NARO

NARL-KAWANDA
NATIONAL AGRICULTURAL RESEARCH LABORATORIES - KAWANDA

FLAVOURANTS/ COLOURANTS MARKET STUDY IN UGANDA

Report

November 2022



ABOUT NARO AND USAID'S FEED THE FUTURE (FTF) -AGRICULTURAL RESEARCH ACTIVITY

NARO is currently implementing a new strategic plan for 2018/19 – 2027/28 which is in line with the National Development Plan (NDP III) that focuses on Agro-industrialization. Correspondingly, NARO in collaboration with CGIAR have adopted a demand-led breeding approach to target several market segments along the commodity value chain. This market-led approach is expected to enhance the adoption and impact attained from the use of new and improved technologies.

In line with the above strategy, NARO identified Bananas (Musa spp.) and purple-fleshed sweet potatoes as priority commodity value chains from which Natural flavours could be derived. Natural flavours have proven to be important alternatives to the use of synthetic flavours in the food industry. Natural flavours in the recent past have gained economic advantage over synthetic flavours because of their non-toxic, non-carcinogenic and bio-degradable nature. They are environmentally friendly and safe for workers and users in food industries. Therefore NARO, with support from USAID's Feed the Future (FtF) - Agricultural Research Activity intends to support domestic production and commercialisation of Flavorants/ colourants by starting with bananas, and purple-fleshed sweet potatoes. Ultimately the objective is to reverse the importation of synthetic Flavourants/ colourants and produce natural Flavourants/ colourants for the local and export markets.

It is against this background that the Independent Consultant – Stephen Anecho was engaged to be able to collect relevant information from stakeholders engaged in the industry, policy, and key informants to inform NARO of among others; the existing and potential/predicted market segments, potential demand and supply, and market prices of synthetic and natural Flavourants/ colourants on the Ugandan market and available investment/ market opportunities.

ACKNOWLEDGEMENT

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DISCLAIMER

This report is a product of the independent consultant. The findings, interpretations, and conclusions expressed do not necessarily reflect the views and policies of NARO and USAID'S Feed the Future (FTF) - Agricultural Research Activity or their funding agencies.

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LIST OF ACRONYMS

CAGR	Compound Annual Growth Rate
CGIAR	Consortium of International Agricultural Research Centres
EAC	East African Community
ITC	International Trade Centre
NACRRI	National Crops Resources Research Institute
NARL	National Agriculture Research Laboratories
NARO	National Agriculture Research Organisation
NDP	National Development Plan
UNBS	Uganda National Bureau of Standards
URA	Uganda Revenue Authority
USD	United States Dollar





EXECUTIVE SUMMARY

About The Assignment

NARO is currently implementing a new strategic plan 2018/19 – 2027/28 which is in line with the National Development Plan (NDP III) that focusses on Agro-industrialization. Correspondingly, in collaboration with CGIAR, NARO has adopted a demand-led breeding approach to target several market segments along the commodity value-chain. This market-led approach is expected to enhance adoption and impact attained from use of new and improved technologies.

NARO under National Agricultural Research Laboratories (NARL Kawanda) and National Crops Resources Research Institute (NACRRI) intends to develop the natural flavours and colours from bananas and purple-fleshed sweet potato and other crops with potential. The Activity will also seek to achieve three specific objectives namely, **i)** Facilitate the release and commercialization of varieties, **ii)** develop improved crop and animal production and management technologies in response to emerging threats and market demand and **iii)** align research with market needs and mobilize additional domestic resources to support agricultural research. In Uganda, Bananas (Musa spp.) are an important staple and food security crop to more than 3 million households. However, they are mainly utilized for their fruit, leaving huge volumes of by-products and wastes such as Fibres, leaves and banana flowers among others. Sweet potatoes are also an important food crop grown and consumed by majority of Ugandans and excess produce is usually marketed to supplement family income.

Natural flavours derived from plant-based materials such as banana flowers, banana leaves, ripened bananas, and the purple-fleshed sweet potatoes have therefore proved to be important alternatives to the use of synthetic flavours in the food industries. They have gained economic advantage over synthetic flavours because of their non-toxic, non-carcinogenic and bio-degradable nature. They are environmentally friendly and safe for the workers and users in food industries. Banana and Sweet Potato, being widely grown in Uganda, are rich sources of raw materials for natural flavours processing but are largely unexploited.

Therefore, a flavours market study was commissioned with the aim of generating information for establishing the commercialization potential of natural flavours and colours in the food industry for the domestic and export markets in Uganda. Further, the Flavours market study focused on key stakeholders to collect information on the existing and potential/predicted market segments, potential demand and supply and market prices of natural flavours and strategies for development and commercialization of the natural flavours and food colours in Uganda.

About this report

This report presents qualitative and quantitative findings and information on the current status of the synthetic and natural Flavorants and colourants markets in Uganda. It presents a mapping of the actors in the market, the products and the potential for substitution of synthetic with natural Flavorants and colourants.

Study methodology

The flavours market study was based on participatory and consultative approaches involving both quantitative and qualitative data collection methods. Both primary and secondary data were used in this study with the former collected in a rapid appraisal exercise where key informant interviews were held in all the four main regions of Uganda. Secondary data were mined from leading trade statistics sites such as ITC, UBOS, and UNCOMTRADE. Data were collected on variables such as quantities of Flavours (synthetic and natural) used in the food industries in domestic and export markets, types of consumer segments, nature of market off-takers such as local traders/ middlemen and distributors, food and beverage processors, and importers who source the different types of Flavorants and colourants. Other data collected included the profiles the flavours and colours used in Uganda, the products in which they are used, map out users of natural flavours in the food industries in domestic and export markets and market segmentation of the commercial natural flavours. Additionally, data on gender preferences, challenges, and variation among natural Flavourant users were also collected.

Key Study Findings

Users of Flavorants in the food industries in domestic and export markets

Mapping of the users of Flavorants and colourants revealed that majority use synthetic ones which are imported from mainly India and Kenya. The users are in the baking and confectionary business, the beverage (alcoholic and non-alcoholic/carbonated and non-carbonated) as well as in the dairy industry (in Flavoured milk, ice creams and yoghurts). The natural Flavorants and colourants are not common although some beverage and confectionary producers extract some colours and juices from fresh fruits such as lemon and pineapple.

Prevalence and quantification of Flavorants (synthetic and natural) in the food industries in domestic and export markets

The global natural Flavorants market picked at US$1,580 million by 2021 according to ITC (2022). The leading exporters of natural Flavorants by percentage of market share among the top ten are the Netherlands (15%), China (13%), USA (11%) and Denmark (11%). The leading exporters of natural Flavorants and colourants by percentage of market share among the top ten are the Netherlands (15%), China (13%), USA (11%) and Denmark (11%). On the other hand, the global market for synthetic Flavorants and colourants was valuated at US$ 24.68 billion by 2021 led by Ireland, France, USA, Germany and Switzerland as the top exporters.

Kenya leads the exporters of natural colourants in Africa with an annual value exported at about US$ 3 million by 2021 followed by Eswatini (US$351,000), Côte d'Ivoire (US$1.4 million), and South Africa (US$977,000). Africa shares about 1.5% of all global import value of natural colourants which hit US$25.2 million by 2021 from US$ 19.3 million five years ago in 2017. Egypt, South Africa, Algeria, Kenya and Nigeria are the top five leading importers of natural colourants in Africa whose combined demand is estimated at US$24.4 million.

Uganda between 2021 and 2022, imported about 7.1 million MT of Flavorants and colourants valued at US$ 13 million according to URA data. Our projections show that given the volatile nature of prices now, if there is price stabilisation, we assumed an annual 2% growth in value for the period 2023-2024 when the country will import US$22.8 million worth of Flavorants and yet by 2027, the country will be importing about US$193.9 worth of Flavorants and colourants.

Profile, sources, and prices of Flavorants used in the food industry in domestic and export markets

The main Flavorants and colourants used on the Ugandan market are synthetic in nature and these are imported from Kenya, India and few from Dubai. These are used in the soft drinks (UNBS has 337 certified flavoured drinks on the Ugandan market). Other products are Dairy ice cream, cakes, bread, snacks, flavoured milk, flavoured sweets, yoghurt, and potato crisps. The colourants are also used in the alcoholic beverages such (the Ugandan market has 242 certified types of alcoholic beverages such as gins, liqueurs, Vodka, and whiskeys.

There is a wide range of colourants and Flavourants on the market including strawberry, pineapple, vanilla, passion fruit, coconut, banana, mint, blue berry, apple, orange, caramel /cream caramel, raspberry essence, rose essence, mango essence, guava peach and honey flavour. Flavours and colours used in the bakery and confectionary businesses are priced uniformly within different regions. The most common price is UGX 5,000 per unit (litre/bottle) although some Flavourants and colourants such as pineapple, blueberry, bubble gum and coconut are more expensive priced at between UGX 6,000 and UGX 9,000 per litre.

Non-alcoholic beverage producers get their Flavourants and colourants such as ginger, rosemary, lemon grass, aloe vera, beetroot and others at a cost between UGX 1,000 and UGX 4,500 per kilogram. The wholesalers including supermarkets sell their Flavourants and colourants using the brand names Pradip, Top lure, Backaldin and Kasaf. The most expensive brands are the Pradip Flavourants and colourants priced between UGX 4,500 and UGX 6,000 per 50ml bottle.

Substitutes for synthetic Flavourants and colours and related products in domestic and export markets

Although banana and purple-fleshed sweet potato are suggested as possible substitutes, the users of these colourants and Flavourants prefer a product with as high quality, stable to temperature and stable in supply. Some showed support to produce natural Flavourants and colourants in Uganda as quoted here below.

> “Natural Flavourants like purple fleshed sweet potatoes is good for human health since it has no chemicals in it - ***Mini –supermarket manager in Lira city”.***

> “The existing Banana flavours on the market get spoilt very quickly”. - ***Mini supermarket manager in Lira city.***

> “The substitutes should be for Strawberry, Coconut, Vanilla, lemon, pineapple, orange, and banana which are currently on the market but in synthetic form” - ***Mini supermarket manager in Lira city.***



Key market segments for commercialized natural Flavorants

The main market segments for the natural Flavorants and colourants identified during this study are.



Industrial food manufacturers *(Bread, biscuits, crips etc.)*



Industrial drink manufacturers *(carbonated, non-carbonated, alcoholic, non-alcoholic drinks, yoghurt, ice cream)*



Cottage industries *(Confectioneries, packed juices, etc.)*



Home and restaurant/hotel made foods and drinks

Recommendations:

The following recommendations are made based on evidence generated from this study.

i. NARO/ NARL should be intentional in building strategic partnerships (Private-private and or Public-Private) and collaborations so as to expand production capacity and accelerate food ingredients market competitiveness. Currently NARO/NARL should seek to partner with private companies like Desbro, Snowmans and Coca-Cola to product test some of the currently produced local colourants/ Flavourants at NARO/NARL and as well conduct some market product testing and feedback gathering. This will help to generate product feedback and continuous product refinement to suit different customer preferences and tastes.

ii. NARO/NARL FtF Research Activity should solicit proposals from nascent private sector firms that are into extraction of natural Flavorants and support them through business accelerator programs that will help them better refine their products offerings, design comprehensive business plans and marketing strategies, better branding to ensure better market penetration. In addition the above private sector firms could be supported to become investment ready so as to enable them receive third-party funding, technical assistance, business development, business training and market development support to enable them to grow their nascent business. This would go a long way to kick-start the nascent Flavorants sub-sector.

iii. NARO/NARL needs to conduct some benchmarking with countries in Africa such as Kenya, South Africa, Egypt, and Eswatini for R&D purposes on how to stimulate this nascent local market opportunity to not only supply domestic consumers but the entire East African Region.

iv. NARO/NARL FtF Research Activity should on-board MSc. Students, preferably in agricultural and Applied economics disciplines or Food Science and Technology to conduct their studies on 'consumer willingness to pay' for the different product attributes of banana and purple-

fleshed sweet potatoes. This could be conducted using a discrete choice experiment on consumer's willingness-to-pay different Flavourants/ Colurants attributes. These studies could focus on using approaches such as the mixed logit (MXL) and latent class logit (LCL) in order to better understand the preferences of banana and purple-fleshed sweet potatoes customers. Their recommendations will inform further product refinement to suit the different market segments.

v. NARO/NARL Government should coordinate its agencies that are responsible for research, regulation, taxation, export promotion and the private sector since many innovations from research are stifled by actions of such agencies such as over taxation and lack of clear standards at the start of rolling out innovations.

vi. NARO/NARL and FTF Research Activity should advocate to relevant government ministries to increase efforts in regulation and monitoring of the quality of Flavorants and colourants being imported onto the Ugandan market. This will help address the loopholes with regard to poor quality products that are currently flooding the domestic markets with a direct impact on consumers' health. Currently there is emergence of a myriad of new products under existing lines for which no standards exists with the regulator – UNBS or URA.

vii. NARO/NARL should start output market linkages with organized farmer groups to supply the raw materials for onward extraction of Flavorants/ Colourants from bananas and purple-fleshed to supply to identified local private sector partners that would like to partner with NARO/NARL on promoting the said value chains. This will go a long way to starting to address the seasonal demand gaps in the natural Flavorants and colourants markets.

viii. In partnership with the private or public sector actors, NARO/NARL and FTF Research Activity should need to design an awareness campaign for the natural Flavorants/ Colourants that they intend to introduce on the Ugandan market. This is because evidence shows that the current market is dominated by imported synthetic products amidst an expanding domestic manufacturing and food and drinks sectors. This will help in import substitution.





CHAPTER 1: INTRODUCTION

1.1 Background to the study

NARO is currently implementing a new strategic plan 2018/19 – 2027/28 which is in line with the National Development Plan (NDP III) that focusses on Agro-industrialization. Correspondingly, in collaboration with CGIAR, NARO has adopted a demand-led breeding approach to target several market segments along the commodity value-chain. This market-led approach is expected to enhance adoption and impact attained from use of new and improved technologies.

In Uganda, Bananas (Musa spp.) are an important staple and food security crop to more than 3 million households. However, they are mainly utilized for their fruit, leaving huge volumes of by-products and wastes such as fibres, leaves and banana flowers among others. These are mostly discarded due to lack of knowledge and suitable technology for their transformation into other value-added products. Efficient utilization of banana by-products and wastes through development of new products can potentially create additional income streams for smallholders, create employment opportunities for other value chain actors and increase foreign exchange earnings of the country.

Sweet potatoes are also an important food crop grown and consumed by majority of Ugandans and excess produce is usually marketed to supplement family income. Astonishingly, Uganda is now the leading producer of sweet potatoes in Africa. Purple pigments we hope to extract from the purple-fleshed sweet potato could be used to colour food, replacing synthesized Flavours.

Natural flavours derived from plant-based materials such as banana flowers, banana leaves, ripened bananas, and the purple-fleshed sweet potatoes have therefore proved to be important alternatives to the use of synthetic flavours in the food industries. They have gained economic advantage over synthetic flavours because of their non-toxic, non-carcinogenic and bio-degradable nature. They are environmentally friendly and safe for the workers and users in food industries. Banana and Sweet Potato, being widely grown in Uganda, are rich sources of raw materials for natural flavours processing but are largely unexploited.

Overall, the proposed flavours Market Study is aimed at generating information for establishing the commercialization potential of natural flavours in the food industry for the domestic and export markets. The Activity however seeks to achieve three specific objectives namely, i) Facilitate the release and commercialization of varieties, ii) develop improved crop and animal production and management technologies in response to emerging threats and market demand and iii) align research with market needs and mobilize additional domestic resources to support agricultural research. Further in line with the above objectives, the flavours market study will focus on key stakeholders to collect information on the existing and potential/predicted market segments, potential demand and supply and market prices of natural flavours and strategies for development and commercialization of the natural flavours in Uganda.

1.2 Overview of the Flavorants and colourants market

1.2.1 Global context

The global food and drink market was worth USD 5.83 trillion in 2020. The market is expected to grow at a 7% compound annual growth rate to reach USD 8.16 billion by 2025 (The Business Research Company, 2021). The global food flavours market size in 2020 was valued at US$12,713 million and projected to reach US$19,224 million by 2030, which is a growth rate of CAGR 3.6 percent (Allied Market research, 2022)[1]. The global growth for food and beverage flavours has been driven by demand for new flavours, continuous industry innovation to come up with innovative technologies, heavy inflows of investments in Research and Development (R&D) activities and a growing demand from the ready-to-eat meals and fast-food industry. The growing demand for natural flavours has been fuelled by the European market's increasing demand for commercialised clean label/green food products free of additives and any other harmful chemicals (Allied Market research, 2022).

According to the Global Market Insights report (2022)[2], Growing sensory-oriented consumers and changing food habits is expected to drive the growth of flavours and enhancers product market. It is estimated that the flavours and enhancers product market cap was at US$ 421 million in 2021 and is projected to exhibit growth at a CAGR of 5% in the forecast period to US$ 2,302 million by 2028. Rising demand for new and innovative flavoured food and beverages due to growing sensory-oriented consumers and changing food habits propels the demand for flavours and enhancers. Additionally, emerging applications in instant soups, snack foods, and frozen dinners should drive the Africa food ingredients market share in the next five years.

Food ingredients are additives used in food and beverages to perform various functions such as improving or maintaining freshness, ensuring safety, and enhancing taste, nutritional value, appearance, and texture. For instance, vitamin A & D, Folic acid, niacin, pyridoxine, and calcium carbonate are added to food products such as bread, breakfast cereals, flour, biscuits, milk, and pasta to maintain their nutritive value and improve the taste. The global food flavours market is segmented by type as natural or artificial/synthetic and by end user as beverage (Alcoholic drinks, soft drinks, hot drinks or others), dairy & frozen products, bakery & confectionery (bakery, chocolate, confectionery & ice cream), savoury & snacks and animal & pet food (Allied Market research, 2022; Persistence Market research, 2022).

1 https://www.alliedmarketresearch.com/food-flavors-market

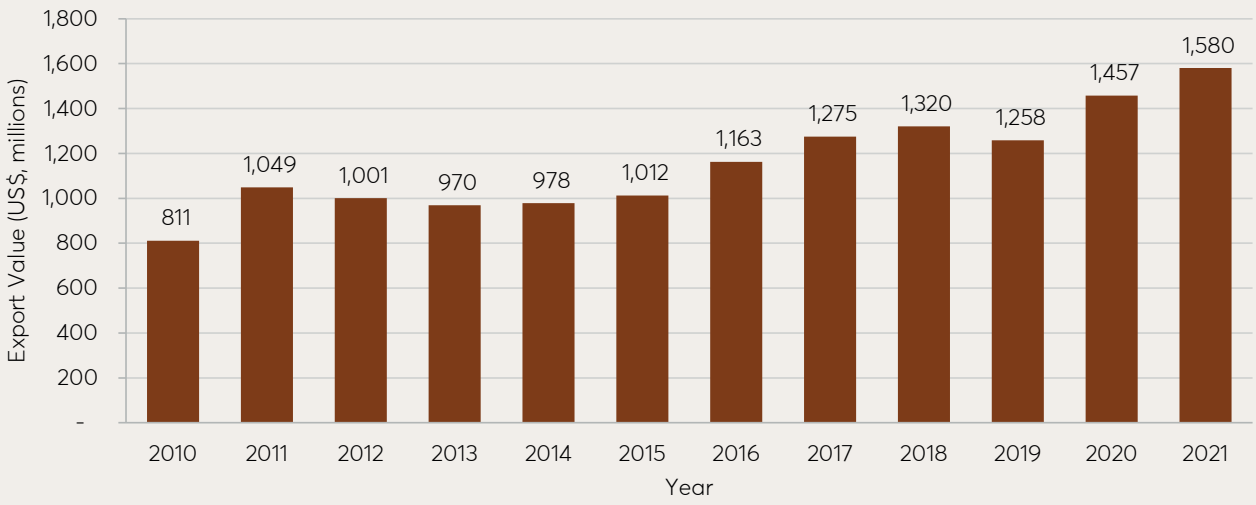
2 https://www.gminsights.com/industry-analysis/africa-food-ingredients-market

1.3 Global natural and synthetic colourant and Flavorants exports and imports (value & growth)

1.3.1 Global natural colourant exports

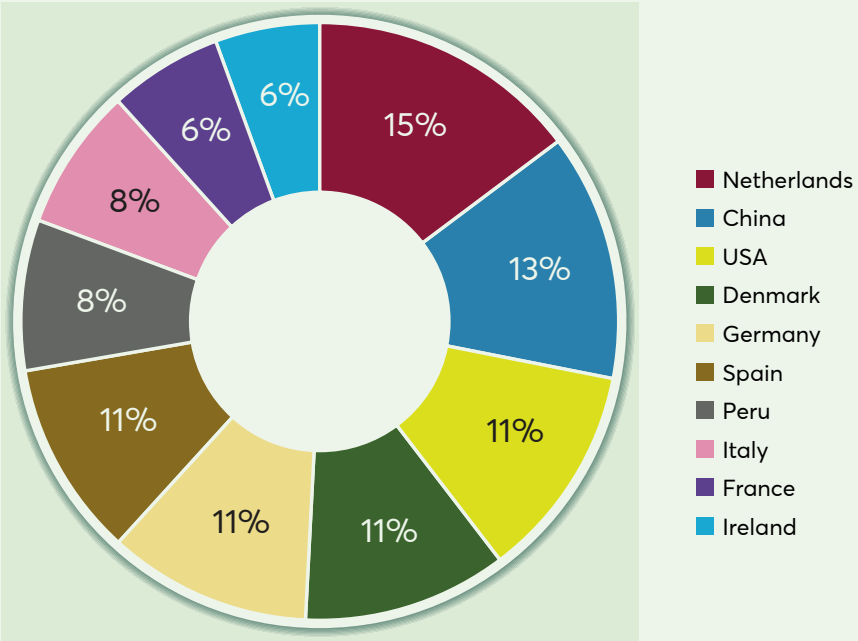
By 2021, the global natural colourants export market was valued at US$ 1,580 million and the trend shows that this has been growing since 2012 from US$ 1,000 million, representing about 58% growth (Fig 1). The top ten leading world exporters of natural colourants have a total share of 76% of the total market having shared US$ 10.5 million between 2010 and 2021. The leading exporters are the Netherlands (15%), China (13%), USA (11%) and Denmark (11%) (Fig:2).

Fig:1: Global natural colourants exports



Source: ITC (2022)

Fig:2: Top 10 natural colourants exporters (2010-2021)

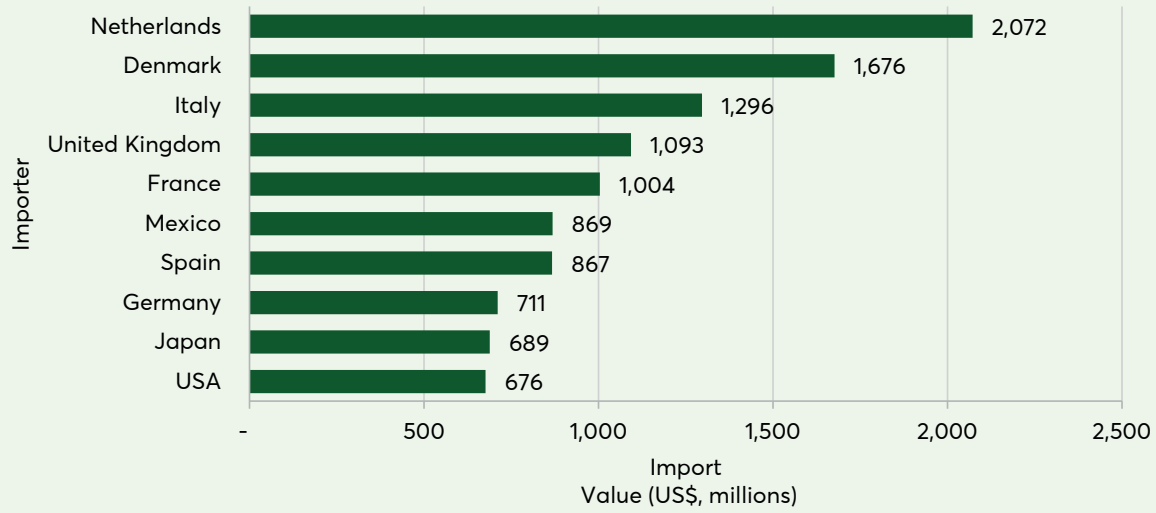


Source: ITC (2022)

1.3.2 Global natural colourant and Flavorants imports

Although the Netherlands and Denmark are top exporters of natural colourants, they are also top importers of the same materials. Others are Italy, UK, France, and Mexico. The top five world importers spend about US$7,140 million on imports (Fig:3).

Fig:3: Top 10 natural colourants and Flavorants importers (2010-2021)



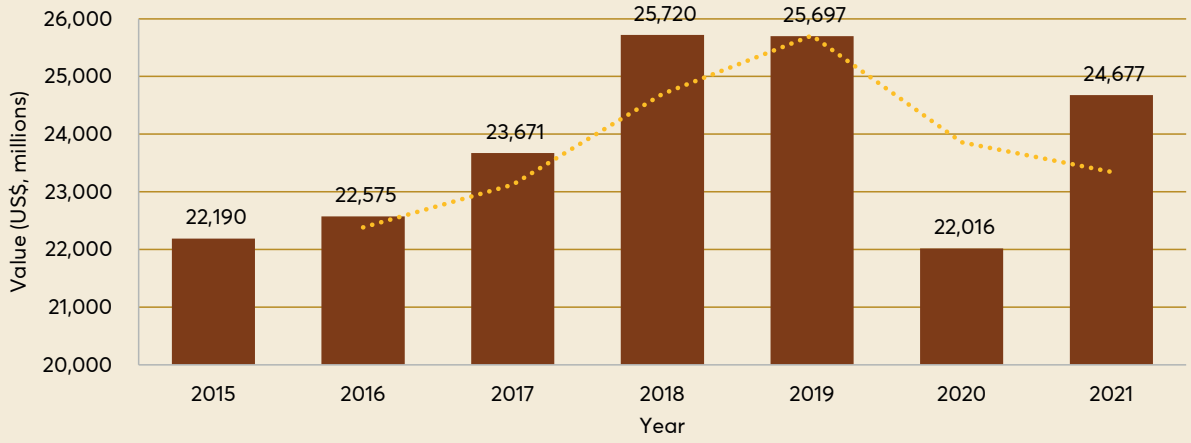
Sources: ITC calculations based on UN COMTRADE and ITC statistics, 2022.

1.3.3 Global synthetic Flavorants and colourants exports and imports (value & growth)

These are classified as mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, based on one or more of these substances, of a kind used as raw materials in industry; other preparations based on odoriferous substances, of a kind used for the manufacture of beverages.

The global market for synthetic Flavorants was estimated at US$24.7 billion by 2021 after bouncing back from the COVID 19 pandemic shock yet in 2019 the exports were US$25.7 billion (Fig:4). By 2021, the USA, France, Mexico, Germany and UK were the leading importers of synthetic Flavorants and colourants globally. The five countries imported US$10.5 billion worth of synthetic Flavorants and colourants in 2021, led by USA with US$3.5 billion (Table 1).

Fig:4: World exports of synthetic Flavorants and colourants (2015-2021)



Sources: ITC calculations based on UN COMTRADE and ITC statistics, 2022.

The top 15 exporters of synthetic Flavorants commanded a total market share of US$21.8 billion which is 88% of the market by 2021. Ireland, France, USA, Germany, Switzerland and Singapore are the leading exporters (Fig 5). However, there has been entry of new exporters into the market who have reduced this share from 91% in the last five years. The new entrants include Italy, Indonesia, Hong Kong, Turkey and Thailand whose market share stood at US$941.5 million by 2021, representing about 3.8% of the global market.

Fig:5: Top 15 world exporters of synthetic Flavorants (2015-2021)

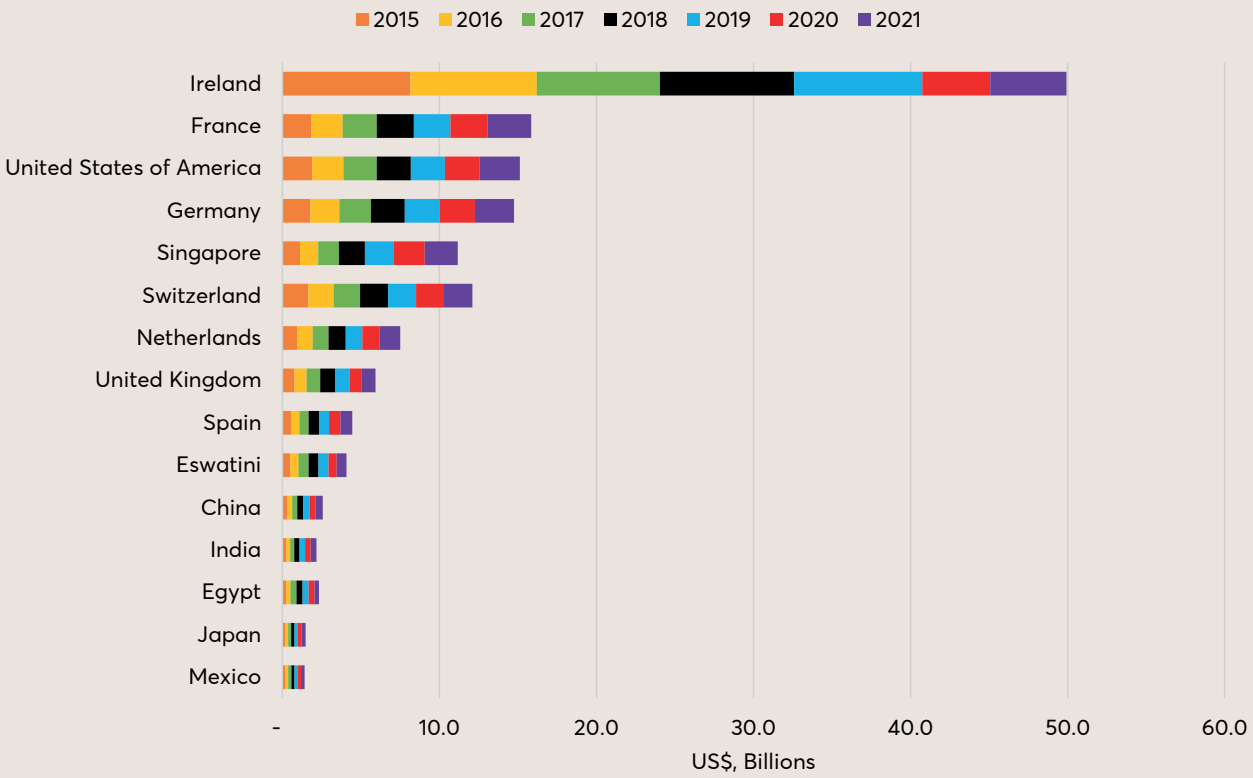


Table 1: Top global synthetic colourants & Flavorants importers

	Synthetic colourants/Flavorants							
Importers	2015	2016	2017	2018	2019	2020	2021	2015-2021
United States of America	2.62	2.45	2.57	3.09	3.20	3.22	3.47	20.62
France	2.19	2.16	2.19	2.29	2.29	2.30	2.70	16.11
Mexico	1.50	1.57	1.73	1.80	1.87	1.86	1.91	12.24
Germany	1.32	1.26	1.26	1.41	1.40	1.34	1.21	9.20
United Kingdom	1.02	0.92	0.92	1.04	0.98	0.94	1.22	7.05
Spain	0.81	0.82	0.89	0.93	0.91	0.81	0.93	6.12
Italy	0.68	0.70	0.69	0.72	0.68	0.66	0.76	4.90
Russian Federation	0.43	0.45	0.53	0.63	0.64	0.69	0.81	4.17
Thailand	0.50	0.54	0.54	0.58	0.62	0.65	0.69	4.11
Canada	0.46	0.47	0.51	0.55	0.55	0.58	0.76	3.87
Poland	0.45	0.46	0.50	0.58	0.58	0.61	0.62	3.80
South Africa	0.47	0.46	0.57	0.58	0.56	0.48	0.57	3.69
China	0.44	0.43	0.45	0.49	0.48	0.49	0.57	3.36
Viet Nam	0.38	0.38	0.40	0.44	0.47	0.51	0.56	3.14
Netherlands	0.34	0.37	0.42	0.48	0.45	0.47	0.58	3.12

1.4 Continental, regional, and Ugandan colourants & Flavorants market context

1.4.1 Natural colourants exports in Africa (value & growth)

Kenya leads the exporters of natural colourants in Africa with an annual value exported at about US$ 3 million by 2021 and a trend that shows growth from US$2.3 million five years ago in 2016. The other top exporters are Eswatini (US$351,000), Côte d'Ivoire (US$1.4 million), and South Africa (US$977,000). Uganda only last exported natural colourants worth (US$3,000) between 2016 and 2017 (Table 2).

Table 2: Top natural colourants exporters in Africa

	Value of exports from selected countries in Africa and EAC (000'US$)						
	2016	2017	2018	2019	2020	2021	2010-2021
Kenya	2,288	2,356	2,812	4,126	3,414	3,002	17,998
Eswatini	812	1,152	1,122	1,051	616	351	5,104
Côte d'Ivoire	587	1,544	2,308	757	221	1,371	6,788
South Africa	501	725	987	664	823	977	4,677
Egypt	52	103	216	130	124	31	656
Ethiopia	-	-	-	-	-	-	-
Uganda	-	-	-	2	3	-	5
Rwanda	1	2	-	-	-	-	3

Sources: ITC calculations based on UN COMTRADE and ITC statistics, 2022.

1.4.2 Natural colourant imports in Africa (value & growth)

Africa shares about 1.5% of all import value of natural colourants which hit US$25.2 million by 2021 from US$ 19.3 million five years ago in 2017. Egypt, South Africa, Algeria, Kenya, and Nigeria are the top five leading importers of natural colourants in Africa whose combined demand is estimated at US$24.4 million which has grown from US$18.8 million within five years.

The global export market for natural colourants was estimated at about US$1.8 billion by 2021 of which Africa's top exporters led by Egypt, South Africa, Algeria, and Kenya share only 1.4%. Over the last 10 years since 2012, Egypt exported natural colourants worth US$108.7 million followed by South Africa at US$87.5 million and Algeria at US$24.5 million. By 2021, Uganda exported US$94,000 worth of natural colourants and in the last 10 years its total exports amounted to US$1.1 million (Table 3). Uganda has been increasingly importing more and more natural colourants over the years. By 2017, Uganda imported US$81,000 worth of natural colourants which increased to US$ 225,000 by 2020. In contrast to other counterparts in the East African Community (EAC), Kenya's natural colourants imports increased from US$830,000 in 2017 to US$1.1 million in 2020 while Tanzania imports increased from US$28,000 in 2017 to US$116,000 in 2020. By 2020, the entire EAC market demand for natural colourants was valued at US$ 1.5 million in imports (Table 3).



Table 3: Top natural colourants exporters in Africa (2012-2021)

Value of exports from selected countries in Africa and EAC (000'US$)											
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2021
World	1,492,012	1,375,761	1,333,276	1,366,747	1,490,099	1,597,522	1,659,286	1,591,438	1,735,438	1,833,055	18,224,924
Africa's top importer share of world market	1.2%	1.3%	1.3%	1.4%	1.6%	1.2%	1.5%	1.6%	1.4%	1.4%	1.4%
Egypt	6,600	8,192	8,242	9,048	11,417	8,344	11,836	11,391	10,728	10,926	108,666
South Africa	8,315	6,283	6,013	6,533	7,411	7,259	7,786	7,571	7,806	8,542	87,455
Algeria	1,144	857	1,071	1,598	2,081	1,533	3,252	4,008	3,795	2,690	24,492
Kenya	762	787	933	874	1,079	830	835	730	1,050	1,551	10,375
Nigeria	461	609	1,139	542	747	877	342	1,155	760	694	7,489
Côte d'Ivoire	202	356	351	205	259	349	355	326	332	480	4,267
Ethiopia	519	684	85	809	591	32	45	143	250	105	3,839
Uganda	7	18	147	88	28	81	197	202	225	94	1,133
Tanzania	11	8	7	21	30	28	65	126	116	106	538
Rwanda	14	2	2	10	11	13	4	12	9	12	97
Burundi	7	-	-	14	10	1	-	3	3	4	45
South Sudan		2							3	2	7

Sources: ITC calculations based on UN COMTRADE and ITC statistics, 2022.

1.5 Global synthetic colourants and Flavorants trade

The global synthetic colourants and Flavorants market has been growing over the years from US$22.19 billion in 2015 to US$24.68 billion in 2021. Ireland was the leading exporter of synthetic colourants exporter by 2021, exporting US$4.86 billion worth of colourants followed by France at US$2.78 billion followed by USA, Germany, and Switzerland (Table 4). These colourants and Flavorants are classified under code 3302 as "Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, based on one or preparations of odoriferous substances used in the beverage industry". In Africa, South Africa and Kenya are among the world's top ten exporters with US$0.62 million and US$0.24 million in exports by 2020 (Table 5). Uganda Exports much of the synthetic colourants to DRC, Burundi, Rwanda, and Kenya although between 2019 and 2020 Rwanda did not buy any colourants because of the closed borders between the two countries (Fig:7).

Table 4: Top 15 world synthetic colourants and Flavorants suppliers (2015-2020)

Value of top global synthetic colourants and Flavorants exports (US$ billion)								
	2015	2016	2017	2018	2019	2020	2021	2015-2021
World	22.19	22.58	23.67	25.72	25.70	22.02	24.68	166.55
Ireland	8.15	8.04	7.85	8.54	8.16	4.31	4.86	49.93
France	1.85	1.99	2.16	2.36	2.33	2.37	2.78	15.85
United States of America	1.90	2.00	2.12	2.16	2.18	2.20	2.57	15.12
Germany	1.79	1.84	2.00	2.16	2.22	2.24	2.48	14.75
Switzerland	1.65	1.62	1.68	1.78	1.78	1.73	1.86	12.09
Singapore	1.12	1.16	1.32	1.65	1.85	1.95	2.11	11.17
Netherlands	0.95	0.98	1.02	1.09	1.07	1.10	1.31	7.51
United Kingdom	0.78	0.77	0.86	0.96	0.89	0.80	0.87	5.93
Spain	0.54	0.55	0.59	0.65	0.64	0.72	0.76	4.45
Eswatini	0.52	0.51	0.64	0.63	0.64	0.53	0.62	4.08
China	0.31	0.32	0.33	0.38	0.40	0.38	0.46	2.58
Egypt	0.24	0.27	0.39	0.38	0.39	0.37	0.29	2.34
India	0.24	0.25	0.26	0.33	0.36	0.35	0.37	2.17
Japan	0.18	0.19	0.19	0.21	0.22	0.23	0.26	1.48
Mexico	0.19	0.19	0.20	0.20	0.22	0.21	0.22	1.42

Sources: ITC calculations based on UN COMTRADE, 2022.

1.6 Africa and Uganda's synthetic colourants and Flavorants exports and imports

The African market for synthetic Flavorants and colourants is dominated by Eswatini, Egypt, South Africa, Senegal, Tunisia, and Kenya among the top five exporters. Africa exported synthetic Flavorants worth US$ 5.3 billion between 2017 and 2021, representing a market share of only 4.4% of the global market (Table 5). Africa also imported US$10.8 billion worth of synthetic Flavorants, making it a net importer (Table 6). The entire East African Community imported about US$223 million worth of synthetic Flavorants by 2021 although this was a drop from the import levels realised in 2017 and 2018 (Fig:6).

By 2021, Uganda exported only US$ 30,000 worth of synthetic Flavorants and imported US$ 25.3 million indicating that the country has an import balance of US$25 million (Table 6), a demand that can be filled by domestic production.

Table 5: Africa's top synthetic Flavorants exporters (2017-2021)

Value of exports (US$, millions)						
Year	**2017**	**2018**	**2019**	**2020**	**2021**	**2017-2021**
Africa Aggregation	1,101.54	1,088.77	1,123.72	997.71	1,024.91	5,336.65
Share of world market	4.7%	4.2%	4.4%	4.5%	4.2%	4.4%
Eswatini	635.43	625.45	636.37	527.42	618.71	3,043.38
Egypt	386.79	380.45	387.62	373.24	294.73	1,822.83
South Africa	57.27	61.83	76.09	68.51	82.77	346.46
Senegal	8.58	11.85	9.85	12.53	10.43	53.23
Tunisia	3.69	3.05	3.25	2.05	3.97	15.99
Kenya	0.16	0.22	3.98	5.54	4.46	14.36
Morocco	1.97	1.22	2.19	1.59	1.43	8.40
Ghana	0.78	1.14	1.39	2.73	1.34	7.39
Botswana	0.02	0.01	0.10	0.01	3.95	4.08
Sudan	3.18	0.02	0.07	-	0.00	3.27
Côte d'Ivoire	0.73	0.41	0.35	0.49	0.01	1.99
Zambia	0.14	0.38	0.42	0.40	0.17	1.50
Zimbabwe	0.00	0.20	0.01	0.46	0.79	1.45
Uganda	0.32	0.64	0.17	0.28	0.03	1.44
Tanzania	0.00	0.02	0.08	0.33	0.97	1.41



Table 6: Africa's top synthetic Flavorants importers (2017-2021)

	Value of imports (US$, millions)					
	2017	2018	2019	2020	2021	2017-2021
Importers						
Africa Aggregation	2,027.25	2,208.84	2,169.75	2,138.42	2,296.10	10,840.35
South Africa	572.61	579.48	558.91	477.87	574.69	2,763.56
Nigeria	249.19	232.59	254.43	450.43	298.67	1,485.31
Algeria	111.74	189.83	191.29	193.62	165.53	852.02
Libya, State of	19.96	56.10	59.24	11.37	145.58	292.23
Egypt	145.97	160.53	157.30	121.58	126.14	711.52
Kenya	102.80	109.94	93.98	83.80	106.17	496.69
Tanzania	71.53	70.89	73.12	69.29	86.28	371.11
Morocco	77.89	73.26	73.95	73.74	85.69	384.53
Côte d'Ivoire	76.71	75.09	78.46	82.58	73.45	386.30
Ghana	29.03	39.72	20.80	51.07	64.43	205.05
Cameroon	50.29	52.10	42.49	45.33	43.88	234.09
Zambia	21.02	30.86	34.42	28.28	43.66	158.24
Ethiopia	45.16	41.82	51.14	37.54	42.94	218.60
Eswatini	32.65	34.42	35.65	30.17	40.57	173.45
Mozambique	36.71	34.00	41.31	36.41	39.97	188.40
Zimbabwe	22.89	32.69	21.48	28.11	38.38	143.55
Angola	56.03	92.81	52.88	24.43	36.31	262.47
Tunisia	29.99	29.44	33.48	30.74	34.92	158.57
Democratic Republic of Congo	26.74	26.13	16.25	19.50	32.34	120.96
Senegal	33.85	35.27	38.09	34.74	29.82	171.76
Uganda	53.56	53.16	51.81	51.00	25.26	234.79
Sudan	8.47	7.99	36.82	34.08	20.27	107.63

Fig:6: East African Community imports by value for synthetic Flavorants and colourants (2015-2020)

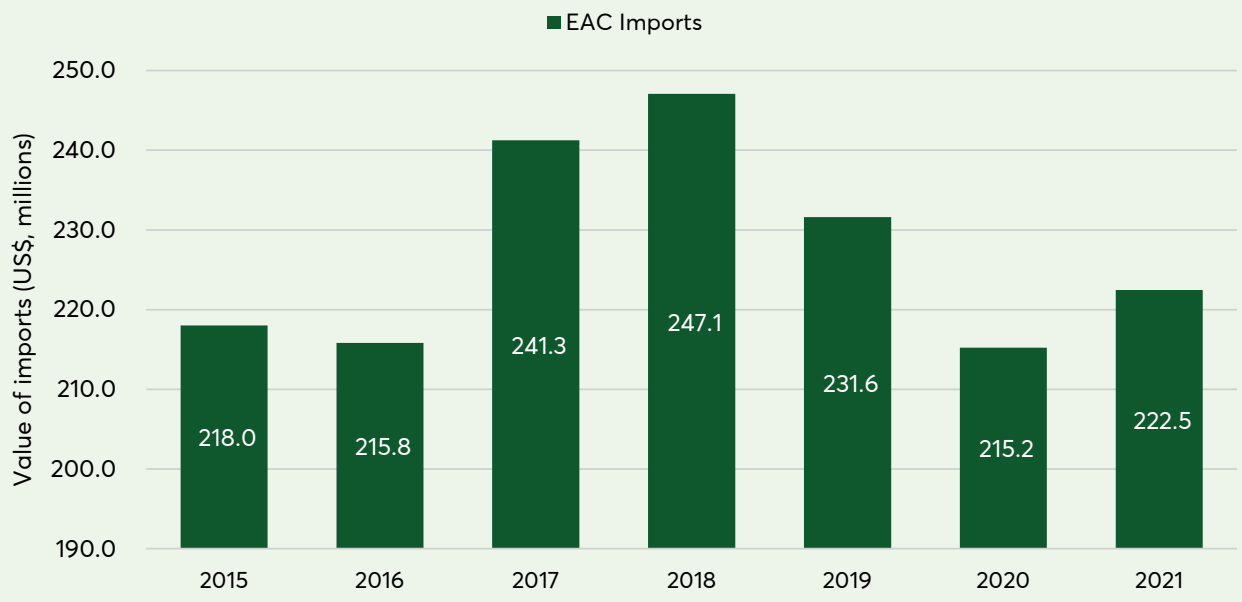
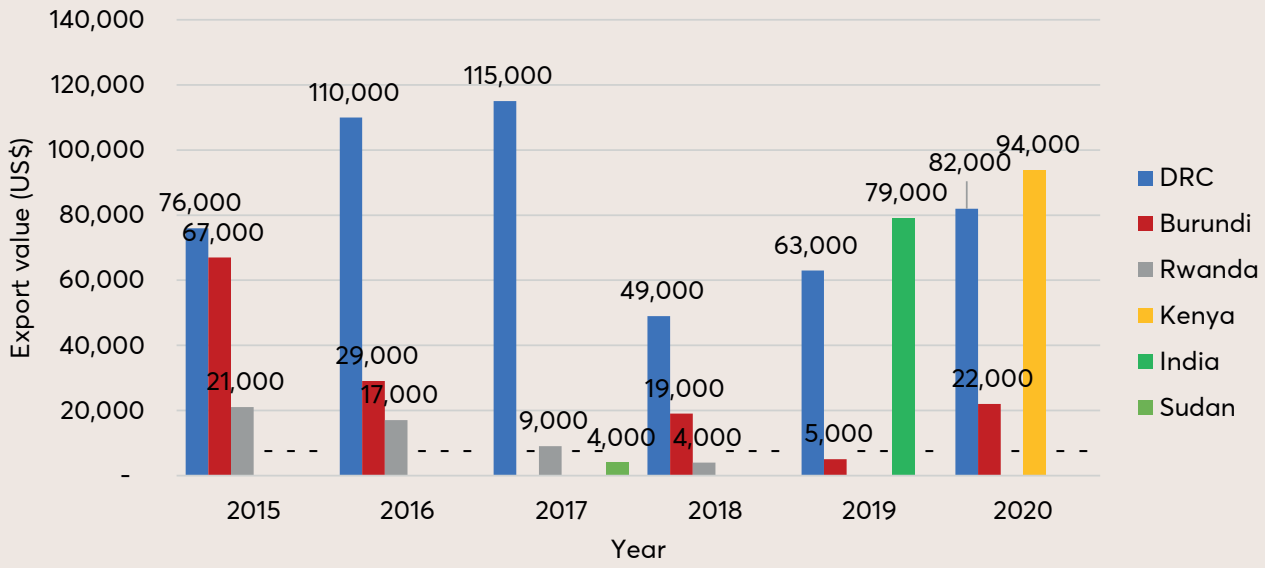


Fig:7: Uganda's destinations by value for synthetic colourants and Flavorants exports (2015-2020)



Sources: ITC calculations based on UN COMTRADE, UBOS and ITC statistics, 2022.







CHAPTER 2: METHODOLOGY AND SCOPE

2.1 Study Approach and data types

The study was based on participatory and consultative approaches involving both quantitative and qualitative data collection methods. Both primary and secondary data were used in this study with the former collected in a rapid appraisal exercise where key informant interviews were held in all the four main regions of Uganda (Central, Eastern, Western and Northern). Secondary data were mined from leading trade statistics sites such as ITC and UN COMTRADE. The quantitative methods were used to collect data on the quantities of Flavours (synthetic and natural) used in the food industries in domestic and export markets i.e., Assess the volumes of different types of Flavorants both natural and synthetic that are consumed domestically and regionally and by which specific consumer segments. Further quantitative data related to the number of market off-takers who source the different types of Flavorants both the local/domestic importers and the East African Region importers and the prices in the food industry in domestic and export markets.

Qualitative data were collected on the profiles the Flavours used in Uganda, the products in which they are used, map out users of natural flavours in the food industries in domestic and export markets and market segmentation of the commercial natural flavours. Additionally, data on gender preferences, challenges, and variation among natural Flavorants users were also collected. The data were collected from different stakeholders including but not limited to; the National Agricultural Research Laboratories (NARL Kawanda & NACRRI-Namulonge) project technical teams/staff, local traders/ middlemen and distributors, food and beverage processors, and importers among other key informants.

Document review:
A comprehensive review of secondary data on the colourants and Flavorants supply chain at global, continental, regional and country levels from publications and related statistics from previous studies undertaken in this area were conducted.

2.2 Research scope and assumptions

The study assessed both the natural and synthetics Flavorants value chains (through discussions with different market actors to identify the flow of the raw materials and products, constraints and opportunities that could unlock the potential of each of the Flavorants sectors. In terms of geographical scope, the study covered the four major regions of Uganda (i.e., Central, Eastern, Western and Northern regions) targeting mainly the city centres where users such as bakeries, confectionaries and food factories as well as distributors such as supermarkets are located.

Due to market actor's inter-connectedness roles, relationships, power, and benefits, the most relevant value chain actors particularly importers and those perceived necessary on the national and regional space such as URA, and UNBS, snow-ball sampling was used to purposively reach each of the critical actors in the respective Flavorants value chains.

2.3 Data analysis

Quantitative data were entered and analysed in Excel before interpretation and integration into the report. The quantitative data were captured in questionnaires or mined from Trade websites and later analysed. The results were presented in form of tables and graphs to highlight patterns, frequencies, and trends. The qualitative interviews from key informants were summarised and analysed by content. The qualitative text data were used for interpretation of emerging trends in the quantitative data as well as contextualising aspects of the study such as policies and regulatory frameworks.







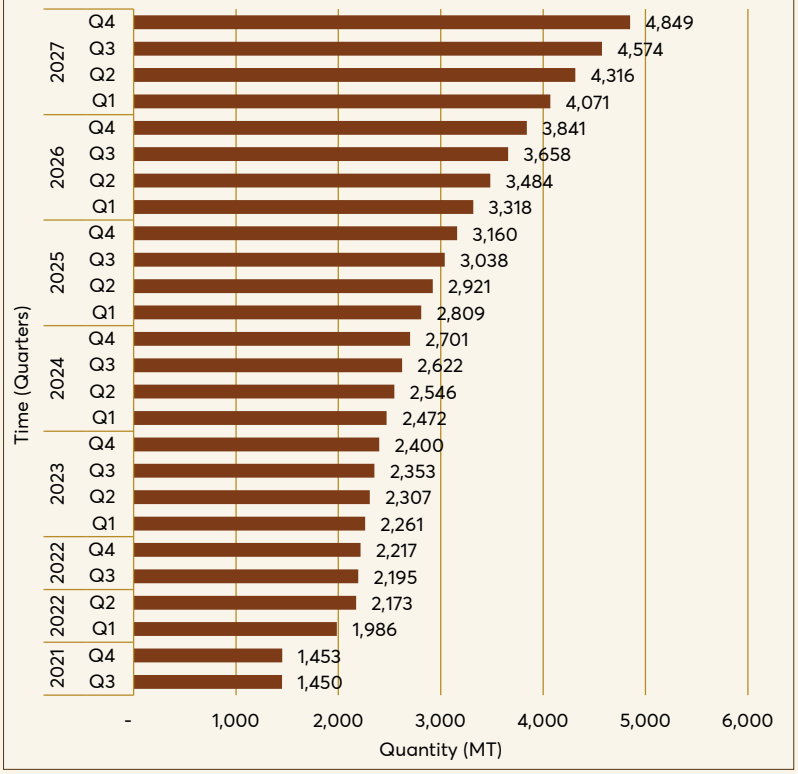


CHAPTER 3: STUDY FINDINGS

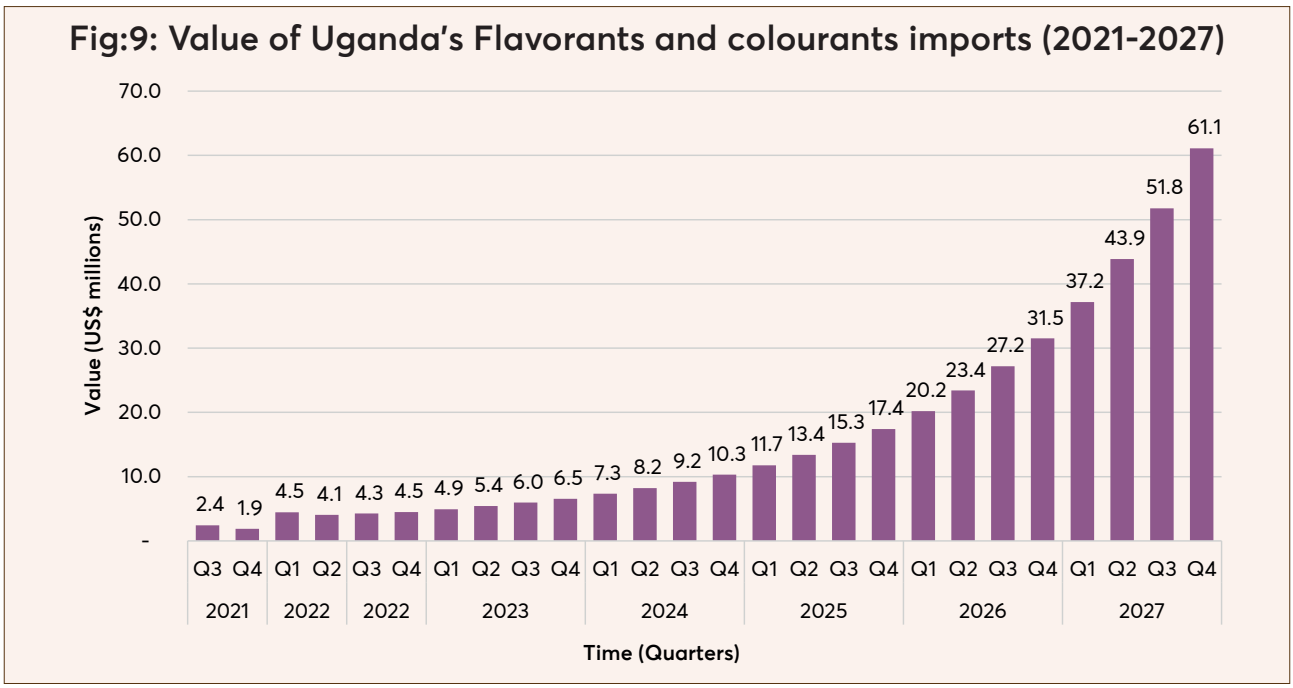
3.1 Flavorants market estimates and forecast, 2022- 2027

Between 2021 and 2022, Uganda's annual Flavorants and colourants imports stood at 7.1 million MT valued at US$ 13 million according to URA data. Using a conservative growth rate of 1% per quarter, we estimated that in 2023, the Flavorants and colourants imports will be 9.3 million MT and in the next five years the market will be importing 17.8 million MT annually (Fig:8). However, given the volatile nature of prices now, we assumed a 10% increase in prices between 2022 and 2023 and after price stabilisation, we assumed an annual 2% growth in value for 2024-2027. Therefore, Uganda will import US$22.8 million worth of Flavorants and colourants in 2023 and by 2027, the country will be importing about US$193.9 worth of Flavorants and colourants (Fig:9).

Fig:8: Uganda's Flavorants and colourants imports (2021-2027)



Source: Consultant calculations based on the URA data (2021-2022)



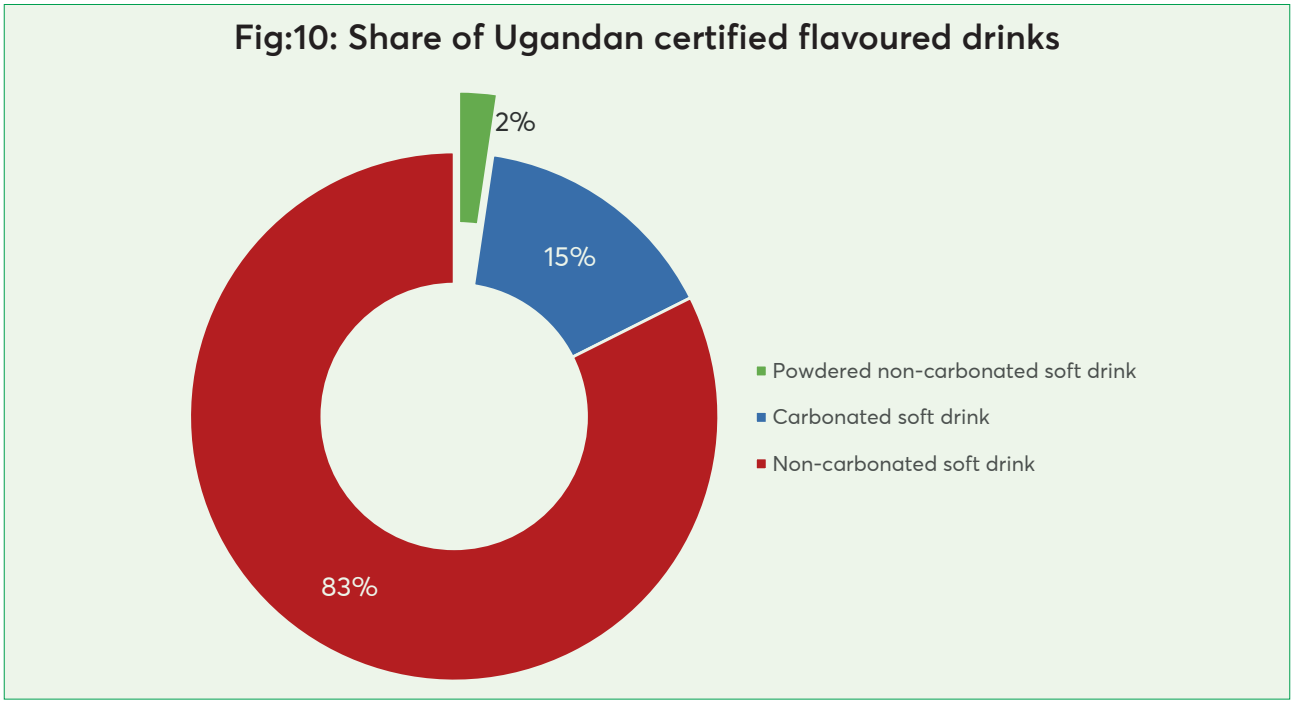
Source: Consultant calculations based on the URA data (2021-2022)

3.2 Market segmentation of certified products that use food colourants and Flavorants in Uganda

This section presents the three main categories of drink and food products on the Ugandan market that are certified to use colourants and Flavorants.

3.2.1 Soft drinks

Data from UNBS indicated that there are 337 certified flavoured drinks on the Ugandan market. Of these, the biggest majority, 83% are non-carbonated soft drinks while 15% are carbonated soft drinks and only 2% are powdered non-carbonated drinks (Fig:10).



Source: UNBS database (2022)

3.2.2 Flavoured foods

Dairy ice cream tops the list of certified flavoured foods at 55% followed by flavoured black tea (10%) and biscuits (9%). A total of 347 certified products exists in the UNBS database including cakes, bread, snacks, flavoured milk and potato crisps (Table 7).

Table 7: Uganda's certified flavoured foods

Certified Product	Frequency	Percentage share
Dairy ice cream	191	55%
Flavoured black tea	35	10%
Biscuits	32	9%
Cakes	25	7%
Bread	18	5%
Food grain snacks	16	5%
Chewing/bubble gum	14	4%
Flavoured UHT milk	11	3%
Potato crisps	4	1.2%
Flavoured drinking water	1	0.3%
Total	347	100%

Source: UNBS database (2022)

3.2.3 Fruit drinks

There are only 21 certified flavoured fruit drinks on the Ugandan market led by Plant protein-based yoghurt (29%) and followed by milk beverage (18%), mango drinks, orange drinks, pineapple and strawberry flavoured drinks (Table 8).

Table 8: Uganda's certified flavoured fruit drinks

Certified fruit drink product	Frequency	Percentage share
Plant protein-based yoghurt	5	29%
Milk beverage	3	18%
Mango flavoured drink	2	12%
Milk powder and cream powder and powder analogues (plain, flavoured or fortified)	2	12%
Orange flavoured drink	2	12%
Pineapple flavoured drink	2	12%
Strawberry flavoured drink	1	6%
Total	17	100%

Source: UNBS database (2022)

3.2.4 Gins, vodkas, and whiskeys

Among alcoholic drinks that are flavoured, the Ugandan market has 242 certified types of which the gins are the majority with 69% of the share followed by vodka at 29% and liqueur and whiskeys that make up only 1.4% (Table 9).

Table 9: Uganda's certified flavoured alcoholic drinks

Certified Product	Frequency	Percentage share
Gin	168	69%
Vodka	71	29%
Liqueur	2	1%
Whiskey	1	0.40%
Total	242	100%

Source: UNBS database (2022)

3.2.5 Flavoured sweets and yoghurt

There are 40 flavoured hard boiled sweet types that are certified and 100 flavoured yoghurts on the Ugandan market (Table 10).

Table 10: Uganda's certified flavoured hard-boiled sweets and yoghurts

Certified Product	Frequency
Flavoured hard boiled sweets	40
Favoured yoghurt	100
Total	140

Source: UNBS database (2022)

3.3 Flavorants and colourants supply chain analysis

Flavorants and colourants were found to be used in baking of cakes, bread and in milk products such as ice cream and yoghurt as well as carbonated and non-carbonated drinks. The most commonly stocked Flavorants are strawberry, vanilla, chocolate, pineapple, and orange. However, users and distributors indicated they have other Flavorants such as passion fruit, coconut, banana, mint, blue berry and apple. Among the stocked and used colourants were apri-green, apricort, brilliant blue, egglo, sunflower and passion red (Table 11). Users of colourants and Flavorants suggested that there is need for introduction of more flavours in the market such as carrot and mangoes because their customers are always willing to learn and try out new products.

The market actors such as cake and bread bakers who interact with the final consumers indicated that there are gender differences in preferences of the different colours and flavours. Some indicated that women prefer products with flavours and bright colours like pink, and red while children prefer bubbles and coloured cakes that have different colours cuttings like Red, pink, blue and yellow. Another Flavorants/colourants retailer indicated that children and women prefer strong flavours like strawberries, lemon and chocolate while men prefer vanilla flavour because it tastes good and smells good. One of the users in Lira city indicated that although some customers are contented with the common flavours, 50% of the consumers are only interested in cakes, they don't mind what has been added, yet 30% want at least a flavour to be added and 20% want a specific flavour to be added in their cake.

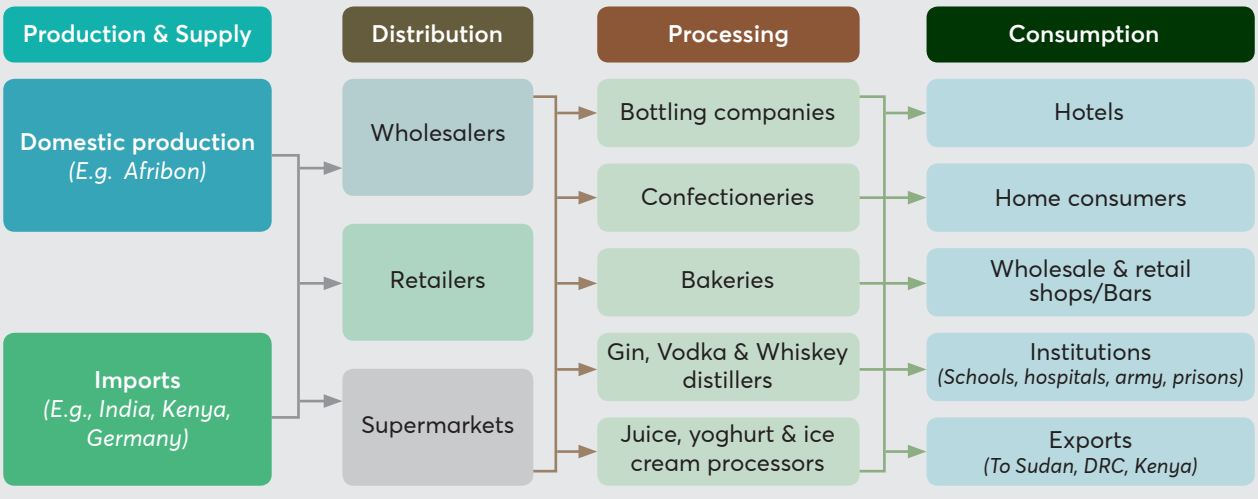
The Flavorants and colourant supply chain in Uganda as shown in Fig:11 originates from mainly the importers who import much of the Flavorants and colourants from India, Kenya and Germany. The distribution is made by wholesalers, retailers and a growing network of supermarkets in Kampala and other cities upcountry. These are used in the processing and manufacture of products such as bread, cakes, juices, sodas, vodkas, and gins. The products are consumed in hotels, institutions such as schools and the army and the rest is exported to neighbouring countries such as South Sudan, and DRC.



Table 11: Main Flavorants and colourants on the market by actor

Actor	Flavorants	Colourants
Users *e.g., Bottling companies, confectionery (Cakes and bakeries), ice cream/ Yoghurt and agro-processing firms*	▸ Strawberry ▸ Pineapple ▸ Oranges ▸ Lemon ▸ Chocolate ▸ Vanilla ▸ Passion fruits ▸ Coconut ▸ Bananas ▸ Blue berry ▸ Tuty fruity ▸ Bubble gum ▸ Ginger ▸ Mango ▸ Butter ▸ Cinnamon	▸ Aloe vera ▸ Rosemary, ▸ Lemon grass ▸ Watermelon ▸ Hibiscus ▸ Pumpkin ▸ Natural Yellow bananas ▸ Alexander Perfumery ▸ Cocoa
Importers		▸ Apri green ▸ Apri cort ▸ Brilliant blue ▸ Egglo ▸ Sunflower ▸ Passion red
Distributors, supermarkets, wholesalers & retailers	▸ Strawberry ▸ Pineapple ▸ Vanilla ▸ Passion fruit ▸ Coconut ▸ Banana ▸ Mint ▸ Blue berry ▸ Apple ▸ Orange ▸ Caramel /cream caramel ▸ Raspberry essence ▸ Rose essence ▸ Mango essence ▸ Guarva peach ▸ Honey flavor	

Fig:11: Supply chain map of Flavorants and colourants in Uganda



3.4 Flavorants and colourants pricing in Uganda

Flavours and colours used in the bakery and confectionary businesses are almost priced at the same ranges within different regions and among different Flavorants and colourants. The most common price is UGX 5,000 per unit (litre/bottle) although some Flavorants and colourants such as pineapple, blueberry, bubble gum and coconut are more expensive priced at between UGX 6,000 and UGX 9,000 per litre (Table 12).

On the other hand, the dairy actors who produce flavoured milk or ice cream buy their Flavorants and colourants at a much higher price simply because they use different brands and many of them import them directly. For instance, dairy processors buy a litre of Strawberry flavour at UGX 50,000 while ice cream producers buy it at UGX 30,000 (Table 13).

Table 12: Prices at which bakeries & confectionaries buy Flavorants and colourants

Type of Flavorants and colourants	Units	Price per unit (UGX)
Bakeries		
Banana flavours	Bottles of 40gms	5,000
Banana Mafins	Litres	5,000
Coconuts	Litres	5,000
Lemon	Litres	5,000
Milk flavour	Bottles of 40 gms	5,000
Vanilla	Litres	5,000
Straw berry	Bottles of 40 gms	5,000
Coconuts	Litres	5,000
Lemon	Litres	5,000
Pineapples	Litres	6,000
Blueberry	Litres	9,000
Bubble gum	Litres	9,000
Coconut	Litres	9,000
Milk flavour	Kilograms	100,000
Cakes/confectionery		
Synthetic		
Lemon	50 ml	4,500
Vanilla	50 ml	4,500-5,000
Pineapple	50 ml	4,500
Strawberry		4,000-5,000
Coconut	50ml	5,000
Chocolate	50ml	5,000
Natural flavours/colours		
Pineapple	8 pieces	5,000
Banana	2 branches/cluster	8,000
Ginger	Kg	3,000
Lemon juice	Litre	2,000
Pineapple fruits	Pieces	4,000

Source: Primary data from key informants (October 2022)

Table 13: Prices at which dairy processors and ice cream producers buy Flavorants and colourants

Type of Flavorants and colourants	Units	Price per unit (UGX)
Dairy processors		
Strawberry	Litre	50,000
Vanilla	Litre	50,000
Lemon	Bottle	6,500
Strawberry	Bottle	5,000
Vanilla	Bottle	4,500
Ice creams		
Vanilla	Litre	30,000
Straw berry	Litre	30,000
Blueberry, banana, mango, pineapple	Litre	25,000

Source: Primary data from key informants (November 2022)

Non-alcoholic beverage producers use both synthetic and natural flavours and colours. Non-carbonated drink producers were found to use mainly fresh fruits which they use to extract the flavours. These use ginger, rosemary, lemon grass, aloe vera, beetroot and others which cost between UGX 1,000 and UGX 4,500 per kilogram (Table 14).

Table 14: Prices at which non-carbonated and non-alcoholic beverage producers buy natural Flavorants and colourants

Type of Flavorants and colourants	Units	Price per unit (UGX)
Rosemary	Kgs	4,500
Ginger	Kgs	2,500
Lemon grass	Kgs	3,000
Pineapple	Whole fruits	500-2,000
Lemon grass	Kgs	3,000
Aloe vera	Kgs	1,000
Lemon	Kgs	2,100
Beetroot	Kgs	3,200
Orange	Kgs	1,200
Carrots	Kgs	1,000

Source: Primary data from key informants (November 2022)

The wholesalers including supermarkets sell their Flavorants and colourants using the brand names Pradip, Top lure, Backaldin and Kasaf. The most expensive brands are the Pradip Flavorants and colourants priced between UGX 4,500 and UGX 6,000 per 50ml bottle (Table 15). Top Lure products include food Essences, Food Colours (gel and powder), Vinegar, Tomato Sauce, Glucose and Bicarbonate of Soda (Photograph 1). However, from the importers interviewed, it emerged that most of the food colours imported are sold at between UGX 20,000 and UGX 80,000 per kilogram depending on the colour and type at the importer's premise (Table 16).

The Top lure products are produced in Kenya by T0P FOOD (E.A.) Limited, a company established about 50 years ago: initially known as NAIROBI FOOD PRODUCTS which was acquired by TOP FOOD E.A. Ltd. in 2005 TOP FOOD E.A. Ltd. started retailing spices and seasoning in small standing pouches, being the pioneers in standing pouch packing in EAST AFRICA. Due to popular customer demands, the company later started packaging in jars and expanding its product lines whilst still being market leaders in seasonings and spices.



Photograph 1: Some of the Top Lure food essences (Left) and food colours (Right) on the market in Uganda[3]

Pradip products on the other hand are produced by Pradip Enterprises (EA) Limited (PEL) that was established in 1974 as a distributor and retailer of food ingredients. Over the years, the company has grown to manufacture, develop and market spices, spice blends, seasonings and herbs under the PEL® Chef category; baking ingredients, food colors, flavours, cake and dessert decorations, and dried fruits under the PEL® Baker category[4].

Backldin flavours on the Ugandan market include vanilla and lemon used in pastries and confectionery creations. Backaldrin produces liquid and powdered flavours including the common flavours, such as vanilla, lemon or rum, and special compositions like Viennese Berliner Flavour or Cake Flavour. One of the most important attributes of Backaldin flavours is that they are bake and freeze stable[5].

Table 15: Prices at which distributors sell Flavorants and colourants

Type of Flavorants and colourants	Units	Price per unit (UGX)
Wholesaler/Supermarket		
Pradip *(Various flavours and colours)*	50ml	4,500-6,000
Top lure *(Various flavours and colours)*	50ml	4,000
Backaldin *(Various flavours and colours)*	100g	8,000
Kasaf's *(Various flavours and colours)*	50ml	5,000
Retail shop		
French vanilla	50ml	20,000
Vanilla	50ml	4,000-4,500
Strawberry	50ml	4,000-4,500
Pineapple	50ml	5,000
Pradip (Various flavours and colours)	50ml	4500-5000
Lemon	50mls	4,000
Orange	50mls	4,000

Source: Primary data from key informants (November 2022)

3 https://www.topfoodea.co.ke/our-brands/top-lure
4 https://pradip.biz/aboutus/
5 https://www.backaldrin.com/en/products/flavours-fillings spices/#:~:text=backaldrin%20offers%20high%2Dquality%20apple,almond%20flavour%2C%20complete%20the%20range.

Table 16: Prices at which exporters sell Flavorants and colourants

Type of food colourants	Units	Price per unit (UGX)
Aprigreen	Kg	20,000-26,000
Aprocoat	Kg	30,000-35,000
Brilliant blue	Kg	70,000-80,000
Egglo	Kg	60,000-70,000
Sunflower	Kg	50,000-60,000

3.5 Market actors' perceptions on use of banana and purple-fleshed sweet potato colourants

Several market actors interviewed including beverage, dairy and bakery and confectionary makers had mixed opinions and perceptions on the introduction and use of banana and purple-fleshed sweet potato extracted colourants in the products they make. Here, the various perceptions were captured verbatim.

> Purple-fleshed Sweet potatoes and bananas can't work in ice-cream, but if the natural flavours of vanilla and strawberry are introduced, I can use them if the prices are favourable" *- Ice cream producer in Mbarara.*

> Purple-fleshed sweet potatoes and bananas don't suit our business. Maybe other flavours if introduced" *- Elite bakery in Mbarara*

> Natural Flavorants like purple-fleshed sweet potatoes is good for human health since it has no chemicals in it". *- Mini –supermarket manager in Lira city.*

> The existing Banana flavours on the market get spoilt very quickly"*- Mini – supermarket manager in Lira city.*

> If there are plans to produce banana or purple-fleshed sweet potato Flavorants/colourants in Uganda, I would advise them to advertise their new products before actual supply and these should be high quality products"*-Supermarket proprietor in Lira city.*

> When asked what would encourage a seller or user to switch to the natural Flavorants/ colourant products made from purple-fleshed sweet potatoes and bananas or any other fruits, a bakery manager and another ice cream producer in Gulu city said "What would encourage me will be if the prices are lower and if the products are available". *Another respondent in Gulu indicated that natural products are liked because* "Their organic nature and freshness since they derived from plants or even animal materials make them trusted as healthy by consumers". Others indicated that they are liked due to health benefits to consumers such as "They can reduce inflammation and boost immunity".

> *A trader in 'Kikuubo'*, Kampala city indicated that they are willing to buy and sell Ugandan made Flavorants and colourant because

> Yes, being Ugandan I embrace the spirit of Buy Uganda sell Uganda". *Another baker agreed that* "Yes – We expect that if it's made from home, it can be a bit cheap".

The above statements from the suppliers and users of Flavorants and colourants indicate that they are willing to supply and use natural colourants and Flavorants manufactured locally as long as they are available at all times (stable supply), affordable and of high quality.

3.6 Factors that influence decisions to use synthetic or natural Flavorants and colourants

The main factors that influence decisions by users to use synthetic Flavorants are that they are easily available on the market and that because they are highly concentrated, the users need small quantities to produce more products. The other factors are that they are cheaper compared to natural flavours and that they have a longer shelf life (Can be kept for future use because only a drop is needed). Many of the retailers indicated that the buyers now prefer the Pradip brand from Kenya is preferred compared to other flavours because of its stability, long shelf life and thickness in addition to being thought of as original. Many of these Flavorants come in liquid packed (Vanilla, Butter Strawberry, and lemon) or powder (Milk).



Photograph 2: Some of the Pradip flavouring essences on the market in Uganda[6]

For the natural Flavorants, the key factor is that they are associated with health benefits given that they are assumed to have no side effects on customers' health and the other is that they taste fresh and good (Table 17). One of the bakers in Mbarara said "we don't use natural flavours because they have weak concentration, and they are expensive".

6 https://www.jumia.ug/baking-mixes/pradip/

Table 17: Main factors influencing use of synthetic and natural Flavorants and colourants

No.	Factors that influence decision to use	
	Synthetic	**Natural**
1	Easily available in the market	No side effect on people
2	Strong and very little quantity is used	Fruits are widely sold in the country
3	Scent and taste is good	More quantity is used making it to taste good
4	Brings flavour to the cakes	Chemical free and bigger quantity is used to bring good flavour
5	Taste is consistent, does change	Bananas are sugar free
6	Very easy to use, just a matter of measuring.	
7	Cheaper compared to natural flavour	
8	Widely known by people	Easily available
9	Taste good	Cheap
10	Very little quantity is used	Taste fresh and good
11	Can be kept for future use because only a drop is needed	
12	They are free from food spoilage bacteria	

Consumers have a mixed preference for the synthetic and natural Flavorants. For instance, lemon, pineapple and oranges belong to both lists of natural and synthetic Flavorants that are liked by customers. However, coconut, strawberry, vanilla, and chocolate are preferred as synthetic while banana and passion fruit are preferred as natural (Table 18).

Key informants indicated that there are no purple sweet potato Flavorants or colourants currently on the market but advised that if these are to be introduced, there will be need for training and sensitization of most users and that they should have health benefits for the diabetics since some people would think that it is too sweet because diabetic patients do not eat sweet potatoes. In a key informant interview, one of the bakery managers in Mbarara was quoted saying "Sweet potatoes and bananas don't suit our business, maybe other flavours if introduced".

Table 18: Consumer needs/tastes and preferences for synthetic or natural Flavorants

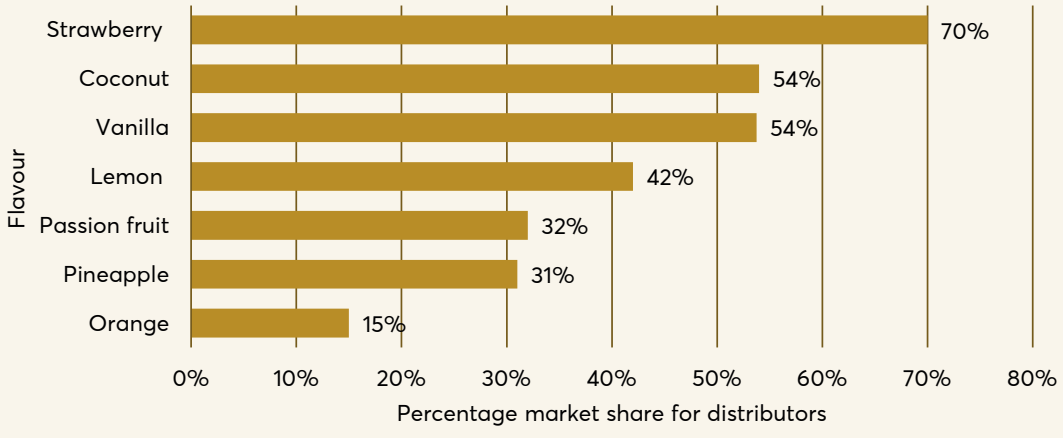
No.	Consumer tastes and preferences	
	Synthetic	**Natural**
1	Coconut	Banana
2	Strawberry	Lemon
3	Vanilla	Pineapple
4	Chocolate	Oranges
5	Pineapple	Passion fruits
6	Orange	
7	Lemon	

The most important attributes of the various Flavorants such as strawberry, vanilla, pineapple, banana, lemon and others that the users look for are Scent, essence and taste. The other attributes are the attractiveness of the colour and the texture of the final product such as the cakes (Table 19).

Table 19: Flavorants products (including Flavorants) preferred in Uganda

No.	Preferred Flavorants		
	Flavourant	**Preferred flavorant product**	**Reason for preference**
1	Strawberry	Cakes, Yoghurt	Scent and the taste are good
2	Coconut	Cakes	Scent and the taste
3	Vanilla	Cakes, Yoghurt	• Scent • Nice smell and sweet • Essence
4	Lemon	Cakes	• Scent of lemon • Good taste • Colour is attractive raising appetite
5	Pineapple	Cakes and juice	• Smells exactly like fresh pineapple • Natural love for the fruit • Used for both juice and cakes (its multi-purpose) • Scent
6	Orange		• Taste and have been common flavour in the market • Softer texture of the cake • Associated with a fruit that people know
7	Banana	Cakes	• It gives the feel of banana taste in the cake
8	Passion fruit	Cakes	• Scent
9	Butter	Bread	• Taste and scent
10	• Aloe vera • Rosemary, • Lemon grass • Watermelon • Hibiscus • Pumpkin	• Aloevera green tea • Lemon green tea • Power tonic • Red tonic	• Treats a variety of diseases • It stimulates digestion. • It is for men, and it helps them to stimulate there manpower • The product is for women. Women use it to cleanse themselves and it treats most of the women related problems

Fig:12: Market share of various flavours distributed on the Ugandan market



Source: Primary data from key informants

3.7 The Ugandan Flavorants and colourants regulatory framework

There are two main regulations that guide the Flavorants and colourants in Uganda are twofold, i.e., (i) labelling requirements for packaged foods (US AES 38) and (ii) Food additives regulations (US 45).

Among the labelling requirements are.

i. Manufacturers name
ii. Manufacturers address
iii. Country of origin
iv. Product name
v. Product composition
vi. Manufacture and expiry dates
vii. Instructions for use
viii. Language of instruction must be English
ix. Precautions for use
x. Intact and airtight package to avoid oxidation

The Flavorants and colourants are imported as raw materials by the importers but the regulator (UNBS) checks for authenticity as entry into the country but certifies the products and the systems of the manufacturing processes using one of the existing standards on code of practice for hygiene in the food and drink manufacturing industry (US 28). The main guidelines for use of flavourings are the US CAC/GL66'2008).

3.8 Flavorants and colourants market dynamics

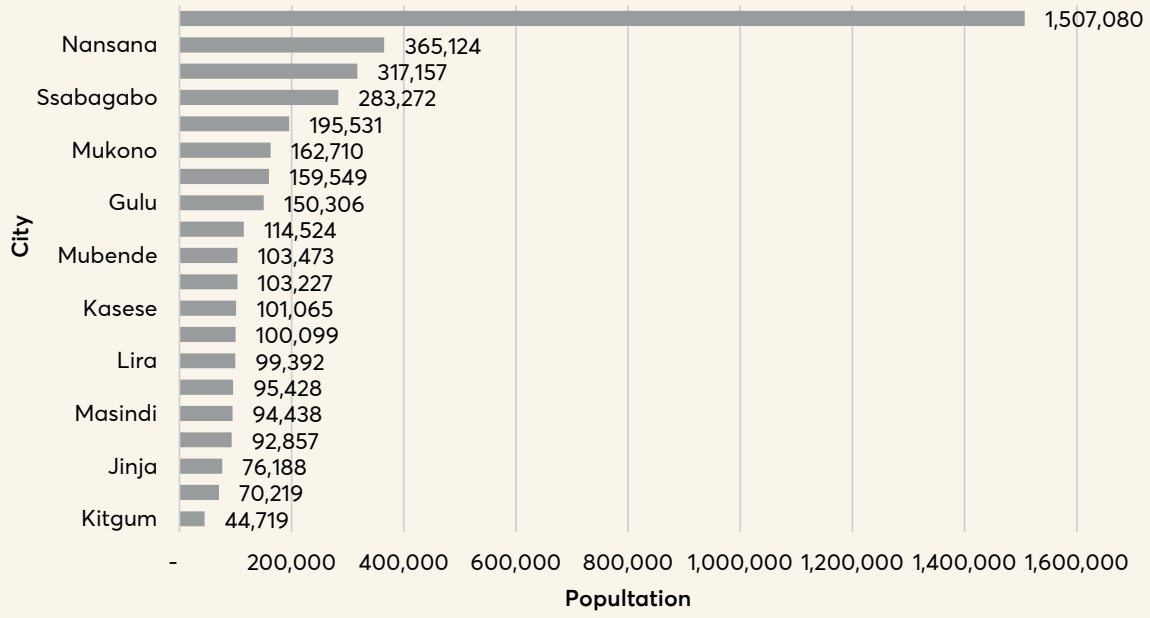
3.8.1 Market drivers

The Flavorants and colourants market is driven by a number of factors such as;

1) **Tastes and Preferences:** the differing tastes and preferences among different age groups and lifestyles means that consumers are disaggregated into market segments. For instance, key informants indicated that women and children prefer strawberry flavors while men prefer vanillas.

2) **A growing population and urbanization:** In addition to Kampala, the capital city, Uganda today has over 20 cities with a combined population of about 4.5 million people according to the 2014 population census (UBOS, 2020) (Fig:13).

Fig:13: Population of Uganda's main cities



Source: UBOS (2020). https://www.ubos.org/explore-statistics/20/

3) **The concentration of the Flavorants/ colourant:** The users of the colorants and Flavorants indicated during key informant interviews that they prefer to use concentrated colorants and Flavorants which allow them to produce more products with little inputs.

4) **The quality of the Flavorants/colourant:** The users of the colorants and Flavorants indicated during key informant interviews that they prefer to use concentrated colorants and Flavorants which allow them to produce more products with little. The other aspect of quality that drives the demand is stability and length of the shelf life of the Flavorants and colorant.

5) **Fair pricing of the Flavorants/colourant and the final product:** is a key driver of the market since many consumers and manufacturers want to spend less on a product even when they need a high-quality product. In fact, one of importers (DESBRO/BRENNTAG) indicated in a key informant interview that they stopped importing Flavorants since many buyers wanted cheaper ones that are available on the market, yet the company has a high-quality standard to maintain and hence, today they only import colourants.

6) **Unique branding:** Many distributors and users indicated that the branding is key to attracting buyers. Therefore, it was very common to find four brands, i.e., Pradip, Top lure, Kasaf's and Backaldin in supermarkets and retail shops.

7) **Aggressive marketing:** There is a lot of competition with cheap / fake products on the market, hence, the distributors have to engage in aggressive marketing campaigns which sometimes turn out to be expensive and these could be transferred to consumers in form of increased prices. Some of the importers indicated that using a network of supply channels is another marketing strategy they use. For instance, the Flavorants and colourants are distributed through Supermarkets, retail shops, wholesale shops and referrals by phone calls for delivery.

8) **Seasonality of demand for products:** Some products such as cakes are used mainly in parties and weddings which means in months such as January to May when there are no parties, the demand is low and only rises in June to December when there are many parties.

9) **Import taxes also affect the final price of the Flavorants and colourants:** given that most of these are not domestically produced but imported from India and Kenya.

3.8.2 Market restraints

The main market challenges mentioned were.

a) High import taxes on the Flavorants and colourants

b) Scarcity of the Flavorants and colourants in some periods when you can't find what you want on the market at times, making them expensive and leading to price fluctuations

c) Limited supply/ Seasonal supply / out of season for natural Flavorants and colourants because they depend on productions seasons.

d) Lack of packaging materials.

3.8.3 User and distributor challenges

The users face the following challenges with the current Flavorants and colourants.

a) Price fluctuation in the market

b) Expiry of the Flavorants and colourants if not put to use quickly they have very-short shelf lives, i.e., it gets spoilt quickly (within a short time)

c) The current Flavorants and colourants on the market need a lot of water in the production/ manufacturing process

d) The current colourants on the market are in only small packages-there are no big containers and tins yet we would like to buy bigger packages.

e) Natural Flavorants and colourants are not known in the market

f) Natural Flavorants and colourants are perishable without a preservative they can get spoilt

3.8.4 Importer challenges

a) Very expensive Flavorants that are not affordable by the Ugandan domestic market/ manufacturers.

3.8.5 Regulatory challenges

There are several regulatory challenges that are impeding the enforcement of standards in the industry. The main challenges include.

a) The large numbers of importers and manufacturers make it easy for evasion to happen.

b) Emergence of new products under the same product lines which may be completely outside the existing standards.

c) Some manufacturers are in remote areas that are not frequently inspected, which creates a loophole for counterfeiting.

d) Some manufacturers go ahead to start mass production and distribution of products on the market before the certification processes are completed.

e) The porous border points make it easy for smuggling in of uninspected and uncertified flavorings and colourants into Uganda by beating the UNBS surveillance team.

The level of compliance to standards was rated at 70% by the regulator key informant, yet the other 30% non-compliant players is mainly composed of mainly start-ups who are intending to manufacture new products. However, the 30% is being helped through public sensitisation of SMEs, and incentives for inspection and certification although many of them fear URA to tax them.

3.8.6 Manufacturing challenges

The manufacturers who use the colourants and Flavorants to make food and drink products indicated that they face a number of challenges, including.

a) The raw materials are now very expensive given the global price hikes and surging fuel prices since many of these materials must be imported and transported by road.

b) Many of the colourants and fragrances on the market are not stable at high temperatures leading to their volatilization.

3.8.7 Research & Development challenges

The research and development sector faces several challenges that range from policy, regulatory to technical challenges. The main ones include.

a) Unfriendly policies on private sector investment into research and development. The existing policies do not provide incentives such as tax waivers/holidays or guarantees for the private sector to invest into R&D.

b) The existing intellectual property law and policies are not implemented and not working to incentivise researchers to innovate more.

c) Research and national priorities for investment and innovation in the agricultural sector sometimes fail to agree on whether to prioritise food security or commercialisation of crops such as bananas and sweet potato. These are envisaged to be used to produce colourants, but they are also food security crops, hence, their commercialisation for industrial use will have effects on food security of millions of households that depend on them for food.

d) There is lack of convergence of research with other related sectors such as taxation, regulation, export promotion and private sector involvement. The agencies responsible for these different functions are not working collaboratively in building products and systems for long term benefits for the actors (new products, incomes, profits, jobs, etc.) and the Government (jobs, revenues, etc.).

3.9 Key market opportunities identified in the Flavourant and colourant subsector

There are several market opportunities identified in this study for both natural and synthetic Flavorants and colourants, and these opportunities are at all nodes of the value chain.

3.9.1 At supply level

a) The Ugandan market is flooded with mainly synthetic Flavorants and colourants with little information showing use of natural Flavorants and colourants in the manufacturing processes of beverages, foods and confectionaries. Hence, any business ideas that seek to produce and supply natural Flavorants and colourants will have high chances of success.

b) Uganda is an agrarian economy with the capacity to mobilize farmers to produce and supply Flavorants and colourants manufacturing factories with raw materials for the most preferred flavours and colours such as strawberry, vanilla, lemon, pineapple and oranges. This means that any manufacturer will have a stable and adequate supply of raw materials throughout the year.

c) The increasing imports of Flavorants and colourants over the years means that the market is available for these products.

3.9.2 At distribution level

a) The distributors of Flavorants and colourants are willing to take up distribution of domestically produced natural Flavorants and colourants to close the seasonal supply gaps they often encounter.

b) There is already an established network of distributors and users of Flavorants and colourants throughout the country in all regions of Uganda as indicated by the key informant interviews done in all regions.

3.9.3 At user level

a) There are already a large number of users of Flavorants and colourants, who range from bakeries, cake confectionaries, hotels and restaurants, biscuit and food industries, beverage and flavoured alcoholic drinks. These provide a huge market and during interviews many indicated willingness to use high quality locally produced Flavorants and colourants.

b) The manufacturers have a wide variety of products from foods, drinks, ice creams, cakes which require a variety of Flavorants and colourants. Hence, there is opportunity of a diversified market and product space that the new Flavorants and colourants can nibble into.

3.9.4 At consumer level

a) There is a growing population and much of it being young and youthful. About 46% of the population are aged 0-14 years while those aged 15-64 years form 52% out of a total population of 42.9 million people of which 56% are females (UBOS, 2022)[7] . These statistics show that the children and women who are the largest consumers and market segment that prefers some flavours in the market is the largest and the market for such Flavorants and colourants.

3.9.5 At policy and regulatory levels

a) The Government priority in the NDPIII is on agro-industrialisation, hence there will be funding for initiatives such as natural Flavorants and colourants manufacturing in Uganda.

b) Government is focused on import substitution and reduction of imports in sectors and products where this has been proven to be economically and socially viable. One of these sectors will be the Flavorants and colourants sector since there is evidence of the potential to develop such an industry in Uganda.

c) The research and development agenda of NARO is to innovate, develop and commercialise products such as natural Flavorants and colourants from locally produced agricultural products. Therefore, there is a high probability of such innovative products will find space in the budgets and plans of research organisations that partner with NARO.

d) The legal and regulatory framework is in place. UNBS indicated that there are already standards they use to ensure quality of the imported Flavorants and colourants in Uganda. These will only need revision and customisation to the domestically produced Flavorants and colourants.

7 https://www.ubos.org/explore-statistics/20/



3.10 Flavorants PESTEL analysis

Table 20: PESTLE Analysis of the Flavorants and colourant market in Uganda

Political	Economic	Social	Technological	Legal	Environmental
Positive factors					
• Flavorants and colourants have potential for getting Government funding for investing in production, processing and marketing of the same under the NDP III's Agro-industrialisation plan	• Increasing colourant and Flavorants imports give chance for increased domestic production for substituting imports, saving dollars and turn Uganda into an exporter • Growing GDP from manufacturing sector means that setting up domestic factories for colourant and flavorant production will contribute positively to economic growth.	• Changing consumer preferences in favour of more organically produced and natural products such as foods, drinks and juices (BUBU) makes natural colourant and flavouring from banana, sweet potato, carrots and other locally grown foods very feasible and likely to succeed. • Youth want to get employment in the industries; hence colourant and Flavorants production here in Uganda will create jobs at the farm, the supply chain and manufacturing sectors for many youths.	• Existence of new high yielding; pests and disease tolerant; and early maturing banana, sweet potato, fruits and other potential sources of natural colourants and Flavorants extracts in Uganda • Primary processing and value addition have advanced technologies and already tested by factories in Uganda. If these are skilfully used, they would advance quality production of colourant and Flavorants	• Established East Africa Standard – and UNBS standards on the many imported synthetic • colourants and f Flavorants mean that these are easy to customise to domestically manufactured colourants and Flavorants.	• Fruits, banana, and purple-fleshed sweet potato Do not demand high use of fertilizers and chemicals and can adapt to organic systems for production of healthy and consumer friendly colourants and Flavorants • Suitable soils and tropical climate that favour production throughout the year.
Negative factors					
• Increase in fuel costs results into higher operational and transactional costs • Covid 19 and pandemic relat-ed restrictions on movement curb the rate of trade flow	• Limited investments in processing facilities and cold storage facilities for perishables like citrus and other crop raw materials by private sectors actors. • Insufficient storage and/ or produce aggregation facilities create unattractive economies of scale	• Men tend to benefit from proceeds than women and youth because women do not own productive resources such as land.	• Limited skills in Good agronomic practices for citrus production • limited skills in using the available postharvest technologies obstruct the sector development. • This is aggravated by limited financing to invest in improved technologies such as irrigation systems along the citrus value chain.	• Informality of most local and cross-border trade transactions which limit structured trade transactions which may hurt the domestically produced colourants and Flavorants • Limited pro-poor market policies, un clear detailed information that examine constraints at every level of the colourants and Flavorants value chain.	• Climate changes with periodic drought periods and floods largely result into yield variations between seasons and locations;







CHAPTER 4: CONCLUSIONS AND RECOMMENDATIONS

In this section, conclusions made about the findings of the study and recommendations for future improvements are suggested.

4.1 Conclusions

Uganda is an agrarian economy with suitable soils and favourable climate to produce competitive quantities of bananas, purple-fleshed sweet potatoes, beetroots, lemon, strawberries, and vanilla to feed the natural Flavorants and colourants manufacturing industry. There is no doubt that there is increasing demand for Flavorants and colourants with an ever-expanding food industry. The fact that Uganda imported US$ 13 million worth of Flavorants and colourants annually between 2021 and 2022, is an indicator of a huge domestic market and demand.

In addition, there is a huge regional demand given that in 2021, Africa imported US$2.3 billion in synthetic Flavorants and colourants of which the East African community shared US$222.5million. On the natural Flavourant and colourant market, Africa shares about 1.5% of all global import value of natural colourants which hit US$25.2 million by 2021 from US$ 19.3 million five years ago in 2017.

Despite the potential competitiveness, Uganda does not produce Flavorants or colourants and all of it is imported mainly from India and neighbouring Kenya yet there is strong will among users to buy Ugandan made Flavorants and colourants, more so the natural ones. Therefore, there is need to encourage the private sector working with GOU to invest in the Flavorants and colourants industry because of the huge domestic and regional demand.

4.2 Recommendations

From the findings of this study based on the secondary and primary data collected and analysed and presented in chapter 3, we make the following recommendations.

i. NARO/ NARL should be intentional in building strategic partnerships (Private-private and or Public-Private) and collaborations so as to expand production capacity and accelerate food ingredients market competitiveness. Currently NARO/NARL should seek to partner with private companies like Desbro, Snowmans and Coca-Cola to product test some of the currently produced local colourants/ Flavourants at NARO/NARL and as well conduct some market product testing and feedback gathering. This will help to generate product feedback and continuous product refinement to suit different customer preferences and tastes.

ii. NARO/NARL FtF Research Activity should solicit proposals from nascent private sector firms that are into extraction of natural Flavorants and support them through business accelerator programs that will help them better refine their products offerings, design comprehensive business plans and marketing strategies, better branding to ensure better market penetration. In addition the above private sector firms could be supported to become investment ready so as to enable them receive third-party funding, technical assistance, business development, business training and market development support to enable them to grow their nascent business. This would go a long way to kick-start the nascent Flavorants sub-sector.

iii. NARO/NARL needs to conduct some benchmarking with countries in Africa such as Kenya, South Africa, Egypt, and Eswatini for R&D purposes on how to stimulate this nascent local market opportunity to not only supply domestic consumers but the entire East African Region.

iv. NARO/NARL FtF Research Activity should on-board MSc. Students, preferably in agricultural and Applied economics disciplines or Food Science and Technology to conduct their studies on 'consumer willingness to pay' for the different product attributes of banana and purple-fleshed sweet potatoes. This could be conducted using a discrete choice experiment on consumer's willingness-to-pay different Flavourants/ Colurants attributes. These studies could focus on using approaches such as the mixed logit (MXL) and latent class logit (LCL) in order to better understand the preferences of banana and purple-fleshed sweet potatoes customers. Their recommendations will inform further product refinement to suit the different market segments.

v. NARO/NARL Government should coordinate its agencies that are responsible for research, regulation, taxation, export promotion and the private sector since many innovations from research are stifled by actions of such agencies such as over taxation and lack of clear standards at the start of rolling out innovations.

vi. NARO/NARL and FTF Research Activity should advocate to relevant government ministries to increase efforts in regulation and monitoring of the quality of Flavorants and colourants being imported onto the Ugandan market. This will help address the loopholes with regard to poor quality products that are currently flooding the domestic markets with a direct impact on consumers' health. Currently there is emergence of a myriad of new products under existing lines for which no standards exists with the regulator – UNBS or URA.

vii. NARO/NARL should start output market linkages with organized farmer groups to supply the raw materials for onward extraction of Flavorants/ Colourants from bananas and purple-fleshed to supply to identified local private sector partners that would like to partner with NARO/NARL on promoting the said value chains. This will go a long way to starting to address the seasonal demand gaps in the natural Flavorants and colourants markets.

viii. In partnership with the private or public sector actors, NARO/NARL and FTF Research Activity should need to design an awareness campaign for the natural Flavorants/ Colourants that they intend to introduce on the Ugandan market. This is because evidence shows that the current market is dominated by imported synthetic products amidst an expanding domestic manufacturing and food and drinks sectors. This will help in import substitution. .



ANNEX

Annex 1: Leading exporters of natural colourants by value (2010-2021)

Table 21: Leading exporters of natural colourants by value (2010-2021)

	Export Value (US$, millions)											
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
World	811	1,049	1,001	970	978	1,012	1,163	1,275	1,320	1,258	1,457	1,580
Netherlands	95	113	121	129	123	118	129	133	123	146	139	173
China	4	9	16	20	21	108	159	201	198	173	247	263
United States of America	70	85	85	80	97	78	91	118	124	100	128	160
Denmark	76	98	91	89	94	92	101	94	111	106	113	111
Germany	94	110	93	97	97	80	86	83	91	90	99	134
Spain	78	103	103	77	73	72	90	104	100	93	116	110
Peru	91	126	66	43	49	60	84	82	73	61	62	58
Italy	37	52	60	72	67	55	56	65	75	81	94	97
France	41	53	57	67	56	46	44	58	56	46	56	66
Ireland	50	56	51	52	61	50	56	48	46	39	37	48
United Kingdom	43	53	54	43	42	40	42	44	47	57	50	56
Switzerland	21	40	39	40	27	25	26	52	46	31	45	40
Israel	2	9	15	34	35	40	38	33	55	48	41	47
Japan	20	19	17	16	15	17	20	20	20	21	20	24
Mexico	13	23	17	15	12	14	13	18	21	15	22	18

ANNEX 2: List of Key Informants

SN.	NAME	Location	ORGANISATION	Node of supply chain	Telephone/Email
1	Balakrishna Thota	Kampala	BRENNTAG/DESBRO	Importer	0752614627/ Balakrishna.thota@brenntag.co.ug
2	Kasim Aiyub Kaka	Matugga, Wakiso	Ahmed Raza Foods Industries LTD	Manufacturer	0777-450115/0752-786080 kasimkaka@everydayuaganda.com
3	Muliika Patrick	Kampala	UNBS	Regulator	0702-222217
4	Dr. Nuwamanya Ephraim	Namulonge/Wakiso	NACRRI	Researcher	
5	Meeme Hadijah	Kampala	UIRI	Researcher	mehadija@gmail.com
6	Jude M	Kampala	URA	Taxation Agency	
7	Mugisha Mukiga/ Aleno John	Kampala Makindye	LAS VEGAS BAKERIES	Bakery	0789796153
8	NAJIB	Kampala Nalukolongo	NTAKE BAKERY	Bakery	0702452528 / 0781470705
9	Olivia Namuyomba	Kampala Nalukolongo	BAKE FOR ME	Bakery	0752476973 / 0758 45 48 50
10	Lawrence Kayiwa	Kampala	Discount Traders	Distributor/Trader	0782528307
11	Andrew. M	Kikuubo, Kampala	Pradip	Distributor/Trader	0753581360
12	Nahabwe Joan	Mbarara	Fresco supermarket	Distributor/Trader	
13	Newton	Mbarara	Bridal shop	Distributor/Trader	
14	John Bosco	Mbarara	Day today supermarket	Distributor/Trader	
15	Allan Mwine	Mbarara	Retail shop	Distributor/Trader	Mwine.allan@gmail.com
16	Michael Mutungi	Mbarara	Retail shop	Distributor/Trader	
17	Wamala Sydney Mark	Mbarara	Mbarara, lakeside Dairy top limited	Diaries	sydneymark2019@gmail.com/ 0701394864
18	Mwebaze Robert	Mbarara	Mbarara, Elite Bakery	Bakery	mwebazerobert82@gmail.com 0701348589
19	Karuhanga Frank	Mbarara	Mbarara, GBK Dairy Products	Diaries	0703461279
20	Twinomugisha Michael	Mbarara	Mbarara, Shemererwa beverage ltd	Beverages	Twinomugisha31micheal@gmail.com
21	Tusigwiire Betty	Mbarara	Mbarara, Rwentondo Ice cream	Ice cream	0701175609
22	Setumba Leonard	Mbarara, Buremba street	Westpot bakery	Bakery	0758262816
23	Byaruhanga Kennedy	Mbarara	Mbarara, Ntare beverage limited	Beverages	0753971560
24	Atuhiire Sedrick	Mbarara	Mbarara, Kazire	Beverages	Sedrick69@gmail.com. 0704923054
25	Ivan Jonathan.	Mbarara	Mbarara, Ntake bakery	Bakery	jonivan727@gmail.com. 0701686075
26	Segwanyi Sam	Masaka	Gwanyi wineries	Wines	
27	Sendagire Waldan	Mpigi	Mpigi, Emaari Bakery	Bakery	sendagiirewalden01@gmail.com
28	Acii Mariam	Gulu	Aciidi & sons' enterprises	Distributor/Trader	
29	Aber fumer	Gulu	Te cwa wa	Distributor/Trader	Pifiaber88@gmail.com
30	Byamukama Emma	Gulu	Life loaf bakery	bakery	0770383556/ emmybyamukama@gmail.com
31	Dorine Odong	Gulu	Yoo leng ice cream	Ice cream	
32	AUMA SANDRA	Gulu	LAZ ICE CREAM	Ice cream	anyiisandra@gmail.com
33	AKELLO BABRA	Gulu	BARBIE CAKES	Cakes	0772324291
34	OCHANA JULIET	Gulu	Barbie Cakes House	Cakes	Ochanajuliet20@gmail.com
35	Lanyero Dillis harnet	Gulu	sifa bakes and confectionaries	Cakes	Dillisharnetlangoo970@gmail.com
36	Alokomach Norah	Gulu	Pumale cakes	Cakes	
37	Richard Laker	Gulu	cakes by janet laker	Cakes	Richie.pichiqex@gmail.com
38	Jonathan	Gulu	Jonathan the spect	Cakes	
39	Nyeko Stephen	Gulu	T.C.R	Cakes	Nyeko.scoro@gmail.com



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