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Research Application Summary

Cassava value chain upgrading for secure food, nutrition, income and resilience of smallholder farmers in the ASALs of Nakuru County: A baseline Report

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Abstract

Cassava is a food security crop in Kenya, mainly grown for subsistence and limited commerce in the western, eastern and coastal regions. Its demand is increasing in non-traditional growing regions like Nakuru County where cassava agribusiness development initiatives have been undertaken but take off has faced challenges including disease (CBSD), late maturity and low yield. This project was conceived with the objective of contributing to improved food, nutrition and income security of small holder farmers through innovations in the cassava value chain in three ASAL (Agricultural Semi-Arid Lands) sub-counties of the greater Nakuru County. A household baseline study on the status of cassava production, utilization and value addition was conducted in the three selected project sites (Njoro, Solai and Subukia sub-counties). Results indicated that the average age of farmers was 60 years and that a majority of household heads (approx. 90%) engaged in farming as their primary occupation, dedicating about 0.3 acres (0.15 ha) of land to cassava production. Majority (88%) of farmers grow cassava for subsistence purposes and with limited food product diversity. A small percentage (12%) grow cassava for both food and sale. The most desirable cassava variety characteristics were high yield potential and early maturity. Access to clean planting materials is a critical drawback as 44% of farmers obtain them from neighbours while 27% recycle their own. Overall, CMD and CBSD are the most problematic diseases with 76% of farmers indicating that they do not apply any control measures. A majority of farmers (79%) cited Good Agricultural Practices (GAPs) as the most important capacity building need for cassava production.

Key words: Baseline survey, cassava, Kenya, Nakuru County, value chain upgrading

Résumé

Le manioc est une culture de sécurité alimentaire au Kenya, principalement produit pour la subsistance et le commerce limité dans les régions de l'Ouest et côtières. Sa demande est grandissante dans les régions de production non-traditionnelle comme le Comté de Nakuru où le développement des initiatives d'entreprenariat agricoles a été entreprises mais l'essor a rencontré des défis comme les maladies (CBSD), maturité tardive, faible rendement. Ce

projet s'est fixé pour objectif de contribuer à une amélioration de l'alimentation, de la nutrition et de la sécurité du revenu des petits producteurs à travers des innovations dans la chaîne de valeur du manioc dans les trois ASAL (Terres Agricoles Semi-Arides) des sous-comté dans le grand Comté de Nakuru. Une étude de base au niveau ménage sur le statut de production du manioc, l'utilisation et la valeur ajoutée a été conduite sur les trois sites sélectionnés par le projet (sous-comté de Njoro, Solai et Subukia). Les résultats ont indiqué que l'âge moyen des agriculteurs est de 60 ans et que la majorité des chefs de ménages (approx. 90%) engagée dans l'agriculture comme leur activité principale, affectent environ 0,3 acres (0,15 ha) de terres à la production du manioc. La majorité (88%) des agriculteurs produit le manioc pour des objectifs de subsistance et avec une diversité limitée en produits alimentaires. Un faible pourcentage (12%) produit le manioc pour à la fois pour la subsistance et la vente. Les caractéristiques les plus préférées sur la variété de manioc étaient le haut potentiel de rendement et la maturité précoce. L'accès aux matériels seins pour plantation est le facteur limitant du fait que 44% des producteurs s'en approvisionnent auprès de leurs voisins alors que 27% recyclent leurs propres matériels de plantation. En général, CMD et CBSD sont les maladies les plus problématiques pour 76% des producteurs indiquant qu'ils n'appliquent aucune mesure de contrôle. Une majorité des producteurs (79%) a cité les bonnes pratiques agricoles (GAPs) comme le besoin le plus important dans le renforcement de capacité pour la production du manioc.

Mots clés: Enquête de base, manioc, Kenya, Comté de Nakuru, revalorisation de la chaîne de valeur

Background

Cassava is a suitable food security crop for smallholder farmers in marginal regions of Kenya but production has been dominant in western, coastal and eastern Kenya regions. The crop is consumed in breakfasts, lunches, dinners or as snacks. Production has been declining since the 1990s due to outbreaks of Cassava Mosaic Disease (CMD) and Cassava Brown Streak Diseases (CBSD) (Njeru and Munga, 2003). Development of the food, industrial and adaptation roles of cassava has attracted targeted interventions with the Government of Kenya investing in improving production, research, marketing and regulations to develop the cassava industry (MoA, 2007). Nakuru County is a non-traditional cassava growing zone where the Government implemented a World Bank funded Kenya Agricultural Productivity Project (KAPP, later KAPAP) in 2005 to introduce cassava agribusiness promotion in regions that experience recurrent droughts and maize crop failures. Later, during the 2008/ 2009 severe drought period, promotion of cassava as a drought resilient crop was spearheaded by Mtakatifu Clara Centre in Lare and KAPAP further extended cassava agribusiness promotion in five of eleven sub counties of Nakuru County (Njoro, Subukia, Rongai, Naivasha, and Nakuru North). In 2010-2015, a consortium of three public and private institutions (MCN, Egerton University and Kenya Agricultural and Livestock Organization (KALRO)) partnered to upscale cassava enterprise development as a contribution to the Sustainable Development Goals (SDGs 1-3, 9 and 13) on alleviating poverty and hunger, and enhancing good health and well-being, industry and innovation, and community resilience to climate change.

At the time the introduced cassava varieties (KMEI, Karembo, Mucericeri, Ndolo, I-96, I-94) gave good yields of 10 to 20 kg per mature plant, but their maturity was long (18 to 24 months); farmers prefer earlier maturing varieties. In stakeholder forums conducted by the three institutions, the barriers to further scaling up of cassava agribusiness enterprises in Nakuru County were identified as: i) long maturity period of the available cultivars, ii) Diseases (CMD and CBSD), iii) limited variety diversity, iv) limited cassava product diversity and consumption, iv) poor market linkages, and v) weak farmer institutions to support cassava value chain upgrading.

This current study aims at dealing with these challenges by addressing itself to the following objectives: i) Conduct farmer participatory screening of diverse sweet cassava varieties to select suitable adapted fast maturing types for the Agricultural Smei-Arid Lands (ASALs) of Nakuru County; ii) Improvement of CBSD resistance in selected varieties using MAS technology; iii) Development of high value cassava based food, feed and industrial products for improved food, nutrition and household incomes; and iv) Capacity building in cassava breeding, food science and agribusiness for an enhanced cassava value chain. To achieve the above objectives a baseline survey was conducted to collect data whose analysis would provide a benchmark upon which project achievements would be measured against.

Methodology

The Baseline study was undertaken through a reconnaissance survey and administration of a household questionnaire. During the reconnaissance survey, key stakeholders (Ministry of Agriculture officials, farmer leaders and Cassava welfare group members) in the project sites were identified and geographic locations for actual survey mapped.

A Household questionnaire was administered at farm level by the project team members and enumerators. A purposive sampling methodology with the aid of farmer leaders in the sites was used to select farmers who grow cassava. A total of one hundred and five (105) farmers were sampled in the three project sites within Nakuru County. In each of the three Sub-counties (Njoro (Lare), Lower Subukia (Waseges) and Rongai (Solai)), thirty five (35) farmer households were selected and interviewed. The questionnaire tool captured information on household characteristics (including gender of household heads), level of education of household heads, land tenure, involvement in cassava production, marketing and utilization.

Results and Discussion

Farmer and household characteristics. Agriculture is the predominant economic activity in the three Sub-counties. All the sampled households in Njoro indicated farming to be their primary occupation. Almost 89% respondents in Rongai and 90% in Subukia indicated that farming was their main economic activity. A small percentage, 5% of households in Rongai and 3% in Subukia, indicated non-farm casual work to be their primary occupation.

From the total number of sampled households, 78% were male-headed and the rest female-headed. The majority of household heads (60%) interviewed had primary level of education while 24% had attained secondary education. Twelve percent (12%) of respondent household heads had no formal education. This finding indicates that while the majority of farmers

have basic literacy skills, there is need to communicate in the local or national language during training in order to reach out to all the farmers. The average age of the household head was 60 years, indicating the generally advanced ages of Kenyan farmers. Households in Rongai had relatively higher numbers (6) of dependents compared to those in Njoro that registered the least number of dependents (4). On average, households in Njoro and Rongai had 4 and 5 dependants, respectively. This means that households in Rongai and Subukia areas were more likely to suffer from food insecurity than Njoro.

Cassava acreage and ranking. The majority of farmers in the project area grew cassava on relatively small plots. Farmers in Njoro Sub-county allocated the smallest size of land to cassava production despite owning larger parcels of land among the three Sub-counties. On average, farmers in Njoro allocate about 0.23 acres of land to cassava production compared to averages of 0.5 and 0.3 acres in Rongai and Subukia Sub-counties, respectively. In terms of production, Rongai farmers reported an average of 6 bags of cassava annually, while Njoro and Subukia sub-counties produced 2 and 3 bags, respectively.

Cassava was ranked as the second most important crop after maize. Approximately 7% of the sampled farmers in the three Sub-counties ranked cassava as the first most important crop, while 14% grew it majorly for subsistence and 86% grew the crop for both subsistence and commercial reasons. This indicates that cassava was becoming an important root crop in Nakuru County.

Cassava varietal characteristics. The highest ranked desirable cassava variety characteristic was high yield potential followed by early maturity characteristic. Other high ranking characteristics included good ugali (milled cassava food) properties, good milling properties and drought tolerance. Late maturity and susceptibility to pests and diseases were the most undesirable variety characteristics identified by farmers. These undesirable characteristics affirms the project's objective of breeding varieties to reduce susceptibility to diseases.

Cassava production and management. Access to appropriate and clean planting materials is critical for improved cassava productivity. Results obtained from this baseline study showed that a majority (44%) of farmers used cassava planting materials obtained from neighbours while 27% recycled their own cassava propagation material. Nineteen percent (19%) got planting materials distributed by NGOs. On disease management, the Cassava Mosaic and CBSD were identified as the most important diseases by 49% and 10% of the respondents, respectively. However, the majority of farmers (76%) did not apply any disease control measures, while 16% used other alternative disease control measures. Whereas 6% of the farmers controlled diseases using pesticides, about 2% of the respondents indicated that the cassava varieties they planted were resistant to diseases.

Concerning information on disease control and management farmers indicated obtaining it from different sources. Forty eight percent, 27%, and 21% of respondents indicated that they received information on disease management and control from their fellow farmers, public extension officers, and NGOs, respectively. This observation affirms that farmer-farmer exchange systems are an important channel through which agricultural information can be channelled. Hence there is need to convey the right and accurate information to the original recipients.

On harvesting methods, 88% of the farmers indicated that they practiced piecemeal harvesting as needed for consumption or sale arose. About 7% the farmers indicated that they did a one-off harvest, while a small minority (4%) combine the two harvesting methods depending on the occasion and need. The harvest practice largely depended on the intended use of the harvested cassava.

Cassava utilization and value addition. Farmers ranked boiling, deep frying and roasting as the three most popular methods of utilization. At least 80% of the farmers indicated that they boil cassava for consumption. Deep frying and drying was done by 7% and 1% of farmers, respectively. Other important value addition practices included chipping and drying, and milling. These results reveal a capacity gap in cassava utilisation and value addition options and calls for efforts towards enhancing the capacities of farmers to diversify products from cassava.

Capacity building. On the need for capacity building, respondent farmers indicated that they required capacity building in a number of cassava management practices. A majority of farmers (79%) cited Good Agricultural Practices (GAPs) as the most important need. Pest and disease control was ranked second most important capacity building need by 65% of the farmers. Post-harvest management and value addition were ranked third and fourth, respectively. These observations indicate a knowledge gap in cassava management and utilization among the surveyed farmers. Accordingly, efforts should be directed at strengthening value addition in the study area.

Conclusion and recommendations

This baseline survey revealed that the average age of farmers in the selected project locations was 60 years, indicating an aging farming community. As such efforts should be directed to promote agriculture amongst the youths. Specifically, there is need to analyse the cassava value chain and encourage the youths to be involved in activities that appeal to them such as marketing and value addition. Partnerships with County Governments and civil organisations would help the youths to gain skills required to embrace agricultural entrepreneurship.

The survey also indicated that cassava is becoming an important crop for the farmers in the study locations. From the baseline analysis, cassava was ranked the second most important crop, but yields were low. The study locations are dominantly farming communities with few farmers engaging in off-farm activities indicating the need to help the communities to transform their economies with the cassava value chain upgrading through product diversification and industrial applications. Engaging partners like EABL and various product development activities would help the rural communities through commercialisation of cassava.

Farmer–to-Farmer interaction is an important channel through which agricultural information is passed. Hence there is need to ensure that the first information recipients receive accurate and credible information to avoid misleading masses. Cassava utilisation and value addition remains a big gap that needs to be bridged through farmer training and product diverstification for various uses.

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