Why is rice so popular?

eslvideo.com Quiz by: Luke Rivers

1. What percentage of calories consumed by humans each year does rice contribute?

- ○ a.) 20%
- ○ b.) 30%
- ○ c.) 40%

2. Where did Asian rice likely originate?

- ○ a.) India
- ○ b.) China
- ○ c.) Africa

3. How many years ago did nomadic hunters begin gathering seeds from a weedy grass?

- ○ a.) 10,000 years ago
- ○ b.) 5,000 years ago
- ○ c.) 15,000 years ago

4. What is the ceremony called in India and Nepal when a baby tastes rice for the first time?

- ○ a.) Gohan
- ○ b.) Biryani
- ○ c.) Annaprashan

5. What percentage of global cropland does rice cover?

- ○ a.) 5%
- ○ b.) 11%
- ○ c.) 15%

6. What greenhouse gas do methanogens produce?

- ○ a.) Methane
- ○ b.) Carbon dioxide
- ○ c.) Nitrous oxide

7. What is one technique researchers are exploring to reduce methane emissions from rice cultivation?

- ○ a.) Continuous flooding
- ○ b.) Alternate wetting and drying
- ○ c.) Dry farming

8. By how much can alternate wetting and drying cut water use?

- ○ a.) 10%
- ○ b.) 20%
- ○ c.) 30%

9. What is the main challenge mentioned for making rice growing more sustainable?

- ○ a.) Cost
- ○ b.) Mindset shift
- ○ c.) Technology

10. What does the word 'gohan' mean in Japan?

- ○ a.) Rice field
- ○ b.) Rice plant
- ○ c.) Cooked rice and meal

Transcript

If you were to place all the rice consumed each year on one side of a scale, and every person in the world on the other, the scale would tip heavily towards rice's favor. This beloved crop contributes over 20% of the calories consumed by humans each year. Korean bibimbap, Nigerian jollof, Indian biryani, Spanish paella, and countless other culinary masterpieces all begin with rice.

So how did this humble grain end up in so many cuisines? The roots of rice go back thousands of years to when early farmers in Asia, Africa, and South America each independently domesticated the crop. First came Asian rice, which many plant geneticists believe originated in what's now China. Over 10,000 years ago, nomadic hunters in the region began gathering and eating seeds from a weedy grass. Then, around 9,000 years ago, they started planting these seeds, prompting nomadic hunters to settle into farming communities.

With each harvest, growers selected and replanted seeds from the rice plants that pleased them most— like those with bigger and more plentiful grains or aromatic flavors. Over millennia, thousands of varieties of Asian rice emerged. A relative of the same weedy grass was also domesticated in Africa around 3,000 years ago. Today, its growth is mostly limited to West Africa. South American growers also domesticated rice around 4,000 years ago, though the crop was lost after the arrival of Europeans.

Asian rice, however, spread widely, and is now a cornerstone of diet and culture in Asia and beyond. In India and Nepal, many Hindus mark an infant's transition to solid foods with a ceremony known as Annaprashan, where the baby tastes rice for the first time. In Japan, rice is so central to diets that the word 'gohan' means both 'cooked rice' and 'meal.'

The global expansion of rice cultivation was only possible because the plant can grow in many climates— from tropical to temperate. As a semi-aquatic plant, rice happily grows in submerged soils. Many other crops can't survive in standing water because their root cells rely on air within soil to access oxygen. But rice plants have air channels in their roots that allow oxygen to travel from the leaves and stems to the submerged tissues.

Traditionally, growers plant rice in paddy fields— flat land submerged under as much

as 10 centimeters of water throughout the growing season. This practice returns high yields since many competing weeds can't hack it in the aquatic environment. But the technique is also water intensive. Rice covers 11% of global cropland, but uses over a third of the world's irrigation water.

This form of rice production also pumps out a surprising amount of greenhouse gas emissions. Flooded fields are the perfect breeding grounds for microorganisms known as methanogens. These microscopic lifeforms thrive in environments lacking oxygen, because they evolved when the Earth contained little of this gas. Methanogens are the only organisms known to produce methane— a greenhouse gas 25 times more potent than carbon dioxide at trapping heat in the atmosphere. Cows, for example, are infamous for burping out methane due to methanogens in their stomachs.

In a flooded paddy field, methanogens set to work eating away at organic material in the submerged soil and multiplying rapidly, all the while releasing copious amounts of methane. The result: rice cultivation contributes around 12% of human-caused methane emissions each year.

But there's good news. Rice doesn't actually need to grow in continuously flooded paddies. Researchers and growers are exploring water management strategies that can cut the methane while keeping the yield. One promising technique is known as alternate wetting and drying. Growers periodically let the water level drop, which keeps methanogen growth in check. Alternate wetting and drying can cut water use by 30% and methane emissions by 30 to 70% without impacting yield.

Greenhouse gases come from many— sometimes unexpected— places. Making rice growing more sustainable is just one of the many challenges we'll need to face to avoid catastrophic warming. Today, many rice growers still flood fields all season long. Changing millennia-old practices requires a major mindset shift. But going against the grain could be just what we need to keep our planet healthy and our bowls full.