Carbon footprint of organic products

- Dr. Christian Schader, Dr. Thomas Lindenthal,
- Mag[a]. Theresia Markut, DI Stefan Hörtenhuber;

- Research Institute of Organic Agriculture (FiBL)

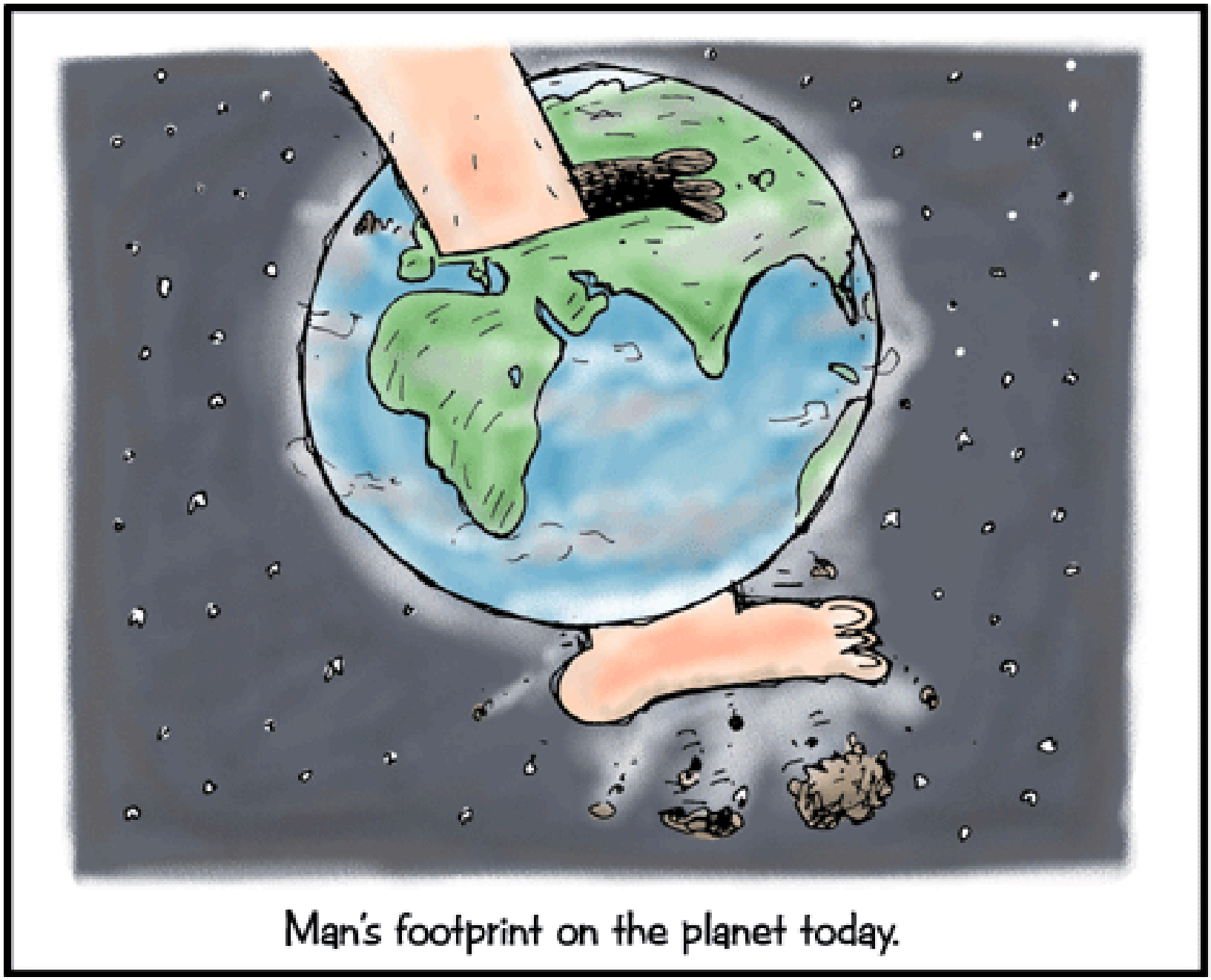
Biofach, Nuremberg, 18/02/2010

FiBL

Outline

1. What is a carbon footprint?
2. How do organic products perform?
3. How can the climate benefits of organic products be communicated to the consumer?

FiBL



Carbon Trust / Tesco footprint

*"The carbon footprint of this juice is **260g** per 250ml serving and we have committed to reduce it. By comparison the footprint of Tesco 100% Pure Squeezed Orange Juice is **360g** per 250ml serving, which is higher **because more energy is required to chill and transport** 100% pure juice than concentration juice."*

FiBL

Project information

Project commissioned by:

- W. Lampert Beratungsges.m.b.H. “Zurück zum Ursprung” / Hofer KG
- Austrian ministry of agriculture

Duration: 2 years (since July 2008)

Review:

- Öko-Institut, Freiburg

Internet-Link to the Project:

http://www.fibl.org/de/oesterreich/schwerpunkte-at/klimaschutz.html

Objectives of the project

1. to compare the greenhouse gas emissions (CO_2 eq) of organic foodstuffs, with foodstuffs grown conventionally

2. to render the results visible for the consumer

Scope of the project

120 foodstuffs were analysed:

- **dairy products**
- **bread products,**
- **eggs, poultry**
- **fruit, vegetables, fruit juices**

in 3 categories:

a) **Conventional foodstuffs**
b) **Organic according to EU regulation**
c) **Organic premium line, „Zurück zum Ursprung“**

FiBL

Methods

- ⇨ CO_2 emissions assessed as a „Life cycle assessment“ (LCA) according to the guidelines of the IPCC (2007)
- ⇨ along the entire supply chain (cradle-to-gate), from the agricultural production, processing, packaging, storage and retailing.

FiBL

Methods

- CO_2, CH_4, N_2O, which were calculated as „CO_2-equivalents“
- Detailed primary data on agriculture, transport, processing, packaging and distribution from the Austrian supermarket corporation HOFER KG’s organic product line, „Zurück zum Ursprung“.
- 200 Austrian and international publications and
- 20 Austrian and international statistics and databases

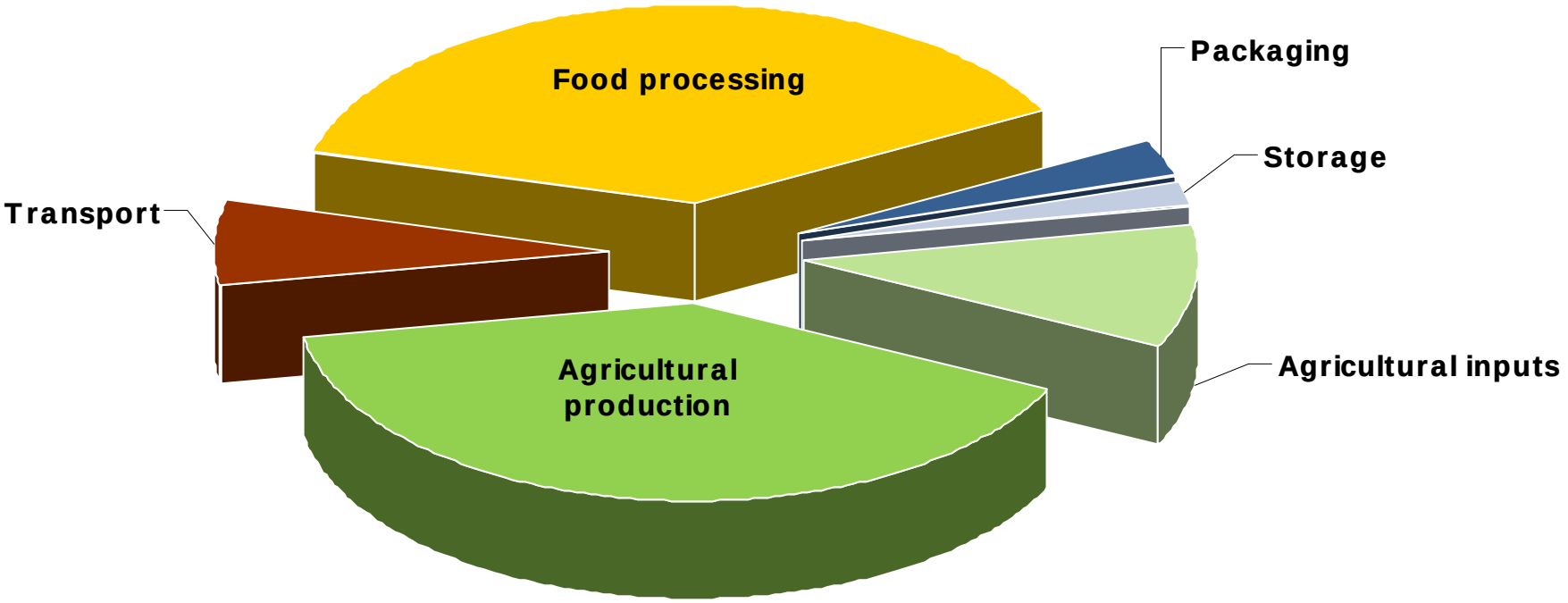
FiBL

Consideration of effects which have so far received little attention

1. **Land Use Change:** Consideration of the destruction of savannas and tropical land through soybean cultivation (over 90% of soybean used for animal feed in Austria is imported from Brazil).

2. **Carbon Sequestration** in the soil (humus accumulation) through organic agriculture

CO_2 emissions of a typical food supply chain



FiBL

Overview of results

Organic products (Bio-ZZU and BIO EU) constantly show lower CO2 emissions than comparable, conventional products:

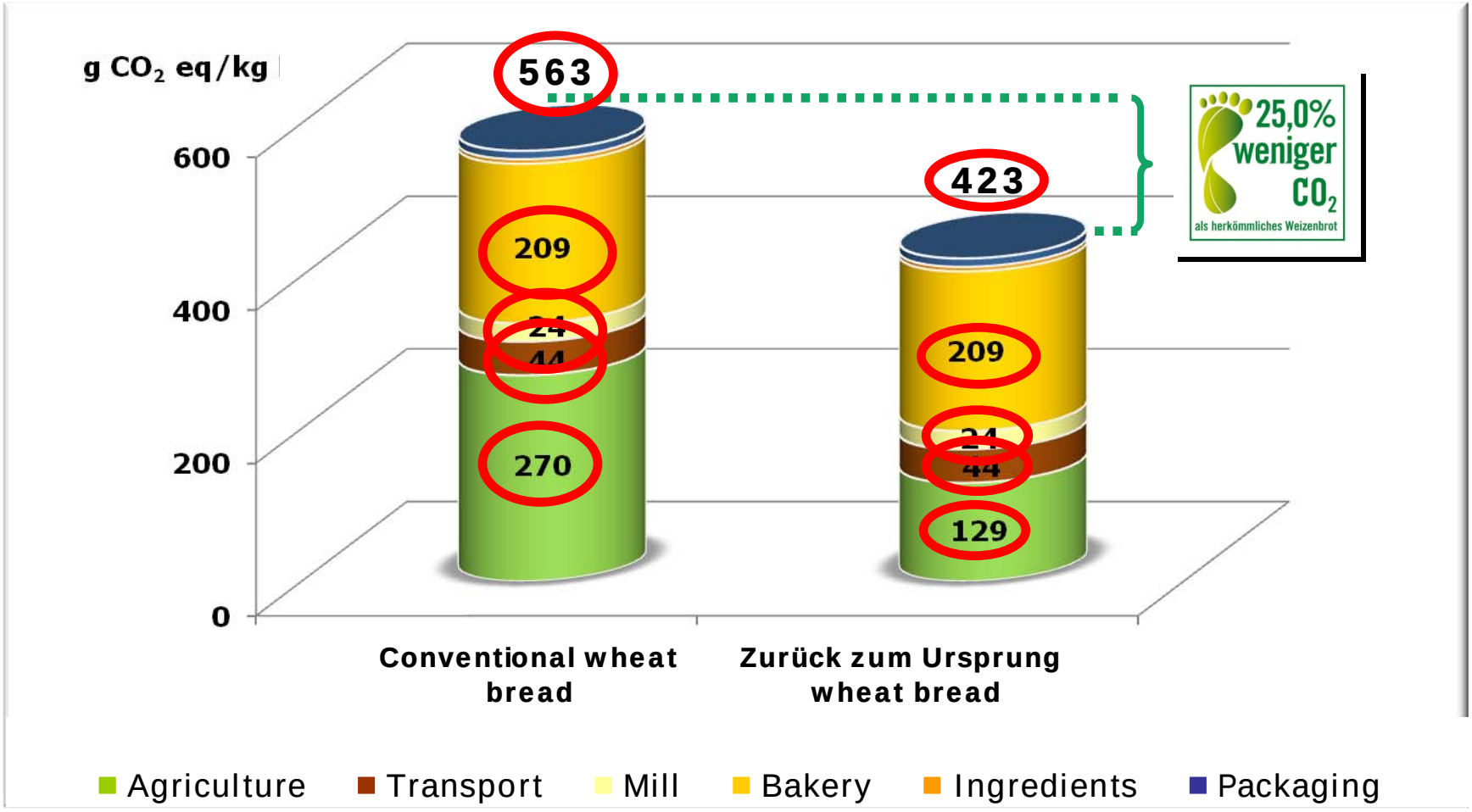
- **Dairy products: 10 - 21% lower CO2 emissions (per kg)**
- **Bread and bread products: 17-45% lower CO2 emissions (per kg)**
- **Vegetables: 10-35 % lower CO2 emissions (per kg)**

FiBL

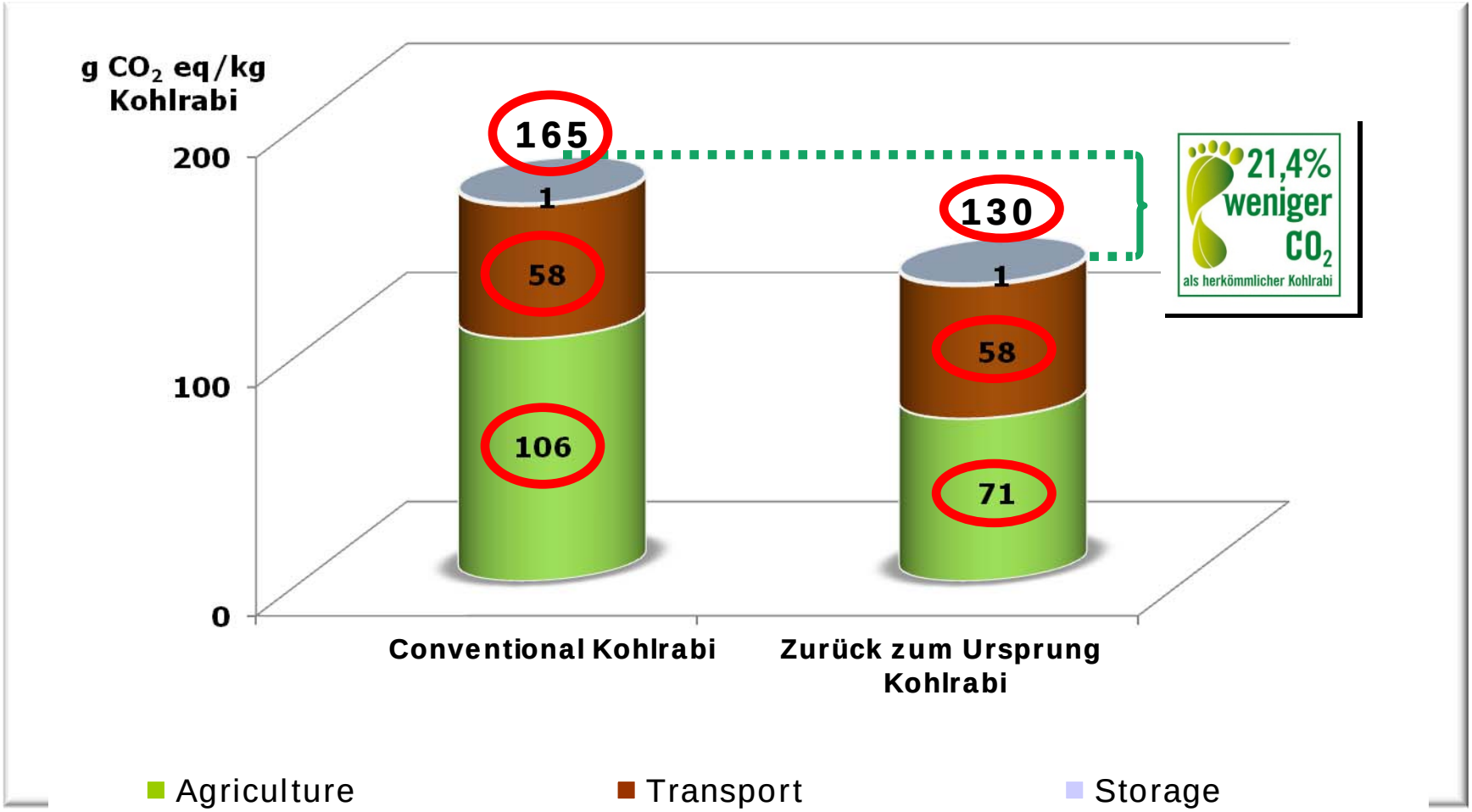
www.fibl.org

FiBL

Exemplary Results: Bread

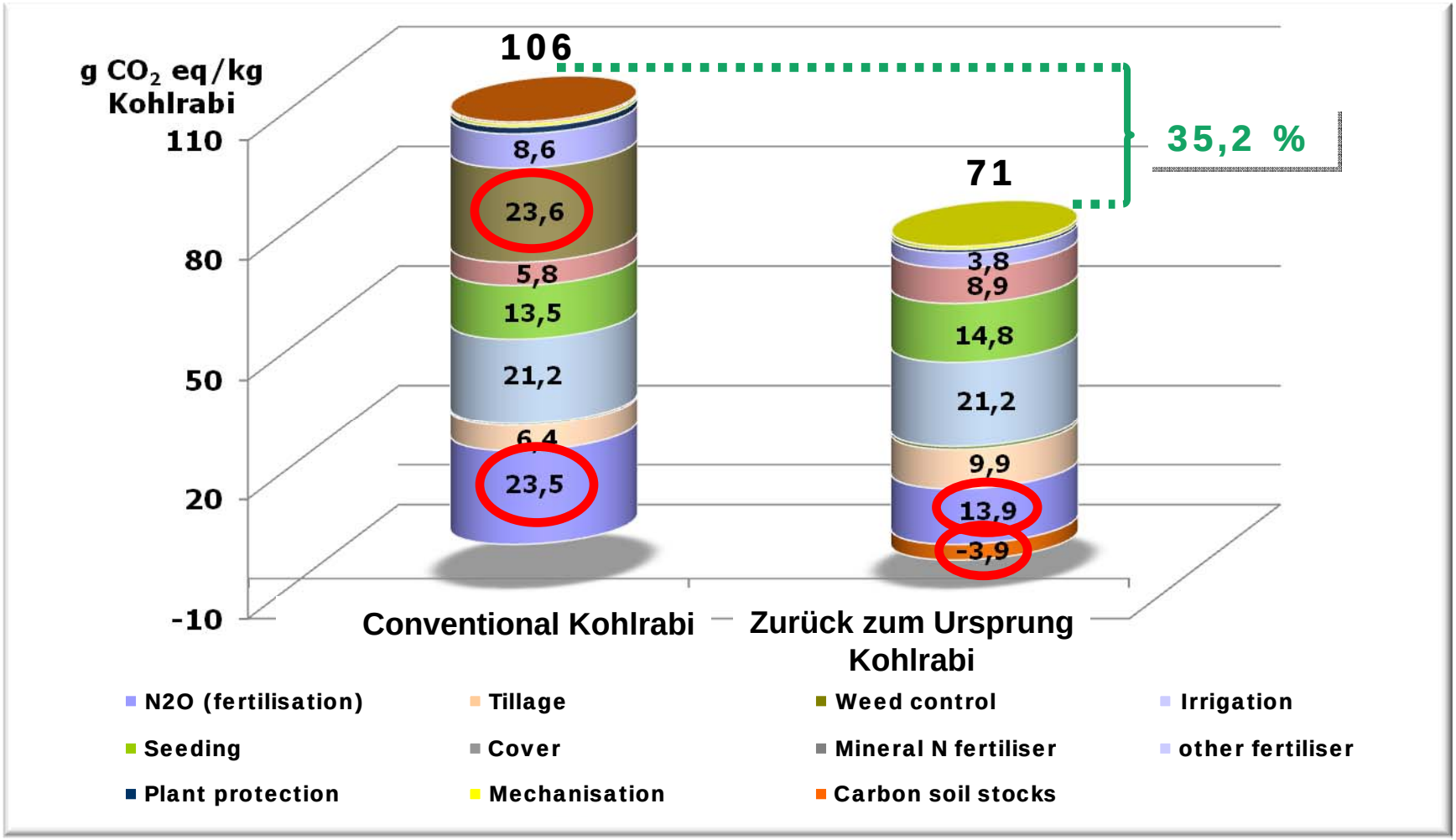


Exemplary Results: Kohlrabi



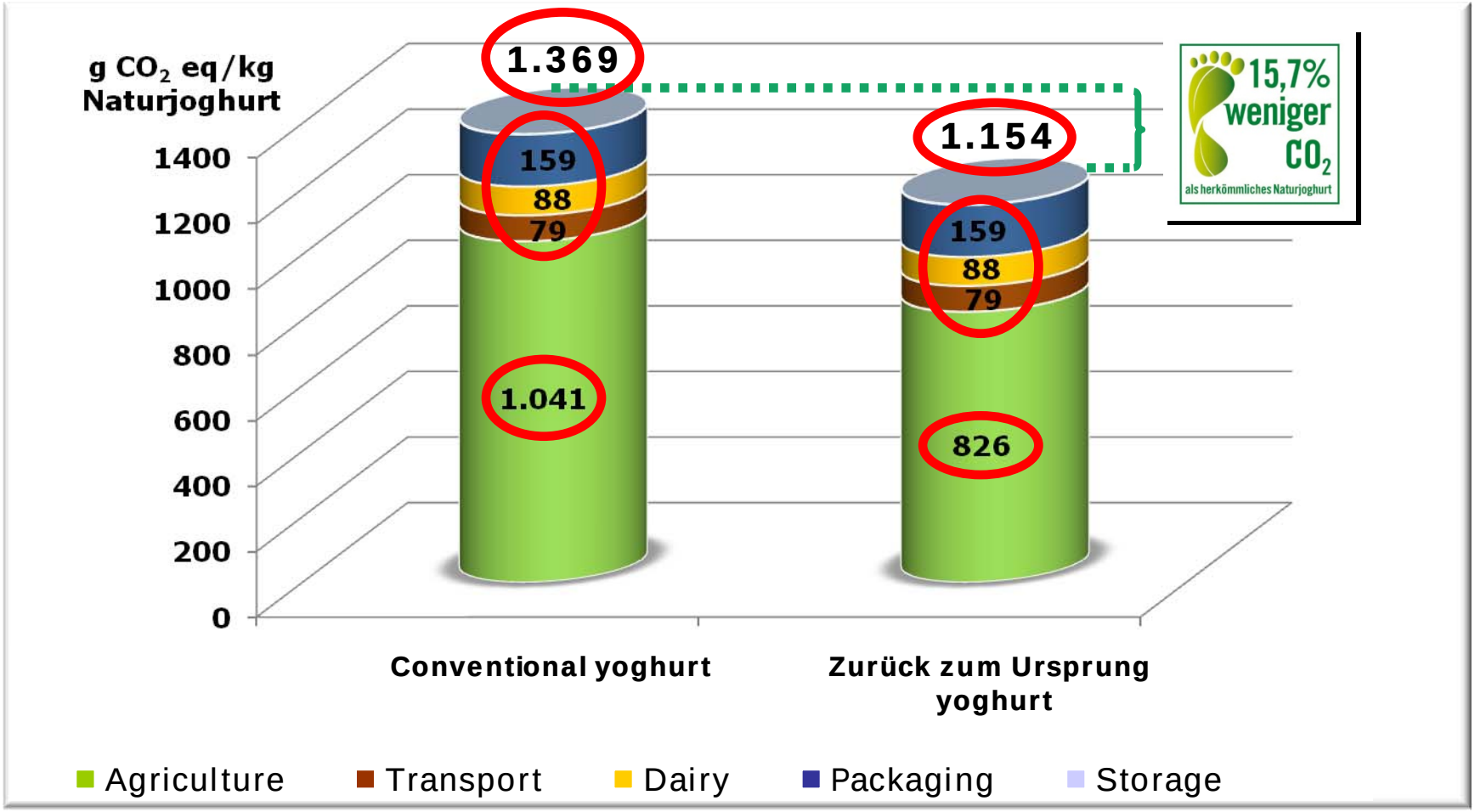
FiBL

Kohlrabi: CO_2-Emissions from horticulture



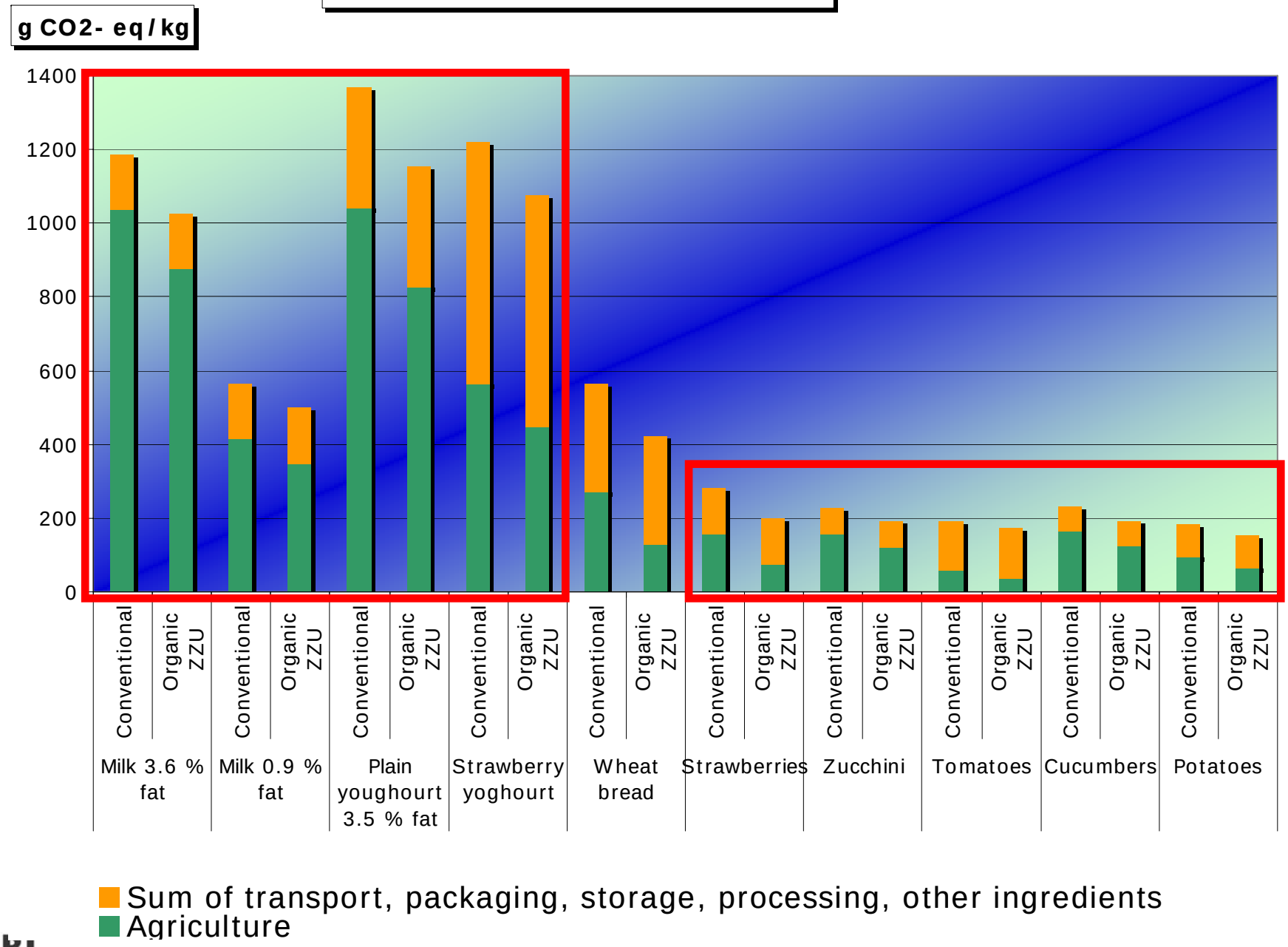
FiBL

Plain yoghurt 3.5 % fat



FiBL

g CO2-eq/kg von Lebensmitteln



www.fibl.org

FiBL

Transport and processing

1.) Role of transport

dairy products: 5-10 %

bread and bread products: 5-15 %

vegetables: 20-50 %

In the case of transport, it is important to consider the efficiency of the transport means (advantages in transport with ships and large trucks compared with small trucks).

2.) Role of convenience

An important CO_2–saving effect in foodstuff processing is the avoidance of convenience, for example **the freezing and re-baking of dough pieces** in the production of bread (rolls):

→ increases the CO_2-saving from 17-25% to over 40%

Conclusions

- There are both feasible and successful ways to communicate climate benefits of organic products relative to conventional ones
- CO_2 emissions depend on the specific product and supply chain
- Results of the analysis are severely influenced by assumptions made
- Communication of additional environmental benefits on organic products can raise consumer awareness and willingness to pay*
- Climate change is only one of these benefits…

*http://fcp.coreportal.org

More information on the project:

http://www.fibl.org/de/oesterreich/schwerpunkte-at/klimaschutz.html

http://www.zurueckzumursprung.at/co2-fussabdruck/co2-ihres-produktes

Lindenthal, T., Markut, T., Hörtenhuber, S., Rudolph, G. (2009): CO2-eq-emissions of organic and conventional foodstuffs in Austria - Results summary of 74 CO2-balanced products. Executive summary. http://www.fibl.org/de/oesterreich/schwerpunkte-at/klimaschutz.html

FiBL

Thank you for your attention!

www.fibl.org

FiBL