# International Rice Outlook: International Rice Baseline Projections 2024–2034

Contransformer and the montantic structure free for the second





ARKANSAS AGRICULTURAL EXPERIMENT STATION

May 2025

Research Report 1016

This publication is available on the internet at: https://aaes.uada.edu/communications/publications/

Photograph credit: An Arkansas producer harvests rice at his farm in Arkansas County. University of Arkansas System Division of Agriculture photo by Fred Miller.

Layout and editing by Gail Halleck.

Arkansas Agricultural Experiment Station, University of Arkansas System Division of Agriculture, Fayetteville. Deacue Fields, Vice President for Agriculture; Jean-François Meullenet, AAES Director and Senior Associate Vice-President for Agriculture–Research. WWW/CC2025. Pursuant to 7 CFR § 15.3, the University of Arkansas System Division of Agriculture offers all its Extension and Research programs and services (including employment) without regard to race, color, sex, national origin, religion, age, disability, marital or veteran status, genetic information, sexual preference, pregnancy or any other legally protected status, and is an equal opportunity institution. ISSN: 1539-5944 CODEN: AKABA7



## International Rice Outlook: International Rice Baseline Projections 2024–2034

A. Durand-Morat and W. Mulimbi





Dale Bumpers College of Agricultural, Food and Life Sciences

Arkansas Agricultural Experiment Station University of Arkansas System Division of Agriculture Fayetteville, Arkansas 72704

## CONTENTS

Materials and Methods       4         Arkansas Global Rice Model (AGRM)       4         Global Macroeconomic Assumptions       5         Stochastic Simulation Method       5         Results and Discussion       6         Global and Regional Rice Market Outlook: Results from the Deterministic Baseline Analysis       7         Country-Specific Rice Market Outlook: Results from the Deterministic Baseline Analysis       9         Rice Consumption       9
Arkansas Global Rice Model (AGRM)       4         Global Macroeconomic Assumptions       5         Stochastic Simulation Method       6         Results and Discussion       7         Global and Regional Rice Market Outlook: Results from the Deterministic Baseline Analysis       7         Country-Specific Rice Market Outlook: Results from the Deterministic Baseline Analysis       9         Rice Consumption       9
Global Macroeconomic Assumptions       5         Stochastic Simulation Method       6         Results and Discussion       7         Global and Regional Rice Market Outlook: Results from the Deterministic Baseline Analysis       7         Country-Specific Rice Market Outlook: Results from the Deterministic Baseline Analysis       9         Rice Consumption       9
Stochastic Simulation Method       6         Results and Discussion       7         Global and Regional Rice Market Outlook: Results from the Deterministic Baseline Analysis       7         Country-Specific Rice Market Outlook: Results from the Deterministic Baseline Analysis       9         Rice Consumption       9
Results and Discussion       7         Global and Regional Rice Market Outlook: Results from the Deterministic Baseline Analysis       7         Country-Specific Rice Market Outlook: Results from the Deterministic Baseline Analysis       7         Rice Consumption       9
Results and Discussion       7         Global and Regional Rice Market Outlook: Results from the Deterministic Baseline Analysis       7         Country-Specific Rice Market Outlook: Results from the Deterministic Baseline Analysis       7         Rice Consumption       9
Global and Regional Rice Market Outlook: Results from the Deterministic Baseline Analysis
Country-Specific Rice Market Outlook: Results from the Deterministic Baseline Analysis
Rice Consumption
Rice Production
<u>Rice Trade</u>
U.S. Rice Market
Key Results from the Stochastic Analysis
Key Market Variables to Watch
China's Rice Stocks
India's Rice Yields and Production
Price Gaps Between Asian and Western Hemisphere Rice
Summary and Conclusion
Literature Cited
Appendix

### **ACKNOWLEDGMENTS**

The authors thank the FAPRI-MU and the Arkansas Rice Research and Promotion Board for their continuous support of the Arkansas Global Rice Economics Program. The authors also thank the FAPRI-MU working groups for their modeling inputs.

All opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the U.S. Department of Agriculture, the University of Arkansas System Division of Agriculture, or the Arkansas Rice Research and Promotion Board.

The supplementary Microsoft Excel Tables include detailed country-by-country deterministic and stochastic projections.

This report is an annual publication of the Arkansas Global Rice Economics Program (AGREP), Department of Agricultural Economics and Agribusiness, University of Arkansas System Division of Agriculture, University of Arkansas, Fayetteville, AR 72701. The AGREP is supported by the Food & Agricultural Policy Research Institute, University of Missouri (FAPRI–MU), under a cooperative research agreement with the U.S. Department of Agriculture (grant no. 58-0111-13-002), and the Arkansas Rice Research and Promotion Board.

Required citation: Durand-Morat, A. and Mulimbi, W. (2025). International Rice Outlook: International Rice Baseline Projections 2024–2034. The Arkansas Global Rice Economics Program (AGREP), University of Arkansas, Fayetteville, AR. © Arkansas Global Rice Economics Program (AGREP), May 2025. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

### International Rice Outlook: International Rice Baseline Projections 2024–2034

Alvaro Durand-Morat and Willy Mulimbi<sup>1</sup>

#### Highlights

- Global rice consumption is projected to exceed global rice production for most of the coming decade, with stocks playing a crucial role in balancing the global market over the projected period.
- The projected growth in production is almost exclusively due to productivity gains.
- The projected global rice consumption is growing, driven mainly by population growth. However, the average global per capita rice consumption is estimated to increase slowly in the coming decade due to a regain in per capita consumption in Asia, the largest rice-consuming region worldwide.
- The international prices of long-grain and medium-grain rice are projected to increase in nominal terms but decrease in real terms in the next decade due to ample rice supplies.
- Rice demand in Africa will continue to grow at a high pace, thus supporting a fast growth in regional production and imports.
- Global rice trade is projected to increase in nominal and relative (to supply) terms, with Africa being the main driver of the expansion.
- Rice exports will remain concentrated between India, Thailand, Vietnam, Pakistan, and Cambodia in the projected decade. India will remain the largest exporter of rice, followed by Thailand and Vietnam, respectively, in the coming decade.
- On the rice import side, we project that China, Indonesia, and the EU will lose market share, while Nigeria and Cote d'Ivoire will grow their market shares, by 2032–2034 relative to the situation in 2021–2023, and the Philippines, Saudi Arabia, and Iran shares will remain steady.

#### Introduction

International rice prices, which had surged due to India's rice export restrictions introduced in September 2022, began to decline in early 2024. Following record-breaking rice crops in 2023 and 2024, India lifted the export ban on non-basmati rice in September 2024, and prices dropped sharply. Between that point and the beginning of 2025, global rice prices fell by 21% as India returned to the international market (Fig. 1). On 7 March 2025, the government of India lifted the export ban on broken rice, putting additional downward pressure on already depressed global rice prices.

The export prices of U.S. long-grain (LG), Thailand, Vietnam, and Uruguay decreased respectively by 12%, 29%, 29%, and 27%, respectively, since the removal of India's export ban on non-basmati rice (Fig. 1). The stronger price decrease in Asia and Uruguay (Mercosur) than in the U.S. undermines the competitiveness of U.S. long-grain rice. Prices in the mediumgrain (MG) segment of the market show a different behavior since these were not directly affected by India's export policies. Coming back from its 2022 record, the international price for MG rice increased in 2024 by 5.5% relative to 2023. The Free on Board (FOB) price of California's MG averaged \$1,011/mt in 2023 and is estimated at \$816/mt in 2024.

In the first eight months of the current 2024–2025 marketing year, the U.S. negotiated 3.54 mmt (paddy basis) of exports (2.34 mmt of LG and 1.17 mmt of MG), a 5% decrease relative to the same period last year, driven entirely by lower LG exports (14% less than in 2023/24) since MG exports are up 22% relative to last year. The U.S. has regained the Mexican market lost largely to Brazil in 2023, but there are concerns about the fate of the Mexican market in the context of the ongoing increase in U.S. import tariffs and the potential for retaliatory tariffs on U.S. rice. From August 2024 to March 2025, U.S. LG rice exports to Mexico totaled 560 thousand metric tons (tmt), making it the largest export market for U.S. LG rice. Haiti and Iraq ranked as the second and third largest markets, respectively, for U.S. long-grain rice during the 2024–2025 marketing year to date.

This report's primary goal is to present the main findings of our 2024–2034 baseline projections for the global rice market. The projected period includes the ongoing 2024 marketing year since, at the time of the estimation, a large share of the 2024 rice crop in the northern hemisphere and most of the 2024 rice crop in the southern hemisphere was still underway. It is important to mention that the results in this report do not account for the changes that occurred in the global economy since January 2025.

#### Materials and Methods

#### Arkansas Global Rice Model (AGRM)

This research report uses the Arkansas Global Rice Model to generate a baseline projection of the global rice economy. The AGRM is a partial equilibrium economic model that covers over 70 rice-producing, -consuming, and -trading countries world-

<sup>&</sup>lt;sup>1</sup> Associate Professor and Research Postdoctoral Fellow, respectively, Department of Agricultural Economics and Agribusiness, University of Arkansas System Division of Agriculture, Fayetteville.

wide. Each country's rice economy is specified as a system of equations representing rice demand, production, trade, and prices for the two major rice types: LG and MG rice. Domestic support and trade policies are embedded in the model equations.

The AGRM can be specified mathematically with the following system of linear equations (demand, supply, and price transmission); where the subscripts *c*, *r*, and *t*, respectively, are the country, rice types (LG and MG), and year; *PC* and *TC* are, respectively, the per capita and total rice consumption; *POP* = population; *RP*, *PP*, *MP*, and *XP* are the retail, farm, import, and export prices, respectively; *SRP* and *SPP* are, respectively, the retail and farm prices of substitute crops for rice, such as wheat. *I* = per capita income; *AH* = harvested rice area; *Y* = paddy (rough rice) yield; *M* = imports; *X* = exports; *BS* and *ES* are the beginning and ending stock, respectively, where  $BS = ES_{t-1}$ ; *WP* = world rice price (Thai 5% broken), which clears the rice markets; *ER* = exchange rates; *TS* and *TD* are the total supply of rice and demand for rice, respectively;  $\sigma$  = paddy to rice conversion ratio;  $\tau$  and  $\omega$  are import tariff and export tax, respectively;  $\lambda$  =

$$PC_{c,r,t} = \alpha_0 \times RP_{c,r,t}^{\alpha_1} \times SRP_{c,r,t}^{\alpha_2} \times I_{c,r,t}^{\alpha_3}$$
(1)

$$TC_{c,r,t} = PC_{c,r,t} \times POP_{c,t}$$
(2)

$$AH_{c,r,t} = \beta_0 \times AH_{c,r,t-1}^{\beta_1} \times PP_{c,r,t}^{\beta_2} \times SPP_{c,r,ct}^{\beta_3}$$
(3)

$$Y_{c,r,t} = \gamma_0 \times Fert_{c,r,t}^{\gamma_1} \times Time^{\gamma_2}$$
<sup>(4)</sup>

$$TP_{c,r,t} = \sigma \times Y_{c,r,t} \times AH_{c,r,t}$$
(5)

$$ES_{c,r,t} = \delta_0 \times TP_{c,r,t}^{\delta_1} \times RP_{c,r,t-1}^{\delta_2}$$
(6)

$$RP_{c,r,t} = \theta_0 \times PP_{c,r,t}^{\theta_1} \times MP_{c,r,t}^{\theta_2} \times (1 \times \lambda)$$
<sup>(7)</sup>

floor price; MSP = minimum support paddy price;  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\theta$ , and  $\varphi$  are the respective demand, supply, and price transmission elasticities, either estimated or taken from the relevant literature. A more detailed specification of the model can be found in Mane and Wailes (2012) and Wailes and Chavez (2011).

#### **Global Macroeconomic Assumptions**

The macroeconomic projections used to calibrate the AGRM model came from S&P Global, representing the projections as of January 2025. The projections suggest that the economic growth rate will slow worldwide in the next decade (2.6% a year) compared to the previous decade (2.8% a year). Looking at the top-5 rice-consuming countries, the projections over the next decade point to a weaker rate of economic growth for China, Bangladesh, and India, while a higher growth rate is expected for Indonesia and Vietnam than that observed in the last decade (Fig. 2). For the largest rice markets in the Western hemisphere, the projections suggest an increase in economic growth rate in Brazil and Peru, a small decreasing rate and slowdown in Colombia, and

$$PP_{c,r,t} = \varphi_0 \times RP_{c,r,t}^{\varphi_1} \times MP_{c,r,t}^{\varphi_2} \times MSP_{c,r,t}^{\varphi_3}$$
(8)

$$MP_{c,r,t} = WP_{r,t} \times ER_{c,r,t} \times (1+\tau)$$
(9)

$$XP_{c,r,t} = WP_{r,t} \times ER_{c,r,t} \times (1-\omega)$$
(10)

$$TS_{c,r,t} = TP_{c,r,t} + M_{c,r,t} + BS_{c,r,t}$$
(11)

$$TD_{c,r,t} = TC_{c,r,t} + X_{c,r,t} + ES_{c,r,t}$$
 (12)

$$\sum_{c} M_{c,r,t} = \sum_{c} X_{c,r,t} \tag{13}$$

$$TD_{c,r,t} = TS_{c,r,t} \tag{14}$$



Source: USDA Rice Outlook, FAO Rice Price Update

Fig. 1. The monthly average export price of long-grain rice from selected exporters.

a slowdown in the U.S.economic growth over the next decade.

The global population is projected to grow over the next decade, but at a lower rate (0.8% a year) than that observed in the last decade (1.1% a year) and is expected to reach 8.81 billion by 2034. The population growth rate is expected to decline across all regions in the coming decade, but most severely among developed countries. For instance, the population growth rate is expected to decrease to 0.22% a year among the Organization for Economic Cooperation and Development (OECD) countries, relative to 0.56% in the last decade. Among developing countries, the population is expected to grow at 1.97% a year in the coming decade, relative to 2.19% in the past decade. Population growth rates in the top-5 rice-consuming countries are expected to continue decreasing in the coming decade, following a similar trend observed in the last several years and despite some updated increases noticed for Bangladesh, Indonesia, and India's population numbers in 2023

and 2024 (Fig. 3). The case of China is still drawing attention as the Chinese population is now projected to decrease from 1.42 billion in 2024 to 1.38 billion in 2034.

#### **Stochastic Simulation Method**

The stochastic component of this research report is based on the probabilistic distribution of rice yields incorporated into the AGRM. The stochastic framework is generated using multivariate empirical distributions (MVE) of the deterministic yields from some important rice-producing and -consuming countries. Yield has been selected as the stochastic variable because it varies by year and country and is very sensitive to seasonal changes, weather conditions, and water availability—factors that are critical for rice production. The stochastic rice yields are simulated using @Risk<sup>©</sup> (Palisade, Ithaca, N.Y.) based on historical rice yield data from 1994 to 2024. For each country, the distribution



Fig. 2. Economic growth projections for the top 5 rice-consuming countries in the world.



Fig. 3. Population growth projections for the top 5 rice-consuming countries in the world.

of detrended residuals is estimated and used to simulate yield variability in the next decade, accounting for yield correlation across countries to reflect global trade. Finally, 100 random yield observations are drawn and then entered into the AGRM model to generate the stochastic results.

#### **Results and Discussion**

#### Global and Regional Rice Market Outlook: Results from the Deterministic Baseline Analysis

The current and projected global rice supply and utilization are presented in Table 1. In the coming decade (2024–2034), it is projected that the global rice market will experience surpluses in the first three years (global production surpassing consumption), and a global deficit thereafter. Production is projected to reach 560.7 mmt a year in 2032–2034, that is, an 8.29% increase from the 2021–2023 average level, based mainly on rice yield gains. Global consumption is projected to grow by 8.42% over the next decade and reach 563.25 mmt a year on average in 2032–2034, driven mostly by population growth. We project a decrease in the stock-to-use ratio from 34.93% in 2021–2023 to 29.97% in 2032–2034, driven primarily by a decrease in rice stocks in India.

Despite the higher growth in rice trade relative to supply observed over the last two decades, rice remains thinly traded, with only 10.95% of the production traded internationally in 2021–2023, compared to 16.06% for corn and 27.38% for wheat. Aside from the fact that most rice is consumed where it is produced without crossing borders, the low trade share may also result from the fact that rice remains a highly protected commodity, particularly in many Asian countries where rice is the staple food. We project that by 2032–2034, the share of rice production that is traded internationally will reach 11.36%, as consumption continues to grow in many importing regions, including Africa and the Middle East.

The international price of LG rice, the most popular type of rice produced and traded worldwide, is projected to decrease in 2024 and remained at a low level in 2025 and 2026, regaining some marginal but steady growth thereafter (Fig. 4). We project

that the nominal price of Thai LG 100% B rice will increase on average 1.81% from its 2021–2023 level, reaching an average of \$553/mt in 2032-2034, while the price of U.S. LG (#2 LG Gulf) will decrease by 1.01% a year from its 2021-2023 level and reach \$618/mt by 2032-2034 (Fig. 4). The price gap between LG rice from Asia and the Western Hemisphere is expected to narrow over the next decade. This projected rice price behavior suggests that Asian rice could become a better option for buyers in the Western Hemisphere and, thus, compete more directly with U.S. and Mercosur rice. Following its highest value in the 2022 crop year, the international nominal price of medium-grain (MG) rice, represented by the U.S. MG#2 (FOB California), declined in 2023 and is projected to decline further in 2024 and increase slowly but steadily thereafter, reaching \$961/mt in 2034. In real terms (adjusting for inflation), the international price of LG (Thai LG 100% B) and MG rice (U.S. #2 MG California) are projected to decline in the upcoming decade.

At the regional level, Asia is projected to account for the bulk (36 mmt out of the 43 mmt increase, or 83%) of the growth in rice production in the next decade, followed by Africa with 5 mmt or 11% of the growth, and America with 2.1 mmt or 5% of the growth (Fig. 5). In 2032–2034, relative to 2021–2023, Africa's share of total production is expected to expand slightly, Asia's share is expected to decline, and America's share is expected to remain steady. Following the rice crisis of 2007–2008, Africa has bolstered its domestic rice supply, achieving a 4% average annual growth in rice production in the last fifteen years. In the coming decade (2024–2034), we project that rice production in Africa will continue to grow, but at a slower pace.

Rice consumption projections are broadly consistent with those on the production side. Asia is projected to account for the largest nominal growth in consumption (66.4%, or 29 mmt out of the 43.7 mmt). Africa will experience the second-largest growth in consumption in nominal terms, with 12 mmt or 27.5% of the projected growth (Fig. 5). Africa is expected to increase rice consumption by 29% over the next decade. Rice consumption in Africa will rise from 42 mmt in 2021–2023 to 54 mmt in 2032–2034. In the last decade, rice consumption in Africa

difess indicated).											
	2021–2023	2032–2034	Nominal	Percent							
Attributes	Average	Average	Change	Change							
				(%)							
Area Harvested (1000 ha)	165,814	170,665	4,852	2.93							
Yield (kg/ha)	3.12	3.29	0.16	5.21							
Production	517,803	560,708	42,906	8.29							
Beginning Stocks	184,524	168,909	-15,615	-8.46							
Domestic Supply	702,327	729,617	27,290	3.89							
Consumption	519,485	563,200	43,715	8.42							
Ending Stocks	181,448	168,780	-12,668	-6.98							
Total Exports	56,716	63,709	6,993	12.33							
Stock-to-use Ratio <sup>a</sup> (%)	34.93	29.97	-4.96	-14.20							

Table 1. Projected world rice supply and utilization (in 1,000 metric tons of milled rice unless indicated)

<sup>a</sup> Globally, the stock-to-use ratio is estimated as ending stocks over consumption.



Fig. 4. The nominal international price of long-grain (LG) and medium-grain (MG) rice. The gray-shaded area represents the projected period between 2024 and 2034.





grew by 48% due to rapid growth in per capita consumption and population. We project that annual consumption growth will slow down relative to the previous decade, but still remain strong in the next decade. Africa's share of global consumption is projected to increase over the next decade and reach 10% of global rice consumption in 2032–2034 (Fig. 5).

Africa is projected to continue driving the growth of the global rice trade to serve the fast-growing demand. We project that Africa will account for 63% of the growth in imports in the next decade. On the export side, Asia accounts for the bulk (87%) of the growth projected in the coming decade (Fig. 6), and this rise is attributed to the good export performance of India, Thailand, Vietnam, and Pakistan, which together are expected to supply 73% of global exports (Fig. 9).

#### **Country-Specific Rice Market Outlook: Results** from the Deterministic Baseline Analysis

*Rice Consumption.* The food basket in several developing countries is expected to transform mainly through substitution between food items (such as increasing consumption of animal protein and less of cereals) and within food items, such as in-

creasing consumption of aromatic or brown rice at the expense of regular white rice (Bairagi et al., 2020, 2022; Mottaleb et al., 2018). As such, the demand for staple food in Asia, such as rice and wheat, will decline, and the demand for non-staple food, such as vegetables, will increase in the future (Pingali, 2015).

In the next decade, rice consumption in Asia will increase by 6.5% relative to 2021–2023 purely based on population growth, along with an expected marginal increase of 0.05% annually in the regional per-capita consumption. Total rice consumption from 2024 to 2034 is projected to increase in most Asian countries except China, Japan, South Korea, and Vietnam, when compared to the previous decade (Fig. 7). Total rice consumption among most African countries is projected to increase strongly following population growth. Furthermore, rice consumption is projected to expand in some African countries due to higher per capita consumption supported partly by growing income levels (Van Oort et al., 2015). Looking at the largest African rice markets, we project that total consumption in Tanzania will grow by 64% over the next decade, driven by an increase in population and per-capita consumption. Rice consumption in Nigeria, Madagascar, and Egypt is expected to



Fig. 6. The projected trend of regional rice export and import shares over the next decade.

grow by 16.5%, 16.1%, and 10.1%, respectively, over the next decade. Finally, rice demand is projected to grow in all Latin American countries except Brazil, the largest rice market outside Asia, where a 12.2% decline in per capita consumption will drive a 9.2% decline in total rice consumption by 2032–2034. For the projected changes in consumption in other countries, see Appendix Table A1.

*Rice Production.* India is projected to be the largest rice producer in the world for the next decade. Indian rice production will increase by 17% over the next decade based mainly on productivity growth, with a marginal increase in production area (Fig. 8). Similar to what has happened in the last decade, we project that India will be a key player affecting the global rice market in the coming decade. We project that production in China will grow marginally at a 0.23% annual rate, supported by slight yield and area improvements. We project rice area and yield to continue growing in Nigeria, Africa's largest rice producer, increasing production by 9% by the end of the next decade. In

Tanzania, we project a 41% increase in rice production, driven by yield improvements and an increase in area. In Latin America, we project that rice production in Brazil will fall, driven by a decrease in rice area. In Peru, the second-largest rice producer in Latin America, we project rice area and yields to grow, leading to a 12.6% increase in production by the end of the next decade. For the projected changes in production in other countries, see Appendix Table A1.

*Rice Trade*. Global rice trade grew 39% in the last decade (from 41 mmt in 2011-13 to 56.7 mmt in 2021–2023), and we project it will continue to grow but at a slower pace, reaching 63.7 mmt by 2032–2034, that is, a cumulative 12.3% growth from its 2021–2023 level. Rice trade is highly concentrated on the export side, with five countries (India, Thailand, Vietnam, Pakistan, and Cambodia) accounting for 78% of the total volume of exports in 2021–2023. Cambodia surpassed the U.S. as the fifth-largest rice exporter, driven by the growing export of paddy rice to Vietnam and the successful trade with the European Union and China. The



-13% -8% -3% 2% 7% 12% 17% 22% 27% 32% 37% 42% 47% 52% 57% 62%

Fig. 7. Projected changes in per-capita and total rice consumption among the 20 largest rice markets in 2032–2034 compared to 2021–2023.

most prominent development on the export side in the last decade has been the rise of India as a steady and leading exporter of rice, a strong position that will remain as India is projected to account for a third (33.6%) of global rice exports in 2032–2034 (Fig. 9). We project that Thailand will remain the 2nd largest exporter of rice following India. Thailand accounted for 15.5% of global exports in 2021–2023 and is expected to rise by 16.7% in the coming decade. Vietnam's export share is projected to decrease to 13.5% in 2032–2034 relative to its share in 2021–2023. With India being the dominant global rice exporter and producer, both Thailand and Vietnam would face a challenging future as their export volumes and prices will be under the regular effect of Indian competition.

The import side of the global rice market is much less concentrated than the export side, with the top-five importers (China, Philippines, Indonesia, Nigeria, and the European Union) accounting for 27.5% of global imports in 2021–2023. We project that the Philippines will surpass China as the largest rice importer in 2032–2034. Indonesia's import volume and share are projected

to decrease as the government of Indonesia strengthens its support with the goal of achieving self-sufficiency. Cote d'Ivoire and Nigeria will increase their share of global rice imports in the next decade, while Iran and Saudi Arabia will remain steady (Fig. 10). For the projected changes in exports and imports in other countries, see Appendix Table A2.

U.S. Rice Market. The U.S. rice supply and utilization by types (namely, LG and MG, where MG includes both mediumand short-grain rice) are presented in Table 2. We project that the production of LG rice will grow from 142 million hundredweight (cwt) in 2021–2023 to 160 million cwt by 2032–2034 (Fig. 11). To put these numbers in perspective, the LG rice crop for 2032–2034 would be 6% smaller than the recent highest production of 2020 (170.3 million cwt), and still be lower than the 172 million cwt expected for 2024. Most of the LG production gains are expected to come from yield improvements, including farm and milling yield gains. Our baseline projections essentially assume that the U.S. rice industry follows through with its commitments to improve



Fig. 8. Projected changes in rice yields, area, and total production among the 20 largest rice producers in 2032–2034 compared to 2021–2023.

the milling and culinary quality of LG rice. Advancing milling and culinary attributes of the LG rice will not only increase milled rice output (higher milled rice and head rice yields generate more milled rice per unit of paddy rice), but also help reverse the loss of competitiveness faced by the U.S. LG rice in core export markets such as Mexico and Central America in the last decade.

Exports of LG rice are projected to reach 72.0 million cwt in 2024, decrease to 57.4 million cwt in 2025, and then grow slowly thereafter, but remaining below 63 million cwt for the rest of next decade (Fig. 11). The U.S. is expected to continue trading LG rice primarily across markets in the Western hemisphere, in many of which U.S. rice has preferential treatment under regional trade agreements. In the last decade, U.S. LG rice has not been competitive vis-à-vis LG Asian rice in other markets of interest, such as the Middle East and Africa, and we project that that situation will continue in the next decade. We project that domestic use (consumption plus residual) will grow at 1.9% annually over the next decade relative to the past decade. It is important to mention that on the import side, we include imports of aromatic (jasmine and basmati) rice as LG rice. With that in mind, we project that imports will continue growing steadily at 2.6% a year between 2024 and 2034.

Looking at the MG segment of the market (Fig. 12), production in 2024 decreased by 22% compared to 2023 due to a decrease in planted acres. Relative to the previous decade, we project MG production to grow slowly at a 0.77% annual rate to reach 53.8 million cwt by 2032–2034. To put these numbers in perspective, the projected production in 2032–2034 would be 13.0% higher than the average 2021–2023 production volume. Exports of MG rice are expected to reach 28.0 million cwt in 2024, decrease slightly over the next three years to reach 24.9 million cwt in 2027, and slowly but steadily increase thereafter, reaching 27.4 million cwt in 2034. This projection implies that the U.S. will maintain and potentially grow its market share in Northeast Asia, where most of the California Calrose MG rice is exported, but also gain markets for MG rice from the mid-South in key markets in northern Africa, the Middle East, and a few Western hemisphere markets such as Canada and



Fig. 9. Historical and projected export shares by the top rice exporters.



Puerto Rico. We project that domestic use (consumption plus residual) will grow marginally in the coming decade relative to the 2021–2023 level, reaching 34.4 million cwt in 2032–2034.

Figure 13 illustrates the dynamics of U.S. rice farm prices. The LG farm price is projected to decrease to \$14.3/cwt in 2024 and \$13.3/cwt in 2025 from the high level reached in 2022, and remain between \$13.5/cwt and \$15/cwt thereafter. In the next decade (2024–2034), the farm price of MG rice from California is projected to remain steady in the short run (2024-2026) and marginally grow by the end of the decade, reaching \$22.6/cwt by the end of the projected period. We project significant price gaps of respectively \$8.2/cwt and \$7.2/cwt on average to remain between MG from California and LG, and between MG from California and MG from the mid-South in the coming decade.

#### Key Results from the Stochastic Analysis

The stochastic simulation generates a probability distribution for each endogenous variable in the model. For brevity, in the present report, we discuss the stochastic projections for a few selected variables. All other stochastic results are available from the authors upon request.

Table 3 shows the stochastic results, represented by the mean, 5th, and 95th percentile values for the international reference price of LG rice (represented by Thai 100% B) and the global levels of production, consumption, and exports. The stochastic behavior of the projected export price of Thai LG 100% B rice, the reference price that clears the international LG market, is illustrated in Fig. 14. The gray-shaded area marks the range of variability between the 5th and 95th percentile. We project that the export price of Thai LG 100% B will be highly volatile in the coming decade, with a 90% confidence that the price will be between US\$390.1/ mt and US\$522.6/mt in 2024. By the end of the projected period, we estimate the Thai LG 100% B to range between US\$475.7/ mt and US\$619.7/mt. The US #2 LG Gulf price is expected to be highly volatile in the coming decade, with the 90% confidence interval between US\$590.8/mt and US\$735.8/mt in 2024, and a narrower interval between US\$596.5/mt and US\$727.5/mt by 2034 (Fig. 15). Finally, the US #2 MG California price (Fig. 16) is expected to be less volatile than the international and U.S. LG export prices, with a 90% confidence interval between US\$782.6/ mt and US\$1013.1/mt in 2024 and between US\$873.7/mt and US\$1057/mt in 2034.

Table 2. United States rice supply and utilization by types.											
	All rice Long-grain Medium- and Sh						m- and Sho	ort-grain			
	2021-	2032-	Annual	2021-	2032-	Annual	2021–	2032–	Annual		
Variables	2023	2034	Growth	2023	2034	Growth	2023	2034	Growth		
			(%)			(%)			(%)		
Planted area (1000 acres)	2499.3	2691.3	0.74	1916.7	2047.0	0.66	582.7	644.3	1.01		
Yield (lb/ac)	7578.7	7946.1	0.47	7406.3	7753.4	0.46	8201.1	8342.2	0.17		
Production (million cwt)	189.7	213.9	1.21	142.1	160.1	1.20	47.6	53.8	1.22		
Beginning stocks (million cwt)	35.6	41.9	1.64	25.2	29.7	1.67	10.4	12.2	1.58		
Imports (million cwt)	40.8	50.9	2.25	33.3	42.9	2.56	7.5	8.0	0.71		
Supply (million cwt)	266.1	306.7	1.43	200.6	232.7	1.50	65.5	74.0	1.22		
Domestic use (million cwt)	149.9	174.8	1.55	116.5	140.5	1.89	33.4	34.4	0.29		
Exports (million cwt)	82.0	89.2	0.85	62.3	62.1	-0.03	19.7	27.1	3.24		
Ending stocks (million cwt)	34.6	42.6	2.10	21.7	30.2	3.34	12.9	12.5	-0.35		
Demand (million cwt)	266.6	306.7	1.41	200.6	232.7	1.50	66.0	74.0	1.14		
Farm price (\$/cwt)	17.7	15.6	-1.25	15.5	13.8	-1.10	31.6	22.6	-3.30		

The stochastic projection of global production (Fig. 17) and consumption (Fig. 18) shows a low variability under this research study's assumptions. With 90% confidence, we project that production will be between 559.2 and 569.5 mmt and consumption between 565.3 and 569 by 2034. Global rice exports will keep increasing to reach between 61.3 and 69.8 mmt in 2034 (Fig. 19). Finally, global rice ending stocks are expected to be highly volatile over the next decade, with a 90% confidence interval ranging from 115.7 and 226.4 mmt in 2034 (Fig. 20).

#### Key Market Variables to Watch

#### **China's Rice Stocks**

China's rice stocks have been an important market variable for a long time, and we expect it to remain that way in the coming decade. China held 107.5 mmt of rice stocks in 2021–2023, representing nearly 70.2% of China's annual rice consumption. The stock buildup that started in the late 2000s was supported by a sustained level of production facilitated by favorable domestic policies, a steady volume of imports endorsed by the World Trade Organization (WTO), and a slowdown in total rice consumption. However, rice consumption bumped up in 2020–2022, surpassing production and driving stocks down (Fig. 21). Our projections suggest that total consumption will exceed total production by 1.74 mmt in 2024 and that the deficit will narrow down but remain throughout the projected period (Fig. 21). The stock-to-use ratio is projected to average 67.5% in 2032–2034, down from 70.2% in 2021–2023, but still above the mid-2000s levels, which averaged 35% from 2001–2010.

Given the large stock-to-use ratio projected for the next decade, a scenario where China could sell some of its large rice stocks in the international market cannot be ignored. With the current







Fig. 12. Historical and projected behavior of selected U.S. medium-grain rice market variables. The gray-shaded area represents the projected period from 2024 to 2034.



Fig. 13. Historical and projected behavior of U.S. rice prices by type, in nominal U.S. dollars. The gray-shaded area represents the projected period from 2024 to 2034.

Table 3. Stochastic projections (5 <sup>th</sup> and 95 <sup>th</sup> percentile) of the international reference price (Thai 100%
B), global production, consumption, and exports.

	T	Thai 100% B (US\$/mt)			Production (mmt)		Consumption (mmt)			Exports (mmt)		
Year	5 <sup>th</sup>	Mean	95 <sup>th</sup>	5 <sup>th</sup>	Mean	95 <sup>th</sup>	5 <sup>th</sup>	Mean	95 <sup>th</sup>	5 <sup>th</sup>	Mean	95 <sup>th</sup>
2013		428.0			481.3			472.1			43.3	
2014		420.0			482.8			473.2			43.9	
2015		386.0			476.7			467.6			40.7	
2016		394.0			492.1			478.3			47.9	
2017		418.0			494.8			481.3			47.9	
2018		399.0			498.4			485.1			44.2	
2019		457.0			498.7			491.9			43.6	
2020		491.0			509.4			498.3			52.3	
2021		416.0			514.1			516.2			58.0	
2022		480.8			516.7			522.4			55.1	
2023		624.1			522.6			519.8			57.0	
2024	390.1	459.5	522.6	523.6	530.9	539.0	525.0	528.0	531.8	54.1	56.1	59.2
2025	343.8	442.0	544.1	525.7	531.6	537.9	528.8	532.7	537.4	56.2	58.8	63.5
2026	341.7	457.4	599.4	530.7	535.3	540.0	532.6	537.2	542.9	54.4	58.2	64.5
2027	370.8	475.6	593.2	535.4	539.0	543.6	537.7	541.4	546.1	54.6	58.6	65.2
2028	406.4	511.5	615.5	539.0	542.6	547.2	541.7	544.9	549.2	55.5	59.5	66.0
2029	428.2	532.3	626.1	542.7	546.5	551.3	546.2	549.0	552.8	56.1	60.0	66.4
2030	439.3	540.0	627.3	546.3	550.4	555.3	550.2	552.6	556.1	57.3	60.9	67.2
2031	447.4	543.6	625.3	549.8	554.0	559.0	554.0	556.2	559.3	58.3	61.8	68.0
2032	456.6	548.5	624.4	553.2	557.4	562.5	557.7	559.7	562.5	59.4	62.9	68.9
2033	467.9	555.5	625.1	556.2	560.7	565.9	561.4	563.1	565.7	60.4	63.7	69.5
2034	475.7	556.4	619.7	559.2	564.1	569.5	565.3	566.8	569.0	61.3	64.5	69.8

projections, it seems reasonable to expect a lower risk of a surge in rice exports out of China. However, we still consider China's ending stocks as a key variable to observe going forward due to their potential impact on the global rice economy.

#### India's Rice Yields and Production

India's production performance in the last 20 years has been remarkable, with an annual growth rate estimated at 2.24% and new unprecedented volumes every year since 2016. Rice production went from 88.5 mmt in 2003 to 137.8 mmt in 2023. India's annual average growth rate is nearly double the global average rate (1.4%) over the same period (2003–2023). The production gain is mainly attributed to yield improvements since the area harvested grew only 0.58% annually from 2003 to 2023. Average rice yields grew 1.65% a year from 2.08 mt/ha in 2003 to 2.88 mt/ha in 2023 (Fig. 22). Such productivity growth was mainly due to the development

and dissemination of improved production technologies such as high-yielding and flood/drought-tolerant rice varieties, the development of irrigation infrastructure, and the use of chemical fertilizer (Kavi Kumar, 2021; Mahajan et al., 2017). Our projections indicate that rice yields in India will continue to grow in the coming decade. We assumed that the yield growths of many of the established rice varieties have nearly been exhausted, and productivity gains will depend on sustainable water use, climatesmart farming, and the adoption of disruptive technologies. We project that the rice yield will grow 0.9% a year, which, together with a slight increase in area, will sustain a 0.91% average annual increase in production over the next decade. Despite this projected slowdown in production growth, India will remain the largest rice exporter worldwide. We expect that the international rice market will find an equilibrium at much lower prices than our projections suggest in case India manages to keep the growth

90% Confidence interval

Mean



Source: USDA; AGREP

Fig. 14. Stochastic projection of the export price of Thai long-grain 100% B rice in the next decade. The grayshaded area indicates the 90% confidence interval based on stochastic projections for the period from 2024 to 2034.



Fig. 15. Stochastic projection of the export price of US #2 long-grain Gulf in the next decade. The gray-shaded area indicates the 90% confidence interval based on stochastic projections for the period from 2024 to 2034.

90% Confidence interval — Mean



Fig. 16. Stochastic projection of the export price of U.S. #2 medium-grain California in the next decade. The gray-shaded area indicates the 90% confidence interval based on stochastic projections for the period from 2024 to 2034.







Fig. 18. Stochastic projection of global rice consumption in the next decade. The gray-shaded area indicates the 90% confidence interval based on stochastic projections for the period from 2024 to 2034.

observed in the last two decades (e.g., via increasing adoption of hybrid rice and improving irrigation).

## Price Gaps Between Asian and Western Hemisphere Rice

The LG rice exports from the Western Hemisphere (e.g., the U.S. and Mercosur) have been historically priced higher than most LG rice originating from Asia. The Western Hemisphere and Asian's LG prices behavior is illustrated in Fig. 23. The nominal and relative premium for U.S. LG rice versus Thai 100% B rice has varied widely since 1984 but remained broadly positive until the rice market crisis of 2007/2008 when the international market price of Thai 100% B rice tripled from \$335/mt to over \$1,000/ mt (Dawe & Slayton, 2012). The price premium was nearly zero

and even reversed in 2011 when Thailand launched its ambitious rice-pledging program, resulting in higher Thai 100% B rice prices and lower export competitiveness. Since then, the price premium for U.S. LG rice has increased significantly, reaching a record gap of \$262/mt in 2022 relative to the Thai 100% B and ending more recently at \$155 in 2023. We project that U.S. LG rice will maintain a significant but decreasing premium over the Thai 100% B in the next decade, with the gap between the two getting to \$115/mt in 2034.

Among the main reasons supporting the price gap between the Western Hemisphere and Asian rice is the level of trade integration in the former and the fact that most rice trade remains regional and benefits from a preferential trade policy treatment. Another reason for the price gap often cited anecdotally by rice



Fig. 19. Stochastic projection of global rice exports in the next decade. The gray-shaded area indicates the 90% confidence interval based on stochastic projections for the period from 2024 to 2034.



Fig. 20. Stochastic projection of global rice ending stocks in the next decade. The gray-shaded area indicates the 90% confidence interval based on stochastic projections for the period from 2024 to 2034.

traders (although not well referenced scientifically) is the quality differentiation that results, among other things, from having a more modern milling industry in the Western Hemisphere. We argue that some market and policy developments could diminish the price premium gap in the coming decade. For instance, trade integration between the Western Hemisphere and Asian countries (e.g., Trans-Pacific Partnership) may lead to a level playing field and improve the competitiveness of Asian rice in key core markets in the Americas. The development and release of high-yield aromatic rice varieties in the U.S. would likely reduce the influence of Asian aromatic rice. Additionally, upgrades in the rice supply chains across Asia are ongoing, resulting in high-quality rice that can compete well in the most demanding markets and lowering production costs through mechanization adoption.

#### Summary and Conclusion

Rice remains one of the most regulated global staple foods. It's a primary source of calories and nutrition for over half of the global population, especially in Asia. On that account, understanding the future behavior of the international rice market is of utmost importance for social stability globally, as well as economic prosperity, since rice is the main source of income for millions of rice farmers and agents worldwide. This report outlines the main findings from the 2024–2034 baseline projections of the global rice market outlook developed by the Arkansas Global Rice Economics Program.

Based on the results from our model simulations, the overall rice story is that global production and consumption will continue to grow strongly over the next decade, with a continuous deficit (de-



Source: USDA, AGREP

Fig. 21. China rice supply and utilization. The gray-shaded area represents the projected period from 2024 to 2034.



Fig. 22. India's historical and projected rice area, yield, and volume of production. The gray-shaded area represents the projected period from 2024 to 2034.

mand greater than production) that will be offset by the release of stocks over the projected period. As such, the global ending stocks are projected to keep declining slowly during the projected period.

At the regional level, most of the nominal growth in production and consumption is projected to happen in Asia, but Africa is expected to become more relevant from a production and consumption point of view in the next decade. The vast majority of the growth in imports in the next decade is projected to be in Africa, which, following Asia, will consolidate its position as the second largest rice consumer in 2032–2034.

At the country level, rice production is projected to decrease in Brazil, Japan, and South Korea and grow the most in Tanzania, Egypt, India, Sri Lanka, Pakistan, Peru, Thailand, and the U.S. relative to the production level observed in 2021–2023. On the other hand, total rice consumption is projected to decline in Brazil, Japan, and South Korea, and increase strongly in Tanzania, India, the U.S., Madagascar, Nigeria, Pakistan, and the Philippines, relative to 2021–2023.

These differential changes in production and consumption across countries will push global rice trade to new records. India will continue to lead the export side, while Thailand and Vietnam are projected to remain the second-largest and third-largest rice exporters, respectively. Cambodia will remain the fifth-largest rice exporter, replacing the U.S. from the top-5 list.

Various factors could reshape the projected paths of the global rice market. Among the key factors to keep an eye on in the future due to their potential impact on the global rice market, we bring back the following three: (1) China's rice stock management, (2) India's yield and overall production performance coupled with their rice policy, and (3) the price gap between Asian and American LG rice. In the short term, the behavior of the rice market and the entire global economy would be influenced by India's rice record-high production and, potentially, by the increase in protectionism arising from the increase in the U.S. import tariffs.

#### Literature Cited

- Bairagi, S., S. Mohanty, S. Baruah, and H.T. Thi. 2020. Changing food consumption patterns in rural and urban Vietnam: Implications for a future food supply system. Australian J. Agric. Resource Econ. 1–26. <u>https://doi.org/10.1111/1467-8489.12363</u>
- Bairagi, S., B.S. Zereyesus, and S. Mohanty. 2022. Structural Shifts in Food Basket Composition of Rural and Urban Philippines: Implications for the Food Supply System. PLoS ONE 17(3), e0264079. <u>https://doi.org/10.1371/journal.</u> pone.0264079
- Dawe, D. and T. Slayton. 2012. The World Rice Market Crisis of 2007–2008. pp. 39-52. *In*: Dawe, D. (ed.) The Rice Crisis: Markets, Policies and Food Security (1st ed.). Routledge. https://doi.org/10.4324/9781849776684
- Kavi Kumar K.S. 2021. Rice Production Systems and Drought Resilience in India. pp. 303-316. *In*: Dasgupta P., Saha A.R., and Singhal R. (eds.) Sustainable Development Insights from India. India Studies in Business and Economics. Springer, Singapore. <u>https://doi.org/10.1007/978-981-33-4830-1\_15</u>
- Mahajan G., V. Kumar, and B.S. Chauhan. 2017. Rice Production in India. pp;. 53-91. *In*: Chauhan B., Jabran K., Mahajan G. (eds.) Rice Production Worldwide. Springer, Cham. <u>https://doi.org/10.1007/978-3-319-47516-5\_3</u>
- Mane, R. and E. Wailes. 2012. Impact of trade liberalization in rice: Assessing alternative proposals. J. Int. Agric. Trade Devel., 8(1):25–41.
- Mottaleb, K.A., D.B. Rahut, G. Kruseman, and O. Erenstein. 2018. Evolving food consumption patterns of rural and urban households in developing countries: A Bangladesh case. British Food J. 120(2):392–408. <u>https://doi.org/10.1108/BFJ-12-2016-0620</u>





- Pingali, P. 2015. Agricultural policy and nutrition outcomes– getting beyond the preoccupation with staple grains. Food Security, 7(3):583–591. <u>https://dx.doi.org/10.1007/s12571-015-0461-x</u>
- Van Oort, P.A.J., K. Saito, A. Tanaka, E. Amovin-Assagba, L.G.J. Van Bussel, J. Van Wart, H. De Groot, M.K. Van

Ittersum, K.G. Cassman, and M.C.S. Wopereis. 2015. Assessment of rice self-sufficiency in 2025 in eight African countries. Global Food Security, 5:39–49. <u>https://doi.org/10.1016/j.gfs.2015.01.002</u>

Wailes, E., and E. Chavez. 2011. 2011 updated Arkansas Global Rice Model. <u>https://doi.org/10.22004/ag.econ.102650</u>

		Production		Consumption		
Country	2021-2023	2032–2034	Change	2021–2023	2021–2023 2032–2034	
	(1000 m	etric tons)	(%)	(1000 me	tric tons)	(%)
East Asia & Pacific	275,145	283,217	2.9	272,927	271,934	-0.4
Australia	437	479	9.7	387	444	14.8
Brunei	1	1	0.0	27	38	39.4
Cambodia	6,987	7,597	8.7	4,083	4,543	11.3
China	146,519	147,582	0.7	153,156	148,362	-3.1
Hong Kong				277	299	8.2
Indonesia	33,773	35,057	3.8	35,667	36,917	3.5
Japan	7,471	6,947	-7.0	8,167	7,627	-6.6
Laos	1,940	2,144	10.5	1,917	2,158	12.6
Malaysia	1,666	1,855	11.4	3,017	3,157	4.6
Myanmar	12,033	12,676	5.3	10,100	10,218	1.2
Philippines	12,497	13,686	9.5	16,033	18,418	14.9
Singapore				405	457	12.9
South Korea	3,783	3,356	-11.3	3,992	3,842	-3.8
Taiwan	1,073	1,196	11.4	1,117	1,054	-5.6
Thailand	20,262	22,947	13.3	12,300	12,331	0.2
Vietnam	26,703	27,693	3.7	22,283	22,070	-1.0
South Asia	182,553	209,210	14.6	158,092	183,892	16.3
Bangladesh	36,400	38,382	5.4	37,133	39,306	5.8
India	134,350	157,017	16.9	113,784	136,503	20.0
Pakistan	8,838	10,277	16.3	3,942	4,492	14.0
Sri Lanka	2,964	3,533	19.2	3,233	3,591	11.1
Middle East & North Africa	5,495	6,544	19.1	10,408	12,103	16.3
Egypt	3,427	4,023	17.4	4,033	4,441	10.1
Iran	1,965	2,165	10.2	2,950	3,258	10.5
Iraq	103	356	245.6	2,000	2,612	30.6
Saudi Arabia				1,425	1,793	25.8
Sub-Saharan Africa	19,997	24,351	21.8	33,445	43,880	31.2
Cameroon	206	260	26.4	832	1,163	39.7
Cote d'Ivoire	1,227	1,704	38.9	2,650	4,038	52.4
ECOWAS-7 <sup>a</sup>	998	1,191	19.3	3,276	4,810	46.8
Ghana	894	1,024	14.5	1,700	2,165	27.3
Guinea	2,097	2,555	21.9	2,850	3,479	22.1
Kenya	137	226	65.3	883	1,240	40.3

Table A1. Projected production and consumption by country.

Continued

	Production Cor				onsumption	
Country	2021–2023	2032–2034	Change	2021–2023	2032–2034	Change
	(1000 m	etric tons)	(%)	(1000 me	tric tons)	(%)
Liberia	171	226	32.4	527	1,046	98.7
Madagascar	2,896	3,102	7.1	3,424	3,976	16.1
Mali	1,800	2,430	35.0	2,200	2,725	23.9
Mozambique	124	201	62.4	877	1,222	39.4
Nigeria	5,423	5,906	8.9	7,467	8,699	16.5
Senegal	978	1,151	17.7	2,233	2,852	27.7
Sierra Leone	903	1,355	50.1	1,320	1,669	26.5
South Africa				947	1,096	15.7
Tanzania	2,144	3,020	40.8	2,259	3,700	63.8
Latin America & Caribbean	16,591	17,959	8.2	17,531	18,683	6.6%
Argentina	791	972	22.9	487	505	3.8
Brazil	7,120	6,493	-8.8	7,100	6,444	-9.2
Chile	70	155	121.8	267	357	33.8
Colombia	1,864	2,133	14.4	2,017	2,307	14.4
Costa Rica	70	92	32.1	245	258	5.2
Cuba	124	238	92.2	540	681	26.0
Dominican Republic	678	723	6.7	667	740	11.0
Guatemala	18	44	140.8	151	224	48.6
Guyana	608	849	39.7	183	219	19.2
Haiti	61	70	15.8	545	713	30.9
Honduras	58	52	-10.4	200	257	28.3
Mexico	158	209	32.3	978	1,117	14.2
Nicaragua	276	339	22.7	390	490	25.6
Panama	251	294	17.4	340	434	27.8
Paraguay	812	1,099	35.4	47	47	1.1
Peru	2,444	2,752	12.6	2,608	2,927	12.2
Uruguay	946	1,147	21.2	40	59	48.6
Venezuela	243	298	22.6	727	903	24.3
North America	6,023	6,790	12.7	5,191	6,122	17.9
Canada				439	571	30.0
United States	6,023	6,790	12.7	4,752	5,551	16.8
Europe & Central Asia	2,048	2,589	26.4	4,155	4,395	5.8
Türkiye	562	596	6.0	805	808	0.3
European Union	1,486	1,993	34.1	3,350	3,588	7.1
The rest of the world	9,950	10,050	1.0	17,736	22,190	25.1
World	517,803	560,708	8.3	519,485	563,200	8.4

Table A1. Projected production and consumption by country continued.

<sup>a</sup> For reporting purpose, here the ECOWAS-7 region includes Benin, Burkina Faso, Gambia, Guinea-Bissau, Niger, Togo, Cape Verde. As of 29 January 2025, Burkina Faso, Mali, and Niger left officially the Economic Community of West African States (ECOWAS).

Table A2. Projected volumes of trade by country.									
			Nominal				Nominal		
Country	2021–2023	2032–2034	Change	Country	2021–2023	2032–2034	Change		
				(1000 metric tons)					
Exporters									
Argentina	345	472	127	Paraguay	795	1,050	256		
Australia	243	230	-13	China	1,816	1,834	18		
Brazil	1,176	1,100	-76	Peru	43	31	-13		
Cambodia	3,167	3,092	-75	Senegal	92	80	-12		
Cote d'Ivoire	28	29	1	Sri Lanka	7	8	1		
Egypt	5	5	0	Tanzania	148	120	-28		
European Union	387	490	103	Thailand	8,806	10,670	1864		
Guinea	100	100	0	Türkiye	262	250	-12		
Guyana	381	628	247	United States	2,606	2,834	227		
India	18,900	21,432	2532	Uruguay	911	1,088	177		
Japan	92	85	-7	Vietnam	8,093	8,623	530		
Laos	87	60	-26	Malaysia	121	125	4		
Myanmar	2,204	2,460	256	Mexico	6	5	-1		
Pakistan	5,047	5,835	788	Rest of the World	849	974	125		
Total Exports					56,716	63,709	6,993		
Importers									
Argentina	3	5	2	Kenya	776	1,019	243		
Australia	242	260	18	Laos	85	75	-10		
Bangladesh	867	946	79	Liberia	353	822	469		
Brazil	991	1,044	53	Madagascar	528	874	346		
Brunei	26	37	11	Malaysia	1,500	1,521	21		
Cambodia	53	50	-3	Mali	358	295	-63		
Cameroon	627	903	276	Mexico	790	916	126		
Canada	462	571	109	Mozambique	753	1,021	268		
Chile	186	205	19	Nicaragua	113	156	43		
China	3,953	3,230	-723	Nigeria	2,203	2,778	575		
Hong Kong	277	299	23	Pakistan	6	-	-6		
Colombia	123	198	75	Panama	89	141	52		
Costa Rica	210	165	-45	Peru	148	210	62		
Cote d'Ivoire	1,526	2,393	867	Philippines	3,950	4,660	710		
Cuba	417	443	27	Saudi Arabia	1,520	1,798	278		
Dominican Republic	49	19	-30	Senegal	1,377	1,793	416		
ECOWAS-7 <sup>a</sup>	2,308	3,621	1313	Sierra Leone	417	314	-103		
Egypt	395	423	28	Singapore	405	457	52		
European Union	2,277	2,360	83	South Africa	1,093	1,254	161		
Ghana	823	1,145	321	South Korea	365	439	74		
Guatemala	132	180	47	Sri Lanka	332	70	-262		
Guinea	924	1,031	107	Taiwan	116	120	4		
Haiti	474	645	171	Tanzania	263	800	537		

Continued

#### International Rice Outlook: International Baseline Projections, 2024–2034

	Table A2. Projected volumes of trade by country, continued.									
			Nominal				Nominal			
Country	2021–2023	2032–2034	Change	Country	2021–2023	2032–2034	Change			
				(1000 metric tons)-						
Exporters										
Honduras	152	215	63	Thailand	67	4	8			
Indonesia	2,830	1,807	-1023	Türkiye	477	488	11			
Iran	928	1,105	177	United States	1,294	1,617	323			
Iraq	2,022	2,263	241	Venezuela	483	607	123			
Japan	692	685	-7	Vietnam	3,267	3,000	-267			
				Rest of the World	8,221	12,501	4280			
Total Imports					55.322	66.072	10.750			

#### Table A2. Projected volumes of trade by country, continued.

<sup>a</sup> For reporting purpose, here the ECOWAS-7 region includes Benin, Burkina Faso, Gambia, Guinea-Bissau, Niger, Togo, Cape Verde. As of 29 January 2025, Burkina Faso, Mali, and Niger left officially the Economic Community of West African States (ECOWAS).



University of Arkansas System