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Research Application Summary

Improving access to agricultural information to small scale farmers using ICT systems in Central Uganda

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Abstract

Small scale holder farmers in rural areas growing ginger (*Zingiber officinale*) face challenge in accessing information on ginger production from pre-harvest to post-harvest stage, yet the information is needed to help farmers understand and adopt best agricultural practices on crop selection, input management, land selection and preparation, finance, transportation, packaging processing, and marketing of the agricultural produce. A web based system is proposed to provide such information. Nearly 80% of smallholder farmers growing ginger in Uganda have limited access to latest technology on agricultural inputs, have low awareness about farming best practices, and weak links across the agricultural value chain. Furthermore, severe climatic conditions often lead to crop failure when fanners are not able to take preemptive steps due to lack of weather cast information. A mobile application as well as web portal will be developed to help rural farmers through their organized groups or associations receive the latest agricultural information on critical inputs, crop selection, input management, land selection and preparation, pesticides, finance, transportation, packaging processing, and marketing of their product (ginger). The application will allow farmers upload images /videos for marketing their product on both local and international markets, show locations (CPS) to enable farmers and their products be located and allow farmers ask questions in English and Luganda (Local language in Buganda region in Uganda) and provide many other functionalities.

Keywords: Agricultural information, ginger, ICT, Uganda, web portal

Resume

Les petits exploitants agricoles des zones rurales qui cultivent du gingembre (*Zingiber officinale*) ont du mal à accéder aux informations sur la production de gingembre, de la pré-récolte à la post-récolte. Ces informations sont pourtant nécessaires pour aider les agriculteurs à comprendre et à adopter les meilleures pratiques agricoles en matière de sélection des cultures, de gestion des intrants, de sélection et de préparation des terres, de financement, de transport, de conditionnement, de transformation et de commercialisation des produits agricoles. Un système basé sur le web est proposé pour fournir ces informations. Près de 80 % des petits exploitants agricoles qui cultivent le gingembre en Ouganda ont un accès limité aux dernières technologies en matière d'intrants agricoles, sont peu sensibilisés aux meilleures pratiques agricoles et ont des liens faibles avec la chaîne de valeur agricole. En outre, les conditions climatiques sévères conduisent souvent à une mauvaise récolte lorsque les agriculteurs ne sont pas en mesure de prendre des mesures préventives en raison du manque d'informations météorologiques. Une application mobile et un portail web seront développés pour aider les agriculteurs ruraux, par le biais de leurs groupes ou associations

organisés, à recevoir les dernières informations agricoles sur les intrants essentiels, la sélection des cultures, la gestion des intrants, la sélection et la préparation des terres, les pesticides, les finances, le transport, le conditionnement, la transformation et la commercialisation de leur produit (le gingembre). L'application permettra aux agriculteurs de télécharger des images/vidéos pour commercialiser leur produit sur les marchés locaux et internationaux, de montrer les emplacements pour permettre aux agriculteurs et à leurs produits d'être localisés, de poser des questions en anglais et en luganda (langue locale de la région de Buganda en Ouganda) et de fournir de nombreuses autres fonctionnalités.

Mots-clés : Information agricole, gingembre, TIC, Ouganda, portail web

Introduction

Ginger (*Zingiber officinale*) is commonly grown in tropical and sub-tropical regions of the world for its spice and medicinal value. It is a perennial herbaceous monocotyledon, usually grown as an annual crop. Ginger has been used as a medicine in Chinese, Indian and Arabic herbal traditions since ancient times (Altman, 2001). Ginger is commercially available in various forms such as fresh ginger, dry ginger, ginger powder, ginger oil, ginger oleoresin and preserved ginger. The main ginger growing countries other than India and China are Jamaica, Taiwan, Sierra Leone, Nigeria, Fiji, Mauritius, Indonesia, Brazil, Costa Rica, Ghana, Malaysia, Bangladesh, Philippines, Sri Lanka, Thailand Trinidad, Uganda, Hawaii, Guatemala and many Pacific Ocean Islands (Peter, 2007).

In Uganda, ginger is widely grown in areas of Butambala and Mpigi districts in central Uganda and it is grown on both small and large scale for commercial and home consumption. Ginger is known by the scientific name *Zingiber officinale* and in Luganda it is called Entangawuzi. Regarding the local market, ginger is highly demanded in Uganda, Congo and the Southern Sudan (Uganda Agribusiness Guide, 2019). However, farmers face challenges during the production of ginger plant such as lack of planting stock at the beginning of the new season, lack of capital to buy the agricultural inputs and farmers lack marketing information which result into selling their crops at low prices. As such an ICT system needs to be integrated into ginger value chain starting from identification of farmers' pre-harvest and post-harvest needs to advisory services. The mobile application and content management web portal will enable farmers' access vital agricultural information on ginger growing, weather forecast, market prices, and best practices in agriculture.

Methods of accessing the information.

Currently, farmers access information through their groups, associations, and talk shows on radio stations. However, some farmers miss some important information when they are not tuned in at the time of the radio talk show. We tend to break the monopoly of middlemen who provide half-baked information to ginger farmers. With the online system the farmers will be required to use their phones or web portal to access the information on ginger, accepting text, voice and videosi in especially English and local languages since English is understood by many local farmers in central Uganda, but also local languages.

Many small enterprises in Uganda use Short Message Service (SMS) to provide advisory services and relevant information to farmers especially on regional weather forecasts, planting, storage and harvesting, and pest and disease control information for crops and livestock (Peter, 2014). With the proposed ICT Integrated system, the application will allow the farmers upload text, images, voice and voice to the web portal. The information will also be received by the specialists in the call center-back in both English and Luganda languages and the specialists would provide the advice on information sent by the farmers. With extensive promotion of modernization of

agriculture in Uganda through different media platforms such as radio, TV shows, news papers and online advisory services, it was noted that smallholder farmers are exploited from the pre-harvest stage to post-harvest stages, due to lack of proper information on critical input, crop selection, input management, land selection and preparation, pesticides, finance, transportation, packaging processing, and marketing of their agricultural produce and this has led to low farm yields, low profit margin and hence low incomes.

Through different innovations to access information in Uganda, farmers in Mayuge district in Eastern Uganda have adopted new and efficient methods of growing ginger which has increased their yields. The new method requires little space of land but gives high yields (Aldon, 2011), With this dug up method, a farmer digs up holes in the garden and fills them with organic materials and animal wastes. Then the organic materials are left in the hole to rot and create a soft ground for ginger to grow (Aldon, 2011). In Tanzania, a Capacity building, Global Marketing Infrastructure, Value Addition and Rural Finance Support Programme (CBGMIRF) was started that aimed at strengthening the capacities of ginger producers, processors and marketing associations through their groups with skills and technologies required for improving their access to inputs and outputs

markets for their produce (TAFAPDO, 2019). The programme targeted 1,400 members of ginger producer groups, processors and marketing associations comprising of 30 - 40 members. These groups have been turned into viable economic groups equipped with skills and technologies required for sustainable and profitable access to inputs and outputs markets.

Challenges in growing ginger in Uganda. The challenges that affect farmers growing of ginger is unpredictable climatic conditions which often lead to crop failure when farmers are not able to take preemptive steps due to lack of weather forecast information, improper planting, lack of capital, lack of planting stocks, and poor harvesting practices which result in low productivity and lower profit margins for farmers. Also the chemicals for pest control are costly, and this is made worse by poor access to value addition skills, postharvest technologies and market information, which often result in fall of price of ginger especially when there is excess in the market during the harvesting period. However, TAFAPD (2019) proposed establishment of a Producer Empowerment and Global Market Linkage sub-component where organized farmers form groups so that they can pool together their skills and financial resources to acquire new technologies, learn new skills, and improve the quality and quantity of their produce so as to improve their bargaining power in the market.

Conclusion

A mobile application as well as web portal will be developed to help rural farmers through their organized groups or associations to provide them with latest agricultural information on critical inputs, crop selection, input management, land selection and preparation, pesticides, finance, transportation, packaging processing, and marketing of their product. The application will allow farmers upload images, text, videos, documents with questions on ginger with ease. It is planned to establish agricultural call centers where questions related to ginger production, value addition and marketing will be provided in both English and Luganda (local dialect in central Uganda).

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