# Comparing plant milks and cow's milk

**ci COMPOUND INTEREST**

## How are plant milks made?

Plant milks are made from water-based plant extracts. Almond, coconut, oat, rice and soy milks are popular examples. Regardless of type, similar processes are used to make them.

**① Extraction**

Wet process: soaked and wet milled; Dry process: dry milled. Flour extracted.

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**② Separation**

Centrifuging or filtering to remove fibrous components.

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**③ Formulation**

Addition of water, fats, flavours, vitamins, minerals, thickeners, and stabilisers.

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**④ Homogenisation**

Reduces the size of fat globules, dispersing them evenly and giving a smooth texture.

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**⑤ Heat treatment**

Kills bacteria which could cause spoilage or illness.

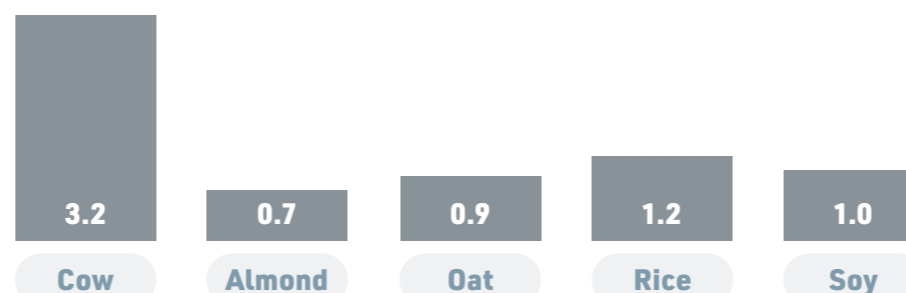→ **⑥ Packaging & distribution**
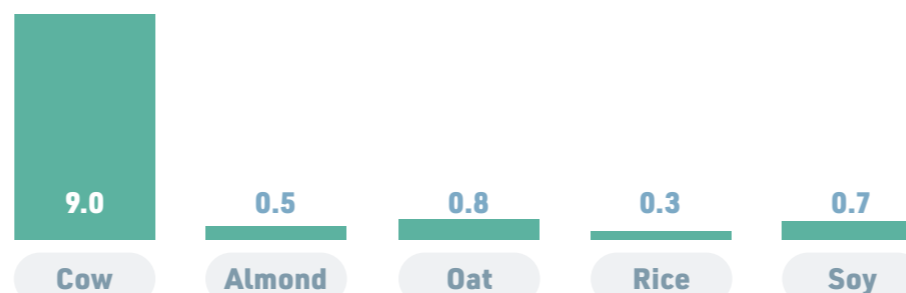
Milk packaged for distribution to stores.

## Environmental impacts

Production of plant-based milks is more environmentally friendly than the production of cow's milk in a number of aspects. The figures below are per litre of milk.
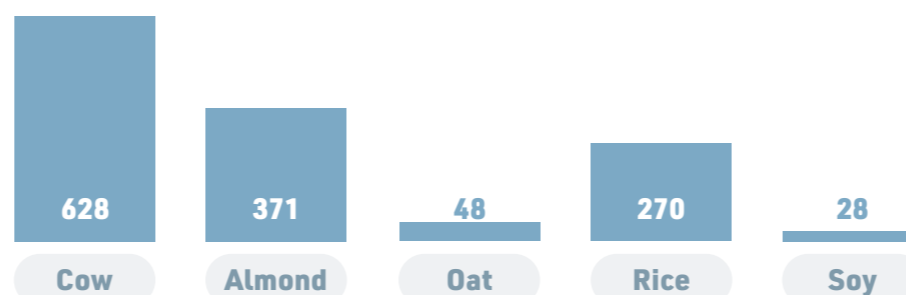
### Carbon emissions (kilograms of $CO_2$ equivalents)

| Cow | Almond | Oat | Rice | Soy |
|-----|--------|-----|------|-----|
| 3.2 | 0.7 | 0.9 | 1.2 | 1.0 |

### Land use (metres squared)

| Cow | Almond | Oat | Rice | Soy |
|-----|--------|-----|------|-----|
| 9.0 | 0.5 | 0.8 | 0.3 | 0.7 |

### Water use (litres)

| Cow | Almond | Oat | Rice | Soy |
|-----|--------|-----|------|-----|
| 628 | 371 | 48 | 270 | 28 |

Source: https://blog.datawrapper.de/cow-milk-and-vegan-milk-alternatives/
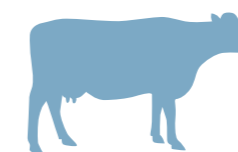
## Nutrition of plant milks

Plant milks are naturally lower in calcium than cow's milk. Most have calcium added to bring it to a similar level to cow's milk, though some of this added calcium may settle out of solution.

**Calcium: 1.23 mg per mL**

**Calcium RDA: 700 mg**

Iodine, important for making thyroid hormones, is found in lower levels in plant milk compared to cow milk. Some plant milk manufacturers now fortify their milk with iodine, but others do not.

**Iodine: 0.3-0.4 μg per mL**   **Iodine: ~0.02 μg per mL**

**Iodine RDA: 140 μg**

Plant milks contain small amounts of vitamin D and are often fortified with vitamin $B_{12}$. Plant milk protein content is variable but for all types it is lower than the protein content of cow's milk.

### Milk protein content (per 100 mL)

| Cow | Almond | Oat | Rice | Soy |
|-----|--------|-----|------|-----|
| 3.3 g | 0.6 g | 1.6 g | 0.3 g | 2.6 g |