

Infectious Diseases and Pandemic Threats in Africa: Analysis of Behavioural Change Theories and Multi-Dimensional Heterodox Responses for Sustainable Solution

Magnus C. Onuoha ^{a,1}

^a Gregory University Uturu, Abia State, Nigeria

Received 17 May 2020; revised 27 January 2021; accepted 12 July 2021

Abstract

This study was conducted to determine appropriate irrigation amount, fruit quality and water-yield relationship for date palm under dry conditions. The research work was carried out in Alkharj, Kingdom of Saudi Arabia, for two consecutive seasons (2016-2017) and (2017-2018). The treatment contained four irrigation water amounts, (ETC 100%, ETC 75% and ETC 50%) of date palm tree water requirement and the amount of water actually used (control). A mature date palm trees (Segae variety) of the same age (10 years) were selected randomly to perform the experiment in both seasons. The experiment was organized in Complete Block Design (CBD) and the analysis was done using SPSS. The measured parameters were water productivity (kg/m^3), yield parameter's (weight of date fruit /g and productivity kg/tree), and quality parameter's (moisture content (%), total soluble solid (TSS %), Brominated (%) of date fruit and Veneer (%)). Moreover, the quality of irrigation water used, was assessed and compared with FAO standard for irrigation water. The result showed that the water quality was found within the permissible level of FAO standard for irrigation water. The result also indicated that the amount of water using in the study area, is more than the actual amount of water needed by date palm tree (ETC100%) according to the local weather. Moreover, the water treatment (75% ETC) showed the highest significant differences ($P \leq 0.05$) of water productivity, moisture content, and (TSS%). While water treatment (100% ETC) revealed the highest values of productivity in both seasons followed by (75% ETC). Moreover, the Brominated and Veneer values were found within the recommended level according to the local standard. However, the water treatment (50% ETC) showed a high significant difference ($P \leq 0.05$) in compared with others treatments. This study concluded that date palm can growth perfectly with high yield and product quality with water regime ETC 75%. Therefore, huge amount of water can be saved when adopting this regime for date palm production.

Keywords: Deficit irrigation; Date palm; Water productivity; Date palm fruit quality

1. Introduction

The outbreak of infectious disease, particularly those for which little or no pre-existing immunity exists represent a significant risk to public health. Even when controlling confounding factors (such as improvements in surveillance, communication infrastructure etc), the number of infectious disease outbreak and fatalities has substantially increased since 1980. Few will suffice here. The discovery of Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012, 851 associated deaths was reported with cases across 27 countries. The H1N1 pandemic of 2009 was estimated a responsible for between 151,700 to 575,400 deaths worldwide during the first 12 months. The 2013-2016 Ebola outbreaks in West Africa led to over 28,600 cases with 11,325 deaths, while the outbreak in the

¹Corresponding author. Email addresses: aliwidaa59@yahoo.com, amelamin@uofk.edu (A.W.M. Elamin)

Sixth, heterodox thesis within the framework of green and blue economic and sustainable development debate will seek to align macroeconomic policy frameworks and development strategy with dynamic pathways of sustainable development so as to create a win-win synergy. Such policy frameworks would include but not limited to environmental fiscal policy, agricultural policy, private/public sector policy, financial planning and so on. These green related policies if implemented to the letter by government will ensure Africa's sustainable transition to a low carbon and resources efficient economy.

4. Recommendation and Sustainable Solutions

As earlier highlighted, infectious diseases and pandemic especially recent one, corona virus, COVID 19 pandemic ravaging the whole world comes with further disruptions and threats: stigma of isolation, social distancing, lockdown and so on. These represent the new normal and they will not be the end of techno-economic disruptions and health pandemic in the coming decades.

Therefore, Africa should harness the importance of human behaviour for emergency response as earlier highlighted in this work– both in terms of developing interventions and its relevance for modeling the potential efficacy of said interventions.

Also the continent can get used to this and plan for the disruptions using the heterodox response approach mainstreamed into the green and blue economic and sustainable development thinking. This is to enable the continent to opportunistically exploit them and at the same time avoiding blame shocks. These entails crafting of simple, smart, multidimensional sustainable responses that includes new ways of socialization; intensive advocacy, sensitization and mobilization in all levels of government to the effect that infectious diseases and pandemic threats are not death sentences as you can be doing your work/businesses in a smart way; priority in the provision of public health care; expanding the scope of curriculum on health sciences to include African natural herbs, nutrition, basic epidemiology of infectious and non-infectious diseases, health policy, health system design, analysis and management; mainstreaming common tips in our national life such as wearing masks, disinfecting all open markets every early morning and all places of public gathering; all transport systems and all passengers wearing masks with hand sanitizers etc. The positive multiplier effect of the aforementioned sustainable solutions in terms of healthy and livelihood building, job creation, and economic growth of the continent will be enormous.

5. Conclusion

Human behavior for emergency responses and heterodox approach in a post COVID 19 era and the techno-economic disruptions and health pandemic, no doubt, hold much promise and opportunities for Africa if properly situated within the confines of the green and blue economic and sustainable development pathway.

References

- Centre for Disease Control and Prevention. Influenza Flu. 2009 H1N1 Pandemic.
- Dale Weston, Atten IP and Richard Amlots (2020) Explaining the Application Behavior Changes Theories in the Context of Infectious Diseases and Emergency Response: A Review of Reviewers. October 1. (Open Access) BMC Public Health.
- Hine D(2010) An Independent Review of the UK Response to the 2009 Influenza Pandemic. London Cabinet Office.
- John Hopskins Corona Virus Resource Centre, USA
- Michie S, Rubin CJ, Amlot R(2020) Behavioral Science must be at the Heart of the Public Health Response to COVID 19. BMJ. August 8.<http://blogs.bmj.com/bmj/2020/0/2/28/behavioural-science-must-be-at-the-heart-of-the-public-health-response-to-covid-19/>accessed 8 Aug 2020
- Onuoha MC et al (2013) Africa: Transitioning to a Green Economy Africa(From Economic Growth to Sustainable Development. Green Economic Institute, UK. www.greeneconomics.org.uk
- Onuoha MC(2016) Green Growth Pathway for Nigeria. www.sepan.org.ng
- Soludo C.C(2020) Post COVID and the Heterodox Responses for Africa's Sustainable Future.(Open Access)