



Awareness, Attitude and Utilization of Orange-Fleshed Sweet Potato (OFSP): Critical Literature Review

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Abstract

The study relied on secondary data to review the level of awareness, attitude and utilization of Orange-Fleshed Sweet Potato (OFSP). The review was supposed to offer important information regarding how widely used and known OFSP was. Evidence from the study showed that although most countries were aware of OFSP's existence and its nutritional advantages, the market for OFSP was not yet formally established. Most of the studies also emphasized the statement that if OFSP is being processed into flour for making chips, biscuits, porridge, bread, drinks and other special forms of foods, consumers especially households would have accepted them to increase consumption. Socio-economic factors such as social class affects the level of utilization and preference patterns of the crop. Lack of storage facilities, lack of modern processing equipment and scarcity of OFSP vines had a great effect on its utilization. The study suggests that in order to increase agricultural value addition, OFSP farmers should be empowered through effective and efficient extension training on the usage of modern processing techniques. Also, OFSP should be processed into several forms such as biscuit, breads, drinks and other special forms of foods for alternative income sourcing. Finally, study should be conducted on consumers' willingness to pay for value added products made from OFSP.

Keyword: Awareness, attitude, knowledge, utilization and orange fleshed sweet potato

Introduction

Orange-Fleshed Sweet Potato [OFSP] (*Ipomoea batatas* L Lam) is one of the many varieties of sweet potatoes. In most nations around the world, it is a crucial crop for ensuring food security and generating of income. Among the several sweet potato types, OFSP is particularly high in beta-carotene, a great source of vitamin A (van Jaarsveld, 2005).

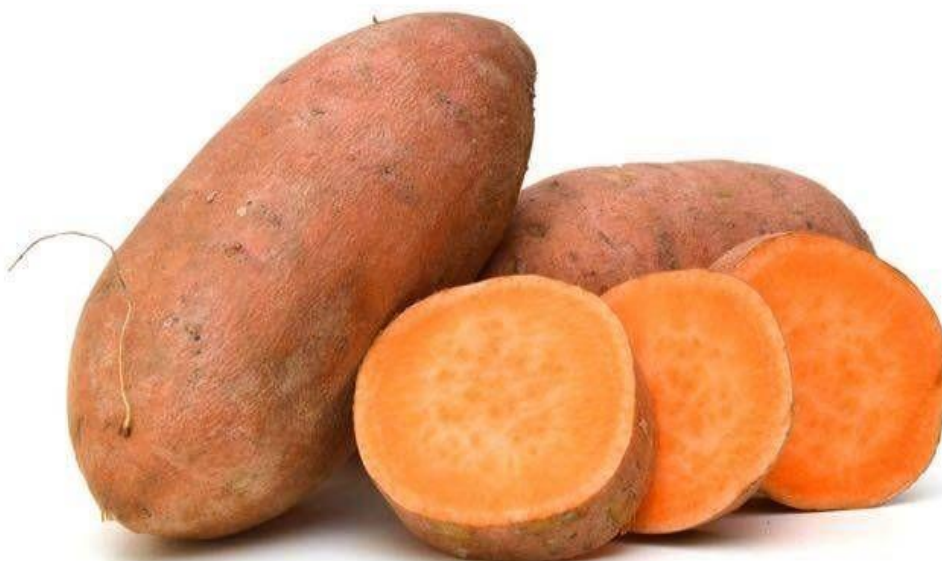


Figure 1. Orange Fleshed Sweet Potato

Consuming OFSP is a helpful option in underdeveloped nations where vitamin A deficiency (VAD), particularly in children, is a major problem (Low, 2009). Due to the acute lack of nutrient-rich food, severe malnutrition is a significant problem in many developing nations. The number of undernourished individuals globally has increased from 777 million in 2015 to 815 million in 2016, with Sub-Saharan Africa and South Eastern and Western Asia seeing the greatest levels. Because of this, Sub-Saharan Africa has a public health problem with regard to the deficiency of micro nutrients like vitamin A (Worsley *et al.*, 2015).

Given the significance of nutrition for a nation's economic growth, efforts are made to guarantee that the food provided contains not only calories but also vital vitamins and minerals. National and international organizations have made significant and expanding efforts over the past few years to introduce OFSP as a biofortified staple crop and as a food-based

strategy to alleviate micronutrient deficiency in Sub-Saharan Africa. This is because OFSP is identified as one of the most prominent bio-fortified food crops (Masumba *et al.*, 2007). Biofortification, according to Nestel *et al.* (2006), is a method for considerably increasing the content of micronutrients in staple food crops by the use of traditional breeding methods. The Orange Fleshed Sweet Potato (OFSP) has been successfully developed and disseminated to communities in the northern regions of Ghana by the International Potato Center (CIP) and the Food Research Institute (FRI) of the Council for Scientific and Industrial Research (CSIR) of Ghana. In an effort to boost knowledge of the new crop, mass communication channels have been used to disseminate information on the OFSP's nutritional and health advantages (i.e., regional stations linked with Farm Radio International). Despite the fact that this radio campaign has raised awareness of the nutritional and health benefits of OFSP, the target audience have not been consuming it in greater amounts for a variety of reasons, including preference, superstition, and lack of access to the crop. Recent studies revealed that a lot of information on OFSP is available. The crop in spite of its enormous benefits, it is less consumed by many. For instance, many interventions have been introduced by the World Health Organization (WHO) and other stakeholders in Mozambique and some Sub-Sahara African countries to help women to include OFSP which is very rich in vitamin A in their diet as a way of eradicating the problems of health hazards among pregnant women and children under the age of five. Similarly, in Northern Region of Ghana where the planting season is unimodal, thus one rainy season in a calendar year which lasts for three months after which the dry season sets in, fresh vegetables and fruits become relatively scarce and expensive. It is observed in northern Ghana that farmers cultivate OFSP as alternative food crop. Currently, the Department of Food Processing Technology in the University for Development Studies have studied the trend and consumption pattern of OFSP and started making some products out of the orange fleshed sweet potato in the region and its environs but the pertinent question still remains as to what extent are the people aware of the orange fleshed sweet potato. What has been the attitude and the utilization pattern of the orange fleshed sweet potato? These are some of the questions the study intends to find answers to. In light of these, the study attempts to ascertain the level of awareness, attitude and utilization of OFSP. Keeping this in mind, the study as a result aims at reviewing available literature to be able to establish the level of awareness, attitude and utilization of OFSP in the Northern Region.

Theoretical framework

The study is premise on the theory of Awareness, Knowledge Attitude and Practice (AKAP) framework. Globally, there is an increasing awareness on the need for new knowledge and when new knowledge is generated by research institutions, efforts must be made to disseminate this knowledge to beneficiaries. The success in achieving this will depend on whether the beneficiaries are aware of the existence of the knowledge, emphasizing the fact that, knowledge is not the starting point of the great variety of human ventures that can be brought to mind. Before one acquires the knowledge, he or she must first be aware of the existence of the knowledge. A periodic, often argumentative, theme in the literature on diffusion of an innovation, and more specifically on how best time has contributed to the spread of an innovation in these four (4) keys variables referred to as Awareness, Knowledge, Attitude and Practice (AKAP). The AKAP approach is a framework of behaviour change (Schrader & Lawless, 2004). AKAP framework was first developed in the 1950s as the first model to making relevant impact in extension innovation adoption process. It is convenient to think of extension as having its greatest economic impact by inducing innovation information through the following sequence:

A: Farmers' awareness of an innovation

K: Farmers' knowledge, through training, observation, experimenting and testing

A: Farmers' Attitude towards the innovation adoption

P: Changes in farmers' practices and behaviour

This sequence can be conceptualized as follows:

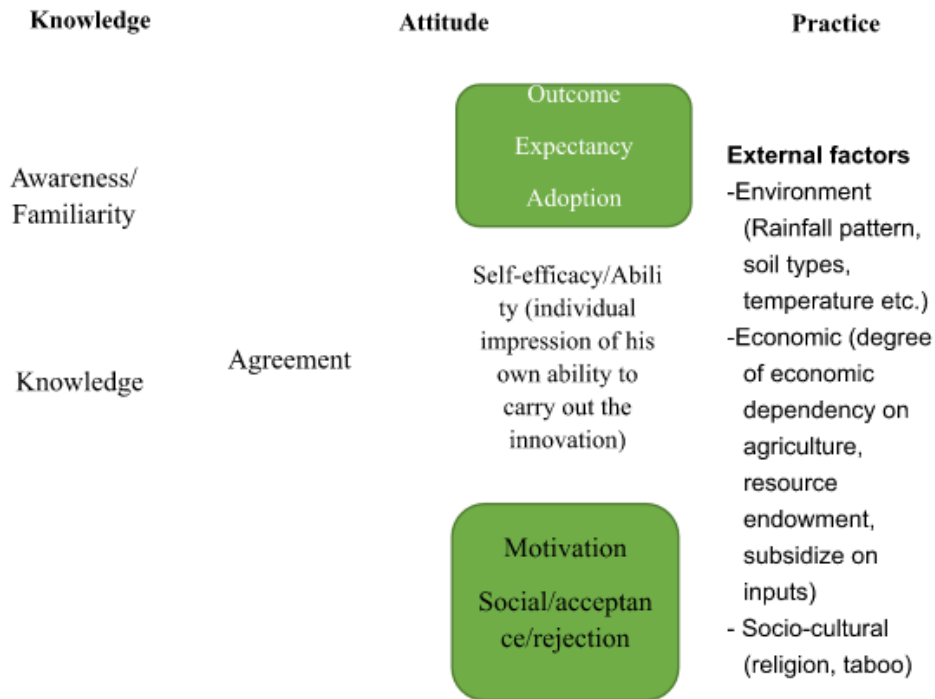


Figure 2. Conceptualization of the AKAP Model
Source: Adopted from (Kristen et al., 2006)

The 'AKAP framework' focuses attention not directly on the easier path to the knowledge-action space. But rather, the focus is on the (taken-for-granted) flow of effects that one should typically see, empirically. With AKAP framework, awareness is not knowledge. But knowledge necessitates awareness, observation, experience, and the critical capacity to assess facts using solid evidence. Knowledge leads to adoption, but adoption is not productivity. It can be inferred from Figure 2 that AKAP = Awareness (is only about the familiarization of OFSP), Knowledge alters or modifies Attitude, which alters or modifies Practice. In other words, Awareness is the starting point of knowledge, Knowledge modifies (predicts) attitudes, which modifies (predicts) the learner's practice pattern (behaviour). A person's intention to act in a certain way determines the behavior that person exhibits. His or her views about that behavior, which relate to what others believe he or she should do, their motivation to carry out those wishes, and their perception of behavior control, constitute the basis of the intention. If a person views a behavior as advantageous, they are more inclined to want to engage in that behavior and are more likely to do so (Montano et al., 2002). Nevertheless, behaviour intention does not always lead to actual behaviour, because some external factors come into play (Wheatley & Loechl, 2008).

These external factors are categories as environmental, economic, socio-cultural and policy signals. Conversely, a person's practice shows their attitude, and their attitude discloses their stock of knowledge or experiences, which depends on their level of awareness of the relevant information. Thus, this knowledge base can be deliberately exposed (subjected) to pre-selected "influencers," resulting in positive ripple effects on attitude clusters and later sets of behaviors. Extension, education, other change-agents, and media of all kinds are major "influencers" in this review. According to researchers, awareness, knowledge, attitude, and practice are connected, and awareness, knowledge, and attitude directly affect practice (*Mulume et al., 2017*).

The framework is useful for cross-examining the relationship between awareness, knowledge, attitude and practice (utilization). It has an interesting scholastic pedigree, to say the least. This is due to the researcher's presumption that usage of OFSP is directly influenced by knowledge and attitude, which is related to awareness, knowledge, and utilization. Furthermore, it is worth noting that, the AKAP framework reveals the misconceptions that may create obstacles to the activities to be implemented and may become potential barriers to the utilization of OFSP. As a result, learning involves clear change, which typically shows through practice. From this point, it is also further worth noting that a fundamental characteristic of learning what is acquired is to measure and observe behaviour. This behaviour is acquired through training of one or another kind. Surveys conducted using AKAP framework has the potential to confirm or disapprove a hypothesis, identify what is known and done about specific themes (<http://www.medicusdumonde.org/outils/Nous-contacter>). For this reason, the AKAP model, by researcher's opinion, could be an interesting and one of the more appropriate frameworks to adopt in understanding and analyzing peoples' awareness, attitude and utilization of Orange-Fleshed Sweet Potato. Coherent with the frame, the hypothesis is that the simple awareness, attitude towards the existence of OFSP does not automatically lead to the utilization of OFSP which impedes the extend of use of OFSP by people in the northern region. This raises the possibility of links between each AKAP phase and usage. (Armstrong, 2016), emphasises that people must be driven to learn and should be aware that their current attitude or behavior, level of knowledge, ability, or competency needs to be improved. The term "attitude" describes a person's particular approach to a certain circumstance. It has a knowledge-based foundation (based on experience) and produces specific behavioral patterns (Armstrong, 2016). (Gumucio, 2011), advances this by explaining that attitude is a way of taking a stand regarding an issue. These are the tendency to act in a specific way. Attitudes cannot be observed directly as in the case of practice (Gumucio, 2011). The AKAP model has been found relevant for the study because of its

ability to measure the scope of existing situation, disprove or confirm a theory, and offer fresh perspectives on the reality of a given circumstance.

Methodology

The researcher used secondary sources to synthesize and draw conclusions on the topic. Some of the information was from already conducted research from primary sources (Cameron, 2018). In doing this, a variety of documents were reviewed, and the data were collected from articles, journals, websites, original research papers and books. Web of knowledge database and the google search engine were all made use of. The collected data were organized and compiled for interpretation. The google search led to the discovery of various online resources on the topic. The literature reviewed undoubtedly renders distinct standpoints to the topic of the study due to the numerous researches conducted on the OFSP.

Results and discussions

Level of Awareness

Although most nations are aware of OFSP and its nutritional advantages, the market for this food supplement has not yet been organized and widely accepted by the general public, which could help increase access to it and its derivatives. For the purpose of raising awareness and examining household attitudes on OFSP, numerous interventions have been made in Kenya, South Africa, Tanzania, Ethiopia, Uganda, Ghana, and Mozambique. This is consistent with research from Omoare (2019) and Babatunde et al. (2019), which found that the majority of farmers were aware of OFSP and engaged in its production. A survey by Adebisi found that 65% of respondents were aware of the health advantages of OFSP and that 89.3% of consumers were generally willing to spend more than the bid price for OFSP. Furthermore, according to a study by Osman et al. (2020), sweet potato farmers in the treatment communities were far more aware of OFSP genotypes than those in the control communities, which lacked research scientists and technicians (57.7% versus 19.2%). There is a need to encourage mass production of OFSP as a garden or backyard crop by making planting materials available to interested farmers. It is also evident from the review that most people are aware of the crop and its nutritional benefits. Additionally, those who were already familiar with OFSP had a higher likelihood of selecting OFSP bread (Ouro-Gbeleo, 2018).

This then implies that if consumers are aware of the nutritional and health benefits of OFSP, they will easily adopt and explore innovative ways of processing in different dietary packaging. This can help create alternative income generating sources for women and the youth in particular and all unemployed people in the country at large.

Level of Utilization

A study conducted by Babatunde et al. (2019) in Kwara state in Nigeria indicated that almost 87% of the stallholders' sampled for a study were into the cultivation of OFSP. Therefore, products from OFSP like bread and chips can be produced and sold to consumers at reasonable prices (Awuni et al., 2017). According to Awuni et al. (2017), adapting meal recipes to include orange-fleshed sweet potatoes (OFSP) may increase dietary consumption of vitamin A. Subsequently, research undertaken in Tamale revealed that consumers' expressed preference for orange fleshed sweet potato bread with reasons for the preferences being that of its sweet taste and soft texture. In review of the various literature, most of the studies emphasized the statement that if OFSP is being processed into flour for making chips, biscuits, porridge, bread, drinks and other special forms of foods, consumers especially households would have accepted them to increase consumption. In order to explore consumer acceptance of and willingness to pay for OFSP in Uganda and Mozambique, respectively, Chowdhury et al. (2011) and Naico & Lusk (2010) employed data from choice trials. They found that when customers in Uganda are informed about the nutritional value of OFSP, they are prepared to pay considerable premiums. They discovered that consumers are prepared to pay just as much for OFSP as they are for conventional white sweet potatoes, even in the lack of nutritional information. They discovered that taste and socio-demographic characteristics are among the factors influencing willingness to pay. The pulp of the OFSP is valued by Mozambican customers more than the pulp of the conventional kind, according to (Naico & Lusk, 2010). Dry matter content and root size are two characteristics that customers value. They also found that, in contrast to rural areas, urban areas were more likely to accept and potentially consume OFSP when nutritional information was provided. In a similar case study, in Tamale in the Northern Region of Ghana, it was concluded that buyers were prepared to pay for the bread. made from OFSP for consumption which in effect will increase the level of utilization of the crop. Several research also indicates that knowledge of the crop also affects its level of utilization among households in both rural and urban areas. Socio-cultural factors such as social class affects the level of utilization or the consumption patterns of the crop and this is in line with the study conducted by World Health Organisation (2009) who stated that sweet potato is still regarded as a poor man's food and neglected crop with little or no government support and is thus rated low in food priority listing because its processing and packaging are limited to traditional techniques. Lack of storage facilities, lack of modern processing equipment and scarcity of OFSP vines had a great effect on its utilization. Hence, provision of storage

facilities, modern processing equipment and provision of OFSP vines should be made available to farmers by the government.

Attitude towards Orange Fleshed Sweet Potato

From secondary data review, farmers have positive attitude towards the consumption and crop usage. An investigation into consumer perceptions of Orange-Fleshed Sweet Potato (OFSP) puree bread in study in Kenya revealed that the level of education, gender and age both had impact on consumer's attitude towards OFSP (De-Groote et al., 2008). Other studies have revealed that understanding of nutrition is favorable correlated with educational attainment, and consumers with higher educational attainments are more likely to seek superior products (Worsley et al., 2015). Studies further found that consumer's attitude towards the consumption of OFSP was influenced by the level of education, income level, flavor, texture and nutritional knowledge. Consumers have shown readiness to consume more of the crop as well as its products when it is made readily available throughout the year. Contrary to popular assumption, sweet potatoes are not simply food for women and children; farmers also include them as a significant portion of household diets. They utilize sweet potatoes to satisfy their hunger and regard the leaves as a nutritious vegetable. Literature also revealed that children do not like OFSP due to its colour because they see the colour orange of OFSP to be rare so it prevents them from accepting it for consumption. Hotz (2012) stated that the orange colour of OFSP is not a hindrance to its adoption and that building an 'orange brand' as part of a marketing campaign to promote vitamin A and OFSP can be very successful. can be very effective. For instance, the color orange can be utilized to convey important messages about OFSP and good health on market stalls, posters, t-shirts, hats, sarongs, etc.

Conclusion

The literature review undoubtedly renders distinct standpoints to the topic of the study due to the numerous research conducted on the OFSP crop. A very high level of awareness of OFSP was inferred from the study's key findings. However, the market for OFSP has not been formalized and well recognized. It was also established that most of the studies emphasized the statement that if OFSP is being processed into flour for making chips, biscuits, porridge, bread, drinks and other special forms of foods, consumers especially households would have accepted them to increase consumption.

Socio-cultural factors such as social class affects the level of utilization or the consumption patterns of the crop. However, lack of storage facilities, lack of modern processing equipment and scarcity of OFSP vines had a great effect on its utilization. Therefore, provision of storage facilities,

modern processing equipment and provision of OFSP vines should be encouraged and be made available to farmers by the government.

Recommendation

Based on the review, the following recommendations are made:

1. The study recommends that OFSP should be processed into several forms such as biscuit, breads, chips, drinks and other special forms of foods for alternative income sourcing.
2. Farmers of OFSP should be trained effectively and efficiently on the use of modern techniques for processing to help increase the crop value.
3. Breads and other forms of foods made from OFSP should be made affordable for consumers to be able to purchase.
4. There should be massive creation of awareness on packaging of sweet potato products, such as bottling and canning.
5. It is suggested that a study should be researched on consumers' willingness to pay for value addition products derived from Orange Fleshed Sweet Potato.

Competing interest

According to the author, there were no conflicts of interest, either financial or otherwise.

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