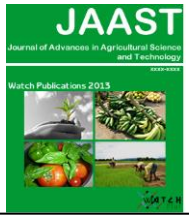
Journal of Advances in Agricultural Science and Technology
https://www.watchpub/jaast/index.htm



ORGANIC FARMING IN NIGERIA IN THE ERA OF AGRO-BIOTECH AND BIOSAFETY

Chidi Oguamanam.
Centre for Law, Technology & Society, Faculty of Law, University of Ottawa, Canada.

Article Info:

Author(s):
Chidi Oguamanam.

History:
Received: 02-09-2015
Accepted Date: 25-09-2015

Vol 3 (6), pp, 77-80 September ,2015

Corresponding Author:
Chidi Oguamanam.
Centre for Law, Technology and Society, Faculty of Law, University of Ottawa, Canada.

E-mail: coguaman@uottawa.ca; oguamanam.chidi@gmail.com

Article Type:
Review

ISSN 2469-3936

Abstract

In accordance with global trend, Nigeria and the rest of Africa are gradually embracing the genetically modified organisms. As well, Nigeria is coming to terms with the reality and ubiquity of applications of agro-biotechnology, including its prospects both for economic advancement and for diverse associated risks. Hitherto, majority of farmers in Nigeria were organic farmers by default, a status that is now undergoing rapid transition to conventional farming not only as a result of agro-biotechnology but also as a result of recent remarkable improvements over access to agro-chemical inputs. As Nigeria embraces agro-biotechnology and transitions into conventional agriculture, organic farming status will assume a new importance as a niche. To embrace the challenge and leverage on the opportunities of Nigeria's agricultural transition, organic farming stakeholders would need to actively penetrate the presently fluid legal regulatory space to secure organic-farming friendly policy in the country.

Keywords: *organic farming, Biosafety, conventional agriculture, agriculture biotechnology, farmers, Nigeria, Africa.*

INTRODUCTION

Like other parts of the world, Nigeria and the rest of Africa are gradually coming to terms with genetically modified organisms (GMOs) and the ubiquity of applications of biotechnology and its prospects both for economic development and for risk to human, animal and plant health and the environment. A number of initiatives, including legal and regulatory interventions and sectoral mobilizations in the area of biotechnology are slowly evolving in response to the new reality. A few noteworthy symbols of these developments are the National Biotechnology Development Agency, charged with strategic development of biotechnology through R&D and investment; the Biotechnology Society of Nigeria, an advisory and promotional interest group; and the National Biosafety Management Agency (NBMA), with statutory mandate to administer biosafety. The Act for the establishment of the NBMA (misleadingly dubbed the Nigeria Biosafety Act) was signed into law recently. Therefore, the NBMA has yet to be established.

EMERGENT AGRO-BIOTECHNOLOGY REGIME

Agriculture is a component or integral aspect of what could conveniently be referred to as Nigeria's emergent biotechnology regime. In other words, agro-biotechnology is embedded within Nigeria's broader biotechnology policy and regulations.The 2015 Biosafety Act is Nigeria's step toward the implementation of the 2000 Cartagena Protocol on Biosafety to the Convention on Biological Diversity (CBD). In a nutshell, the Biosafety laws of parties to the CBD and, of course, the Protocol are designed to put in place adequate and effective safety measures to prevent or, where necessary, mitigate the adverse effects of modern biotechnology on human, animal and plant health as well as on the environment as a whole (Segger, Perron-Welch & Frison, 2013). In developing countries, such laws are increasingly being perceived as motivated less by biosafety but more for reason of opening up the countries to the operations of transnational agro-biotechnology actors, raising multiple concerns about food security, food sovereignty, environmental sustainability health and socio-economic disruptions of the global food regime (Bello, 2009; Njemanze, 2015).

As in other African countries, Nigeria's enactment of biosafety law is not without its criticisms. The criticisms are, in some ways, the extensions of the lingering controversies over GMOs (Altieri, 2002; Oguamanam, 2007; Njemanze, 2015). The Biosafety Act (or National Biosafety Management Act, its official title) is perhaps the clearest expression of Nigeria's wholesale embrace of agricultural biotechnology and, by extension, GMOs. A substantive concern is whether Nigeria is sufficiently prepared for that move or whether, in relation to agriculture, the Act has not unduly privileged agro-

biotechnology stakeholders at the expense of Nigeria's ultimate food security. But the dilemma is that if Nigeria remains lethargic, GMOs and agro-biotechnology would continue to advance at a pace that would not only undermine the country's biosafety but also place the country in a state of economic disadvantage. Doing nothing is hardly an option. But getting it right is certainly critical.

In Africa, agriculture, specifically agro-biotechnology, arguably represents a greater site for controversy more than the applications of biotechnology in health and other innumerable sectors. Not only is health an acknowledged and inherently high-risk domain with pre-existing elaborate safety regulations, it is also exclusive in regards to the professional actors and stakeholders. However, agro-biotechnology has innately disruptive influence on Africa's socio-cultural and economic dynamics in which agricultural production in pivotal. That is particularly so for other developing countries, including Nigeria, where upward of 70% of the population is employed to some degree in traditional, small-scale communal forms of agricultural production, which are, by default, either organic or conventional in nature.

NIGERIA'S ORGANIC AGRICULTURE PROFILE

Compared to some African countries, as an organized practice, Nigeria's organic farming profile is fairly new and less impressive. Nigeria has estimated 61 million ha of arable land, which translates to 66% of its total landmass. Since 2000s Nigeria has cultivated a land area of upward of 33 million ha, leaving between 28-31 million ha of viable arable land resource for agricultural production. A range of "60-70% of Nigerian farmers are traditional rural farmers who by their nature of subsistence agriculture produce uncertified organic using localized and natural resources due to inability to secure synthetic fertilizers" (USDA, 2014, p. 10). However, available data indicate that only 11, 979 ha (i.e. 0.03%) of Nigeria's over 30 million ha of arable agricultural land are cultivated by a trifling 517 producers (USDA, 2014, p. 2) under organized organic farming.

In the past ten years of its emergence, the organic sector of Nigeria's agriculture has been distinctively busy. For the most part, that busyness is evident in the mushrooming of actors and stakeholders of various stripes, including institutional/research interests at various levels of research, education and development, as well as among civil society and other non-classifiable actors. In no order, the impressive list of such factors include the organizing umbrella initiative, the Organic Agriculture Project in Tertiary Institutions in Nigeria (OAPTIN) that focuses on developing capacity and network of Nigerian academics in organic agriculture; the pioneering Dara/Eurobridge Farm, a venture at the forefront of Nigeria first certified organic agro-produce (medicinal herbs, ginger, turmeric, plantain and lemongrass). Others include the Olusegun Obasanjo Centre for Agricultural Research and Development (OOCORD), which supports R&D in organic agriculture. The OOCCORD is credited with the formation of the Nigerian Organic Agriculture Network (NOAN), which is a networking platform for all organic agricultural interest groups in Nigeria (USDA, 2014). There is also the Organic Farmers Association of Nigeria (OFAN) in addition to regional or rural-leaning organic agro organizations and various organic input producing and organic product-specific bodies too numerous to mention.

As expected from this list of organic stakeholders, there is no dearth of activities around organic agriculture in Nigeria, which is the host of the 2015 Third African Organic (Agriculture) Conference. However, as indicated above, those activities have yet to translate into a significant organized organic farm holding. Not only has Nigeria embraced agricultural biotechnology and now set to formally introduce and regulate GMOs on the agricultural fields and on dining tables, among others, such a development is happening at a time when Nigeria's agricultural reforms has attracted the attention of Africa and the rest of the world.

AGRICULTURAL TRANSFORMATION: NO LONGER ORGANIC BY DEFAULT

One of the key highlights of Nigeria's recent agricultural transformation under the immediate past administration of President Jonathan is the liberalization and sanitization of the distribution of chemical fertilizers and other agro-chemical in-puts among all farmer cadres across the country. Nigeria's elaborate agricultural transformation agenda (ATA) has through the growth enhancement support (GES) leveraged the distribution of various forms of subsidized chemical fertilizers and "improved" seeds across rural agricultural communities (FESAN, 2014). A manifest consequence of the ATA scheme is increased entrenchment of Nigerian farmers in the practice of conventional agriculture. Before now, majority of them practised organic farming by default partly as a result of the prohibitive cost and corruption that made chemical fertilizers and other publicly subsidized agro-chemical inputs inaccessible. Those conditions have experienced remarkable improvement lately.

As Nigeria embraces agro-biotechnology, majority of Nigerian farmers are at the same time consolidating the practice of conventional agriculture. As a consequence, certified organic farming and produce will assume a new urgency as a niche. It would no longer be fashionable or comforting for discriminating consumers to assume that majority of Nigeria's agricultural produce and farmers are by default organic. In Europe, United States, Canada, Japan, Australia and elsewhere where agro-biotechnology is fully entrenched, lingering reservation about the safety of GMOs is gradually being left for market forces to resolve. Many discriminating and elite consumers are disposed to pay a premium price even

upward of 100% for organic products. According to a USDA's Foreign Agricultural Service study, "[t]he upper classes in Nigeria are beginning to follow this trend"! (USDA, 2014, p. 8).

ORGANIC FARMING AS NICHE: CHALLENGES AND OPPORTUNITIES

Nigeria's organic farming stakeholders face a challenge and, at the same time, they on a threshold of significant opportunities. Not only are they able to leverage on Nigeria's factor endowment in human resources in agricultural R&D, they have the benefit of Africa's largest domestic market with immense export potential for their produce. However, they need to actively penetrate the legal regulatory space to secure organic farming-friendly policies in Nigeria. For example, in comparison with conventional agriculture, organic farming employs more labour and has better export and foreign exchange prospects, not to mention its ecological, ecosystem and diversity-enhancing attributes. For a continent that has gross unemployment challenges and recurring balance of trade problems, promotion of organic agriculture as a strategic socio-economic even if environmental or climate-change mitigation policy is an unflappable argument. Only few African governments can undermine policy schemes for the promotion of organic agriculture, taking into account its multiplier socio-economic, environmental and perceived health, even if psychological benefits.

However, despite the robust presence of multifarious actors on the organic sub-sector of Nigeria's agriculture, it does not yet seem that these actors have adequately deployed their influence in recent regulatory and legislative developments on biotechnology, nay, agro-biotechnology in Nigeria. First, not only is there no concrete policy articulation for organic farming. Second, there is no direct regulatory protection of the practice in Nigeria. An examination of Nigeria's Biosafety Act shows no mention of organic farming! In many developed countries, where transgenic agriculture or agro-biotechnology have since advanced, one of the major contentious issues is how to tackle the phenomenon of genetic contamination, gene wondering or genetic drift, which is a reference to accidental or unintended drift of transgenic materials to non-target environments (Lee & Burrell, 2002). In Canada, for example, a class action suit was initiated by a group of certified organic farmers, who lost their certification as a result of alleged contamination of their organic farmlands and crops by neighboring transgenic farmers who grew Monsanto's genetically modified crops (*Hoffman v. Monsanto Canada Inc.*, 2007). Late entrants to the regulation of agro-biotechnology, like as Nigeria, can preempt such challenges presented in this case, for example, by providing for genetic drift insurance as part of risk management for GMOs that can protect the interest of many, including organic farmers.

One of the advantages of Nigeria's delayed entry into organized organic farming is the potential to learn from the mistakes of others. Therefore, even though the Biosafety Act is essentially, even if ostensibly, about the safety issues incidental to the introduction of biotechnology, including transgenic materials or crops, a key aspect of biosafety regulation is risk assessment. A strategic aspect of biosafety risk assessment is socio-economic risks. For example, s. 2(f) of the Biosafety Act outlines part of its core objectives, which is to "ensure that the use of the genetically modified organisms does not have adverse impact on socio-economic and cultural interest either at the community or national level". One of the greatest threats to the development and survival of organic farming is how to ensure that the disruptive effects of transgenic agriculture or GMOs do not undermine the organic niche or other categories of non-transgenic agricultural endeavours.

In many developed countries such as US, Canada and the EU, the idea of 100% organic products is no longer feasible. Hence, what qualifies as organic is matter of regulatory discretion or benchmark on the percentage of tolerable presence of transgenic material. Given the globalized trade in agricultural products and international harmonization of organic certification, Africa is not exempt from this trend.

NIGERIA'S BIOSAFETY ACT: IMPLICATIONS FOR ORGANIC FARMING

As an emergent sector, certified organic farming stakeholders in Nigeria should be proactive interveners and participants in the regulatory regime pursuant to the new Biosafety Act and other standard setting initiatives. Admittedly, the Act makes no mention of organic farming or organic agriculture. But it has robust schedules that specify detailed disclosures and requirements for risk assessment regarding the introduction, handling, or use of GMOs by applicants seeking to introduce them.

The litany of such requirements as they relate to socio-economic risk assessment include changes in prevalent socio-economic patterns, threat to biodiversity, traditional crops, farmers' varieties; specific communities to be affected with regard to disruption of socio-economic welfare as result of introduction of GMOs. Others include potential impact of GMOs on target and non-target ecosystems; potential for horizontal or vertical gene transfer or exchange with other organisms; anticipated socio-economic loss to genetic diversity, employment, market opportunities, and disruptions of community livelihood and its socio-cultural, ethical and religious values occasioned by the introduction of GMOs. The Act provides for informed public and stakeholder interventions in the process of the NBMA's decision to approve or decline the introduction of GMOs by an applicant (s. 28).

In order to secure their interests, organic farmer stakeholders in Nigeria need to be proactively involved

from the outset in contributing to the implementation of the Biosafety Act and related laws. They must ensure that their members and interests are represented in envisaged consultations, in making regulations and in various prospective bodies that will precede and supervise the full operationalization of the Biosafety Act. More importantly, there is need to ensure that independent bodies, not interested parties, conduct the risk assessments contrary to Act's inclination.

In addition to tackling legal and regulatory issues on biosafety, stakeholders must commit to the emergence of viable organic plant breeding. Proprietary, monopolistic and monoculture seed breeding practices are the drivers of agro-biotechnology, which often results in genetic erosion. For organic agriculture to thrive, stakeholders have to chart the partway for its sustainability. As such, they are in a natural position to champion agro-ecological diversity, and to focus on in-situ breeding of traditional farmer varieties (with niche markets), which are of little interest to conventional seed breeders. Nigeria already has a critical mass of stakeholders in the fledgling organic farming industry. Experience from Europe, notably Germany and Switzerland, reveals the need for creative public interest-driven and multiple funding sources for R&D in organic breeding programs. Increasingly, forms of open access framework are favoured for organic plant breeding (Kotschi & Wirz, 2015).

CONCLUSION

Contemporary developments in Nigeria's agricultural landscape show simultaneous advancement of conventional agriculture with the development of legal regulatory framework for GMOs. Farmers continue to have improved access to chemical fertilizers and other agro-chemical input. It is therefore increasingly less fashionable to assume that majority of Nigeria farmers are by default organic producers. While increased number of Nigerian farmers operates in the conventional realm, the Biosafety Act of 2015 officially opens up the country for agro-biotechnology. These developments force the urgency for the organic farming industry stakeholders to explore the unfolding opportunities as they embrace the emergent challenges. Already, there is a diversity of stakeholder organic farmer organizations in the country. In addition to standard problems, including market access, infrastructure deficit, poor government support, regulatory vacuum, low harvest, shortage of bio-mass, a timely challenge of organic farmers in Nigeria lies in their ability to influence emergent legal and regulatory regimes, not the least of which are those pursuant to the Biosafety Act. In addition, Nigeria's fledging organic farming community ought to strategize on how best to develop a robust organic plant breeding for seed supply as a counterweight to agro-biotechnology or conventional options.

ACKNOWLEDGEMENT

The author thank Chris Koziol for dedicated research assistance.

REFERENCES

Altieri M (2002) "The Case Against Agricultural Biotechnology: Why are Transgenic Crops Incompatible with Sustainable Agriculture in the Third World?" available at http://www.mindfully.org/GE/GE4/Case-Against-Biotech-Altieri22aug02.htm.

Bello W (2009) The Food Wars, NY, Verso. Cartagena Protocol on Biosafety to the Convention on Biological Diversity (2000) available at https://www.cbd.int/doc/legal/cartagena-protocol-en.pdf.

Convention on Biological Diversity (1992) 1760 UNTS 79; 31 ILM 818 (1992) available at https://www.cbd.int/convention/text/.

FESAN (Fertilizer Suppliers Association of Nigeria) (2014) "Validation of Fertilizer Regulations" available at http://www.fepsannigeria.com/files/Vol_%204%20No_%2010.pdf.

Hoffmann v. Monsanto Canada Inc. (2007) SKCA, 47, available at CanLII, http://www.canlii.org/en/sk/skca/doc/2007/2007skca47/2007skca47.html#showHeadnotes.

Kotschi J, Wirz J (2015) "Who Pays for Seeds? Thoughts on Financing Organic Plant Breeding", working paper, AGRECOL and Section on Agriculture, available at http://www.agrecol.de/files/Kotschi_&_Wirz%20Engl_12_05_15.pdf.

National Biosafety Management Act, 2015 (Nigeria).

Lee M, Burrell R (2002) "Liability for Escape of GM Seeds: Pursuing the 'Victim'?" 65 Modern Law Review 517-537.

Njemanze P (2013) "Biosafety Bill: A Danger to Food Security and Health", The Punch Newspaper, March 22, 2015, available at http://www.punchng.com/opinion/biosafety-bill-a-danger-to-food-security-and-health/.

Oguamanam C (2007) "Tension on the Farm Fields: The Death of Traditional Agriculture?" 27 (4) Bulletin of Science, Technology & Society 260-273.

Segger MC, Perron-Welch F, Frison C (eds.) (2013) Legal Aspects of Implementing the Cartagena Protocol on Biosafety, New York, Cambridge University Press.

USDA (Olaito P) (2014) "Organic Agriculture in Nigeria", Global Agricultural Information Network (GAIN) available at http://gain.fas.usda.gov/ Recent%20GAIN%20Publications/Organic%20Agriculture%20in%20Nigeria_Lagos_Nigeria_6-5-2014.pdf.