

# Carbon footprint of early 'best alliance' strawberries imported from Huelva, Spain to Germany

- part of the PCF Pilot Project Germany

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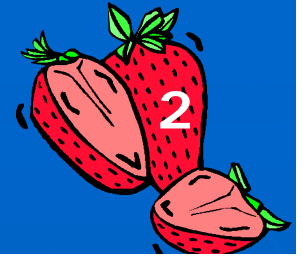
M. Eimer, Campina Verde, Huelva, Spain  
WWF

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Institute of Crop Science and Resource Conservation  
University of Bonn  
Germany

1 Joint NA LCA Congress, Boston, USA, 2 October 2009



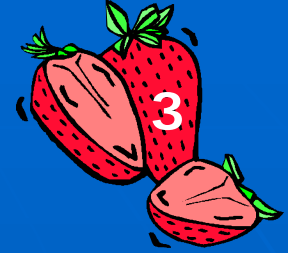
# Introduction



## What is PCF?



- n **PCF = Product Carbon Footprint**
- n **Organisers?** Thema1, Eco institute, PIK, WWF
- n **Partners:** restricted to 10 international industrial partners, 4 NGOs and 2 universities (Bremen and Bonn)
- n **Topics:** Food and non-food, from bedding linen to s t r a w b e r r y
- n **Objective:** carbon footprint for selected produce , develop standards and principles where necessary - joint action
- n **Partner of GHG protocol initiative**
- n **When:** April 2008 - now
- n **Where based?** Berlin, Germany
- n **Results:**press conference 26 January, Berlin, 300-400 press
- n **Homepage:** <http://www.pcf-project.de>



# Introduction

## Background

- n Criticism: import of Spanish strawberries
- n Strawberry production in Germany starts May
- n Spain nearest strawberry supplier before May
- n Preference of regional produce

## Objectives

- n Study sustainability of strawberry cultivation & supply chain
- n Improve resource conservation and management
- n Identify hotspots of excessive energy consumption
- n Identify role of consumer participation
- n Identify countermeasure e.g. for
  - Carbon and energy reductions
  - water conservation e.g. WWF nature reserve projects

# LCA approach



## Setting the scene

- n **System boundary:** cradle to consumer (PAS2050)
  - n = plantlet to package recycling, no offset
- n **Point of sale (POS):** Feb-May, Rhein-Ruhr-16 Mio
- n **Functional unit:** 500 g strawberry packet

## Data source and quality

- n **Orchard data:** Campina Verde, Huelva, Spain
- n **Packhouses:** Huelva, Spain
- n **Transport data:** truck company, car to consumer
- n **Re-distribution:** REWE distributors
- n **Data quality:** ca. 90% primary data

Raw material

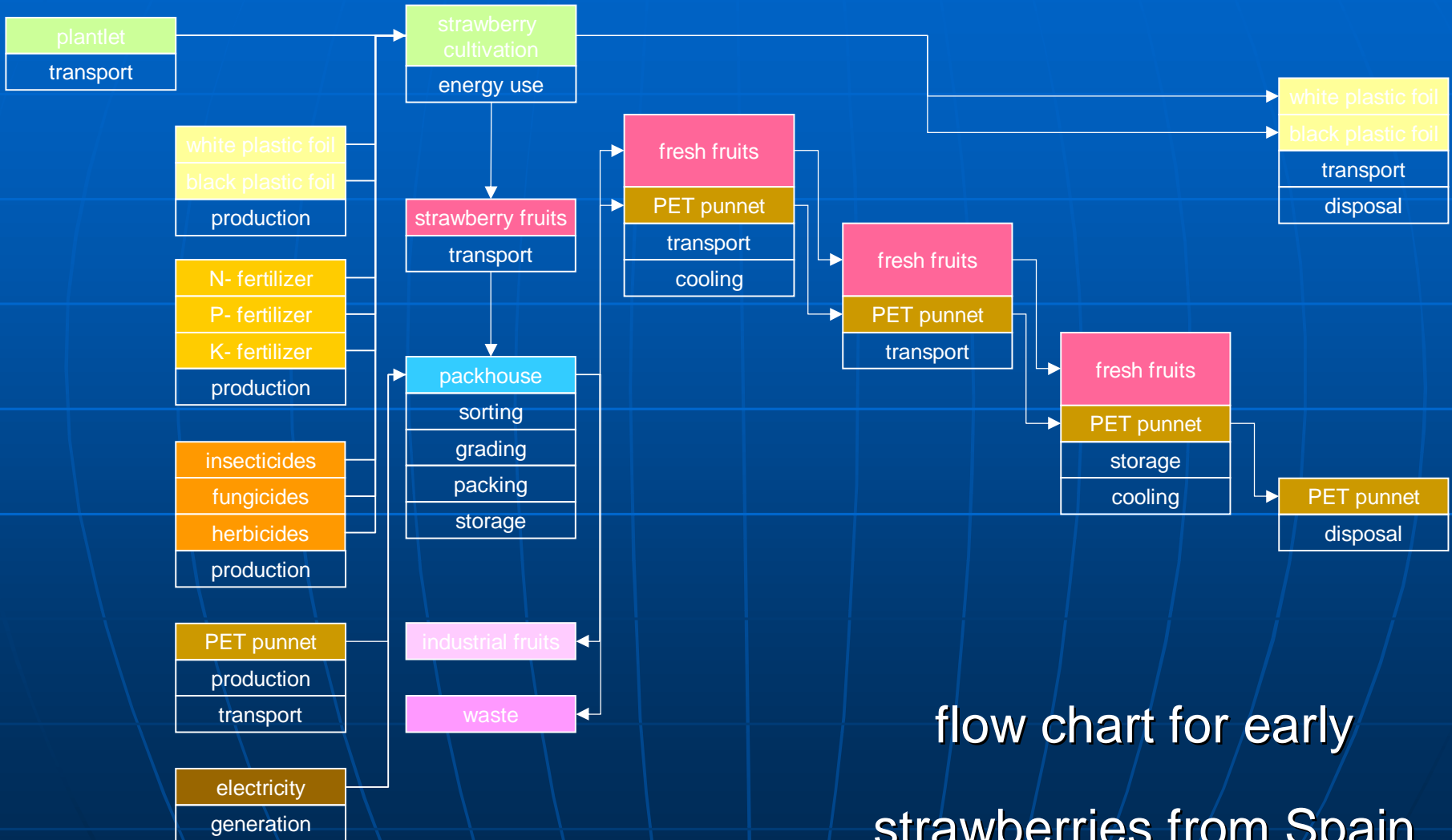
Production

Distribution

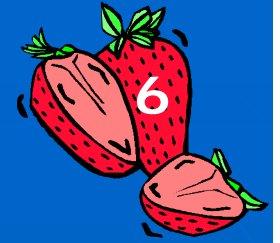
Shopping trip

Product use

Recycling/ Disposal



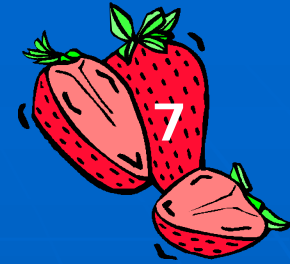
flow chart for early strawberries from Spain



# Orchard data Huelva, Spain

- n orchard : Huelva, Southern Spain
- n strawberry cultivar: Candonga
- n planting: from December
- n Planting density : 70.000 plants/ha
- n Plantletorigin: Segovia, N. Spain (2x 660 km, 50%)
- n Cultivation: polytunnel, black plastic mulch
- n Fertiliser NPK, irrigation (pumps), pesticides
- n harvest: January - May
- n Yields 45.5 t/ha
- n Transport to packhouse Huelva: 2x 5 km (50% )

# Carbon footprint [g CO<sub>2e</sub>/ 500 g]



## Fruit production

- n Fertiliser and pesticides + fuel 41 g - 9 %
- n Polytunnel and plastic mulch 61 g - 14%

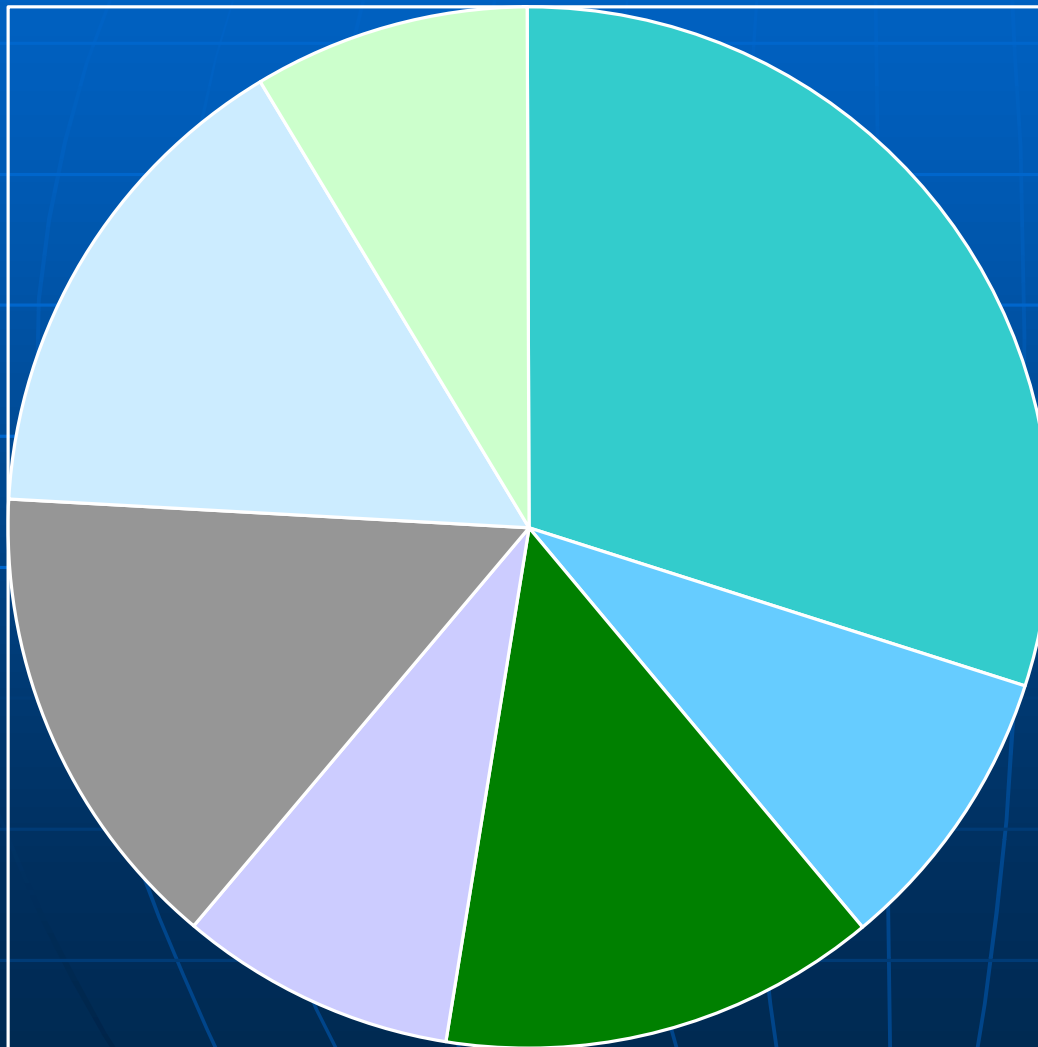
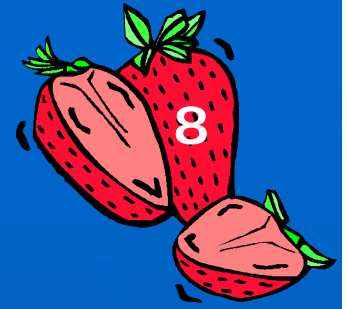
## Packhouse

- n Energy, fruit PET package and its transport 66 g
- n Disposal of plastic mulch and fruit PET package 53 g

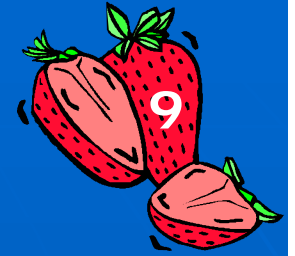
## Transport

- n Overall transport to retail outlets: 140 g - 31 %
- n Consumer shopping (2x 5km, 50%): 65 g - 15%
- n Use phase (12 h consumer fridge) : 6 g
- n misc 17 g
- n Carbon footprint [g CO<sub>2e</sub> / 500 g]: **448 g – 100%**

# Carbon footprint [g CO<sub>2e</sub>/ 500 g]



- Transport overall 31%
- fert., pest., fuel 9%
- polytunnel, mulch 14%
- disposal, incin. 9%
- consumer shop. 15%
- packhouse 16%
- misc 9%



# hotspots

- Orchard level

- 1) Pesticide and energy use e.g. water pumps in Spain

- Packhouse level

- 2) Energy use – certified green energy

- 3) PET package

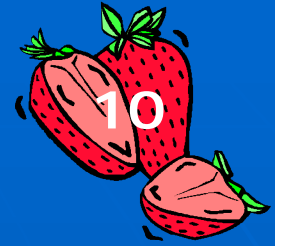
- Transport level

improve fuel efficiency, empty return load (PET, plants)

- Consumer level

- 4) avoid unnecessary shopping trips (15 %) by using car-share, public transport or other means than private cars

- largely under-estimated portion of primary energy



We would be proud,  
if this study  
contributed to REWE  
achieving the  
prestigious  
sustainability prize

Thank you for  
your attention