



Gates Foundation



Crop Yield Forecast Estimates May 2025

Partnership for Inclusive Agricultural Transformation in Africa (PIATA)
The Regional Food Balance Sheet

Preface

Acknowledgments and Disclaimer

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This report was prepared by Xylem Lab, which leads the NASA Harvest Africa Initiatives at the University of Maryland.

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May 2025

Overview

This report summarizes yield, acreage, and total production estimates for maize, rice, and beans across six focus countries. The data is updated monthly in the RFBS Dashboard via a standard data file. Our model reports on the main growing season for countries with available historical yield data for model training. For detailed growing season imagery by country, please refer to the crop calendars in the various chapters for each country.

Data Limitations and Model Caveats

The data used in this report has limitations due to gaps in historical records and variations in data collection methods:

- Historical data accuracy and consistency vary by country.
- Our model reflects these data gaps, as it is trained on available information.
- We view these limitations as opportunities to improve data sharing and scaling methods with our country partners.

For detailed information about the model and data used in this report, please refer to Appendix A.

Data presented here this month focuses on maize, rice and bean systems in [Kenya](#), [Uganda](#), [Malawi](#), [Rwanda](#), [Zambia](#), and [Tanzania](#), which are currently in season. Additional information and context for the other priority countries can be found in the [Executive Summary](#). The complete report will include yield, acreage, and total production estimates for these crops for all six priority countries: **Kenya, Malawi, Rwanda, Tanzania, Uganda, and Zambia**. Satellite data in the current model runs are described in Appendix A.

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Nomenclature

Abbreviations

Abbreviation	Definition
EO	Earth Observation
NDVI	Normalized Difference Vegetation Index
ESI	Evaporative Stress Index
NOAA	National Oceanic and Atmospheric Administration
NASA	National Aeronautics and Space Administration
SMOS	Soil Moisture and Ocean Salinity
GLAM	Global Agriculture Monitoring
CPC	Climate Prediction Center

Data	Source
NDVI	UMD GLAM system
ESI	NASA SERVIR Global
Precipitation	CHIRPS (historical)
NOAA precipitation	CPC (Areas outside of CHIRPS coverage)
Precipitation Forecast	CHIRPS-GEFS
Soil Moisture	NASA-USDA Global soil moisture, utilizing SMOS data
Temperature	NOAA CPC



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Chapter 1

Executive Summary

This report presents national forecasts for **May 2025**, focusing on **maize, rice, and bean production in Malawi, Tanzania, Zambia, Uganda, Kenya, and Rwanda**. These six countries are currently in their respective crop production seasons, with production underway. Our analysis leverages a yield estimation pipeline combining machine learning with Earth observation data to assess crop conditions at sub-national scales. The methodology integrates multiple satellite-derived indicators, including the Normalized Difference Vegetation Index (NDVI), Evaporative Stress Index, and Cumulative Rainfall (see Appendix A).

1.0.1 Production Forecast Summary

Current projections for May 2025 maize, beans and rice production in East Africa show varying forecasts between USDA, FAO and UMD models, as summarized in Table 1.1.

Figure 1.1 compares national-level yield estimates (in million hectares) for maize, bean and rice across Malawi, Tanzania, Zambia, Uganda, Kenya, and Rwanda based on production data from the United States Department of Agriculture (USDA), Food and Agriculture Organization (FAO) and UMD production estimates. UMD estimates include a range represented by minimum and maximum values, with the average shown as a blue bar and capped error bars indicating variability. USDA and FAO estimates are shown as single average values using green and yellow bars, respectively. *NB: Estimates from FAO are for 2023.*

Season Overview and Analysis

Our modeling integrates historical yield data with satellite observations covering the January-May growing period, including vegetation health, water stress, temperature extremes, and soil moisture. These assessments are designed to complement the Regional Food Balance Sheet by providing data-driven insights for agricultural policy and decision-making.

Figure 1.1: This figure compares national-level yield estimates (in million hectares) for maize, bean and rice across Malawi, Tanzania, Zambia, Uganda, Kenya, and Rwanda based on production data from the United States Department of Agriculture (USDA), Food and Agriculture Organization (FAO) and UMD production estimates. UMD estimates include a range represented by minimum and maximum values, with the average shown as a blue bar and capped error bars indicating variability. USDA and FAO estimates are shown as single average values using green and yellow bars, respectively. *NB: Estimates from FAO are for 2023.*

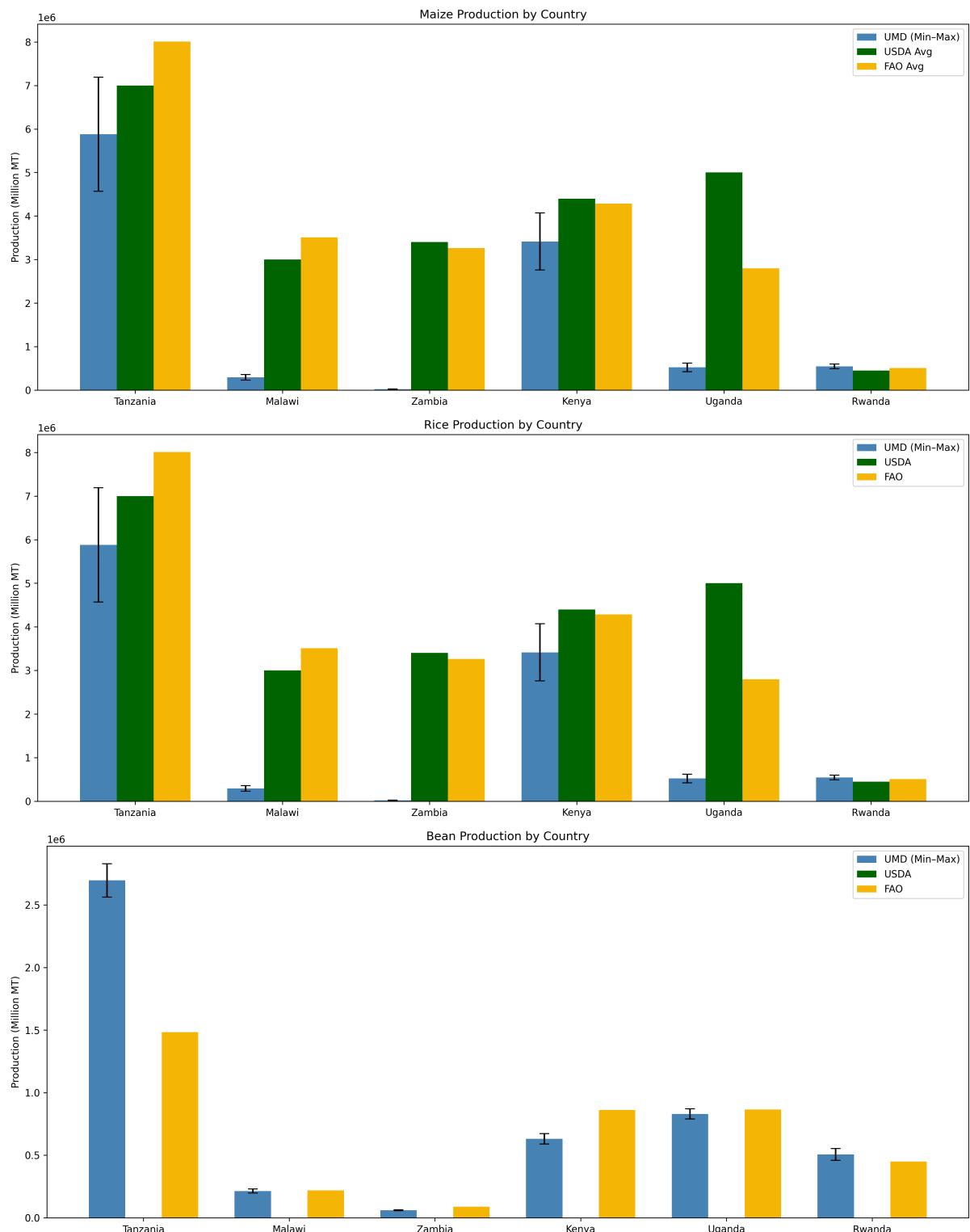


Table 1.1: This figure shows maize, rice and bean production estimates for 2025 from USDA and University of Maryland (UMD) models. Whereas estimates from FAO are from 2023

Country	Crop	Source	Area (Million ha)	Yield (MT/ha)	Min - Max Prod. (Million MT)
Tanzania	Maize	USDA	4.0	1.75	7.0
		FAO	4.2	1.9	8.0
		UMD	3.9	1.5	4.6 - 7.2
	Rice	USDA	1.1	3.37	3.8
		FAO	1.2	3	3.58
		UMD	3.9	1.43	4.4 - 7.1
Malawi	Bean	FAO	1.1	1.37	1.5
		UMD	3.9	0.7	2.6 - 2.8
		USDA	1.8	1.67	3.0
	Maize	FAO	1.8	1.76	3.5
		UMD	0.1	2.6	0.23 - 0.4
		FAO	0.07	1.6	0.12
Zambia	Rice	UMD	0.36	1.3	0.37 - 0.59
		FAO	0.37	0.6	0.22
		UMD	0.36	0.58	0.19 - 0.23
	Bean	USDA	1.4	2.43	3.4
		FAO	1.4	2.3	3.3
		UMD	0.01	1.84	0.017 - 0.025
Kenya	Maize	FAO	0.05	1.3	0.006
		UMD	0.1	1.1	0.08 - 0.15
		USDA	0.13	0.67	0.008
	Rice	FAO	0.06	5.18	0.21
		UMD	0.038	5.8	0.23
		FAO	0.4	1.8	0.65 - 0.92
Uganda	Bean	FAO	1.2	0.7	0.86
		UMD	1.3	0.54	0.58 - 0.67
		USDA	2.3	1.91	4.4
	Maize	FAO	2.4	1.76	4.28
		UMD	2.5	1.7	2.8 - 4.1
		USDA	0.06	2.17	0.021
Rwanda	Rice	FAO	0.23	2.5	0.42 - 0.62
		UMD	0.23	1.67	0.24
		FAO	0.2	1.59	0.26
	Bean	UMD	0.2	1.3	1.04 - 1.78
		FAO	1.0	1.4	0.86
		UMD	1.1	0.74	0.79 - 0.87
	Maize	FAO	1.03	0.8	0.45
		USDA	0.3	0.51	0.51
		UMD	0.32	1.59	0.49 - 0.59
Rice	FAO	UMD	0.31	1.8	0.13
		USDA	0.032	4.1	0.9 - 1.3
	Bean	UMD	0.6	1.77	0.45
		FAO	0.62	0.72	0.46 - 0.55



1.1 Regional Overview/Conditions

1.1.1 Eastern Africa

This month, climate conditions across Kenya, Rwanda, Tanzania, and Uganda reflected the seasonal transition at the end of the long rains (March-May). Western and Central Kenya, Rwanda and much of Uganda received well-distributed rainfall, supporting favorable crop development, particularly for maize and beans. However, eastern Kenya, northeastern Uganda (Karamoja), and parts of northern Tanzania experience below-average rainfall and localized dry spells, raising concerns about vegetation stress and delayed planting. In unimodal zones of Tanzania, rains tapered off as expected, while bimodal areas saw inconsistent rainfall affecting crop growth. Overall, conditions were broadly favorable for agriculture in much of the region, though early signs of dryness were evident in arid and semi-arid zones, warranting close monitoring.

1.1.2 Southern Africa

Malawi and Zambia entered the dry season following the end of their main rainfall period (November to April). Rainfall across both countries was largely minimal and typical for this time of the year, with isolated light showers in highland areas. Soil moisture levels began to decline, especially in southern and central Zambia and Southern Malawi, where harvesting of main-season crops like maize was underway. Vegetation conditions remained generally favorable, reflecting the cumulative effects of earlier rains, although signs of drying were evident in lowland and southern zones. No major climatic disruptions were reported, and post-harvest activities progressed under seasonally dry conditions, with attention turning toward land preparation in irrigated zones.

1.2 Country Summary

1.2.1 UGANDA

Crop conditions in Uganda were mixed. While maize performed well in the Western and Eastern regions, rice in the North declined to poor condition with significant yield losses. Beans remained under watch, particularly in the North and Eastern regions, where negative yield anomalies were observed. Land preparation continued in Unimodal zones and weeding began in Bimodal areas. The Northern region showed the highest estimated maize production (139,071 - 188,890 tons), though with high uncertainty, while bean forecasts were more stable across all regions.

1.2.2 Rwanda

This month, Rwanda's season B crops were generally in favorable condition, with maize, rice and beans performing well in Amajyarugu, Iburengerazuba, and Amajyepfo provinces. However, Iburasirazuba continues to face poor maize and bean conditions with below-average yields. Nationally, maize yields improved by 10% from last month, ranging between 1.57 and 1.93 MgT/ha, with the highest in Amajyarugu. Bean

yields were strongest in Iburengerazuba and Amajyaruguru, while rice yields were above average in the south but showed negative anomalies in the east and the capital. Despite regional variability, overall production prospects remain favorable.

1.2.3 Malawi

Malawi's main harvest and winter planting continued, with overall favorable conditions for maize, rice, and beans in the Central region and improving bean conditions in the North. However, maize and rice remained in poor condition in both the Northern and Southern regions, while beans in the South were negatively affected by extreme climatic events. Maize yields in Central Malawi rose by 35% from last month, with projections exceeding 0.29 MgT/ha. Bean yields were above average in the Central and Northern regions but fell below -0.06 MgT/ha in the South. Rice showed the highest estimated production across all regions, especially in the Central region, though wide variability, particularly in the South, indicates greater forecast uncertainty.

1.2.4 Zambia

Maize conditions in Zambia showed improvement, particularly in Lusaka, where they shifted from poor to favorable. Favorable maize conditions also persisted in the Luapula, Central, Copperbelt, Northern, and North-Western regions, while the Southern and Western regions continued to face poor and declining conditions for both maize and rice. Rice and bean crops remained largely under poor or watch conditions, with slight improvement in rice noted in the North. Yield projections range from 1.16 to 2.25 MgT/ha for maize, 0.81 to 1.52 MgT/ha for rice, and 0.50 to 0.58 MgT/ha for beans. Northern and northwestern regions showed the strongest production potential, especially for rice. However, negative yield anomalies are expected in the Southern, Western, Eastern, and Lusaka regions for both rice and beans, while maize yields are projected to decline below -0.51 MgT/ha in the South and West.

1.2.5 Tanzania

Crop conditions in Tanzania for this month varied across the unimodal and bimodal regions. In the unimodal zone, maize remained mostly favorable in regions such as Katavi, Rukwa, and Mbeya, with yields reaching up to 2 MgT/ha, while poor maize and rice conditions persisted in Morogoro, Dodoma, and Lindi. Rice yields improved in parts of the southwest, while beans showed generally favorable conditions in six out of thirteen regions. In the bimodal areas, maize conditions were favorable in Tanga, Kagera, and Kilimanjaro but declined in Kusini Pemba and Manyara. Rice continued to face poor conditions in many coastal and northern areas, although regions like Arusha and Mwanza saw improvement. Beans remained under watch in most areas, with yields ranging from -0.01 to 0.07 MgT/ha. Overall, maize led in production across most regions, though rice had the highest variability and beans remained the most stable but least productive.

1.2.6 KENYA

May marks the planting season in Kenya, with crop conditions showing significant regional variation. Maize is in very poor condition in 24 counties, with yield anomalies

between -0.1 and -0.89 MgT/ha, while 19 counties report favorable and above-average yields ranging from 1.72 to 2.69 MgT/ha. Rice shows mixed performance, favorable in parts of western, central, and Rift Valley counties, but poor or under watch in many coastal and northeastern areas. Bean conditions are mostly favorable or stable, though they remain poor in several arid and coastal counties. Maize leads in production volume nationwide, particularly in Turkana (381,056 - 465,432 tons), (165,430 - 272,970 tons), and Narok (162,141 - 212,356 tons), though coastal areas are expected to record lower yields.

Chapter 2

Uganda

In bimodal areas, Uganda has two rainy seasons, the first from **March to July** and the second from **September to December**. In the unimodal areas found above 3° North altitude, there is one rainy season from **April to October**. Crop-growing regions are located throughout the country, but the eastern, central, and western regions are most intensely cultivated.

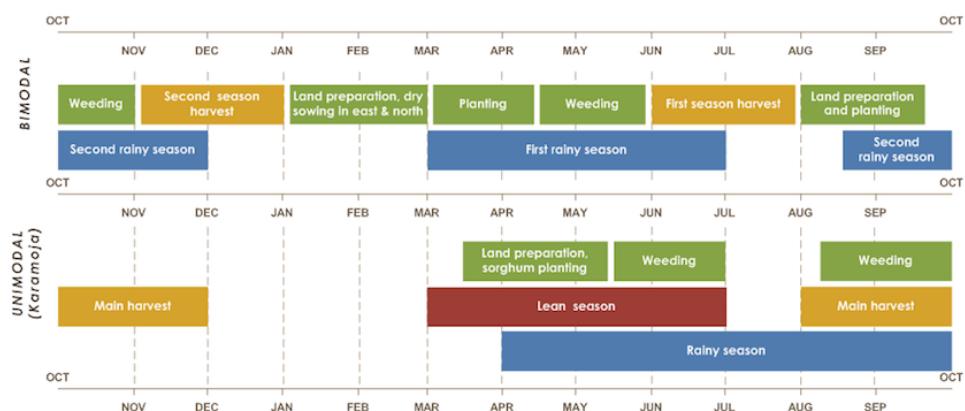


Figure 2.1: Uganda's agricultural calendar

2.1 Regional Crop Conditions and Yield Forecasts

This section provides a summary of crop conditions and yield forecasts for Uganda for May 2025. Land preparation and planting activities are still ongoing in the Unimodal regions whereas weeding activities commenced this month in the bimodal region. Rice conditions in Northern Uganda have declined from **favorable** to **poor** this month, with yield anomaly dropping below -0.28 MgT/ha. As in the previous month, maize continues to perform well in Western and Eastern Uganda, with projected yield anomalies exceeding 0.06 MgT/ha. However, beans remain under **watch** conditions across Northern, Central and Eastern regions. All other crops, including maize and beans, continue to experience **poor** conditions in the North, although trends remain stable.

The table 2.2 below summarizes the notable updates for Uganda maize, beans and rice. Only major changes in conditions or forecast yield are highlighted here.

Figure 2.2: Maize, bean, and rice conditions as of May 2025 and the estimated minimum and maximum production forecast for July 2025, showing regional variations in crop performance. This table not only shows predicted yield but also estimated crop production minimum and maximum ranges with their uncertainty across counties using standard deviation.

Crop Yield Forecast for Uganda

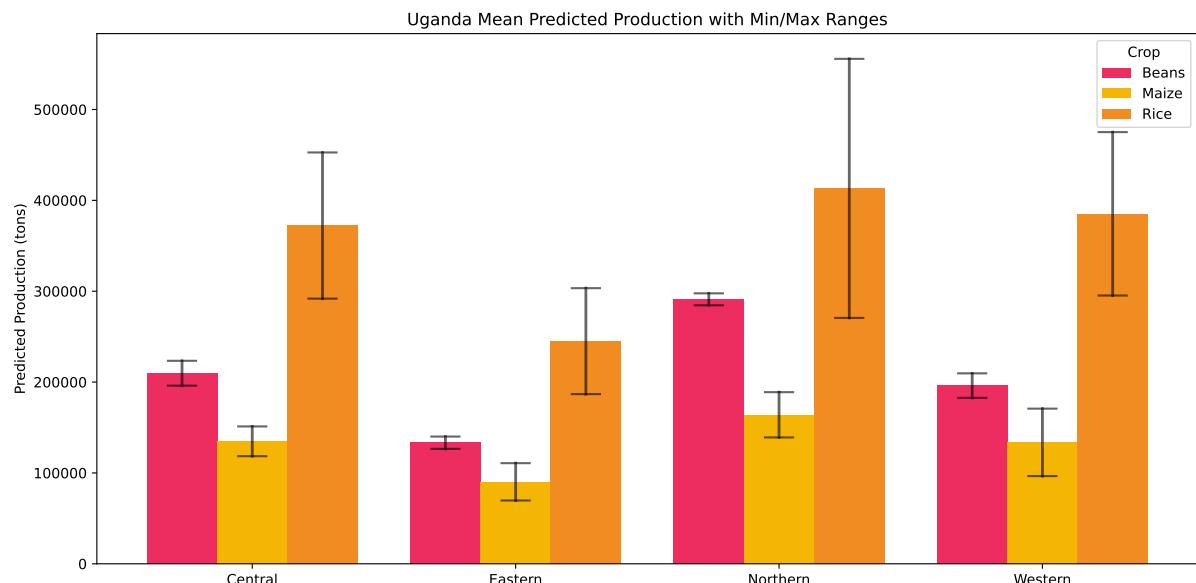
County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Maize						
Northern	112,417	1.46	139,071-188,890	-0.22	Poor	Stable
Central	80,837	1.67	118,436-151,178	-0.01	Watch	Stable
Western	72,771	1.84	96,542-170,751	0.16	Favorable	Stable
Eastern	51,973	1.74	69,679-110,756	0.06	Favorable	Stable
Rice						
Northern	365,534	1.13	270,617 - 555,734	-0.28	Poor	Declining
Central	262,847	1.42	291,847 - 452,709	0.01	Favorable	Stable
Western	236,621	1.63	295,279 - 475,111	0.22	Favorable	Stable
Eastern	168,996	1.45	186,739 - 303,346	0.04	Favorable	Stable
Beans						
Northern	365,534	0.8	279,440 - 302,720	-0.01	Watch	Stable
Central	262,847	0.8	194,060 - 225,406	0	Watch	Stable
Western	236,621	0.83	179,919 - 212,316	0.03	Favorable	Stable
Eastern	168,996	0.79	125,481 - 141,054	-0.01	Watch	Stable

Poor Watch Favorable Exceptional

Source: Satellite data analysis

2.1.1 Production Forecasts

Figure 2.3: This figure highlights the mean estimated production for maize, beans and rice across the four regions in Uganda. Northern region (139,071 - 188,890 tons) shows the highest estimated average production for maize with relatively wider minimum and maximum ranges, indicating considerable prediction uncertainty. This is consistent across all regions for maize. On the other hand, beans have low min/max ranges across all regions with Eastern and Northern having the lowest, suggesting reliable forecasts. Refer to Table 2.2 for estimated production ranges. **NB: The vertical black lines and caps indicate the minimum and maximum estimated production range for each region.**



Further analysis of yield forecasts and anomalies is presented in Figures 2.4, 2.5, and 2.6 showing the spatial distribution of the projected maize, bean, and rice yield for Uganda's end of season.

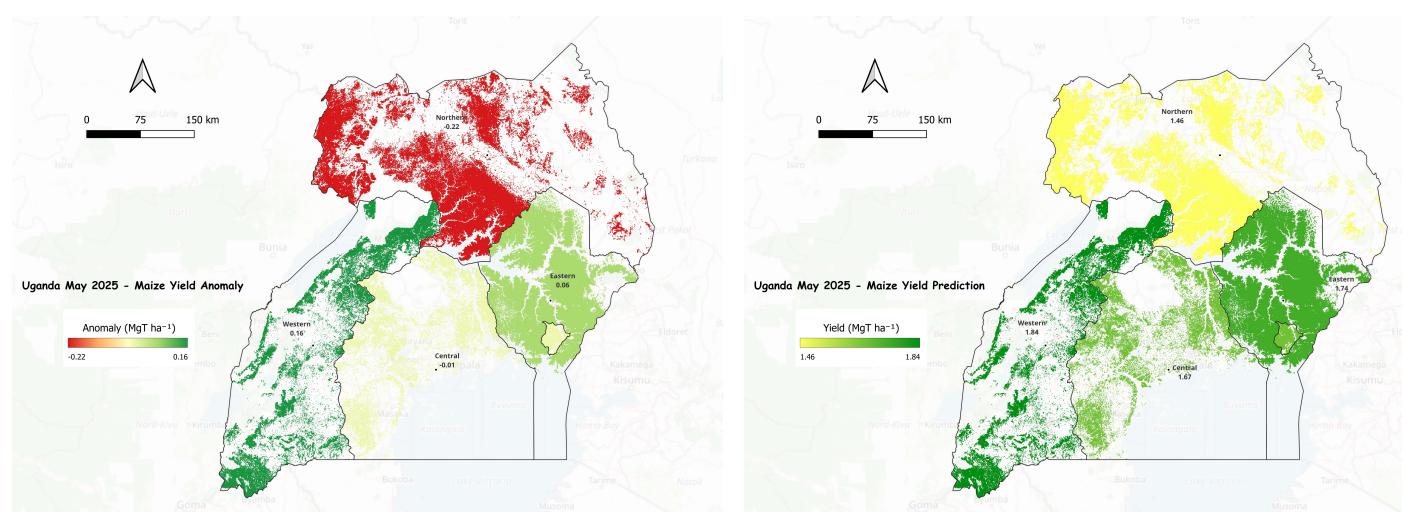


Figure 2.4: (a) End-of-season maize yield forecast for Uganda and (b) Yield anomaly projections based on satellite data and machine learning analysis. Maize yield is predicted to range between 1.46 and 1.84 MgT/ha in all of Rwanda; however, negative anomaly (-0.22 MgT/ha) is observed in Northern Uganda

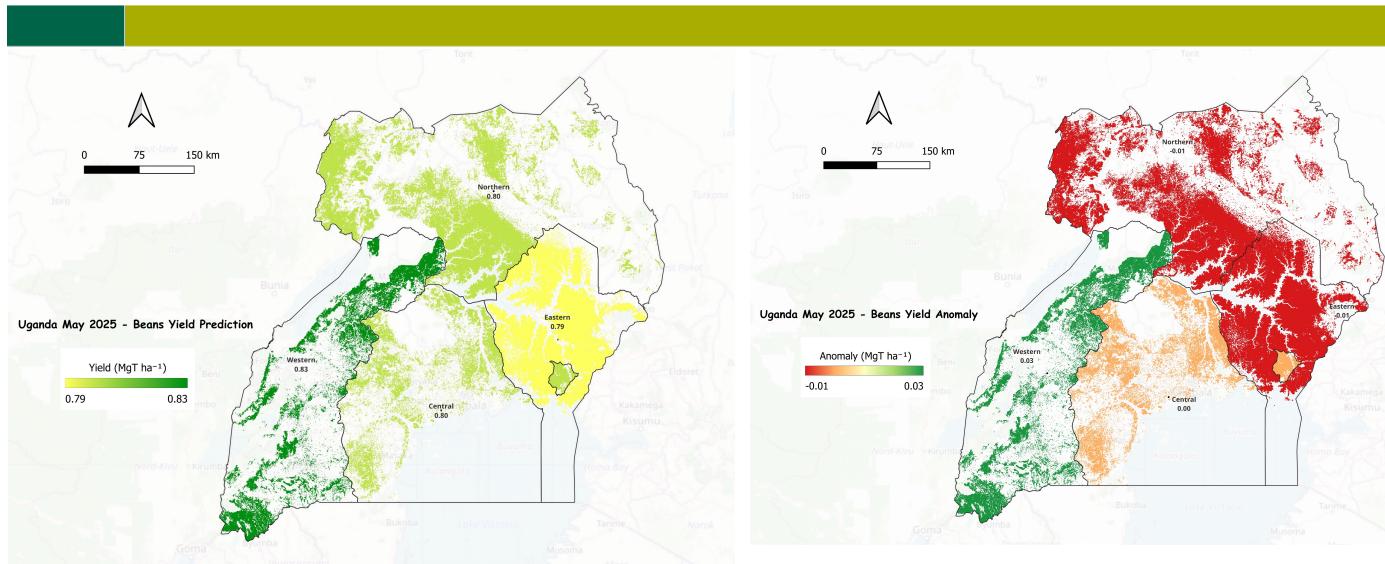


Figure 2.5: (a) End-of-season bean yield forecast for Uganda and (b) Yield anomaly projections based on satellite data and machine learning analysis. Bean yield is predicted to fall below -0.01 MgT/ha due to extreme climatic events in the Eastern and Northern regions of Uganda; however, yield is expected to be above average in the Western Uganda.

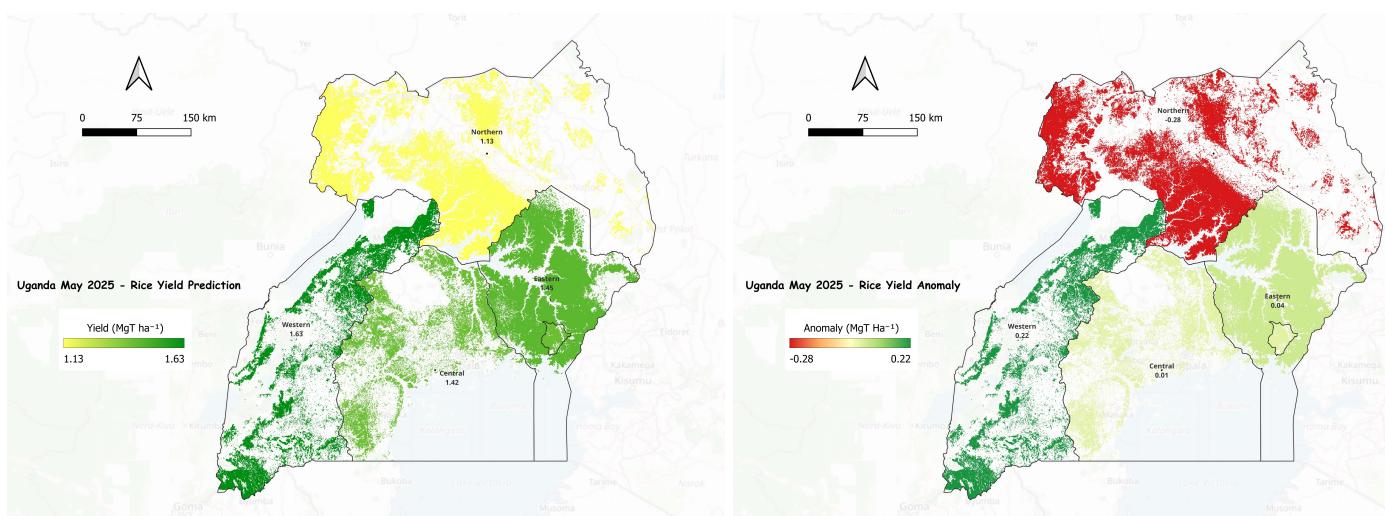


Figure 2.6: (a) End-of-season rice yield forecast for Uganda and (b) Yield anomaly projections based on satellite data and machine learning analysis. Rice in Northern Uganda is projected to have negative yield anomalies (-0.28 MgT/ha) with all other regions above average.

Chapter 3

Rwanda

Rwanda has two rainy seasons with crop-growing regions throughout the country, largely concentrated in the East. The long rainy season lasts from **March to May** and the short rainy season lasts from **October to December**.

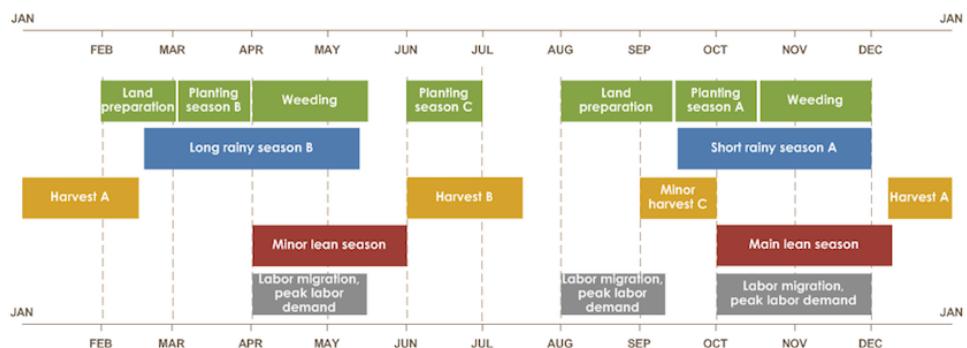


Figure 3.1: Rwanda's agricultural calendar

3.1 Regional Crop Conditions and Yield Forecasts

This section summarizes crop conditions and yield forecasts for Rwanda for the current Long rainy season B. This month, maize, rice and beans are in **favorable** conditions in Amajyaruguru, Iburengerazuba, and Amajyepfo, with yield anomalies above 0.02 MgT/ha for maize, 0.06 MgT/ha for rice and 0.01 MgT/ha for beans. Contrarily, Iburasirazuba continues to experience **poor** crop conditions for maize this month.

The table 3.2 below summarizes Rwanda's maize, beans and rice crop conditions and yield forecasts.

Figure 3.2: Maize, bean, and rice conditions for Rwanda as of May 2025 and the estimated minimum and maximum production forecast for June 2025, showing regional variations in crop performance.
This table not only shows predicted yield but also estimated crop production minimum and maximum ranges with their uncertainty across provinces using standard deviation.

Crop Yield Forecast for Rwanda

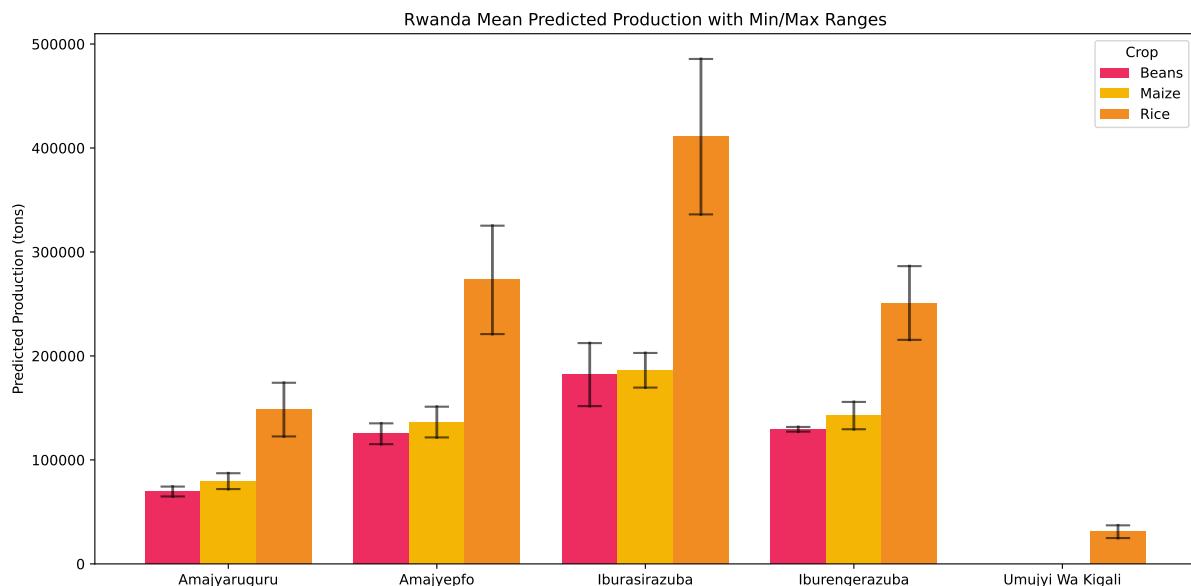
County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Maize						
Iburasirazuba	118,755	1.57	169,558 - 202,862	-0.24	Poor	Stable
Amajyaruguru	41,197	1.93	71,958 - 87,207	0.12	Favorable	Stable
Iburengerazuba	74,903	1.9	129,507 - 155,765	0.1	Favorable	Stable
Amajyepfo	74,785	0.02	121,636 - 151,188	0.02	Favorable	Stable
Rice						
Iburasirazuba	233,571	1.76	336,140 - 485,626	-0.02	Watch	Stable
Amajyaruguru	80,902	1.83	122,588 - 174,204	0.06	Favorable	Stable
Iburengerazuba	145,284	1.73	215,478 - 286,376	-0.05	Watch	Stable
Amajyepfo	147,259	1.85	221,023 - 325,283	0.08	Favorable	Stable
Umujiyi Wa Kiga	18,027	1.72	24,856 - 37,079	-0.06	Watch	Stable
Beans						
Iburasirazuba	240,507	0.76	151,754 - 212,362	-0.06	Watch	Stable
Amajyaruguru	83,305	0.84	64,865 - 74,362	0.01	Favorable	Stable
Iburengerazuba	149,599	0.87	127,214 - 131,702	0.04	Favorable	Stable
Amajyepfo	151,633	0.83	115,161 - 135,176	0	Watch	Stable

Poor Watch Favorable Exceptional

Source: Satellite data analysis

3.1.1 Production Forecasts

Figure 3.3: This chart illustrates the mean estimated production for each province in Rwanda, categorized by crop type. Iburasirazuba province shows the highest average estimated production for all crops, with maize having the highest standard deviation followed by Amajyepfo and Iburegerazuba, respectively. Meanwhile, Umujyi Wa Kigali province (24,856 - 37,079 tons) records the lowest estimated rice production. Refer to Table 3.2 for estimated production ranges. **NB: The vertical black lines and caps indicate the minimum and maximum estimated production range for each province.**



Further analysis of yield forecasts and anomalies is presented in Figures 3.4, 3.5, and 3.6 reflecting on the projected maize, bean and rice yield for Rwanda's end of season.

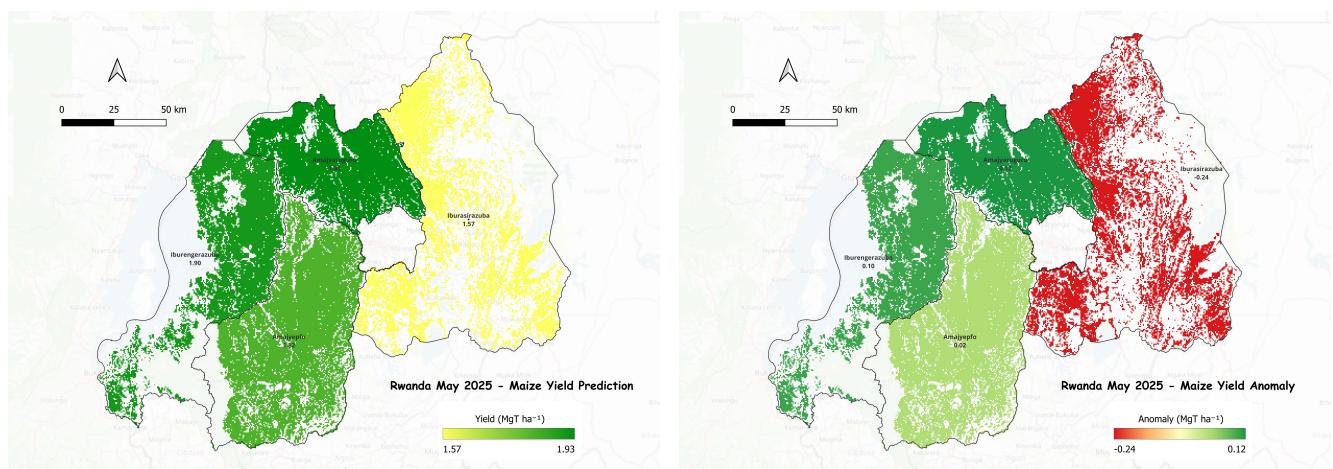


Figure 3.4: (a) End-of-season maize yield forecast for Rwanda and (b) Yield anomaly projections based on satellite data and machine learning analysis. This month, predicted maize yield for Rwanda ranges between 1.57 MgT/ha and 1.93 MgT/ha, which is a 10% increase from last month's forecast, with the highest yield from Amajyaruguru. Albeit maize yield falls below average in Iburasirazuba

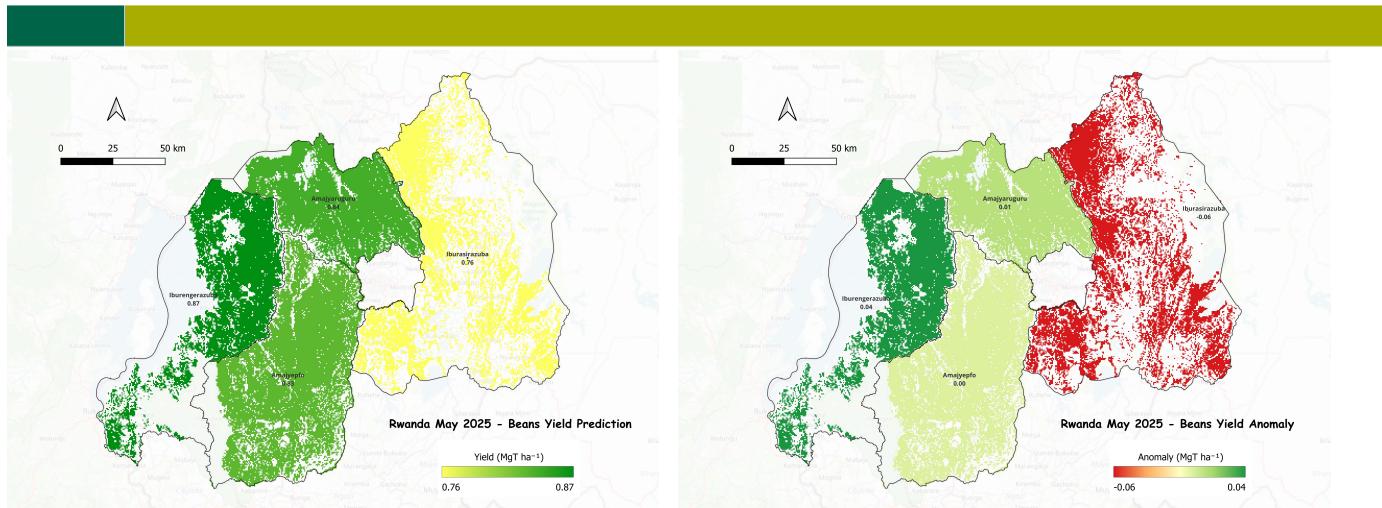


Figure 3.5: (a) End-of-season bean yield forecast for Rwanda and (b) Yield anomaly projections based on satellite data and machine learning analysis. The highest forecasted bean yield is recorded in Iburengerazuba at 0.87 MgT/ha, followed by Amajyepfo at 0.84 MgT/ha. Beans falls below average (-0.06 MgT/ha) in Iburasirazuba province

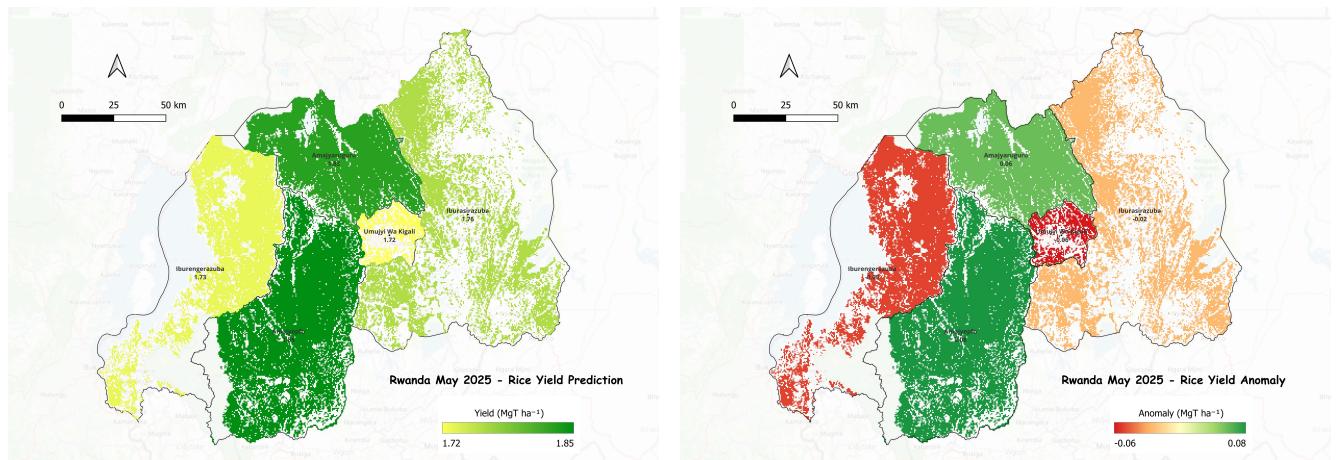


Figure 3.6: (a) End-of-season rice yield forecast for Rwanda and (b) Yield anomaly projections based on satellite data and machine learning analysis. Forecasted rice yield is above average in Amajyepfo and Amajyaruguru, whereas Iburasirazuba, Iburengerazuba, and Umuji Wa Kigali are forecasted to receive negative rice yield anomalies, mostly below -0.02 MgT/ha



Chapter 4

Malawi

This chapter analyzes Malawi's crop conditions and yield forecasts for the current season. Malawi's agricultural patterns are characterized by distinct seasonal planting and harvesting schedules:

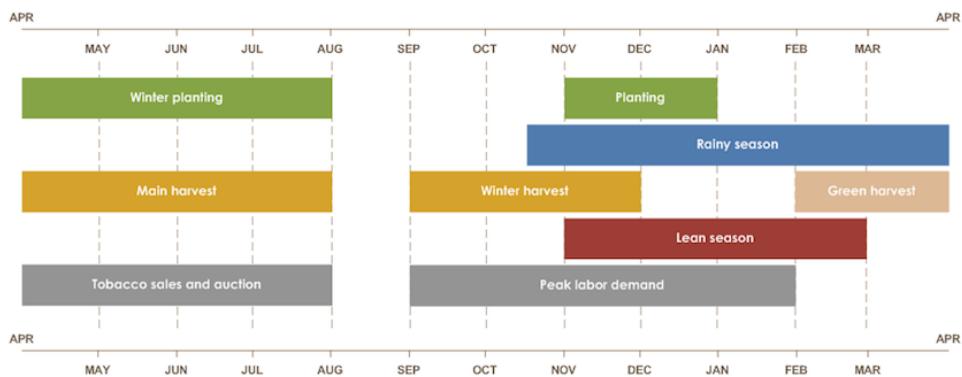


Figure 4.1: Malawi has one long rainy season that typically extends from mid-October through April.

The planting season occurs from November to January, with the main harvest from April through August. A second winter planting season takes place from May through August, with the winter harvest occurring from September through December.

4.1 Regional Crop Conditions and Yield Forecasts

Winter planting and the main harvest are still underway this month. Maize, rice and beans continue to be under stable and **favorable** conditions across the Central and Northern Malawi. On the other hand, the Northern and southern regions are experiencing **poor** maize and rice conditions. Beans however in the northern region is in **favorable** conditions, marking an improvement from previously **poor** conditions.

The table 4.2 below summarizes the notable updates for Malawi maize, beans and rice. Only major changes in conditions or forecast yield are highlighted here.



Figure 4.2: Maize, bean, and rice conditions for Malawi as of May 2025 and the estimated minimum and maximum production forecast for July 2025, showing regional variations in crop performance. This table not only shows predicted yield but also estimated crop production minimum and maximum ranges with their uncertainty across provinces using standard deviation.

Crop Yield Forecast for Malawi

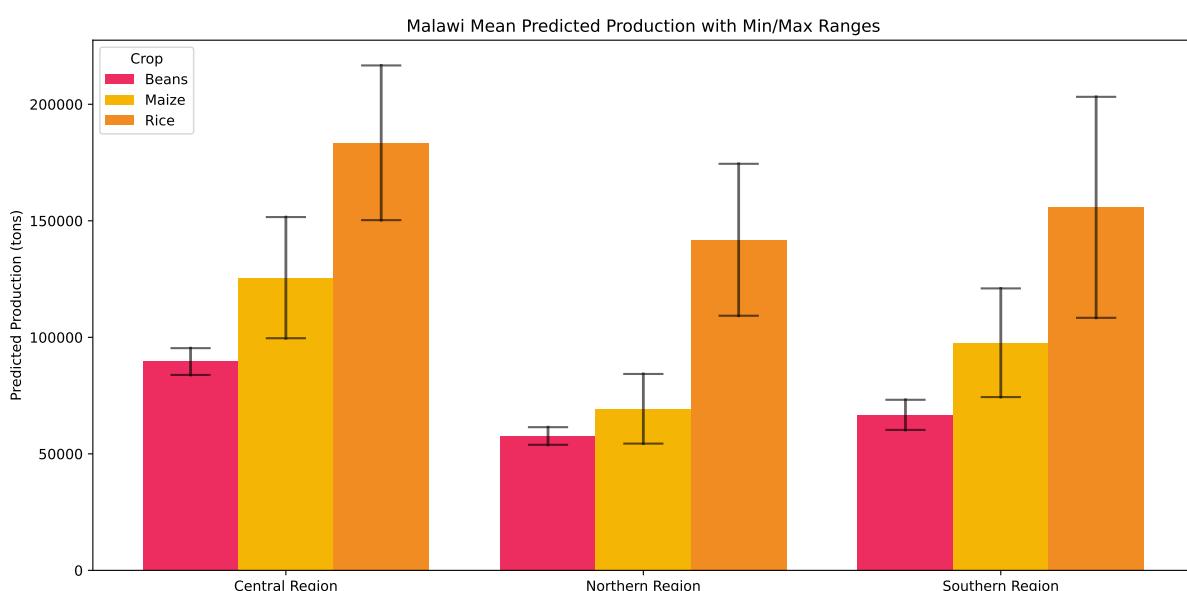
County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Maize						
Northern Region	29,637	2.34	54,391 - 84,273	-0.23	Poor	Stable
Central Region	43,895	2.86	99,611 - 151,599	0.29	Favorable	Stable
Southern Region	38,731	2.52	74,362 - 120,986	-0.05	Watch	Stable
Rice						
Northern Region	97,006	1.46	109,265 - 174,453	0.14	Favorable	Stable
Central Region	143,672	1.28	150,288 - 216,665	-0.05	Watch	Stable
Southern Region	126,769	1.23	108,370 - 203,194	-0.09	Poor	Stable
Beans						
Northern Region	97,006	0.59	53,875 - 61,441	0.01	Favorable	Stable
Central Region	143,672	0.62	83,858 - 95,352	0.04	Favorable	Stable
Southern Region	126,769	0.53	60,262 - 73,193	-0.06	Watch	Stable

Poor Watch Favorable Exceptional

Source: Satellite data analysis

4.1.1 Production Forecasts

Figure 4.3: This chart displays the mean estimated production for beans, maize, and rice across Malawi's Central, Northern, and Southern regions. Rice has the highest estimated mean production in all three regions, particularly in the Central Region (150,288 - 216,665 tons). Maize follows, while beans have consistently lower but more stable production estimates. The min-max error bars highlight variability. Rice shows the widest estimation ranges, especially in the southern region, indicating higher uncertainty. Beans demonstrates the most consistent production with narrower ranges across regions. Refer to Table 4.2 for estimated production ranges. **NB: The vertical black lines and caps indicate the minimum and maximum estimated production range for each county.**



Further analysis of yield forecasts and anomalies is presented in Figures 4.4, 4.5, and 4.6, showing the spatial distribution of the projected maize, bean and rice yield for Malawi's end of season.

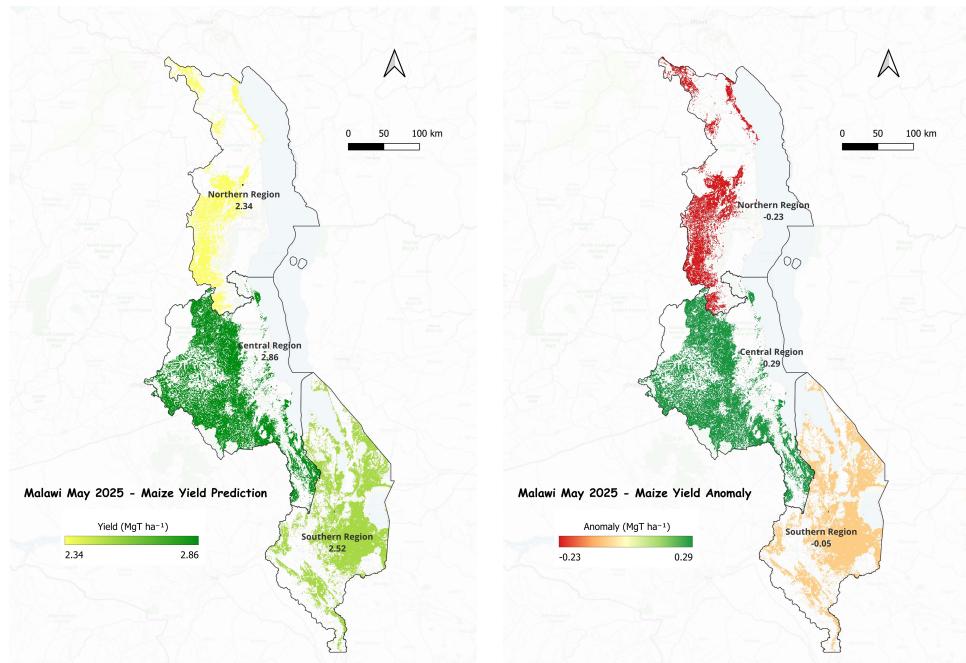


Figure 4.4: (a) End-of-season maize yield forecast for Malawi and (b) Yield anomaly projections based on satellite data and machine learning analysis. Maize yield is projected to increase above 0.29 MgT/ha, which is a 35% increase in last month's prediction in all of Central Malawi, with maize crop generally in **favorable** conditions in this region and **poor** in the North and Southern Region

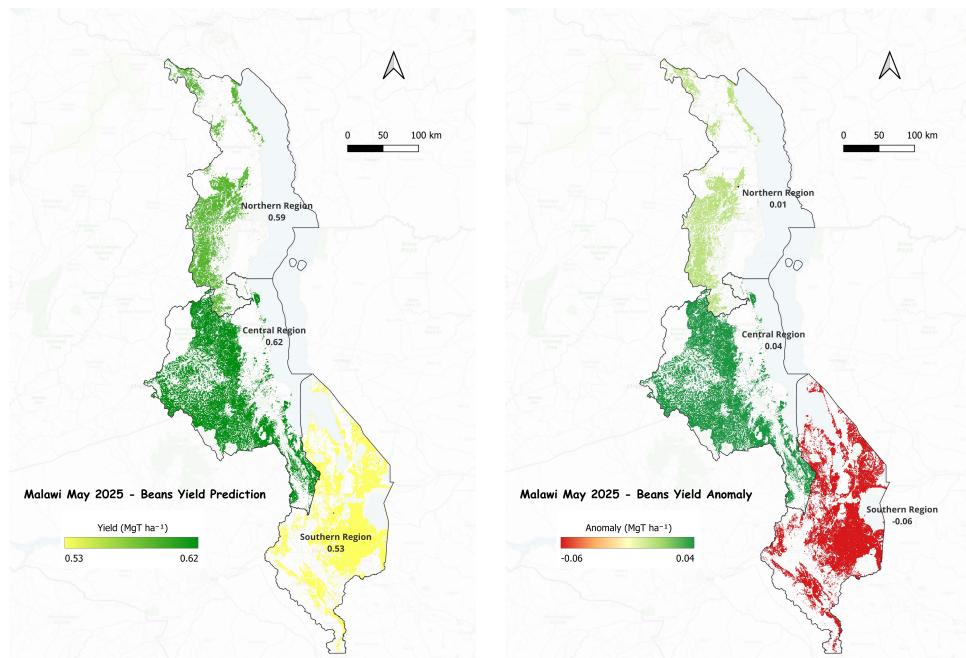


Figure 4.5: (a) End-of-season bean yield forecast for Malawi and (b) Yield anomaly projections based on satellite data and machine learning analysis. Again this month, Bean yield is predicted to fall below -0.06 MgT/ha due to extreme climatic events in southern Malawi; however, yield is expected to be above average (0.01 MgT/ha) in the Central and Northern regions.

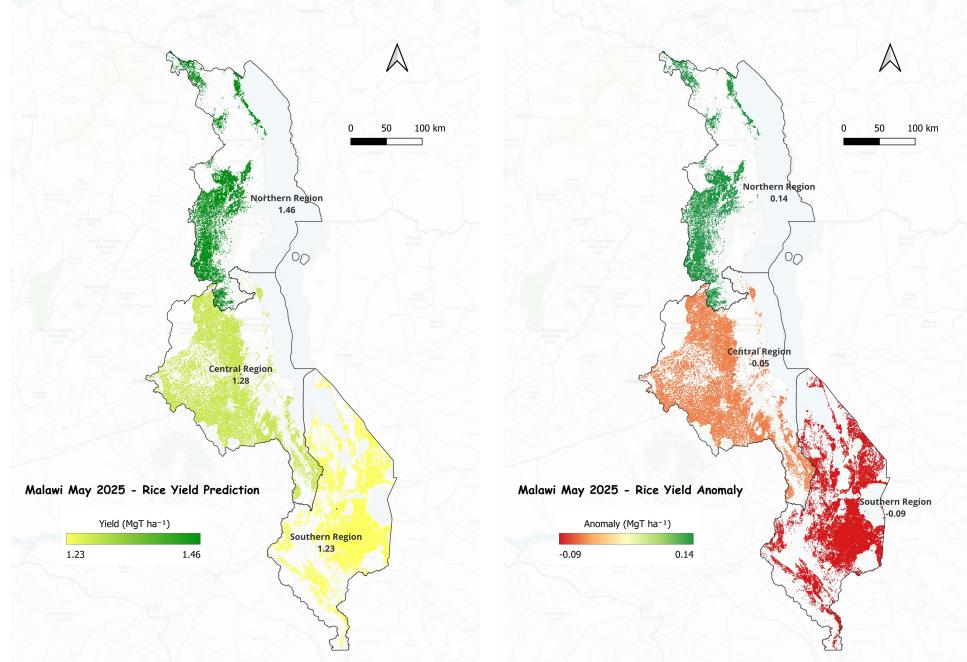


Figure 4.6: (a) End-of-season rice yield forecast for Malawi and (b) Yield anomaly projections based on satellite data and machine learning analysis. Current rice yield projections across the region range from 1.23 MgT/Ha to 1.46 MgT/Ha. However, the central and southern regions are performing below average (-0.05 MgT/Ha this month)



Chapter 5

Zambia

This section summarizes April 2025 crop conditions and yield forecasts for Zambia (harvest starting May 2025) for the current season. Zambia has one long rainy season from **November to April**, though for some regions, the season extends through May. The main planting occurs from November through January, with the main harvest occurring during April and May.

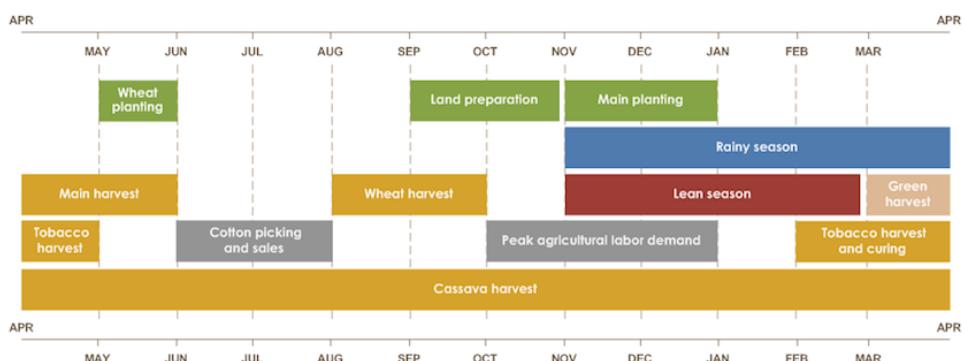


Figure 5.1: Zambia's agricultural calendar

5.1 Regional Crop Conditions and Yield Forecasts

Maize conditions have improved from **poor** to **favorable** in Lusaka, whereas the Southern and the Western regions continue to experience **poor** and **declining** maize and rice crop conditions. Similar to last month, maize remains in **favorable** conditions in the Luapula, Central, Copperbelt, North-Western, Copperbelt and Northern regions. Rice and bean conditions are generally **poor** and under **watch**, although there are signs of improvement for rice in Northern Zambia compared to last month. Yield projections for this month range from **0.81 to 1.52 MgT/ha** for rice, **1.16 to 2.25 MgT/ha** for maize and **0.5 to 0.58 MgT/ha** for beans.

The tables 5.2 and ?? below summarize the notable updates for Zambia's maize, beans and rice. Only major changes in conditions or forecast yield are highlighted here.



Figure 5.2: Maize, bean and rice conditions as of May 2025 and the estimated minimum and maximum production forecast for June 2025, showing regional variations in crop performance. This table not only shows predicted yield but also estimated crop production minimum and maximum ranges with their uncertainty across provinces using standard deviation.

Crop Conditions and Yield Forecast for Zambia

County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Maize						
Western	2,331	1.16	1,827 - 3,562	-0.68	Poor	Stable
Eastern	941	1.81	1,443 - 1,967	-0.02	Watch	Stable
Luapula	911	2	1,609 - 2,025	0.16	Favorable	Stable
Central	2,020	1.87	3,233 - 4,331	0.04	Favorable	Stable
Southern	1,249	1.32	1,381 - 1,925	-0.51	Poor	Stable
Copperbelt	569	2.13	1,060 - 1,366	0.3	Favorable	Stable
Lusaka	430	1.94	661 - 1,003	0.1	Favorable	Improving
North-Western	2,288	2.04	3,891 - 5,441	0.2	Favorable	Stable
Northern	1,424	2.25	2,563 - 3,843	0.41	Favorable	Improving
Rice						
Western	22,146	0.81	10,243 - 25,746	-0.26	Poor	Declining
Eastern	9,016	1.01	5,897 - 12,281	-0.06	Watch	Stable
Luapula	8,858	1.52	11,741 - 15,178	0.45	Favorable	Improving
Central	16,531	0.81	8,615 - 18,302	-0.26	Poor	Declining
Southern	14,935	0.83	8,219 - 16,583	-0.24	Poor	Stable
Lusaka	2,489	0.86	2,489 - 4,085	-0.22	Poor	Stable
North-Western	22,041	1.27	22,232 - 33,914	0.02	Favorable	Stable
Northern	13,604	1.47	15,114 - 24,800	0.39	Favorable	Improving

Poor Watch Favorable Exceptional

Source: Satellite data analysis

Beans Conditions and Yield Forecast for Zambia

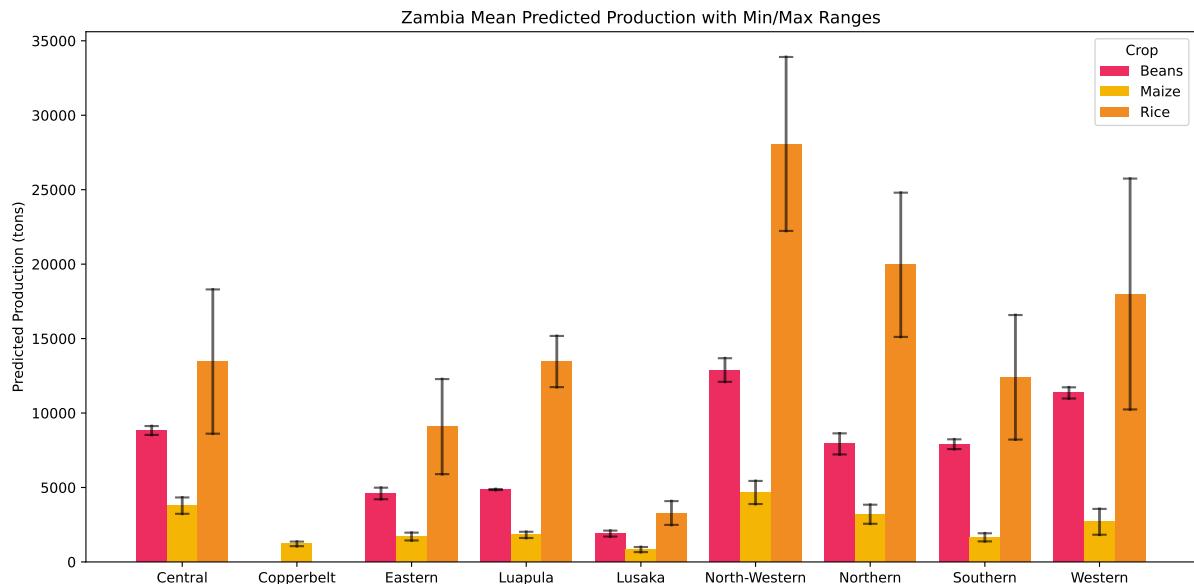
County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Western	22,146	0.51	10,975 - 11,728	-0.02	Watch	Stable
Eastern	9,016	0.51	4,212 - 4,987	-0.03	Watch	Stable
Luapula	8,858	0.55	4,828 - 4,898	0.01	Favorable	Stable
Central	16,531	0.53	8,530 - 9,125	0	Watch	Stable
Southern	14,935	0.53	7,579 - 8,236	-0.01	Watch	Stable
Lusaka	3,836	0.5	1,705 - 2,103	-0.04	Watch	Stable
North-Western	22,041	0.58	12,095 - 13,682	0.05	Favorable	Stable
Northern	13,604	0.58	7,221 - 8,636	0.05	Favorable	Stable

Poor Watch Favorable Exceptional

Source: Satellite data analysis

5.1.1 Production Forecasts

Figure 5.3: This chart illustrates the mean estimated production for each county in Zambia, categorized by crop type. North-western and Northern show the strongest performance across all three crops, led by rice. Variability for estimated production is most prominent for rice and maize, while beans maintains stable production ranges across regions. Refer to table 5.2 for estimated production ranges. **NB: The vertical black lines and caps indicate the minimum and maximum estimated production range for each county.**



Further analysis of yield forecasts and anomalies is presented in Figures 5.4, 5.5, and 5.6 reflecting on the projected maize, rice and bean yield for Zambia's end of season.

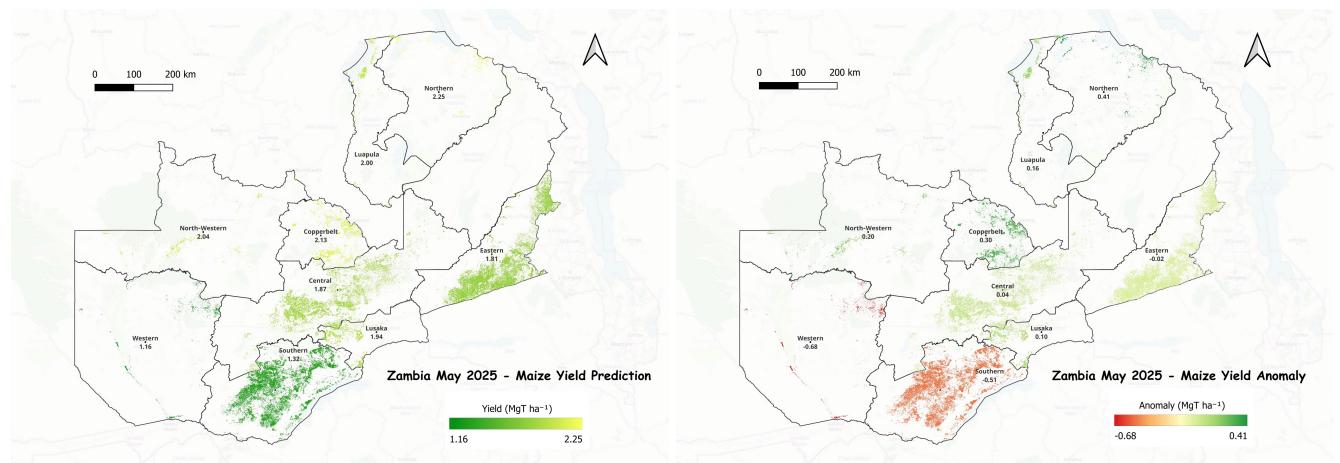


Figure 5.4: (a) End-of-season maize yield forecast for Zambia and (b) Yield anomaly projections based on satellite data and machine learning analysis. Maize yields are projected to increase across most regions, ranging from above 0.04 MgT/ha to 0.41 MgT/ha. However, yield is expected to decline below -0.51 MgT/ha in western and southern Zambia

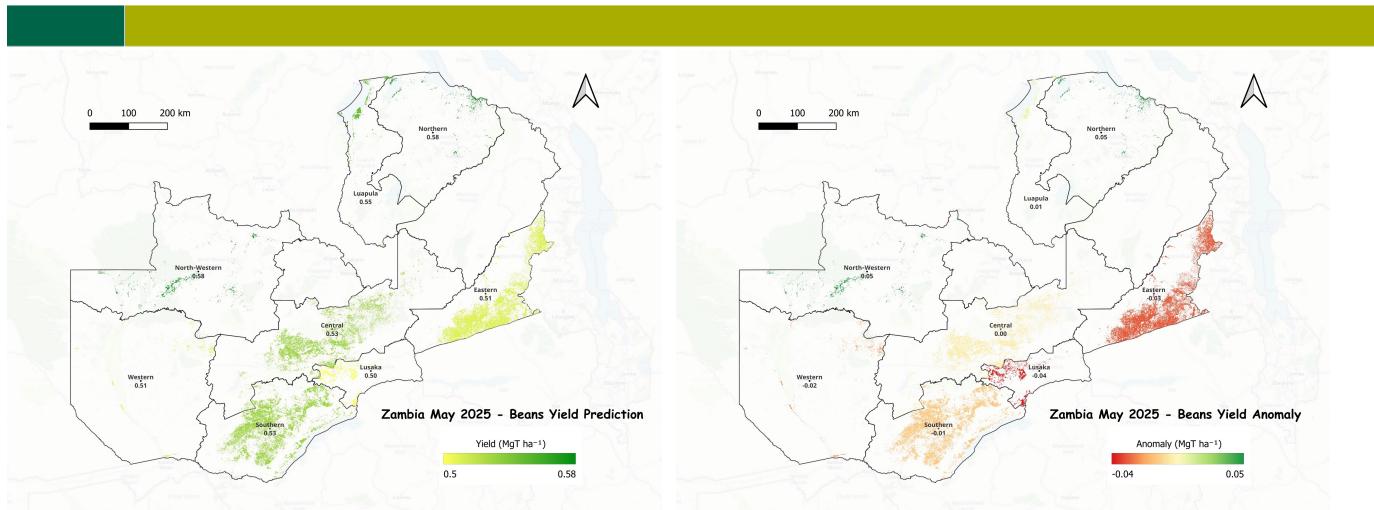


Figure 5.5: (a) End-of-season bean yield forecast for Zambia and (b) Yield anomaly projections based on satellite data and machine learning analysis. Projected bean yield ranges from 0.50 MgT/ha to 0.58 MgT/ha . However, the Eastern, Southern, Western and Lusaka regions are expected to experience negative yield anomalies falling below -0.01 MgT/ha .

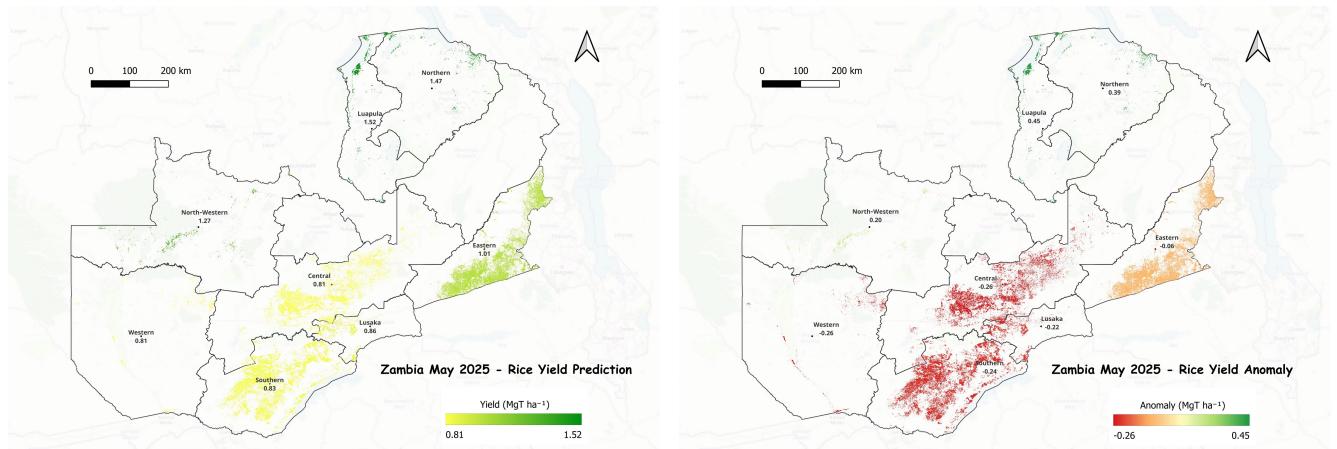


Figure 5.6: (a) End-of-season rice yield forecast for Zambia and (b) Yield anomaly projections based on satellite data and machine learning analysis. Rice yields in most counties in Zambia are projected to fall below -0.06 MgT/ha .



Chapter 6

Tanzania

This chapter analyzes Tanzania's crop conditions and yield forecasts for the current season. Tanzania exhibits distinct bimodal (North) and unimodal (South) rainfall patterns.



Figure 6.1: Tanzania's agricultural cycles follow two rainfall patterns: bimodal in the north (November-December and March-May) and unimodal in the south (November-April).

6.1 Unimodal Regions

The Msimu rains just ended this month, with harvest commencing this month.

6.1.1 Current Crop Condition

Maize conditions have generally been stable throughout the unimodal region. This month, **favorable** maize crop conditions are observed in areas such as Katavi, Rukwa, Iringa, Kigoma, Ruvuma, Njombe and Mbeya, with yields ranging from 1.54 MgT/ha to 2 MgT/ha. Morogoro, Tabora, Dodoma, Lindi, Singida and Mtwara continue to face **poor** conditions, with yield falling below -0.15 MgT/ha (Figure 6.3)



Rice continues to be under favorable conditions from last month in Rukwa, Iringa, Mbeya, Kigoma and Katavi. Yield is forecasted to increase at/above 0.11 MgT/ha in these areas, which is a 57% increase in predicted rice yield from last month. Rice yields projected in Tabora, Morogoro, Dodoma, Singida, Ruvuma, Njombe, Lindi, and Mtwara are generally negative, the worst being in Lindi (-0.31 MgT/ha) (Table 6.3).

Beans is mostly under **favorable** conditions in about six out of thirteen regions this month. These regions include Katavi, Rukwa, Kigoma, Iringa, Kigoma, Mbeya and Njombe. however Dodoma and Lindi are experiencing **poor** conditions, with yield projected to decrease below -0.09 MgT/ha in these areas.

Tables 6.3 and 6.2 present maize, bean, and rice conditions and yield forecasts for Tanzania's unimodal regions, integrating satellite data and machine learning predictions. Figure 6.5 highlights the spatial variability of crop condition.

Figure 6.2: Bean conditions for the Unimodal regions of Tanzania as of May 2025 and the estimated minimum and maximum production forecast for July 2025, showing regional variations in crop performance. **This table not only shows predicted yield but also estimated crop production levels with their uncertainty across counties using standard deviation.**

Beans Conditions and Yield Forecast for the Unimodal Regions of Tanzania

County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Beans						
Tabora	321,230	0.63	189,265 - 214,321	0	Watch	Stable
Morogoro	297,844	0.61	171,525 - 189,991	-0.02	Watch	Stable
Dodoma	178,499	0.54	94,273 - 99,628	-0.09	Poor	Stable
Singida	204,101	0.58	114,660 - 120,783	-0.05	Watch	Stable
Katavi	207,331	0.68	129,803 - 152,609	0.05	Favorable	Stable
Rukwa	118,747	0.81	87,946 - 103,858	0.18	Favorable	Stable
Iringa	160,278	0.66	101,854 - 108,907	0.03	Favorable	Stable
Kigoma	192,760	0.66	123,869 - 132,350	0.03	Favorable	Stable
Ruvuma	269,237	0.62	156,215 - 176,139	-0.01	Watch	Stable
Njombe	90,647	0.66	56,906 - 63,433	0.03	Favorable	Stable
Lindi	275,753	0.54	144,984 - 154,912	-0.09	Poor	Stable
Mtwara	76,287	0.58	44,418 - 44,418	-0.05	Watch	Stable
Mbeya	170,207	0.64	103,763 - 113,975	0.01	Favorable	Stable

Poor Watch Favorable Exceptional

Source: Satellite data analysis

Figure 6.3: Maize, and rice conditions for the Unimodal regions of Tanzania as of May 2025 and the estimated minimum and maximum production forecast for July 2025, showing regional variations in crop performance. This table not only shows predicted yield but also estimated crop production levels with their uncertainty across counties using standard deviation.

Crop Conditions and Yield Forecast for the Unimodal Regions of Tanzania

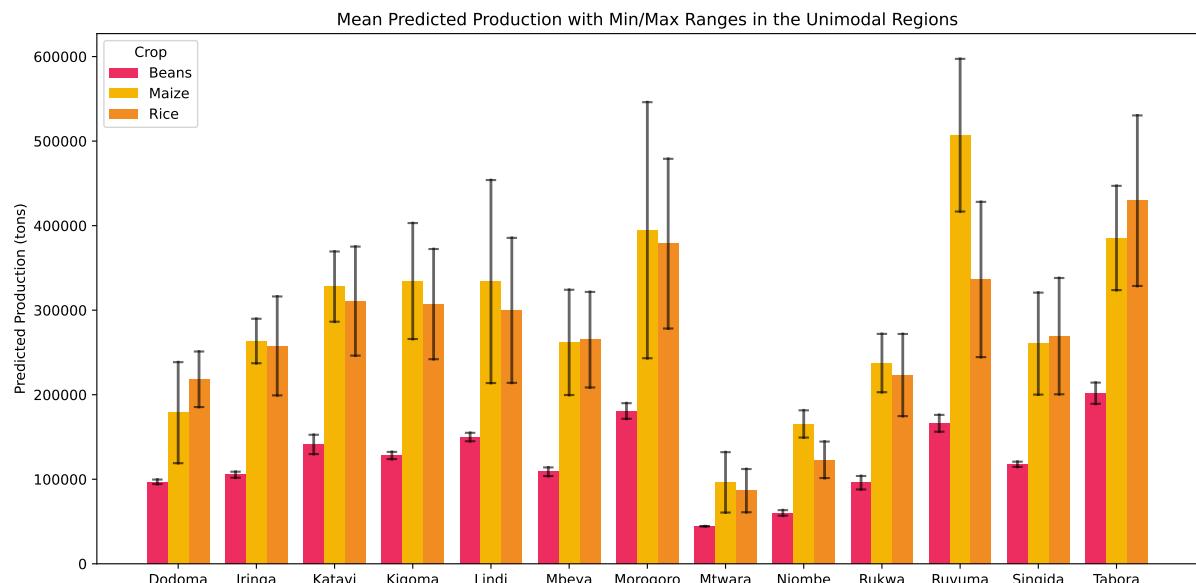
County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Maize						
Tabora	321,231	1.2	323,748 - 447,079	-0.28	Poor	Stable
Morogoro	297,843	1.32	243,179 - 546,062	-0.15	Poor	Stable
Dodoma	178,499	1	119,024 - 238,499	-0.47	Poor	Stable
Singida	204,099	1.28	200,127 - 320,757	-0.2	Poor	Stable
Katavi	207,331	1.58	286,373 - 369,417	0.11	Favorable	Stable
Rukwa	118,747	2	202,986 - 271,940	0.52	Favorable	Stable
Iringa	160,279	1.64	237,268 - 289,843	0.17	Favorable	Stable
Kigoma	192,759	1.74	265,906 - 403,055	0.26	Favorable	Stable
Ruvuma	269,235	1.88	416,680 - 597,297	0.41	Favorable	Stable
Njombe	90,647	1.82	149,329 - 181,516	0.35	Favorable	Stable
Lindi	275,751	1.21	213,809 - 453,936	-0.27	Poor	Stable
Mtwarra	76,287	1.26	60,653 - 132,048	-0.21	Poor	Stable
Mbeya	170,207	1.54	199,631 - 324,137	0.06	Favorable	Stable
Rice						
Tabora	321,230	1.34	328,648 - 530,381	-0.06	Watch	Stable
Morogoro	297,844	1.27	278,317 - 479,064	-0.12	Poor	Stable
Dodoma	178,499	1.22	185,416 - 251,104	-0.17	Poor	Stable
Singida	204,101	1.32	200,495 - 338,060	-0.07	Watch	Stable
Katavi	207,331	1.5	246,259 - 375,220	0.11	Favorable	Stable
Rukwa	118,747	1.88	174,714 - 271,849	0.49	Favorable	Improving
Iringa	160,278	1.61	199,219 - 316,222	0.21	Favorable	Stable
Kigoma	192,760	1.59	242,039 - 372,345	0.2	Favorable	Stable
Ruvuma	269,237	1.25	244,510 - 428,130	-0.14	Poor	Stable
Njombe	90,647	1.36	101,422 - 144,570	-0.04	Watch	Stable
Lindi	275,753	1.09	214,026 - 385,545	-0.31	Poor	Declining
Mtwarra	76,287	1.13	60,971 - 112,084	-0.26	Poor	Declining
Mbeya	170,207	1.56	208,590 - 321,608	0.16	Favorable	Stable

Poor Watch Favorable Exceptional

Source: Satellite data analysis

6.1.2 Production Forecasts

Figure 6.4: This chart illustrates the mean estimated production for each county in the Unimodal Region, categorized by crop type. Overall, Ruvuma (416,680 - 597,297 tons) shows the highest estimated mean production range for maize followed by Morogoro, Tabora, and Kigoma while Njombe and Iringa have the narrowest min/max ranges, suggesting more stable yield expectations. In contrast, Morogoro and Tabora's wide range for rice indicates significant uncertainty in production outcomes. Refer to tables 6.3 and 6.2 for estimated production ranges. **NB: The vertical black lines and caps indicate the minimum and maximum estimated production range for each county.**



Among the crops maize consistently has higher mean estimated production than rice and beans across all counties. However, the wider min/max for maize in Morogoro suggests greater variability and uncertainty.

Further analysis of yield forecasts and anomalies is presented in Figures 6.5, 6.6, and 6.7, reflecting on the projected maize, bean and rice yield for Tanzania's end of season.

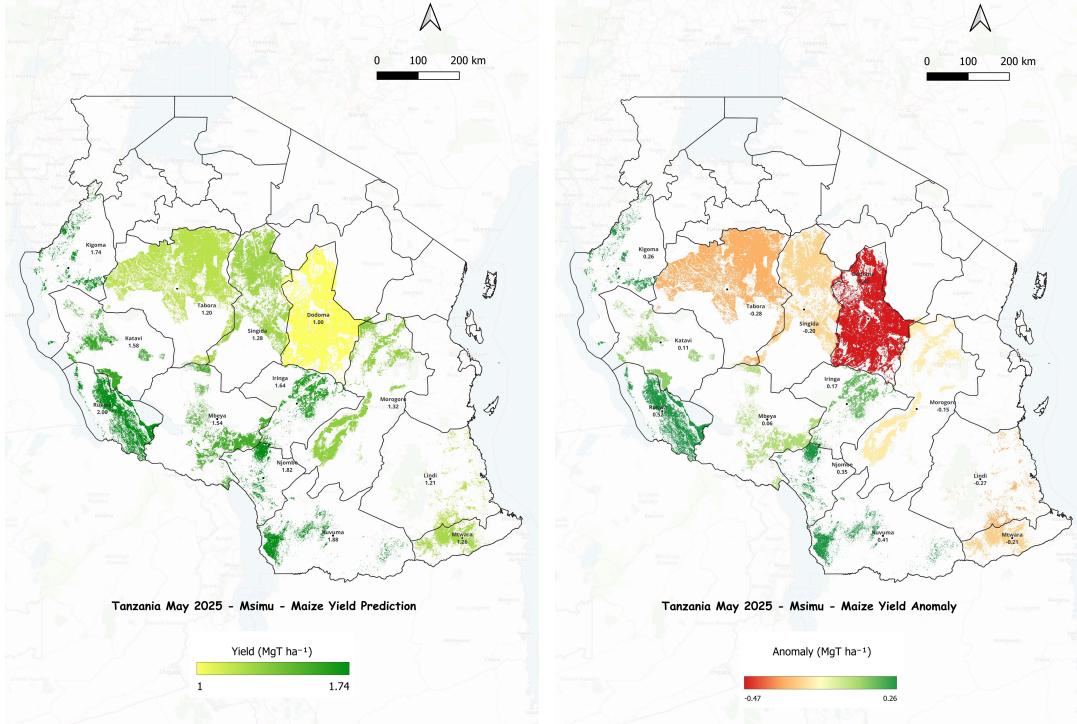


Figure 6.5: (a) End-of-season maize yield forecast for the unimodal regions of Tanzania and (b) Yield anomaly projections based on satellite data and machine learning analysis. This month, yield is projected to increase up to 0.52 MgT/ha and fall below -0.19 MgT/ha.

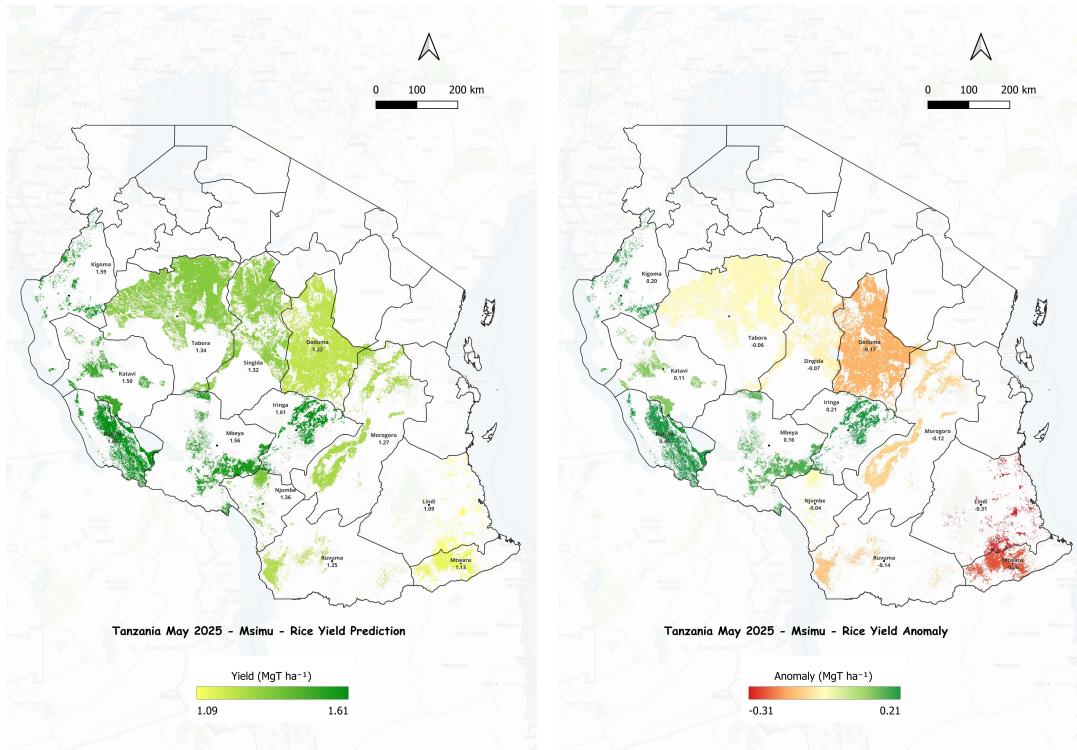


Figure 6.6: (a) End-of-season rice yield forecast for the unimodal regions of Tanzania and (b) Yield anomaly projections based on satellite data and machine learning analysis. Like in the previous month, rice yield is projected to fall below -0.06 MgT/ha in seven out of twelve provinces

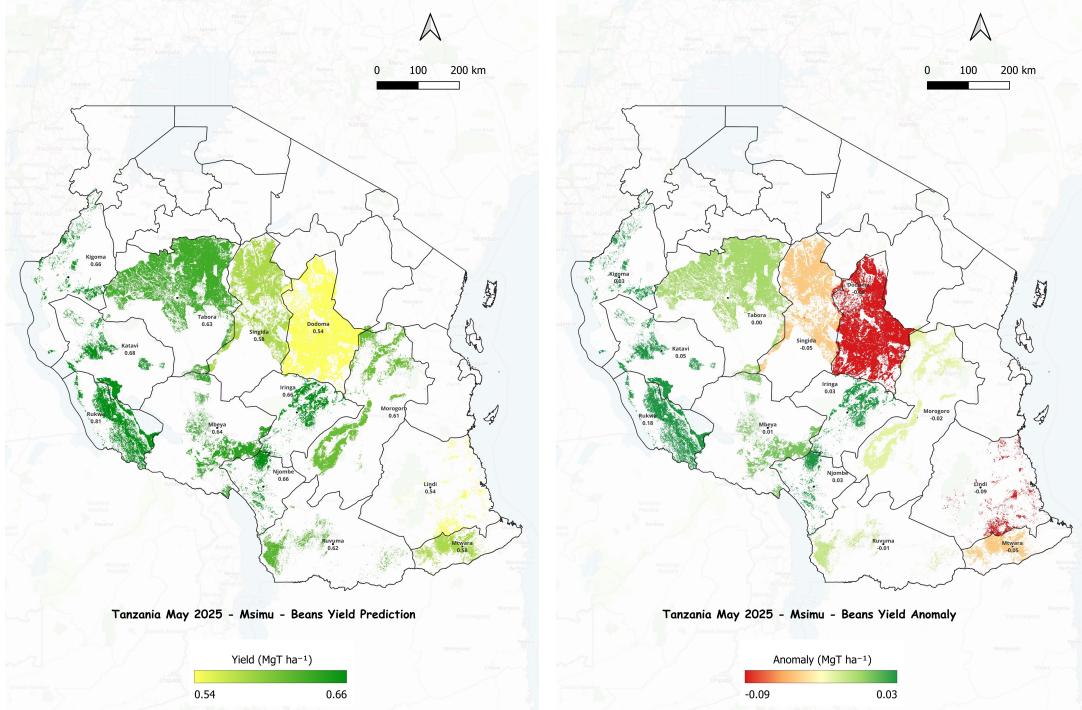


Figure 6.7: (a) End-of-season bean yield forecast for the unimodal regions of Tanzania and (b) Yield anomaly projections based on satellite data and machine learning analysis. The overall outlook of bean is generally favorable, with yield prediction above 0.01 MgT/ha in most regions, with the exception of Dodoma, Singida, Mtwara and Lindi

6.1.3 Bimodal Regions

Current Crop Condition

In the bimodal region, maize crop conditions and yield forecasts for May vary across regions. Tanga, Kilimanjaro, Kagera, and Arusha continue to experience **Favorable** maize conditions, with Pwani and Kaskazini Unguja improving from poor to favorable this month. Conversely, Kusini Pemba, and Manyara declined from favorable conditions to **poor** conditions. As a result, projected maize yield anomalies in these regions range from **-0.11 to -0.32 MgT/ha**.

Rice is generally in poor condition in multiple Bimodal regions this month. These include Tanga, Pwani, Kusini Pemba, Shinyanga, Dar-es-salaam, Kilimanjaro, Simuyu, Kaskazini Unguja, Mjini Magharibi and Kusini Unguja. Meanwhile, regions like Manyara, Kagera, Arusha, Mwanza, Kaskazini Pemba, Mara, Geita, and Songwe are experiencing **favorable** rice conditions with projected yields at/above **1.08 MgT/ha**, showing improving trends.

Bean conditions are generally under stable **watch** conditions, with nine out of seventeen regions in favorable conditions. Projected yield anomalies range between **-0.01 MgT/ha** and **0.07 MgT/ha** this month.

Tables 6.8 and 6.10 present maize, beans and rice conditions and yield forecasts for Tanzania's bimodal regions, integrating satellite data and machine learning predictions. Figures 6.11, 6.12, and 6.13 show spatial regional crop condition summaries.

Figure 6.8: Maize and rice conditions for the Bimodal regions of Tanzania as of May 2025 and the estimated minimum and maximum production forecast for July 2025, showing regional variations in crop performance. This table not only shows predicted yield but also estimated crop production levels with their uncertainty across counties using standard deviation.

Crop Conditions and Yield Forecast for the Bimodal Regions of Tanzania

County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Maize						
Tanga	122,715	1.66	161,840 - 245,373	0.17	Favorable	Improving
Pwani	136,503	1.53	155,057 - 263,570	0.04	Favorable	Improving
Kusini Pemba	2,115	1.25	2,457 - 2,816	-0.25	Poor	Stable
Shinyanga	70,095	1.32	71,243 - 113,970	-0.17	Poor	Improving
Dar-es-salaam	6,871	1.15	5,893 - 9911	-0.34	Poor	Stable
Kilimanjaro	55,807	2.05	87,461 - 141,469	0.56	Favorable	Stable
Manyara	195,151	1.39	180,801 - 360,350	-0.11	Poor	Stable
Kagera	156,823	1.68	217,937 - 309,072	0.19	Favorable	Improving
Simuyu	102,983	1.5	127,759 - 180,453	0	Watch	Improving
Arusha	161,579	2.09	270,953 - 404,554	0.6	Favorable	Improving
Mwanza	105,007	1.48	126,055 - 184,576	-0.01	Watch	Stable
Kaskazini Unguja	1,971	1.26	2,177 - 2,792	-0.23	Poor	Stable
Mjini Magharibi	975	1.5	1,390 - 1,535	0.01	Favorable	Stable
Kaskazini Pemba	2,207	1.18	2,421 - 2,774	-0.32	Poor	Stable
Mara	131,551	1.46	126,957 - 243,476	-0.08	Watch	Stable
Kusini Unguja	3,767	1.55	5,098 - 6,581	0.06	Favorable	Improving
Geita	89,451	1.39	104,335 - 143,978	-0.1	Poor	Stable
Rice						
Tanga	122,714	1.02	71,954 - 178,961	-0.43	Poor	Declining
Pwani	136,504	1.25	116,087 - 225,563	-0.2	Poor	Stable
Kusini Pemba	2,114	1.12	1,934 - 2,796	-0.33	Poor	Declining
Shinyanga	70,095	1.33	67,306 - 119,737	-0.12	Poor	Stable
Dar-es-salaam	6,871	1.25	7,208 - 9,998	-0.2	Poor	Stable
Kilimanjaro	55,806	1.33	55,205 - 92,818	-0.13	Poor	Stable
Manyara	195,153	1.79	271,143 - 427,656	0.34	Favorable	Improving
Kagera	156,822	1.75	236,085 - 312,614	0.3	Favorable	Improving
Simuyu	102,982	1.29	93,269 - 171,536	-0.17	Poor	Stable
Arusha	161,581	1.82	238,157 - 349,325	0.37	Favorable	Improving
Mwanza	105,006	1.62	138,598 - 201,602	0.17	Favorable	Stable
Kaskazini Unguja	1,971	1.25	1,857 - 3,067	-0.2	Poor	Stable
Mjini Magharibi	976	1.08	845 - 1,259	-0.37	Poor	Declining
Kaskazini Pemba	2,206	1.58	2,631 - 4,325	0.12	Favorable	Stable
Mara	131,550	1.66	172,692 - 262,936	0.2	Favorable	Stable
Kusini Unguja	3,769	1.34	3,506 - 6,559	-0.12	Poor	Stable
Geita	89,451	1.79	136,090 - 184,930	0.34	Favorable	Improving
Songwe	91,491	1.89	134,759 - 210,881	0.44	Favorable	Improving

Poor Watch Favorable Exceptional

Source: Satellite data analysis

6.1.4 Production Forecasts

Figure 6.9: This chart shows wide regional variation in estimated production for beans, maize and rice across the Bimodal Region. Manyara, Arusha, and Simiyu emerge as the top-producing regions, particularly for maize and rice, with estimated outputs exceeding 300,000 tons. Rice consistently leads in production across regions, followed by maize, while beans generally records the lowest. Prediction uncertainty, as shown by the error bars, is more pronounced for maize and rice particularly in Pwani, Manyara, and Simiyu. Dar Es Salaam and Kaskazini Pemba show the lowest production values overall. Refer to tables 6.8 and 6.10 for estimated production ranges. **NB: The vertical black lines and caps indicate the minimum and maximum estimated production range for each county.**

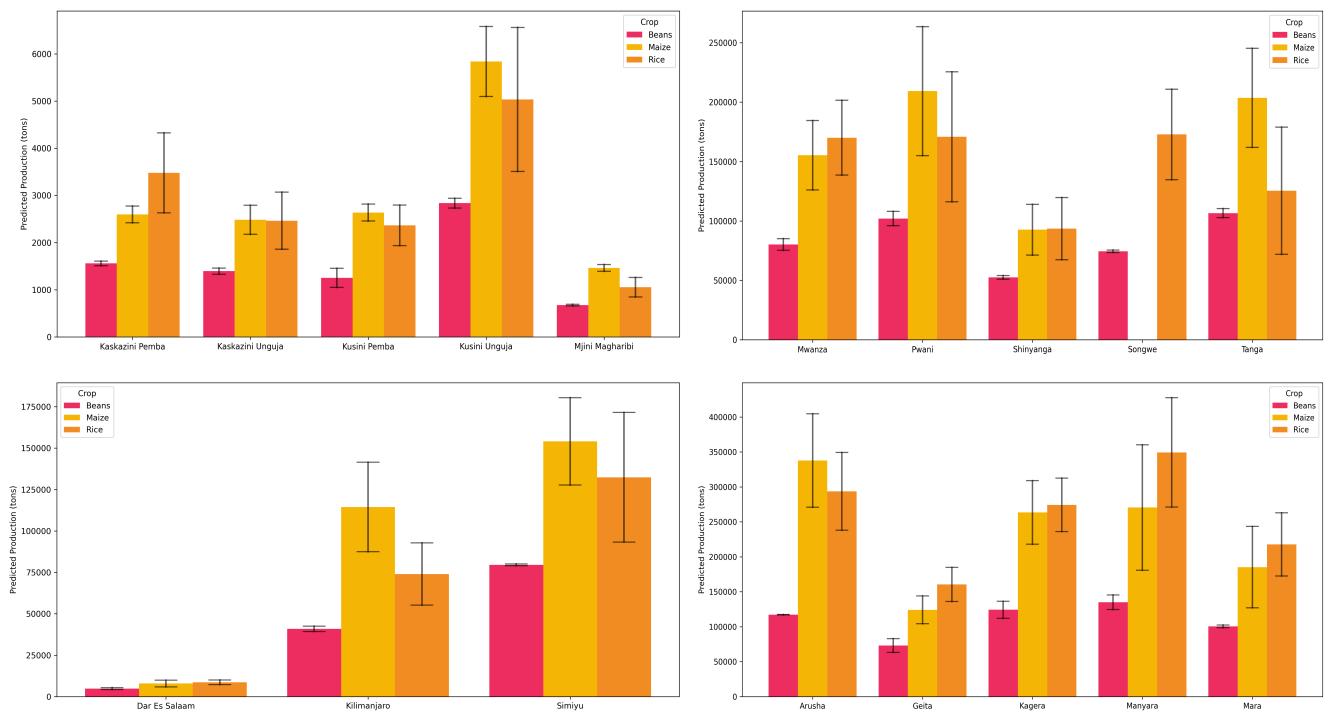


Figure 6.10: Beans conditions for the bimodal regions of Tanzania as of May 2025, and yield forecasts for July 2025 harvest season based on satellite observations

Beans Conditions and Yield Forecast for the Bimodal Regions of Tanzania

County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Beans						
Tanga	122,714	0.87	102,797 - 110,406	0.12	Favorable	Stable
Pwani	136,504	0.75	96,026 - 108,039	0	Watch	Stable
Kusini Pemba	2,114	0.59	1,049 - 1,455	-0.15	Poor	Stable
Shinyanga	70,095	0.75	50,895 - 53,979	0	Watch	Stable
Dar-es-salaam	6,871	0.71	4,219 - 5,470	-0.04	Watch	Stable
Kilimanjaro	55,806	0.73	39,266 - 42,503	-0.01	Watch	Stable
Manyara	195,153	0.69	124,753 - 145,439	-0.05	Watch	Stable
Kagera	156,822	0.79	112,067 - 136,531	0.05	Favorable	Stable
Simuyu	102,982	0.77	79,049 - 80,079	0.03	Favorable	Stable
Arusha	161,581	0.73	116,978 - 117,625	-0.02	Watch	Stable
Mwanza	105,006	0.76	75,251 - 85,121	0.02	Favorable	Stable
Kaskazini Unguja	1,971	0.71	1,329 - 1,459	-0.04	Watch	Stable
Mjini Magharibi	976	0.69	658 - 691	-0.05	Watch	Stable
Kaskazini Pemba	2,206	0.71	1,509 - 1,606	-0.04	Watch	Stable
Mara	131,550	0.76	98,513 - 102,459	0.02	Favorable	Stable
Kusini Unguja	3,769	0.75	2,733 - 2,937	0.01	Favorable	Stable
Geita	89,451	0.82	63,298 - 82,977	0.07	Favorable	Stable
Songwe	91,491	0.81	73,393 - 75,406	0.07	Favorable	Stable

Poor Watch Favorable Exceptional

Source: Satellite data analysis

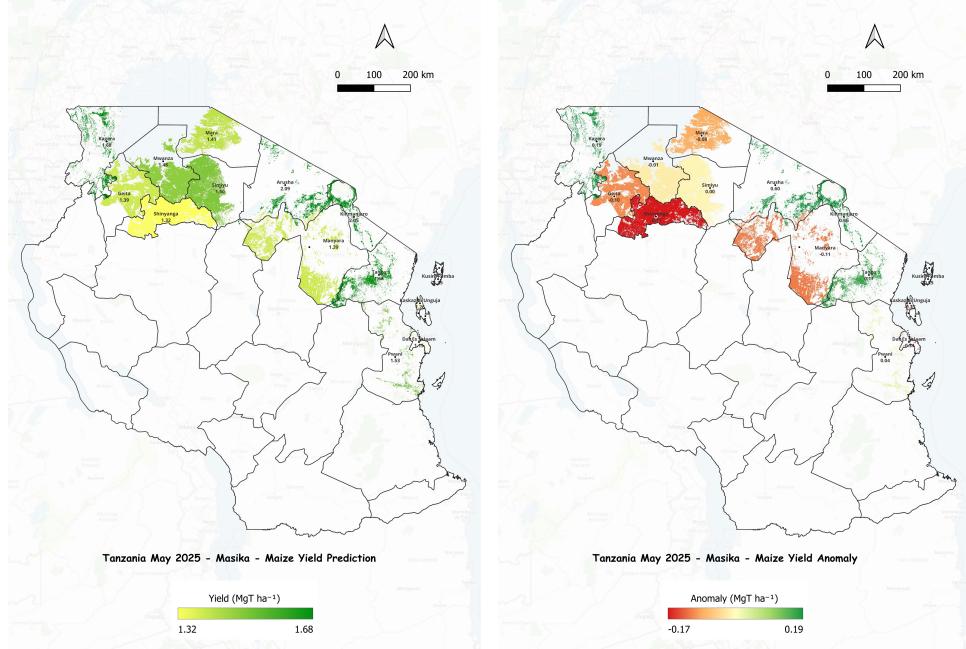


Figure 6.11: (a) End-of-season maize yield forecast for the bimodal regions of Tanzania and (b) Yield anomaly projections based on satellite data and machine learning analysis. Yield is projected to increase up to 2.09 MgT/ha and fall to 1.15 MgT/ha across the bimodal region. Mara, Geita, Shinyanga, Magyara, and Simuyu continue to experience poor growing conditions, with yield anomaly falling below -0.08 MgT/ha.

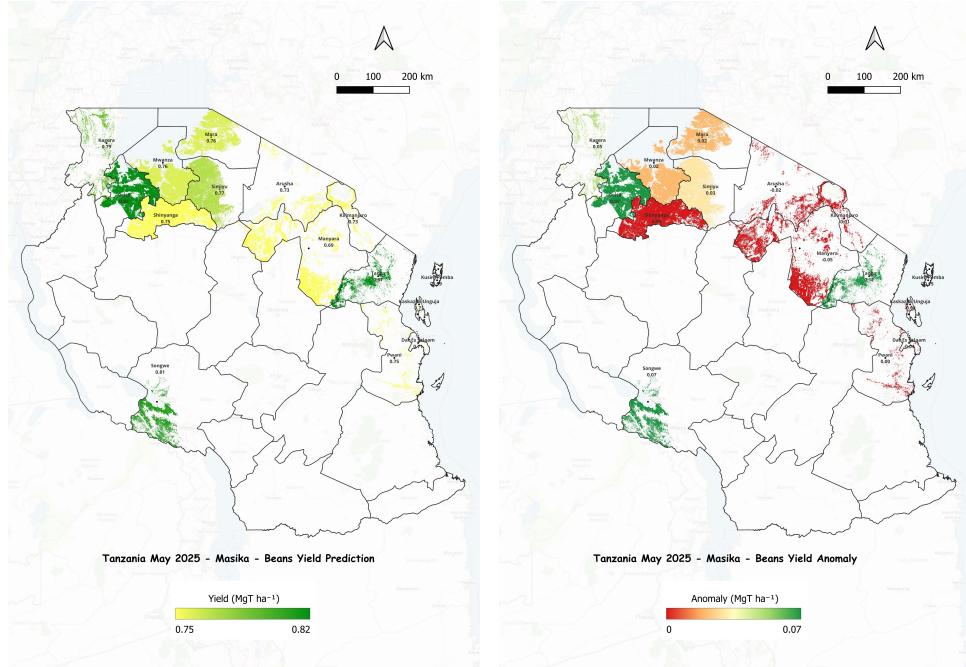


Figure 6.12: (a) End-of-season rice yield forecast for the bimodal regions of Tanzania and (b) Yield anomaly projections based on satellite data and machine learning analysis. Bean yield is projected to fall below -0.01 MgT/ha in eight out of eighteen regions

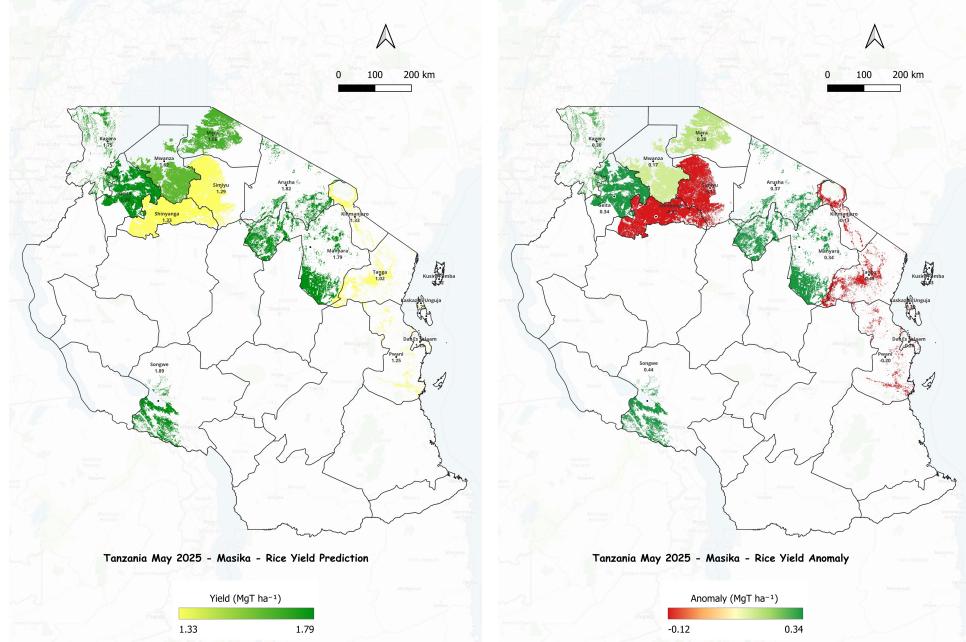


Figure 6.13: (a) End-of-season rice yield forecast for the bimodal regions of Tanzania and (b) Yield anomaly projections based on satellite data and machine learning analysis. Like in the previous month, negative rice yield anomaly below -0.12 MgT/ha is experienced again in Tanga, Pwani, Kusini Pemba, Shinyanga, Dar-es-Salaam, Kilimanjaro, Simuyu, Kaskazini Unguja, Mjini Magharibi and Kusini Unguja



Chapter 7

Kenya

Kenya's agricultural patterns are characterized by distinct growing regions with different rainfall patterns:

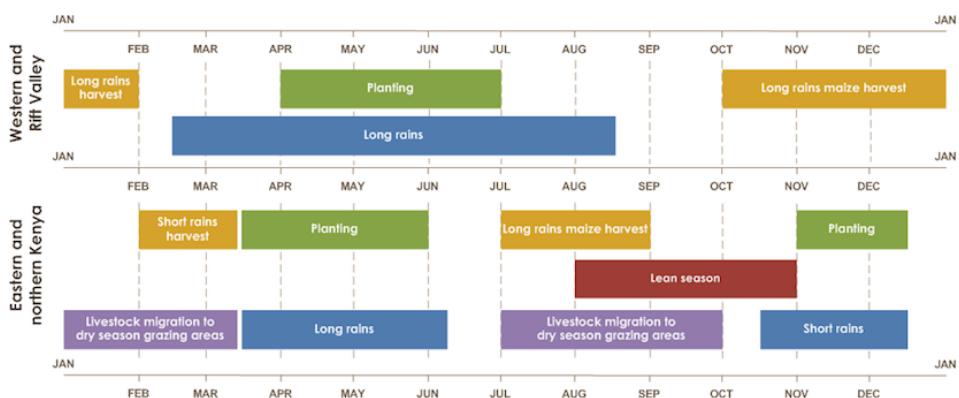


Figure 7.1: Kenya's agricultural calendar shows distinct regional patterns: the Rift Valley and Western regions follow a unimodal pattern with long rains (February-August), planting (April-June), and harvest (October-December), while the Eastern and Northern regions exhibit a bimodal pattern with two seasons - long rains (March-June planting, July-August harvest) and short rains (October-December planting, February-March harvest).

7.1 Current Crop Conditions

This month falls within the planting season of Kenya. There is significant regional variation in crop production this month. In 24 out of 47 counties, maize conditions are observed to be in **very poor** condition. Forecasted yield performance is significantly below average, with negative anomalies ranging from **-0.1 to -0.89 MgT/ha** in these regions. On the other hand, maize in about 19 counties is in **favorable** and **stable** conditions. Predicted yields in these regions range between **1.72 and 2.69 MgT/ha** with yields above historical averages. Rice conditions are mixed across the region. **Favorable** conditions are observed in Kakamega, Nyandarua, Lamu, Nakuru, Siaya, Bungoma, Kirinyaga, Nyeri, Kiambu, Busia, Elgeyo-Marakwet, West Pokot, Murang'A, and Meru. Forecasted yields exceed seasonal averages, ranging between 0.01 MgT/ha and 0.27 MgT/ha. Contrarily, Kilifi, Tana River, Kwale, Migori, Embu, Baringo, Homa Bay, Garissa, Taita Taveta, Kisumu, Vihiga and Tharaka-Nithi are currently experiencing **watch and poor** conditions.



Like in the previous month, bean conditions are generally **favorable** across most counties, with the majority classified under favorable and watch conditions. The exception is Garissa, Wajir, Marsabit, Kilifi, Mandera, Tana River, Kitui, Lamu and Makueni, where conditions remain **poor**.

The table [7.3](#), [7.2](#) and [7.5](#) below summarize Kenya's maize, beans and rice crop conditions and yield forecasts.

Figure 7.2: Rice conditions for Kenya as of May 2025 and the estimated minimum and maximum production forecast for August 2025, showing regional variations in crop performance. This table not only shows predicted yield but also estimated crop production levels with their uncertainty across counties using standard deviation.

Rice Conditions and Yield Forecast for Kenya

County	Area	Predicted Yield	Predicted Prod.	Yield Anomaly	Current Conditions	Trend
rice						
Kilifi	27,964	1.55	35,219 - 51,662	-0.25	Poor	Stable
Tana River	85,241	1.60	111,259 - 160,869	-0.21	Poor	Stable
Kwale	18,341	1.61	24,815 - 34,389	-0.19	Poor	Stable
Migori	5,758	1.65	7,754 - 11,266	-0.16	Poor	Stable
Embu	6,249	1.69	8,316 - 12,828	-0.12	Poor	Stable
Baringo	24,342	1.70	34,635 - 47,926	-0.11	Poor	Stable
Tharaka-Nithi	5,903	1.70	7,783 - 12,246	-0.11	Poor	Stable
Homa Bay	6,996	1.74	9,973 - 14,353	-0.07	Watch	Stable
Garissa	99,248	1.75	149,735 - 197,573	-0.06	Watch	Stable
Taita Taveta	37,886	1.76	51,793 - 81,345	-0.05	Watch	Stable
Kisumu	4,625	1.79	6,905 - 9,680	-0.01	Watch	Stable
Vihiga	1,177	1.80	1,672 - 2,565	-0.01	Watch	Stable
Kakamega	6,693	1.81	10,067 - 14,204	0.01	Favorable	Stable
Nyandarua	7,196	1.82	10,163 - 15,964	0.01	Favorable	Stable
Lamu	13,911	1.82	21,664 - 29,037	0.01	Favorable	Stable
Nakuru	16,621	1.84	24,705 - 36,340	0.03	Favorable	Stable
Siaya	5,611	1.85	8,154 - 12,610	0.04	Favorable	Stable
Bungoma	6,724	1.85	10,739 - 14,155	0.04	Favorable	Stable
Kirinyaga	3,280	1.87	5,342 - 6,937	0.06	Favorable	Stable
Nyeri	7,400	1.88	10,927 - 16,952	0.08	Favorable	Stable
Kiambu	5,640	1.93	9,354 - 12,411	0.12	Favorable	Stable
Busia	3,757	1.94	5,903 - 8,699	0.14	Favorable	Stable
Elgeyo-Marakwet	6,719	1.96	11,217 - 15,114	0.15	Favorable	Stable
West Pokot	20,334	1.98	32,207 - 48,312	0.17	Favorable	Stable
Murang'A	5,674	2.02	9,845 - 13,091	0.21	Favorable	Stable
Meru	15,530	2.08	27,506 - 37,042	0.27	Favorable	Improving

Poor Watch Favorable Exceptional

Source: Satellite data analysis

Maize Conditions and Yield Forecast for Kenya

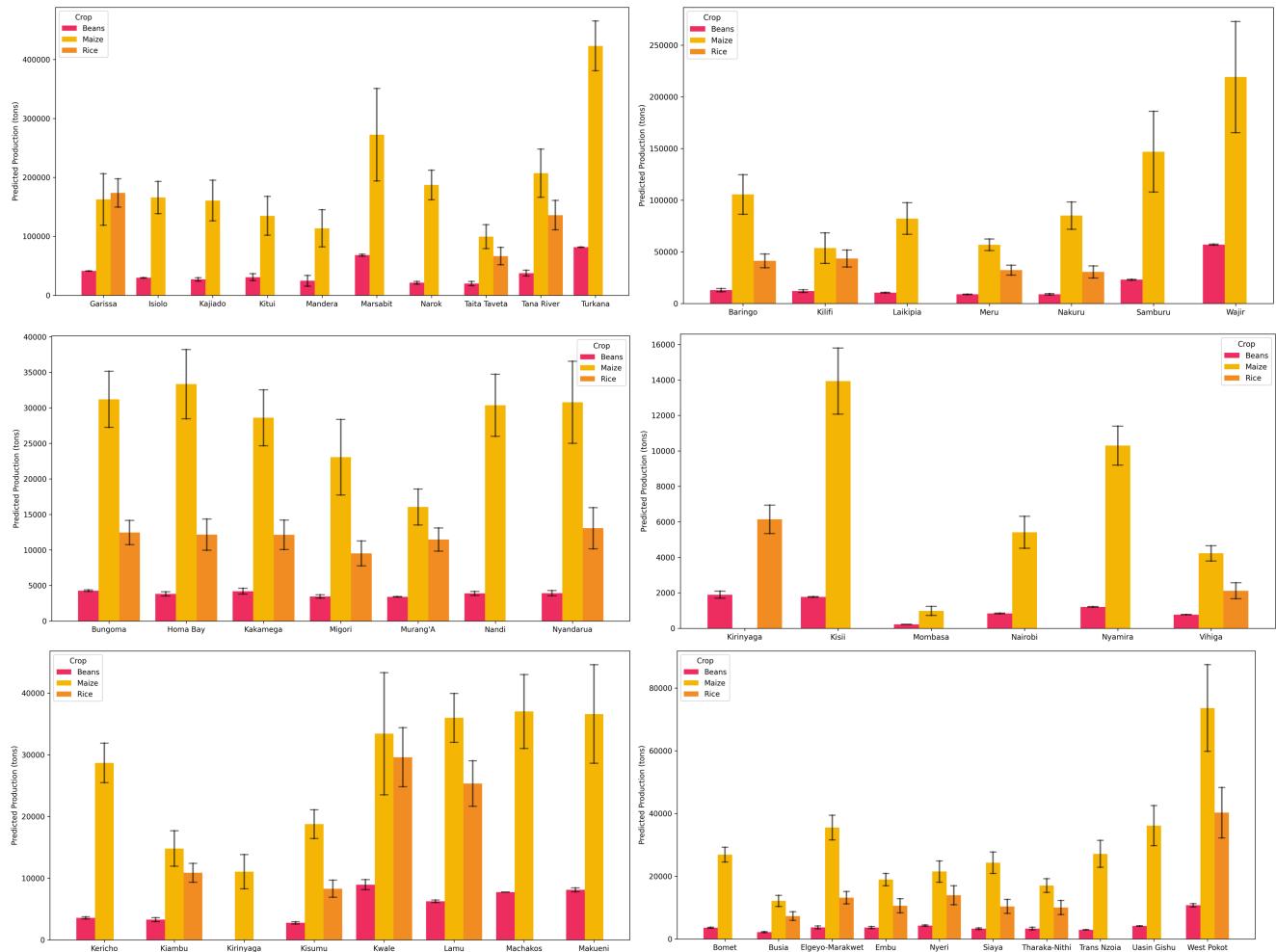
County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Garissa	191,365	0.85	118,854 - 206,388	-0.86	Poor	Stable
Wajir	249,020	0.88	165,430 - 272,970	-0.83	Poor	Stable
Marsabit	333,877	0.82	193,987 - 350,954	-0.89	Poor	Stable
Mombasa	1,026	0.96	732 - 1,233	-0.75	Poor	Stable
Kilifi	55,255	0.97	38,862 - 68,343	-0.74	Poor	Stable
Mandera	114,223	1	82,205 - 145,199	-0.71	Poor	Stable
Tana River	171,888	1.21	166,337 - 248,027	-0.5	Poor	Stable
Taita Taveta	75,240	1.32	79,215 - 119,863	-0.38	Poor	Stable
Kwale	36,325	0.92	23,518 - 43,324	-0.79	Poor	Stable
Kitui	133,577	1.01	101,997 - 167,722	-0.7	Poor	Stable
Lamu	26,606	1.35	32,040 - 39,942	-0.35	Poor	Stable
Makueni	35,855	1.02	28,616 - 44,603	-0.69	Poor	Stable
Tharaka-Nithi	11,327	1.5	14,850 - 19,217	-0.2	Poor	Stable
Embu	12,371	1.53	16,946 - 20,868	-0.18	Poor	Stable
Isiolo	111,387	1.49	138,533 - 193,318	-0.22	Poor	Stable
Machakos	26,530	1.4	31,041 - 42,999	-0.31	Poor	Stable
Turkana	264,820	1.6	381,056 - 465,432	-0.11	Poor	Stable
Busia	7,763	1.56	10,363 - 13,907	-0.14	Poor	Stable
Kajiado	96,066	1.67	126,362 - 195,254	-0.03	Watch	Stable
Siaya	15,412	1.58	20,885 - 27,725	-0.13	Poor	Stable
Kisumu	11,689	1.6	16,424 - 21,095	-0.1	Poor	Stable
Kirinyaga	6,469	1.71	8,283 - 13,817	0	Watch	Stable
Homa Bay	20,607	1.62	28,462 - 38,206	-0.09	Watch	Stable
Nairobi	3,096	1.75	4,511 - 6,313	0.04	Favorable	Stable
Migori	13,839	1.67	13,839 - 17,733	-0.04	Watch	Stable
Samburu	92,183	1.59	107,892 - 186,010	-0.11	Poor	Stable
Murang'A	11,074	1.45	13,506 - 18,581	-0.26	Poor	Stable
Vihiga	2,458	1.72	3,795 - 4,656	0.01	Favorable	Stable
Nyeri	14,628	1.47	18,102 - 24,896	-0.24	Poor	Stable
Kiambu	11,158	1.33	11,943 - 17,671	-0.38	Poor	Declining
Meru	30,673	1.85	51,184 - 62,444	0.15	Favorable	Stable
Kakamega	13,196	2.17	24,655 - 32,539	0.46	Favorable	Stable
Bungoma	13,206	2.36	27,262 - 35,155	0.66	Favorable	Stable
Laikipia	41,824	1.97	66,881 - 97,601	0.26	Favorable	Stable
Nyandarua	14,324	2.15	25,015 - 36,542	0.44	Favorable	Stable
Bomet	10,694	2.51	24,508 - 29,248	0.81	Favorable	Stable
Baringo	47,755	2.21	86,407 - 124,684	0.5	Favorable	Stable
Nyamira	3,934	2.62	9,201 - 11,397	0.91	Favorable	Stable
West Pokot	40,612	1.81	59,830 - 87,465	0.11	Favorable	Stable
Nandi	12,437	2.44	25,991 - 34,733	0.73	Favorable	Stable
Narok	78,561	2.38	162,141 - 212,356	0.68	Favorable	Stable
Kisii	5,764	2.42	12,070 - 15,798	0.71	Favorable	Stable
Kericho	11,026	2.6	25,500 - 31,877	0.89	Favorable	Stable
Uasin Gishu	14,893	2.43	29,740 - 42,514	0.72	Favorable	Stable
Trans Nzoia	10,839	2.5	22,830 - 31,420	0.8	Favorable	Stable
Nakuru	32,835	2.59	71,869 - 98,276	0.88	Favorable	Stable
Elgeyo-Marakwet	13,201	2.69	31,577 - 39,437	0.98	Favorable	Stable

Poor Watch Favorable Exceptional



7.1.1 Production Forecasts

Figure 7.4: This chart illustrates the mean estimated production for each county in Kenya, categorized by crop type. Across most counties, maize stands out as the leading crop by estimated production volume, with the highest output seen in Turkana (381,056 - 465,432 tons), Wajir (165,430 - 272,970 tons), and Narok (162,141 - 212,356 tons). Rice is more prominent in Kurunyaga. The large estimation range interval for maize in certain counties highlights regions with significant uncertainty. Refer to tables 7.3, 7.2 and 7.5 for estimated production ranges. **NB: The vertical black lines and caps indicate the minimum and maximum estimated production range for each county.**



Beans Conditions and Yield Forecast for Kenya

County	Area	Predicted Yield	Min-Max Production	Yield Anomaly	Current Conditions	Trend
Garissa	99,248	0.42	41,185 - 41,384	-0.13	Poor	Stable
Wajir	125,712	0.45	56,486 - 57,492	-0.09	Poor	Stable
Marsabit	157,370	0.43	66,523 - 69,670	-0.11	Poor	Stable
Mombasa	485	0.46	220 - 226	-0.08	Watch	Stable
Kilifi	27,964	0.43	10,706 - 13,335	-0.11	Poor	Stable
Mandera	57,526	0.43	15,592 - 33,655	-0.11	Poor	Stable
Tana River	85,241	0.44	32,794 - 42,512	-0.1	Poor	Stable
Taita Taveta	37,886	0.53	16,258 - 23,532	-0.02	Watch	Stable
Kwale	18,341	0.49	8,147 - 9,761	-0.05	Watch	Stable
Kitui	67,483	0.46	24,919 - 36,526	-0.09	Poor	Stable
Lamu	13,911	0.45	6,049 - 6,467	-0.09	Poor	Stable
Makueni	17,818	0.46	7,790 - 8,432	-0.09	Poor	Stable
Tharaka-Nithi	5,903	0.56	2,895 - 3,721	0.02	Favorable	Stable
Embu	6,249	0.58	3,301 - 3,963	0.04	Favorable	Stable
Isiolo	56,187	0.53	29,314 - 30,100	-0.01	Watch	Stable
Machakos	13,767	0.56	7,737 - 7,737	0.02	Favorable	Stable
Turkana	152,312	0.54	81,505 - 81,809	-0.01	Watch	Stable
Busia	3,757	0.58	2,015 - 2,338	0.04	Favorable	Stable
Kajiado	48,569	0.56	24,191 - 29,728	0.01	Favorable	Stable
Siaya	5,611	0.58	3,009 - 3,548	0.04	Favorable	Stable
Kisumu	4,625	0.6	2,559 - 2,947	0.05	Favorable	Stable
Kirinyaga	3,280	0.58	1,699 - 2,092	0.04	Favorable	Stable
Homa Bay	6,996	0.55	3,530 - 4,117	0	Watch	Stable
Nairobi	1,543	0.54	815 - 858	0	Watch	Stable
Migori	5,758	0.6	3,226 - 3,687	0.06	Favorable	Stable
Samburu	46,620	0.49	22,563 - 23,402	-0.05	Watch	Stable
Murang'A	5,674	0.6	3,380 - 3,437	0.06	Favorable	Stable
Vihiga	1,177	0.65	764 - 773	0.11	Favorable	Stable
Nyeri	7,400	0.58	4,056 - 4,470	0.03	Favorable	Stable
Kiambu	5,640	0.58	2,981 - 3,590	0.04	Favorable	Stable
Meru	15,530	0.57	8,626 - 9,060	0.03	Favorable	Stable
Kakamega	6,693	0.63	3,789 - 4,606	0.09	Favorable	Stable
Bungoma	6,724	0.64	4,167 - 4,382	0.09	Favorable	Stable
Laikipia	20,983	0.5	10,059 - 10,857	-0.04	Watch	Stable
Nyandarua	7,196	0.55	3,556 - 4,291	0	Watch	Stable
Bomet	5,464	0.66	3,397 - 3,769	0.11	Favorable	Stable
Baringo	24,342	0.53	11,386 - 14,453	-0.01	Watch	Stable
Nyamira	1,994	0.61	1,190 - 1,222	0.06	Favorable	Stable
West Pokot	20,334	0.53	10,246 - 11,262	-0.01	Watch	Stable
Nandi	6,396	0.61	3,600 - 4,176	0.07	Favorable	Stable
Narok	39,770	0.54	19,077 - 23,610	0	Watch	Stable
Kisii	2,921	0.61	1,748 - 1,789	0.06	Favorable	Stable
Kericho	5,497	0.65	3,384 - 3,747	0.11	Favorable	Stable
Uasin Gishu	7,418	0.56	4,072 - 4,190	0.02	Favorable	Stable
Trans Nzoia	5,534	0.53	2,893 - 2,937	-0.01	Watch	Stable
Nakuru	16,621	0.54	8,237 - 9,633	0	Watch	Stable
Elgeyo-Marakwet	6,719	0.55	3,239 - 4,126	0.01	Favorable	Stable

Poor Watch Favorable Exceptional



Further analysis of yield forecasts and anomalies is presented in Figure 7.6, reflecting on the projected maize, bean and rice yield for Kenya's end of season.

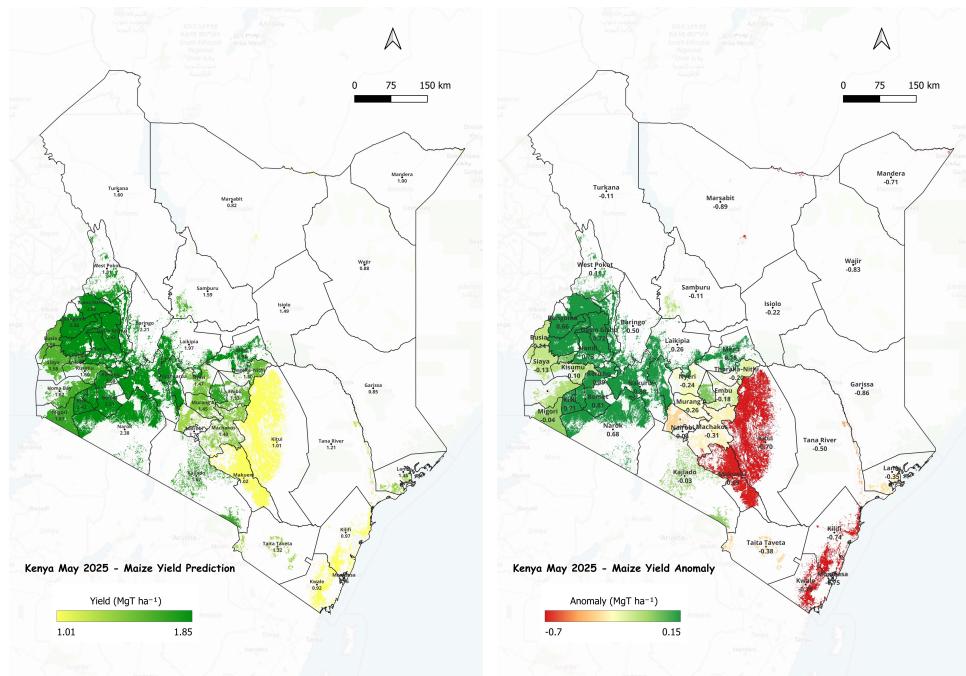


Figure 7.6: (a) End-of-season maize yield forecast for Kenya and (b) Yield anomaly projections based on satellite data and machine learning analysis. Maize yield across Kenya are projected to exceed 1.5 MgT/ha in most regions; however, the coastal areas are expected to record comparatively lower yields ranging between 0.92 and 1.35 MgT/ha

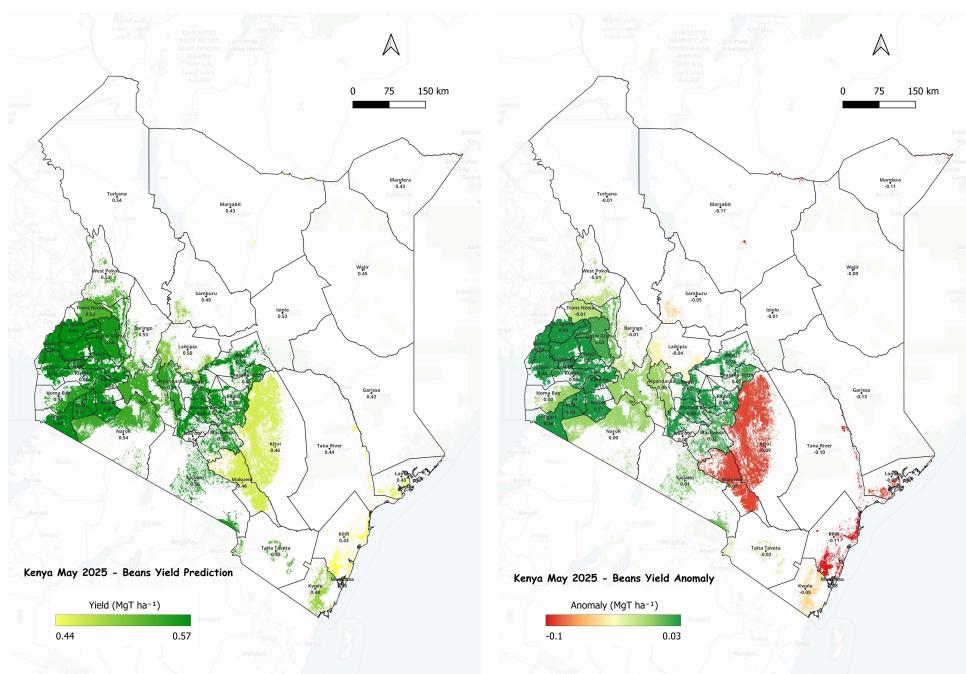


Figure 7.7: (a) End-of-season bean yield forecast for Kenya and (b) Yield anomaly projections based on satellite data and machine learning analysis. Beans yield is projected to fall below -0.02 MgT/ha in Kitui, Makueni, Kwale, Kilifi, Garissa, Lamu, Tana River and Taita Taveta

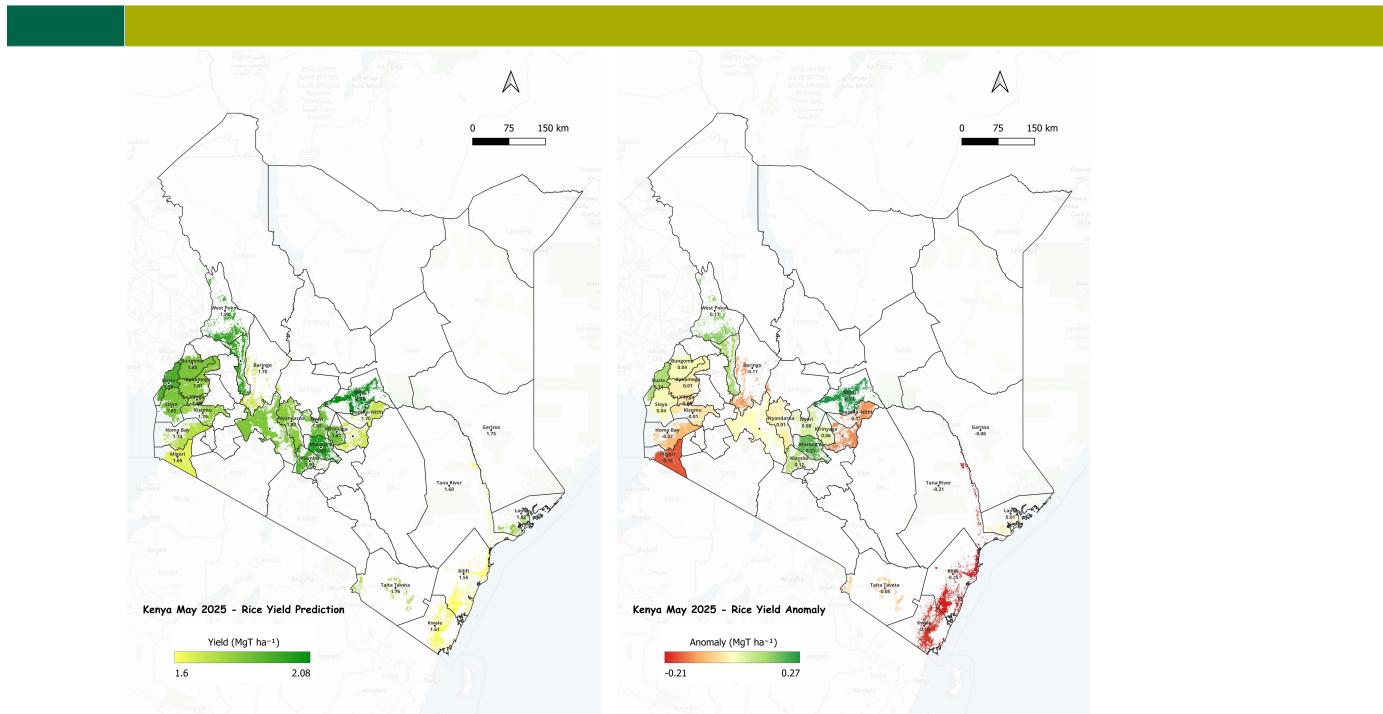


Figure 7.8: (a) End-of-season rice yield forecast for Kenya and (b) Yield anomaly projections based on satellite data and machine learning analysis. Rice yield anomaly is projected to increase up to 0.27 and dip below -0.01 MgT/ha this month.



Appendix A

Model Description and Parameters

A.1 Crop Conditions Classes

Crop conditions classes (Figure A.1) are based on a combination of inputs, including earth observations, ground observations, reported impacts, and meteorological data, following the [Crop Monitor for Early Warning Classification system](#). The assessment considers crop phenology, climatic conditions, and agronomic information.

Class	Color	Definition
Exceptional		Conditions are much better than average* at the time of reporting. This label is used only during the grain-filling through harvest stages.
Favourable		Conditions range from slightly below to slightly above-average* at reporting time.
Watch		Conditions are not far from average* but there is a potential risk to final yields. There is still time and possibility for the crop to recover to average conditions if the ground situation improves. This label is only used during the planting-early vegetative and the vegetative-reproductive stages.
Poor		Crop conditions are well below average*. Crop yields are likely to be 10-25% below-average*. This is used when crops are not likely to recover, and impact on yields is likely.
Failure		Crop conditions are extremely poor. Crop yields are likely to be 25% or more below-average*.
Out-of-Season		Crops are not currently planted or in development during this time.
No data		No reliable source of data is available at this time.

* Average refers to the average conditions for that time of year in that area.

Crop conditions are based on a combination of inputs including earth observations, ground observations,

Figure A.1: Crop Conditions Classification

