PIG PRODUCTION AS PANACEA TO ANIMAL PROTEIN SHORTAGE IN NIGERIA AMIDST A GLOBAL PANDEMIC (COVID-19)

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Abstract

The COVID-19 pandemic has directly affected food systems by impacting both food supply as the capacity to produce and distribute food is affected and demand due to decreasing consumers' purchasing power. The coronavirus is expected to slash the global economic output and estimates suggest that the number of people who could be pushed into extreme poverty in 2020 may reach about 49 million people, with around half of this increase occurring in Sub-Saharan African countries where food insecurity is common. Animal protein is essential in human nutrition because of its biological significance and it is mostly gotten from ruminants, poultry and swine (pigs). Pig production in Nigeria has not yet developed like poultry production but possess some unique advantages over all other animals. They have high fecundity rate, fast growth, they are hardy and are able to multiply extensively over a short period of time to alleviate protein shortages. Also, pigs are very efficient in feed utilization which brings better returns per unit of inputs than most other animals, the quality of their meat is tender and more nutritive in protein and the B-vitamins than those of other animals. Conclusively, to quickly recover from these economic and food scarcity shock caused by COVID-19, pig production possess a viable bail-out.

Keywords: Covid-19, High fecundity, Pig production, Protein shortage

Introduction

Pandemics of global impact have been a reoccurring incidence in the world with different forms occurring and different times. All of these episodes of pandemic have disrupted human occupation and adversely affected economic advancement of the globe(Padam, et al., 2020). Cucinotta and Vanelli, (2020) reported that world is currently battling with a new pandemic named corona virus disease of 2019 (CVID-19) which is a highly infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The obvious signs and symptoms of this disease include difficult breathing, sneezing and fever. Death, pneumonia are the result of more severe case (World Health Organization (WHO), 2020). It has been recommended that hand washing with soap and water or alcohol-based rubs, covering or respiratory openings (nose and mouth), sneezing in the flexed elbow or disposable tissue and keeping a reasonable distance with infected people are some of the measures to keep safe.

Livestock production, one of the notable sectors of the world economy cannot be unparalleled matched in the supply of animal protein and human development (WHO, 2020). Central Bureau of Statistics (CBS), (2013), said livestock contributes immensely to employment, raw materials supply to industries and food security of more than 70 percent households worldwide. The livestock sub-sector is equally vital to the national economy since it is the main supplier of the highly essential animal protein. The importance of livestock sub-sector is in line with recommendation of the Food and Agriculture Organization (F.A.O.), (2003) that on an average basis, a man's daily protein intake should be between 65-72 grams and 53% (about 35 grams) of this should be animal based.

The coronavirus is expected to slash the global economic output by $8.5 trillion over the next two years. Estimates suggest that the number of people who could be pushed into extreme poverty in 2020 may reach about 49 million people, with around half of this increase occurring in Sub-Saharan African countries where food insecurity is common. More than 2 billion small producers, farm laborers, rural workers, and their families, who represent a large proportion of the moderately and severely food insecure, will also be disproportionately affected by economic shock (Phillipson, et al., 2020).

To quickly recover from these economic and food scarcity shock, livestock production posses a viable bail-out. Among livestock, pig is by far the most efficient in terms of feed conversion and conversion of feed energy to

body energy (Pond and Manner, 1974). The high rate of productivity is another major advantage of pigs. Technical Centre for Agriculture and Rural Cooperation (C.T.A), (1995), identified the average litter size of pig to be 9.3 live piglets per sow. Okoli (2006) also identified the litter per sow to be 9.96, though, before weaning, an average of 1.51 died. Leaving the average number of piglet weaned per sow to be 8.45. So a sow farrowing twice a year comes up with an average of 16.9 piglets per year, this is a remarkable advantage over ruminants like cattle whose maximum are two young one within such period. Tewe and Adesehinwa (1995) revealed that the pig is a more efficient carcass yielder than cattle, sheep or goat, dressing out at about 70% compared to 52.5% for cattle and about 50% for sheep and goat.

This paper therefore looks at pig production as panacea to animal protein shortage in Nigeria amidst a global pandemic (covid-19)

Global pandemic (COVID-19)

The world has been experiencing different global health challenges since the time immemorial (Chen, Y., Liu, Q., and Guo, D. 2020). For example;

- Spanish Flu 1918-1919
- Asian Flu1957-1958
- Hong Kung Flu1968-1970
- HIV/AIDS1981-Present
- COVID-192019-Present

Severe Acute Respiratory Syndrome-COV-2, evolved from a virus previously found in animals. It has the ability to infects people of all ages with older people, people with complicate medical history having higher risk of being infected, unlike other coronaviruses that cause a significant percentage of colds in adults and children that are not a serious threat for healthy adults (Occupational safety and health administration (OSHA), 2020). Tang et al., (2020) reported that structural diversity of SARS-CoV-2 in the receptor-binding domain differs from other viruses (SARSr- CoVs), which could be the resultant effects of mutations and natural selection, enhancing viral transmission and observable fatality in adult. In fact, Angeletti, et al., (2020)reported that it is the mutational changes at positions 723 and 1010 involving the replacement of glycine amino acid with serine and isoleucine by proline respectively in the ORF1ab (- 2'-O-methyltransferase) encoded 2 (nsp2) and nsp3 made the virus more virulent and deadly, as at May 2020, more than 3.2 million cases were confirmed with over 231,000 deaths.

Food Shortage

The COVID-19 pandemic is directly affecting food systems by impacting both food supply as the capacity to produce and distribute food is affected and demand due to decreasing consumers' purchasing power (Abid, Mohd and Raju, 2020).. Smallholder farmers producing for export have lost access to global markets. As movement restrictions are imposed: agricultural input - such as seeds, fertilizers and insecticides - supply chains are impacted and access to farmlands limited. All at critical times in the season, reducing production, harvesting capacity, informal labourers' access to wages (Siche, 2020). On top of that, transport of goods to processing facilities and/or markets is impaired. Livestock supply chains are also exposed to risks: transhumance routes are already affected by movement restrictions and border closings. Supply chain disruption coupled with loss of income are restricting people's access to sufficient/diverse and nutritious sources of food, especially in countries hit hard by the virus or already affected by high levels of food insecurity.

Pig Production

Pig production is an example of such community level livestock programmes. The name pig is broadly applied to all mammals of the family *Suidae* and *order Artiodactayla* but specifically to the domestic animal known scientifically as *Sus scofa*or *Sus vitatus* from which domestic pig was developed. One of the major advantages of pigs is the ability to convert different kinds of feed even including kitchen waste to meat (Rahman et al., 2008). Considering general feed conversion, pig is by far the most efficient among farm animals in the conversion of feed energy to body energy (Pond and Manner, 1974). The high rate of productivity is another major advantage of pigs. CTA (1995), identified the average litter size of pig to be 9.3 live piglets per sow. Okoli, (2006) also identified the litter per sow to be 9.96, though, before weaning, an average of 1.51 died. Leaving the average number of piglet weaned per sow to be 8.45. So a sow farrowing twice a year comes up with an average of 16.9 piglets per year, this is a remarkable advantage over ruminants like cattle whose maximum are two young one within such period. Tewe and Adesehinwa, (1995) revealed that the pig is a more

efficient carcass yielder than cattle, sheep or goat, dressing out at about 70% compared to 52.5% for cattle and about 50% for sheep and goat.

In addition, pig carcasses have a smaller proportion for bones and higher proportion of edible meat. It is relatively easy to establish intensive pig production in a developing country like Nigeria, if capital are available and adequate feed supplies are assured (Ogunniyi and Omoteso,2011). Profitable pig production will however not be achieved unless the right products are produced in the right place at the right price. It is therefore important for the intending pig producer to understand the economic, physical, social and religious forces which operate to determine the effective way of producing swine. All over the world, meat production remains overwhelmingly the main purpose of keeping pigs. The pork can be utilized by the producer and his family or sold as a source of income. Processed meats such as bacon sausage are also being produced and are increasingly gaining recognition. Lard or fat from pig is the least popular. Byproducts such as pigskin and bristle are used in the manufacture of light leather and brushes especially in Asian countries (Young, 2005). Pig manure is a valuable fertilizer and can be aerobically digested to produce cooking gas, it also stimulates the growth of microorganisms and plants for feeding fresh water fish and ducks (Okoli,2006).

Social factors that could influence pig production in Nigeria include a general preference for ruminant meat and lack of incentives for investing in large scale pig production due to economic and political factors. The large Moslem populations of northern Nigeria may also not favour profitable pig production in that part of the country. Other social factors in Nigeria include the belief that pigs are dirty and constitutea health hazard. This is absolutely untrue for pigs that are produced under modern intensive production techniques since under suitable modern husbandry pigs can be very clean animals (Ajala et al.,2007).

With the ever-increasing human population in Nigeria and virtually static agricultural productivity, animal protein consumption among Nigerians has worsened in the past few years (Okpor, 1999). Many Nigerians feed on carbohydrate. This is because the average man cannot afford the cost of animal protein which is richer in amino acid. The deficiency of animal protein in the diet of so many people is often attributed to low number of livestock (such as pig, cattle, poultry and their products) and the activities connected with their production which are not efficient (Morison, 1991). According to Ugwu, (1996), animal protein apart from palatability is essential for normal physical and mental development of man. Pig industry in Nigeria is an important aspect among the livestock sub-sector in the overall agricultural sector. This assertion derives from the fact that pig production has high potential to contribute to high economic gain in three ways. Firstly, pigs have high feed conversion efficiency, early maturity, short generation interval and relatively small space requirement. Secondly, they are multipurpose animals providing about 40% of meat in the world market. Pig's dung serves as a good source of organic manure for enriching poor soils and provision of biogas (methane) for cooking. Thirdly, pig's skin is also useful for light leather production (Babatunde and Fetuga, 1990). According to Food and Agriculture Organization (FAO, 2001), pork is the most popular meat consumed in the world today, forty percent protein is derived from pork and pork products. There is a greater output of meat from pigs than the combined output of meat from cattle, buffalo, sheep and goat. Pigs supply about 63.9 million metric tons of meat per year (Dennis and Lutwama, 2012).The growth and transformation of the sector offer opportunities for agricultural development, poverty reduction and food security gains.

Conclusion and Recommendation

The shock on food supply especially protein giving foods as a result of the pandemic currently facing the world cannot be over flogged. If nothing of urgency is done, some parts of the world will experience extreme food shortage. Sub-Saharan Africa which Nigeria belongs to have been predicted to suffer from this extreme food scarcity.

Farmers should consider investing more in pig production as one of the quick ways to prevent food shortage in Nigeria.

Government at all levels should support pig farmers through incentives like low interest loans, subsidy on feeds etc. this will enable them to increase their flock size. It will also encourage more farmers to engage in pig production thereby increase supply of proteineous food to Nigerians.

Reference

Abid H., Mohd J., and Raju V. (2020). Effects of COVID 19 pandemic in daily life. *Current Medicine Research and Practice*. https://doi.org/10.1016/j.cmrp.2020.03.011.

Ajala, M. K., Adesehinwa, A. O. K. and Mohammed, A. K. (2007). Characteristics of small holder pig production in Southern Kaduna Area of Kaduna State, Nigeria. *American-Eurasian Journal of Agricultural and Environmental Science,* 2 (2), 182-188.

Angeletti S., Benvenuto D., Bianchi M., Giovanetti M., Pascarella S., and Ciccozzi M. (2020). COVID-2019: The role of the nsp2 and nsp3 in its pathogenesis. *Journal of Medical Virology*. doi: 10.1002/jmv.25719.

Babatunde G. M., Fetuga B. L. (1990): Pig production in Nigeria, possibilities and problems. *Proceedings of the Agricultural Society of Nigeria, llorin* 10: 12–28

C. B. S. (2013). National sample census of agriculture Nepal 2011/12. National report. Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics Kathmandu,Nepal.

C. T. A. Agricultural Extension in Africa, Technical Centre for Agriculture and Rural Cooperation. Yaunde Cameron, 1995.

Chen, Y., Liu, Q., and Guo, D. (2020). Emerging coronaviruses: Genome structure,replication, and pathogenesis. *Journal of Medical Virology*. doi: https://doi. org/10.1002/jmv.25681.

Cucinotta, D., and Vanelli, M. (2020). WHO Declares COVID-19 a Pandemic. *Acta Biomed*. 2020; 91:157-160.

Dennis, M. V., and Lutwama, F. N. M. (2012). Factors that influence pig production in Central Uganda - Case study of Nangabo Sub-County, Wakiso district 5(6): 346-351.

Food and Agriculture Organization, Agriculture in Nigeria. F.A.O of United Nation, Rome, 2003.

Ogunniyi, L. T., and Omoteso, O. A. (2011). Economic Analysis of Swine Production in Nigeria: A Case Study of Ibadan Zone of Oyo State. *Journal of Human Ecology* 35(2): 137- 142

Okoli, C. I. (2006). Topical Tips On Intensive Pig Production; Animal Management and Health Issues. Technical Notes. Tapas Institute of Scientific Research and Development.

Okpor, J. U. (1999): Comparative Analysis of the Profitability of Pigs and Poultry. M. Sc. Dissertion, Department of Agricultural Economic, University of Nigeria, Nsukka.

OSHA, (2020). COVID-19. Occupational safety and health administration. [Online]. Available from: https://www.osha.gov/SLTC/covid-19/medicalinformation.html. retrieved on 13 March 2020.

Padam, B. P., Mukti, R. P., Aasish G., Samiksha P., Chiran K. T., Nisha B., and Shila B. (2020).COVID-19 and its Global Impact on Food and Agriculture. *Journal of Biology and Todays World*.9(5): 221

Phillipson, J.; Gorton, M.; Turner, R.; Shucksmith, M.; Aitken-McDermott, K.; Areal, F.; Cowie, P.; Hubbard, C.; Maioli, S.; and McAreavey, R. (2020). Covid-19 and rural economies. *In Briefing Note Prepared by Sta of the Centre for Rural Economy and Rural Enterprise; Newcastle University*.

Pond, W. G., and Maner, J. H. (1974. Swine Production in Temperate and Tropical Environment. W.H. Freeman & Co. San Francisco U.S.A Pp 190-194.

Rahman, S., and Barthakur, S. G. K. (2008). Pig production and management system in Aizawl District of Mizoram, India. *Livestock Research for Rural Development*, 20(9).

Siche, R. (2020). What is the impact of COVID-19 disease on agriculture? *Sci Agropecu*.11:3-6.

Tang, X., Wu, C., Li, X., Song, Y., Yao, X., and Wu, X. (2020). On the origin and continuing evolution of SARS-CoV-2. *National Sci Rev*. doi: https://doi.org/10.1093/nsr/nwaa036

Tewe, O., and Adesehinwa, A. O. K. (1995). Resource requirement for profitable pig farming. In: Pig Production Workshop Training Manual, pp.16-26. NAERLS, A.B.U., Zaria.

World Health Organization (WHO) (2020). Coronavirus. https://www.who.int/health-topics/coronavirus retrieved 03 April, 2020].

Young, T.P. (2005). Assembly rules and restoration ecology. *J. Environ. Manag.*, 32, in press.