

HORTICULTURE

VALIDATED REPORT 2014



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Horticulture Validated Report 2014

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ACRONYMS

ABE	African Bird Eye
AFFA	Agriculture, Fisheries and Food Authority
ALVs	African leafy vegetables
ASALs	Arid and Semi-Arid Lands
CDA	County Agriculture Officer
EU	European Union
Ha	Hectare
HCD	Horticultural Crops Directorate
KALRO	Kenya Agriculture and Livestock Research Organization
KAVES	Kenya Agricultural Value Chain Enterprises
Kenya	Horticulture Development Program (KHDP)
KEPHIS	Kenya Plant Health Inspectorate Services
KES	Kenya Shillings
KHCP	Kenya Horticulture Competitiveness Project
KNBS	Kenya National Bureau of Statistics
MAPs	Medicinal and Aromatic Plants
MoALF	Ministry of Agriculture, Livestock and Fisheries Agriculture, Fisheries
MRLs	Maximum Residue Limits)
MT	Metric Tons
SCAO	Sub- County Agriculture Officer
UAE	United Arab Emirates
USAID	United States Agency for International Development

1. Foreword

Horticultural Crops Directorate (HCD) a directorate in Agriculture, Fisheries and Food Authority (AFFA) with the participation of other stakeholders in the industry undertook data validation exercise on the horticulture performance for 2014 presented in this report. The report is meant to provide information to the industry on performance of the fruits, vegetables, and flowers grown in all the Counties for the purpose of planning, research, development, and investment.

The data has been outlined according to the area covered by each crop as well as the value at the farm gate level. The overall potential for each crop with the accompanying challenges has also been discussed though it is prudent to mention that there has been under reporting for some crops particularly those grown by the large scale growers.

The performance of the sector is very important considering that it provides income, food security and foreign exchange to the economy. Therefore, this report provide the growth pattern over the years to assist in developing interventions to promote the sector. The data provided herein is obtained from the localities by the field extension staff guaranteeing representation of all parts of the country.

The main challenge has always been the validity of the data brought about by non-standardized methodology of collecting the data at the county level. However, the data validation team which is composed of a multi-disciplinary team of officers were able to interrogate and collate the data in order resulting into highly accurate data.

There is need to develop a standard guide on how data should be collected from the field and build capacity of the extension workers to enhance the validity of the data collected. The field data which were outside acceptable range were moderated using the previous year's values. This moderation was also informed by the wide variation in acreage between 2011 and 2012.

2. Acknowledgement

This report is a product of wider consultations among the key industry stakeholders whose input has been invaluable.

Members of the data validation team include the Ministry of Agriculture, Livestock and Fisheries (MoALF), Agriculture, Fisheries and Food Authority-Horticultural Crops Directorate (AFFA-HCD), Kenya National Bureau of Statistics (KNBS), Kenya Plant Health Inspectorate Services (KEPHIS) and Kenya Agriculture and Livestock Research Organization (KALRO) that provided support toward the data collection from the counties are hereby acknowledged.

Special thanks to the MoALF staff who were directly involved in the validation exercise at county levels. The support of County Directors of Agriculture, County Horticulture Crop Officers, Sub County Agriculture Officers, and Sub County Horticulture Crops Officers in availing data for scrutiny and organizing meetings to deliberate respective reports was vital in completing this report with high level of accuracy

This work has been accomplished by a team of highly qualified and dedicated officers namely Ms. Grace Kyallo, Mr. Wilfred Yako, Ms. Josephine Simiyu, James Kamau Paul, Gilbert Kipyegon, Dr. Beatrice Ng'ayu, Mr David Mbarire, Mr. Caleb Yatich of AFFA-HCD; Ms Agnes Kyallo, Ms. Ann Njoroge, Mr. Patrick Onchieku, Mr. Tom Dienya of State Department of Agriculture, MoALF; Mr. Augustus Kivi of KEPHIS, Mr. John G. Mburu and Mr. Patrick Nderitu of KNBS. Ms. Grace Watani, Ms. Tabitha Runyora, USAID-KAVES, and Ms. Juster Gitonga of KALRO.

Special thanks go to Ms. Gladys Mwai for providing the logistical supporting and attending to the technical needs of the Committee during the report writing exercise.

Mr. Zakayo Magara, Interim Head of Directorate HCD, immensely guided and facilitated the entire process.

I wish to acknowledge the horticulture farming fraternity that continues to generate the data and information used in preparing this report. Since it is not possible to name each one of you that significantly contributed towards this work, kindly take this acknowledgement as my humble appreciation for your invaluable input.

The publishing of this report was financed by the Kenya Agriculture Value chain Enterprises (USAID-KAVES) Project, which is a part of Feed the Future, the U.S. Government's global hunger and food security initiative.

3. Methodology

Data collection exercise was preceded with development of data capturing templates. The templates were forwarded to the County Directors of Agricultural Officers (CDA) through the County Executives, prior to the field visits by the data validation team. The data validation team was trained, on the templates and data collection procedures prior to the field visits.

The Data was validated in all the 47 counties through county data validation fora. The fora were attended by the CDAs and Sub County Agricultural Officers (SCAOs) of the respective counties and chaired by a member of the validation team. Using pre-filled data templates earlier submitted to the County Agricultural Officers (CAOs), the county fora validated the information provided in the templates.

A workshop was convened to compile data from the counties and the data then subjected to analysis using excel. The draft report generated from the workshop was discussed and validated by stakeholders before the final version was produced.

4. VEGETABLES

The agriculture sector is the mainstay in the Kenyan economy contributing 30 percent of the GDP and accounts for 80 percent of the employment. According to the Kenya Economic Survey 2014, the leading subsectors in 2014 were Dairy, Tea, and Horticulture in that order.

The domestic value of horticulture production in 2014 amounted to KES 196 billion as compared to 186.9 billion in 2013; this is equivalent to an increase of five percent as shown in table 1. Over the same period, cultivated area increased by two percent from 596,574 Ha to 605,057 Ha while the total production increased by nine percent from 7.3 million MT in 2013 to 7.9 million MT in 2014.

Table 1: Trends of Horticulture Crops Performance, 2012-2014

Indicator	2012	2013	2014	Percent (%) Increase in 2014
Area (Ha)	529,482	596,574	605,057	2.0
Production (Millions MT)	6.49	7.26	7.88	9.0
Value (Millions KES)	179,097	186,912	195,899	5.0
Export volume ('000' KG)	205,728	213,884	220,248	3.0
Export value (Millions KES)	89,869	83,381	84,084	0.8

Source: HCD

Review of Performance of Horticultural Crops by Category

In 2014, vegetables contributed 36 percent to the domestic value of horticulture. The area, production, and value were 326,837 Ha, 4.1 million MT and KES 70.9 billion respectively. The area under vegetables, production, and value all increased by 26, 12, and 11 percent. The leading vegetables in production and value were Irish potatoes, tomatoes and cabbages.

In 2014, fruits contributed KES 51.4 billion accounting for 26 percent of the domestic value of horticultural produce. The area under fruit was 159,301 Ha with a production of 3.3 million MT. Although the area under fruits declined by 32 percent from the 2013 level, production and value increased by seven and three percent, respectively. The major fruits grown in order of importance were; banana mangoes, pineapples, avocado, pawpaw, oranges, water melon, and passion fruit.

In 2014, nuts contributed KES 9.6 billion accounting for five percent of the domestic value of horticulture. The area, value and production increased by 3.4, 30, and 9 percent respectively compared to the previous year. The increase in the area, production and value of nuts is attributed to better prices offered to farmers. Nuts have a potential to be processed into diversified high market end value products and hence an important sub-sector in attaining objectives of the Kenya Vision 2030.

Floriculture is one of the fastest growing subsectors in the agriculture sector and is key in achieving the Kenya vision 2030. In 2014, the subsector contributed KES 59.9 billion accounting for 30 percent of the domestic value of horticulture. This was a 7 percent increase in value as compared to KES 55.95 billion realized in the year 2013.

Table 2: Horticulture Industry Performance by Category (2012-2014)

Product	2012			2013			2014			Percent share by 2014 value
	Area (Ha)	Quantity (Ton)	Value (Million KES)	Area (Ha)	Quantity (Ton)	Value (Million KES)	Area (Ha)	Quantity (Ton)	Value (Million KES)	
Vegetables	239,994	3,191,908	54,096	258,354	3,629,762	63,686	326,837	4,076,981	70,867	36
Flowers	4,039	108,306	64,963	4,049	105,544	55,975	4,085	114,764	59,893	30
Fruits	205,354	2,831,007	46,342	232,715	3,118,588	50,042	159,301	3,329,363	51,354	26
Nuts	67,528	141,568	7,388	86,901	171,278	9,283	103,801	224,231	9,601	5
Maps	12,567	185,333	6,308	14,855	232,269	7,941	16,293	176,874	6,946	2
Total	529,482	6,458,122	179,097	596,874	7,257,441	186,927	605,057	7,882,028	195,899	100

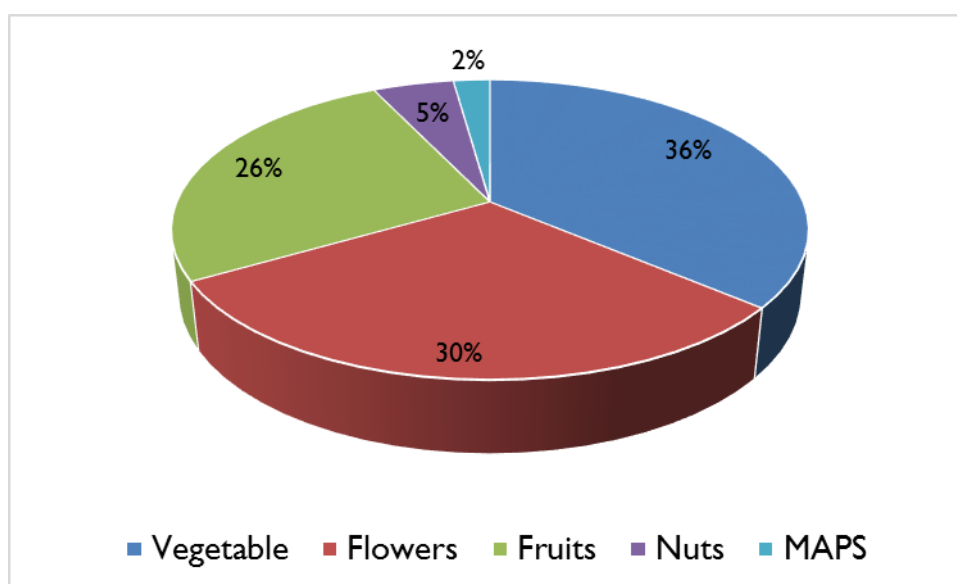
Figure 1: Horticulture Industry contribution by Value, 2014

Table 3: Counties leading in horticultural production by value in 2014

YEAR	2012			2013			2014		
COUNTY	Area (Ha)	Volume (Tons)	Value (Million KES)	Area (Ha)	Volume (Tons)	Value (Million KES)	Area (Ha)	Volume (Tons)	Value (Million KES)
Bungoma	15,889	405,092	8,716	18,516	445,471	10,122	24,736	519,355	11,919
Meru	30,982	663,738	12,031	32,326	718,065	13,035	30,046	588,287	10,812
Murang'a	26,358	550,732	11,259	26,860	553,007	11,759	21,220	517,315	9,952
Nyandarua	36,771	488,466	4,868	38,565	500,457	5,625	40,326	499,791	6,594
Kiambu	29,828	429,462	9,193	27,290	462,390	8,679	25,375	293,877	6,363
Kirinyaga	9,180	336,133	6,364	9,218	325,785	6,129	7,470	304,088	6,016
Elgeyo Marakwet	21,559	358,261	5,384	24,456	406,588	5,980	21,350	351,605	5,326
Nyeri	16,538	167,294	3,621	18,396	194,922	3,441	25,774	248,641	5,007
Nakuru	20,860	369,969	3,749	28,234	662,684	4,238	22,749	407,855	3,622
Kwale	16,383	99,353	1,466	16,318	95,565	1,387	11,562	209,182	3,351
Embu	8,757	303,680	3,142	9,135	343,564	3,710	7,257	302,807	3,035
Kericho	5,759	118,727	1,758	5,822	123,984	3,220	2,087	100,022	2,101
Machakos	12,715	122,833	10,082	14,272	122,465	12,108	11,456	103,844	2,040
Taita Taveta	6,546	222,461	3,764	6,937	251,408	3,870	3,698	144,644	1,642
Narok	6,646	72,166	1,696	8,337	236,818	3,687	10,035	81,275	1,303
Others	189,687	1,798,451	34,063	207,575	2,025,687	40,866	82,757	1,040,221	16,900
TOTAL	454,458	6,506,818	121,156	492,257	7,468,860	137,856	347,898	5,712,809	95,983

Horticultural exports 2012-2014

The total volume of horticultural produce exported in 2014 was 220,000 MT valued at KES 84 billion. Compared to 2013, the volume exported in 2014 was three percent higher though the volume only increased marginally by 0.8 percent. The increase in quantity and value was due to the increase in quantities of flowers and fruits exports. The biggest gains in exports were flowers especially roses and fruits particularly avocado and mangoes whose volumes to the Middle East market increased. There was a drop in vegetable both in value and quantity as shown in the figure below. This could be attributed to several interception due to Maximum Residue Limits (MRLs) exceedance in Europe.

Table 4: Fresh Horticultural Exports

Year	2012		2013		2014	
	Volume	Value	Volume	Value	Volume	Value
	(Tons)	(Million KES)	(Tons)	(Million KES)	(Tons)	(Million KES)
Flowers	108,306	64,964	105,554	55,976	114,764	59,893
Fruits	31,070	4,680	31,107	4,483	35,149	5,411
Vegetable	66,352	20,226	77,172	22,923	70,335	18,781
Total	205,728	89,869	213,833	83,382	220,248	84,085



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KAVES | Kenya Agricultural Value Chain Enterprises Project

The Kenya Agricultural Value Chain Enterprises (USAID-KAVES) Project.

The Kenya Agricultural Value Chain Enterprises (KAVES), is a five-year activity launched in January 2013, and supported by the American people through the United States Agency for International Development (USAID) to invest in the commercialization of smallholder agriculture.

The USAID-KAVES goal is to increase the productivity and incomes of smallholders along staples, dairy and horticultural value chains, thereby enhancing food security and improving nutrition. It is part of Feed the Future, the U.S. Government's global hunger and food security initiative. With a focus on smallholder farmers, particularly women, Feed the Future supports partner countries in developing their own agriculture sectors to generate opportunities for economic growth and trade, which can help reduce poverty and hunger.

Who we work with

KAVES interventions are commercializing and raising incomes for more than 350,000 smallholder farmers in 22 counties, including men and women of all ages. Households are also benefiting from specific nutrition, water, sanitation, and hygiene interventions and investments. KAVES focuses on smallholder farmers who are producing milk and crops for both home consumption and sales. The project's aim is that all farmers in the KAVES team will increase their incomes from agriculture continuously over the five years of the project.

Farmers receive technical advice and practical field demonstrations on how to implement sustainable agricultural practices that result in profitable production of maize, sorghum, rice, groundnuts, green gram, export vegetables, passion fruit, mango, banana, and potato and how to manage dairy cows for optimum milk production. The training and technical support is provided by an array of commercial partners and local subcontractors.

KAVES maintains high levels of engagement with national and county government agricultural departments. As a market-driven project, the project has also established many commercial partnerships that are increasing continuously and contributing substantially to the impact of KAVES.

KAVES target Counties



KAVES is working in 16 western, high rainfall (HR1) counties shown above:

Uasin-Gishu, Bomet, Kericho, Kisumu, Kisii, Homa Bay, Busia, Kakamega, Bungoma, Nyamira, Migori, Siaya, Vihiga, Trans-Nzoia, Nandi, Elgeyo Marakwet.

And in 6 counties in eastern, semi-arid (SA2) areas shown below:

Meru, Tharaka-Nithi, Machakos, Makueni, Kitui, and Taita-Taveta.



CHAPTER TWO

VEGETABLES PERFORMANCE



Overall performance

In 2014, vegetables contributed 36 percent to the domestic value of horticulture. The area, production and value were 326,837 Ha 4.1 million MT and KES 70.9 billion respectively. The area under vegetables, production, and value all increased by 26, 12, and 11 percent. The leading vegetables in production and value were Irish potatoes, tomatoes, and cabbages. The leading vegetables in production and value were Irish potatoes, tomatoes, kales, and cabbages.

The decreased production was occasioned by unfavorable weather conditions that resulted in low yield, thus reducing the value of vegetables particularly leafy ones. The leading vegetables in production and value were potatoes, tomatoes, kales, and cabbages as shown in the Table 5 below. Initiatives by the government to ensure planting materials are accessible especially to vegetables that have a bearing on food security and nutrition such as potatoes and sweet potatoes also resulted in the increase. However, the main challenge has always been inaccessibility to quality seeds for other vegetables, lack of value addition technologies and high postharvest losses.

Table 5: Performance of selected exotic vegetables 2012-2014

Produce	2012			2013			2014			% of value
	Area ('000) HA	Volume MT	Value (Million KES)	Area ('000) HA	Volume MT	Value (Million KES)	Area ('000) HA	Volume MT	Value (Million KES)	
Potatoes	114	1,570	22,170	117	1,759	25,081	131	1,757	26,706	43%
Tomatoes	19	364	10,386	21	384	11,652	24	400	11,803	19%
Cabbages	15	412	4,517	16	451	5,144	15	443	4,931	8%
Sweet potatoes	22	311	3,349	23	300	3,556	23	365	4,767	8%
Kales	24	308	4,153	24	353	4,277	24	349	4,844	8%
Garden peas	9	39	882	11	43	1,016	11	43	1,021	2%
Runner beans	0.375	2	162	0.345	2	129	0.404	2	174	0%
French beans	5	84	5,245	5	112	4,382	5	123	5,038	8%
Carrots	6	170	2,150	5	199	2,645	6	90	1,952	3%
Green maize	1	4	76	1	5	109	26	111	821	1%
Butternut	1	12	208	1	8	171	1	13	224	0%
Sweet pepper	1	9	278	1	14	415	2	12	325	1%
Grand Total	217	3,285	53,576	225	3,630	58,577	268	3,708	62,606	100%

4.1 Potatoes (*Solanum tuberosum*)

The area under Irish potatoes in 2014 was 131,201 Ha producing 1.76 million MT with a value of KES 27 billion. Compared to 2013, the area increased by 11 percent while the volume produced decreased by less than one percent due to unfavorable weather. At the same time the value of potato produced in 2014 was KES 1.3 billion lower than the previous year. The major producing areas were; Nyandarua, Elgeyo Marakwet, and Nakuru which accounted for 60 percent of total production in 2014. The price per kilogram of potatoes in 2014 was generally the same as the previous year at KES 14 remained the same in 2014. However, highest potato prices, over KES 20 per kilogram, were reported in Meru, Bomet, and Murang'a. The prices, which are 53 percent above the average price are attributed to high market demand in Nairobi and the variety which is mainly used in the processing industry. The main challenge in Irish potato production has been limited use of certified seeds, resulting to poor performance especially in Narok and Murang'a where yields are nearly 60 percent below the national average.

Table 6: Production of Potatoes in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyandarua	25,175	347,731	3,334	25,861	363,520	3,714.5	30,070	386,440	4,972.1
Elgeyo Marakwet	15,844	259,047	4,126	18,386	303,359	4,616.0	18,019	302,306	4,426.1
Meru	10,842	133,704	3,332	11,503	148,991	3,663.5	11,503	148,991	3,663.5
Nakuru	13,675	252,751	2,336	14,634	263,401	2,317.4	17,991	323,842	2,616.8
Kiambu	12,582	116,155	2,005	11,291	132,631	1,956.2	12,582	116,155	2,005.0
Bomet	2,847	43,600	1,020	2,924	74,504	1,477.3	2,899	64,420	1,288.4
Nyeri	8,067	133,446	1,463	6,404	94,721	1,490.0	7,821	61,143	1,140.0
Narok	5,022	38,465	1,754	6,356	162,857	2,437.0	8,807	53,965	774.9
Bungoma	7110	86,340	402	7,316	74,205	483.4	8,640	172,800	3,456
Murang'a	6,423	35,150	683	6,570	35,298	723.0	6,429	35,059	723.6
Baringo	1,717	25,924	516	1,711	26,809	617.5	2,043	33,246	483.4
Uasin Gishu	913	13,531	199	1,145	28,025	541.3	1,212	18,016	348.9
Others	3,702	84,210	1,000	3,394	50,488	1,044	3,185	40,717	807
Total	107,52	1,570,05	22,168	117,495	1,758,8	25,443	131,20	1,757,100	26,706

4.2 Tomatoes (*Lycopersicon esculentum*)

During the year under review, the area under tomatoes was 24,074 ha. The total national production was 400,204 MT valued at KES 11.8 billion. The area under production increased from 20,985 Ha to 24,074 in 2014 representing 15 percent increase. The quantity and value increased from 383,868 to 400,204 tons and value from 11.6 to 11.8 billion representing 4.0 and 1.3 percent, respectively. Tomato was mainly produced in Bungoma, Kirinyaga, and Kajiado, which accounted for 37 percent of total tomato output in 2014. In Kirinyaga and Loitokitok, tomato is produced under irrigation schemes namely Mwea and Namelock schemes respectively. Green house tomatoes have picked up with farmers but the main challenge is the spread of bacterial wilt that has caused some green houses to be abandoned.

Table 7: Production of Tomato in select Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kajiado	1,603	35,937	921	1,668	50,884	962	1,680	47,368	1,624
Bungoma	1,344	39,232	1,221	1,474	41,568	1,228	1,700	50,399	1,611
Kirinyaga	1,903	59,464	1,159	1,796	30,774	750	1,648	48,560	1,156
Makueni	431	17,582	651	486	22,560	991	558	21,096	857
Kiambu	964	18,029	811	691	9,169	419	964	18,029	812
Trans Nzoia	480	9,270	129	623	17,395	302	628	14,848	416
Machakos	547	10,335	222	724	11,548	323	447	6,189	356
Kisii	876	15,590	331	951	16,985	364	937	16,664	351
Nakuru	509	6,745	602	495	8,668	516	633	17,511	347
Kisumu	822	12,219	347	1,537	14,307	444	1,477	16,720	328
Others	9,706	139,702	3,992	10,540	160,010	5,353	13,402	142,820	3,945
Total	19,185	364,105	10,386	20,985	383,868	11,652	24,074	400,204	11,803

4.3 Snow Peas (*Pisum sativum* var. *Saccharatum*)

The total area under snow peas was 1,605 Ha in 2014 producing a total volume of 17,363 MT of snow peas which was a 53 percent increase as compared to 2013. Although the area decreased by 10 percent, production and value increased by 53 and 27 percent respectively. The main counties producing the crop were Meru and Nyandarua which accounted 78 percent of the total national output. However, it is important to note that the data does not include snow peas produced by large scale exporters.

Table 8: Production of Snow peas in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	851	5,055	309.0	959	5,745	361.2	773	11,990	451.9
Nyandarua	368	2,627	106.0	356	2,118	179.0	342	2,470	276.1
Laikipia	18	54	2.0	145	600	45.4	189	793	56.0
Taita Taveta	214	4,336	71.9	98	2,002	13.8	60	600	23.7
Kiambu	124	1,092	20.4	124	1,012	21.3	124	1,012	21.0
Narok	-	-	-	40	252	22.7	40	160	14.4
Baringo	25	213	21.3	15	129	12.9	17	109	10.9
Nyeri	17	81	29.8	18	88	2.5	11	52	3.3
Trans Nzoia	31	46	1.0	13	36	2.4	16	76	3.1
Nakuru	8	19	2.0	10	28	2.8	7	41	2.3
Others	46	218	7	42	205	16	26	60	3
Total	1,702	13,741	570	1,820	12,215	680	1,605	17,363	866

4.4 French Bean (*Phaseolus sp.*)

The total production of French bean in 2014 was 112,666 MT valued at KES 5.04 billion. The area increased by three percent from 4,707 Ha in 2013 to 4,572 Ha while the output and value increased by nine and 15 percent from 112,409 MT to 122,666 MT and KES 4.4 to 5.04 billion, respectively. The leading counties producing French bean were Kirinyaga, Murang'a, and Meru which accounted for 81 percent of total output. French bean is primarily grown for exports with a small quantity consumed in the domestic market. The farm gate prices for the product have remained constant in recent year's averaging KES 40 a kilogram. It is important to note that the data does not include production from large scale farms.

Table 9: Production of French bean in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kirinyaga	1,813	51,148	2,455.58	1,481	45,626	2,053.78	1,536	47,440	2,372.81
Murang'a	861	3,848	1,185.28	885	36,810	1,268.21	847	34,690	1,268.10
Meru	326	16,615	616.63	367	13,328	530.32	407	17,030	681.33
Machakos	329	1,760	75.22	522	2,415	106.01	398	11,139	433.15
Narok	105	1,575	94.50	120	900	54.00	120	900	54.00
Kiambu	221	4,149	55.95	226	3,832	45.83	191	3,749	47.00
Taita Taveta	48	1,191	42.23	134	3,514	147.59	58	1,245	43.74
Embu	58	746	25.85	43	639	34.33	35	490	26.03
Nyeri	139	428	623.85	148	431	9.38	143	525	16.36
Bomet	-	-	-	-	-	-	54	240	13.68
Makueni	74	379	16.52	62	376	16.43	97	421	13.68
Kajiado	88	478	17.04	95	580	25.38	81	863	13.09
Others	894	1,529	36	624	3,958	91	605	3,934	55
Total	4,956	83,846	5,245	4,707	112,409	4,382	4,572	122,666	5,038

4.5 Sugar snaps (*Pisum sativum* var. *Macrocarpon*)

Sugar snaps is grown for export market and insignificant amounts consumed locally. In 2014, it was grown on an area of 2,683 Ha producing 43,497 MT valued at KES 579 million. As compared to 2013, the area, yield and value increased by 12, 44, and 12 percent. Meru, Trans Nzoia, and Taita Taveta are the leading production areas which are accounting for 98 percent of production in 2014.

Table 10: Production of Sugar snaps in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	60	600	72.00	80	800	96.00	450	4,090	203.60
Trans Nzoia	5	20	-	10	35	-	1,563	8,448	170.52
Taita Taveta	548	2,740	95.90	547	2,735	82.05	612	3,947	91.73
Uasin Gishu	40	800	72.00	42	630	44.10	14	196	13.72
Narok	-	-	-	10	88	8.31	10	40	3.80
Elgeyo Marakwet	-	-	-	-	-	-	12	60	3.00
Laikipia	-	-	-	-	-	-	16	64	1.92
Nyeri	4	17	0.66	5	19	0.80	6	22	1.08
Others	3	10	0.6	11	76	0.01	1	0	0
Total	660	4,187	241	705	4,383	231	2,684	16,867	489

4.6 Spinach (*Spinacia oleracea*)

Spinach is produced in almost all the counties in the country. The leading producers in 2014 were Kiambu, Meru, and Nyandarua accounting for 47 percent of national output. Nationally, 5,005 Ha was put to the crop producing 62,817 MT valued at KES 878 million. There was an overall decrease in the volume produced and value of about 17 and 24 percent, respectively. However, the area under the crop increased by six percent in 2014. In general, the demand for spinach is increasing, particularly in the urban markets.

Table 11: Production of Spinach in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	1,120	12,457	202.18	1,005	35,081	390.00	1,120	12,457	202.18
Meru	210	1,537	25.16	172	1,129	19.37	251	6,425	133.73
Taita Taveta	74	3,342	80.67	120	4,043	218.72	74	3,293	81.30
Nyandarua	829	11,031	58.17	594	10,707	68.85	565	10,782	69.65
Laikipia	56	758	10.16	73	1,065	15.25	105	2,275	55.64
Nakuru	231	2,056	34.51	238	2,140	29.05	359	4,730	46.84
Makueni	81	1,139	27.95	86	1,255	37.90	117	1,114	31.90
Bungoma	190	1,000	22.60	260	1,350	26.88	269	1,415	25.86
Uasin Gishu	60	1000	23.85	67	1,100	19.90	56	856	21.05
Homa Bay	15	107	2.83	20	182	2.78	39	420	19.63
Others	1,928	14,436	271	2,081	17,769	327	2,050	19,050	190
Total	4,794	48,863	759	4,716	75,821	1,156	5,005	62,817	878

4.7 Runner Beans (*Phaseolus Coccineus*)

Runner beans is grown by large scale growers in Meru, Nyandarua, and Migori Counties majorly for export under special conditions whose investments cannot be afforded by small growers. Meru and Nyandarua account for 92 percent of the total runner bean production in the Country. During the year under review, the runner bean was grown on 404 Ha producing 1,973 MT of the crop valued at KES 174 million.

Table 12: Production of Runner bean in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	150	1,500	150	120	1,200	120	160	1,600	160
Nyandarua	180	230	7	185	192	6	213	208	6
Migori	27	108	1	25	125	1	20	125	6
Nyeri	5	9	0	2	5	1	4	8	1
Busia	4	30	1	4	30	1	4	30	1
Samburu	1	1	0	1	1	0	1	2	0
Others	8	75	3	8	120	0	2	0	0
Total	375	1,953	162	345	1,673	129	404	1,973	174

4.8 Cabbage (*Brassica oleracea* var *capitata*)

Cabbage is grown in the wet areas of the country and is one of the highly consumed vegetables. In 2014, the country produced 442,569 MT of cabbages with a total value of KES 4.93 billion from 15,318 Ha. The leading producers of cabbage were Meru, Nyandarua, Kiambu, and Nakuru which accounted for 56 percent of total production. Compared to 2013, the area, volume produced and value all declined by five, two, and four percent.

Table 13: Production of Cabbage in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	2,036	95,831	989	2,240	106,763	1,087	1,958	97,560	1,096
Nyandarua	2,334	63,575	705	2,205	56,830	701	2,326	63,420	658
Kiambu	1,830	47,735	515	1,620	41,768	512	1,830	47,735	515
Bungoma	995	28,613	272	1,168	30,944	355	1,298	36,379	395
Kisii	892	23,987	275	1,008	27,397	310	988	26,971	307
Bomet	1,006	27,619	283	1,121	31,810	344	809	23,865	274
Nakuru	849	18,323	125	971	22,333	150	1,213	39,159	242
Narok	217	5,026	42	280	19,085	237	366	14,073	183
Elgeyo Marakwet	1,131	15,338	133	1,634	28,016	299	972	16,262	175
Uasin Gishu	366	17,012	162	388	14,040	149	336	14,788	146
Others	3,395	68,511	1,016	3,449	71,765	1,000	3,222	62,357	940
Total	15,051	411,570	4,517	16,084	450,751	5,144	15,318	442,569	4,931

4.9 Kales (*Brassica oleracea* var *acephala*)

Kale is the most popular leafy vegetables consumed in the country, because of its short production cycle and high productivity. In 2014, the area under production of kales was 24,422 Ha which produced 348,637 MT with a value of KES 4.8 billion. Though the area under production increased by one percent production decreased by a percent when compared to 2013. However, the value increased by 13 percent due to a rise in the prices from KES 12 to KES 14 per kilogram. The leading counties in kale production were Kiambu accounting for 23 percent followed by Kisii, Nyeri, and

Nyamira which accounted for 9, 8, and 4 percent respectively. Kiambu County recorded the highest farm gate price with an average price of KES 28 per kg and this was attributed to its proximity to Nairobi.

Table 14: Production of Kales in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	5,772	38,963	1,128	5,385	31,075	781	5,772	38,963	1,128
Kisii	1,886	36,938	393	2,033	40,660	445	1,990	41,700	439
Nyeri	826	19,557	188	845	18,835	194	867	22,901	384
Nyamira	455	6,930	70	462	7,775	92	848	13,679	195
Nandi	592	8,537	162	664	10,595	168	581	9,348	192
Bungoma	1,242	19,978	107	1,641	28,080	146	1,603	30,363	182
Narok	431	8,334	665	433	29,805	295	588	10,356	181
Uasin Gishu	462	18,295	222	443	15,140	182	314	12,800	178
Kakamega	872	5,738	155	900	6,230	155	1,040	7,404	176
Elgeyo Marakwet	725	11,236	118	746	11,790	122	844	10,563	149
Others	10,495	133,506	945	10,606	152,854	1,697	9,975	150,560	1,640
Total	23,758	308,012	4,153	24,158	352,839	4,277	24,422	348,637	4,844

4.10 Garden Pea (*Pisum sativum*)

The area under Garden Pea decreased by eight percent from 11,414 Ha in 2013 to 10,556Ha in 2014. However, the production of garden pea increased by one percent from 43,305 MT to 43,611 MT same as the value which increased marginally from KES 1,016 to 1,021 million during the same period. The major producing counties were Nyandarua, Nakuru, and Meru accounting for 37, 23, and 11 percent respectively. The crop is largely consumed in the domestic market with some exports as mixed prepacks.

Table 15: Production of Garden pea by select Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyandarua	4,462	15,678	310	6,013	19,823	502	5,746	16,346	346
Nakuru	2,384	11,464	195	2,642	13,018	196	1,672	10,104	224
Meru	178	914	33	146	770	29	442	4,850	154
Uasin Gishu	146	1,283	63	153	2,388	91	95	1,088	46
Laikipia	1,095	596	19	1,773	1,082	40	1,875	4,000	43
Bungoma	30	450	25	32	512	29	35	700	42
Kiambu	127	2,245	124	72	1,078	33	72	1,078	33
Kericho	29	116	3	25	100	16	34	163	33
Baringo	54	421	24	52	405	23	58	453	27
Taita Taveta	85	2,320	55	39	975	7	43	1,073	14
Others	478	3,243	31	467	3,154	50	484	3,119	59
Total	9,068	38,730	882	11,414	43,305	1,016	10,556	43,611	1,021

4.11 Carrot (*Daucus carota*)

Carrot is produced for the domestic market however; small quantities of baby carrots are exported. In 2014, the area under carrots was 5,504 Ha, producing 89,844 MT with a value of KES 1.9 billion. The leading producer of the crop was Kiambu County accounting 61 percent of total production. Although the area under carrots increased by three percent in 2014, production and value decreased by nine and four percent, respectively. This was mainly attributed to low productivity.

Table 16: Production of Carrots in select Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	676	108,983	1,096	661	133,489	1,386	676	18,983	500
Migori	890	16,830	171	881	10,490	208	954	11,175	453
Meru	1,037	10,484	169	1,138	11,262	179	1,054	8,681	162
Nyandarua	523	10,357	71	478	11,380	141	519	13,027	152
Siaya	223	3,144	106	303	4,335	155	321	4,720	150
Kisii	138	3,396	78	157	3,793	88	159	3,893	89
Nyeri	160	3,228	110	183	3,636	102	161	3,283	77
Nakuru	117	1,530	32	151	1,724	29	520	8,964	66
Bungoma	20	401	32	22	473	49	22	513	58
Homa Bay	251	2,006	100	264	1,829	91	125	802	48
Others	1,705	9,743	185	1,103	16,096	217	993	15,803	197
Total	5,740	170,102	2,150	5,341	198,507	2,645	5,504	89,844	1,916

4.12 Courgettes (*Cucurbita pepo*)

Courgettes are consumed in small quantities in the domestic market and are also exported in mixed pre packs. During the year under review, courgettes were planted on 548 Ha and produced 5,278 MT valued at KES 143 million. The area, production and value all declined in 2014 by 15 and 19 percent, respectively. The main producers of the crop were Kiambu and Taita Taveta accounting for 76 percent of the total production. Kiambu produces large quantities for the Nairobi population while Taita Taveta produces for Mombasa which have the largest demand for the commodity.

Table 17: Production of Courgettes by County

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	279	2,589	60	257	2,087	45	279	2,589	60
Taita Taveta	99	1,444	59	95	1,785	66	95	1,397	44
Machakos	21	137	3	33	153	4	40	275	10
Murang'a	73	248	7	96	313	8	76	295	8
Nakuru	7	28	2	7	29	1	12	143	6
Kirinyaga	10	111	3	10	140	4	12	202	5
Kajiado	6	72	4	10	86	6	8	60	4
Embu	4	130	3	4	135	3	6	204	3
Others	64	1,415	39	75	1,501	40	20	113	3
Total	563	6,174	180	587	6,229	177	548	5,278	143

4.13 Sweet Pepper (*Capsicum annuum* L.)

Sweet pepper is mainly consumed by the urban population as well as hotels. They are produced both in green houses and outdoors. In 2014, a total of 1,999 Ha was planted with sweet pepper giving an output of 11,874 MT with a value of KES 325 million. As compared to 2013, the area, increased by 86 percent. However, both volume produced and value decline by 17 and 22 percent, respectively. The major producing counties are Kiambu, Makueni, Tana River, and Embu accounting for 41 percent of total output. The main challenge facing the crop is bacterial wilt which has rendered traditional production areas to be unproductive.

Table 18: Production of Sweet pepper in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	236.00	1,950.70	71.96	222.00	1,822.00	86.48	196.00	1,191.00	72.74
Makueni	35.18	569.32	19.56	85.20	1,362.40	59.20	70.00	1,129.00	49.63
Tana River	39.00	1,203.00	30.32	42.00	1,152.00	45.00	57.00	1,329.00	33.23
Embu	12.00	295.60	6.33	38.00	2,057.60	41.15	27.00	1,162.40	29.05
Kisumu	26.00	234.00	1.74	65.00	740.00	21.75	65.00	487.50	19.59
Machakos	51.00	264.00	2.76	50.00	198.00	2.80	65.00	758.00	19.52
Others	487.50	4,606.00	145.61	573.70	6,985.00	158.61	1,518.75	5,816.96	101.19
Total	887	9,123	278	1,076	14,317	415	1,999	11,874	325

4.14 Broccoli (*Brassica oleraceae* var *italica*)

Broccoli is produced for the upscale market in the urban centers and hotels as well as for export. The largest production is in Meru and Kiambu which account for 66 percent of total production by volume. Compared to 2013, the area decreased by 53 percent from 706 to 332 Ha. Also, the volume produced and value decreased by 68 and 41 percent, respectively, from 8,125 to 2,623MT and KES 183 to 109 million. The expansion in production of this crop is inhibited by low domestic demand as consumers are unaware on how to prepare it.

Table 19: Production of Broccoli by selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	15	225	22.5	120	495	24.8	82	1,068	61.4
Kiambu	34	655	23.8	41	607	21.0	34	655	23.8
Homa Bay	11	165	4.1	13	195	4.9	28	375	9.4
Embu	40	100	3.0	80	240	6.0	65	300	7.8
Migori	380	5,700	87.0	430	6,450	122.0	10	150	3.75
Siaya	10	40	1.4	5	20	0.7	13	59	2.1
Others	19	88	2.6	17	118	3.6	8	16	0.3
Total	509	6,973	144	706	8,125	183	240	2,623	109

4.15 Butternut Pumpkin/squash (*Curcubita moschata*)

Butternut production has expanded over the years due to awareness created by various institutions among them Ministry of Agriculture. In 2014, a total of 630 Ha was planted giving a production of 13,146 MT with a value of KES 224 million. The leading counties by production were Kirinyaga, Elgeyo Marakwet, Meru, and Embu accounting for 71 percent of total volume produced.

Table 20: Production of Butternuts Pumpkin/Squash (*Curcubita moschata*) 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kirinyaga	105	4,546	55	38	445	7	136	6,125	91
Elgeyo Marakwet	23	1,015	15	23	1,036	15	26	1,054	19
Meru	96	2,329	50	84	2,225	46	67	1,110	19
Embu	38	1,720	24	22	970	9	25	1,105	14
Siaya	17	145	13	26	375	27	28	404	12
Homa Bay	46	245	3	50	246	9	100	664	9
Murang'a	63	418	11	62	363	9	61	368	9
Others	214	1,989	37	218	1,880	49	187	2,316	51
Total	602	12,407	208	523	7,540	171	630	13,146	224

4.16 Baby Corn (*Zea mays var scarni*)

The crop is mainly produced for export by both small scale and large scale farmers. In 2014, it was grown on 567 Ha producing 4,784 MT which had a value of KES 110 million. The main producing counties were Makueni, Kirinyaga, Machakos, and Laikipia which accounted for 94 percent of the total production. Though the area decreased by 12 percent the production largely remained the same as it was in 2013. Overall, the value of baby corn in 2014 was 13 percent higher than the previous year.

Table 21: Production of Baby corn in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Makueni	210	1,560	39	435	3,180	68	307	2,276	47
Laikipia	8	48	2	15	125	3	39	570	20
Kirinyaga	128	1,177	19	108	1,041	14	107	1,067	16
Machakos	43	72	2	50	80	2	60	600	12
Others	47	497	12	35	367	10	54	271	15
Total	436	3,354	74	643	4,793	97	567	4,784	110

4.17 Lettuce (*Lactuca sativa*)

Lettuce is a specialty crop mainly used in hotels and restaurants for preparing vegetable salads. There is little consumption at household level. The total area occupied by lettuce during the year dropped by 27 percent from 117 Ha to 85 Ha leading to the production of 1,404 MT with a total

value of KES 42 million. Compared to 2013, the output and value also dropped by 63 and 49 percent respectively.

Lettuce is mainly grown in Taita Taveta and Kiambu counties which account for 98 percent of national production. The challenge of producing in other parts of the country is the low domestic demand.

Table 22: Production of Lettuce by County

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	56	662	24	38	363	11	56	662	24
Taita Taveta	20	706	18	65	3,318	67	21	717	17
Nyeri	2	18	0	2	17	0	2	23	0
Vihiga	-	-	-	-	-	-	1	1	0
Kakamega	-	-	-	-	-	-	1	1	0
Others	13	81	4	12	89	5	4	0	1
Total	91	1,467	46	117	3,787	83	85	1,404	42

4.18 Cauliflower (*Brassica oleracea* var *botrytis*)

The crop has low demand in the domestic market and is grown mainly for the high income level market in the urban centers. In 2014, 3,644 MT of cauliflower with a value of KES 64 million was produced on 80 Ha of land. The crop is mainly produced in Kiambu which accounts for 89 percent of the cauliflower produced in the country. This is attributed to its close proximity to Nairobi which is the main market.

Table 23: Production of Cauliflower in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	63.0	3,247.5	62.0	40.5	480.5	14.2	63.0	3,247.5	62.0
Kakamega	4.0	40.0	0.8	1.0	10.0	0.2	1.0	10.0	0.2
Taita Taveta	12.0	378.0	1.6	27.3	1,380.8	7.2	15.7	386.3	1.3
Total	93	3,782	71	69	1,871	22	80	3,644	62

4.19 Beetroot (*Beta vulgaris*)

The crop is regarded as medicinal though it's consumed in small quantities either in fruit or vegetable salad. The area under beetroot in 2014 was 32 Ha that produced 216 MT with a total value of KES 13 million. The counties that had the highest production were Nakuru and Kiambu which accounted for 88 percent of total production. In general, the area under the crop increased by 2.5 times while the production and value also significantly increased by 133 and 74 percent, respectively.

Table 24: Production of Beetroot in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	14.0	107.5	5.4	10.8	67.5	4.7	13.3	70.0	5.4
Nakuru	-	-	-	-	-	-	15.3	122.1	4.9
Nandi	-	-	-	1.0	25.0	2.5	1.0	20.0	2.0
Turkana	-	-	-	-	-	-	0.2	2.0	0.2
Elgeyo Marakwet	0.5	0.1	0.1	0.6	0.1	0.1	0.7	0.1	0.01
Trans Nzoia	1.3	16.2	1.3	-	-	-	1.0	2.0	0.1
Total	27	230	11	12	92	7	32	216	13

4.20 Cucumbers (*Cucumis sativus*)

Cucumber is produced in small quantities in the country because of low domestic demand mainly in the hospitality industry. In 2014, the crop was produced on 162 Ha producing 1,549 MT with a domestic value of KES 27 million. The crop is mainly grown in Murang'a, Nyeri, Kiambu, Kajiado, Machakos, and Kwale Counties which account for 56 percent of national production. In 2014, the area, production and value all declined from the 2013 level by 18, 26, and 19 percent.

Table 25: Production of Cucumber in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Murang'a	63	531	10.9	62	380	9.5	62	409	10.2
Nyeri	19	134	6.3	17	121	5.6	25	111	6.1
Kiambu	12	102	27.3	2	17	0.4	12	102	2.7
Kajiado	7	130	2.6	13	220	4.8	5	100	2.0
Machakos	3	6	0.1	3	6	0.1	10	80	1.6
Kwale	2	34	1.2	4	69	2.4	4	69	1.4
Siaya	2	6	0.3	3	10	0.4	4	14	0.7
Embu	10	10	0.8	5	5	0.4	6	7	0.6
Meru	17	170	3.5	16	162	3.3	3	18	0.5
Others	36	434	18	73	1,103	6	31	639	1
Total	171	1,557	35	198	2,093	33	162	1,549	27

4.21 African Leafy Vegetables

The preference for the African leafy vegetables (ALVs) has been on the increase because of increased awareness on the health as well as nutritional benefits. During 2014 the area under ALVs increased six percent while the yields and value increased by 6.0 and 10 percent, respectively. In this category of vegetables, cowpeas, African nightshade spider plant and leaf amaranth are the most important accounting for 86 percent of the volume produced. However, spider plant, grain amaranth, African night shade and jute mello are the most valuable accounting for 62 percent of the total value of the leafy vegetables produced in 2014.

Table 26: Performance of African Leafy vegetables 2012-2014

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
African Nightshade	2,820	18,945	505	3,018	29,796	561	3,376	25,435	763
Spider plant	2,273	20,134	454.7	2,239	20,912	529.6	2,435	16,752	640.7
Cowpeas	25,544	69,940	910	23,195	55,223	764	24,431	65,096	812
Jute mallow	1,708	7,919	214.6	2,096	10,269	251.2	1,832	9,290	284.6
Leaf Amaranth	1,035	9,913	208.5	1,187	12,208	227.4	1,586	17,001	195.7
Pumpkin leaves	797	3,948	107.6	877	4,552	119.4	921	4,099	117.3
Rattle pod	286	1,984	43.2	370	2,780	58.2	533	5,100	119.1
Grain Amaranth	525	3,951	85.3	445	1,856	63.3	389	2,057	70
Total	34,988	136,734	2,529	33,427	137,596	2,574	35,503	144,830	3,002

4.21.1 Leaf Amaranth (*Amaranthus Sp*)

Leaf Amaranth also known as African Spinach is produced wholly for the domestic market invirtually every county. It is consumed in combination with other leafy vegetables and is rich in iron. During the year under review, the area under production was 1,586 Ha producing 17,001 MT valued at KES 195.6 million. This represented a decrease in the area and the yields by 34 and 39 percent respectively but the value decreased by 14 percent as compared to 2013. The Counties leading in production were Kilifi and Vihiga accounting for 56 percent of total Leaf amaranth produced in the year under review.

Table 27: Production of Leafy Amaranth in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Vihiga	76	604	31.2	100	894	46.1	162	1,332	64.3
Kilifi	177	3,290	65.8	198	3,749	69.2	373	8,271	22.2
Nyamira	2	10	0.3	3	12	0.3	151	755	15.0
Taita Taveta	31	535	12.6	49	1,007	0.0	33	593	13.4
Kakamega	190	849	12.7	194	927	12.0	205	891	11.8
Kiambu	40	660	11.4	18	149	22.6	40	660	11.4
Homa Bay	29	144	0.7	31	155	0.8	50	216	8.8
Tana River	10	140	2.8	13	161	3.4	33	226	6.8
Others	480	3,681	71	581	5,154	73	539	4,057	42
Total	1,035	9,913	209	1,187	12,208	227	1,586	17,001	196

4.21.2 Grain Amaranth (*Amaranthus SP*)

Grain Amaranth is largely produced for making flour and as a food additive. In 2014, the area under grain amaranth was 389 Ha producing 2,057 MT valued at KES 70 million. This represented a decline in the area under production of 13 percent but both production and value increased by 11 percent compared to 2013. The Counties leading in the production of this crop were Migori and Siaya which accounted for 60 percent of the total production.

Table 28: Production of Grain Amaranth in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Migori	95	380	15.0	124	616	24.2	74	616	30.3
Siaya	30	300	7.5	65	470	12.7	73	615	16.1
Homa Bay	8	80	4.3	13	130	7.4	16	121	7.3
Kakamega	105	147	2.6	127	225	3.2	114	107	2.9
Kisii	176	2,255	37.4	22	95	5.9	20	20	2.5
Kiambu	24	600	10.8	8	113	2.2	9	114	2.2
Vihiga	2	10	0.9	2	10	0.9	4	22	1.8
Trans Nzoia	-	-	-	4	16	0.3	5	8	1.5
Busia	33	23	1.0	33	23	1.0	37	25	1.2
Bungoma	7	15	0.6	8	20	0.9	7	27	1.2
Others	45	141	5.2	39	138	4.6	30	382	3
Total	525	3,951	85.3	445	1,856	63.3	389	2,057	70

4.21.3 African Nightshade (*Solanum nigrum complexes*)

The crop is popular in across all the Counties. The area under the crop in 2014 was 3376 Ha with a production of 25,435 MT valued at KES 763 million. Compared to 2013, the area under production and value increased by 12 and 36 percent, respectively. Conversely production declined by 15 percent. The major challenge in production of the crop is inadequate supply of certified seeds. The main production areas were Nyamira and Kisii which accounted for 37 percent of the total production.

Table 29: Production of African nightshade in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyamira	326	2,844	82	379	3,370	99	670	6,050	231
Kisii	387	3,508	125	406	3,700	121	393	3,332	96
Narok	72	1,440	72	80	1,600	80	82	1,640	82
Kericho	49	322	11	58	876	44	42	630	50
Kakamega	368	1,371	33	391	1,478	34	424	1,495	36
Bungoma	157	824	28	161	845	28	200	1,043	34
Marakwet	238	2,007	18	210	1,832	10	203	1,813	32
Bomet	116	589	10	117	739	13	100	1,080	21
Uasin Gishu	70	591	15	81	638	17	76	670	21
Homa Bay	64	386	8	68	415	9	88	512	17
Others	973	5,063	103	1,067	14,303	106	1,098	7,170	143
Total	2,820	18,945	505	3,018	29,796	561	3,376	25,435	763

4.21.4 Cowpea Leaves (*Vigna unguiculata*)

Cowpea is produced for the domestic market. It is commonly referred to as 'Kunde'. The leading producers of cowpeas in 2014 were Kitui, Kwale, Machakos and Siaya which accounted for a combined 47 percent of total production. Overall, 24,431 Ha was put to the crop in 2014 realizing 65,096 MT valued at KES 812 million. The area planted and production were 5 and 18 percent higher

than the previous year but the value dropped by 19 percent. The crop is highly susceptible to rust during the hot weather while availability of certified seeds is a major challenge.

Table 30: Production of Cowpea leaves in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kitui	11,780	19,000	32	12,800	15,310	31	13,000	15,470	245
Siaya	405	4,478	254	407	2,304	52	1,039	3,029	96
Migori	95	455	26	105	525	27	193	1,315	52
Machakos	1,082	3,702	58	1,593	5,441	79	2,668	4,814	49
Kakamega	526	1,407	30	591	1,644	35	729	2,025	43
Kwale	696	1,290	25	217	878	13	1,122	6,982	38
Bungoma	127	909	28	138	957	31	168	1,120	37
Kisumu	759	3,063	51	430	3,210	48	374	1,188	32
Tharaka Nithi	61	325	24	56	260	27	60	298	5
Nyamira	301	2,109	39	322	2,698	62	130	991	28
Others	9,712	33,202	343	6,536	21,996	359	4,948	27,864	187
Total	25,544	69,940	910	23,195	55,223	764	24,431	65,096	812

4.21.5 Jutemallow (*Corchorus olitorius*)

It is commonly referred to as “Mrenda” and is prepared together with other vegetables. The area under production was 1,832 Ha producing 9,290 MT of produce valued at KES 284million. Though the area and output reduced by 13 and 10 percent, respectively, in 2014 as compared to the previous year, the value of sales increased by 13 percent. The counties leading in production of the crop were Siaya, Busia, and Migori which accounted for a combined 82 percent of total production.

Table 31: Production of Jutemallow in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Busia	436	2,167	86.3	437	2,043	80.9	414	2,040	81.0
Siaya	613	3,165	68.9	815	3,560	69.1	772	3,718	73.1
Migori	149	543	17.0	202	991	33.1	187	1,893	67.4
Kakamega	217	949	14.1	238	976	14.3	276	1,017	33.7
Homa Bay	54	211	4.3	48	175	3.8	66	253	12.4
Others	239	884	24	356	2,524	50	117	369	17
Total	1,708	7,919	215	2,096	10,269	251	1,832	9,290	285

4.21.6 Pumpkin Leaves (*Cucurbita maxima*)

Pumpkin can be consumed as vegetable (leaves) or as a fruit. The leaves are a delicacy for some communities therefore grown specifically for the leaves which affect the production of the pumpkin fruit. In 2014, the area planted was 921 Ha producing 4,099 valued at KES 117 million. Compared to 2013, the area, production and value increased by 5, 1, and 8 percent. The Counties leading in

pumpkin leave production were Bungoma and Kirinyaga which accounted for 64 percent of national output in 2014.

Table 32: Production of Pumpkin leaves in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Bungoma	403	2,033	64.6	403	2,092	66.2	454	2,294	72.8
Kakamega	82	194	5.2	146	208	4.3	115	341	14.5
Migori	47	553	10.0	28	739	13.3	25	130	5
Kisii	62	401	7.1	68	432	7.9	66	323	4.8
Kisumu	10	19	4.7	8	24	4.7	8	34	1.2
Others	193	748	16	224	1,057	23	253	977	19
Total	797	3,948	108	877	4,552	119	921	4,099	117

4.21.7 Pumpkin fruit (*Cucurbita maxima*)

The fruit is mainly used as baby foods though it is also an important food security crop.

During the year under review, 1,181 Ha was planted with the crop producing 22,617MT with a value of KES 611 million. Bungoma and Bomet were the Counties leading in production of the crop accounting for 60 percent of total production. Compared to 2013 the area, production and value all declined by 8,41, and 11 percent, respectively.

Table 33: Production of Pumpkin fruit in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Bungoma	359	10,588	274.2	427	12,160	367.8	438	12,485	365.2
Lamu	182	4,375	73.5	204	4,925	107.5	11	825	53.6
Siaya	25	420	20.3	28	464	22.4	38	932	45.5
Bomet	103	758	8.3	70	930	10.3	66	1,093	14.7
Kakamega	47	253	7.4	64	327	6.6	69	380	12.5
Others	475	7,164	140	493	19,217	170	559	6,902	120
Total	1,191	23,558	524	1,286	38,023	684.6	1,181	22,617	611

4.21.8 Rattle pod (*Crotalaria brevidens*)

Rattle pod is locally referred to as “Mitoo” and is produced for the domestic market. The area, yields and value increased from 370 to 533 Ha; 2,780 to 5,100 MT; and KES 58.2 to 119.1 million respectively. This represented a 44, 83, and 105 percent increase respectively in 2014 as compared to 2013. However, the crop is faced with inadequate supply of certified seed. More so it is grown under minimal inputs reducing its productivity. The Counties leading in production of the crop were Trans Nzoia and Siaya which account for a combined 69 percent of total production.

Table 34: Production of Rattle pod in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Siaya	33	257	6.9	71	711	24.0	95	1,084	54.4
Trans Nzoia	28	644	11.9	32	960	9.6	82	2,460	24.6
Migori	18	90	0.9	20	100	3.0	37	170	8.1
Homa Bay	42	141	0.9	45	150	1.0	35	142	7.2
Taita Taveta	22	403	8.1	20	360	7.2	18	332	6.6
Others	143	449	14.5	182	499	13.4	266	912	18.2
Total	286	1,984	43	370	2,780	58	533	5,100	119

4.21.9 Spider plant (*Cleome gynandra*)

Spider plant is locally known as “Sagaa” and is grown for the domestic market. The area under the crop increased by nine percent from 2,239 in 2013 to the current 2,435 Ha. However, production reduced by 20 percent from 20,912 to 16,752 MT. Despite the drop in production, the value increased by 21 percent from KES 529 to 641 million. Nyamira and Kisii recorded the highest volumes produced accounting for 53 percent of the total production.

Table 35: Production of Spider plant in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyamira	620	9,640	121.5	599	10,153	131.5	643	5,350	187.6
Kisii	309	3,812	152.0	340	4,139	161.5	328	3,541	135.7
Elgeyo Marakwet	16	26	0.9	29	139	2.3	20	141	50.9
Kericho	40	242	7.4	45	675	40.5	32	479	43.1
Siaya	210	1,224	26.9	173	1,166	32.8	210	1,509	40.4
Others	1,078	5,190	146	1,053	4,640	161	1,202	5,732	183
Total	2,273	20,134	455	2,239	20,912	529.1	2,435	16,752	641

4.21.10 Other African Leafy Vegetables

Vine spinach (‘nderema’), Russian comfrey (‘mafaki’), and Malaborgourd (‘Kahurura’) jointly occupied an area of 810 Ha and contributed nine percent of African Leafy Vegetable, respectively in 2014 but a negligible amount towards the total vegetable production. Vine spinach is grown along the fence and not attended to. Russian Comfrey and Malaborgourd are a preferred crop in Central and Eastern province. The main counties producing Vine spinach were Nyamira (30%), Machakos (37%), and Kisii (17%). Russian comfrey and Malaborgourd were produced in Tharaka Nithi county which accounting for 100 and 96 percent of the former and the latter, respectively.

4.22 Asian vegetables

In 2014, the total area planted with Asian Vegetables was 11,006 Ha, an increase of 10 percent from the previous year. The production and value also increased by 38 and 25 percent, respectively as compared to 2013. Aubergines, Okra, and Dudhi were the leading Asian vegetables accounting for 93 percent of total Asian vegetables produced in 2014.

Table 36: Performance of Asian Vegetables 2012-2014

Crop	2012			2013			2014			%
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	
Aubergines	8,586	34,780	783.3	8,064	40,646	892.5	9,193	46,932	954.2	60
Okra	300	3,752	133	481	6,119	187	657	8,757	278	18
Dudhi	112	821	22.1	131	944	28.7	717	4,960	234.4	15
Karella	169	1,987	48	1,172	4,772	103	212	1,297	36	2
Tindori	128	2,356	78.3	117	2,072	53	98	11,473	39.6	2
Turia	1	12	0.1	16	237	5.7	85	1,418	28.4	2
Valore	24	62	1.6	23	58	1.5	44	292	10.1	1
Total	9,320	43,770	1,066	10,004	54,848	1,271	11,006	75,129	1,581	100

4.22.1 Aubergines (*Solanum melongena*)

Aubergines are also known as Eggplant, Brinjals, or Ravaya is the most produced Asian vegetables accounting for 60 percent of the total volume of Asian vegetables produced in 2014. They are harvested at different stages depending on market requirement. As compared to 2013, the area, quantities and value increased by 14, 15, and 7 percent respectively. Nyeri County is the main producer of the crop accounting for 78 percent of total production in 2014. Like tomatoes, aubergines are also grown under the green house during high demand seasons.

Table 37: Production of Aubergines in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyeri	7,973	27,970	630.9	7,186	30,600	635.9	8,380	36,554	779.8
Makueni	78	942	32.7	162	1,845	72.0	137	1,555	58.2
Meru	70	765	20.0	54	594	12.5	45	1,164	45.4
Kwale	-	-	-	13	207	5.2	42	627	12.5
Murang'a	56	295	8.7	69	283	9.4	57	324	10.6
Others	409	4,808	91	580	7,117	158	532	6,708	48
Total	8,586	34,780	783	8,064	40,646	892.5	9,193	46,932	955

4.22.2 Okra (*Hibiscus esculentus*)

Okra though an export crop and classified as an Asian vegetable, it is preferred locally by the Coast region. During the year under review, the crop was cultivated on an area of 657 Ha with a total production of 8,757 MT valued at KES 278 million. The area, production and value all increased by 37, 43, and 49 percent respectively as compared to 2013. The counties leading production were Kilifi and Mombasa accounting for 83 percent of national production.

Table 38: Production of Okra in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kilifi	170	2,731	99.2	273	3,397	96.3	455	6,209	180.0
Mombasa	-	-	-	33	706	29.2	54	1,032	51.6
Makueni	64	442	15.0	64	512	26.2	59	477	23.9
Others	66	579	19	111	1,503	35	89	1,039	22
Total	300	3,752	133	481	6,119	187	657	8,757	278

4.22.3 Karella (*Momordica charantia*)

Karella is consumed locally but is mainly grown for the export market. During the year under review, the area, production and value decreased by 82, 66, and 60 percent respectively. Reduced production is attributed to several notification as a result of some quarantine pests found on this produce in Europe leading to many export companies cutting production. Karella is mainly produced in Meru, Murang'a, Taita Taveta, and Makueni which account for 81 percent of national production.

Table 39: Production of Karella in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	14	150	7.2	14	151	7.3	83	400	12
Murang'a	29	263	6.4	31	279	8.4	31	248	8.7
Taita Taveta	39	868	13.0	49	1,078	16.2	25	207	3
Makueni	25	170	7.3	49	320	11.2	31	190	7.3
Others	62	536	14	1,029	2,944	60	42	252	5
Total	169	1,987	48	1,172	4,772	103	212	1,297	36

4.22.4 Dudhi (*Lagenaria siceraria*)

Also known as bottle gourd is grown for export market as well as a small high end domestic market. During the year under review, the area under production increased from 131 to 717 Ha, leading to the production of 4,960 MT of dudhi valued at KES 234 million. The area under production and value increased by more than four times due underreporting in Meru county in the year 2013. Meru County is the main producer of the crop accounting for 90 percent of total production.

Table 40: Production of Dudhi in selected Counties

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	36	327	9.8	41	372	11.3	636	4,445	222.3
Murang'a	34	194	6.2	35	210	7.4	35	280	8.4
Nyeri	14	70	3.0	14	63	2.1	15	70	2.2
TharakaNithi	20	160	1.5	20	145	1.5	15	90	0.9
Others	8	70	1.6	21	154	6.4	16	75	0.6
Total	112	821	22	131	944	29	717	4,960	234

4.22.5 Valore (*Lablab purpureus L.*), Tindori (*Coccinia cordifolia cogn*) and Turia (*Lufta acotangula*)

Valore and Turia is produced abundantly in Meru County while Tindori main production area is Taita Taveta Meru and Murang'a counties respectively. They are produced both for domestic and export market though the area under Tindori has been declining over the years as shown on the table below due to dwindling export demand as very little is consumed locally.

Table 41: Production of Valore, Tindori and Turia, 2012-2014

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Tindori	128	2,356	78.3	117	2,072	53.0	98	11,473	39.6
Turia	1.00	12	0.1	16	237	5.7	85	1,418	28.4
Valore	24	62	1.6	23	58	1.5	44	292	10.1
Total	153	2,430	80	156	2,368	60	226	13,183	78

4.23 Medicinal and Aromatic Plants (MAPs)

Herbs and spices have been included in the Medicinal and Aromatic plants (MAPs) category because they have similar properties with crops in that category. With the exception of onions and chilies, herbs and spices remain unexploited in Kenya and processing companies have to rely on imports from India and Zanzibar among other countries. In 2014, the sub sector contributed KES 4.3 billion, accounting for less than 2 percent of the total value of the domestic horticulture. In 2014, the area under herbs and spices was 11,007 Ha with a production of 136,516 MT.

Table 42: Production of Various MAPS 2012 - 2014

Crop	2012			2013			2014			% Share
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	
Bulb onion	3,647	56,905	1,957	3,864	60,909	2,153	3,548	57,773	2,182	50
Spring onion	3,386	52,719	1,278	4,255	62,492	1,842	4,058	65,878	1,656	38
Bixa	2,110	4,883	220	3,099	10,305	391	2,369	2,564	75	2
Garlic	67	930	108	72	1,073	122	77	859	94	2
Moringa	38	28	1	49	11	1	32	256	13	0
Coriander	231	3,214	77	260	2,849	85	244	3,194	77	2
Long cayenne	302	1,851	42	280	1,895	50	221	1,478	42	1
African birds eye	131	424	21	202	1,468	78	267	2,538	98	2
Leeks	56	897	131	69	691	43	99	1,032	55	1
Bullet chilies	107	409	12	68	353	11	118	1,117	50	1
Total	10,075	122,260	3,846	12,218	142,046	4,775	11,033	136,689	4,342	100

Cultivation of herbs and spices is dominated by smallholder farmers. Bulb and spring onion are the main crops under this category accounting for 90 percent of the produced volume. The challenges facing the sub-sector include; the lack of quality planting materials, competitive products, and limited production knowledge. However, there is increasing demand for herbs and spices. In addition there is favorable climate for growing a wide range of herbs and spices across the country. Overall, the area under MAPS, production and value reduced by 10, 4 and 10 percent respectively in 2014 from the previous year.

4.23.2 Green Bunching Onions (*Allium fistulosum*)

The green bunching onion also commonly referred to as shallot or spring onion is a popular commercial crop among smallholder farmers, even though it is facing competition from other horticultural crops. The area under the crop declined by five percent while the volume produced increased by a similar percentage. However, the value of the crop reduced by 10 percent. The major green onion producing counties are Bungoma and Kisii which accounted for 65 percent of total production. However, the crop has great potential as a substitute for the bulb onion.

Table 43: Production of Green bunching onions in selected Counties

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Bungoma	703	28,032	756.7	759	30,240	861.6	810	32,153	1,012.2
Kisii	662	9,822	206.2	708	10,525	222.1	715	10,540	220.4
Siaya	54	465	48.6	161	2,173	128.5	173	2,459	102.7
Nyeri	590	1,793	73.3	585	1,756	69.8	596	3,125	96.7
Bomet	41	205	2.1	394	2,805	28.1	202	2,631	27.0
Nandi	96	863	18.9	113	1,333	20.0	120	1,410	24.2
Nakuru	83	990	20.0	104	1,244	23.8	155	1,822	23.4
Nyandarua	107	1,421	18.1	121	1,685	20.8	120	1,690	20.1
Others	1,050	9,128	134	1,310	10,731	467	1,167	10,048	129
Total	3,386	52,719	1,278	4,255	62,492	1,841	4,058	65,878	1,656

4.23.3 Bulb Onions (*Allium cepa* L.)

The domestic demand for bulb onion outstrips the local supply resulting to imports from India, Egypt, and Tanzania. In 2014, 3,548 Ha was planted with bulb onion realizing a production of 57,773 MT valued at KES 2,182 million. While the area and output declined by 8 and 5 percent, respectively, the value of production increased marginally in 2014. The major bulb onion producing county was Bungoma which accounted for 47 percent of total production. The potential for increasing productivity depend on expanding area under irrigable agriculture and adopting appropriate pre and post harvest handling practices to reduce post harvest losses.

Table 44: Production of Bulb onions in selected Counties

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Bungoma	791	21,068	759.8	913	23,377	885.7	957	27,222	1,094.2
Meru	346	6,543	238.9	370	6,900	253.3	374	5,419	249.0
Kajiado	163	1,790	69.6	162	1,671	77.6	172	2,035	111.2
Kisii	101	1,980	81.6	108	2,108	86.9	92	1,792	75.5
Pokot	260	3,900	119.0	160	2,350	56.8	170	2,380	71.4
Mandera	162	2,219	65.0	172	2,278	65.8	203	2,768	71.1
Laikipia	13	208	8.3	85	923	29.9	108	1,304	49.1
Siaya	32	245	14.2	33	438	24.4	37	605	48.2
Nyandarua	193	2,790	44.8	198	2,896	45.8	213	2,927	45.4
Machakos	147	1,111	33.9	148	828	48.9	105	511	39.1
Others	1,439	15,051	522	1,515	17,140	578	1,117	10,810	328
Total	3,647	56,905	1,956.9	3,864	60,909	2,153	3,548	57,773	2,182

4.23.4 African Bird Eye (ABE) Chili– (*Capsicum frutescens*)

The African Bird Eye (ABE) chili is produced for both the domestic and export market and consumed either fresh or processed. In 2014 267 Ha was planted producing 2,538 MT valued at KES 98 million. The total area, production and value increased by 32, 73, and 26 percent in 2014 from the previous year. The Counties leading in production of ABE chili are Lamu, Kilifi, Meru, and Kwale which accounted for 92 percent total production in 2014. The major challenges to production of ABE chilies include inadequate knowledge on postharvest handling and prevalence of diseases. However, the crop has a ready market and can grow in marginal areas with minimum rainfall.

Table 45: Production of ABE Chili in selected County

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Lamu	65	260	13.0	115	1,150	63.3	68	1,150	57.5
Meru	-	-	-	-	-	-	37	370	14.8
Kilifi	15	25	1.2	32	125	4.3	54	435	10.9
Kwale	6	46	2.3	7	50	2.5	23	370	7.4
Makueni	4	20	1.3	11	55	3.5	10	51	3.1
Others	41	73	3	37	88	4.1	75	162	4.1
Total	131	424	20.8	202	1,468	78	267	2,538	98

4.23.5 Long Cayenne (*Capsicum annum*)

This is a hot type of pepper produced for domestic and export markets. During the year under review, the area under production was 221 Ha producing 1,478 Mt of the crop valued at KES 42 million. The total area, production and value all declined from the previous year by 21, 22 and 15 percent respectively. The crop is mainly grown in Tana River, Makueni, Kwale, and Elgeyo Marakwet which accounted for 52 percent of national output in 2014. The major challenges to production of long cayenne include inaccessibility of quality seeds and prevalence of pest and diseases.

Table 46: Production of Long cayenne in selected Counties

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Makueni	11	206	8.2	15	195	10.1	20	192	11.6
Tana River	-	-	-	-	-	-	18	270	8.1
Elgeyo Marakwet	11	64	0.7	10	55	0.6	19	144	3.2
Kwale	12	89	1.8	5	33	0.7	19	161	3.2
Garissa	23	61	3.2	28	63	3.9	22	64	2.7
Laikipia	58	60	1.2	24	112	3.4	7	112	2.2
Others	187	1,371	26.7	198	1,437	31.4	116	535	11.4
Total	302	1,851	42	280	1,895	50	221	1,478	42

4.23.6 Bullet Chilies (*Capsicum annum*)

In 2014, the area, production and value of Bullet chilies were 118 Ha, 1,117 tons and KES 50 million respectively compared with 68 Ha, 353 tons, and 10.7 million in 2013. This was an increase of area, production, and value by 74, 216, and 367 percent as compared to 2013. The extreme increase was recorded in Meru County, with 49 Ha under the crop compared to only three Ha reported in 2013. The main counties producing the crop were Meru and Migori which accounted for 70 percent of total production. Bullet chilies is exported along other Asian vegetables as well as consumed domestically in the urban areas. The main challenge in production is inaccessibility to quality planting material.

Table 47: Production of Bullet Chilies in selected Counties

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	4	18	0.7	3	9	0.4	49	692	34.7
Migori	15	150	2.8	12	84	1.6	5	84	8.4
Makueni	5	22	1.4	9	43	2.6	12	36	2.2
Bomet	3	17	0.5	3	13	0.4	9	49	1.3
Homa Bay	1	3	0.1	2	2	0.1	2	12	0.9
Tharaka	2	36	1.4	2	36	1.4	1	18	0.7
Others	77	163	5.4	37	166	4.2	40	226	1.8
Total	107	409	12	68	353	11	118	1,117	50

4.23.7 Coriander (*Coriandrum sativum*)

Coriander is a popular herb for its pungent leaves and is grown for domestic market. The total area under production in 2014 was 244 Ha producing 3,194 valued at KES 77 million. The area under production declined by six percent but production increased by 12 percent in 2014. The value also declined by 10 percent when compared to 2013. The crop is mainly grown in Kiambu which account for 82 percent of total production. The major challenge to production of coriander is inaccessibility to quality seeds.

Table 48: Production of Coriander by County 2012-2014

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kiambu	119	2,854	61.8	95	2,629	55.9	95	2,629	55.9
Kisii	5	30	1.2	7	38	1.5	10	28	5.9
Nakuru	9	23	0.8	17	39	1.4	38	121	3.4
Murang'a	8	43	2.7	10	45	2.9	11	50	3.2
Narok	11	32	0.3	12	84	8.4	8	24	2.4
Meru	3	13	0.8	3	13	0.8	11	63	1.7
Others	76	219	9.2	116	1	14.2	71	279	4.2
Total	231	3,214	77	260	2,847	85	244	3,194	77

4.23.8 Garlic (*Allium sativum*)

Garlic is a leading source of income among herbs and spices. It contributed to 81 percent of the overall income earned from herbs and spices. However, the issue of quality seed is a challenge since farmers have to save seed from the previous crop which is in most cases inferior and makes the product uncompetitive as compared to imported garlic. The area increased by seven percent from 72 Ha in 2013 to 75 Ha in 2014. However, the production and value of output both declined by 20 and 23 percent, respectively. The decline in production is attributed to drop in production the main growing areas due to poor seed. Meru County is the main source of garlic in the country accounting for 90 percent of production in 2014. The major challenges to production of garlic are unavailability of quality planting material and uncompetitive produce.

Table 49: Production of Garlic by County

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	52	780	78.0	55	825	82.5	63	770	80.1
Bomet	6	100	10.2	8	180	27.1	6	60	7.8
Narok	6	34	10.2	6	54	10.8	4	25	5.0
Nakuru	2	7	0.5	1	6	0.3	1	2	0.4
Kakamega	1	2	0.2	1	1	0.1	2	2	0.2
Others	0	7	9	1	7	1.1	1	0	0.1
Total	67	930	90	72	1,073	122	77	859	94

4.23.9 Leeks (*Allium ampeloprasum*)

Leeks are grown for both the domestic and export markets. The baby leeks are ideal for use in assorted pre-packs for both local and export markets. The value of Leeks in 2014 was KES 55 million. The crop was grown in 99 Ha producing 1,032 MT. The area, production and value increased by 43, 49 and 22 percent in as compared to 2013. The counties leading in leeks production were Taita Taveta and Kiambu which accounted for 84 percent of total production. The major challenge to production of leeks is limited domestic market. High prices for export market offers opportunity for growth and expansion.

Table 50: Production of Leeks by County 2012-2014

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Taita Taveta	21	554	38.9	29	465	32.9	64	672	41.7
Nakuru	0	2	0.0	0	1	0.0	9	68	5.1
Kiambu	11	206	50.2	10	193	4.9	10	193	4.9
Meru	6	24	0.7	8	32	1.0	10	75	1.5
Others	18	111	41.1	22	0	4	6	24	1.8
Total	56	897	48	69	691	43	99	1,032	55

4.23.10 Moringa (*Moringa oleifera*)

Moringa, commonly known as Drumstick, is grown for both domestic and export markets. The crop contributed KES 13 million to the domestic value of horticulture and occupied an area of 32 Ha. The area under production decreased by 34 percent as compared to 2013 but production and value increased by over 1,000 percent. Nearly 98 percent of the crop is produced in Kilifi. The crop is adapted to drought hence potential for expansion in the Arid and Semi-Arid Lands (ASALs). In addition, the seed has multiple uses including oil extraction, domestic water purification, therapeutic values, and high nutritious leaves.

Table 51: Production of Moringa by County 2012-2014

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kilifi	30.00	20.00	0.20	40.00	-	-	25	250	12.50
Kisumu	2.00	2.00	0.40	2.00	2.00	0.40	2.50	2.50	0.50
Homa Bay	0.50	0.20	0.10	0.50	0.20	0.10	0.50	0.20	0.10
Kakamega	0.50	0.50	0.06	0.50	1.00	0.06	1.00	1.00	0.06
Vihiga	2.00	2.00	0.03	2.00	2.00	0.03	2.00	2.00	0.03
Others	3	3	0.25	3.5	5.5	0.32	1	0	0
Total	38	28	1.04	49	11	0.91	32	256	13



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USAID-KAVES Horticulture Value Chain

USAID-KAVES horticultural interventions are focused on three strategic objectives:

- Increasing income of smallholders from production of selected horticultural crops with large domestic and export markets.
- Increasing horticultural crop compliance with market requirements.
- Production of specific fruit and vegetable varieties for agro-processing.

KAVES is building on the success of the USAID-funded Kenya Horticulture Development Program (KHDP) and Kenya Horticulture Competitiveness Project (KHCP) that have contributed much to the outstanding growth of commercial horticulture in Kenya since 2003. Analyses carried out by KAVES show that overall exports of horticulture products (fresh and processed vegetables, fruit, and flowers) rose by 14 per cent over the past five years. During that period, there has been a 51 percent increase in fresh and processed fruit exports, more than 60 percent produced by smallholders. Regional markets for fresh fruit and vegetables are growing the fastest with exports of carrots, green beans, and passion fruit to Uganda increasing from less than 5,000 to more than 15,000 MTs over the past three years.

KAVES is utilizing this type of value chain analysis to target new and growing markets for smallholder products. At the same time, the project is focusing on horticultural interventions in counties that have not been major producers in the past. The high returns obtained are changing the approach to farming in these areas with many farmers achieving profits from their land and labor for the first time.

5. FRUITS



Overall performance

In 2014, fruits contributed KES 51.4 billion accounting for 26 percent of the domestic value of horticultural produce. The area under fruit was 159,301 Ha with a production of 3.3 million MT. Although the area under fruits declined by 32 percent from the 2013 level, production and value increased by seven and three percent, respectively. The main fruit categories grown in Kenya are the tropical and temperate fruits. The major fruit grown in order of importance are; banana (35.6%), pineapples (20%), mangoes (17%), avocado (6%), pawpaw (6%), passion fruit (3.6%), oranges (3%), water melon (3%) and tangerines (2%). The potential of most fruits remain unexploited. However, there is potential for growth due to increasing demand both in domestic and export market for fresh fruits and fruit products such as juices and concentrates. In addition there are number of initiatives to support fruit production and value addition. Further, the government is supporting organizations of smallholder producers into commodity associations and producer business groups to facilitate production and marketing. Challenges in fruit cultivation include low adoption of modern technologies, inadequate quality planting materials, high postharvest losses, and prevalence of pests and diseases.

Table 52: Production of various fruits 2012-2014

Crop	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Bananas	48,022	1,331,959	12,934.55	50,719	1,437,566	17,751.00	52,102	1,430,217	18,164.00
Pineapples	11,551	422,399	8,543.00	12,479	461,908	8,929.00	12,989	496,036	10,149.00
Mangos	41,411	573,720	6,216.00	44,018	644,829	7,669.00	47,620	744,639	8,902.00
Pawpaw	9,799	150,234	3,136.90	11,681	160,171	3,248.80	12,729	160,848	3,216.60
Avocados	8,450	152,936	3,187.90	11,439	177,799	3,748.90	12,966	225,808	3,838.00
Passion	2,617	28,652	1,111.60	3,440	38,640	1,430.70	4,288	57,953	1,974.60
Oranges	4,715	62,186	1,469.90	5,199	57,760	1,556.30	6,650	79,211	1,619.20
Water Melons	2,698	55,210	1,667.50	3,660	84,375	2,159.10	3,485	59,216	1,583.60
Tangerines	1,107	32,913	580.3	1,033	29,966	542.2	1,312	35,140	947
Lemons	931	10,044	210	1,150	10,603	502	1,405	12,363	267
Tomatillo	620	6,068	204.59	617	4,679	134.25	863	12,207	363.32
Tree tomato	500	5,397	190.2	474	4,067	122.3	619	5,111	156.3
Strawberry	56	885	93.5	68	921	115.5	100	162	55.1
Total	132,477	2,832,603	39,546	145,977	3,113,284	47,909	157,128	3,318,911	51,236

5.1 Banana (*Musa* sp)

Banana is an important source of income and food security among smallholders and large scale farmers. In 2014, the area under banana was 52,102 Ha with a total production of 1.43 million tons valued at KES 18.16 billion. The Area under production increased from 50,719 to 52,102 Ha and value increase by KES 413 million representing three and two percent increases respectively but production went down by a single percent. The drop in production was attributed to low productivity in areas that don't have access to irrigation especially Murang'a, and Bungoma. Counties of Meru, Kirinyaga, Embu, and Taita Taveta recorded production of 35, 51, and 49 which could be attributed to access to water for irrigation, adoption of superior varieties, availability of clean planting materials from Tissue Culture technology, and exposure of farmers to modern agronomic practices. The main varieties grown include: dessert banana cultivars - Grandnain, Gross Mitchel, Williams's hybrid, lactan, Valery, Chinese Cavendish, Giant Cavendish, Dwarf Cavendish and Apple banana; cooking cultivars which include: Gradi Shisikame, MutaHato, Uganda green and Ng'ombe and multipurpose cultivars such as Mururu and Goldfinger. The leading counties in banana production were: Meru (14%), Kirinyaga (12%), Embu (10%), Bungoma (8%), Taita Taveta (7%) Kisii (7%), and Murang'a (6%) among others.

Table 53: Production of Bananas by selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	6,194	288,803	2,675	6,493	307,013	3,422	6,146	215,580	2,476
Kirinyaga	3,434	185,402	1,818	3,627	209,601	2,289	3,768	192,231	2,206
Embu	3,026	147,791	1,480	3,363	164,374	1,647	3,634	177,924	1,782
Bungoma	3,029	57,143	1,085	3,413	65,166	1,231	3,980	75,234	1,428
Taita Taveta	2,450	126,727	1,296	2,569	130,155	364	2,514	129,740	1,236
Kisii	3,856	85,700	1,238	3,795	85,022	1,151	3,962	85,780	1,231
Murang'a	5,696	94,981	942	5,820	99,737	1,123	5,874	101,753	1,142
Tharaka Nithi	2,049	80,900	1,039	2,138	75,920	964	2,149	79,823	1,140
Kakamega	2,485	31,557	797	2,579	34,254	946	2,746	35,378	1,016
Nyamira	1,356	26,162	561	1,431	28,066	630	2,363	47,160	932
Others	14,447	206,793	3,548	15,491	238,258	3,984	14,966	289,614	3,575
Total	48,022	1,331,959	12953	50,719	1,437,566	17,751	52,102	1,430,217	18,164

The challenges in banana production are prevalence of insect pests and diseases. The Panama disease (banana fusarium wilt) which is caused by a soil borne fungus, *Fusarium oxysporum* f. sp. *cubense* (Foc) led to decline of production of banana in Kisii and other areas. Another disease of significance to banana production in Kenya is Bacteria Wilt Disease (BW). Other major challenges include poor marketing channels and market structure. Despite the challenges, appropriate interventions such as provision of clean planting material through the tissue culture technology and capacity building in crop husbandry have significantly minimized the impact of pest and diseases although not widely adopted.

5.2 Mango (*Mangifera indica*)

Mangoes production has been on the increase due to increased demand for fresh market fruits, processing, and health concerns. In 2014, the area under mangoes was 47,620 Ha with a production of 744 million MT, valued at KES 8.9 billion as compared to 7.67 billion achieved in 2013. This steady increase can be attributed to expansion of area especially in North Rift and Eastern region; introduction of marketing systems with various government and private sector initiatives across the value chain and increased consumption of mango juice and salads. The leading counties in mangoes production were Makueni, Kwale, and Kilifi which accounted for 48 percent of production as shown on Table 54 below.

The mango varieties grown include improved varieties such as Tommy Atkins, Kent, Van Dyke, Kensington, Sensation, Haden, Apple, Ngowe, Boribo, Batawi, Pears, Sabro, Dodo, and Sabine. Insect pests particularly fruit fly and mango seed weevil coupled with diseases like Anthracnose and powdery mildew are the major challenges to increased production of quality mangoes. Other challenges

include lack of quality planting materials; premature harvesting of fruits and high postharvest losses associated with poor road infrastructure in major production areas.

Table 54: Production of Mangoes in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Makueni	10,237	44,482	398	10,237	44,482	398	10,737	146,425	1,817
Kwale	2,136	43,196	431	2,636	52,574	525	4,135	91,390	1,365
Kilifi	5,729	101,655	1,017	6,634	116,080	1,152	9,850	134,335	1,160
Machakos	4,825	54,329	630	5,133	51,546	624	5,593	67,320	836
Nyeri	1,833	44,836	763	1,925	50,239	883	1,806	44,727	751
Embu	3,127	109,105	631	2,944	111,480	780	3,044	108,088	730
Meru	4,176	46,010	460	4,135	48,432	484	4,027	41,605	516
Bungoma	935	18,560	209	1,166	23,151	297	1,268	25,211	316
Tharaka Nithi	1,058	22,280	253	1,111	15,984	242	1,067	20,137	239
Elgeyo Marakwet	690	20,072	153	518	11,806	135	618	11,567	209
Others	6,665	69,195	1,271	7,579	119,055	2,149	5,475	53,834	963
Total	41,411	573,720	6,216	44,018	644,829	7,669	47,620	744,639	8,902

5.3 Purple Passion fruit (*Passiflora edulis*)

Passion fruit is an important fruit with great commercial potential since demand for both fresh fruit and processed juice is on the increase. In the previous reports, all the passion fruit varieties data was lumped together therefore will give the impression that the performance of purple passion fruit declined. In 2014, passion fruit contributed KES 1.64 billion. The area under the crop was 3,175 Ha and production of 42,210 MT. The area, production and value increased by 14, 39, and 35 percent, respectively. The production is faced with challenges among them increased incidences of fusarium wilt, dieback and woodiness virus disease. In addition, premature harvesting of fruits has negatively impacted the global competitiveness of the passion fruit from Kenya. The counties leading in production are Kwale, Embu, and Elgeyo Marakwet which account for 55 percent of output.

Table 55: Production of purple passion fruit in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Embu	57	1,793	87	72	2,108	148	143	4,845	359
Kwale	115	1,309	39	306	3,441	103	886	14,108	282
Elgeyo Marakwet	333	4,508	186	418	6,005	173	401	4,690	181
Nyeri	195	1,170	70	280	1,680	101	240	1,680	134
Uasin Gishu	351	5,779	209	222	3,190	120	169	2,286	125
Laikipia	49	84	4	40	33	3	47	3,706	112
Others	1,176	10,845	438	1,442	13,978	559	1,289	10,895	441
Total	2,276	25,488	1,033	2,780	30,435	1,207	3,175	42,210	1,634

5.4 Sweet yellow passion fruit

The introduction of sweet yellow passion fruit varieties (KPF4, KPF11, and KPF12) which are high yielding and tolerant to fusarium wilt offer viable opportunity for growth and expansion of passion fruit industry in medium and lower regions. The current growing areas of sweet yellow passion fruit are Kwale, Kilifi, and Lamu.

Table 56: Production of sweet passion fruit in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kwale	115	1,309	39.3	306	3,441	103.2	886	14,108	282.3
Kilifi	20	208	6.2	148	1,667	73.8	227	1,630	58.0
Lamu	206	1,647	33.1	206	3,097	46.7	0	5	0.3
Makueni									
Tharaka Nithi									
Machakos									
Kitui									
Siaya									
Total	341	3,164	78.6	660	8,206	223.7	1,113	15,743	340.6

5.5 Avocado (Persea Americana)

Avocado is an important commercial fruit grown mainly by both small and large scale farmers. The main avocado varieties grown for export market are Hass, Fuerte, and Pinkerton. In addition, three others are traded in the local market which includes Puebla, Duke, and G6. Avocado is mainly grown for fresh market and processing into avocado oil. In 2014, avocado contributed KES 3.8 billion accounting for five percent value of the fruit sub-sector. The area production and value increased by 13, 27, and 2.5 percent, respectively. The leading counties are Nyamira, Bungoma, Murang'a, and Kisii accounting for 57 percent of total production.

The major challenges in production of avocado are insect pests and diseases. Pests and disease of economic importance to avocado production include fruit fly, Phytophthora, and Anthracnose, respectively. In addition, premature harvesting of fruits has negatively impacted on the global competitiveness of avocado from Kenya. Increased demand in fresh market, and pharmaceuticals and cosmetic industries provide feasible growth and expansion of avocado production.

Table 57: Production of Avocados in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyamira	441	9,846	85	460	10,172	263	2,633	52,140	777
Bungoma	1,350	18,228	1,262.9	2,058.0	20,476.0	669.9	1,623	20,006	734
Murang'a	1,328	30,085	208	1,344	28,095	243	1,393	29,553	456
Kisii	912	15,451	228	924	15,766	240	936	15,526	232
Kiambu	637	14,286	240	639	13,706	212	639	13,706	212
Kirinyaga	238	8,512	123	261	8,912	135	261	8,458	168
Nyeri	234	3,906	48	219	3,925	49	285	3,753	65
Embu	230	7,650	50	229	7,645	61	230	7,807	63
Meru	498	4,056	38	528	4,478	46	452	4,500	60
Makueni	206	1,338	38	210	1,456	56	252	2,668	53
Others	2,376	39,578	867	4,567	63,168	1,774	4,262	67,691	1,018
TOTAL	8,450	152,936	3,188	11,439	177,799	3,749	12,966	225,808	3,838

5.6 Pawpaw (Carica papaya)

In year 2014, pawpaw contributed 3.22 billion accounting for 6 percent of the fruits subsector. The area and production increased by 9 and 0.4 percent respectively while the value decreased by a single percent. The main varieties grown include Mountain, Solo, Sunrise, Honey dew and Hawaii. The following varieties, Sunrise hybrid, Sunrise Pekerra, Solo Sunset, Malaysian 5, 7, 10, and 12, are under trial in various KARLO centers.

The major challenges to production of pawpaw are lack of quality planting material arising from genetic erosion due to open pollination during production; since we do not have established seed producers for pawpaw seed, basic seed is usually imported, low productivity, insect pests and diseases; especially spider mites and powdery mildew.

Table 58: Production of Pawpaw in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Bungoma	824	20,269	707.5	946	23,438	839.3	994	24,725	891.3
Nyeri	2,600	28,600	286.0	3,800	41,800	418.0	3,995	35,156	703.1
Tharaka Nithi	735	15,699	334.4	732	13,672	311.9	682	13,579	318.2
Kwale	491	8,369	125.6	532	8,326	124.9	1,175	17,597	182.8
Makueni	393	11,728	212.4	405	8,720	114.7	791	9,589	160.2
Others	4,756	65,569	1,471	5,266	64,215	1,440	5,092	60,202	961
Total	9,799	150,234	3,137	11,681	160,171	3,249.0	12,729	160,848	3,217

5.6.2 Citrus (*Citrus sp*)

Citrus is an important fruit in Kenya because of its nutritional and commercial value. In 2014, the combined area of citrus varieties was 10,468 Ha with a production of 140,292 MT contributing KES 3.6 billion. The main citrus varieties produced in the country were oranges (54%), tangerine (26%), lemon (13%), lime (5%), and grape fruit (2%). The major challenges facing citrus production include inadequate quality planting materials, poor orchard management, insect pests and prevalence of greening, and gummosis diseases. Opportunities include mainly increasing domestic demand evidenced by increasing citrus imports.

Table 59: Citrus production in the Country for the year 2102-2014

Crop	2012			2013			2014			%
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	
Oranges	4,715	62,186	1,470.00	5,199	57,760	1,556	6,650	79,211	1,619	52
Tangerine	1,107	32,913	580.5	1,033	29,966	542	1,312	35,140	946.7	30
Lemon	931	10,044	210	1,150	10,603	502	1,405	12,363	267	9%
Lime	608	8,232	132.4	638	7,582	142	640	7,985	174.5	6%
Grape	236	2,372	28	326	3,860	37.9	461	5,593	104	3%
Total	7,597	115,747	2,421	8,346	109,771	2,780	10,468	140,292	3,111	100 %

5.6.1 Oranges

Orange production is mainly done in the low lands of Kenya. During the year under review, oranges contributed to KES 1.6 billion which accounted for 51 percent of the value of citrus fruits. The area under production was 6,650 Ha producing 79,211 tons of oranges. Compared to 2013, the area, production and value increased by 28, 37 and 4 percent respectively. The leading producing county was Kwale which accounted for 52 percent of the national output.

Table 60: Production of Oranges in selected Counties 2012-2014

County	2012			2013			2014			% Share
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	
Kwale	1,200	20,157	403.0	1,500	28,398	668.0	2,070	41,400	828.0	51
Kilifi	792	10,425	188.9	1,008	12,567	208.1	1,539	15,259	281.3	17
Makueni	411	16,306	614.2	416	2,073	415.6	587	3,298	178	11
Nyeri	389	6,478	134.4	390	5,818	116.5	432	9,129	138.6	9
Machakos	1,583	6,580	77.6	1,543	6,145	85.6	1,679	7,841	130.1	8
Murang'a	340	2,240	51.8	342	2,759	62.5	343	2,284	63.2	4
Total	4,715	62,186	1,470	5,199	57,760	1,556	6,650	79,211	1,619	100

5.6.2 Lemons

Lemon production has been on the increase for the last three years. During the year under review, the area and production increased by 22 and 17 percent respectively. However, value of lemon produced decreased by 47 percent. The main counties producing the crop were Kwale and Kilifi which accounted for 58 percent of national production in 2014.

Table 61: Production of Lemon in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kilifi	157	2,302	34.5	214	2,904	335.1	301	3,599	100
Kwale	60	998	15.0	65	1,075	16.0	230	3,550	35.5
Nyeri	45	360	21.6	42	336	20.2	48	394	23.6
Migori	45	450	12.3	48	480	15.0	40	480	19.2
Elgeyo Marakwet	75	1,015	15.7	76	1,034	15.8	76	1,012	18.8
Siaya	41	388	14.6	55	524	20.5	53	427	16.7
Embu	5	150	1.5	16	608	9.1	21	735	14.7
Others	503	4,381	95	634	3,642	71	636	2,166	38
Total	931	10,044	210	1,150	10,603	502	1,405	12,363	267

5.6.3 Lime production

The land under lime in 2014 was 640 Ha which was just an increase of 2 Ha from the figure reported for 2013 of 638 Ha. Production increased by five percent while the value of the produce increased by 23 percent due to improved prices. The leading counties were Nyeri, Kwale, Tana River, and Meru accounting for 36, 34, 14, and 12 percent of the national production.

Table 62: Production of Lime in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyeri	121	1,452	43.6	108	1,296	38.9	96	1,152	63.4
Kwale	40	704	10.6	41	722	10.8	165	2,950	59.0
Tana River	125	1,145	17.2	149	1,377	20.7	160	1,625	24.4
Meru	-	-	-	-	-	-	35	525	21.0
Kilifi	103	1,648	24.7	121	1,665	25.8	132	1,261	3.4
Makueni	25	152	4.4	24	131	1.5	31	130	1.7
Taita Taveta	17	287	3.6	17	268	2.0	17	291	1.4
Others	177	2,844	28	178	2,123	42	4	51	0
Total	608	8,232	132	638	7,582	142	640	7,985	174

5.6.4 Grape fruit

Grape fruits are mainly produced by just a few counties in the country. In the year 2014, the area under the fruit was 461 Ha which was a 41 percent increase from 2013. Production and value also went up from 3,860 to 5,593 MT and 37.9 to 104 million representing 45 and 174 percent increase respectively.

Table 63: Production of Grape fruit in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Kwale	30	525	5.2	32	560	5.6	130	2,050	41
Kilifi	32	307	4.7	85	1,182	9.6	130	1,644	30
Nyeri	148	1,456	14.8	196	1,952	19.6	167	1,654	25
Meru	-	-	-	-	-	-	14	120	4.8
Elgeyo Marakwet	2	31	2.5	2	31	2.5	2	31	2.5
Taita Taveta	8	52	0.4	8	90	0.0	10	92	0.8
Others	16	1	0.1	3	45	0.6	8	2	0
Total	236	2,372	28	326	3,860	37.9	461	5,593	104

5.6.5 Tangerine production

Tangerines production in the country has been showed unpredictable trend on increase and decline as clearly shown by the table. During 2014, the area, production and value increased by 27, 17, and 75 percent respectively. This was contrary to 2013 where the area, production and value decreased by 7, 9, and 7 percent respectively. The leading counties were Nyeri, Kilifi, and Kwale accounting for 45, 40 and 10 percent respectively.

Table 64: Production of Tangerine in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyeri	123	17,085	307.5	156	18,602	297.7	161	19,201	423
Kilifi	260	3,120	62.4	386	4,929	76.3	492	5,627	377
Kwale	250	4,547	20.0	100	1,819	36.4	454	9,080	91
Makueni	224	3,553	135.6	120	615	17.7	141	678	30
Meru	16	125	2.8	12	93	2.1	14	100	17
Others	234	4,483	52	259	3,908	112	50	454	9
Total	1,107	32,913	580	1,033	29,966	542.0	1,312	35,140	947

5.7 Peaches (Prunus persica)

Peaches are grown for the domestic market. There has been an increase for demand of peaches in the domestic market. The major counties in production of peaches were Meru (54%) and Kiambu (27%). Other counties are Nyandarua, Narok, Baringo, Busia, and Nyeri. The major constraint to increased production of peaches is inadequate quality planting material. In addition, there is limited knowledge on appropriate agronomic practices among growers.

Table 65: Production of peaches in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	-	-	-	-	-	-	20	250	10.00
Kiambu	21	264	6.04	22	262	6.20	22	200	4.99
Nyandarua	7	112	1.05	7	104	1.00	7	102	0.98
Narok	3	41	0.00	3	15	0.30	3	42	0.83
Baringo	18	24	0.71	18	24	0.72	18	24	0.77
Busia	5	25	0.50	5	30	0.60	5	30	0.60
Nyeri	1	2	0.25	1	2	0.00	1	2	0.21
Others	2	5	0.04	2	10	0.30	1	3	0.04
Total	57	473	8.59	58	447	9.12	77	653	18.43

5.8 Strawberries (*Fragaria sp*)

Straw berry is grown for the domestic market. The main varieties grown include Chandler, Douglas, Cambridge favourite and Aiko among others. The demand for strawberry has been on the increase in the recent years. In 2014, the area under production was 100 Ha, producing 1,487 MT with a value of KES 144 million. The major strawberry producing counties include Taita Taveta, Kiambu, Meru, and Nakuru accounting for 41, 36, 14, and 8 percent of the total value of strawberries produced in the country. The potential for increased production of strawberry is immense due to ready market in the food processing industry. The major constraints to increased production of strawberry are lack of suitable day-neutral varieties, inadequate quality planting materials, pests especially birds and limited knowledge on appropriate agronomic practices among growers.

Table 66: Production of Strawberries by County 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Taita Taveta	30	423	46.1	40	526	58.0	38	59	22
Kiambu	24	460	47.0	26	392	57.1	35	52	17
Meru	-	-	-	-	-	-	20	34	11
Nakuru	-	-	-	-	-	-	4	10	3
Murang'a	1	0	0.2	1		0.2	1	2	0.6
Kirinyaga	1	2	0.2	1	3	0.2	2	5	1.5
Total	56	885	93.5	68	921	115.5	100	162	55

5.9 Tree Tomatoes (*Solanum betaceum*, syn. *Cyphomandra betacea*)

During the year under review, the area, production and value of tree tomato was 619 Ha, 5,111 MT and 156.3 million respectively. This was an increase of area, production and value by 31, 26 and 28 percent increase in production as compared to the previous year. The counties with major production of tree tomato were Nyandarua, Meru, and Nakuru. The potential for increased production is immense due to increasing awareness of the nutritional value of tree tomato. The major constraints to increased production of tree tomato were lack of suitable varieties, insect pests and diseases, unavailability of quality planting material, and limited knowledge on appropriate agronomic and postharvest practices.

Table 67: Production of Tree Tomato in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Nyandarua	67	924	20.6	87	1,089	24.5	116	1,067	31.2
Meru	82	379	14.4	82	515	16.1	167	826	26.8
Nakuru	124	941	26.7	135	957	28.1	88	721	25.6
Laikipia	-	-	-	24	300	11.8	43	706	21.1
Kiambu	166	1,675	103.5	52	345	18.7	64	655	18.8
Tharaka Nithi	31	1,247	20.6	57	566	15.7	60	601	16.3
Elgeyo Marakwet	10	101	0.5	15	155	1.1	60	395	10.4
Embu	20	130	3.9	22	140	6.3	21	140	6.1
Total	500	5,397	190.2	474	4,067	122.3	619	5,111	156.3

5.10 White Sapote (*Casimiroa edulis*)

White sapote has immense potential for increased production due to its use as source of sugar in the confectionery industry. It was produced on an area of 50 Ha giving a production of 375 tons. During the year under review, area, production and value declined 24, 15, and 33 percent respectively as compared to 2013. The decline can be attributed to lack of awareness on the crop and poor marketing. The major counties in production of white sapote were Nyeri, Meru Nakuru, Elgeyo Marakwet, and Kakamega. The major constraint to increased production of white sapote are lack of suitable varieties, unavailability of quality planting material and limited knowledge on appropriate agronomic practices.

Table 68: Production of White Sapote in selected Counties 2012-2014

County		2012			2013			2014	
	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)
Nyeri	24	240	4.80	26	228	4.8	20	147	2.90
Meru	3	32	1.55	2	18	0.84	8	83	1.63
Nakuru	0	8	0.4	1	16	0.78	2	38	1.15
Elgeyo Marakwet	3	16	0.79	3	16	0.79	3	16	0.79
Kakamega	5	25	0.68	4	24	0.43	5	27	0.51
Others	26	255	3.89	30	139	3.76	12	64	0.69
Total	61	576	12.11	66	441	11.4	50	375	7.67

5.11 Guavas (*Psidium guajava*)

Guava is grown mainly for the fresh local market and mainly grows unattended sprouting from seeds dispersed unintentionally. During the year under review, the area under guava was 1,260 Ha which produced 11,327 tons valued at 111.6 million in 2014. As compared to 2013, the area, production and value increased by 19, 48, and 29 percent respectively. This could be attributed to under reporting in 2013 especially Meru County. The leading Counties in guava production were Meru, Mandera, Kisii, and Migori contributing 58, 10, 6, and 5.9 percent respectively of the national value.

The major constraints to increased guava production include lack of suitable superior varieties, limited knowledge in agronomic and postharvest practices associated with limited value addition.

Table 69: Production of Guavas in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)
Meru	2	14	0.58	3	20	4.00	308	969	31.00
Mandera	21	302	8.20	17	267	7.64	18	252	11.41
Kisii	70	589	10.14	77	704	11.57	67	564	6.81
Migori	31	155	1.50	33	165	2.00	20	165	6.60
Siaya	515	2,650	3.00	516	2,660	3.20	442	233	4.60
Kakamega	28	90	2.00	30	91	1.82	52	201	3.89
Kisumu	26	68	1.30	11	70	2.70	15	75	3.10
Homa Bay	130	340	2.00	125	340	2.30	177	354	2.39
Nyamira	83	2,024	50.10	73	1,774	43.85	2	40	0.20
Vihiga	51	751	1.51	51	752	1.52	51	75	1.52
Others	114	747	6.23	120	817	6.02	108	537	4.11
Total	1,071	7,730	86.56	1,056	7,660	86.61	1,260	3,465	75.63

5.12 Pineapples (*Ananas comosus*)

Pineapple is grown for both fresh market and processing market. The main variety grown is smooth cayenne. During the year under review, the area, production and value of the crop was 12,989 Ha, 496,036tons and KES 10.15 billion respectively. The major counties accounting for 91 percent of total pineapple production were Murang'a, Kericho, Kiambu, and Homa Bay. The major constraints to pineapple production are unavailability of quality planting material and insect pests especially mealy bugs, and nematodes besides poor agronomic practices among smallholders. In addition, there is limited cottage industry to process pineapple in diverse range of products.

Table 70: Production of Pineapples in selected Counties, 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Murang'a	6,000	312,000	6,240	6,000	312,000	6,240	6,000	312,000	6,240
Kericho	2,023	59,806	743	2,030	60,580	920	1,979	98,750	1,975
Kiambu	465	8,675	309	378	8,070	433	378	8,070	494
Homa Bay	1,312	19,605	492	1,312	19,605	492	1,970	37,586	484
Bungoma	236	4,645	151	287	5,684	187	270	5,266	163
Machakos	350	1,200	100	350	1,500	150	391	4,317	154
Nyeri	256	1,602	91	318	1,878	110	307	2,053	142
Meru	108	1,011	26	104	1,417	37	135	4,318	90
Kisii	114	3,027	73	135	3,191	79	132	3,215	80
Nandi	77	1,533	49	82	1,757	53	87	1,856	56
Others	610	9,295	269	1,483	46,226	228	1,340	18,605	271
Total	11,551	422,399	8,543	12,479	461,908	8,929	12,989	496,036	10,149

5.13 Melon (*Cucumis melo* sp)

The area under Melon was 3,485 Ha producing 86,216 MT with a value of KES 1.6 billion. The data outlined here includes both for water melon and sweet melon though currently there is increased production of the horned melon. The leading counties in melon production were Makueni, Tana River Kilifi, Migori, Kwale, and Meru which accounted for 69 percent of the National value. Prevalence of pests and diseases was a major constraint limiting the increase of sweet melon production.

Table 71: Production of Melons in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Makueni	206	14,893	295.1	284	16,112	319.0	298	16,614	400.0
Tana River	160	5,334	160.0	243	7,487	224.6	271	10,112	303.4
Kilifi	88	3,103	93.1	437	14,738	135.3	360	8,890	120.3
Migori	463	6,870	126.8	365	6,565	143.1	391	6,765	112.8
Kwale	25	641	19.2	15	385	11.5	91	2,690	80.7
Meru	88	3,740	90.9	86	3,944	83.1	150	1,788	71.5
Homa Bay	137	3,588	53.7	147	2,615	60.8	241	3,368	59.7
Elgeyo Marakwet	59	968	15.7	75	1,695	28.9	72	1,520	42.5
Kajiado	19	117	2.3	37	279	12.8	152	1,669	40.3
Kitui	40	654	11.7	66	882	35.0	142	2,420	39.4
Others	1,413	15,302	799	1,905	29,673	1,105	1,317	3,380	313
Total	2,698	55,210	1,668	3,660	84,375	2,159	3,485	59,216	1,584

5.14 Pears (*Pyrus communis*)

Pears are grown for the domestic market. The production during the reporting year was 653 MT with a value of KES 18 million. The major counties in production of pears were Meru, Kiambu, and Nyandarua accounting for 86 percent of total production. The major constraint to increased production of pears is unavailability of quality planting material and limited knowledge on appropriate agronomic practices on the part of smallholder farmers.

Table 72: Production of Pears in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)
Meru	-	-	-	-	-	-	20	250	10.00
Kiambu	21	264	6.04	22	262	6.20	22	200	4.99
Nyandarua	7	112	1.05	7	104	1.00	7	102	0.98
Narok	3	41	-	3	15	0.30	3	42	0.83
Baringo	18	24	0.71	18	24	0.72	18	24	0.77
Others	8	32	0.79	8	42	0.90	7	35	0.85
Total	57	473	8.59	58	447	9.12	77	653	18.43

5.15 Apples (*Malus domestica*)

Apple is grown by smallholder farmers for the domestic market. During the year under review, apple had mixed performance. During the year under review, the area under production increased by 31 percent the yield and value increased by 93 and 75 percent respectively, as compared to the previous year. In 2014, apple contributed KES. 26.3 million, with a production of 714 tons. The major Counties in production of apple were Baringo (46%), Kiambu (18%), Meru (17%), and Nyandarua (8%). The major constraint to increased production of apple is unavailability of quality and appropriate planting materials.

Table 73: Production of Apples in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)
Baringo	10	81	1.02	14	83	1.27	10	80	12.00
Kiambu	12	74	5.60	13	74	6.11	20	114	4.75
Meru	-	-		-	-		10	150	4.50
Nyandarua	9	110	1.88	9	107	1.97	12	110	2.00
Nakuru	6	64	2.88	6	72	4.10	9	242	1.82
Uasin Gishu	5	22	1.96	6	26	1.22	3	10	0.86
Narok	4	13	0.00	4	7	0.34	4	8	0.38
Total	46	364	13.34	52	369	14.99	68	714	26.30

5.16 Plums (*Prunus domestica*)

Plum is grown for domestic fresh and processing markets. During the year under review, the area and quantity and value of plums increased from 195 Ha, 2,108 tons, and KES 41.3 million in 2013 to 221 Ha to 2,277 tons, and 42.5 million in 2014 representing 13, 8, and 3 percent increase. The major Counties in production of plum by value were Kiambu (39%), Nyandarua (31%), Meru (8%), and Nakuru (6%). Other counties were Nyeri, Kirinyaga, Murang'a, and Uasin Gishu. The major constraints to increased production of plum are unavailability of quality planting materials and lack of suitable varieties.

Table 74: Production of Plums in selected Counties, 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)
Kiambu	41	487	23.21	38	444	18.81	47	549	16.74
Nyandarua	70	1,250	14.06	70	1,109	12.55	70	1,100	13.09
Meru	6	60	0.90	8	80	1.20	16	120	3.30
Nakuru	24	222	3.33	24	286	2.90	21	215	2.74
Nyeri	14	69	2.20	12	64	1.76	18	122	2.69
Others	41	188	4.11	43	125	4.09	49	171	3.91
Total	196	2276	47.80	195	2108	41.30	221	2277	42.47

5.17 Loquats (*Eriobotrya japonica*)

Loquat is grown for local fresh market. In 2014 the area under loquat was 182 Ha producing 944 tons of fruits valued at KES 14.59 million. This represented an increase in area and production of seven and six percent respectively. On the contrary, the value dropped by 20 percent due to low market prices as compared to 2013. The major counties in production of loquat by value were Kisii and Meru which accounted for 53 percent of national output. The major constraints to increased production of loquat are prevalence of insect pests and diseases, high postharvest losses, lack of suitable varieties and unavailability of quality planting material.

Table 75: Production of Loquats in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Meru	16	59	2.12	13	55	1.77	32	138	4.44
Kisii	48	328	4.31	55	420	5.27	48	364	4.15
Makueni	43	243	9.43	38	70	4.00	17	57	1.43
Kiambu	4	32	0.64	5	30	0.60	10	57	1.15
Nandi	3	5	0.49	4	7	0.89	5	20	0.78
Others	47	427	6.08	55	297	5.69	70	308	2.64
Total	161	1,094	23.07	170	879	18.22	182	944	14.59

5.18 Grapes

Grapes is a new tropical fruit crop in Kenya which commands premium prices in the local fresh market. It has been grown under irrigation in some warm to hot areas in particular Yatta with modest success. The main varieties grown include: Dodrelabi, muscat of Hamburg, Golden Muscat, Office Vine, and Muscat of Alexandria. Production of grapes in the last few years has been static in the area but its value has been on the increase due to the high prices in the fresh market. The main growing Counties include, Machakos, Meru, and Tharaka Nithi.

Table 76: Production of Grapes in selected Counties 2012-2014

County	2012			2013			2014		
	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)	Area (Ha)	Volume (MT)	Value (KES)
Kwale	30	525	5.20	32	560	5.60	130	2,050	41.00
Nyeri	148	1,456	14.77	196	1,952	19.60	167	1,654	24.95
Meru	-	-	-	-	-	-	14	120	4.80
Kilifi	32	307	4.70	85	1,182	9.60	130	1,644	43.00
Elgeyo Marakwet	2	31	2.46	2	31	2.46	2	31	2.46
Others	24	51	0.43	11	135	0.69	18	94	1.88
Total	236	2,370	27.55	326	3,860	37.95	461	5,593	118.09

6. FLORICULTURE



Overall performance

Floriculture is one of the fastest growing subsectors in the agriculture sector and is key in achieving the Kenya vision 2030. The value of flowers rose from KES 55.97 billion in 2013 to 59.89 in 2014 representing 7 percent increase after a 15 percent drop from 66 billion to 56 from 2012 to 2013. The sub-sector directly employs over 500,000 people directly and indirectly hence a major employer.

The main categories of flowers cultivated in Kenya by value are Roses, Carnations, Pelargonium, lilies, Hypericum, Chrysanthemum, Hypericum, Gypsophila, Alstroemeria, Solidago and Chrysanthemum Statice, Phlox, lilies, Mathiola, and Veronica. During the year under review, Roses, Cuttings, Carnations, Pelargonium cuttings, and Hypericum accounted for 71, 10, 4, 3, and 2 percent of the country's total value of flowers.

Table 77: Production of selected flowers: 2012-2014

Flower Type	2012		2013		2014	
	Volume (Tons)	Value (Millions KES)	Volume (Tons)	Value (Millions KES)	Volume (Tons)	Value (Millions KES)
Roses	87,867.24	39,404.61	88,422.20	37,092.72	98,145.00	42,121.56
Cuttings	189.17	965.18	1,172.39	5,596.65	1,221.83	6,142.18
Carnation / dianthus	4,878.33	1,739.92	3,718.21	1,553.14	3,410.99	2,209.67
Pelargonium cuttings	93.35	11,492.03	125.21	3,839.63	85,884.19	1,512.34
Lilies/longiflora	269.35	332.27	401.56	311.19	442,962.68	1,451.67
Chrysanthemums cuttings	16.70	120.77	59.16	462.31	21,474.74	1,006.96
Hypericum	2,248.52	934.68	1,917.90	1,293.17	1,887.89	669.04
Gypsophilla / Million stars	1,250.42	416.39	1,517.25	535.81	1,817.31	628.96
Mixed flowers	636.01	230.70	1,518.88	959.51	1,333.43	584.15
Alstroemeria	624.65	189.61	683.79	229.40	880.51	462.62
Solidago	962.73	421.74	960.46	387.28	951.17	460.06
Chrysanthemums	33.12	495.78	118.97	1,178.26	56.90	455.71
Statice/limonium	980.06	361.40	1,190.73	406.47	993.53	332.24
Phlox	108.56	32.24	72.78	27.11	80.72	238.19
Calla lilies	97.69	88.29	144.17	110.88	238.82	216.08
Mathiola	71.76	76.85	161.00	116.76	269.39	209.85
Veronica	911.57	243.49	872.51	200.34	611.23	195.25
Assorted/bouquet	3,678.40	7,570.25	562.03	371.82	416.73	180.68
Astrantia	58.21	20.89	49.01	22.69	44.28	104.81
Ammi	174.37	56.76	145.67	61.53	194.54	87.14
Helianthus/sunflower	1.75	0.81	18.28	7.91	47.29	83.78
Eryngium	222.42	43.93	319.10	74.06	312.52	75.22
Cut foliage	177.83	113.35	151.60	98.12	102.50	61.62
Ornithogulum	274.48	91.42	239.46	89.53	138.45	54.81
Arabicum / saundersia	109.90	30.75	211.28	231.77	213.77	48.74
Hydrangea	0.35	0.21	35.04	10.44	107.39	41.08
Agapanthus	162.48	49.22	109.38	38.29	106.11	32.05
Craspedia	97.24	33.08	123.05	147.60	102.13	28.65
Bupleurum	11.88	5.70	22.73	10.81	19.96	22.87
Geranium cuttings	1.63	23.03	3.25	333.98	3.69	16.37
Totals	106,210.17	65,585.35	105,047.05	55,799.18	664,029.69	59,734.35

Summer flowers comprise of 2.9 percent of the total production of cut-flowers and are mainly done by smallholder growers in Nyandarua, Nakuru, Kiambu, Nyeri, Meru, Machakos, Trans Nzoia, Siaya, Migori, Bomet, Nyamira, Mombasa, Kwale, and Murang'a counties. The flower industry is growing rapidly and there still remains potential for further growth since the flowers can be grown in a wide range of agro-ecological zones. The flower industry is expected to grow even further with the expansion of the markets such as Japan, Dubai, United Arab Emirates (UAE), and Russia. Locally, there is also increasing demand for the flowers for use in value added products such as bouquets and other flower arrangements especially because of economic growth enabling consumers to be

able to afford to buy flowers. Generally, the people have embraced and appreciated the importance of flowers therefore increasing the consumption in the domestic market.

Major challenges in the flower industry include pests, high cost of investment, high dependence on imported planting material, high taxation, climate change, high costs involved to compliance to standards such as Global gap hence cuts off the smallholder farmers, small holder farmers reliance on auction markets and poor postharvest processing among others. Pests impact heavily on the industry since they affect market access due to interceptions abroad caused by non-compliance to phyto-sanitary requirements.

However, favorable climatic conditions, local expertise, research, locally available labor and the improving infrastructure provide opportunity for further growth and expansion of floriculture.

Kenya is ranked third exporter of flowers globally after the Netherlands and Colombia. Other exporters posing competition to market access are Ecuador, Ethiopia, and Israel. In order to remain competitive and expand markets, there is need for the industry to institute measures that will ensure that the industry remains competitive such as compliance to phyto-sanitary measure.

6.1 Cut flowers

6.1.1 Roses (*Rosa hybrida*)

Roses contributed KES 42 billion of the KES 59 billion, earned from floriculture in 2014, accounting for 71 percent of the total value of floriculture. The leading counties in rose production in terms of value are Nakuru, Kiambu, Meru, Machakos, Kericho, and Kajiado. Other Counties producing flowers include Murang'a, Nyandarua, Nyeri, Trans Nzoia, Uasin Gishu, and Baringo. The total area under rose production was 2,597 Ha producing 98,145 MT of flowers in 2014. Counties around Mount Kenya region have been identified as potential in production of high quality flowers

The major challenge in rose flower production is the *Agrobacterium tumefaciens* (crown gall disease). Infected fields are reported to have uneconomically short life-spans of 0 - 8 months. Other challenges include erratic weather patterns and prevalence of pests and diseases attributed to climate change. The cost of investment is also considered prohibitive to many local investors.

6.1.2 Cuttings

Cuttings are among the flowers with the highest market value. They are normally exported to other growing countries to growers as planting materials. Cuttings contributed 10 percent of the domestic value of floriculture. The total volume of cuttings was 1,221.8 tons valued at KES 6,142 million of flowers in 2014.

The major challenges in production of cuttings are high costs of investment required, high taxation and pests which result in high incidences of interceptions in the European Union (EU). However, the potential for growth is immense due to high demand in the domestic and export market.

6.1.3 Carnations (*Dianthus caryophyllus*)

Carnations are among the leading cut flowers locally used in flower arrangements and in value addition of flowers in form of bouquets. Carnations contributed 4 percent of the domestic value of floriculture. The total volume of carnations was 3,411 MT valued at KES 2,210 million of flowers in 2014. The leading Counties in carnations production are Nakuru, Kajiado, Kericho, and Uasin Gishu.

The major challenges in production of carnations are high costs of investment required, high taxation and pests which result in high incidences of interceptions in the EU. However, the potential for growth is immense due to high demand in the domestic and export market.

6.1.4 Hypericum (*Hypericum spp*)

Hypericum is also known as St John's wort or Magical universe and constitutes 1.1 percent of the domestic. In 2014 the area under Hypericum was 79 Ha with a production of 1,888 MT. The major counties in production of Hypericum are Nakuru (96.33%) and Kiambu (3.67%). Hypericum is cultivated mainly for export market with the main market being Japan. Data for Laikipia was not captured in 2014. The major challenge in production of Hypericum is prohibitive cost of production associated to royalties and also lighting and shading requirements. In addition, Hypericum production is intensive and requires highly skilled workforce.

7. ANNEXES

NATIONAL SUMMARY

Table 78: Horticulture production performance by County: 2012-2014

YEAR	2012			2013			2014		
COUNTY	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)	Area (Ha)	Volume (MT)	Value (Million KES)
Bungoma	15,889	405,092	8,716	18,516	445,471	10,122	24,736	519,355	11,919
Meru	30,982	663,738	12,031	32,326	718,065	13,035	30,046	588,287	10,812
Murang'a	26,358	550,732	11,259	26,860	553,007	11,759	21,220	517,315	9,952
Nyandarua	36,771	488,466	4,868	38,565	500,457	5,625	40,326	499,791	6,594
Kiambu	29,828	429,462	9,193	27,290	462,390	8,679	25,375	293,877	6,363
Kirinyaga	9,180	336,133	6,364	9,218	325,785	6,129	7,470	304,088	6,016
Elgeyo Marakwet	21,559	358,261	5,384	24,456	406,588	5,980	21,350	351,605	5,326
Nyeri	16,538	167,294	3,621	18,396	194,922	3,441	25,774	248,641	5,007
Makueni	18,658	145,992	2,899	11,754	114,465	2,802	14,272	207,996	3,747
Nakuru	20,860	369,969	3,749	28,234	662,684	4,238	22,749	407,855	3,622
Kwale	16,383	99,353	1,466	16,318	95,565	1,387	11,562	209,182	3,351
Kisii	12,045	217,444	3,476	12,393	226,772	3,580	10,843	214,253	3,281
Embu	8,757	303,680	3,142	9,135	343,564	3,710	7,257	302,807	3,035
Kilifi	39,968	199,033	3,225	58,366	300,478	3,968	14,068	189,054	2,399
Nyamira	4,717	76,071	1,371	5,064	82,833	1,748	7,440	126,165	2,366
Kericho	5,759	118,727	1,758	5,822	123,984	3,220	2,087	100,022	2,101
Machakos	12,715	122,833	10,082	14,272	122,465	12,108	11,456	103,844	2,040
Kajiado	3,528	49,684	1,233	3,557	65,764	1,341	2,098	52,095	1,795
Tharaka Nithi	5,264	137,082	2,082	5,553	125,806	1,994	4,034	114,546	1,720
Bomet	7,375	110,872	1,904	9,046	157,173	2,650	4,145	93,438	1,648
Taita Taveta	6,546	222,461	3,764	6,937	251,408	3,870	3,698	144,644	1,642
Kakamega	6,883	50,660	1,322	7,037	53,483	1,448	5,780	49,280	1,351
Narok	6,646	72,166	1,696	8,337	236,818	3,687	10,035	81,275	1,303
Uasin Gishu	2,962	67,993	1,243	3,070	73,068	1,346	2,275	50,710	901
Migori	4,879	54,284	769	4,970	50,128	963	1,956	23,068	773
Homa Bay	11,044	80,310	1,945	11,294	122,374	2,986	2,938	44,825	686
Siaya	8,069	51,177	1,358	7,099	51,195	1,331	3,298	19,808	663
Trans Nzoia	3,553	84,209	655	2,826	50,984	822	2,295	25,842	616
Baringo	4,370	41,846	1,054	4,552	44,996	1,257	2,164	33,936	535
Kisumu	5,466	34,350	949	5,141	60,386	2,967	1,942	18,507	384
Tana River	4,046	56,485	976	4,571	62,076	1,110	539	13,562	376
Laikipia	2,530	20,055	554	4,131	24,797	865	2,429	13,530	361

Kitui	13,156	34,212	316	14,828	36,418	395	13,142	17,890	284
Nandi	2,504	37,726	820	2,644	44,472	999	794	12,654	275
Lamu	15,950	115,866	2,282	14,601	122,103	2,592	79	1,980	111
Busia	3,992	27,262	848	3,982	29,174	918	460	2,125	84
Mandera	921	8,300	288	929	7,746	273	221	3,020	83
Pokot	1,832	17,552	488	1,661	15,870	302	170	2,380	71
Vihiga	2,029	29,216	558	2,199	31,095	635	220	1,432	68
Mombasa	-	-	-	1,886	18,722	306	54	1,032	52
Garissa	1,742	31,690	797	1,990	29,002	475	22	64	3
Turkana	328	1,015	28	228	1,182	52	0	2	0
Samburu	122	181	6	102	230	8	1	2	-
Nairobi	794	7,489	312	772	8,460	346			
Isiolo	676	9,666	275	975	13,247	347			
Wajir	219	577	24	272	983	33			
Marsabit	69	153	6	84	209	8			
Others							82,757	1,040,221	16,900
TOTAL	454,462	6,506,819	121,156	492,259	7,468,864	137,857	445,576	7,046,006	120,612



The Kenya Bureau of Standards is a statutory body established under the Standards Act, CAP 496 of the laws of Kenya to provide standardisation solutions for sustainable development. KEBS plays a major role in the Horticulture Industry by developing relevant standards for this sector. These are:-



Mr Charles Ongwae, Managing Director, Kenya Bureau of Standards.

1. Code of general hygienic practice for the horticultural food industry (KS 1560:2000).

This standard recommends general hygiene practices for use in handling, which includes growing and harvesting, preparation, processing, packaging, storage, transport, distribution and sale of horticultural food product for human consumption.

2. Horticulture industry-Code of practice for floriculture (KS 1758-1:2015).

This standard prescribes the requirements for responsible and safe production of both edible and ornamental horticultural products.

3. Agricultural machinery- Safety- Part 9: Seed drills.

This standard specifies the safety requirements, verification for design and construction of machinery used in agriculture and horticulture.

The Testing arm of KEBS is modern and well equipped to provide services in the areas of chemistry, food including genetically modified foods, microbiology, material engineering and textiles.

To service the horticulture industry, KEBS tests for farm inputs to ensure conformity to established standards. Samples received in testing laboratories include import products, export products, quality assurance samples taken by KEBS QA staff Standards Development samples for Standards development and private samples. KEBS laboratories are accredited by United Kingdom Accreditation Service (UKAS).

KEBS testing laboratories also offer attachment opportunities for horticulture students, staff of horticulture firms and train them in analysis.

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