

Appendix

Appendix Table 1. World rice production records by countries as at 2022

Appendix Table 2: Questionnaire for data sampling on rice production in Kogi State, Nigeria

World rice production records by countries as at 2022

Country	Production (Tons)	Production per Person (Kg)	Acreage (Hectare)	Yield (Kg / Hectare)
China	211,405,211	151.669	29,960,066	7,056.20
India	177,645,000	132.92	43,780,000	4,057.70
Indonesia	54,604,033	206.041	10,677,887	5,113.70
Bangladesh	54,586,344	330.574	11,516,553	4,739.80
Vietnam	43,448,504	458.995	7,469,890	5,816.50
Thailand	28,356,869	409.881	9,715,358	2,918.80
Myanmar	26,269,814	487.718	6,920,875	3,795.70
Philippines	18,814,827	176.816	4,651,490	4,044.90
Pakistan	11,115,428	55.062	3,033,965	3,663.70
Cambodia	10,886,000	677.415	3,001,313	3,627.10
Japan	10,527,000	83.224	1,542,000	6,826.80
Brazil	10,368,611	49.484	1,710,049	6,063.30
Nigeria	8,435,000	42.731	5,281,286	1,597.10
USA	8,376,720	25.557	1,000,390	8,373.50
Egypt	6,690,000	68.618	799,032	8,372.60
Nepal	5,610,011	192	1,491,744	3,760.70
South Korea	5,016,083	97.145	729,814	6,873.10
Sri Lanka	4,592,056	214.142	957,596	4,795.40
Madagascar	4,231,145	161.108	815,693	5,187.20
Tanzania	3,474,766	64.111	1,052,547	3,301.30
Laos	3,438,000	493.88	783,766	4,386.50
Mali	3,196,336	167.28	924,644	3,456.80
Peru	3,188,306	102.067	414,509	7,691.80
Colombia	3,012,311	60.332	531,158	5,671.20
Malaysia	2,912,203	89.179	684,416	4,255
North Korea	2,803,713	109.474	465,839	6,018.60
Guinea	2,599,164	218.72	1,924,161	1,350.80
Iran	1,993,000	24.377	437,231	4,558.20
Côte d'Ivoire	1,884,000	75.645	697,886	2,699.60
Taiwan	1,791,211	75.974	270,066	6,632.50
Italy	1,492,620	24.697	220,030	6,783.70
Congo-Kinshasa	1,378,846	16.952	1,813,464	760.3
Uruguay	1,200,000	342.272	145,000	8,275.90
Argentina	1,189,866	26.742	183,285	6,491.90
Senegal	1,155,730	73.491	345,596	3,344.20
Ecuador	1,099,686	64.435	257,273	4,274.40
Russian Federation	1,098,660	7.48	190,691	5,761.50
Dominican Republic	1,081,000	105.298	195,507	5,529.20
Paraguay	1,069,200	151.595	162,000	6,600

Guyana	1,050,000	1,342.33	206,428	5,086.50
Turkey	1,000,000	12.375	126,419	7,910.20
Sierra Leone	947,464	122.733	601,748	1,574.50
Ghana	925,000	31.235	321,215	2,879.70
Spain	778,780	16.691	103,370	7,533.90
Venezuela	764,631	24.024	179,041	4,270.70
Bolivia	600,044	53.067	187,281	3,204
Iraq	574,705	14.609	127,673	4,501.40
Kazakhstan	560,668	30.684	101,970	5,498.40
Nicaragua	468,115	74.484	73,890	6,335.30
Benin	406,000	35.732	113,719	3,570.20
Mauritania	383,000	96.129	72,964	5,249.20
Afghanistan	382,500	12.114	127,530	2,999.30
Cuba	377,700	33.66	108,402	3,484.30
Burkina Faso	376,527	18.599	177,256	2,124.20
Mozambique	341,000	11.815	724,801	470.5
Uzbekistan	314,659	9.636	64,923	4,846.60
Cameroon	313,084	13.158	268,408	1,166.40
Panama	305,000	73.339	89,559	3,405.60
Chad	290,563	18.925	192,327	1,510.80
Suriname	274,266	482.607	60,185	4,557
Mexico	245,217	1.966	38,518	6,366.30
Greece	220,930	20.517	29,860	7,398.90
Uganda	220,000	5.667	77,398	2,842.50
Guinea-Bissau	187,000	117.999	120,000	1,558.30
Haiti	177,000	15.927	65,007	2,722.80
Chile	174,897	9.952	26,242	6,664.80
Ethiopia	170,630	1.587	57,576	2,963.60
Liberia	170,000	38.792	240,000	708.3
Kenya	160,584	3.152	23,490	6,836.30
Costa Rica	153,805	30.74	31,657	4,858.50
Portugal	152,750	14.843	28,500	5,359.60
Togo	147,053	20.002	89,678	1,639.80
Malawi	133,000	7.417	74,862	1,776.60
Rwanda	131,577	10.964	32,896	3,999.80
Turkmenistan	130,000	22.217	171,180	759.4
Niger	121,760	5.672	26,739	4,553.60
Tajikistan	106,442	11.918	12,394	8,588.20
Burundi	88,510	8.287	58,997	1,500.20
France	82,570	1.227	15,100	5,468.20
East Timor	80,000	63.421	24,978	3,202.80
Bulgaria	70,920	10.06	11,820	6,000
Australia	66,835	2.668	7,620	8,771
Morocco	64,598	1.858	7,973	8,102.10

QUESTIONNAIRE FOR DATA SAMPLING ON RICE PRODUCTION IN KOGI STATE, NIGERIA.

Dear respected respondents/farmers, my name is **OLAMIDE OWOEYE**. I am a Master's degree researching student studying in Czech University of Life Sciences Prague, Czech Republic. My MSc research thesis is on "*Economic analysis of rice production in Kogi State, Nigeria*". Kindly provide to me the following questions to help in my study and to contribute to the development of rice production in your area. Complete the questions as they apply to you by filling the gap or ticking the box. Your answers are only for the research purpose and will be treated confidentially.

SECTION A: Farms/Fields Geographical Related Information *(To be completed by the researcher)*

Farm/field community name: Date of sampling:

Farm/Field site identification number/code: Geocoordinate point(s):

Local Government Area (LGA): Region of the State:

SECTION B: Farmers' Bio/Personal Data *(To be completed by the farmers/respondents)*

1. How old are you? 2. What is your gender? Male Female

3. What is your highest educational qualification?

No basic/formal education

Primary education (FSLC)

Secondary education (WASC/WAEC/NECO/TITC)

Tertiary education: NABTEC/NCE OND HND/Bachelor's degree MSc

PhD

4. Marital status: Single Married Divorce/separated Widow/widower

5. What is your position in your family? Head Member

6. What is your status/profile in the rice farm community? Indigene Non-Indigene

7. How long have you lived in this rice farm community?

8. How long have you spent in the rice farm and production business?

9. Are you the owner of the rice farm? Yes No

10. Are you a labourer in the rice farm? Yes No

11. What is your average monthly income from all your business activities including the rice production?

(a) < 100 USD (b) 100 – 200 USD (c) > 200 USD

12. What are the major factors affecting rice production in your farm (Kindly state the challenge(s) below:

SECTION C: Data about the rice farm and production *(To be completed by the farmers/respondents)*

1. How old is the rice farm?

2. What are the common rice species? Asian species African species Both

3. What are the main rice varieties/brand? List at least one:,,

4. Why did you choose this/these rice varieties? *(Tick as many that are applicable to you).*

(a) High yields (b) pests and diseases resistant (c) Climate adaptation

(d) Other environmental factors resilience (e) People's preference

5. What is/are the size(s) of your rice field(s) in hectares?

6. What is/are the ecology(ies) of your rice cultivation? (a) Rain-fed upland (b) Rain-fed lowland (c) Irrigated upland Irrigated lowland

7. Who owns the rice farmland? Family Rented
8. (a) If it belongs to your family (as in above), do you pay certain amount to your family?

If yes, how much (amount per year)

(b) If rented, what is the cost of the rent per year?

9. What are the costs of acquiring input resources/materials that would cover a hectare in the farm?
- (a) Cost of seeds/seedlings
- (b) Cost of agrochemicals such as fertilizers/manures, pesticides, herbicides (if applicable)
- (c) Cost of water for irrigation (if applicable)
- (d) Cost of manual weeding (if applicable)
10. What are the costs of labour? (*respond to the one applicable to you*)
- (a) Cost of land clearance per hectare
- (b) Cost of sowing per hectare.....
- (c) Cost of irrigation per hectare.....
- (d) Cost of weed control per hectare
- (e) Cost of applying pesticides and herbicides per hectare
- (f) Cost of harvesting per hectare
- (g) Cost of postharvest and processing (per ton)
11. What are the yields/production estimates (in tons/heactare)?
- (a) Total grain yields
- (b) Total straw yields
- (c) Total husk yields
12. What is the cost of transportation from farm to processing locations and to the buyers/consumers?
13. What is/are your purpose of rice production? (*tick where it is applicable to you*).
- (a) Subsistence/family consumption
- (b) Commercial only
- (c) Both Subsistence and commercial purposes

The Economic returns:

14. What are the cost derived from selling the proceeds from the rice farm production (in USD/tons)?
- (*respond appropriately where it is applicable to you*)
- (a) Cost/price for selling rice grain
- (b) Price/cost of selling rice straw
- (c) Price/cost of selling rice husk
15. What are the net profit and/or loss from the rice production and sales (in tons)? (*tick where it is applicable to you*)[*Note: the official exchange rate is 455 NGN = 1 USD*]
- (a) Grain profit or grain loss < 20 USD 20 – 50 USD > 50 USD

- (b) Straw profit or grain loss < 20 USD 20 – 50 USD > 50
USD
- (c) Husk profit or grain loss < 20 USD 20 – 50 USD > 50
USD

SECTION D: LIKERT SCALE QUESTIONNAIRE for further clarifications on the questions in section B and C.

Variables	Code	Items	Agreement Scale				
			Strongly Disagreed	Disagreed	Undecided	Agreed	Strongly Agreed
			1	2	3	4	5
Rice	1	My rice field/farm is at least 10 years old.					
Cultivation	2	The size in hectare is at least 3 hectares.					
	3	Cost of <u>presowing</u> and <u>precultivation</u> such as land surveying is/was above 25 USD (above 11,250 Naira)/ hectare.					
	4	The cost of acquiring the farmland is/was between 200 – 400 USD (90,000-180,000 Naira)/ hectare.					
	5	The cost of acquiring clearing and preparing the land for cultivation is/was between 30-50USD (13,000 – 22,000 Naira)/ hectare.					
	6	Cost of getting seeds/seedlings is/was between 75-100 USD (33,750-45,000 Naira) / hectare.					

	7	The cost of sowing the seeds is/was between 15-25 USD (6,750-11,250 Naira)/ hectare.					
	8	Cost of weed control per hectare is/was between 15-25 USD (6,750-11,250 Naira)/ hectare.					
	9	Cost of <u>labour</u> for sowing per hectare (if applicable) is/was above 25 USD (above 11,250 Naira)/ hectare.					
	10	Cost of applying pesticides and herbicides per hectare is/was above 25 USD (above 11,250 Naira)/ hectare.					
	11	Cost of <u>labour</u> (cultivating and harvesting) per hectare is/was above 100 USD (above 45000 Naira/ hectare.					
	12	Cost of postharvest, processing and marketing (per ton) is/was above 25 USD (above 11,250 Naira)/ hectare.					
Rice yields/product ion	1	Grain yields are estimated at 8-10 tons/hectare.					
	2	Straw yields are estimated at 8-10 tons/hectare.					
	3	Husk yields are estimated at 8-10 tons/hectare.					
	4	Sales of rice residues for livestock and manure are estimated to ranging from 300 – 500 USD (135,000 - 225,000 Naira)/ton.					
	5	Cost/price for selling rice grain is between 900 - 1,100 USD (400,000 -500,000 Naira)/ton.					

	6	Price/cost of selling rice straw is between 100 - 200 USD (45,000 – 90,000 Naira)/tons.					
	7	Price/cost of selling rice straw is between 100 - 200 USD (45,000 – 90,000 Naira)/tons.					
Profit	1	Make profit of less than 200 USD per growing season					
	2	Make profit of 200 – 500 USD per growing season					
	3	Make profit of more than 500 USD per growing season					
	4	Make loss in some growing seasons					

[Note a ton is about 1000kg which is equivalent to 20 bags of 50kg rice].