

BAMBARA NUT: A REVIEW OF UTILISATION, MARKET POTENTIAL AND CROP IMPROVEMENT

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ABSTRACT

Bambara groundnut (*Vigna subterranea* (L.) Verdc.) originated in West Africa but has become widely distributed throughout the semi-arid zone of sub-Saharan Africa (SSA). Sharing a high nutritive value with other widely consumed legumes, bambara has an appealing flavour which is reflected in demand from small local and niche markets. Despite its high and balanced protein content, bambara remains under-utilised because it takes a long time to cook, contains anti-nutritional factors and does not dehull easily. Bambara yields well under conditions which are too arid for groundnut (*Arachis hypogea*), maize (*Zea mays* L.) and even sorghum (*Sorghum bicolor* L.). Its drought tolerance makes bambara a useful legume to include in climate change adaptation strategies. Existing bambara products are not well promoted in the local or international markets and new products are needed that highlight its inherent nutritional and culinary advantages. A number of projects on bambara, involving several countries in SSA since the 1980s, have failed to stimulate a sustainable increase in the production of the crop. The absence of functioning value chains has been a factor in this failure, as accessible market outlets might provide the required incentive for smallholder households to obtain improved seed and invest more of their land and labour in the crop. There is little documented evidence of trade in bambara but circumstantial evidence indicates considerable international demand. More attention should be given, therefore, to market research and development, with crop improvement programmes being more market-led, if bambara is to make a greater contribution to household income and rural development in SSA.

Key Words: Anti-nutritional factors, *Vigna subterranea*

RÉSUMÉ

Les arachides Bambara (*Vigna subterranea* (L.) Verdc.) d'origine Ouest Africaine ont été largement répandues dans la zone semi aride sub saharienne. Avec sa valeur nutritive élevée à côté d'autres léguminees largement consommées, bambara a une saveur attractive qui se reflète dans sa demande sur des petits marchés locaux. Malgré sa teneur équilibrée en protéines, bambara reste sous utilisé par suite du long moment de cuisson, contient des facteurs anti-nutritionnels et sa coque ne s'enlève pas facilement. Bambara produit de bons rendements dans des conditions qui sont trop arides pour les arachides (*Arachis hypogea*), le maïs (*Zea mays*) et même le sorgho (*Sorghum bicolor*). Sa tolérance en sécheresse fait du bambara une légumine utile surtout lorsqu'il s'agit des stratégies d'adaptation au changement climatique. Les produits existants de bambara ne sont pas bien promus sur des marchés locaux ou internationaux et de nouveaux produits montrant tous les avantages nutritionnels et culinaires sont désirés. Un nombre de projets sur bambara impliquant plusieurs pays d'Afrique Sub Saharienne depuis 1980, ont échoué de stimuler une augmentation durable de la production de cette culture. L'absence de chaînes des valeurs fonctionnelles a été un facteur de cet échec, étant donné que des points de vente sur les marchés accessibles devraient motiver les petits ménages pour obtenir des semences améliorées et plus investir dans leurs terres et la main d'oeuvre. Il ya très peu d'évidence documentée sur le commerce du bambara mais des évidences circonstancielles font montrer

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Nutritional and Health Aspects of Food in Western Africa Ogugua Charles Aworh, Patricia Gyaa

Owusu-Darko, 2024-07-10 Nutritional and Health Aspects of Native West African Foods is part of an ongoing series that continues to build out Elsevier's Nutritional and Health Aspects of Traditional and Ethnic Foods series. Written by a gender diverse team of experts, this book explores native and wild West African foods from Cameroon, Ghana, and Nigeria, where 60% of West Africa live. Through valorization trials, the book analyzes nutritional components and the processing and safety of native plants and botanicals and shows how indigenous foods such as grains, fruits, tubers, fungi, and cheese make a global impact on diet-related health claims and disease. From handling and processing methods to regulatory issues and sustainable farming, this book presents a framework to discover the influence of historical eating habits on today's diets. Promotes global availability and insight into native West African foods available in Cameroon, Ghana, and Nigeria. Reviews the safety, processing, and health benefits of these foods. Explores both scientific and anecdotal diet-related health claims. Analyzes nutritional components of native plants through valorization trials for global market. Presents framework to determine if these foods meet local and international regulatory requirements and presents strategies to remedy non-compliance.

Processing, Nutrition and Value Addition Principles of Neglected and Underutilized African Foods Tilahun Seyoum

Workneh, Duncan Onyango Mbugue, Geremew Bultosa, 2026-01-30 Africa's agroclimatic conditions are conducive to a diverse array of indigenous foods from vegetables, fruits, and spices to fungi, insects, and roots. However, scientific documentation of traditional preservation, processing, and value addition of these species and their potential to heal and nourish is not well known to the global population. Processing, Nutrition and Value Addition Principles of Underutilized African Foods introduces traditional methods of processing and preserving indigenous foods from Africa while reporting on the commercial potential and nutritional constituents that contribute to a more healthful society and a sustainable planet. Written by a collaboration of authors from different parts of Africa and around the world, Processing, Nutrition and Value Addition Principles of Underutilized African Foods explores the neglected and underutilized agricultural and botanical diversity of Africa. Authors show how certain species such as African nightshades, sourplum, monkey oranges, ancient grains, edible insects, and more can have health, nutrition, and functional benefits while contributing to a sustainable global food system and potentially helping combat food insecurity. The taxonomy of each neglected species will be discussed along with distribution, planting area, yield, and loss and waste. The book also provides a comprehensive view of the societal attitudes towards these foods and delves into the reasons behind their neglect and underutilization despite their inherent health benefits. Explores traditional, neglected, and underutilized agricultural and botanical diversity of Africa. Highlights foods, health, nutrition, and functional benefits and contribution to a sustainable global food system. Addresses preparation, preservation, processing, and value addition of indigenous foods. Emphasizes global potential of indigenous foods for wider applications such as food insecurity. Offers

cultural and societal perceptions surrounding traditional African foods that are often sidelined in modern diets Food and Nutrition Security: Underutilized Plant and Animal-Based Foods Yasmina Sultanbawa, Michael Erich Netzel, Dharini Sivakumar, Olivia Renee Louise Wright, 2022-02-28 Prof Dharini Sivakumar was previously an Associate Partner at Simfresh International an agribusiness development company All other Topic Editors declare no competing interests with regard to the Research Topic subject Traditional and Indigenous Knowledge for the Modern Era David R. Katerere, Wendy Applequist, Oluwaseyi M. Aboyade, Chamunorwa Togo, 2019-09-05 While there is talk of the Fourth Industrial Revolution old and new challenges bedevil the world climate change nutrition and health poverty being at the top of the list In seeking solutions to these and other problems which afflict the modern era it is worthwhile to look into our collective past to the traditions and knowledges of our ancestors Such knowledge continues to exist in many parts of the world though now marginalized by homogenous Eurocentric ontology and epistemology This book presents a compilation of reviews case studies and primary research attempting to locate the utility of traditional and Indigenous Knowledges in an increasingly complex world It assembles chapter authors from across the world to tackle topics ranging from traditional knowledge based innovations and commercialization traditional medicine systems as practiced around the world ethnoveterinary practices and food innovation to traditional governance and leadership systems among others This book is an important resource for policymakers scholars and researchers of cultural studies leadership governance ethnobotany anthropology plant genetic resources and technology innovation and readers interested in the history of knowledge and culture as well as cultural activists and political scientists Features Unique combination of social science and anthropological aspects with natural science perspectives Includes summaries aimed at policymakers to immediately see what would be relevant to their work Combines case studies illuminating important lessons learned with reviews and primary data Multidisciplinary in the scope of the topics tackled and assemblage of contributors Global footprint with contributions from Africa Europe North America Asia and the West Indies David R Katerere Department of Pharmaceutical Sciences Tshwane University of Technology South Africa Wendy Applequist William L Brown Center Missouri Botanical Garden St Louis Missouri Oluwaseyi M Aboyade Department of Pharmaceutical Sciences Tshwane University of Technology South Africa and Nutritica SA The Innovation Hub Pretoria South Africa Chamunorwa Togo The Innovation Hub Pretoria South Africa *Pulses A.* Manickavasagan, Praveena Thirunathan, 2020-05-25 World health authorities recommend people maximize their protein intake through vegetable sources such as pulses and reduce protein intake from animal sources Increasing vegetable protein intake has been shown to be positively associated with the reduction of both cardiovascular disease related mortality and all cause mortality Pulse consumption has been shown to improve satiety and metabolism of glucose and lipids due to their high protein and fiber content which makes their consumption ideal for preventing and managing obesity In recent years there has been increasing demand for pulses and pulse based products in developed countries Several large scale collaborative

research projects on pulse products have been initiated by government agencies Similarly established multinational food companies have developed pulse product units Pulses Processing and Product Development fulfills the need for a comprehensive book on processing and products of pulses The book addresses a specific pulse with each chapter to meet a wide range of audiences from undergraduate students to consumers **Enhancing Crop Gene Pool Use** Nigel Maxted, M Ehsan Dooloo, Brian V Ford-Lloyd, 2016-05-31 Maintaining food security in the face of human population increase and climate change is one of the critical challenges facing us in the 21st Century Utilisation of the full range of agrobiodiversity will be a necessary tool in addressing this challenge In this book a team of international contributors review all aspects of utilization and conservation of crop wild relative CWR and landrace LR diversity as a basis for crop improvement and future food security This book will appeal to a wide array of specialists and postgraduate students such as those working in the fields of agrobiodiversity conservation and use conservation ecology botany genetics plant breeding and agriculture Tropical Agriculture, 2015 Promotion of Bambara Groundnut (Vigna Subterranea) International Bambara Groundnut Network. International Workshop, 2003 *Bambara groundnut: Utilization and Future Prospects* Victoria A. Jideani, Afam I. O. Jideani, 2021-09-27 The Bambara groundnut BGN or Vigna subterranea is an extremely hardy grain legume As it produces reasonable yields even under conditions of drought and low soil fertility it is also a climate smart crop Previously underutilized BGN is the subject of growing interest among researchers and consumers for its balanced nutritional profile Indigenous consumers of BGN report medicinal benefits from the plant however such knowledge is at risk of being lost with the urbanization and changing lifestyles of younger generations To date there is no comprehensive resource on the Bambara groundnut despite market demand for plant proteins around the globe Authored by scientists who have researched and developed patents using BGN Bambara Groundnut Utilization and Future Prospects aims to fill this gap The text provides in depth coverage on breeding food and feed utilization medicinal benefits and future research prospects Drawing on both indigenous knowledge and cutting edge research Bambara Groundnut is the first book to fully explore the potential of this remarkable crop Food and Potential Industrial Applications of Bambara Groundnut Samson A. Oyeyinka, Beatrice I. O. Ade-Omowaye, 2021-10-06 Bambara groundnut Vigna subterranea is a crop native to the Bambara tribe of Mali and is grown as a subsistence crop in Africa Recent advances in research however have brought the crop to the forefront of the sustainable agriculture movement The Bambara plant is highly drought tolerant and rich in protein and carbohydrates including starch These macromolecules have enormous industrial potentials For example the starch in Bambara grain has been found to exhibit higher double viscosity than conventional corn starch Modified Bambara groundnut starch has been used to produce edible bioplastics that could be upgraded industrially to suit the fourth industrial revolution shift Bambara plants are also a natural source of soluble fiber which is gluten lactose and cholesterol free with potential as a stabiliser thickener and gelling agent as well as a cryoprotectant in frozen products The health benefits include lowering of cholesterol

levels levelling of blood glucose and as a detoxing aid Furthermore several researchers have explored the grain either alone or as composite with cereal and tubers for the development of value added products Food and Potential Industrial Applications of Bambara Groundnut presents in a clear coherent way the research findings on Bambara grain and its status as a promising food and industrial crop *Bibliography of Agriculture* ,1977 *Bibliography of Agriculture with Subject Index* ,1977 *A Global Mapping System for Bambara Groundnut Production* Sayed N. Azam-Ali, José Aguilar-Manjarrez, Mohammad Bannayan-Avval, 2001-01-01 This report describes an approach to assess locations and areal expenses that have potential for the production of bambara groundnut *Vigna subterranea* L Verdc across the world The methodology was applied both to regions such as Africa where the crop is widely cultivated but where experimental evidence is limited and to new regions that have not previously been associated with bambara groundnut but where environmental factors are conducive for productive growth A weather generator and a crop simulation model of bambara groundnut BAMnut were incorporated into a Geographical Information System GIS to predict for the first time bambara groundnut production for the world BAMnut is a process based model that uses physiological principles to describe the capture and use of environmental resources principally solar radiation and soil moisture This mechanistic approach allows crop growth and yield to be predicted for regions beyond those used in the development of the model or regions where bambara groundnut is currently cultivated The preliminary identification of potentially suitable areas for production based on the agro ecological requirements of the crop serve as a useful prelude to detailed field investigations on bambara groundnut to identify appropriate management practices and may provide a basis for a similar assessment on many other underutilized crops Publisher s description *Bambara Groundnut Vigna Subterranea (L.) Verdc* Joachim Heller, 1997 **The Phosphorus and Nitrogen Nutrition of Bambara Groundnut (*Vigna Subterranea* (L.) Verdc.) in Botswana Soils** Gaebewe Modirwa Ramolemana, 1999

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