

Crop Yield Forecast Estimates

July 2025

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



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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.

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

Current Focus: Data presented this month focuses on maize, rice and bean systems in **Kenya, Uganda, Rwanda, and Tanzania's Bimodal Region**, which are currently in season.

Executive Summary

This report presents national forecasts for July 2025, focusing on maize, rice, and bean production in Tanzania's Bimodal Region, Uganda, Kenya, and Rwanda. These four countries are currently in their respective crop production seasons, with production underway.

Key Results: Crop conditions in July 2025 were generally stable but with marked regional disparities for beans, maize, and rice.

Uganda: Beans and maize remained largely stable, though stress was noted in the Eastern and Northern regions. The most favorable outcomes were observed in Central and Western areas. Rice showed sharp contrasts, with highly favorable conditions in the East (+0.25 MgT/ha anomaly) but deficits in Central and Western regions. **Rwanda:** Bean conditions were stable nationwide. Maize and rice showed localized stress, particularly in Iburasirazuba (maize -0.14 MgT/ha, rice -0.11 MgT/ha), while western and southern regions recorded slightly positive anomalies, leaving most crops in watch to favorable status. **Tanzania (Bimodal):** Beans were mostly stable with minor anomalies. Maize displayed strong regional variation, with severe deficits in coastal/island regions (down to -0.51 MgT/ha) but highly favorable conditions in northern/western areas (up to +0.41 MgT/ha). Rice faced a significant decline in coastal/island zones (anomalies as low as -0.99 MgT/ha), though northern and western regions showed notable improvement. **Kenya:** Beans showed a mixed picture, with deficits in eastern and northern counties but favorable conditions in central and western highlands. Maize was highly polarized, with extreme deficits in arid/semi-arid counties (e.g., Garissa -0.94 MgT/ha) contrasted by exceptional surpluses in Rift Valley and western counties (up to +1.11 MgT/ha). Rice remained weak in coastal/central counties, though some western areas showed modest improvement. Overall, beans remained mostly stable across the region, maize exhibited the widest variability with both extreme deficits and exceptional gains and rice was under notable stress in coastal/island areas, though inland and highland zones in Uganda, Rwanda, and northern Tanzania showed resilience.

Production Forecast Summary

2.2 - 2.68M MT

TANZANIA MAIZE (BIMODAL)

0.57 - 0.68M MT

UGANDA MAIZE

3.61 - 4.08M MT

KENYA MAIZE

0.49 - 0.56M MT

RWANDA MAIZE

Current projections for July 2025 maize, beans and rice production in East Africa show varying forecasts between USDA, FAO and UMD models. Tanzania's prediction for this period only covers the bimodal region; hence, the sharp decline in production estimates compared to last month. Notable changes include:

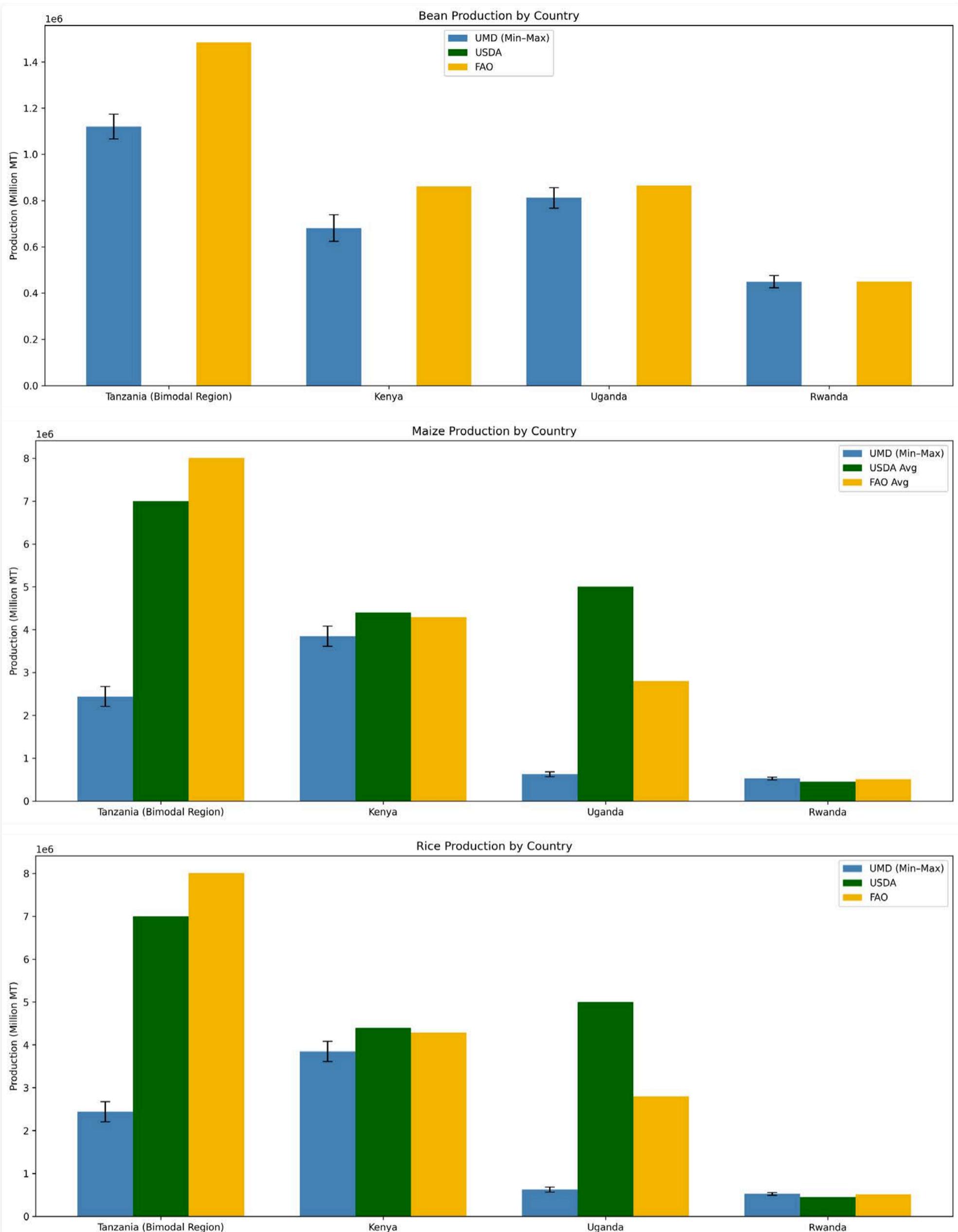


Figure 1.1: Comparison of Production Estimates from UMD, USDA, and FAO

This figure compares national-level production estimates (in million hectares) for maize, bean and rice across Tanzania's Bimodal Region, 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.

Yield Estimate Summary

1.72 T/Ha

TANZANIA MAIZE (BIMODAL)

1.96 T/Ha

UGANDA MAIZE

1.9 T/Ha

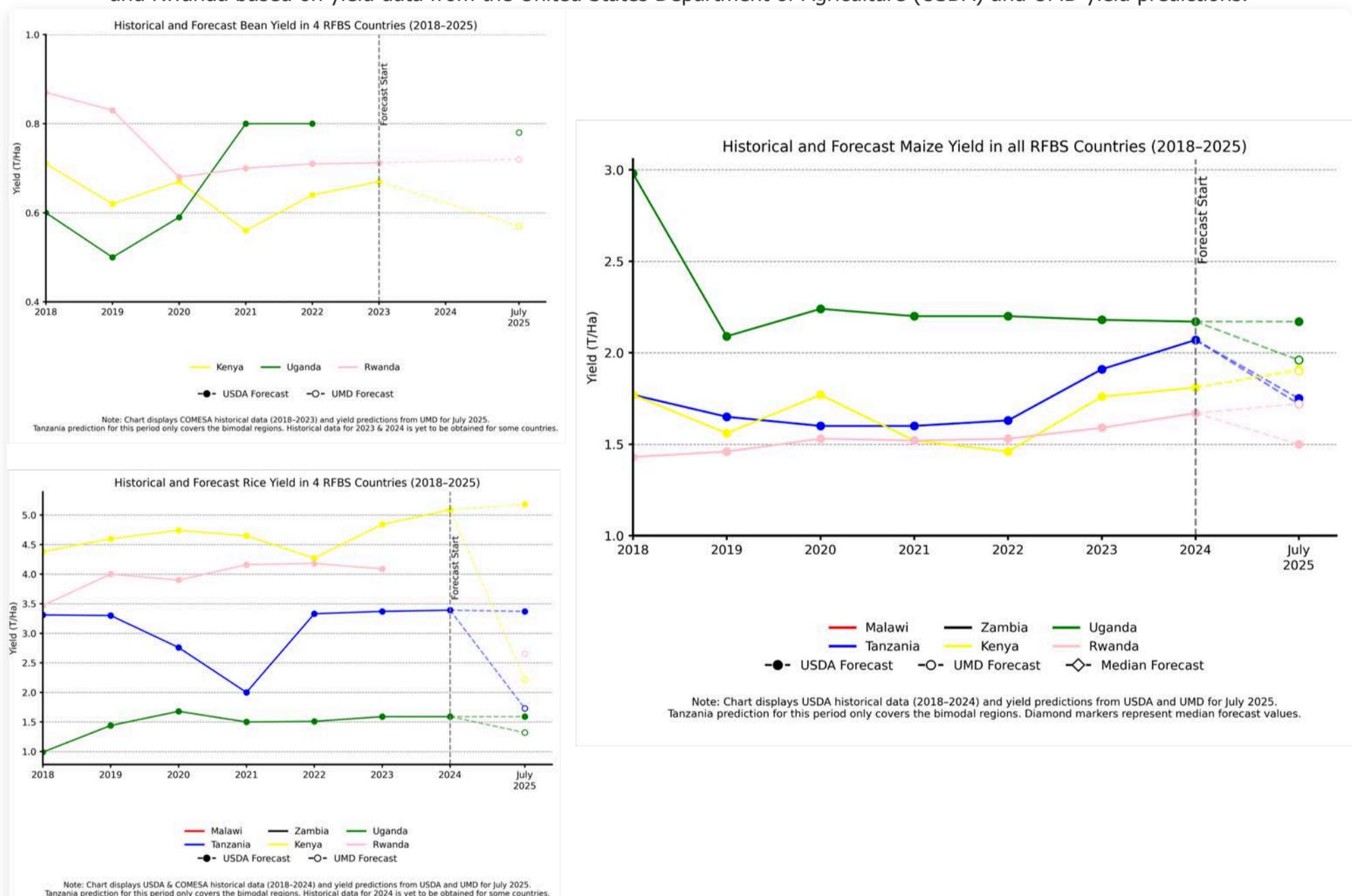
KENYA MAIZE

1.72 T/Ha

RWANDA MAIZE

Figure 2.1: Comparison of Yield Estimates from UMD and USDA

This figure compares national-level yield estimates (in t/ha) for maize, bean and rice across Tanzania's Bimodal Region, Uganda, Kenya, and Rwanda based on yield data from the United States Department of Agriculture (USDA) and UMD yield predictions.



Regional Overview/Conditions

Eastern Africa

In July 2025, Kenya, Rwanda, Tanzania, and southern Uganda were in their cool, dry season with mild to warm days, cool nights, and little rainfall, while northern Uganda saw some continued seasonal rains; coastal areas in Kenya and Tanzania stayed warmer and more humid with occasional light showers.

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.

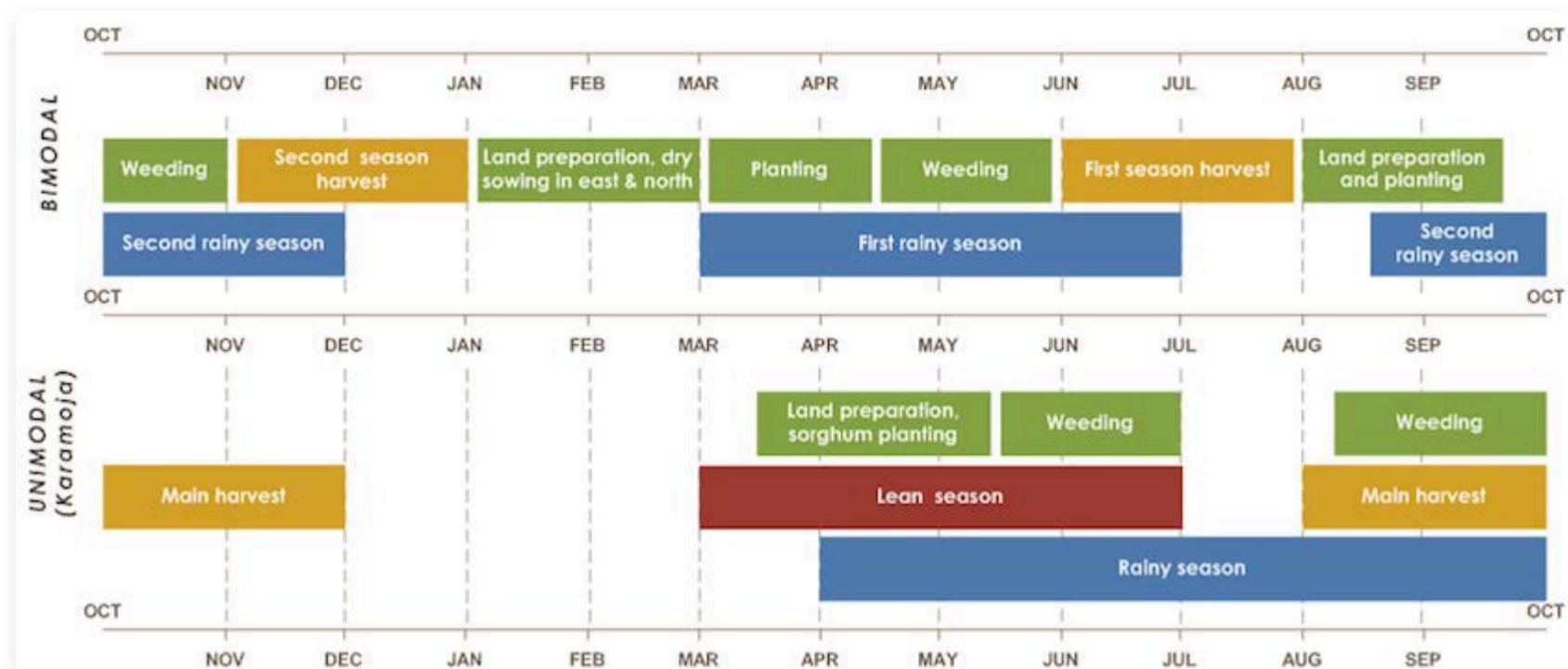


Figure 2.1: Uganda Agricultural Calendar

Shows Uganda's agricultural calendar with bimodal and unimodal rainfall patterns and corresponding crop seasons.

Regional Crop Conditions Summary

Crop conditions in Uganda showed **modest improvements** compared to June:

- **Maize conditions improved** in Western and Northern regions, shifting from poor to favorable
- **Bean conditions remained mixed**, with favorable status in Central and Western Uganda
- **Rice conditions declined in Western**, and improved in Eastern and Northern regions

Production Forecasts

Crop	Region	Predicted Yield (MgT/ha)	Production Range (tons)	Yield Anomaly	Conditions
Beans	Eastern	0.73	119,068 - 128,870	-0.05	Watch
	Northern	0.78	268,366 - 301,265	0.0	Watch
	Western	0.79	181,314 - 193,618	+0.01	Favorable
	Central	0.82	197,988 - 232,684	+0.04	Favorable
Maize	Western	2.01	129,123 - 163,399	-0.6	Favorable
	Northern	1.9	195,424 - 230,865	-0.06	Watch
	Eastern	1.8	84,202 - 102,511	-0.16	Poor
	Central	2.11	157,368 - 183,223	+0.15	Favorable
Rice	Central	1.14	267,492 - 334,255	-0.18	Poor
	Northern	1.38	480,200 - 525,527	0.06	Favorable
	Western	1.2	246,143 - 319,969	-0.12	Poor
	Eastern	1.57	247,756 - 281,555	+0.25	Favorable

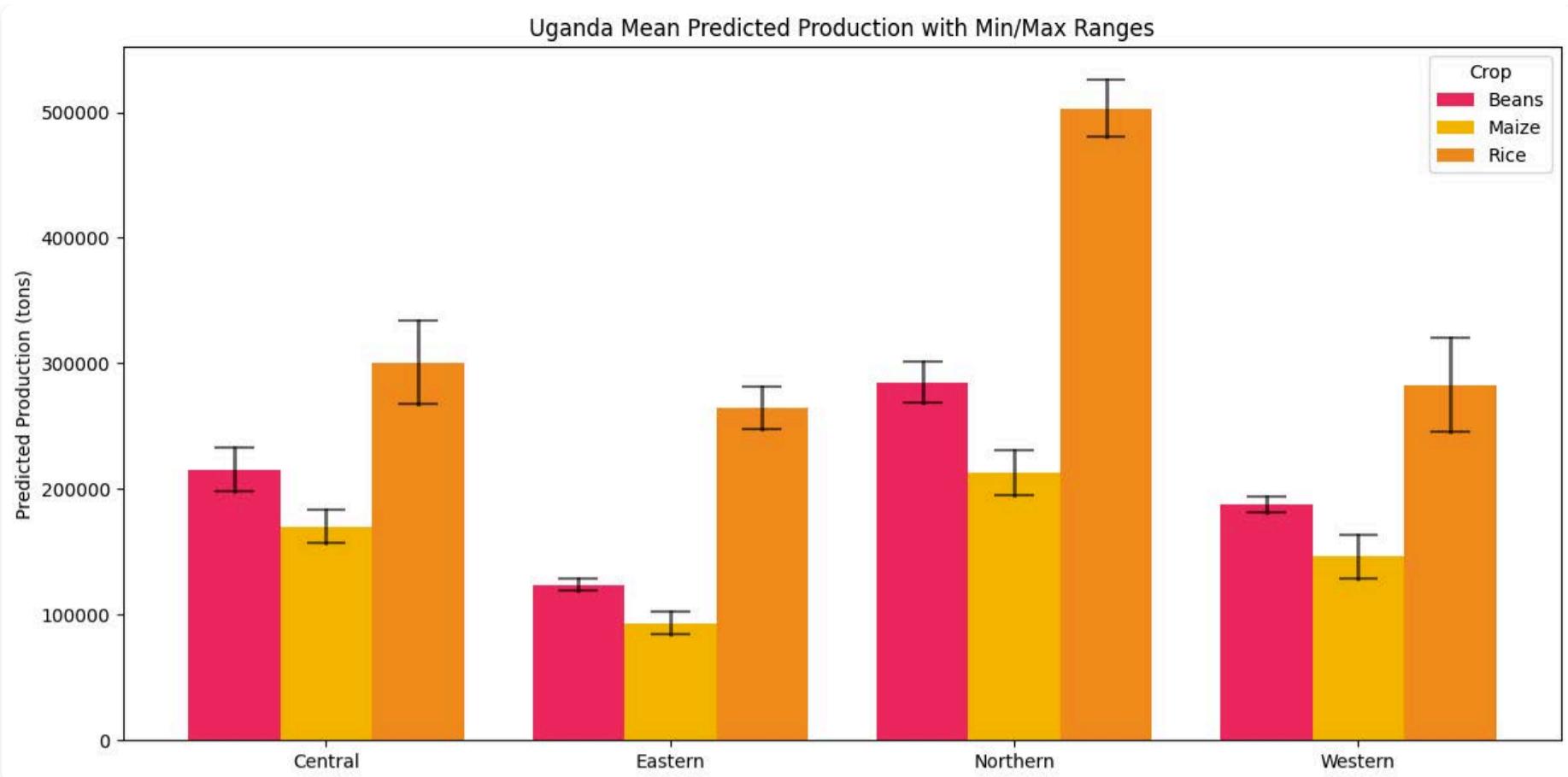


Figure 2.3: Average Estimated Production with Min/Max Ranges in Uganda

Bar chart showing mean predicted production for maize, beans, and rice across Uganda's four regions, with error bars indicating minimum and maximum estimated production ranges.

End-of-season maize, bean and rice yield forecast map and yield anomaly projections for Uganda based on satellite data and machine learning analysis.

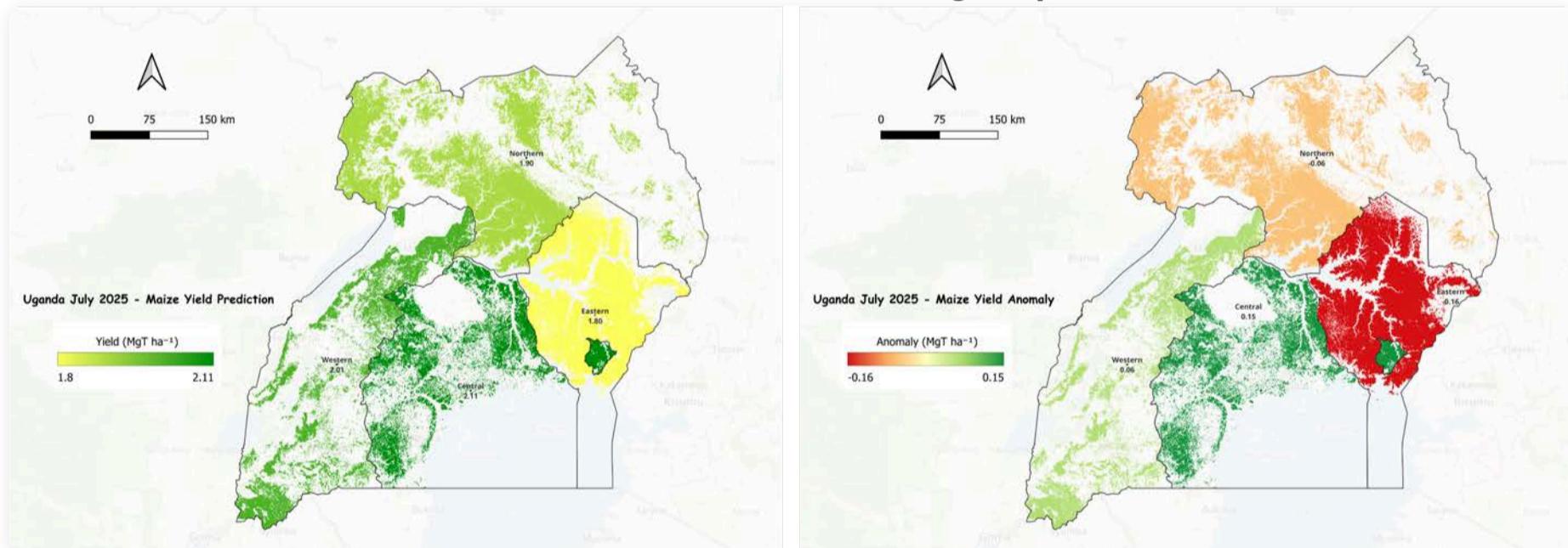


Figure 2.4: Regional Maize Yield Forecasts

Uganda's Central region records the highest predicted maize yield at 2.11 MgT/ha, while the Eastern region has the lowest at 1.80 MgT/ha, with the West and North showing moderate yields of 2.01 MgT/ha and 1.90 MgT/ha, respectively.

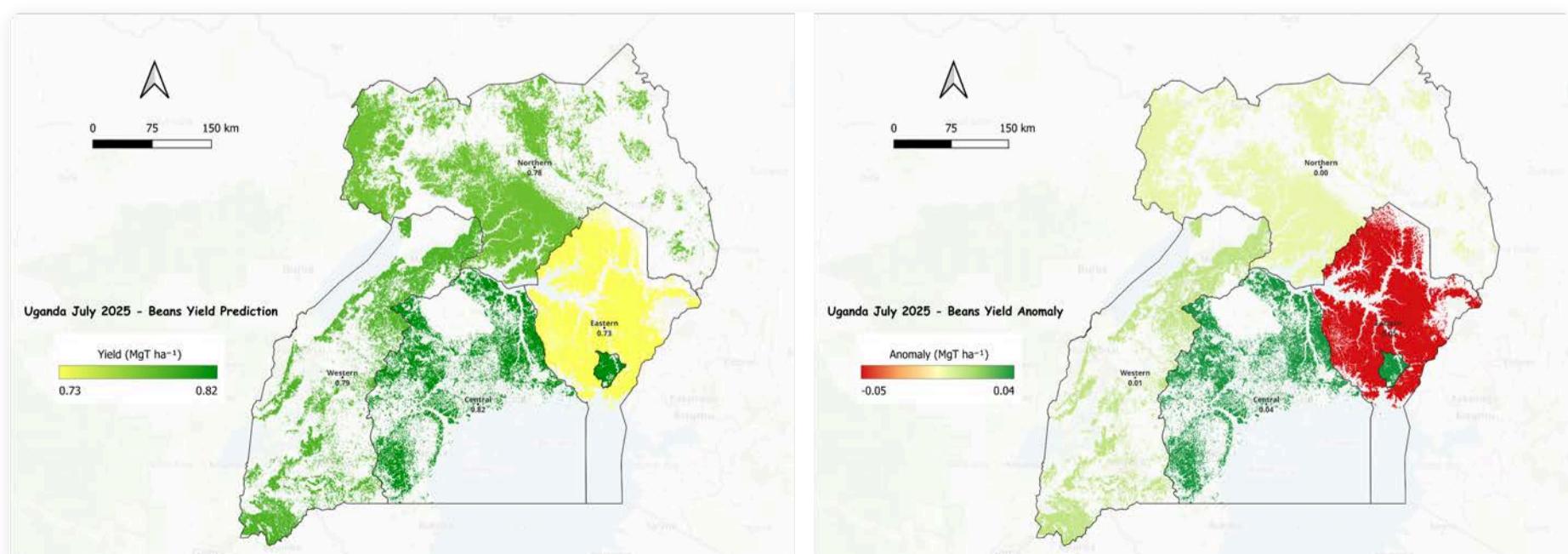


Figure 2.5: Regional Bean Yield Forecasts

In July 2025, the Central region of Uganda shows the highest bean yield prediction at 0.82MgT/ha, while the Eastern region has the lowest yield at 0.73 MgT/ha, indicating a yield range from below average to above average across the country.

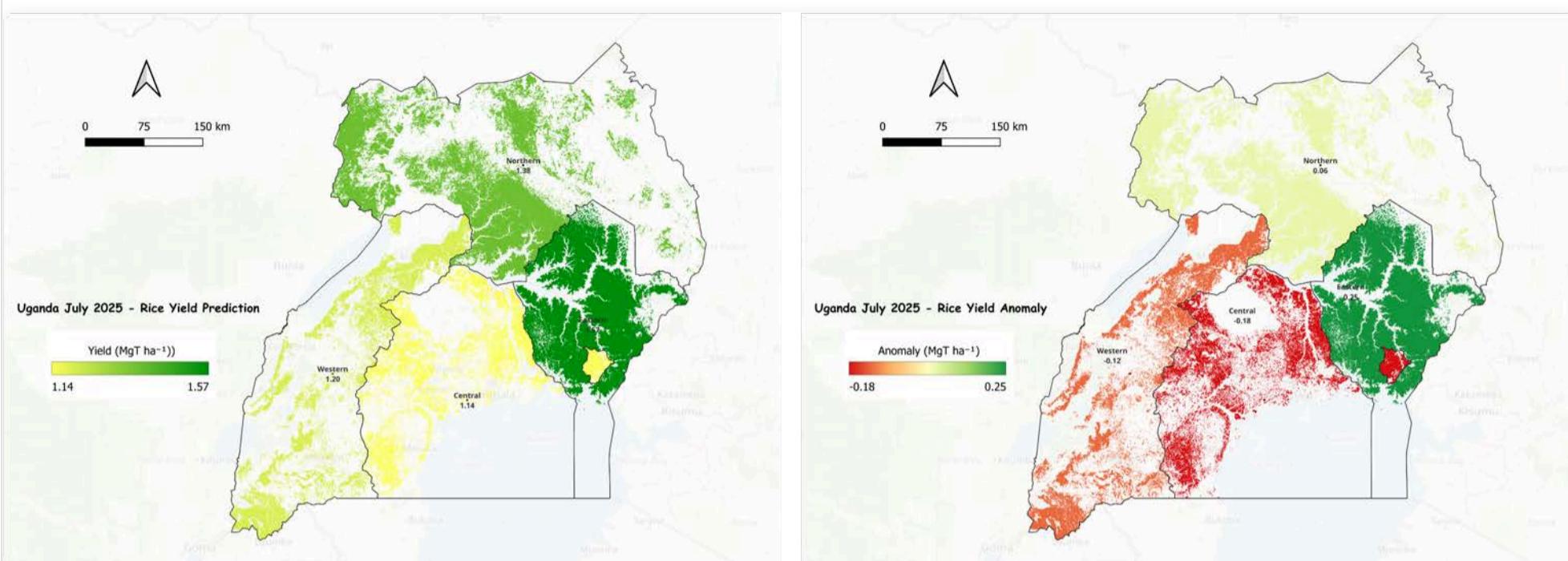


Figure 2.6: Regional Rice Yield Forecasts

Uganda's rice yields range from 1.14 to 1.57 MgT/ha, with the Eastern region leading both in yield (1.57 MgT/ha, +0.25 anomaly) and the Central region recording the lowest performance (1.14 MgT/ha, -0.18 anomaly)

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.

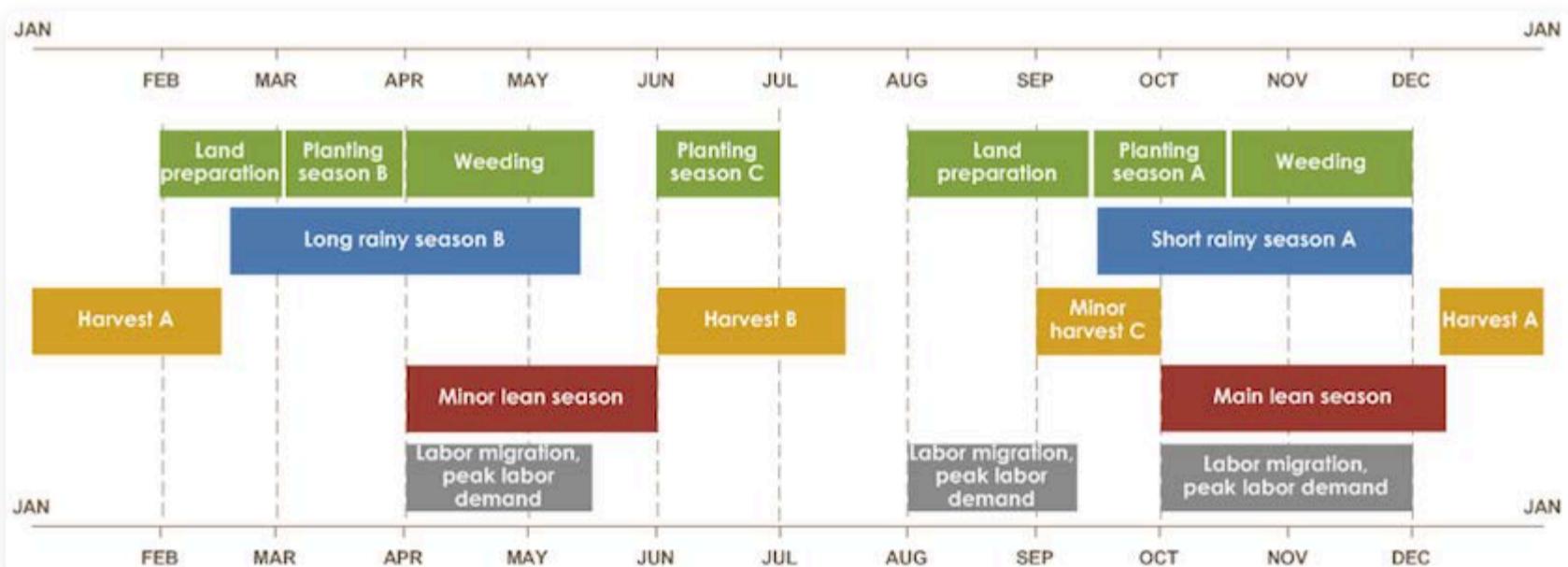


Figure 3.1: Rwanda Agricultural Calendar

Shows Rwanda's agricultural calendar with long rainy season (March-May) and short rainy season (October-December) patterns.

Regional Crop Conditions Summary

In July 2025, crop conditions in Rwanda remained **largely stable and favorable**.

- **Favorable conditions** for beans, and rice continued in Amajyepfo
- **Iburasirazuba leads** in average production for beans, maize, and rice, however, crop are under watch and poor conditions
- **No major shifts** in regional crop conditions

Production Forecasts by Province

Crop	Province	Predicted Yield (MgT/ha)	Production Range (tons)	Yield Anomaly	Conditions
Beans	Amajyaruguru	0.72	59,762 - 59,762	0.00	Watch
	Iburasirazuba	0.73	102,778 - 115,045	+0.01	Favorable
	Iburengerazuba	0.7	162,252 - 175,240	-0.02	Watch
	Amajyepfo	0.74	97,849 - 125,143	+0.01	Favorable
Rice	Umuji Wa Kigali	2.66	44,942 - 51,107	0.1	Favorable
	Iburasirazuba	2.54	554,711 - 633,658	-0.11	Poor
	Iburengerazuba	2.63	365,507 - 398,923	-0.02	Watch
	Amajyaruguru	2.65	201,208 - 227,097	-0.01	Watch
Maize	Amajyepfo	2.78	385,080 - 433,087	-0.13	Favorable
	Iburasirazuba	1.58	171,703 - 203,945	-0.14	Poor
	Amajyepfo	1.71	123,253 - 131,996	-0.01	Watch
	Amajyaruguru	1.75	68,190 - 75,625	+0.03	Favorable
	Iburengerazuba	1.84	130,459 - 144,782	+0.12	Favorable

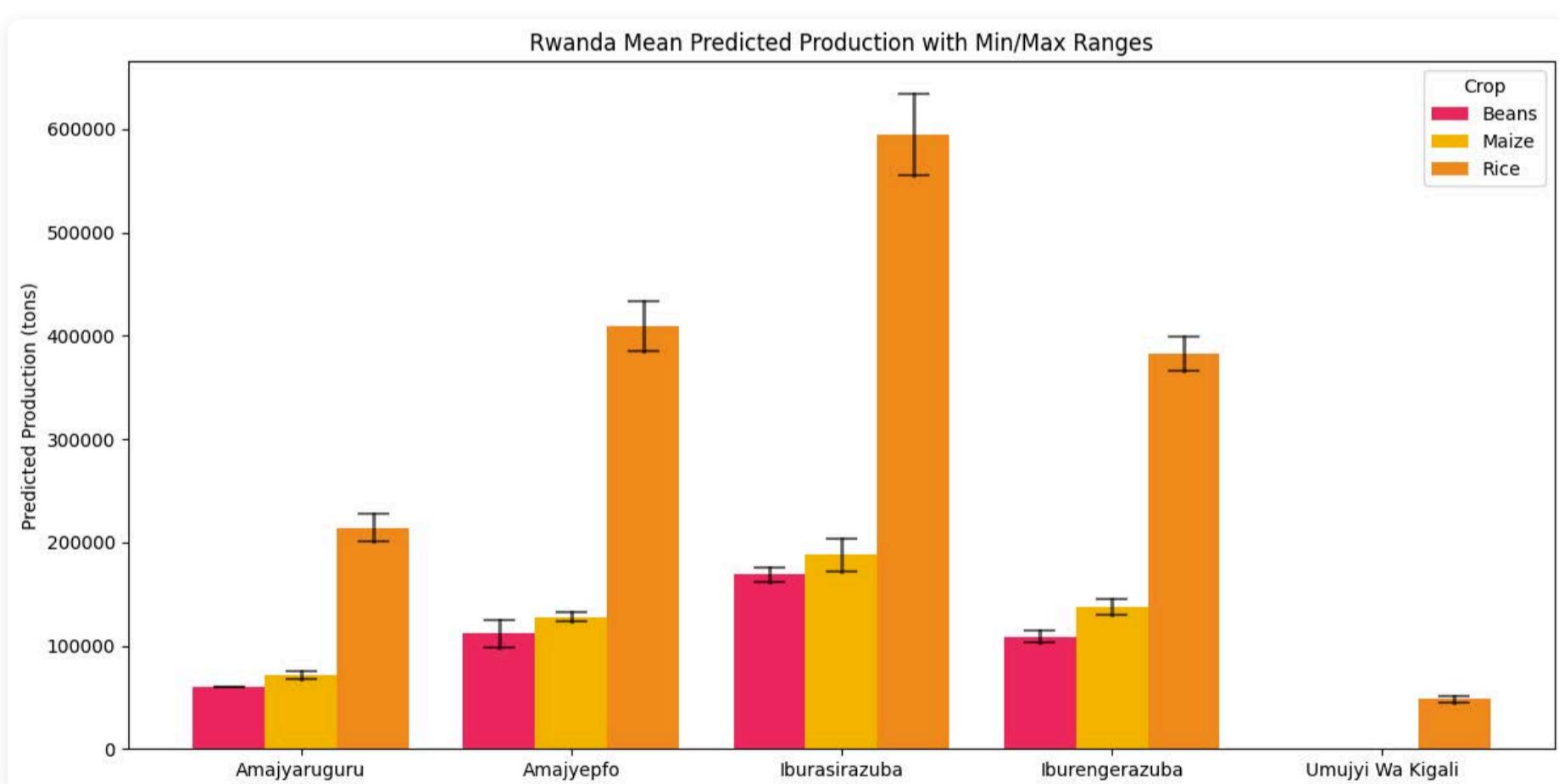


Figure 3.3: Average Predicted Production with Min/Max Ranges in Rwanda

Chart presenting mean predicted production for beans, maize, and rice across Rwanda's provinces, with Iburasirazuba showing highest average production across all crops.

End-of-season maize, bean and rice yield forecast map and yield anomaly projections for Rwanda based on satellite data and machine learning analysis.

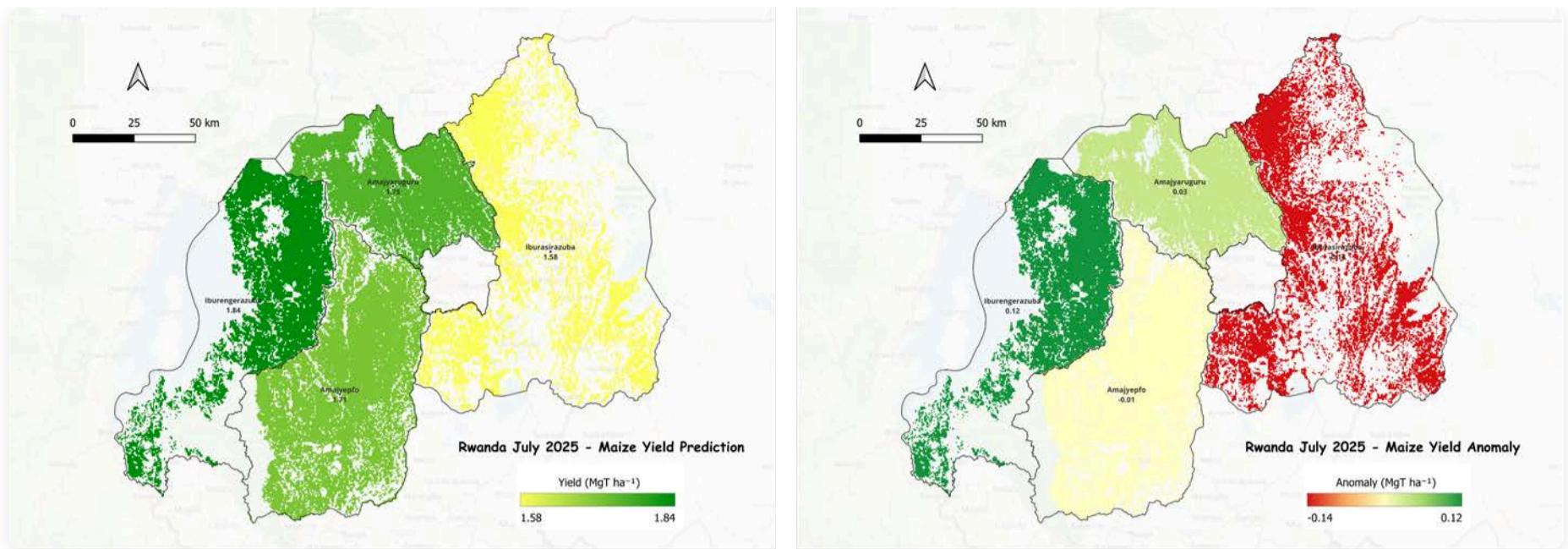


Figure 3.4: Regional Maize Yield Forecasts

The western region of Iburengerazuba shows the highest predicted maize yield at 1.84 MgT/ha , while the eastern region of Iburasirazuba has the lowest predicted yield at 1.58 MgT/ha , indicating a clear spatial gradient from higher to lower yields across Rwanda.

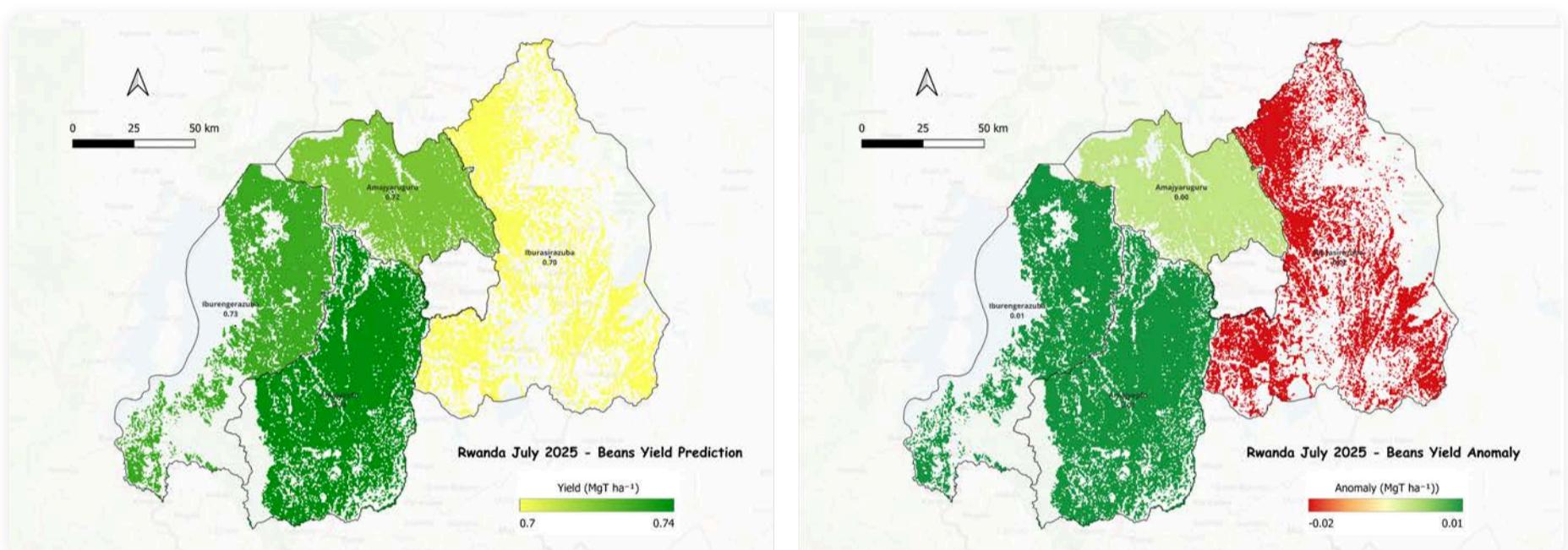


Figure 3.5: Regional Bean Yield Forecasts

Bean yields range narrowly between $0.70\text{--}0.74 \text{ MgT ha}^{-1}$, with Amayepfo showing the highest yield (0.74 MgT ha^{-1}) and a slight positive anomaly ($+0.01$), while Iburasirazuba records the lowest yield (0.70 MgT ha^{-1}) and a negative anomaly (-0.02).

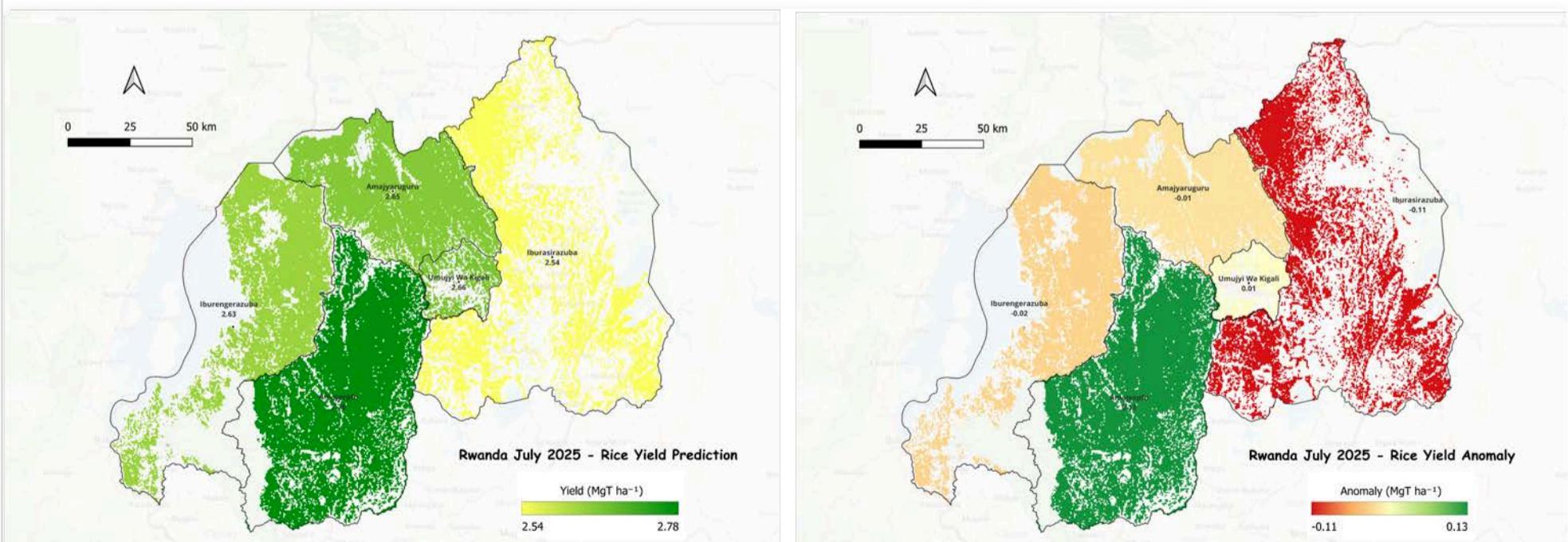


Figure 3.6: Regional Rice Yield Forecasts

Amayepfo is the top-performing region with a predicted rice yield of 2.78 MgT/ha , while Iburasirazuba shows the lowest yield at 2.54 MgT/ha , representing the extremes in yield across Rwanda. The map indicates a yield gradient from higher values in the south-central

Tanzania (Bimodal Region)

This analysis covers Tanzania's Bimodal Region, which exhibits distinct bimodal (North) rainfall patterns with two seasons: November-December and March-May.



Figure 4.1: Tanzania Crop Calendar

Tanzania's agricultural cycles showing bimodal rainfall patterns in the north (November-December and March-May) and unimodal patterns in the south (November-April).

Current Crop Conditions

In the bimodal region of Tanzania, July 2025 crop conditions show **mixed performance** across commodities:

- **Maize conditions improved significantly** - 9 out of 17 regions now experiencing favorable conditions
- **Rice remains under declining conditions** in coastal and island regions
- **Bean production remains generally stable** with most regions in watch conditions

Key Regional Performance

+0.43

HIGHEST MAIZE ANOMALY
(KILIMANJARO)

+0.41

HIGHEST RICE ANOMALY
(GEITA)

+0.08

HIGHEST BEAN ANOMALY
(MWANZA)

Top Performing Regions

Region	Maize Yield	Region	Rice Yield	Region	Bean Yield	Overall Status
Kilimanjaro	2.15 MgT/ha	Geita	2.13 MgT/ha	Kusini Unguja	1.84 MgT/ha	Favorable
Mara	2.13 MgT/ha	Mwanza	2.12 MgT/ha	Geita	1.82 MgT/ha	Favorable

Region	Maize Yield	Region	Rice Yield	Region	Bean Yield	Overall Status
Mwanza	1.98 MgT/ha	Manyara	2.12 MgT/ha	Tanga	1.81 MgT/ha	Favorable
Kagera	1.89 MgT/ha	Arusha	2.12 MgT/ha	Pwani	1.72 MgT/ha	Favorable

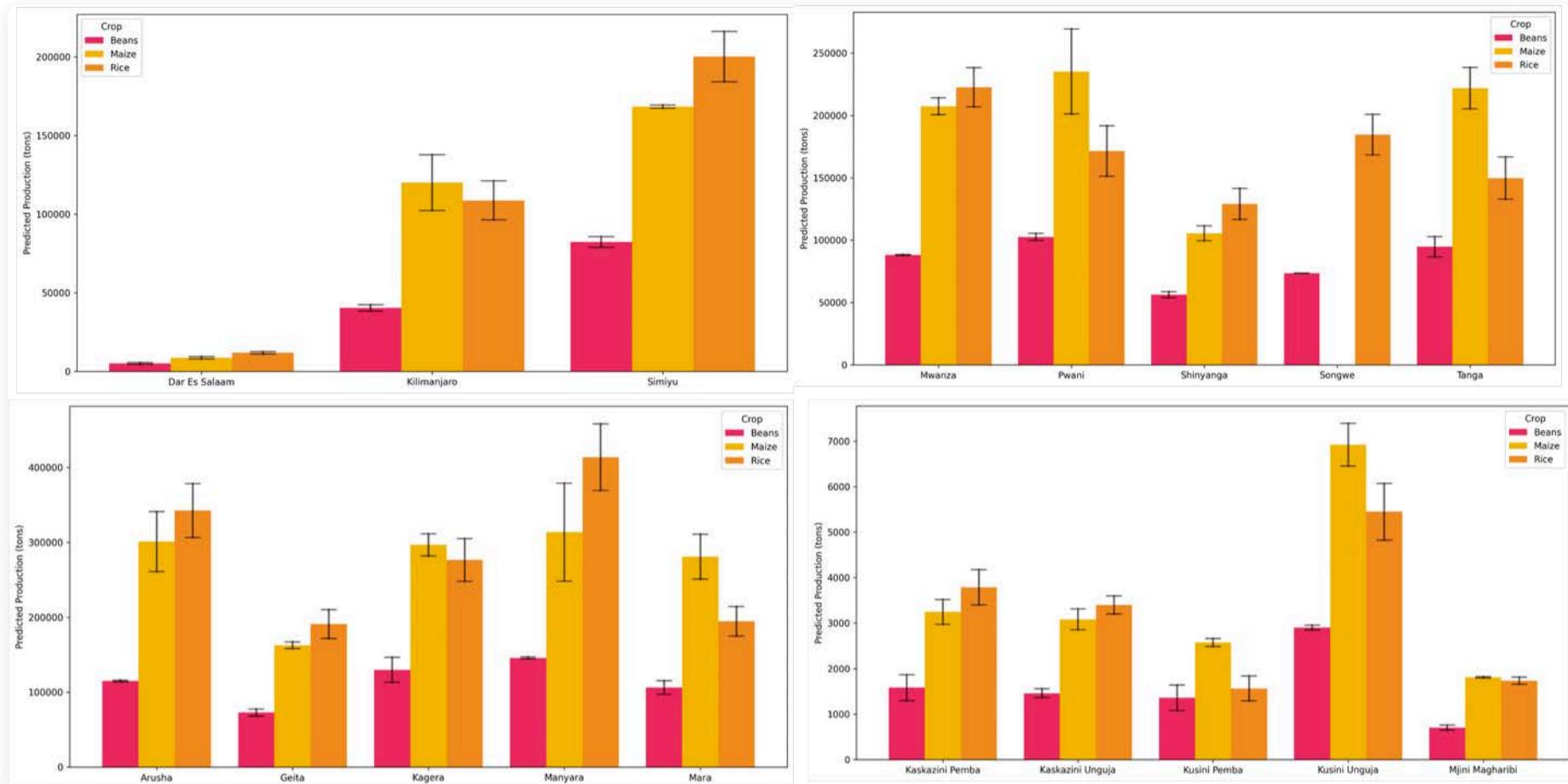


Figure 4.4: Mean Predicted Production with Min/Max Ranges in Bimodal Regions

Production forecast for Tanzania's bimodal region showing rice dominates total crop output, followed by maize, while beans record the lowest production volumes.

End-of-season maize, bean and rice yield forecast map and yield anomaly projections for Tanzania's Bimodal Region based on satellite data and machine learning analysis.

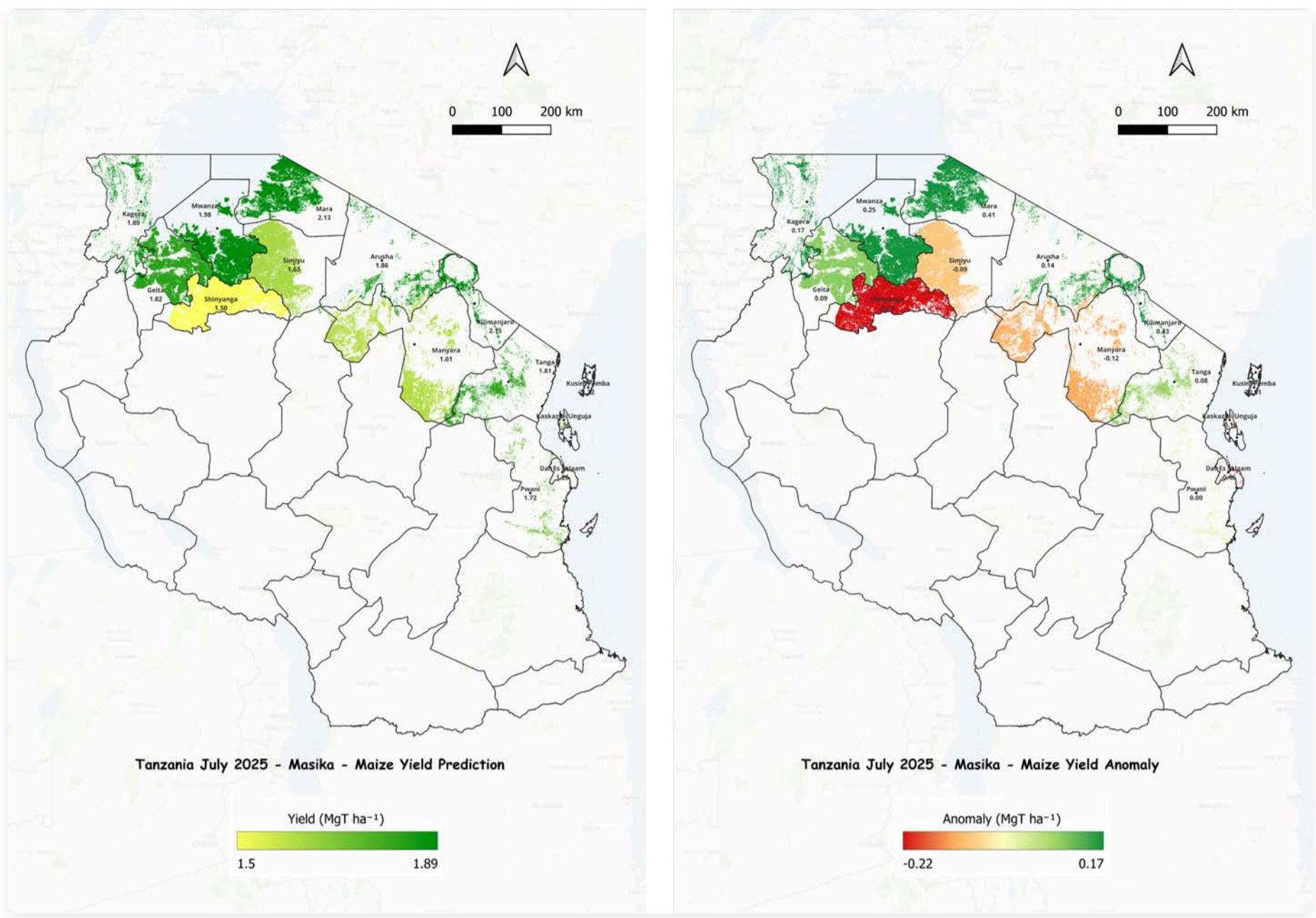


Figure 4.5: Maize Yield Forecasts

Maize yields range mostly between 1.50–1.89 MgT ha⁻¹, with Kilimanjaro recording the highest yield (2.15 MgT ha⁻¹, +0.43 anomaly) and Shinyanga the lowest (1.50 MgT ha⁻¹, -0.22 anomaly), highlighting sharp regional disparities.

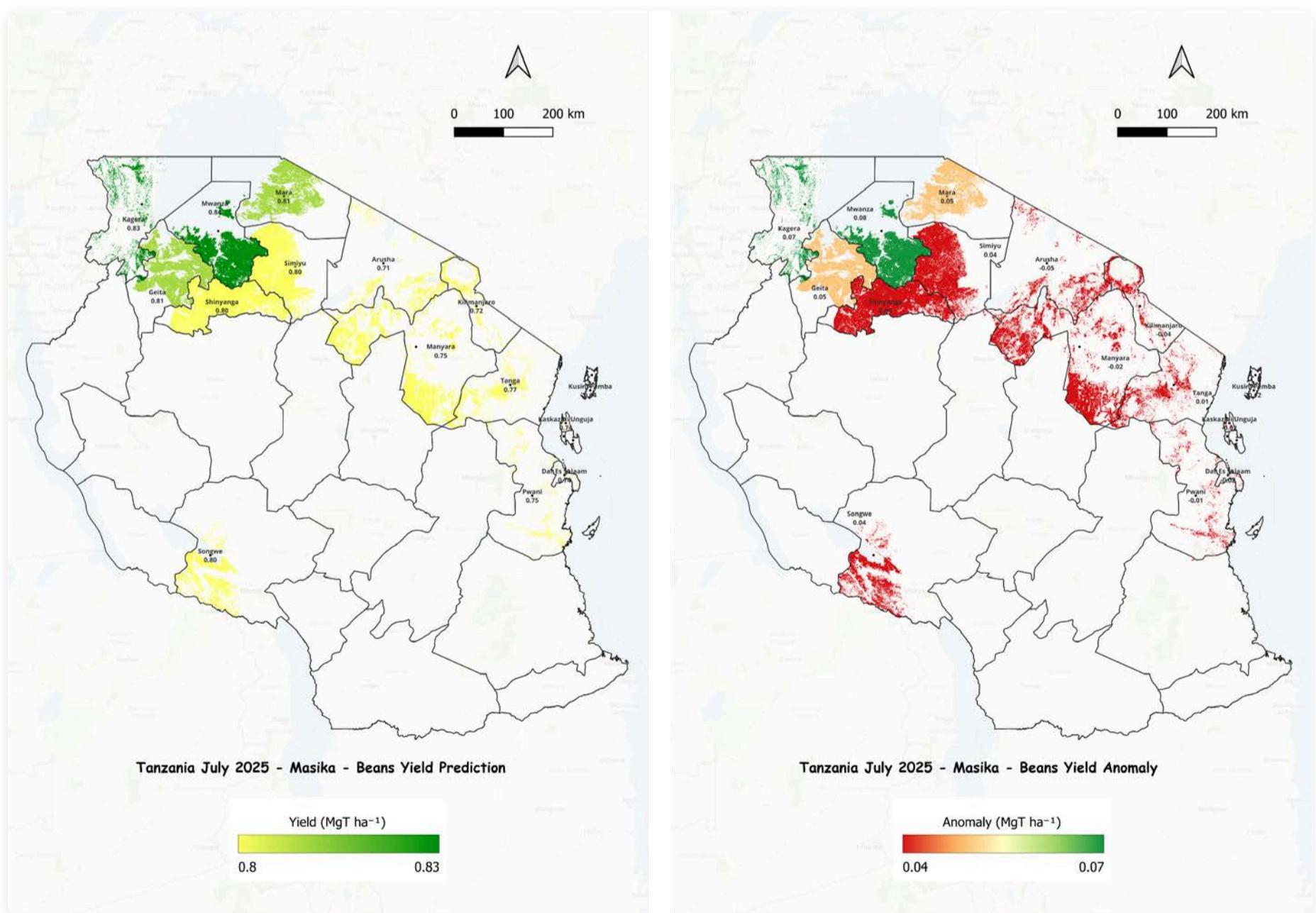


Figure 4.6: Bean Yield Forecasts

Bean yields in Tanzania range from 0.74 MgT ha^{-1} in Kusini Pemba to 0.83 MgT ha^{-1} in Kagera, with higher yields in the north/northwest and lower yields in the east; Mwanza shows the highest positive anomaly ($+0.08$), while Arusha records the lowest (-0.05), reflecting notable regional variation.

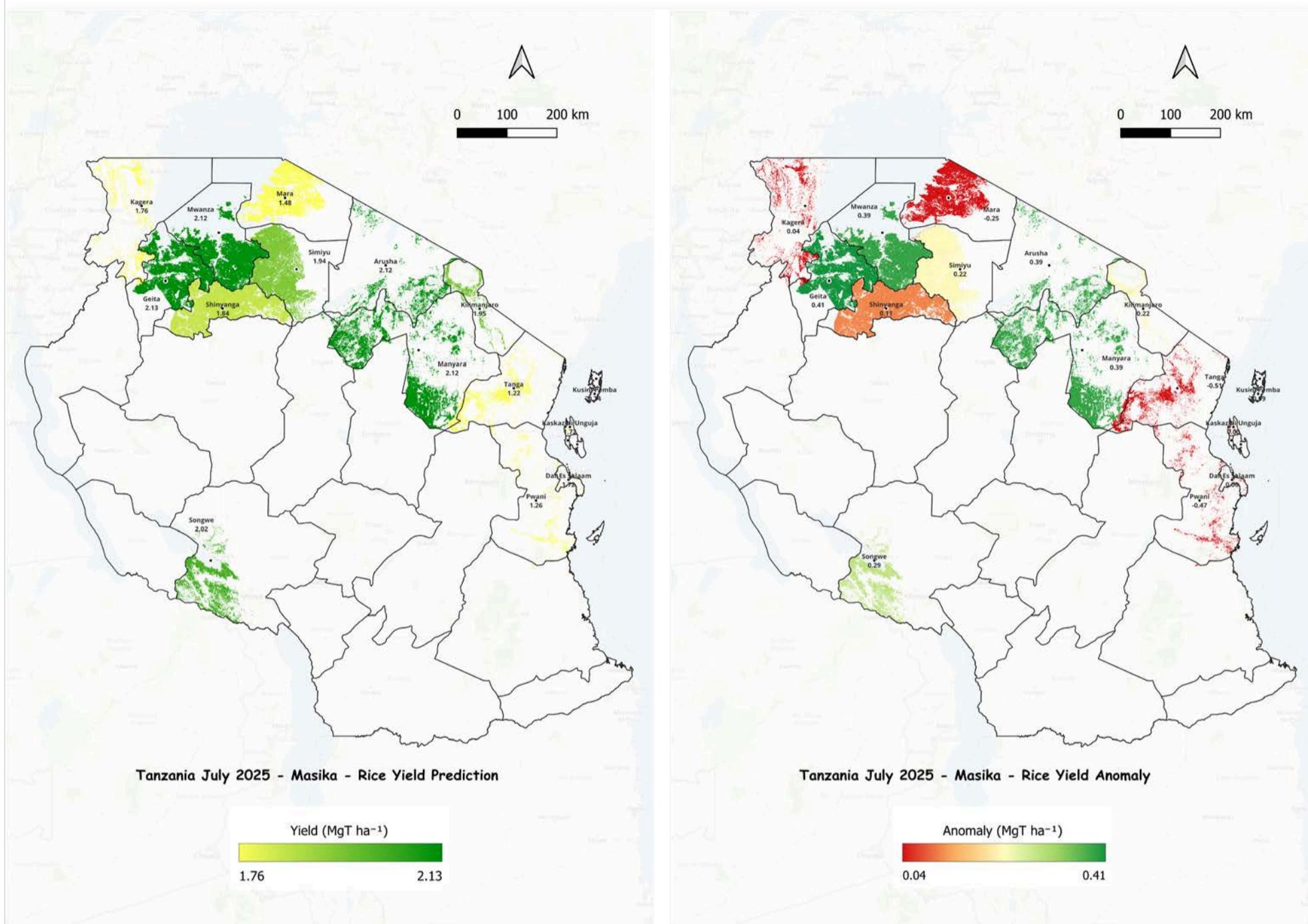


Figure 4.7: Rice Yield Forecasts

In July 2025, rice yields in Tanzania range from 1.22 MgT ha^{-1} in Tanga to 2.13 MgT ha^{-1} in Geita, with higher yields concentrated in the northwest and central regions and lower yields in coastal and northeastern areas.

Kenya

Kenya's agricultural patterns are characterized by distinct growing regions with different rainfall patterns: the Rift Valley and Western regions follow a unimodal pattern, while the Eastern and Northern regions exhibit a bimodal pattern.

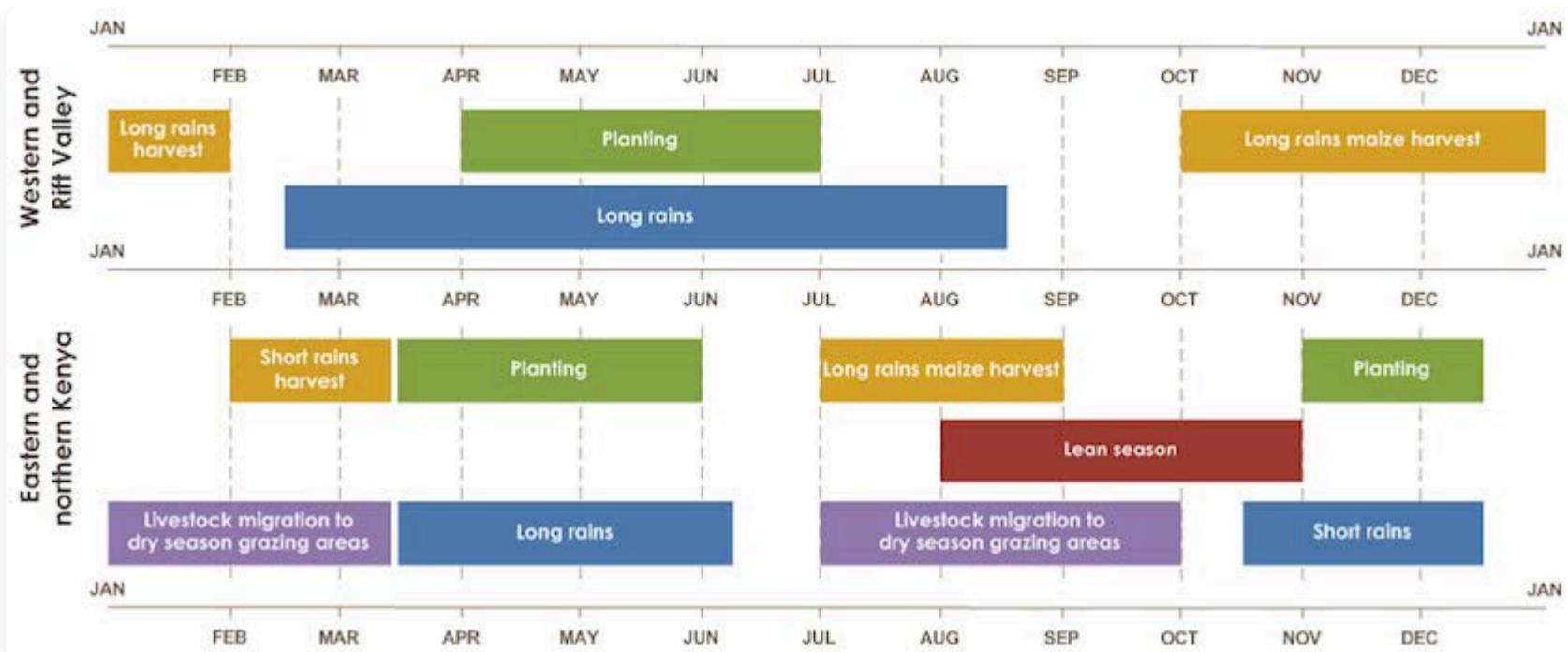


Figure 5.1: Kenya Agricultural Calendar

Kenya's agricultural calendar showing distinct regional patterns: the Rift Valley and Western regions follow a unimodal pattern with long rains, while Eastern and Northern regions exhibit a bimodal pattern with two seasons.

Current Crop Conditions

This month marks the **end of the planting season** in Kenya, with crop conditions showing clear regional contrasts:

- **Maize conditions show clear progress**, with the number of counties under poor status dropping to 19 out of 47, an improvement from 23 last month.
- **Rice conditions remain mixed** with 12 counties showing favorable conditions
- **Beans continue to perform well** overall

Top Producing Counties

County	Maize Production (tons)	County	Rice Production (tons)	County	Bean Production (tons)	Overall Status
Turkana	461,721 - 448,259	Garissa	175,292 - 209,632	Turkana	81,996 - 100,273	Favorable
Marsabit	330,653 - 384,469	Tana River	158,770 - 184,001	Garissa	41,275 - 52,788	Favorable
Wajir	231,982 - 289,517	Taita Taveta	74,840 - 86,131	Tana River	40,601 - 42,818	Favorable
Tana River	222,547 - 254,118	Kilifi	53,381 - 62,162	Isiolo	27,893 - 30,590	Favorable

Yield Performance by Condition

3.01

HIGHEST MAIZE YIELD (NAKURU)
MGT/HA

2.52

HIGHEST RICE YIELD (KIRINYAGA)
MGT/HA

0.66

HIGHEST BEAN YIELD (BOMET)
MGT/HA

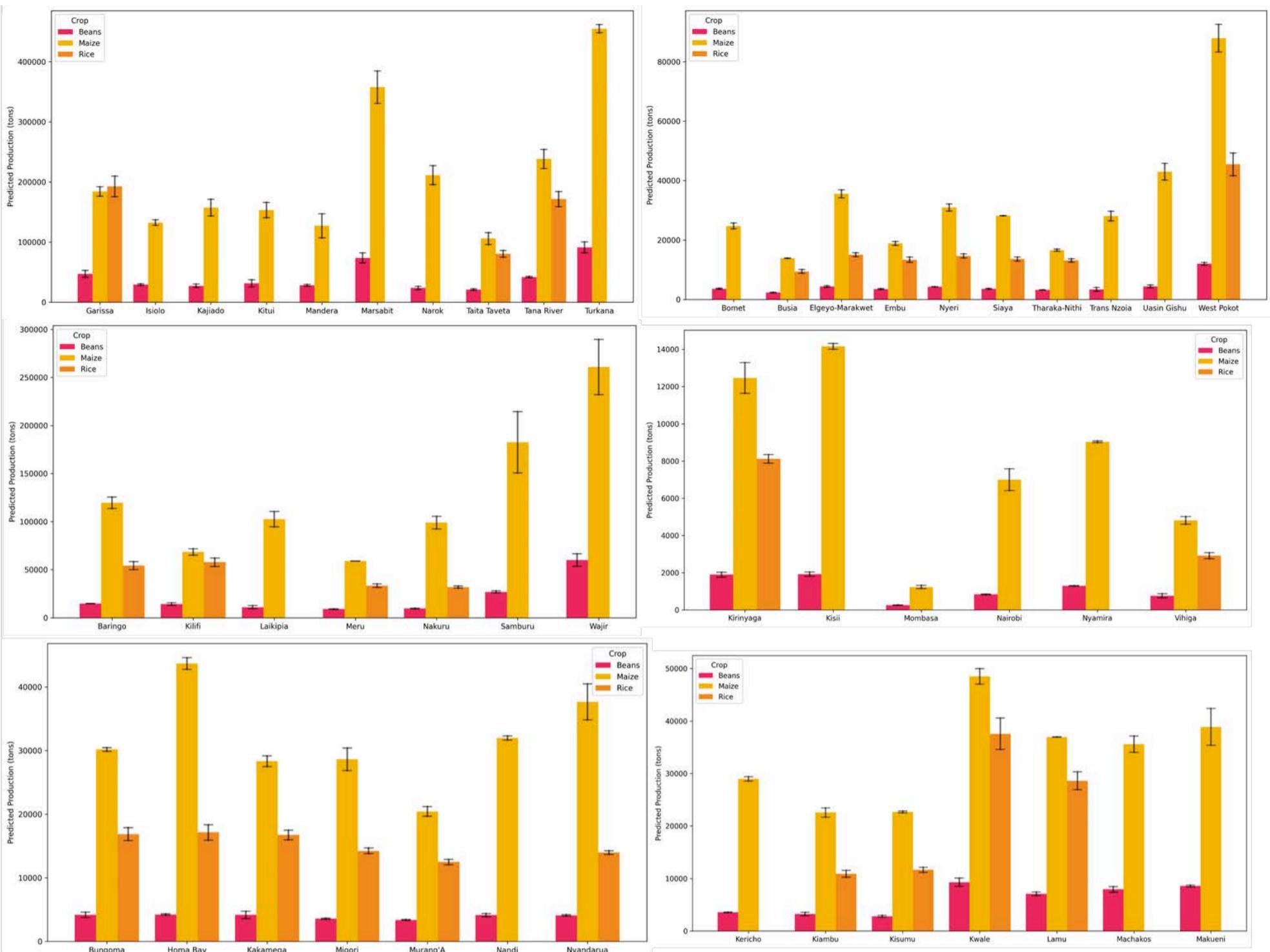


Figure 5.4: Mean Predicted Production with Min/Max Ranges in Kenya

Kenya's production forecast showing maize as the leading crop across most counties, with top production in Turkana, Wajir, and Marsabit, while rice is notable in Garissa and beans have the lowest production levels.

End-of-season maize, bean and rice yield forecast map and yield anomaly projections for Kenya based on satellite data and machine learning analysis.

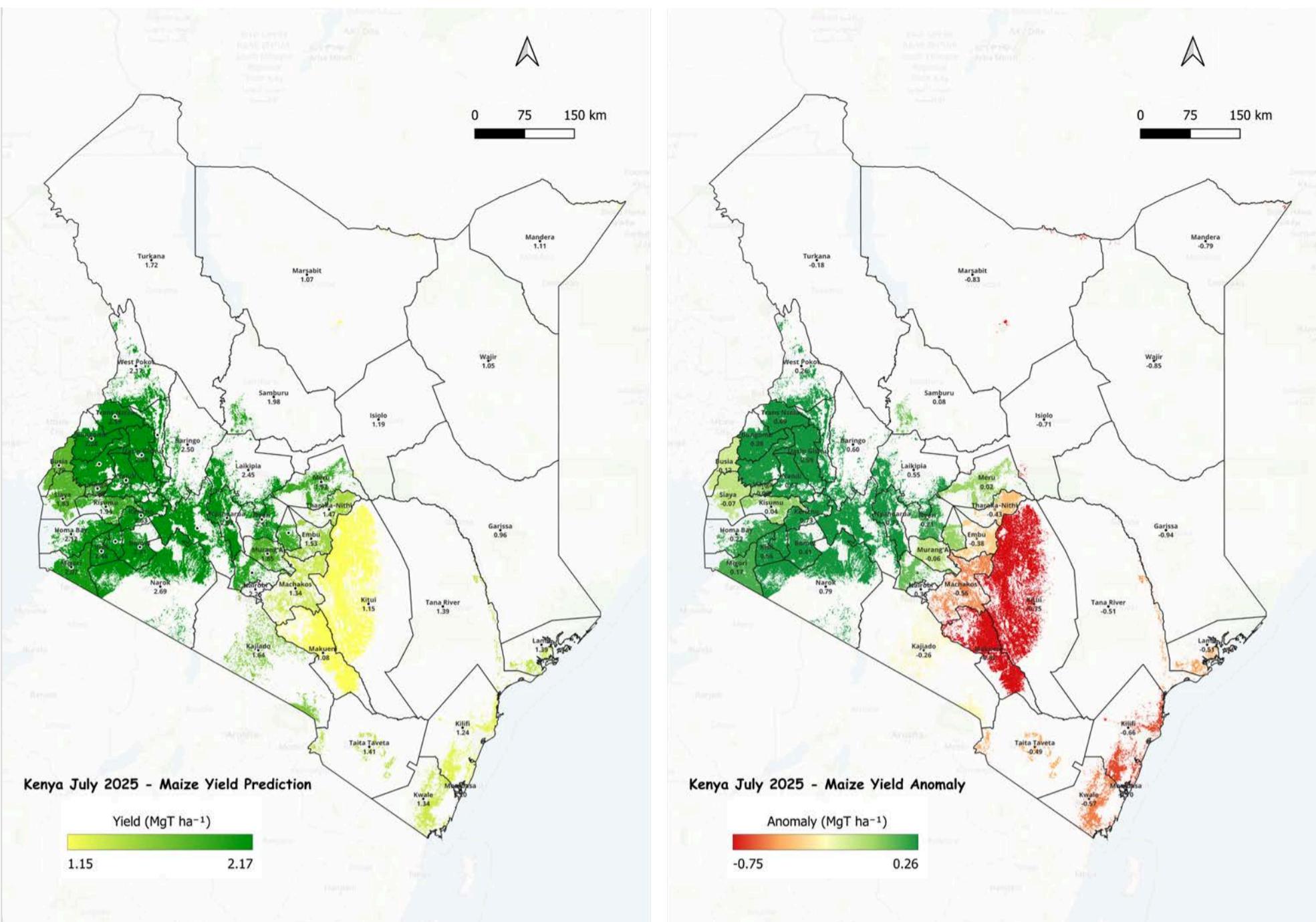


Figure 5.6: Maize Yield Forecasts

Maize yields in Kenya range from 0.96 MgT/ha in Garissa to 2.50 MgT/ha in Baringo, reflecting sharp regional disparities. Kisii shows the highest positive anomaly (+0.99), while Garissa records the lowest (-0.94), with western areas generally above average and eastern regions notably below."

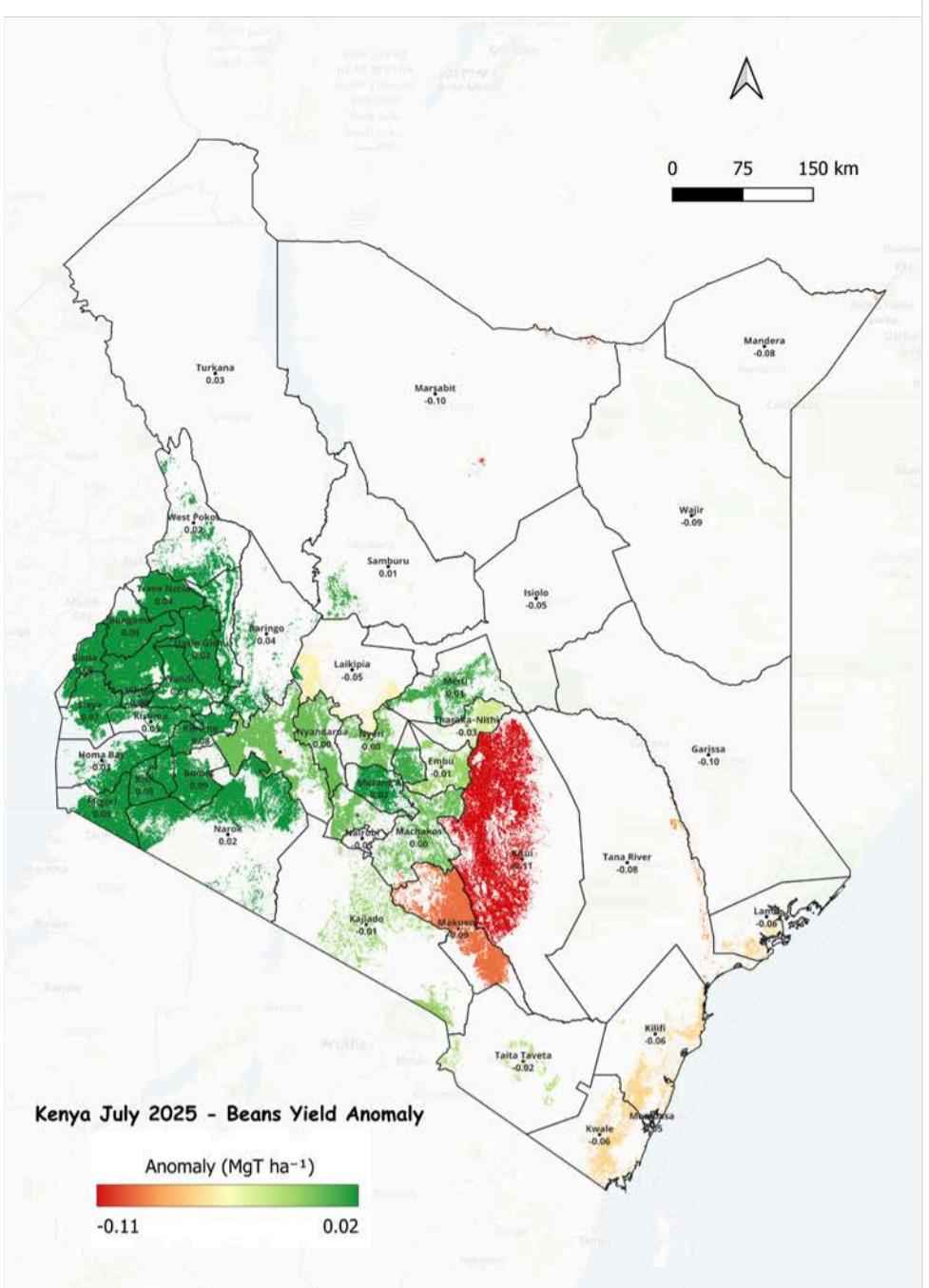
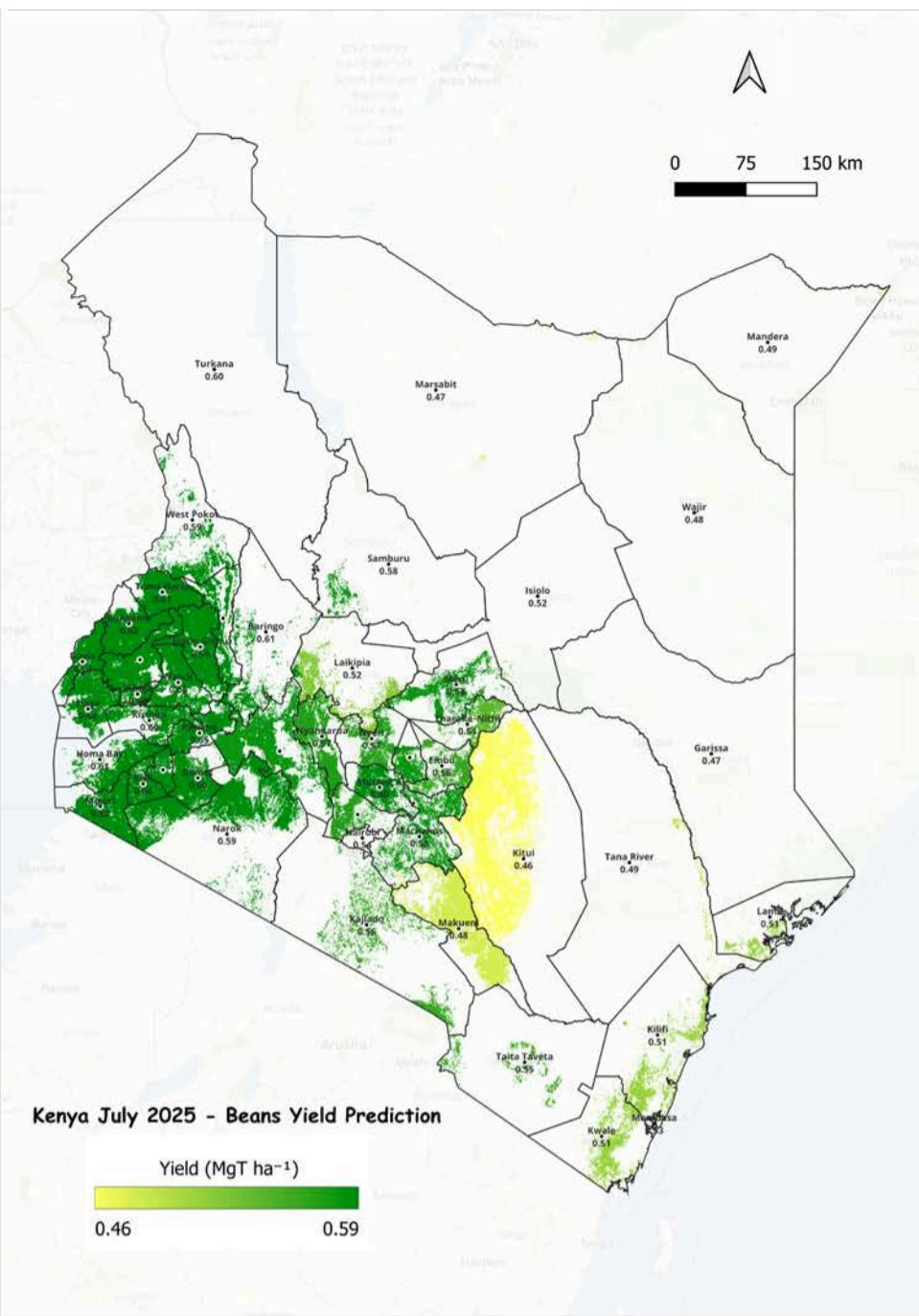


Figure 5.7: Bean Yield Forecasts

Bean yields in Kenya range from 0.46 MgT/ha in Kitui to 0.62 MgT/ha in Bungoma, with a clear west–east gradient. Kisii (+0.09) and Bungoma (+0.05) show the highest positive anomalies, while Kitui (-0.11), Garissa, and Marsabit (\approx -0.10) record the lowest, highlighting strong regional contrasts."

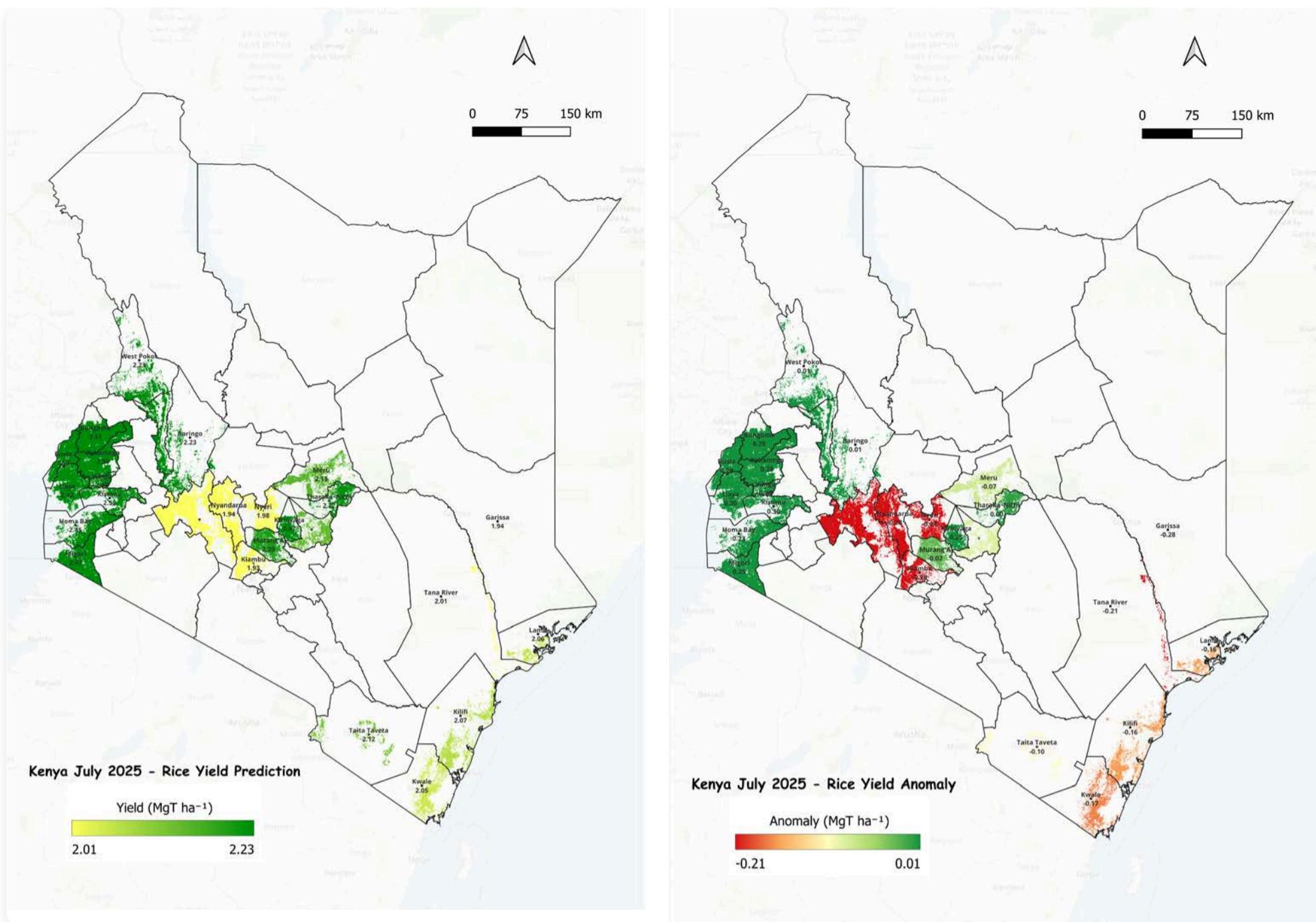


Figure 5.8: Rice Yield Forecasts

In July 2025, rice yields in Kenya range from 1.93 MgT/ha in Kiambu to 2.51 MgT/ha in Bungoma, while anomalies vary widely, with Kisumu showing the highest positive (+0.30) and Garissa the lowest negative (-0.28), highlighting substantial regional differences

Appendix A: Model Description and Parameters

Crop Conditions Classes

Crop conditions classes 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.

Class	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.
Favorable	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.
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.

Data Sources

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

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Project Lead: Dr. Catherine Nakalembe

Team: Xylem Lab/NASA Harvest-Africa Team

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