by SAA, the main emphasis was on upgrading the technical and human relations skills of staff of the ministries of agriculture in Africa. With the move toward increasing the role of the private sector, including NGOs, in the provision of agricultural services, the focus of the SAFE initiative is being broadened to respond to these changes.

Third, another untapped opportunity is for universities and colleges to device ways and means for greater participation of community-based resource persons and organizations from outside these institutions in the training programs, especially for the off-campus practical component of the course. The participation of outside resource persons offers several advantages such as: (1) helping to alleviate the problem of inadequate teaching staff by reducing the number of full-time teaching staff and the associated overhead costs; (2) keeping students and lecturers in touch with practical, real-life situations; and (3) and exposing the institutions to the outside world to enhance its prestige. Many outside resource persons are usually willing to participate in teaching of courses and in practical activities in universities and colleges. However,

several problems often limit their participation, including: (1) the rigid criteria for approving such individuals, particularly in terms of academic credentials whereby in most instances a minimum of a Masters degree, preferably by research, is required to be approved for teaching courses in universities and colleges; and (2) poor remuneration of the resource persons in terms of the costs of transportation and honoraria.

Conclusion

In order to bring African universities and colleges more into agricultural development, there is an urgent need for systemic change in the agricultural education systems on the continent. The environment under which extension organizations operate is rapidly changing. This calls for a continuous improvement in the manner in which extension staff are trained. The emphasis must be placed on both the quantity and quality of the training, especially the exposure of the trainees to real-life work environments.

Sasakawa Africa Association (SAA), as a small non-governmental organization, is serving as a catalyst in the process of facilitating the revitalization of agricultural extension training programs in selected universities and colleges in sub-Saharan Africa. Based on the emerging success of the SAFE programs in selected universities and colleges in Ethiopia, Ghana, Tanzania and Uganda, many universities and colleges across Africa have expressed interest in launching similar responsive agricultural extension training programs for early- to mid-career extension staff. SAA is unable to meet the requests of these institutions due to its limited budget. Therefore, other donor and technical assistance agencies must also contribute to future efforts. More importantly, national governments in Africa must be willing to provide the needed resources and policy framework necessary to effect the systemic changes that are required to bring their universities and colleges more into agricultural development to ensure food security.

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Summary of Task Force Reports

Roger E. Steele

Four task forces were set up to deliberate on important issues related to the workshop. Each participant was assigned to one of the four task forces. Allowed over 2 hours to complete their deliberation, each of the task force groups was instructed to prepare a set of recommendations to use as the basis for a summary report to be presented to a plenary session of the workshop. Most of the key outcomes from the four task forces have been captured in the following paragraphs.

What have been the most significant messages heard at the workshop?

As their first activity, each of the four task forces was asked to identify the most important messages they had heard at the workshop. The eight key ideas generated by the task force members were:

1. Every university or college must be willing to leave its "ivory tower" and seek to be more demand-driven. In particular, they must seek to make their training more relevant to extension workers.
2. There must be sufficient vision and strategy to drive changes in university curricula and to sustain their continuing implementation.
3. Extension training must be approached in a multi-disciplinary manner with an emphasis on lifelong continuing education.
4. Every university and college curricula must be dynamic and adaptable in order to meet the changing needs of agricultural extension—but that the changes should not jeopardize the quality of higher education.
5. All universities and colleges must discover ways to effectively partner with various levels of government and private sector for the new programs to be viable and sustainable.
6. Women and children must be made central in these and all agricultural development approaches.
7. In order to have significant and lasting change, there must be a critical mass of universities and colleges (within countries, across the continent, and even worldwide) who are willing to implement demand-driven responsive mid-career training.
8. Universities and colleges need to increase the quantity and improve the quality of networking in the area of relevant training for extension workers.

What are the most challenging issues that are yet to be fully addressed?

Secondly, each of the four task forces identified a few of the most problematic issues related to the workshop theme. The most troubling concerns mentioned were:

1. Since the agricultural sector ultimately has a somewhat limited potential for providing employment, some help must

be given to help enable employment in other sectors.
2. It has been very difficult for some universities and colleges to find sufficient funding for start-up of new SAFE-type programs and others are struggling to locate sufficient resources for effective continuation of existing programs.
3. Universities and colleges rarely have an enabling environment (weak policies) and often do not have the women and men with sufficient courage (lack of leadership) to make the necessary bold and responsive changes.
4. Despite some progress, there is still a serious gender imbalance in agricultural education and extension.
5. It is difficult to identify and evaluate the training needs for extension—caused to some extent by a lack of accurate and current data that would be needed for effective planning.
6. Universities and colleges need more staff in all areas relevant to training of extension workers—and that these staff must be qualified and equipped to make the training more relevant to client needs.
7. HIV/AIDS, in particular, along with other diseases are radically impacting agriculture.
8. The image of agriculture is poor in every country.
9. The best students often do not choose to study agriculture.
10. There is virtually no well-organized agricultural education at the secondary school levels in some countries—and that the agricultural education that is available at the secondary level is often limited and of questionable quality.
11. Focusing on mid-career improvement does meet an urgent short-term need for more effective extension workers but, on the other hand, does not do enough to address broader challenges for pre-service preparation of future agricultural workers.
12. Because a considerable amount of the brain drain in extension is due to poor salaries and benefits, an improved training scheme will fall short unless it is accompanied by reforms that improve the conditions of service for extension workers.

Potential roles and strategies for national organizations

Two of the task force groups discussed and identified some appropriate roles and strategies that national organizations should consider in trying to bring universities and colleges more into development. National organizations were identified to be ministries of agriculture, education, finance/planning, and environment/natural resources; research institutions; parliament; local authorities or local governments and certain non-governmental organizations.

By definition, national organizations embody potential capacity to provide training, protection of natural resources, distribution of agricultural resources, improvement of infrastructure, and agro-processing. The roles that they can play include advocacy (at least for NGOs), rationalization/maximization of resources between governments and universities, setting of appropriate policies, employment of personnel through respective ministries, provision of scholarships, salary guarantees, offers of adequate conditions of service, and assistance with formalizing field activities between ministries and universities. In particular, a ministry of finance can remove or reduce tax duties on items and equipment related to research and teaching. National organizations should also organize workshops to help evaluate partnerships between governments and universities and to encourage informal discussions among other stakeholders.

Each ministry of agriculture in a participating country should ensure involvement of their extension staff in mid-career programs and provide approved leave, sufficient funding, and adequate study facilities for those who participate. The ministry of agriculture should also actively participate in the curriculum development, monitoring, and evaluation process in collaboration with other partners.

An essential strategy for ministries of education includes meaningful incorporation of agricultural education into primary and secondary school curricula. Furthermore, it is essential that once high quality primary and secondary agricultural education has become available, the respective authorities must be convinced to give due weight to agricultural qualifications in university admission processes. As a complementary strategy, universities and teacher training colleges must start training more teachers in agricultural subject matter content and pedagogy so secondary and primary schools have an appropriate cadre of qualified professional teachers.

As far as local authorities or local governments are concerned, they must be willing to provide infrastructure (especially housing) to universities for new demand-driven programs. Local authorities can also remove or reduce levies on services such as rentals and utilities to ease the burden on new and continuing programs. Perhaps most importantly, the local governments must help establish standards for adequate salaries and conditions of service that will serve to motivate and retain the best extension workers in their communities.

Another important ingredient to success of new and continuing programs is to encourage universities and colleges to accelerate their interactions with NGOs. If NGOs can be convinced that university and college students are able to meaningfully engage with their development activities in the field, then the NGOs are likely to assist with funding for the related portions of students' interventions in SEPs and other field activities. However, universities and colleges must be diligent in helping their students conceptualize and develop proposals for SEPs that fit the objectives of each particular NGO and its target clientele in the field. It is essential that universities and colleges involve representatives of NGOs in curriculum development processes as early and often as possible. Once convinced of a viable role, NGOs often have flexible resources that they are willing to allocate toward meeting aims and objectives of essential field work components related to academic extension training programs. In particular, NGOs often have a unique and complementary capacity to help in strengthening applied research efforts in the applied social sciences.

As for the commercial private sector, they need to learn ways that they can work with and, in particular, benefit from involvement with universities/colleges. Often, individuals who work for private companies are not able to visualize what university or college students and graduates might be able to do to help them. They often limit student involvement to specific prescribed technical tasks. Special efforts must be made by universities and colleges to help market the abilities of students and graduates to perform more complex problem solving and to help the private sector understand that students are able to effectively undertake practical multidisciplinary type activities that are encountered in the field.

The next point is perhaps the most critical to ensuring success of new mid-career extension training programs. One

of the task force groups specifically recommended that each country's respective national organizations must secure sufficient finances of its own for start-up and operation of mid-career training programs. They recommended the following:

- That 30% of funds for equipment and other initial investments should be provided by the respective national governments (ministry of agriculture and education, and university).
- That 20% be provided by other sources internal to the country (NGOs, farmer organizations, etc.).
- That the remaining 50% be provided by external international organizations.

Responsibilities for on-going operating costs should also be shared but with the respective host university or college in charge of providing and managing human resources.

This task force group also recommended that a significant portion of the funds needed for funding SEPs should be solicited from NGOs and other potential partners for at least the first 5 years of each new program. After the initial 5-year period, the university and ministry of agriculture should be prepared to assume primary financing of SEPs.

What are potential roles and strategies for bilateral and multilateral organizations?

It is painfully obvious that the area of agricultural education and extension desperately needs more advocates who are able to influence decision-making at all levels. Human resource development improvements must be incorporated at the appropriate moments in all program and project development and funding processes. Curriculum revision, provision of equipment, and development or expansion of training facilities are a few of the urgent needs. With these needs in mind, two of the workshop's task forces deliberated on the potential and appropriate roles for bilateral and multilateral organizations. These two task force groups recommended that bilateral and multilateral organizations be encouraged to fund proposals for agricultural education and extension programs, particularly those proposals that arise from participatory strategic planning processes that have involved representatives of bilateral and multilateral organizations. Bilateral and multilateral organizations are positioned to play a key role in facilitating dialogue between stakeholders and ensuring that agricultural education is seen as a priority at the highest levels of national government. Representatives of bilateral and multilateral agencies can also help encourage and enable an increase in the number and quality of human resource needs assessments, tracer studies, and other forms of analysis that will represent the needs of those people living at the community level. National organizations will welcome constructive assistance to aid their processes of formulating effective policies, preparing accurate documentation, and in disseminating any information that might be of interest to a broader international community

Task force members itemized several strategies that might help raise the likelihood that bilateral and multilateral organizations will choose to support programs for mid-career training of extension staff. An important aspect was that proposals to international organizations must clearly show the following:

- how needs were identified
- that the identified needs have been expressed by the people themselves
- the potential for sustainability of the new programs

- more gender sensitivity, especially more participation of women in all aspects of extension
- relevance of the cadres to be trained to the overall agricultural and rural development needs
- relationship to other programs being promoted by host countries
- an integral relationship of new programs to important environmental concerns
- that there has been internal agreement between ministries (especially important for World Bank and FAO involvement)
- a convincing connection to both long and short term visions
- that a host government has an internal commitment to the proposed extension training programs

Accurate accounting for funds along with an extensive dissemination of program results through reports, workshops, and users conferences will increase the likelihood of soliciting continuing cooperation from bilateral and multilateral organizations. Similarly, rigorous monitoring and thorough evaluation will increase credibility in the eyes of bilateral and multilateral agencies.

One of the task forces noted that the bilateral and multilateral community would continue to focus on their own priorities unless national government officials guide them in another direction. They observed that national officials must be convinced through in-country dialogue that agriculture is the foundation of national development and, in particular, that a relevant training of mid-career extension staff is essential for preparation of qualified individuals who can work in the food, fiber, and off-farm agricultural-related industries. A clear statement of internal prioritization will be the most effective means for convincing bilateral and multilateral organizations that agricultural education and extension should also be one of their investment priorities. Undoubtedly, the bilateral and multilateral organizations will also want to see national governments demonstrating greater commitment to agricultural education and extension through allocation of their own resources to the sector.

What are potential roles and strategies for NGOs and the private sector?

One of the task forces devoted all of their discussion time to identifying appropriate roles and strategies for NGOs and the private sector. Potential roles include:

- clients or potential employers
- collaborators (co-teaching, joint research, extension, demonstrations, etc.), including planning, implementation, monitoring, and evaluation
- hosts for students during SEPs activities
- sponsors of components of the program (e.g., their staff, students, trainers)
- providers of grants, endowment etc.
- promoters of the program (e.g., brokerage and lobbying roles)
- users of knowledge provided by universities and colleges

Perhaps most importantly, the task force members felt that the private sector and NGOs should be a part of university and college decision-making processes. Qualified representatives from the private sector and NGOs should be recruited to sit on councils and curriculum planning and review bodies. In particular, they could provide information on training needs with the intention of improving relevancy. Finally, universities and colleges should work with the private sector and NGOs to explore and pursue strategic partnerships with each other for mutual benefits.

Final Comments

One theme in particular echoed through each of the four task force discussions: the need for sufficient funding to launch and sustain programs for helping universities and colleges to become more engaged with agricultural development. All of the groups mentioned that it is always cheaper and more convenient for universities and colleges to continue living in their ivory towers. Engaging with agricultural development will require a significant change in orientation and a shift in momentum. Those academic communities which have decided that they want to move closer to farmers and consumers in their constituent areas will face seemingly insurmountable obstacles. They will face both passive and active opposition from many arenas. Their efforts to leave the ivory tower will require considerable new investment and re-allocation of existing resources. Academic staff will have to be provided with appropriate incentives and then be enabled and empowered to move some of their pedagogic activities off the campus and closer to communities.

A second integrating theme arising from the task forces is related to the dynamic processes of dialogue that are necessary for bringing about the enabling environment that must exist to successfully launch any significant set of changes, especially those that are attempting to change traditionally inflexible institutions. One workshop participant was overheard to say "the participants at this workshop are preaching to the converted." This individual was making the point that the network that contains the dialogue about bringing universities and colleges into agricultural development must be significantly widened to include new audiences. This person also commented on the limited diversity of participants from bilateral and multilateral organizations at this workshop. It was noted that even though the workshop organizers extended invitations to numerous bilateral and multilateral organizations, only a few were actually able to attend. Widening the net of participation remains a primary challenge for this mid-career extension education movement.

Finally, while the workshop's task force participants clearly voiced the need for extension workers to obtain a solid educational grounding in relevant areas of agricultural science and technology, there was an even more urgent call for a radical change in the traditional approaches that universities and colleges use as their primary approach to teaching and learning. The lecture is still the predominant teaching methodology—people tend to teach the same way they were taught. Each of the task force groups noted that considerable energy must be exerted if universities and colleges are to be significantly moved toward a better mode of preparing students that is more practical, problem-based, and multidisciplinary in its orientation. Each of the task force discussions affirmed that change toward more responsive curricula is easier to talk about than to actually implement and sustain. It is recognized that a multifaceted and long-term effort with strong and capable leadership will be needed to bring about the necessary changes in such a challenging institutional environment.

Overall, the workshop participants applauded the remarkable efforts that have been made through SAFE-type initiatives in Ghana and elsewhere. They also enthusiastically endorsed the continued experimentation, innovation, and implementation of new mid-career initiatives in other countries and their respective institutions.

Concluding Comments

Norman Borlaug

As I sat here over the last 2 days listening to discussions, I have sort of reflected on all of the changes that I have seen, not just in extension and education as Sasakawa Africa Association has been involved with here in sub-Saharan African countries, but also in other areas of agricultural development. Let me begin by going back about six decades to the original program to see how the development effort has evolved over time. That first foreign technical assistance program was established between the government of Mexico and its Secretary of Agriculture and the Rockefeller Foundation in 1943. I joined the effort in 1944 and from that day to this I have been in one way or another working in research, extension and education in different organizations associated with agricultural development in developing nations.

The Early Years

When the program in Mexico was initiated in 1943 there was no research of any consequence going on in that country with the exception of a small amount going on in maize and even much less in wheat. There was no extension division so we researchers and our research associates had to function, in effect, as the extension service. We did this because we were interested to see the improved technologies we developed—the new varieties and how to grow them, how to prepare the land, how to fertilize crops, how to control weeds in irrigated fields and how and when to irrigate crops—move to the beneficiaries of these technologies. At that time the colleges of agriculture were dealing largely with theory. There was very little practical experimentation to illustrate the principles that were being put forward. There was no graduate school in agricultural sciences of substance anywhere in Latin America at that time. So researchers and their staff implemented extension until about 12 years later when 15 researchers were moved into extension to begin the extension program.

It is important to mention that we ultimately succeeded in having a very successful wheat breeding program although many people sometimes thought it was insane because they said the method was non-conventional. This success made it possible to move this

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wheat technology rapidly to areas that were in great difficulty with famine and hunger, namely Pakistan and India. Behind the scenes it also moved into China even though I didn't see it there until about 9 years later in 1974.

Reaching Out

When we got to Pakistan and India we ran into some problems. The researchers didn't talk to the extension people or perhaps I should say the extension people didn't talk to the researchers—you couldn't tell the difference. There was a no-man's land between them. And obviously the transfer of technology didn't take place from experimental stations or universities to farms until this no-man's land was bridged.

There was a lot to be done in training. And while there was a lot more sophistication in the educational institutions, especially in India, than we had in Latin America when we began, but the training was still not very relevant to much of the things that needed to be done in the short-term. I should have pointed out that in that early period in Mexico, and we found it true especially in Pakistan and to a lesser extent in India, that when we had outstanding young people who had proven their capabilities and needed graduate study training it was a hassle. There were a lot of training scholarship funds available in those early years in Latin America through Rockefeller, Ford Foundation, USAID and various others like the Kellogg Foundation. But the obstacles, especially of language, were great as there were no rapid language training schools at that time. So there were early decisions to start graduate schools and now there are several in Mexico and in many of the Latin American countries. At that time the relevance of training in American or Western European universities was much more appropriate than it is today for our people here in sub-Saharan Africa. So it behooves us to put major emphasis not only on the type of training we are dealing with in this workshop, but also as far as possible, try to influence the restructuring or the reorientation and focus of the curricula being used for courses of study for sub-Saharan African students for the next several decades.

Opposition to Progress

Don't get the impression that we didn't have problems then with communication or that we didn't have certain groups that were trying to subterfuge and sink the whole effort. They were not as skilled in handling the television or the press or radio and television hardly existed at that time. But they were there badmouthing everything that was going on not just in the third world. Look, I say, back home at the country where I first came from, we had all sorts of people who, depending on which way the wind was blowing, could be supportive. There were others that were very disruptive and very disillusioning to the total efforts. There were others that were more skilled at undermining the things we had set out to achieve and these very often were people in top positions such as in the Ministry of Agriculture, Finance, or in educational institutions. When you reach the pinnacle of the Civil Service system you don't want people rocking the canoe. You want the status quo. But the status quo means that you are not changing with population growth and you are marching backwards.

There were all sorts of things that were being used as propaganda. Not too different in the degree of exaggeration that we hear today in some of the environmental issues by the extremists. I want to make it clear that I originally lived in the back country and I like wildlife. The

environment and the benefits of proper use of the land resources are important to me, but I must admit sometimes I get a bit disconcerted by the over-exaggerated emphasis given to one narrow aspect of the environment where the bias is all too often very extreme. Just so that you understand and can appreciate how you have to deal with all of this along the way in development, whether it is in education or extension or research, let me share an experience with you. At one time rumors were put out by three top people, one a Vice Chancellor, who insisted that the Mexican wheat had inferior taste. That rumor couldn't be quelled until a minister of agriculture of Pakistan ran a blindfold test comparing chapatis made from two of the best pre-Indian, meaning pre-partition, varieties with those made from two imported Mexican varieties. With the help of God, or at least with a lot of confusion, they rated the two Mexican varieties as the best and that stopped that rumor. But there were other things said that were more ferocious and more vicious: that these wheats were making the animals, and possibly the women also, sterile. That was more difficult to deal with because these are insidious things and if they are properly dished out they have a way of catching on. I mention these because of many of the issues being put forward today by people with extremist views that indicate we are on the verge of being poisoned out of existence by all sorts of things. For example, they imply that chemical fertilizers are same as insecticides, fungicides, herbicides etc., by lumping them together in the same sentence. We all know fertilizers as nutrients for plants whereas the other three—insecticides, fungicides and herbicides—are toxic substances selected to control certain organisms, but this all gets tangled up and here we are tripping over each other.

Conclusion

In concluding, let me say that I believe the SAFE Program that was firmed by the three people who originally had a strong hand in its development—Deola Naibakelao, Chris Dowswell and Roger Steele—has, both in terms of organization and structure, taken a solid shape which we have had the privilege of utilizing for this exchange. We have had the opportunity to share ideas and information to further improve its efficiency and impact and I think it has been great. There's a lot left to be done in terms of curriculum modification and revitalization and it is my hope that one or two outstanding graduate faculties in Agricultural Science will emerge in one of the best universities and will become a truly great international institution.

I will stop here, but allow me to congratulate all of you for the roles that you played. I want to thank Yohei Sasakawa for continuing the noble efforts of his father, Roichi Sasakawa, who started the whole African program. We had an understanding with Yohei's father that when he passed away we were going to try to push this program forward so that he would be proud of what was being achieved. I feel strongly that if he were here he would be proud of this meeting that we have participated in over the last 2 days. I wish you all success to carry on this struggle for greater and greater improvement of extension education. Earlier, I mentioned three persons who played an important role in getting this program started. It would not have been possible to have had a successful local program in Ghana without the leadership of the Vice Chancellor, his Dean and staff. They set the tone for an excellent program which has spread to other countries within this short period and that speaks in a loud voice. Congratulations to all of you.

APPENDIX

Starting and Sustaining a SAFE-Type Program: A Look at the University of Cape Coast SAFE Program, Ghana

M. M. Zinnah, S. Akuamoah-Boateng, J. A. Kwarteng and G. O. Tetteh

The University of Cape Coast (UCC) B.Sc. Program in Agricultural Extension was launched in the 1993/94 academic year. It consisted of two tiers: a 4-year program for certificate holders, and a 2-year program for candidates with diplomas. In 1999, a 2-year post-Certificate program leading to a Diploma in Agricultural Extension was launched at the Kwadaso Agricultural College in Kumasi leaving the University of Cape Coast to concentrate on the 2-year post-Diploma Degree program.

The program was requested by the Ministry of Food and Agriculture (MOFA) to train mid-career agricultural extension staff in Ghana. It was launched with financial and technical assistance from the Sasakawa Africa Association (SAA), a Japanese non-governmental donor organization and Winrock International, a non-governmental development organization in the USA. The Ministry of Food and Agriculture and the University of Cape Coast provided additional funding.

Getting the Program Started

The important issues considered at the outset were:

- preliminary issues related to the program
- resources needed to start the program
- financing the program

Preliminary Issues

1. Formal and informal consultations were held among major stakeholders—University of Cape Coast, Ministry of Food and Agriculture, Sasakawa Africa Association and Winrock International—to sensitize and create awareness for the need for the mid-career extension program and to ensure a shared vision and commitment to the program.
2. A formal extension training needs assessment was conducted to provide data on current training needs and the capacity of the university in terms of physical infrastructure, academic and administrative staff etc. to offer the training needed.
3. In-house workshops were held with the major stakeholders to discuss the philosophy, approach, opportunities and problems in developing and implementing such a program.
4. A national workshop was held for representatives of diverse stakeholders—regional and district directors, farmers, lecturers, NGOs, etc.—to discuss and consolidate the vision and details of the program and to secure wider commitment to the objectives of the program.

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Box 1. **Summary of Curriculum for the Post-Diploma B.Sc. Agricultural Extension Programme in the School of Agriculture, University of Cape Coast.**

Course no./course title		*Hours Theory/practice*	*Credits*
	Level 300* - First Semester Courses		
AGN 205	Introduction to Computing	1-2	2
AEX 303	Social Change and Rural Development	3-0	3
AEX 304	Adult and Non-Formal Education	3-0	3
AEC 301	Farm Management Economics	2-3	3
IRC 301	Information Retrieval	2-0	2
ACR 301	Principles of Horticulture	2-3	3
AAS 401	Fisheries	2-3	3
Total			19
	Level 300* - Second Semester Courses		
AEX 302	Communication and Extension Methods	2-2	3
AEX 305	Extension Research Methods	2-3	3
AGN 302	Non-Traditional Farming	2-3	3
AEN 302	Post-Harvest Technology	1-2	2
AEX 306	Systems Thinking for Changing Agriculture	2-0	2
AEX 307	Participatory Approaches in Extension	1-2	2
AEX 403	Report and Proposal Writing	2-2	3
AEC 401	Agricultural Marketing	2-0	2
Total			20
	Level 400 First Semester Courses		
AEX 402	Programme Planning and Evaluation in Extension	3-0	3
AEX 404	Planning of Supervised Experience Projects (SEPs)	2-2	2
AEX 405	Group Dynamics and Public Relations	3-0	3
AEX 406	Gender, Leadership and Youth Issues in Extension	3-0	3
AEX 411	Animal Production	2-3	3
	Elective Course**		3
	Elective Course**		3
Total			20
	Level 400 –Off-Campus Supervised Experience Projects (SEPs)		
AEX 407	Supervised Experience Projects (SEPs)	0-9	3
Total			3

*Students are placed at Level 300—equivalent to Year 3 in the normal 4-Year University program—because they already possess a Diploma qualification

** The two elective courses must be selected by students from the list of elective courses based on the student's perceived need and upon the advice and consent of their academic advisors or the Head of the Department of Agricultural Economics and Extension.

Continued

Box 1. Continued.

Course no./course title		Hours Theory/practice	Credits
	Level 400 - Second Semester Courses		
AEN 401	Irrigation and Drainage	2-2	3
AEX 408	Population, Resource Management and Environment	2-0	2
AEX 409	Development of Extension Training Materials	2-3	3
AEX 410	Current Issues in Extension and Technology	3-0	3
ACR 404	Integrated Pest Management	2-3	3
ASS 403	Soil Management	2-3	3
AEX 499	Project	0-9	3
Total			20

TOTAL CREDIT HOURS = 82

NOTE: Courses in Agricultural Extension and closely related fields make up a total of 44 credit hours or 54% of credit distribution while supporting courses in agriculture and agricultural economics make up the remaining 46%.

5. A detailed, responsive curriculum was prepared with inputs from the major stakeholders to satisfy MOFA's demand (see summary in Box 1).
6. The curriculum was sent through the academic board of the University for study, discussion and approval.
7. Selection and admission criteria were developed for prospective students according to the employer's (MOFA's) staff development policy criteria and the admission requirements of the University of Cape Coast.

Resources Needed to Start Program

An assessment was made of the following resources needed to start the program.

1. Human resources (number and qualification of full-time and part-time academic staff, administrative staff, etc.). However projections were made to increase senior staff strength by 50%.
2. Physical infrastructure (classrooms, offices, dormitories, library, etc.). A facility comprising classrooms, dormitories, offices and conference rooms was constructed (see Fig. 1).
3. Instructional materials/equipment (books, journals, computers, projectors and accessories, vehicles, etc. (Table 1).

Financing the Program

The main aspects of financing involved capital and operational costs. The major sources of funding for the UCC SAFE program are presented in Table 2.

Capital cost involved the cost of vehicles, offices, classrooms, dormitories etc. Internal and external funds were required to cover capital costs at the beginning of the program. In addition, a couple of vehicles and other materials and equipment were acquired for the program. Capital cost for the UCC SAFE program was provided by the Sasakawa Africa Association, the Ministry of Food and Agriculture, USAID and the University of Cape Coast.

Operational costs were costs involved in the day-to-day running of the program as well as costs for such items as tuition,

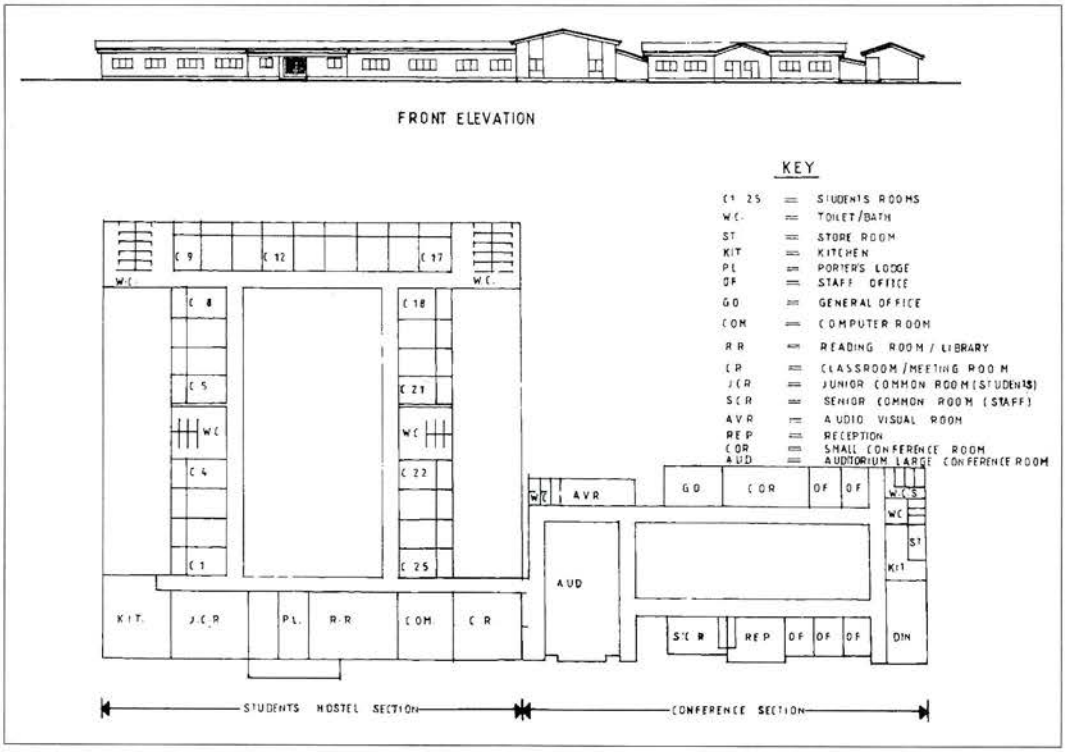


Figure. 1. Plan of physical structures (student hostel section and conference section).

materials and the supervision of SEPs . In the case of the UCC program, tuition costs were covered by the University while MOFA provided study leave for all their students enrolled in the program. Additional funding was provided by SAA and the University to cover materials, running costs and supervision of the supervised enterprise/experience projects (SEPs).

Human resources costs involved costs of full-time and part-time faculty, administrative and junior staff costs as well as staff development (especially from Masters to Ph.D. degrees) and professional enhancement costs involving such activities as conferences, seminars and workshops. These costs are borne by the University of Cape Coast under its existing arrangements. Funds are from time to time provided by the SAFE program for workshops and conferences.

Keeping the Program Going

Keeping the program going entails activities related to:

- on-campus delivery of the curriculum
- off-campus supervised enterprise/ experience projects (SEPs)

On-Campus Delivery of Curriculum

This comprises teaching, field trips, on-campus practicals, training materials and other consumables etc. Adult education principles and adult teaching methods as well as facilitation skills are stressed throughout the teaching and learning encounter.

Off-Campus Supervised Enterprise/ Experience Projects (SEPs)

The off-campus SEP is to help students work with farmers in rural communities to:

Table 1. Instructional materials and equipment required for getting started.

Item	Quantity	Unit Cost (US$)	Total Cost (US$)
30-Seater Bus	1	70,000	70,000
4x4 Double Cabin Pick-Up	1	30,000	30,000
4x4 Station Wagon (Land Cruiser)	1	55,000	55,000
Core reference text books	Several	–	20,000
Journal subscriptions	Assorted	–	4,000
Internet subscriptions	–	–	500
Computers, monitors and cables	22	2,500	55,000
Printers and cables	10	600	6,000
UPS	22	450	9,900
Photocopiers	2	4,000	8,000
Scanner	1	600	600
Computer software	10	400	4000
Laptop computers	3	2000	6000
Fax machine	1	600	600
Multi-media video projector	1	10,000	10,000
Video projector screens	4	650	2,600
Video camera	2	700	1,400
Still camera	5	400	2,000
Binding machine	2	350	700
Overhead projector	3	550	1,650
Slide projector	3	600	1,800
Video deck	2	400	800
Color printer	1	700	700
TV monitor	2	300	600
Trolley	4	150	600
Flip chart stands	5	60	300
Tripod for video cameras	2	60	120
Generator (60 KVA)	1	20,000	20,000
Public address system	1	1,000	1,000
Refrigerator	2	700	1,400
Miscellaneous Equipment	–	–	10,000
Total			325,270

- develop increased competencies as extension agents in order to promote the effective delivery of extension through participatory extension
- increase reflective learning
- appreciate the value of participation in experiential learning
- emphasize the importance of process and impact in experiential learning thereby promoting a monitoring and evaluation culture
- complement on-campus learning for holistic human resource development
- encourage lifelong learning

The planning, implementation and evaluation of SEPs goes through the following stages:

1. Students visit proposed SEPs communities to plan projects with stakeholders. After this exercise every student is required to filled out and duly approved Pre-SEPs Form 01 (see Box 2).
2. Students develop and submit SEPs proposals to on-campus supervisors (UCC lecturers).
3. Students proceed to selected communities to implement SEPs with stakeholders. Daily student field activities are moni-

Table 2. Major sources of funding for the SAFE program at the University of Cape Coast.

Major sources of funding	Components of program being funded
University of Cape Coast (UCC)	Salaries of university staff; administrative overheads; utilities; office and accommodation for Winrock/SAA staff seconded to UCC; contribution to the construction of Sasakawa Centre hostel, conference rooms, library etc.; contribution to the funding of off campus SEPs.
Ministry of Food and Agriculture (MOFA)	Contribution to the construction of Sasakawa Centre; provision of instructional materials and equipment; contribution to the funding of SEPs; payment of study leave salaries of all MOFA staff in the program
Sasakawa Africa Association	Grants for initial planning; contribution to the construction of Sasakawa Centre; vehicles; instructional materials and equipment (e.g., computers); contribution to funding of off-campus SEPs; salary and benefits of seconded SAA/Winrock staff.
German Technical Co-operation	Contribution to funding of students' SEPs
World Vision International–Ghana	Contribution to funding off-campus SEPs
USAID	Contribution to the construction of the Sasakawa Centre
Darko Farms	Contribution to students' SEPs
District Assemblies	Contribution to students' SEPs
Other NGOs	Contribution to students' SEPs

tored by designated supervisors called Co-Supervisors. These are usually MOFA employees of the rank of District Director.
4. Lecturers visit students at pre-determined intervals to evaluate SEPs activity. Lecturers fill out Form 02–SEPs Visitation Record for UCC Lecturers (see Box 3).
5. Co-supervisors assess students under their charge and provide feedback to the University on the basis of the following variables: quality of planning, dependability, initiative, judgment, use of available local resources, usefulness of the SEP to local extension activities, degree of achievement of SEP objectives, attitude toward SEP activities, attitude toward workers and farmers, attitude toward directions, and guidance.
6. Students prepare and present SEPs Project Reports.
7. Students prepare and submit final SEPs reports in the form of dissertations.
8. Students are given final grades on the basis of overall performance (see Box 4).

Note: The average annual total cost of the SEPs per student is currently $805. Most of this cost is made up of transportation and supervision costs.

Recommendations for Launching and Sustaining SAFE-Type Programs

The following recommendations are offered for the benefit of institutions and partners interested in launching SAFE-type programs.
1. Carry out a formal needs assessment to establish a need for the program.
2. Secure the commitment of the leadership of the implementing institution to the vision and success of the program through dialogue and discussions about the program.
3. Hold consultations with major stakeholders to ensure a common and shared vision for the program.
4. Develop responsive curriculum with input from major stakeholders. The curriculum should be reviewed from time to time and the required changes made to keep it responsive and relevant.
5. Hold a re-orientation course for all staff

Box 2.

UNIVERSITY OF CAPE COAST
SCHOOL OF AGRICULTURE
DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

FORM 01— **PRE-SUPERVISED ENTERPRISE PROJECTS (SEPs) FORM**

NAME OF STUDENT:

_____

*PROPOSED SEPs TOPIC:**

_____

_____

**Please consider points a-d below in arriving at a proposed SEPs topic*

JUSTIFICATION FOR TOPIC (To be filled by student in consultation with local supervisor)

_____

_____

(a) What are the most pressing agricultural problems for farmers in this area? Please list in descending order of priority.

(b) Is the selected SEPs topic related to any of the prioritized agricultural problems indicated in (a) above

YES.....; NO.....If Yes, Explain _____

_____

(c) Will the student be able to complete the proposed project within the stipulated 4-6 months period?

YES.....; NO .....

(d) Will there be adequate on-site supervision for the student over the project period?

YES.....; NO .....

Co-Supervisor's Name: ..... Position:.....

Contact Address:.....

Tel: .....; Other (e.g., e-mail. Fax): .....

Please indicate what support the District will be able to provide for the student:

_____

Name of District Director of Agriculture: _____

Signature of District Director of Agriculture: _____ Date: _____

Box 3.

UNIVERSITY OF CAPE COAST
SCHOOL OF AGRICULTURE
DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

FORM 02— **SEPs VISITATION RECORD FOR UCC LECTURERS**

GENERAL INFORMATION

Name of Student:

_____

Surname *First Name* *Middle Initial*

Date of visit:_____ Visit No.:_____Village/Town _____

District:_____ Region:_____

Title of SEP:_____

_____

Observations:_____

_____

Major Accomplishments:_____

_____

Improvements or changes in the SEP since last visit (or since student began the SEP, if this is the first visit) _____

_____

Student's Problems and Concerns:_____

_____

Lecturer's comments and recommendations for improvement:

_____

_____

Lecturer's Name:.....Lecturer's Signature: .....Date:.....

Box 4.

UNIVERSITY OF CAPE COAST
SCHOOL OF AGRICULTURE
DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

FORM 04—**STUDENT OVERALL SEPs EVALUATION FORM**

Name of Student:

_____

Title of SEPs Project:

_____

_____

Village/ Town.....District.....Region.....

Overall Evaluation Score	**Grade**

Grading System

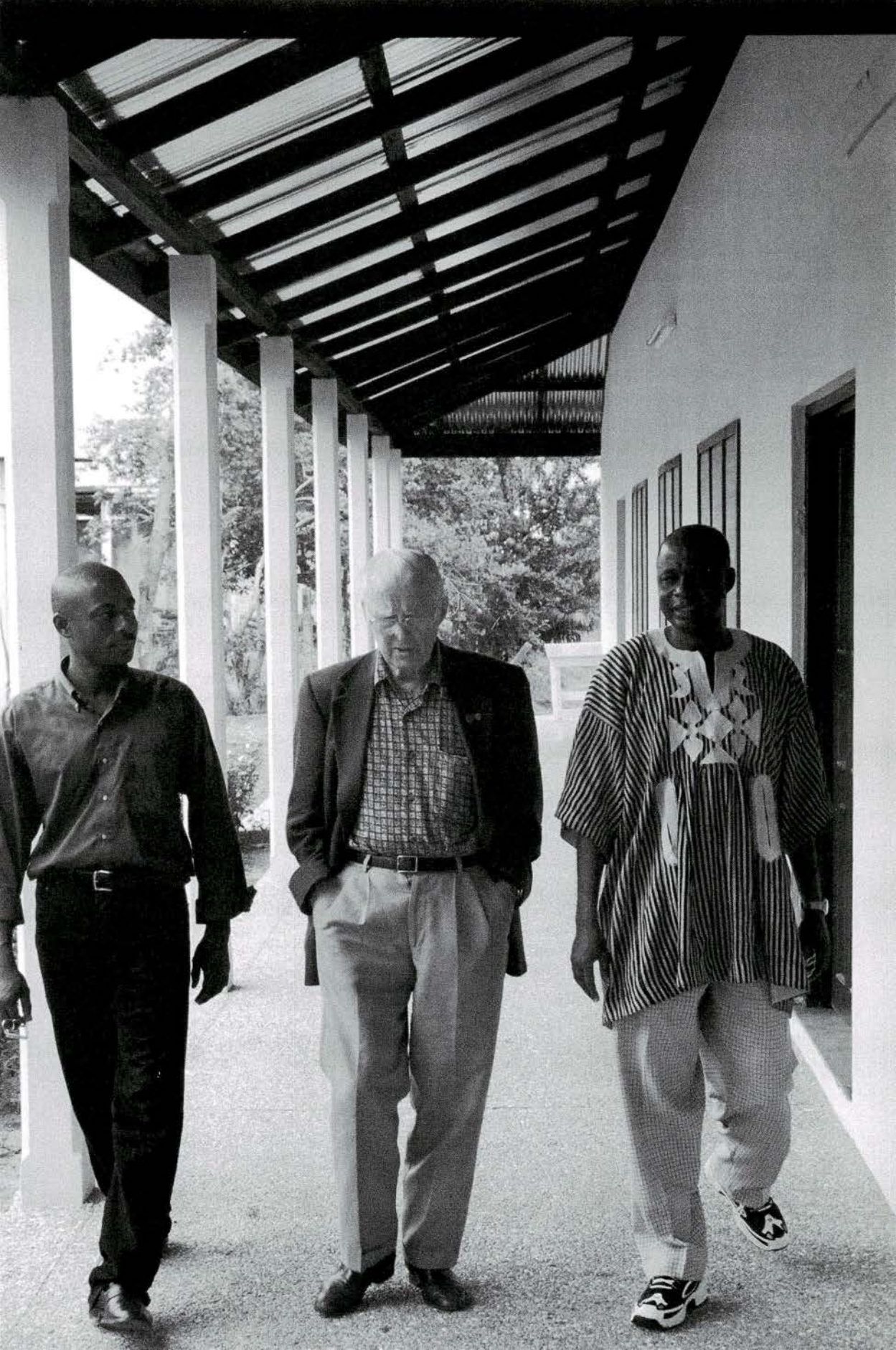
80-100	—	A
75-79	—	B+
70-74	—	B
65-69	—	C+
60-64	—	C
55-59	—	D+
50-54	—	D
0-49	—	E

Supervisor's Name: .....

Supervisor's Signature: .....

Date: .....

involved in the program to sensitize them to the philosophy, operation and merits of the program.
6. Plan for the effective delivery of the curriculum using adult education principles, participatory approaches and facilitation skills.
7. Make sure there are adequate numbers of qualified staff (human resources) to start the program.
8. Ensure that gender is mainstreamed in all aspects of the program.
9. Provide effective supervision to make SEPs projects relevant and successful.
10. Make sure there is (or will be) adequate infrastructure to start the program.
11. Plan for the acquisition of instructional materials and equipment for the program.
12. Determine clearly the costs involved in starting and sustaining the program and show how the program will be financed (e.g., through grants and funded proposals).
13. Organize a start-up workshop for major stakeholders to facilitate the smooth implementation of the program.
14. Form partnerships with organizations and institutions committed to the same vision.
15. Have a human resources development program and motivation strategies that promote continuing staff development and high staff morale for staff involved in the implementation of the program.
16. Develop a framework and a set of criteria for monitoring, evaluating, and documenting the impacts of the program. This may involve internal and external reviews of the program.



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Bringing African Universities and Colleges More into Agricultural Development, held in Accra and Cape Coast, Ghana, 4–6 September 2000.

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