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# Agricultural education and training: The landscape, challenges and opportunities

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Agricultural endeavours on the African continent is as old as the first domestication of animals and plants by humans. This measure of control over nature stirred a slow but sure switch from a hunter-gatherer lifestyle to that of the agriculturalist. Interaction between the two groupings probably was hostile at times, but it is conceivable that there was an exchange of technologies. Hunter-gatherers became much more efficient with the development of technologies for producing metal tools, primarily made from iron.



The mastery of metallurgy also benefited agriculturalists. Metal tools made greater efficiency of key crop production practices such as the turning of hard soils, weeding and harvesting possible. Domestication of animals and plants meant that people could settle in communities that were self-containing and promised permanency and security – the start of human civilisation.

## The African perspective

Agriculture in Africa characteristically has a huge gulf between commercial and subsistence (resource-poor) farming that reflects in farmer livelihoods. In sub-Saharan Africa, most agricultural production occurs at small-scale (subsistence) level. In South Africa, commercial agriculture produces most of the food, although subsistence farming is the mainstay food source in remote rural areas.

The chasm between commercial and resource-poor farming is slow in closing on the African continent because this evolutionary process tends to bog down in socio-economical, cultural and political quagmires.

**Key constraints are:**

• **Economics** – poor access to funding and advanced technologies.
• **Social** – entrenched patriarchal social system (chiefdoms, male-dominated).
• **Education and training** – limited school education and practical training with local relevance.
• **Nature** – degradation of soils, changing rainfall patterns, global warming, new pests.
• **Infrastructure** – poor infrastructure limits agricultural development and livelihoods.

• **Politics** – enough said!

The successful resource-poor farmer that pushes boundaries of agricultural productivity is already on the way to the commercial farmer level – 'entrant' commercial farmer.

Africa abounds with wrecked projects designed with the best intent for the upliftment of its people through boosting agricultural production. Many projects designed in developed countries have failed when advice and training rely solely on information dissemination, without effective knowledge transfer as the main driving force. Irrespective of how the education and training are packaged, failure is likely if local people, who are supposed to benefit, do not volunteer for active participation.

## Bridging SA's skills gap

The *World Economic Forum Report 2017* states that Africa's skills gap at secondary school level is high. In most African countries, local business executives believe secondary school graduates do not possess, on average, the skills employers demand from a productive workforce. Skills shortcomings vested in school leavers increase the risk of them failing to cope with the skills leap to tertiary education level. Similarly, industry finds that entrants fresh out of university often require inordinately long adjustment periods and upskilling to cope with workplace challenges.

In South Africa, tertiary training institutions attempt to deal with the skills discrepancy between secondary school and university through bridging programmes, with capricious success. Universities experience unacceptably high dropout rates, especially at first- and second-year levels.

Many leading South African farming entities share the common sentiment that agricultural colleges are no longer delivering the well-rounded, technically skilled professionals who are critical to the role of not only production managers but also lesser-skilled workers.

Young Africans deserve urgent and tangible actions to equip them for future roles in the agri-industry. They need an enabling environment that will prepare them for competing in the 'global village' where interconnectivity and technology-dense work environments define labour markets.

From a business management perspective, agricultural enterprise is dependent on various skill sets. In a survey conducted by Van Rooyen et al. (2012), respondents assigned the highest importance to interpersonal, communication, team building, conflict management and related 'soft skills'. Fundamental to it all is the need to instil the drive for acquiring in-depth disciplinary knowledge as well as to develop skills for transferring knowledge to different levels of implementation, across the full spectrum of qualifications.

Government intervention and support for education and training on the African continent is generally slow and fraught with bureaucratic impediments. The logical solution is to involve private industry, i.e. the required skills, experience and funding. Effective public-private collaboration can contribute to reducing skill-gaps at national and regional levels.

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## The role of agriculture

South Africa’s economy is heavily reliant on the agricultural sector. Agriculture delivers more jobs per rand invested than any other productive sector and remains critical in the face of rural poverty and food insecurity. The primary production component of this sector contributes nearly 3% to the country’s GDP, but for the entire value chain, the contribution to GDP increases to nearly 12%.

Agriculture is often neither a study direction nor a career. Partly to blame is limited awareness and understanding of the vast number of agri-business and entrepreneurship career opportunities that exist along the entire length of the food and nutrition value chain. Much can be and should be done to change perceptions, which are currently evident at both school and higher education levels.

## Appropriately trained graduates

The NQF (national qualifications framework) abounds with qualifications in the field of agriculture. In light of the variety of components comprising the total agricultural supply chain, not only skills linked with college diplomas and university degrees are required, but skills ought to derive from a wider range of disciplines outside of the traditional agriculture-focused qualifications.

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In addition to local relevance, curricula should be multi- and transdisciplinary in order to build capacity for solving modern-day challenges, such as evolving environments (e.g. climate change), new weeds and pests, resistance to pesticides, and improved crops and livestock through classical breeding and genetic modification. Increased exposure to modern agricultural practices is required in student studies.

The South African agri-industry has lamented the lack of practical exposure and experience of university graduates in particular. This gap in practical experience, which exists between university and industry, puts the brakes, temporarily at least, on both a company’s and the country’s competitiveness.

A major challenge facing AET in South Africa and other countries on the continent is how to allocate scarce resources towards both commercial and small-scale farming. The argument, in particular for South Africa, is that there remains a skewed focus towards commercial agriculture. However, the reverse is true in certain other African countries or is perceived as more equitable.

South African organisations that have instituted training programmes for farm labourers and small-scale farmers, include Grain SA and the Agriculture Research Council (ARC). Government support in the form of the AgriSETA also contributes to the development of much-needed human capacity. There is consensus, across all levels of agricultural endeavour, that the socio-economic aspects at all farming levels get too little attention.

## Funding and resource allocation

Funding for education is a contentious issue. The need for increased funding was raised in all AET workshop forums; top of the item list is ‘practical, vocationally relevant training’. Agricultural experimental farms have become financial liabilities for schools and tertiary training institutions alike. Relatively low student numbers in the field of agriculture results in disparate funding, which eventually causes facilities and equipment to become rundown and outdated.

Lack of funding is a debilitating factor for schools delivering agricultural science as a programme or subject. Shortcomings include lack of adequate infrastructure for practical training, and inefficient channelling and management of funding is problematic.

Industry involvement in tertiary education and training can ensure the injection of much-needed funding at meaningful levels that can sustain the practical component of curricula and enable exposure of students to modern technology and agricultural practices. Industry’s close ties with the farming community make on-farm training possible that is practical and vocationally relevant.

## ABOUT THE AUTHOR

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