Young Scientists' Perspectives on "Harnessing Modern Agricultural Biotechnology for Africa's Economic Development: Recommendations to Policymakers"

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Introduction: The decision on Modern Agricultural Biotechnology has stayed long enough on the desks of policy makers and research institutions, it's time to either adopt it fully and reap from its fruits or discard it completely and embark on the conventional agricultural practices. However, prior to its full adoption, one would ask, is it the only solution to current agricultural backdrop in Africa and the world at large? Besides the scientifically proven benefits of GMO, cannot more be done to better improve agricultural practices other than shifting full attention to it at the expense of the known practices? The world has existed and sustained the human population for thousands of years without GMO products, what is the guarantee that this is viable? These questions can only be answered by embarking on scientific evidence and doing comparative studies with countries that have embraced biotechnology. A critical analysis of the progress of the three African countries (Sudan, Burkina Faso and South Africa) which have adopted agricultural biotechnology on maize, soya bean and cotton suggests productivity and sustainability. The role of agricultural biotechnology in curbing pests and insects attacked by producing pest and insect resistant crop varieties as well as drought resistant varieties has a lot of benefits to local farmers who have been suffering and could not afford the cost of insects and pest control measures, and it should thus not be underrated. Therefore, African countries have great potential in agriculture if the best agronomic practices are applied together with the modern biotechnology to avert food insecurity and malnutrition.

Therefore, following the NASAC recommendations on the five thematic areas: The Potential of Agricultural Biotechnology for Africa's Development; Governance of Biotechnology Development and Biosafety Regulation; Africa in the Global Agricultural Biotechnology Enterprise; Capacity for Biotechnology Research, Product Development and Deployment; Public Awareness, Participation and Communication, we believe these are the major stumbling blocks that if they can be overcome then we will benefit from technology blowing with expected socio-economic benefits. In general, this report has explored the most important public and policymakers' concerns regarding the implementations of modern agriculture biotechnology for Africa's development. In our commentary, we will comment on and elaborate some points from our perspective as young scientists in the field of agricultural biotechnology.

Strength points throughout the report:

- It touches all policy stakeholders: at least all key stakeholders have been included in this policy recommendation. This will ensure ease in the policy implementation process. Most importantly, the inclusion of the media that can be favourably used to educate the people on the benefits of biotechnology and how it relates to their culture in a positive way.

- Emphasizes decisions to be based on science: this is the key step to establishing resilience and promoting adoption of an un-received technology among the masses.

- Points out the importance of African-based research: partly as mentioned in the report, the reluctance to receiving biotechnology is the perception that the technology is foreign. It is believed by some that the technology is being used by the whites to recolonise Africa. This perception can only be overcome by educating African scientists in biotechnology and establishing African biotechnology research institutions. This will also proliferate biotechnology research in the continent.

Specific comments and recommendations are made on the five thematic areas:

1: The Potential of Modern Agricultural Biotechnology for Africa‘s Development

Challenges: The question as to whether biotechnology is the best and viable solution to food insecurity in Africa or the improved conventional agronomic practices seems not to be answered clearly.

Recommendations: African governments should be tasked to fulfil the commitment to the Maputo Declaration, 2003 and the Lagos Plan of Action, April 1980, as a way of enhancing biotechnology research and the agricultural sector. Taking the case study Burkina Faso commercialising Bt cotton, other African countries similarly follow processes of controlled field testing for efficacy, safety and commercial viability coupled with political will and harmonious understanding between stakeholders such as the scientists, GM crop producers and the consumer companies of the product.

2: Governing Modern Biotechnology Development and Biosafety Regulation in Africa

Challenges: The purported real health and environmental benefits of GM products were not clearly outlined apart from food source, pest and diseases control and resilience to drought. Proportionately could the negative effects resulting from the GM products be outlined and the probable strategies of managing these effects. This will be more transparent and acceptable than the blanket statement of no health and environmental effects. The blame on African government on being very stringent on their precautionary measures which is seemly against the Cartagena Protocol on Biosafety is unjustifiable. Why should African countries loosen their stance on the issue of biotechnology while they are strict on others such as the technology and pharmaceutical sectors among

others? The stewardship role of the government on any new technology is appropriate and should not be thwarted but deemed objectively as important, since this is ideally what happens in developed countries. However, this should be done in accordance with the Cartagena Protocol on Biosafety.

Recommendations: The biotechnology policy and regulatory frameworks on agricultural biotechnology should be disseminated to the local communities early enough – probably after inception and focus group discussions are made and the scientific evidence is proven. This will curb the misinformation given out about biotechnology, especially in regard to GMOs. Quality assurance of products and services is a central pillar of all governance, and hence promotes the idea that governments should lower precautionary measures that will actually raise more eyebrows than help. If our products are good and clean for human consumption, let the science speak for itself even under rigorous precautions. Governments should be stricter and define clear routes through which acceptable GMO products can be released into the market. This will prevent unwarranted release into the market of poor quality products and seeds under the guise of GMO by usurpers that distort the public perception of GMOs.

3: Africa in the Global Modern Agricultural Biotechnology Enterprise

Challenges: In the report on the global facts on GM, the five EU countries reported to be growing GM crops apart from Spain are not mentioned: What could be the reason or was it a slight omission? Up-scaling of biotechnology should be ideally dependent on a country or region. Comparing Africa with the rest of the world in biotechnology enterprise is a challenge. Most African countries have what works for them as far as agricultural attainment is concerned, therefore let African youths be equipped, informed so as to be able to make scientifically proven opinions.

Recommendations: African countries can embark on commercial biotechnological production of non-food crops like cotton, which can attract good revenue owing to the fact that it has been proven from the case studies of Burkina Faso, Sudan and South Africa. Once their confidence is won, it would not be difficult to venture into other crop varieties.

4: Capacity for Biotechnology Research, Product Development and Deployment

Challenges: The raised issues of ethical concerns such as patenting of life, monopolistic controls on food supplies, and the role of indigenous people as protectors of agricultural biodiversity are still not made clear to the general public and the political leaders and policy makers. The general fear of losing out the indigenous seeds of the African crops and to depend on the commercial seeds is a great concern as well. Probably this will lead to the extinction of some crop varieties in the long run. Africans by tradition and culture are subsistence farmers and like to hold control and ensure seed security. They usually retain portions of their harvest to act as seeds for the next planting season. Dependence on external sources for seeds on an annual basis creates discomfort and a

sense of insecurity. This may not be clearly spoken out, but intuitively the technology will prove unconvincing to secure food security to the farmers. Therefore, these fears needed to be clarified in the report.

Recommendations: The commitments by the African countries on the Lagos Plan of Action and the Maputo Declaration should not necessarily be focused on in biotechnology research. Yet, theses should help in carrying out the foundational agricultural research in plant and animal breeding alongside enhancement of agricultural biotechnology. As much as agricultural biotechnology research is deemed important, better agricultural research on the conventional crop and animal breeding practices and techniques should not be side-lined. These have not failed totally elsewhere, so changing the focus drastically to biotechnology research may not be viable.

5: Public Awareness, Participation and Communication

Challenges: The manner of information dissemination is the major cause of rejection of GM products in Africa and the world at large. Making farmers aware of the technology prior to commercialisation or large scale production should be ensured. This is cause of the loophole for misinformed and non-scientific opinions that reach the general public before accurate information. There is no clear mention of the nature of training to be given at senior political levels about ethical concerns regarding "patenting of life," monopoly of food supply chains and the role of indigenous people in protecting agricultural biodiversity.

Recommendations: Government-sponsored public education and awareness campaigns should be fortified in all the countries and regions.

Conclusion: The report is mainly concerned with modern agricultural biotechnology and highly focused on GMOs as the main tool for agricultural biotechnology which can improve the economy of the continent. Moreover, it elaborates on the socio-economic benefits and impacts of applying these relatively safe tools as an entryway to explore the benefits of GMOs. However, ethical concerns and general fears of losing out the indigenous seeds and a potentially high dependence on commercial seeds in addition to the role of indigenous people as protectors of agricultural biodiversity still need more guarantees and clarifications to the general public, political leaders and policy makers. In line with the important modern applications of biotechnology, agricultural research on the conventional crop and animal breeding practices and techniques should proceed in parallel in order to reach a balance and to reduce public and policy makers' fears.