SECTION 1 FACT CHECK RICE DRINK

Conventional dairy farming is considered a climate killer. Industrial agriculture, factory farming, and feed production harm the environment. Many are therefore looking for alternatives and switching to plant-based drinks. But is this really more sustainable?

Fact check RICE DRINK

Rice drink also belongs to the category of cereal milk products and is considered the lowest allergen alternative to cow's milk. Accordingly, it is also suitable for milk lovers who are plagued by lactose, gluten, nut or soy allergies. Its taste is similarly sweet, but its watery consistency does not convince everyone.

Apart from the taste, there is not much left of the original food after the complex production process to milk. Vitamins, calcium, sugar and trace elements are therefore added to the rice drink industrially. There is hardly any question of naturalness here. There are 47 calories in 100 ml of rice drink. The high carbohydrate content provides quick energy. On the other hand, with 0.3 g protein, it is not a source of protein.

Rice is one of the staple foods. In Asia and also Europe (Italy and Spain), rice is grown on permanently flooded fields. This consumes a lot of water and also produces large amounts of methane. Rice accumulates the toxic semimetal arsenic ten times more than other cereals. In September 2013, the FDA (Food and Drug Administration, USA) found up to 46 micrograms of inorganic arsenic per liter in rice drinks (by comparison, the maximum level for drinking water in the EU is 10 micrograms per liter).

Rice drink is a form of cereal milk. It is made from rice. In the EU it may therefore not be sold as milk, but is marketed as a rice "drink," among other things. The liter is available from about 1.45 euros.

As for the eco-balance....

A direct comparison between cow's milk and rice drink shows:

- The production of rice drink requires 95% less land and causes 60% less greenhouse gases.
- The water requirement is very high at 270 L per m². In direct comparison with cow's milk, 50% less water is required. Compared to oat drink, however, the demand is about 5 times as high.

Compare the tables in the DATA SHEET (SECTION 2). These values come from studies by the Water Footprint Network, the Öko-Institut and Statista. Other sources include the work of Mekonnen & Hoekstra (2010) and Poore & Nemecek (2018).

TASKS:

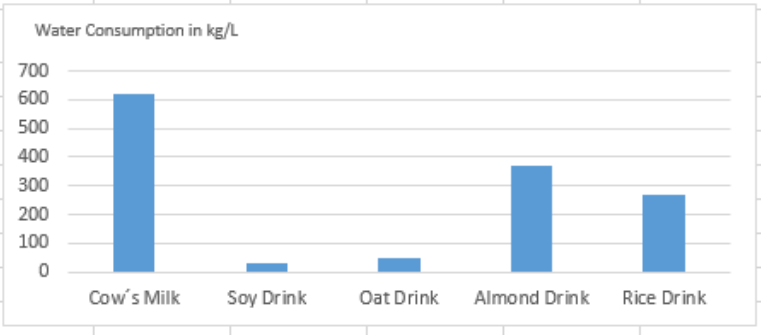
Collect further information on the rice crop in order to complete tasks 1-4.

1. In which countries are rice produced? What is the production volume in tons? Uses the world map.
2. Describes the growing conditions. Are fertilizers and/or pesticides used?
3. Who exports rice? Describes the world trade.
4. How is rice drink produced? Outlines the technical process.

SECTION 2 **DATA SHEET** (key data on water consumption, CO_2 footprint and land use)

Water consumption of cow's milk and plant-based drinks compared 2018

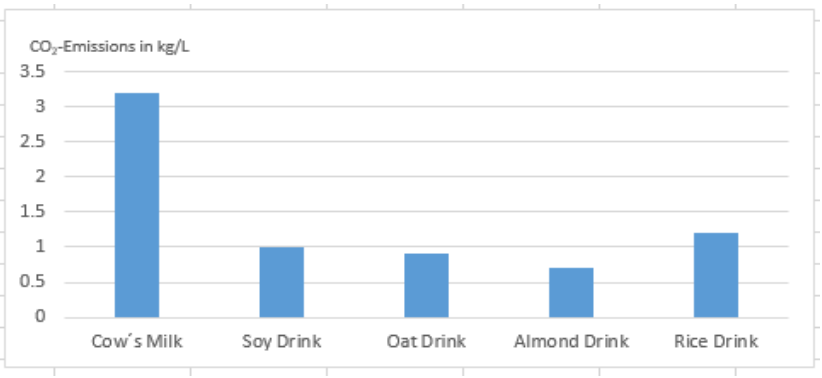
In terms of water consumption, plant-based drinks achieve a better eco-balance than cow's milk. While around 623 liters of water were consumed for one liter of cow's milk in 2018, the water consumption for the production of soy drink was only 28 liters.



	Water Consumption in kg/L
Cow´s Milk	623
Soy Drink	28
Oat Drink	48
Almond Drink	371
Rice Drink	270

CO_2 emissions of cow's milk and plant-based drinks in comparison 2018

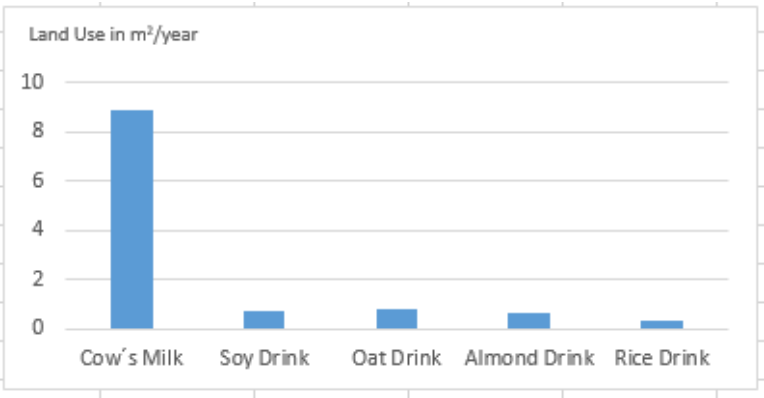
In terms of CO_2 emissions, plant-based milk achieves a better eco-balance than cow's milk. While around 3.2 kilograms of carbon dioxide were emitted in 2018 for one liter of cow's milk, CO_2 emissions in the production of almond drink were 0.7 kilograms.



	CO_2-Emissions in kg/L
Cow´s Milk	3.2
Soy Drink	1
Oat Drink	0.9
Almond Drink	0.7
Rice Drink	1.2

Land consumption of cow's milk and plant-based alternatives in comparison 2018

In terms of land consumption, plant-based milk achieves a better eco-balance than cow's milk. While around 8.9 square meters were required for one liter of cow's milk in 2018, the land required for the production of soy drink was only 0.7 square meters.



	Land Use in m^2/year
Cow´s Milk	8.9
Soy Drink	0.7
Oat Drink	0.8
Almond Drink	0.6
Rice Drink	0.3

TASK: Create an overview chart for the 5 products and discuss their life cycle assessments. The reference value should be one liter of cow's milk or plant-based drinks.

These values come from studies by the Water Footprint Network, the Öko-Institut, FAOSTAT and Statista.

SECTION 3 FACTS TABLE WITH GROUP DISCUSSION - EXPERT ROUND TABLE

Cow´s Milk substitutes: What the plant-based alternatives can do

In some refrigerators, plant-based milk alternatives have now displaced classic cow's milk. In any case, cow's milk is ahead in terms of price. While it is sometimes offered for as little as 78 cents, consumers often think twice about whether they really need the almond drink e.g. for around 2 $. Obviously, cow's milk consumption continues to be a subject of debate.

We want to shed some light on the subject and present some representatives of milk alternatives. From a purely legal point of view, only animal milk from cows, goats or horses is entitled to the name "milk". Most plant-based milk representatives therefore adorn themselves with the title "drink," which not infrequently causes additional confusion among consumers.

Overview of arguments pro / contra milk and plant-based alternatives	
RICE DRINK	
Animal Welfare	
Factory farming	
Handling calves	
Life expectancy	
Attitudes	
other	
ecological reasons	
Land consumption	
Water consumption	
other	
Health	
Vitamin B12	
Calcium	
Allergies	
World population, hunger	
economic reasons	

Other arguments:

The great advantage of the vegetable alternatives is the absence of cholesterol and lactose. In terms of taste, some products are not convincing in their natural form. Manufacturers often add sugar, additives and flavorings, which quickly turns the supposedly healthy drink into a calorie bomb. In this case, it is worth taking a look at the nutritional information on the packaging. The missing calcium is now also added industrially to most milk alternatives.