

Research Article

Nutritional Values of Organic Farm Products, its Implications to Improved Sports Performance and Adequate Management of Athletes in Nigeria

Alagbu Chukwubikem Eugene^{1*}, Alagbu Chinwe Adline², Chike-Ijezie Ifeoma Blessing³ and Agwubike Elias Okey⁴

¹Department of Human Kinetics and Health Education, Nnamdi Azikiwe University, Nigeria

²Department of Educational Management and Policy, Nnamdi Azikiwe University, Nigeria

³Department of Medicine and Surgery, Nnamdi Azikiwe University Teaching Hospital Nnewi Campus, Nigeria

⁴Department of Health, Environmental and Human Kinetics, University of Benin, Nigeria

Abstract

In the advanced countries of the world, their coaches, sports administrators and other stakeholders in sports, spare no efforts in searching for the best quality food that will enhance and improve the performance of their athletes. Since they are aware, that the type of food eaten by an athlete and source of production, could have tremendous implications on their performance, overall wellness and fitness. An individual's diet (in this case an athlete) can impose definite limitations on performance, while its proper manipulations and selections, immediately before, after and during sports competitions, can improve performance, particularly as it relates to muscle glycogen loading. The primary objective of this article is to ascertain the awareness of Nigerian sports administrators and coaches (counterparts), regarding the nutritional values of organically produced foods and its implications to improved sports performance and adequate management of athletes in Nigeria. A total of 250 respondents comprising sports administrators and coaches, in five Federal Universities, Five State Universities and Five Colleges of Education, in the 5 states that make up the South-East Geopolitical Zone of Nigeria, were purposively selected and used in the research. A self structured questionnaire with a reliability value of 0.73 using the test re-test method was used for data collection. Data collected were subjected to descriptive statistics of frequency percentage and Chi-square inferential statistics, tested at 0.05 level of significance. Findings showed that though majority of the respondents were aware of the nutritional values of organically cultivated food crops and their implications on athletes performance, yet they paid little or no serious attention to selection/sources of their athlete's food. It was therefore recommended among others, that the tertiary institutions in Nigeria should spearhead the efforts through scientific researches/pay attention to the nutritional values of the foods given to their athletes with particular reference to organically cultivated farm food items.

Keywords: Organic farm; Chemical fertilizer; Nutritional value; Sports; Performance; Manipulation of diet; Quality health; Wellness; Fitness; Food crops

Introduction

Farm crops produced using properly processed organic manure are said to be more nutritious in the body than those cultivated with artificial chemical fertilizers [1]. Production of Chemical fertilizers hinges on two very crucial elements or substances namely Phosphorous (P) and Potassium (K). Hence it is known that chemical fertilizers are artificially produced containing nutrients in specific proportions. Even though they tend to be costlier than organic manure, yet they contain chemicals that could be toxic to the skin, respiratory system, acidic, whose acid contents dissolves into the soil, damaging the soil, since its nutrients are not replenished in the soil. Eventually when the cementing components of chemical fertilizers gets compacted, they

tend to prevent rain water from percolating into the soil easily, thereby making the top soil easily eroded during the rainy seasons.

Furthermore, chemical fertilizers equally adversely affect the soil pH level thereby altering the natural types of microorganisms that co-exist in the soil that are beneficial to plants, by providing or supplying plants with some natural nutrients that are more beneficial to man. Through researches, it has been proved that vegetables and fruits cultivated with chemical fertilizers are said to be low in nutritional values and flavor; and that lack of trace elements in chemical fertilizers result to less nutrition in such fruits and vegetables. Trace elements are very vital minerals that constitute important components of healthy nutrition, which every athlete requires for optimal performance [2].

According to Igbanugo [3] human beings especially athletes need to be given nutritious food from these classes of food types: Carbohydrates, fats, proteins, vitamins and minerals. Nutrition according to William and Brown [4] is the science of food, whose nutrients and other substances therein, their actions, interactions and balance in relation to health and disease, and the process by which the organism ingests, digest, absorbs, transports, utilizes and excretes food substances.

Similarly, Olafinhan [5] averred that nutrition is the process through which the food nutrients taken into the body are used to promote growth, provide energy, repair and maintain/replenish broken down tissues of the body of the human being (e.g. athlete).

Citation: Eugene AC, Adline AC, Blessing CI, Okey AE. Nutritional Values of Organic Farm Products, its Implications to Improved Sports Performance and Adequate Management of Athletes in Nigeria. World J Phys Med Rehabil. 2019; 1(1): 1003.

Copyright: © 2019 Alagbu Chukwubikem Eugene

Publisher Name: Medtext Publications LLC

Manuscript compiled: July 01st, 2019

***Corresponding author:** Alagbu Chukwubikem Eugene, Department of Human Kinetics and Health Education, Nnamdi Azikiwe University, Awka, Nigeria, Tel: 23480679668440; E-mail: alagbuchukwubikem@yahoo.co.uk or ce.alagbu@unizik.edu.ng

The type of food eaten by athletes and their sources could have tremendous implications on their sports performance, overall wellness and fitness. An athlete's diet can impose definite limitations on performance, while its proper manipulations immediately before, after and during sports exercise can improve performance, particularly as it relates to muscle glycogen loading [6,7], posited that unhealthy diet (food) has been considered as a major factor in the development of cardiovascular diseases and unwellness in human beings.

Over the past few decades, consumers' high demand of organically cultivated food crops may be most likely due to their perceived benefits to human health and fitness. The major components of organic farm cultivation is to provide organic manure as nutrients to promote plant growth as well as sustain soil quality and productivity.

The primary objective of this research therefore is to review and highlight the scientifically based factual information, regarding the esteemed value of well processed organic based food crops, as sources of nutrients for quality health and wellness; ascertain the awareness of Nigerian sports administrators and coaches of the value such highly nutritious food crops, produced from organic manure, on athletes optimal performance and management.

Although it has been noted, that in the process of comparing conventional use of chemical fertilizers in food cultivation, and that of organic manure may be confronted with the problem of controlling some extraneous variables, e.g. the interference of other cropping systems, despite this hitches, a diligent examination and articulation of the numerous scientific literatures/researches, goes to suggest that the values of the use and application of well processed organic manure in plant crop cultivation, outweighs its disadvantageous. Since based on scientific evidence and results, food crops cultivated with processed organic manure, portrays improved health, wellness and fitness, of the consumers [8]. This evidential scientific results and reports has resulted to their high demand, and astronomical increase in their cost for consumers. According to Lockie et al. [1]; Williams and Hammitt [9], the high demand of organically produced food crops appears to be driven by the perception that such sources of food are safer, more nutritious and a better source of efficient energy supply for the human body.

Furthermore, many other researches has been conducted, all centered on benefits and efficacy of organically produced food crops on the health of individual, and the high nutritional qualities of such food sources to their consumers [10-16]. In all these researches there seem to be consistency, that the benefits or values of organically cultivated food crops are higher in dry matter contents, higher in mineral concentrations, lower in nitrate (NO₃) concentrations, higher in vitamin C concentrations, higher in phytonutrient content and better in taste.

Based on these scientifically acclaimed values and health benefits derivable from organically grown food crops by the consumers, the researcher was prompted to ascertain the perception of sports administrators and coaches, on the implications of these classes of food crops towards improved performance, and management of athletes in Nigeria.

Methods and Procedure

The purposive sampling technique was used to select 250 sports administrators and coaches. For the purposes of this research, sports administrators refer to directors of sports of these various institutions and lecturers of physical and health education department, and

employed sports coaches of the various institutions. From each of the institutions 16 respondents were selected, with the exception of Nnamdi Azikiwe University, where 17 respondents were selected.

A self structured questionnaire with a reliability test of 0.73 which was designed in line with the Likert scale pattern was used for data collection. The questionnaire has two sections (A & B). Section (A) was on the demographic data of the respondents which included their level of qualification in the area of physical education as lecturers or sports coaches, while the section (B) was on the research questions.

Data analysis

Data collected for the study were coded and analyzed using descriptive statistics of simple percentage as well as Chi-square inferential statistics. Inferences were made at 0.05 level of significance.

Discussion

Table 1 above indicates that 157 (62.8%) and 23 (9.2%) strongly agreed and agreed that organically cultivated food crops are more nutritious than the ones grown with chemical fertilizers, while 45 (18.0%) and 25 (10.0%) strongly disagreed and disagreed with the statement.

In continuation with the discussion of the result in Table 1 129 (51.6%) and 73 (29.2%) of the respondents strongly agreed and agreed respectively with the statement, that food crops grown with organic manure are both human and environmental friendly, while 25 (10.0%), 23 (9.2%) strongly disagreed and disagreed with the statement.

Furthermore, 112 (44.8%) and 55 (22.0%) of the respondents strongly agreed and agreed respectively with the statement that organically cultivated food crops are in high demand all over the world, especially for elite athletes. While 39 (15.6%) and 44 (17.6%) strongly disagreed and disagreed with the statement.

Analytically the calculated Chi square value of 47.82 being greater than the table value 12.59 at 0.05 alpha level, hence the hypothesis which states that the sports administrators, coaches and other stakeholders in sports will not be aware of the nutritional values of organically grown/cultivated food crops was rejected.

The findings corroborates the assertion of Igbanugo [3] who averred that though people know the value of balanced or good nutritious diet, yet they pay little or no attention to what they eat, even among the educated class.

In Table 2 above, 153 (61.2%) and 27 (10.8%) of the respondents strongly agreed and agreed respectively with the statement that vegetable, and fruits cultivated through well processed organic manure, contain trace elements, which are vital minerals athletes require for optimal performance, while 40 (16.0%) and 30 (12.0%) strongly disagreed and disagreed with the statement.

Furthermore, 123 (49.2%) and 79 (31.6%) of the respondents, strongly agreed and agreed respectively, with the statement that an average athlete's diet must be selected from carbohydrates, cereals, protein and mineral groups preferably based on organically processed food items. While 20 (8.0%) and 28 (11.7%) strongly disagreed and disagreed with the statement.

Similarly 111 (44.4%) and 57 (22.8%) of the respondents strongly agreed and agreed with the statement that based on scientific researches, organically cultivated food crops are better to taste and supply more efficient energy for physical activities. While 37 (15.6%)

and 45 (18.0%) of the respondents strongly disagreed and disagreed with the statement.

The result from this table in the same vein, supports the views of Rudge [17] who averred that though people may be aware of the fact about an issue but would not readily participate or practice it, either due to their work schedule or lack of time.

In Table 3 above, 151 (60.4%) and 29 (11.6%) of the respondents strongly agreed and agreed with the statement, that the diet of their athletes are handled by non-nutrition experts. While 39 (15.6%) and 31 (12.6%) disagreed and strongly disagreed with the statement.

In a similar vein 121 (48.4%) and 81 (32.4%) of the respondents strongly agree and agree with the statement, that their athletes dieticians are never on strict instruction to select or source for food items cultivated with organic manure. While 19 (7.6%) and 29 (11.6%) Strongly disagreed and disagreed with the statement.

Furthermore, 100 (40.0%) and 59 (23.6%) of the respondents strongly agreed and agreed with the statement, that the manipulations of their athletes' diets both before, during and after competitions/sports exercises are not based on organically processed food products.

The result from this table corroborates the findings of Alagbu and Agwubike [18] who asserted that the services of professional experts should be employed for regular nutritional assessment of university players/athletes' diets, to ensure that they are always given the best that will enable them perform optimally.

Conclusion

Based on the findings or results of this research, it could be concluded that the respondents are quite aware of the existence of organically cultivated food crops and their valued nutritional qualities

Table 1: Analysis of Respondent's awareness of the esteemed nutritional value of organically grown food crops.

Responses	SA	%	A	%	D	%	SD	%	DF	X ² tab	X ² cal	Decision
Organically cultivated food crops are more nutritious than the ones grown with chemical fertilizers	157	62.8	23	9.2	45	18	25	10				
Food crops grown with processed organic manure are both human and environmental friendly	129	51.6	73	29.2	25	10	23	9.2	6	12.59	47.82	S
The demand for organically cultivated food crops are in very high demand all over the world especially for elite athletes	112	44.8	55	22	39	15.6	44	17.6				

P<0.05

Table 2: Analysis of data on the nutritional values of organically cultivated food crops.

Responses	SA	%	A	%	D	%	SD	%	DF	X ² tab	Decision
Vegetables and fruits cultivated by well processed organic manure contain trace elements which are vital minerals athletes require for optimal performance	153	61.2	27	10.8	40	16	30	12			
An average athletes diet must be selected from carbohydrates, cereal protein and mineral groups preferably based on organically processed food crops	123	49.2	79	31.6	20	8	28	11.7	6	12.59	S
Based on scientific researches, organically cultivated food crops are better to taste and supply more efficient source of energy.	111	44.4	57	22.8	37	15.6	45	18			

P<0.05

Table 3: Analysis of respondents' efforts and keen desire to select and provide their athletes with such high profile organically cultivated food crops as diet for efficient performance.

Responses	SA	%	A	%	D	%	SD	%	DF	X ² tab	X ² cal	Decision
Diet for my athletes are handled by non-nutrition experts	151	60.4	29	11.6	39	15.6	31	12.6				
My athletes dieticians are never under instruction to select or source for food strictly organically cultivated	121	48.4	81	32.4	19	7.6	29	11.6	6	12.59	47.82	S
The manipulations of my athletes diets both before during and after competitions/sports exercises are not based on organically processed food products	100	40	59	23.6	35	14	47	18.8				

P<0.05

as opposed to those produced with chemical fertilizers, and the need for them to source food nutrients of their athletes from the organically cultivated ones (types), however, they lack the enabling environment, to practice same.

Recommendations

- The tertiary institutions in Nigeria (the universities, polytechnics & Colleges of Education are looked upon as centre of academic excellence, hence they should be able to regularly organize seminars, workshops and symposia, where experts in the area of nutrition in sports, exercise physiology and sports medicine, will be involved to educate the sports administrators/coaches about appropriate nutritional practices, and their effects on sports performance of athletes.
- Sports administrators and coaches who handle or train budding athletes, should include as part of their training programmes in education of their athletes on proper nutritional practices, which must include eating strategies and performance from organically cultivated food items.
- The Federal Government of Nigeria should as a matter of policy, de-emphasize the use of chemical fertilizers in farming, and promote the organic farm practice more, whose products are astronomically in very high demand all over the world today, the same way they are promoting exclusive breastfeeding of newly born babies, as opposed to the use of artificial milk products.

References

- Lockie S, Lawrence G, Mummery K. Eating "green" Motivations behind organic food consumption in Australia. *Sociol Ruralis*. 2002;42(1):23-40.
- Disadvantages of chemical fertilizer. 2014.

3. Igbanugo VC. Physical fitness through selected activities. Ibadan Faculty of Education, University of Ibadan. 1995.
4. William MH, Brown WMC. Nutrition for fitness and Sport. Dubnque Lowan. 1996;91(2):985.
5. Olafinhan K. A survey of the nutritional status of the mentally Retarded pupils of Torrey Home Kano. Health and Fitness Journal International (HFJI). 2000;2:63-9.
6. Ira Wolinsky. Nutrition in exercise and sport. 3rd ed. Florida: CRC Press; 1998.
7. Trumbo P, Schlicker S, Yates AA, Poos M; Food and Nutrition Board and the Institute of Medicine, The National Academies. Dietary Reference intakes for Energy, Carbohydrate, fiber, fat, fatty acids cholesterol, protein and Amino Acids. (Macronutrients) A 900 pages comprehensive assessment of nutritional needs. J Am Diet Assoc. 2002;102(11):1621-30.
8. Dimitric C, Greene C. Recent growth patterns in the U.S. Organic foods market. (USDA Econs. Res. Serv). Agr Info Bul. 2002;(AIB-777):42.
9. William PR, Hammitt JK. Perceived risk of conventional and organic produce. Pesticides, pathogens and natural toxins. Risk Anal. 2001;21(2):319-30.
10. Bourn D, Prescott J. A comparison of the nutritional value, sensory qualities and food safety of organically and conventionally produced foods. Crit Rev Food Sci Ntri. 2002;42(1):1-34.
11. Brandi K, Molgaard JP. Organic agriculture: Does it enhance or reduce the nutritional value of plant foods? J Sci Food Agr. 2001;81(9):924-31.
12. Chen L, Dick WA, Streeter JG, Hoitink HA. Fe Chelates from compost microorganisms improve fe. Nutrition of soyabean and oat. Plant Soil. 1998;200(2):137-47.
13. Heaton S. Organic farming food quality and human health. UK: Soil Assn; 2001.
14. Woese K, Lange D, Boess C, Bogi KW. A comparison of organically and conventionally grown foods Results of a review of the relevant literature. J Sci Food Agr. 1997;74(3):281-93.
15. Trewavas A. A critical assessment of organic farming and food assertions with particular respect to the UK and the potential environmental benefits of no-till agriculture. Crop Prot. 2004;23(9):757-81.
16. Magkos F, Arvaniti F, Zampelas A. Organic food: Nutrient food or food for thought? A review of the evidence. Int J Food Sci Ntr. 2003;54(5):357-71.
17. Rudge FR. Recreation and Leisure. St. Louis: Mc Graw Hills. 2001.
18. Alagbu CE, Agwubike EO. The interface of Nutritional practices of selected basket ball players of Nnamdi Azikiwe University, Awka, on performance. Glob J Health Sci. 2012;4(5):192-8.