



## Water resources: The “gentle cycle” is organic

Global demand for water has increased threefold since 1950. Farming significantly contributes to this increase: the farming sector is responsible for an astonishing 70 percent of global freshwater consumption. FiBL Austria has calculated the “water footprint” of organically and non-organically produced foods. This provides scientific evidence of the water savings potential of organic farming.

On behalf of the Hofer KG discount supermarket chain, the FiBL Austria team assesses and calculates the water consumption and aqueous emissions attributable to Hofer’s own-brand “Zurück zum Ursprung” (Back to the roots) organic range as well as the products’ greenhouse gas emissions and biodiversity impacts, comparing these parameters to those of equivalent non-organic products.

### **Blue, green and grey water**

“A complete water footprint considers three components”, explains Stefan Hörtenhuber, FiBL Austria’s sustainability team member in charge of water assessments: “Blue water” is fresh surface and groundwater which is used directly in agricultural production for e.g. irrigation, for livestock, or for the production of mineral fertilizers. “Green water” evaporates from the soil and vegetation or transpires through plants. “Grey water” is the volume of water that is required to dilute water pollutants such as nitrates, phosphorous and pesticides to such an extent that the quality of the water remains above agreed drinking water quality standards. Grey water is therefore a measure used to convert water pollution into water consumption. Grey water is particularly relevant to quantifying environmental water footprints.

The FiBL water footprint model considers all three components. Based on models and studies representing international best practice, the FiBL model considers up-to-date Austria-specific data, distinguishing by crop type and production conditions at the regional level. Previously, data were only available at the broader level of Austria’s provinces. The FiBL model now allows the scientists to calculate in detail the water required to produce individual food items along the entire value chain from the field or livestock house to the supermarket shelf.

### **Balance tips in favour of organic products**

The comprehensive water footprint calculations allow the FiBL team to underpin their assessments of foods in terms of water consumption and pollution with impressive figures: One kilogram of harvested non-organic wheat requires approximately 500 litres of green water, additional blue water if it is irrigated, and about 1000 litres of grey water. The latter is the volume of water needed to “absorb”, i.e. to dilute the nitrate loss in non-organic wheat production to the extent that the maximum permissible nitrate level in drinking water of 45 mg/l is not exceeded. The production of one



Stefan Hörtenhuber calculated the water footprint of 250 organic foods.

litre of non-organic milk has a footprint of up to 450 litres of green water and 500 litres of grey water.

The water footprints of organic wheat and organic milk are 20 percent and 15 percent lower, respectively, compared to their non-organic counterparts. Blue and green water consumption in non-organic and organic farming are quite similar; the decisive factor in comparisons between the two production systems is the grey water footprint. This reveals the water savings potential of organic farming, which generates significantly less water pollution. Especially the favourable nitrogen efficiency and the rejection of chemically-synthesized plant protection products have a positive impact on the water footprints of organic products.

While the figures calculated by FiBL Austria vary from product to product, the 250 organic foods assessed so far show an average reduction in water demand of 15 percent compared to the equivalent non-organic products. The organic advantage is particularly evident when it comes to vegetables (e.g. courgettes or carrots) or pork. The water savings potential of organic pork is 25 percent and more.

The water footprint model developed by FiBL Austria allows scientists to present scientifically complex facts with respect to water consumption and pollution in a way that is comprehensible for consumers. The sustainability effects, expressed in percentage figures, are printed on the packaging of Hofer's Zurück zum Ursprung own-brand organic range. Consumers can now see exactly what contribution they make to protecting water resources when they buy these organic foods. *ek*

**Contact:** stefan.hoertenhuber@fibl.org

**Funding:** Werner Lampert Beratungsges.m.b.H., Vienna, "Zurück zum Ursprung"/Hofer KG, Sattledt, Austria.