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AGRICULTURAL EDUCATION AND HUMAN RESOURCES DEVELOPMENT IN AFRICA

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Abstract

The role of Agriculture in transforming the socio-economic framework of African economy cannot be overemphasized. It is also essential for the expansion of employment opportunity, poverty alleviation, improvement of income distribution, industrialization and easing the pressure of balance of payments. In effect, it has been a sustainable source of government revenue. This paper examined the relevance of agricultural education in achieving human resources development in Africa against the background of increasing unemployment rate among school leavers and the resultant negative effects on African economy. Consequently, the authors looked at the concepts of Agricultural Education and human resources development, overview of university, intermediate, and secondary levels of Agricultural Education in Africa. Resources development opportunities of Agricultural Education and challenges for Agricultural Education in Africa were highlighted. Appropriate recommendations aimed at improving Agricultural Education for human resources development were made.

The improvement of a country's human capacity for productivity is a prerequisite for social and economic development. In the agricultural sector, both formal and non-formal educations are essential for improving food security, rural employment and reducing poverty. Formal agricultural education is needed for the production of skilled manpower to serve the agricultural sector through extension, research, entrepreneurship and commerce. Non-formal agricultural education, often provided by both public and private extension services, is needed for training of farmers, farm facilities and workers and for capacity-building in a wide range of rural organizations and groups.

To meet the challenges of agricultural production and food security in the 21st century, African countries must be willing to invest in their human resources for development. Improving human capital in agriculture is especially important in the low-income, food-deficit countries of Africa where the shortage of trained human resources is a major limiting factor to development.

The Basic Concept of Agricultural Education

The Federal Government of Nigeria, in recognition of the importance of agriculture in the national economy, introduced pre-vocational agriculture in the junior secondary school curriculum in order to equip the young students with the necessary pre-vocational or entry skills in agricultural occupations.

The broad objectives of the curriculum include:

- i) To stimulate students interests in agriculture.
- ii) To assist students acquire and ingrate basic knowledge and skills in agriculture.
- iii) To expose students to the various occupational opportunities available in the field of agriculture
- iv) To prepare students for occupation and for further studies in agriculture

Egbule (2004) defined Agricultural Science Education as the training of learners in the process of agricultural productivity, as well as in the techniques for the teaching of agriculture. Presently Agricultural Education in Africa takes place at the informal and formal level whereby learners are trained to modern agricultural production processes outside the formal school system. At the formal level, agriculture is studied at various levels in the Nigeria educational system.

Agricultural education is concerned with that aspect of learning that prepares people and personnel to become teachers of agriculture extension and other professionals in areas that require a broad knowledge of agriculture. It among other things focuses on the development of leadership skills needed in planning and achieving long range goals and objectives, including improved agricultural

production, conservation of natural and human sources and provision of education programmes for personal family and community development

In Nigeria, for example, it is not surprising to find that most of our universities offer agriculture as a field of study. This trend is however not complemented by commensurate number of students. For instance, of the over 60% of the agriculture labour force that are women, only 25% of these women studied agriculture. A survey among the students found the most cited reasons to be personal. The view of their teachers however contrasted sharply with the position of the students who studied agriculture simply to have a degree and rarely practiced farming (Afonja and Omolara, 1995).

Concept of Human Resources Development

Development does not start with goods; it starts with people and their education, organization and discipline. Without these three, all resources remain latent and untapped. (Schumacher in Abdullahi, 1996)

There is no doubt that the most vital resources or asset of a nation are the people. Consequently, the progress and development of resourcefulness of her people which also is a reflection of the quality of training and purposeful development of education in that nation.

This can be achieved through effective adoption and implementation of vocational agriculture. According to Egbule (2004), the best legacy to give a child is to teach him how to plough the land and the worst punishment you can give him is to deny him any knowledge of agriculture.

Overview of University-level Agricultural Education in Africa

UNESCO'S (1993) World Education report showed that opportunities for higher education vary greatly in Africa. They range from enrolment of 1698 per 100,000 inhabitants in Egypt to 16 per 100,000 in Mozambique. In the francophone countries, the range goes from 958 in Morocco to 50 per 100,000 in Rwanda. Not surprisingly, there is a clear correlation between economic development and the number of students enrolled in higher education. There are a number of countries where low levels of education are accompanied by per capita annual incomes of below US\$ 500. This includes much of sub-Saharan Africa.

In Africa, university education in agriculture is at a crossroads. Financial constraints are severe and the demand for higher quality education has never been greater. There is a need for greater educational relevance and higher quality graduates. There is an obligation to enroll more women and to produce students who

are prepared to go on to positions of leadership. Some progress has been made. A recent Food and Agricultural Organization study shows that, in the past ten years, the enrolment of women in intermediate and higher level has increased from an average of 15 percent to nearly 25 percent of the total students studying agriculture in Africa. In the French language institutions, the results show an increase from 14 percent to 20 percent. But many problems remain. University graduates are no longer automatically hired by governments and employers in the private sector are demanding for graduates with different and higher level, skills and knowledge. Education outside the continent, which has been seen as a way to fill the manpower gap, has often proved to be inappropriate to the unique development needs of African countries.

Post-graduate training to provide high-level scientists and researchers is an essential part of quantity improvement. It is also critical that institutions of higher education play a developmental role by establishing linkages with relevant private and public agricultural agencies and with farming communities. Curricular revision should include basic foundation courses to be taken by all students, leaving the final portion of the educational cycle for specialized training of subject-matter specialists, research scientists, and those who wish to pursue academic careers.

Curricular should include important topics that are generally missing such as the role of women in agricultural development, farming systems management, agribusiness and marketing, environmental protection, and population issues. Gender discrimination in enrolment practices should be eliminated and participation of women at all levels of educational, research and extension systems should be encouraged. A common regional policy for reforming national higher education system and the creation of centers of excellence should be priority considerations for educational policy makers.

Intermediate-level Agricultural Education

At the intermediate level, student demand does not justify building new colleges and schools. Rather, the need is for competency-based education so that students can acquire the skills, knowledge and attitudes that are being demanded by governments and private employers. It is a time for private and public partnerships that lead to curriculum revision and improved practical skills of graduates. The goal should be to produce students who can find jobs because they are well-trained and want to work in Agriculture.

It is at the intermediate level that most of Africa's field-level agricultural extension workers are prepared. It is increasingly clear that extension workers need better training in both technical agriculture and the extension methods needed to disseminate production technologies to the thousands of small-scale farmers who

need them. Food security in the low-income, food-deficit countries should be a priority. The training of extension workers should emphasize skills and knowledge for sustained crop production and strategies for the prevention of food losses during harvest, storage, marketing and processing.

Secondary-level Agricultural Education and Below

In East Africa, at the secondary school level, there are several examples where agriculture is an examination subject and, along with other science subjects, is providing the foundation for secondary students who want to study agriculture at the tertiary level. In West Africa, the study of agriculture in regular secondary schools is very limited and is an issue that needs to be addressed as part of national and regional educational policy.

At the elementary level, the study of agriculture is severely limited. In some instances, school gardens have been promoted, but in general agriculture is not taught as a subject at the elementary level. Rural students drop out of school at a very high rate. In many cases, as many as 90% do not go beyond elementary school. If they are to study agriculture in a school setting, it will have to be at the elementary level. The farming population comes from youth and Africa's food security depends on those farmers.

Resources Development Opportunities in Agricultural Education

Ijere (1995) noted that unemployment is among the greatest plagues of African society and it is therefore not surprising that one of the efforts of government is the provision of educational training for her citizens to be able to face the world of work.

Training in vocational agriculture in institutions of learning should be seen as a design by government to equip youths with specific knowledge and skills as to be able to employ themselves on graduation. Vocational agriculture programme is designed to provide knowledge and practical skill in areas of agriculture such as crop production, animal's husbandry, soil science, horticulture, agricultural economics and extension, fishery, forestry and wildlife. Other areas include agricultural Engineering, Agricultural Extension etc.

According to Aghimien and Nosa (2001), a well trained vocational agriculturist who has the zeal and commitment can use the knowledge and skills acquired in any of the above subject areas to provide not only self-reliance but can on the long run, be an employer of labour in the following fields: crop production, production of vegetable crops, livestock production, fish production, establishment of Horticultural gardens, agricultural products processing, and provision of farm services.

Food Production and Improvement in Livelihood

In late 70s, agricultural training expanded tremendously in Kenya, Nigeria and Tanzania. During this era of expansion, the number of universities offering Agricultural Education rose rapidly. The expansion of agricultural education from the theoretical and practical levels had a positive implication on farming standard and led to an increase in food production (Osimen, 2008).

Other African countries including Ghana, Sierra Leone, Libya and Chad also realized the enterprising power of Agricultural Education in food production and hence intensified the teaching and learning of the programme in the school curriculum. The application of this programme also increased the availability of technical human resources in the continent of Africa since 1970 in Kenya, 1971 in Tanzania and early 60s in Nigeria. In addition, Agricultural Education improves livelihood in rural communities particularly in West Africa. This is achieved through adult education programmes and extension education activities. It also improves Agribusiness in Africa as agricultural activities are becoming more complex than before in area of food production, processing, storage, transportation and marketing. Hence, Agricultural Education unavoidably becomes one of the working tools for improving the livelihood of the rural dwellers in Africa.

Agricultural Education and Youths Development

The government of Kenya, Tanzania, Nigeria, Morocco, Chad, Egypt and many other countries consider agriculture to be the key to social and economic prosperity of the teeming of African youths. This is achieved through women in Agriculture, youths in Agriculture and young farmers clubs.

Even during the colonial era in most African countries, Agriculture was taught as a subject to enable graduated youths secure gainful employment in Government establishments. In early 80s Agricultural Education was aggressively expanded at all levels of Educational Institution to involve youth training to become employers of labour in model farms and other Agribusinesses. In other words, Agriculture was taught in African schools mainly to impart knowledge to youths and inculcate in them a positive attitude towards farming (Ngurit et al., 2002). According to Osimen (2007) the whole intention was to prepare them for life in the rural areas with intention to reduce youth's unemployment in urban areas of Africa.

It is obvious that Agricultural Education expansion has made the programme in many African countries address the perceived shortage of raw materials in agro-industries for youth's employment. And more importantly to produce professional work force for African youths. Training programme for youths and awards of

certificates, diploma and degree automatically leads to job opportunities for African youths.

In Nigeria, Kenya, Tanzania and Cameroun the introduction of agricultural science in secondary schools brought about a good link between the schools, the surrounding youth farmers and extension agents (Ngugi, 2002). Members of the young farmers clubs in schools maintain these links through field tours and participation in agricultural shows. In Kenya, the club was supported by Agricultural Society of Kenya (Osimen, 2008), in Nigeria, Industrial Work Experience Scheme embark by students in Higher Institutions in Nigeria is supported by Federal Government of Nigeria. The main objective is to ensure that youths both boys and girls are trained to embrace agriculture as a noble profession.

Agricultural Education and Poverty Alleviation

In 1980, an estimated 27% of Nigerians lived in poverty. By 1999, about 70% of the population had income of less than \$1 per day. Poverty levels vary within country and even from one country to another. Ghana, Chad and many African countries are worse than Nigeria.

Poverty alleviation is the most difficult challenge facing African countries, (NEEDS, 2005). Food and Agricultural Organization (1999) reported that the estimated 790 million people in developing countries were undernourished; while approximately 200 million are in sub-Saharan Africa. This constituted 19% of the total population. The indication is that out of every five people one is undernourished. Indeed, about 9 million people die of hunger yearly (Drummond and Goodwin, 2004). The magnitude of this human loss is enormous and it is a continuous and relenting event in African continent.

The gradual rise in the achievement of Agricultural occupational skills is to reduce poverty particularly among the middle work force in Africa. This is attributed to the introduction of Agricultural Education in the school curriculum. To further effect a gradual change in the poverty level of individual, the training of man power through a model Agricultural Education and training system with extension agencies as well as exploring local natural and global linkage has been adopted in many African countries. Osinem (2008) pointed out that Agricultural Education though has generally kept pace with scientific progress in the past; the pace of change is much faster today. Food processing, storage and marketing are aspect of food production process that has become more increasingly important to Agricultural producers than in the past. These strategies are working toward increase in food supply and above all in the reduction of poverty among the Agricultural work force in Africa.

Agricultural Education and Employment in Africa

Currently, every African country can boast of farmers as the highest percentage of citizenry. In Chad 65%, Ghana 72%, Nigeria 60-70%, Morocco and Egypt about 65%, while Uganda, Kenya and Tanzania above 80% of the people have secured livelihood in Agriculture. However, this high farming population is a serious challenge to Agricultural educators, since it is an indication of high poverty rate, considering the relatively low farming population in United States (8%) and 5% in Britain.

Hence, the role of Agricultural Education in employment opportunities cannot be overemphasized. The training of man-power to realize sustainable Agricultural growth in Africa is achieved through this programme. The under-subsistent farmers acquire occupational skills through Agriculture extension service system in order to reduce the population of Africans in 'Pseudo-farming' (unproductive and non-rewarding farming). The extension service delivery system to rural farmers is intensive in Nigeria, Kenya, Ghana and Tanzania particularly in early 1990.

NEEDS (2004) further stressed the need to provide employment in Nigeria and other African countries by intensifying attention and direction in agricultural science human development in any nation will be grossly undermined and impaired without gainful employment. It is the Agricultural Education programme that is expanded in Nigeria to address the perceived shortage of human resources and middle man power among Nigerian farmers.

Agricultural Education and Human Resources Development in Africa

The total population in West Africa will triple between 1950 and 2000, and urban population levels are growing at an even faster rate. In 1950, the urban/rural population ratio was 1:10, in 1990 it was 1:3.4 and in 2010 it is projected to be 1:2. With the exception of Burkina Faso, per capita food intake is diminishing. Increasing population density and pressure on the land have altered traditional production patterns and sustained agricultural production is being threatened.

The school age population is expected to double in the 20 years between 1990 and 2010. Currently average primary school enrolment in the region is approximately 40 percent, and that low figure is compounded by a drop-out rate of 40 percent. The risk of increasing the current illiteracy rate of 70 percent seems very great indeed.

A recent study in six francophone countries of the Sahel (Burkina Faso, Mali, Mauritania, Niger, Senegal and Chad) shows that there are notable differences among

the agricultural education systems of these countries. The following problems were found to be common to all, however:

1. High recurrent costs, especially in relation to the number of persons trained.
2. Low internal efficiency rates (i.e., low output of graduates in relation to student capacity due to high drop-out and failure rates).
3. Low quality of education.
4. Lack of relevance to the national rural development needs; and in some fields.
5. An excess of supply over demand of trained personnel.

The origins of these problems were found to be diverse in nature and range from too low student/teacher ratios, exorbitant costs for non-teacher salaries (i.e., administrator salaries), high drop-out/failure rates, no-fee and scholarship policies, inadequate facilities and equipment, and the inability of governments to guarantee, as in the past, immediate employment to graduates. The report also points out that a regional policy for agricultural education and training and a regional cooperative approach are not only desirable, but possible to achieve. A major constraint is the relatively low level of funding allocated to education in agriculture.

Furthermore, teaching methods and curricula are not being adjusted to the new requirements and demands for trained manpower in agriculture, especially in the private sector. Government employment of graduates is no longer assured; structural adjustment is having a negative effect not only on traditional employment patterns, but on the ability of educational institutions to respond to trained manpower needs.

Challenges of Agricultural Education in Africa

What matters most for economic development in Africa is the capacity of rural people to be efficient producers given their natural resource base. There is little doubt that economic and social development, and the benefits that accrue such as improved nutrition and health, require an educated populace. No country has become developed without well-educated people and a strong agricultural base that provides food security. Good educational systems will not solve all the problems, but they provide a prerequisite for sustained agricultural production and economic development.

The mission of agricultural education in Africa in the 21st century is to work toward improved, relevance, and effective teaching, research, and extension. To contribute food security for all, education in agriculture must prepare a critical mass of dedicated, well-trained men and women who are committed to achieving socio-economic improvement for Africa.

Conclusion

No doubt agriculture being the mainstay of African economy cannot be properly enhanced without the adoption and implementation of appropriate agricultural reforms and programme that are suitable to the Africa environments. The paper has highlighted the areas of resources development opportunities of agriculture that will create gainful employment to many youths and adults. Therefore Africans government should ensure that reforms in agriculture should be strictly followed by the availability of people who are willing to embrace agricultural education. This would be feasible if necessary machinery is put in place to ensure the interest of youths and adults (both males and females) in agriculture.

Recommendations

A critical need at the intermediate level of agricultural education is to raise the internal efficiency of the existing systems so that an increased output of students is obtained from the same facilities. At university-level agricultural education, there is a pressing need for institutions to strengthen links with rural society so as to play a full part in the development efforts of their region or community. Agricultural universities and colleges also need to have closer links with current national research in applied fields. At all levels, there is a need for a critical review of subject-matter content and a judicious preplanning of courses to fit employment opportunities and to address the problems and issues of sustainable agricultural production and rural development. Priority attention should be given to upgrading teaching skills and methods with an emphasis on practical, field-oriented student training.

In the light of the foregoing, it is here recommended as follows:

- i. Re-introduction of farm settlement scheme in rural areas with the provision of social amenities such as pipe borne water, electricity, road network, this will not only boost agricultural production but encourage youths to stay in rural communities.
- ii. The existing agricultural training institutions in Africa should be well equipped with necessary and modern tools, equipment, improved seeds, chemicals and different livestock species and breed to expose students to practical agriculture.
- iii. Incentives should be given to deserving students who have excelled in skills display so that more students should feel more committed to the subject.
- iv. Agricultural education programmes should be made compulsory at all levels of the nation's education system. Tertiary institutions students in faculties/schools other than agriculture as a general studies programme, so that on graduation, such students will be equipped with at least the rudiments of modern agriculture, such students will then go into either full time or part time farming in future.

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- v. There should be consistency in government agricultural practices.
- vi. Policy makers must develop the political will to support investment into research and extension to ensure development of appropriate technologies for farmers. Investment into research should not be viewed as waste as there can never be any development without research.

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