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KNOWING CONSUMER PREFERENCES TO VALUE RICE MARKETS

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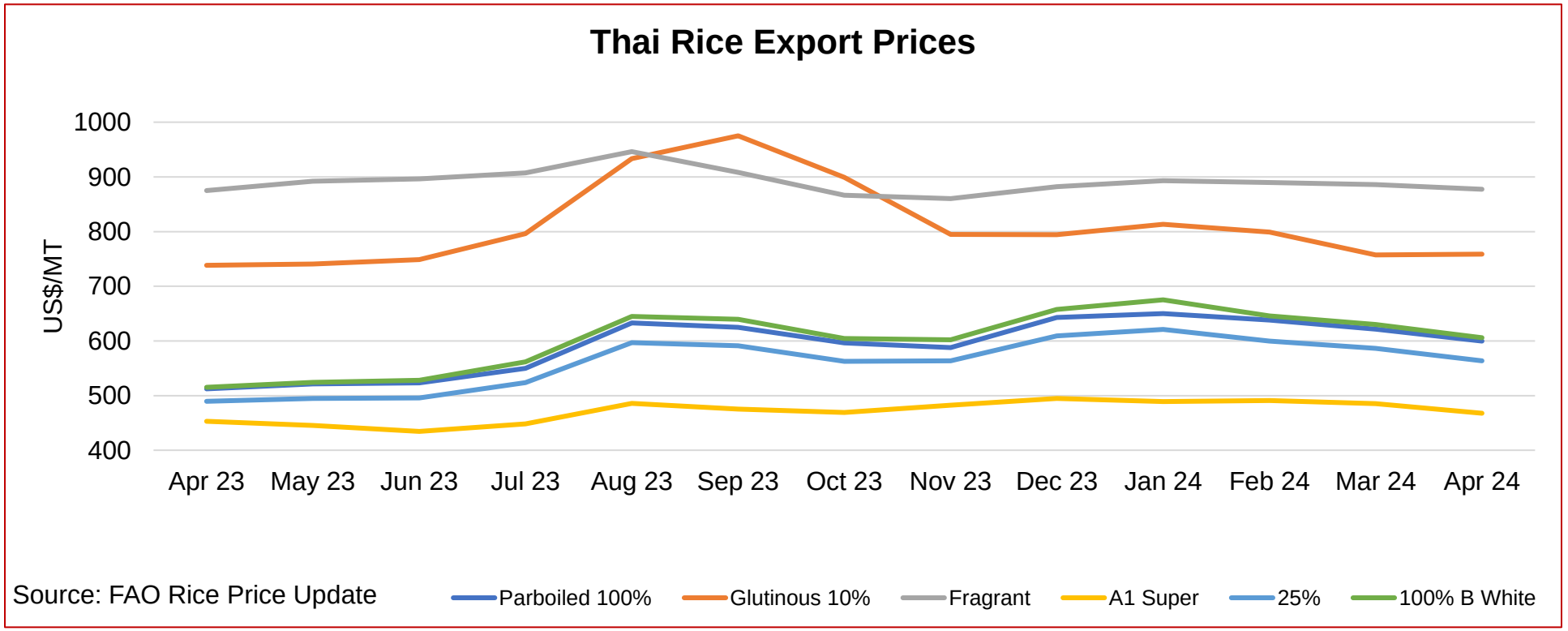
INTRODUCTION

1. Rice is not a homogeneous commodity, but a mix of commodities that differ in many attributes
    - *Think of the different rice types found around the world (indica "long-grain" rice; Japonica "medium- and short-grain" rice, jasmine, basmati, glutinous, arborio, etc…*
    - *Think about the different quality attributes within each of the rice types cited above (some intrinsic, other extrinsic)*
2. Differences in prices reflect differences in quality

INTRODUCTION

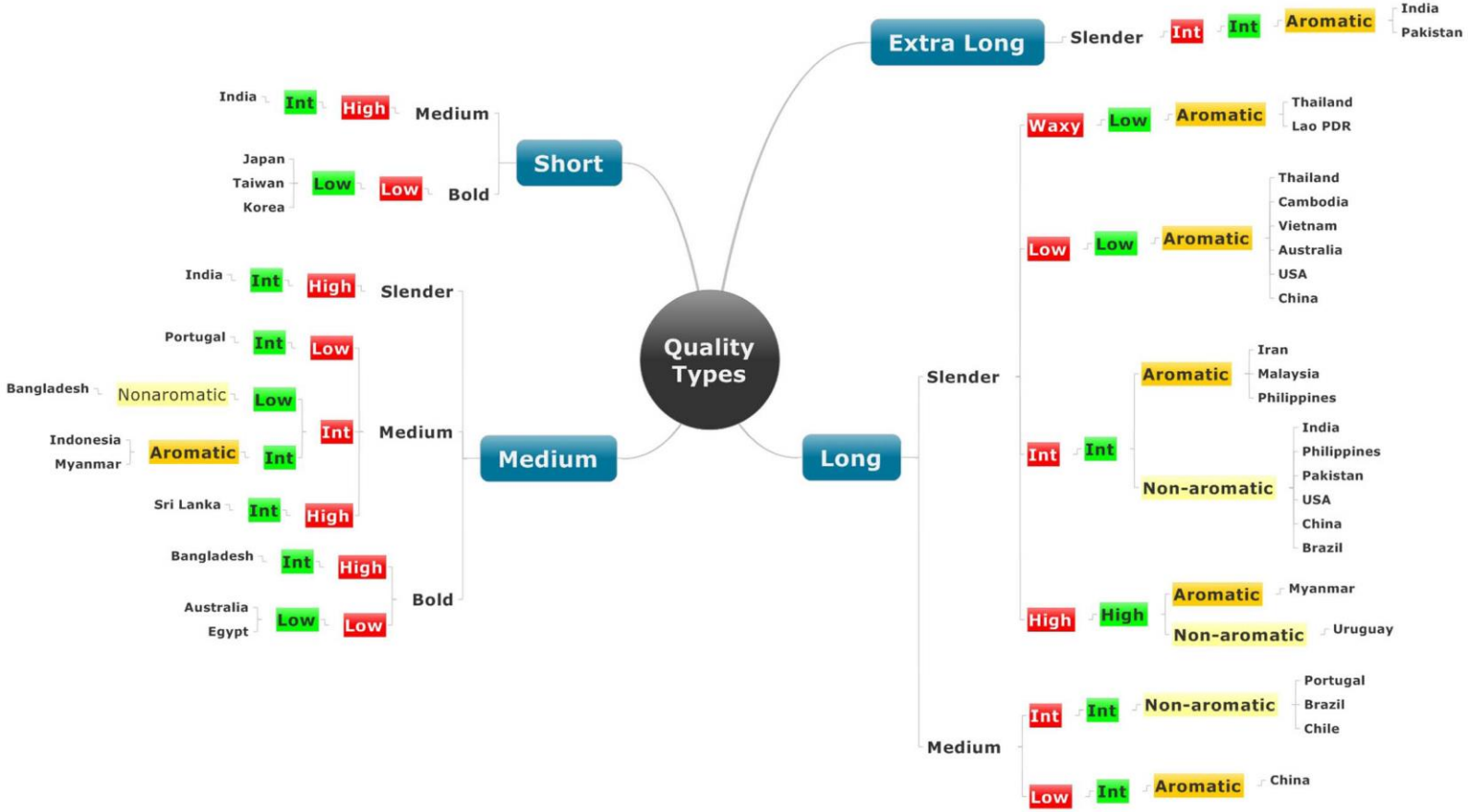


Source: FAO Rice Price Update

INTRODUCTION

3. Globally, consumer preferences for rice are heterogenous
    - *The value of specific attributes varies (e.g., geographically and culturally)*
4. There is growing evidence, primarily from Asia and Africa, that shows consumers are increasingly aware of rice quality, even among low-income households

INTRODUCTION



Source: Calingacion et al. (2014)

INTRODUCTION

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Review

Rice quality: How is it defined by consumers, industry, food scientists, and geneticists?

Marie Claire Custodio*, Rosa Paula Cuevas, Jhoanne Ynion, Alice G. Laborte, Maria Lourdes Velasco, Matty Demont

International Rice Research Institute (IRRI), Los Baños, Laguna, Philippines

- *Consumers perceive rice quality differently among regions, countries, and urbanization levels.*
- *In Southeast Asia, nutritional benefits, softness, and aroma define premium quality.*
- *In South Asia, the physical appearance of grains and satiety define premium quality.*
- *Current rice quality protocols and classification ranges need to be standardized.*

INTRODUCTION

3. Globally, consumer preferences for rice are heterogenous
   - *The value of specific attributes varies (e.g., geographically and culturally)*
4. There is growing evidence, primarily from Asia and Africa, that shows consumers are increasingly aware of rice quality, even among low-income households
5. Understanding consumer preference for rice grain quality is crucial for the wide adoption of any newly developed rice variety
   - *Demand is a function of many variables (e.g., prices and income), including preferences, and preferences are difficult to change*
   - *Rice breeders, producers, millers, etc. must consider what the market demands*

WHAT IS QUALITY?

- Rice quality is judged based on attributes, which could be classified in several ways.
  - ***Intrinsic*** *(e.g., appearance, taste, texture, and color) or* ***extrinsic*** *(e.g., packaging, brand, and label) characteristics.*
  - ***Search*** *(e.g., price, appearance, brand, and packaging),* ***experience*** *(e.g., taste, texture, ease of cooking, and swelling capacity), and* ***credence*** *(e.g., organic, regenerative) attributes.*

ASSESSING CONSUMER PREFERENCES

- Knowing consumer preferences can be useful to prioritize efforts throughout the supply chain
  - *For instance, sensory studies can help us understand which attributes consumers value the most*
- Being able to translate consume preferences to economic value is also important to extend the analysis to include economic feasibility
- Through economic experiments, we can estimate the value of:
  - *Attributes as a bundle*
  - *Each attribute separately*

WAYS TO MEASURE THE ECONOMIC VALUE

- The underlying assumption is that any good can be described in terms of its attributes or characteristics, and that the price consumers are willing to pay for the good is a function of how much they are willing to pay for each attribute (Lancaster, 1971)
  - *For example, the price of long-grain rice is a function of the price for broken percentage, chalk percentage, color, shape, homogeneity, parboiled, organic, etc. embedded in the rice*

$$Price_i = \beta_0 + \beta_1\, Broken\ \%_i + \beta_2\, Chalk\ \%_i + \beta_3\, Color_i + \beta_4\, LWR_i + \beta_5\, Homogeneity_i + \beta_6\, parboiled_i + \beta_7\, organic_i + \varepsilon_i$$

- So, if we can measure precisely the attribute levels and have a sample that is representative of the situation we want to assess, we can estimate the value of each attribute separately

WAYS TO MEASURE THE ECONOMIC VALUE

- Some ways we can use to measure the economic value of quality attributes include:
  - *Hedonic models (revealed preferences)*
  - *Retail scan data (revealed preferences)*
  - *Experimental auctions (stated preferences)*
  - *Choice experiments (stated preferences)*
- Each method has pros and cons, but that discussion is beyond today's presentation

EVIDENCE FROM THE LITERATURE

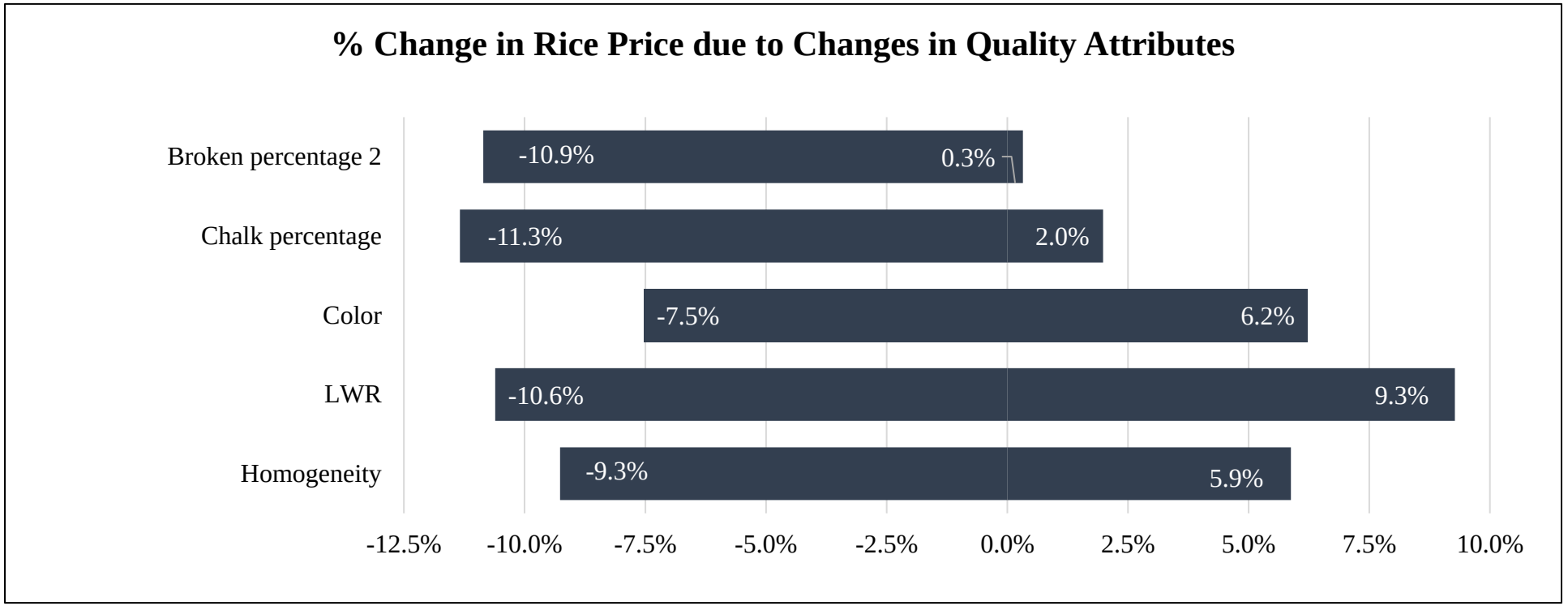
EVIDENCE FROM THE LITERATURE

In Bangladesh, Saha et al. (2021) found that:

- Broken percentage at a rate below 24.9 percent has no significant impact on rice prices. Above 24.9%, a 1-point increase in the broken percentage reduces the price of rice by 0.25 percent.
- Chalk percentage has a small negative impact on price. A 1-point increase in the chalk percentage reduces the price of rice by 0.16 percent.
- Color has a positive and significant impact on rice prices → the whiter, the better
- Shape was positive and significant → the slenderer, the better

EVIDENCE FROM THE LITERATURE

In Bangladesh, Saha et al. (2021) found that:



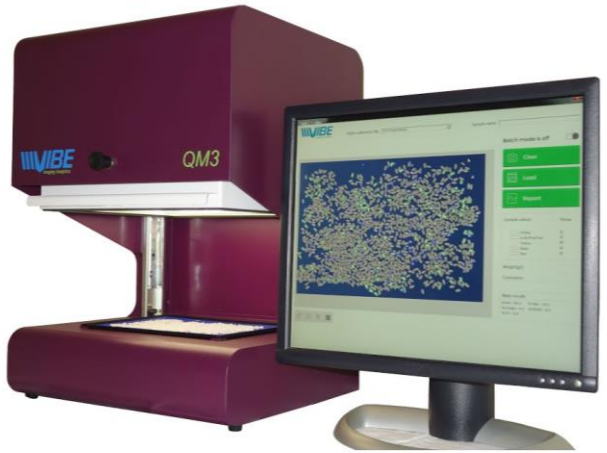
EVIDENCE FROM THE LITERATURE

In Haiti, Richardson et al. (2022) found that:

- Broken percentage negatively impacts rice prices in aggregate (across all regions and income groups)
  - *When disaggregated by regions (Cap-Haïtien, Croix des bouquets, Ouanaminthe, Petion-ville, and Ponte-sonde) broken rice only has a negative impact on the price in Petion-ville*
  - *When disaggregated by income level, broken rice has a negative impact on the price paid by the high-income segment*
- Origin has a significant and large impact → consumers prefer domestic to imported rice

EVIDENCE FROM THE LITERATURE

Attributes	Attribute Levels
Price	2500 COP/kg
	4000 COP/kg
	5500 COP/kg
	7000 COP/kg
	8500 COP/kg
Percentage of Broken Rice	5%
	10%
	15%
	20%
	30%



EVIDENCE FROM THE LITERATURE

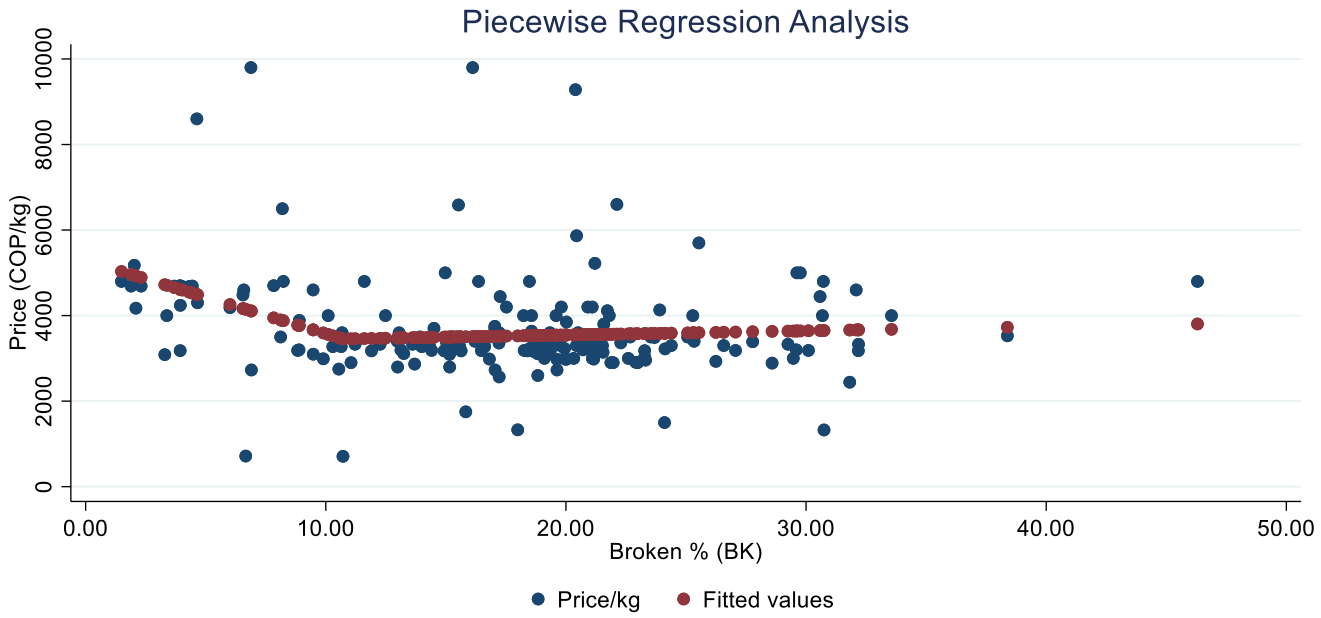
In Colombia, Phillips et al. (2023) found that:

- Consumers can perceive differences in rice quality regarding broken percentage and require a discount for broken rice
  - *The revealed discount (based on market samples and prices) → COP 29.6/point-change in broken%*
  - *The stated discount (based on a choice experiment) → COP 2.45/point-change in broken%*
  - *Labelling (conducted as part of the choice experiment) makes a big difference → COP 2.45 versus COP 6.24/ point-change in broken%*
  - *Non-linear relationship between broken and price*

Evidence from the Literature

In Colombia, Phillips et al. (2023) found that:

- Consumers can perceive differences in rice quality regarding broken percentage and require a discount for broken rice



EVIDENCE FROM THE LITERATURE

Looking at consumer preferences for sustainable rice in Ghana, Danquah et al. (forthcoming) found that:

- Consumers are willing to pay a premium for rice produced according to the Sustainable Rice Platform (SRP)
  - *WTP for sustainable rice varies significantly across cities and rice origin.*
  - *Consumers revealed a higher WTP for sustainable local rice in Kumasi and Tamale (44.1% and 14.6% premium over conventional rice, respectively), but no WTP premium in Accra.*
  - *Consumers revealed a high WTP for sustainable imported rice in all three locations.*

EVIDENCE FROM THE LITERATURE

EVIDENCE FROM THE LITERATURE

Looking at consumer preferences for zinc-biofortified rice in Colombia, Oswalt et al. (forthcoming) found that:

- **Round 1: no information, only tasting**
  - *18.8% premium for zinc-biofortified relative to standard quality, but not relative to premium*

EVIDENCE FROM THE LITERATURE

Looking at consumer preferences for zinc-biofortified rice in Colombia, Oswalt et al. (forthcoming) found that:

- **Round 2: labeling**
  - *33.2% premium for zinc-biofortified relative to standard quality, but not relative to premium*
  - *Labeling has a positive (7.9%) impact on the WTP for zinc-biofortified rice*

EVIDENCE FROM THE LITERATURE

Looking at consumer preferences for zinc-biofortified rice in Colombia, Oswalt et al. (forthcoming) found that:

- **Round 3: labeling + information about the benefits of zinc-biofortified rice**
  - *41.4% and 12.0% premium for zinc-biofortified relative to standard and premium quality, respectively*
  - *Information has a positive (9.1%) impact on the WTP for zinc-biofortified rice*

WHY SHOULD WE CARE ABOUT RICE QUALITY?

1. Rice is a global staple, primarily among low-income households in developing countries → food security entails not only availability but also affordability
2. Knowing the quality consumers prefer can help the rice supply chain compete better with other staple foods
   - *Everything else equal (including prices), matching the quality preferred by consumers could help secure a market → a consumer satisfied with the product is more likely to buy it again*
   - *Matching the quality preferred by consumers could lead to lower prices for consumers but higher gains for sellers (e.g., maybe selling white rice with higher broken% allows for a slightly lower price, thus increasing demand)*

WHY SHOULD WE CARE ABOUT RICE QUALITY?

3. Knowing the quality consumers prefer can help the rice supply chain be more efficient → more rice going into human food

   - *Although difficult to quantify, it is believed that millions of metric tons of rice leave the human food system every year due to quality issues (pet food, energy, etc.)*
   - *That represents an inefficiency that could be fixed by knowing better what consumers demand*
   - *Rice has a large environmental footprint, and therefore efforts must be made to use rice to feed people*

WHY SHOULD WE CARE ABOUT RICE QUALITY?

4. Knowing the quality consumers prefer can help the rice supply chain expand and flourish

   - *Niche markets are everywhere, and those who know it have a competitive advantage*
   - *Trade agreements/integration open new opportunities to serve markets with new and potentially different preferences*
   - *Markets evolve (due to income changes, or even slowly due to preference changes) and therefore knowing the impact of quality could help serve the same market better*

CONCLUSION

- Consumers are becoming more aware of rice quality
- Those that serve consumers better will have better growth prospects
- The rice supply chain must acknowledge the importance of consumer preferences (whoever the relevant consumers are), make attempts to assess them and formulate strategies that account for those preferences
- There is growing evidence from Latin America about consumer preferences for rice quality, but more studies are needed
- Studying consumer preferences is not expensive, but requires a careful design to obtain valuable results