



**RICE FARMING:
WHAT'S IN IT FOR
THE NEXT GENERATION?**

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I'M NOT A SOCIOLOGIST OR ECONOMIST

- **Worked globally on rice for over 30 years.**
 - **On the technical side of production.**
 - **Crop protection chemicals.**
 - **Agronomic practices.**
 - **Yield improvement.**
 - **Finding technical solutions for improving yield.**

I AM SIMPLY AN OBSERVER

- **Of my end customer.**
 - **The rice farmer.**
- **Necessary to understand and anticipate:**
 - **Trends.**
 - **Practices.**
 - **Needs.**
- **To add value by providing cost effective solutions.**

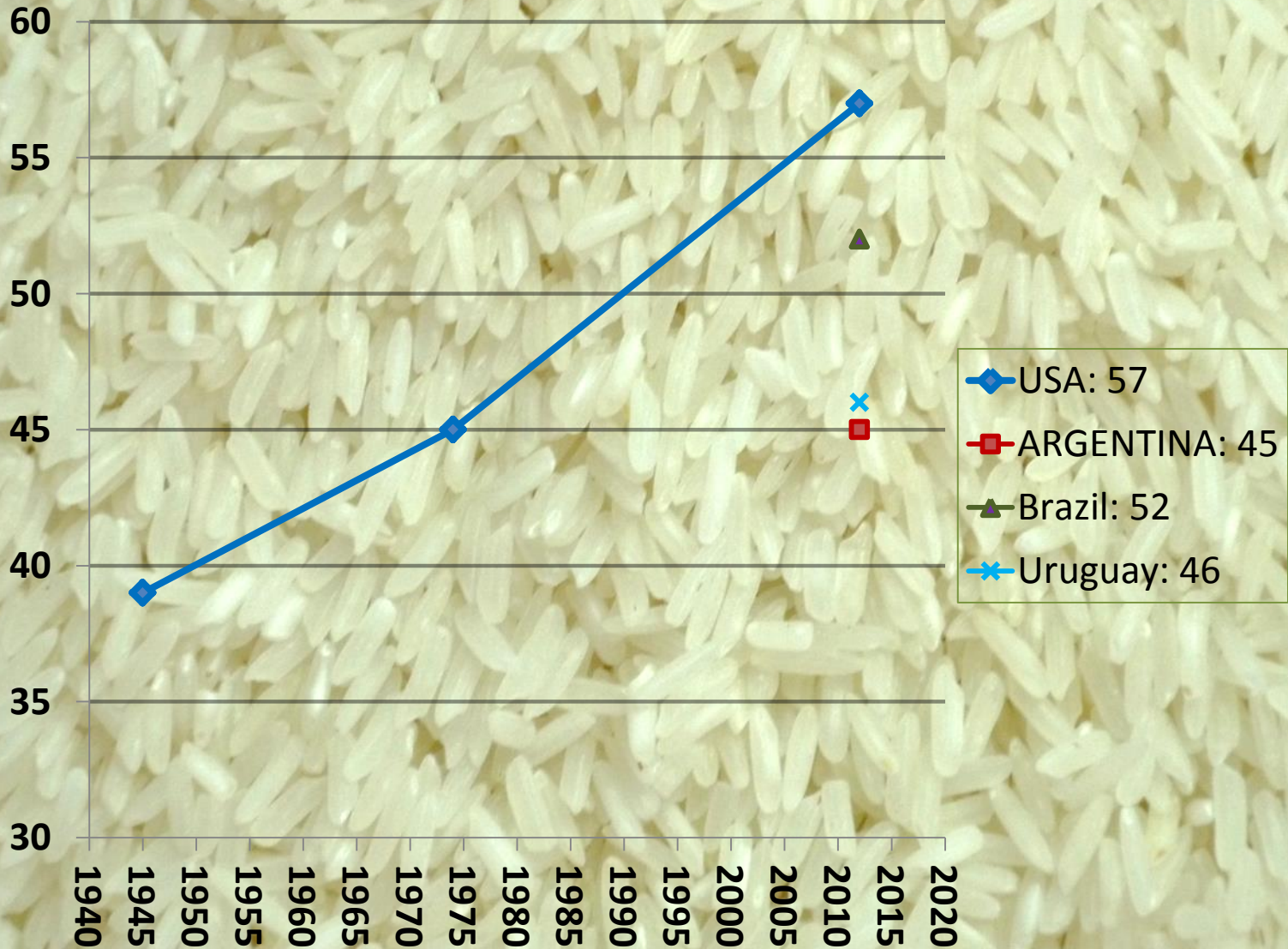
THE NEVERENDING STORY

- **Feel like I'm preaching to the choir.**
- **Setting the stage by:**
 - **Describing the situation.**
 - **Providing an interpretation.**
 - **Assigning responsibility.**

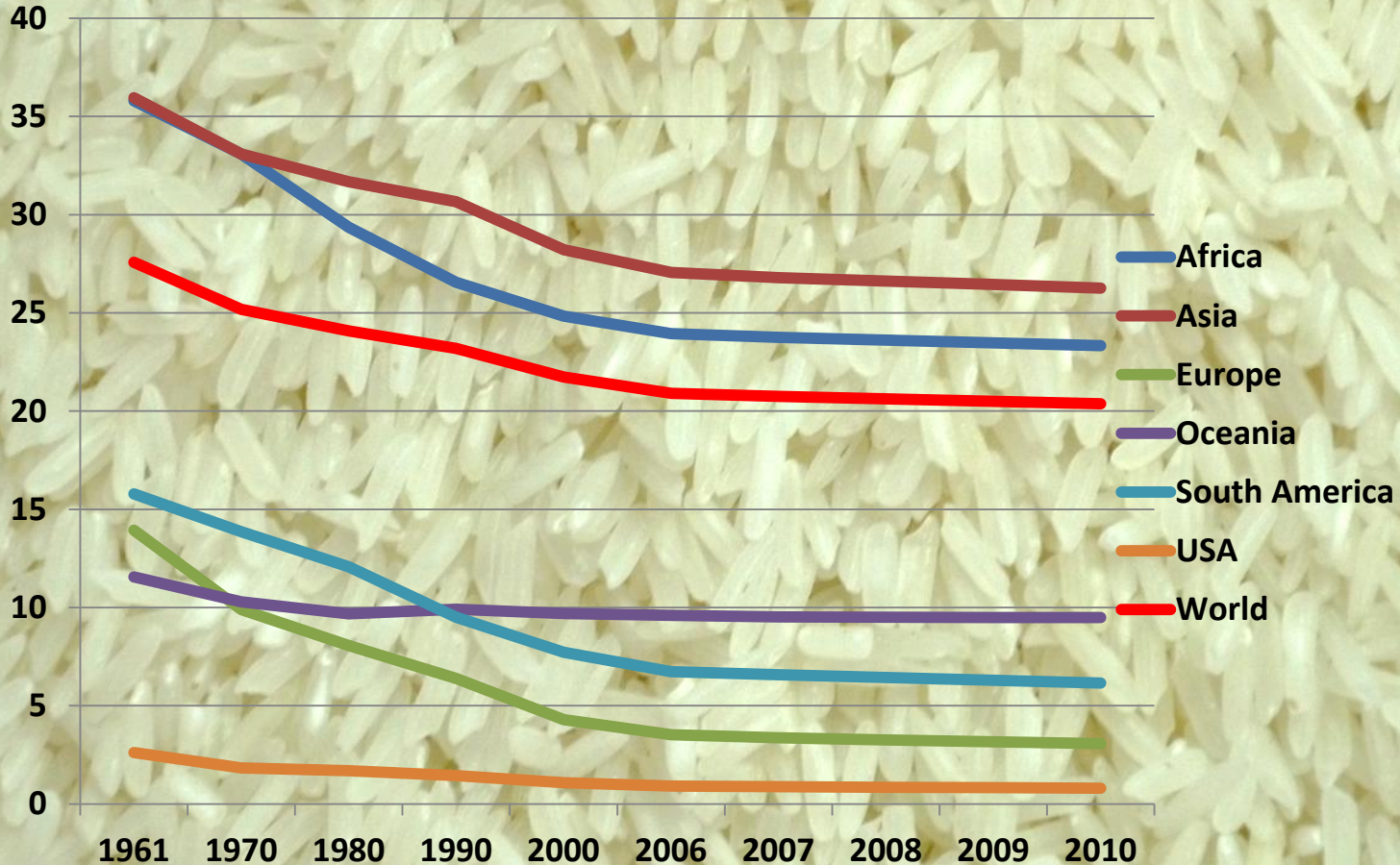
DEFINING THE SITUATION #1

- **The farm labor force is declining.**
 - **The average age of farmers is increasing.**
 - **Children leaving the farm.**
 - **Situation is not new.**
 - **My great grandfather was a farmer.**
 - **Jeremy's parents are farmers.**

AVERAGE FARMER AGE



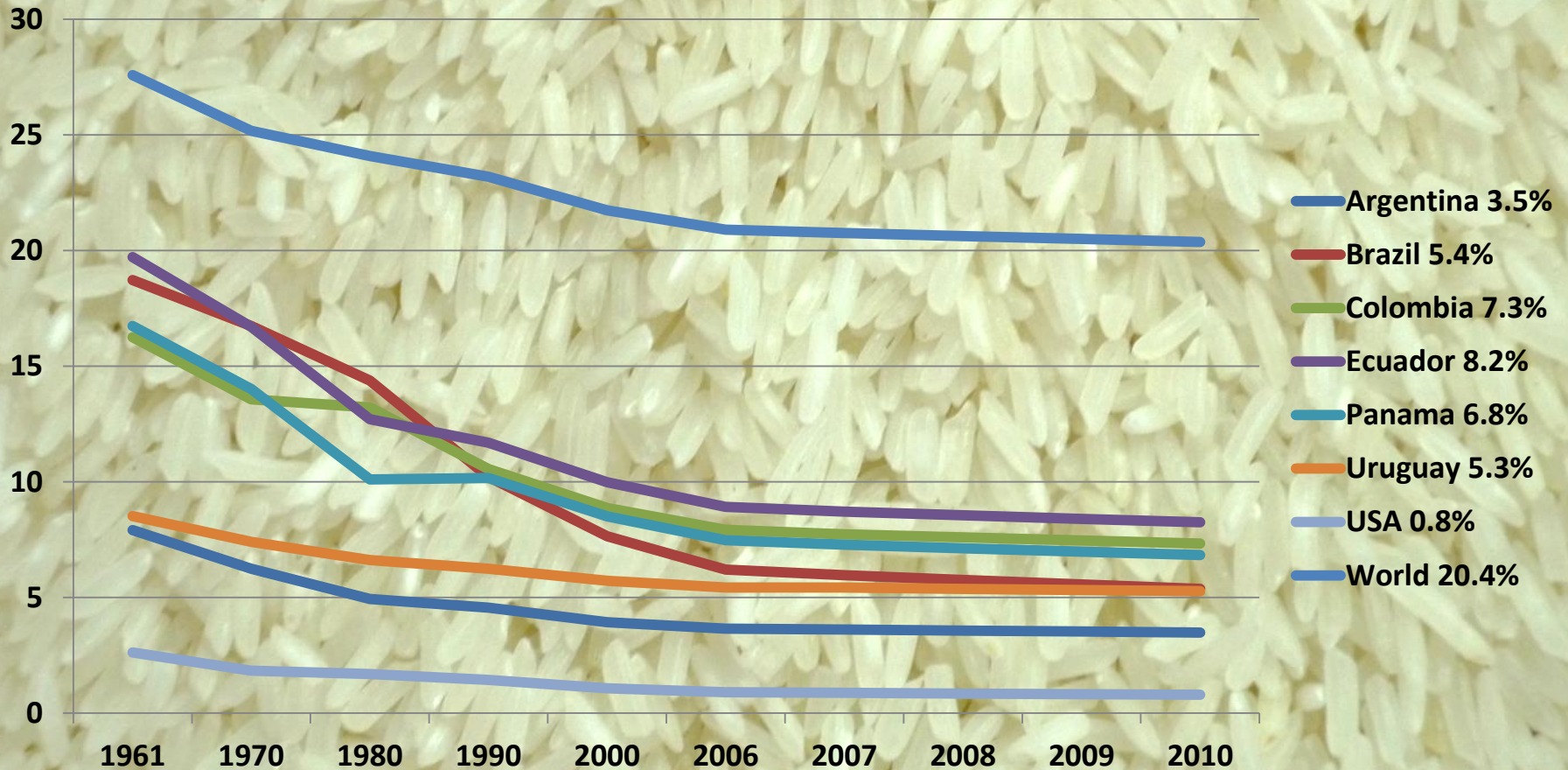
EMPLOYMENT IN AGRICULTURE



<http://ricestat.irri.org:8080/wrs>

Farm labor % of entire work force by region.

EMPLOYMENT IN AGRICULTURE (AMERICAS)



<http://ricestat.irri.org:8080/wrs/>

Farm labor % of entire work force by country.

SHIFTING DEMOGRAPHICS

- **Socioeconomic drivers for leaving the farm.**
 - **The farm cannot support the entire family.**
 - **Industry and service sectors pull labor away from the farm.**
- **Prevailing perceptions/truths:**
 - **Greater opportunity off the farm.**
 - **Improved standard of living/ quality of life off the farm.**

SHIFTING DEMOGRAPHICS

- **Its not all bad as long as it:**
 - **Does not place unmanageable burdens on those remaining to farm.**
 - **Allows for on farm productivity improvements.**
 - **Resulting in better standard of living/quality of life.**
 - **Does not disrupt rice supplies and trade.**

THE CRITICAL QUESTION

- **How can the flow of those leaving the farm be slowed?**
 - **Improve the standard of living/quality of life for those remaining.**
 - **Improve productivity.**

DEFINING THE SITUATION #2

- **Rice farmers are shifting to other crops.**
 - **This may have a greater impact on the global rice production value chain than SITUATION #1.**

RICE TO MAIZE IN THE USA

- **One third of the US rice hectares have shifted to growing maize in the last three years.**
 - **Lower cost of production.**
 - **Higher value in maize.**
- **The US exports 50% of its rice,**
 - **Mainly to Latin America.**
 - **Who will supply this rice in the future?**

<http://ageconsearch.umn.edu/bitstream/15284/1/27020386.pdf>

<http://www.world-grain.com/News/News%20Home/World%20Grain%20News/2013/3/US%20rice%20acreage%20expected%20lower%20this%20year.aspx?cck=1>

RICE TO MAIZE IN CHINA

- **China was a larger buyer of US maize.**
- **Due to high price of US maize, China:**
 - **Shifted large areas from growing rice to maize.**
- **For first time China will produce more maize than rice.**
 - **Imported the rice deficit caused by growing maize.**
 - **In 2012, China bought a record 2.6 million tons of milled rice.**
- **What will this do to global rice trade?**

<http://www.croplife.com/article/32709/chinese-growing-more-corn-than-rice>

<http://online.wsj.com/article/SB10001424127887323706704578228052284001608.html>

THE CRITICAL QUESTION

- **How can the shift to growing other crops be stopped?**
 - **Make the return on growing rice more competitive with that for growing other crops.**
- **Who is responsible for making this happen?**

ECONOMICS IS THE DRIVER

- **Everything is driven by economics.**
- **Profitability in rice production is shrinking.**
 - **Relative to the value of other crops.**
 - **Cost of production.**
 - **Value of crop.**
 - **Contributing to:**
 - **Those leaving farming.**
 - **Those switching to other crops.**

FINDING SOLUTIONS

- Improving the standard of living/quality of life for those remaining on the farm through:
 - Higher incomes.
 - Less work.
- Achieving the above will also incentivize:
 - Remaining in farming.
 - Continuing to grow rice.

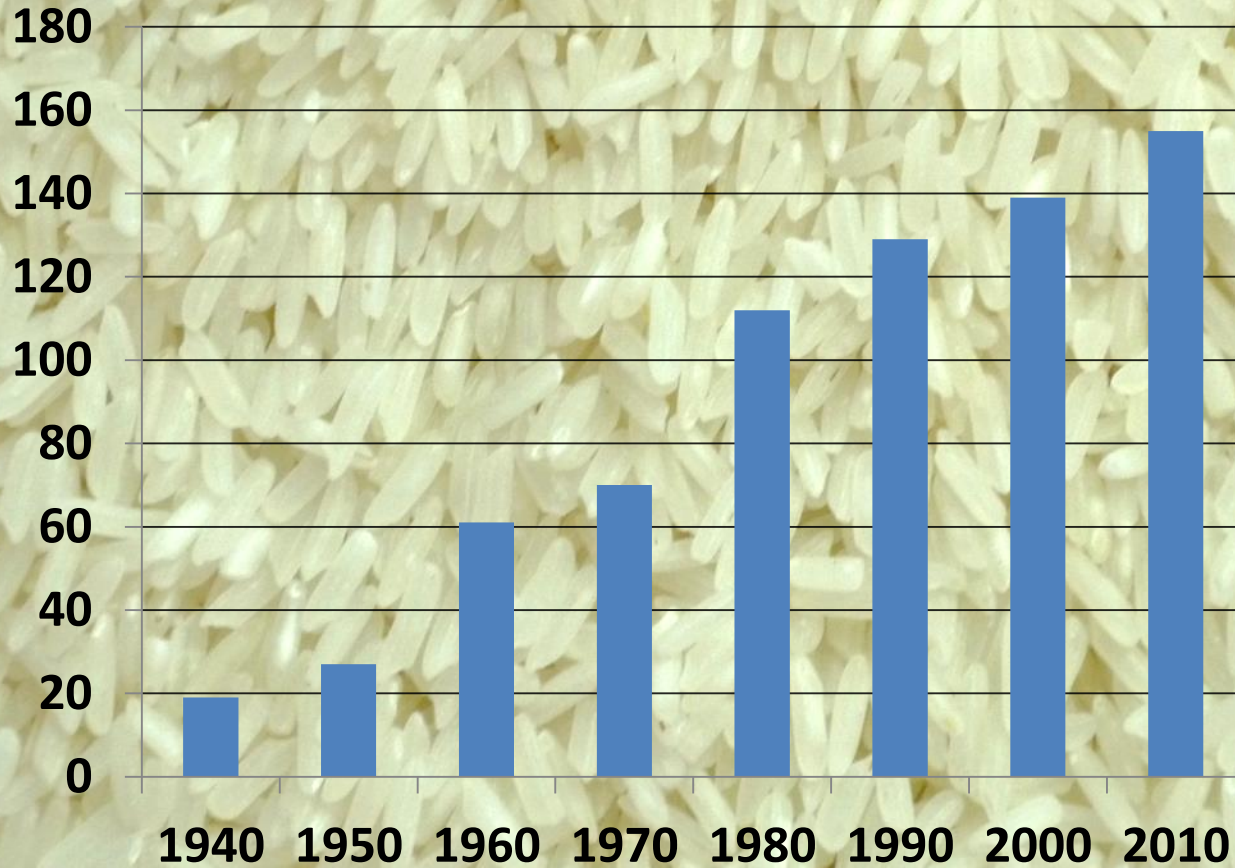
REQUIRES IMPROVED PRODUCTIVITY

IMPROVING PRODUCTIVITY

- **Productivity is the measure of efficiency in production.**
 - **It is a measure of the inputs required relative to the value of the product produced.**

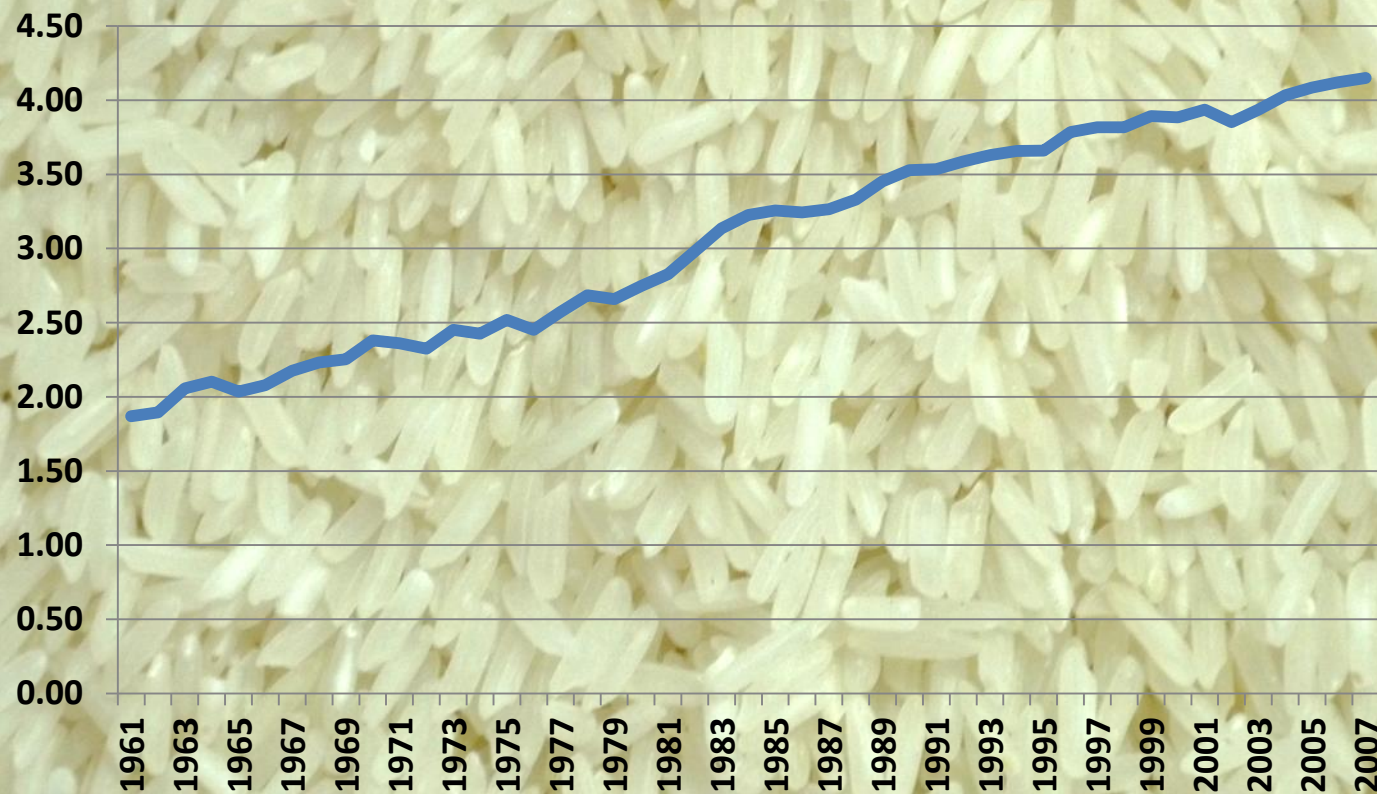
PRODUCTIVITY OF US FARMER

Number of people fed annually by one farmer.



Source: American Farm Bureau Federation

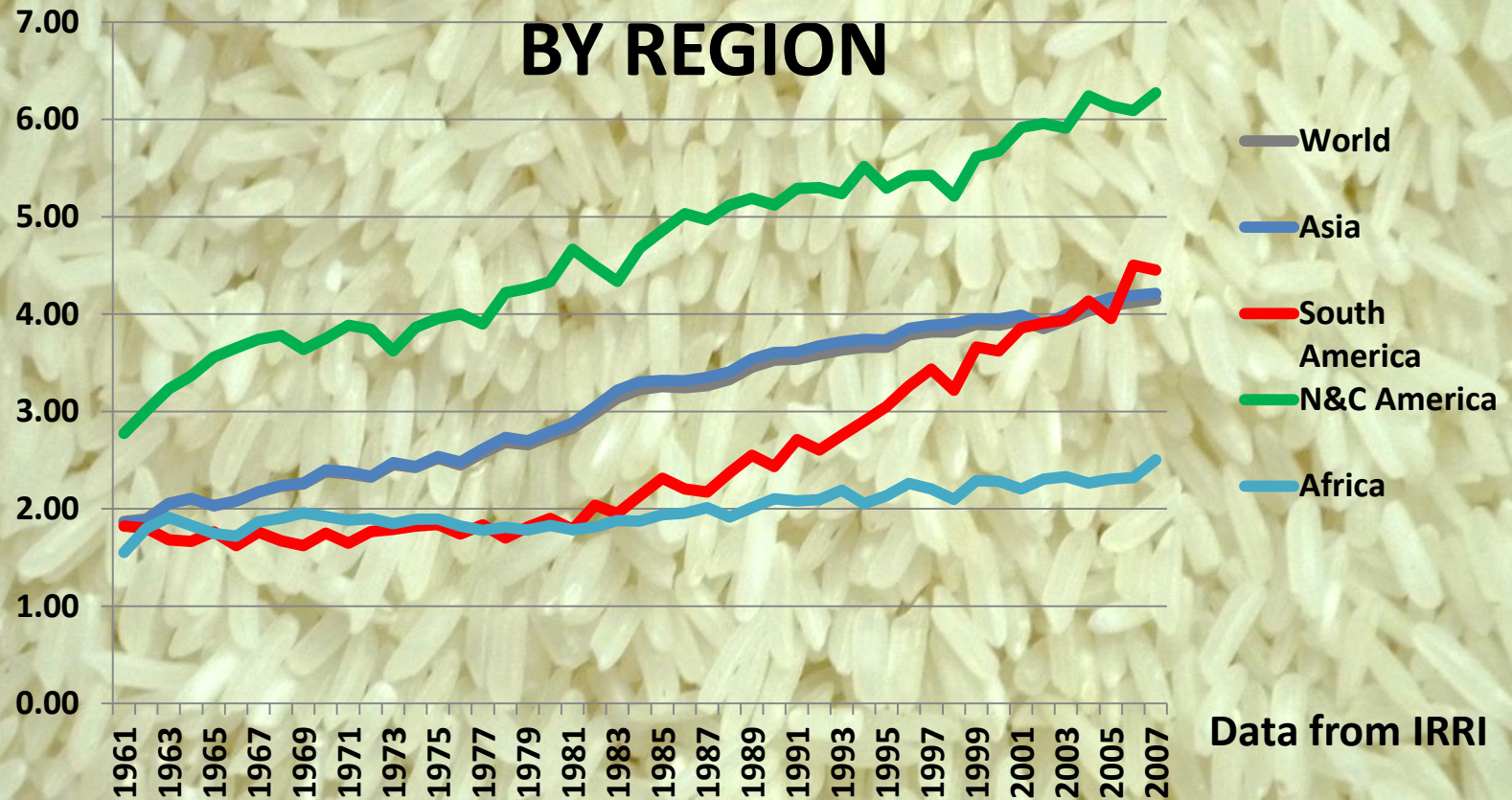
AVERAGE WORLD RICE YIELD/HECTARE



**122% increase in 46 years.
(Average 2.6% per annum)**

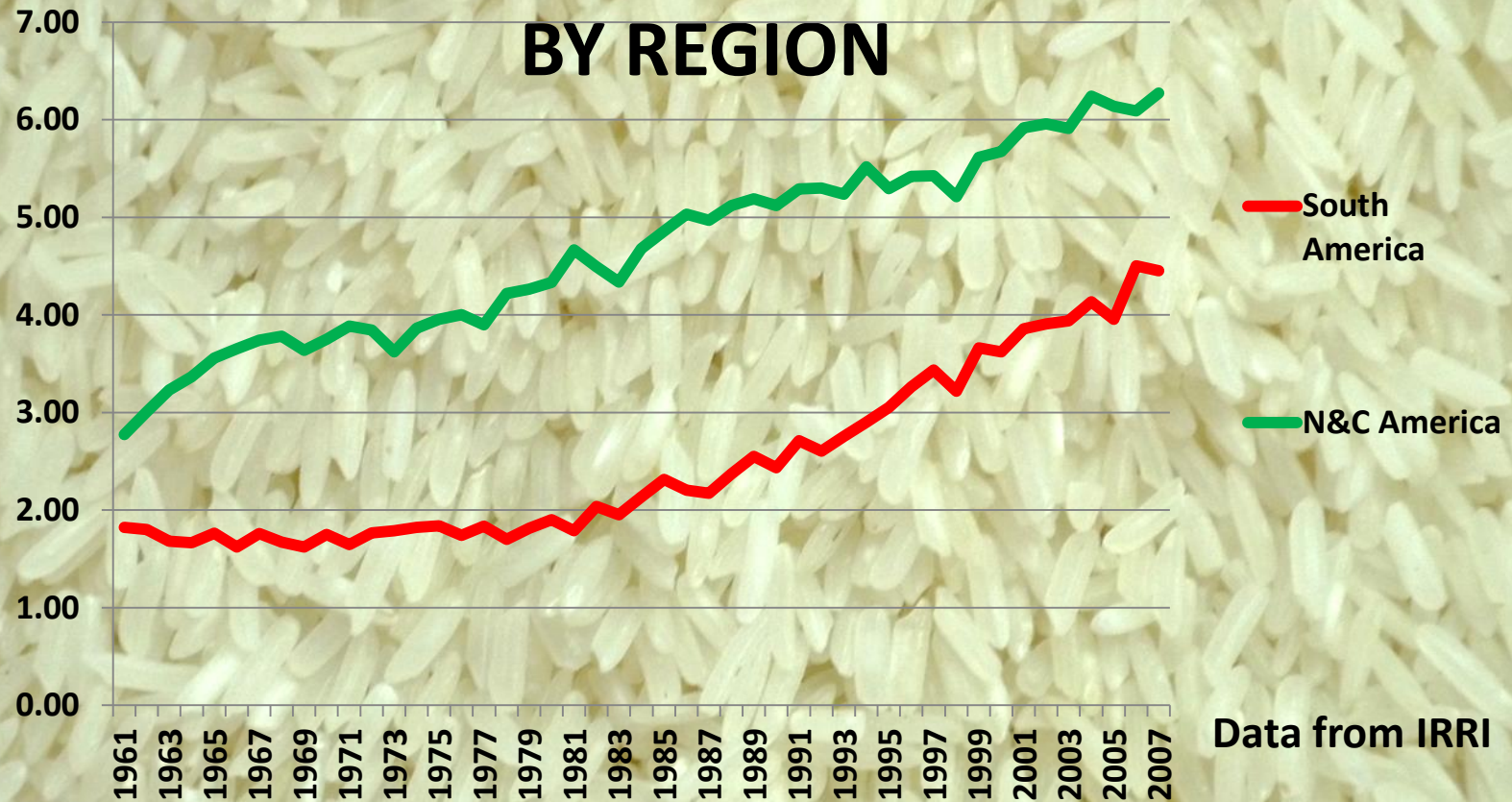
Data from IRRI

AVERAGE RICE YIELD/HECTARE



- Asia tracks well with the world average due to the dominance of hectares grown.
- N&C America average is high due to USA pulling the average up.
- South America's yields began to increase in the 1980s.
- Africa's yields have remained relatively flat.

THE YIELD GAP



– **The challenge for South America.**

- **Close the yield gap with North America.**

IMPROVING PRODUCTIVITY

- **Three ways to improve productivity.**
 - 1. Improve on what is being done now.**
 - 2. Expand to benefit from “economy of scale.”**
 - 3. Do both of the above.**

IMPROVE ON WHAT IS BEING DONE

- **When a technology is proven beneficial and farmers can afford it, they embrace it.**
 - **Modern rice varieties**
 - **Mechanization**
 - **Hybrid crops**
 - **Crop Protection Chemicals (CPCs)**
 - **Integrated Pest/Crop Management**
 - **No-till farming**

PITFALLS OF NEW TECHNOLOGIES

- **In adopting new technologies before their offering can be realized.**
 - **New high yielding varieties when yield is dampened by other factors.**
 - **Using machinery capable of more than is needed.**
 - **Adopting practices beyond infrastructure capacity to manage.**

BENEFITING FROM EXPANSION

- **Belief behind economy of scale.**
 - **Bigger is better.**
 - **Efficiencies can be realized when cultivating more hectares.**

PITFALLS OF EXPANSION

- **In expanding area under cultivation.**
 - **Diseconomy of scale.**
 - **Expanding too fast.**
 - **Infrastructure not capable of managing area.**
 - **Efficiencies not realized.**

OPERATIONAL EFFICIENCY



When is a paddy too large for manual weeding?

When is a paddy too small for an herbicide application by air?

What are the intermediate alternatives?

RUN THE FARM LIKE A BUSINESS

- **Productivity and profitability come from detailed record keeping and analysis:**
 - **Track expenses and manage costs.**
 - **Determine productivity and profitability.**
 - **Adjust to changing conditions.**
 - **Determine the break even point in selling the crop.**
- **Plan a growth strategy.**

THE BOTTOM LINE

Price of rice

- Cost of production

Profit/Loss

- **A farmer will grow rice if he can:**
 - **Manage his input costs.**
 - **Sell his crop at a price that will**
 - **Allow for a reasonable/competitive return on his investment.**

CROP PRODUCTION BUDGETS

Critical costs to track can be found on the www:

- Arkansas:
 - <http://www.aragriculture.org/crops/rice/budgets/2009/default.htm>
- Louisiana:
 - <http://www.lsuagcenter.com/NR/rdonlyres/E6BF06DF-2BD9-49F4-B032-A09BD0211180/84509/2012RiceBudgetsAEA282.pdf>
- Mississippi:
 - http://www.agecon.msstate.edu/what/farm/budget/pdf/12/M_SURICE12.pdf

IN SUMMARY

- **Rice farming is a competitive business.**
- **Select technologies that fit the farm.**
- **Rice farming competes with:**
 - **The service and industrial sectors for labor.**
 - **Other crops that may be more profitable to produce.**

IN SUMMARY

- **Children will continue to leave the farm.**
- **Remaining on the farm requires improving the standard of living/quality of life on the farm.**

IN CONCLUSION

- **Brings me to a topic dear to my heart.**

SUSTAINABLE RICE

SUSTAINABLE RICE DEFINED

Sustainable rice is a holistic, integrated systems approach to rice production that endeavors to improve productivity as well as the livelihoods of everyone in the production chain, based on environmentally sound inputs that are applicable within individual systems and that the user can afford.

Leeper, J. R. 2013. Sustainable Rice & Productivity. Journal of Crop and Weed Science, Vol.9 No.1 (in press).

THIS DEFINITION

- **Takes sustainability beyond the farm:**
 - **To include all participants in the global rice production business.**
- **Recognizes there are backward and forward rewards and consequences that influence the entire production system.**
 - **There must be a profitability incentive at every juncture in the system to maintain sustainability.**

THE REST OF THE STORY

- **Wherever you are on the global rice production value chain you play a role in determining:**
 - **Farm profitability.**
 - **How much rice is grown**
 - **The quality of life on the farm.**
 - **And your own ultimate survival.**

THE REST OF THE STORY

- **Every link in the value chain is dependent on the other links for survival.**
- **You are all authors in writing the next chapter in this story.**

**WHAT WILL BE
THE REST OF THE STORY?**

The image features a dense, uniform field of uncooked white rice grains. The grains are small, elongated, and have a slightly glossy texture. They are scattered across the entire frame, creating a textured, light-colored background. In the center of this field, the words "THANK YOU" are printed in a bold, black, sans-serif font. The text is centered both horizontally and vertically, standing out clearly against the white rice.

THANK YOU