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Agroscope

Environmental impacts of different beef production systems

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Introduction

- Effects of meat production on **environment** topic of great concern
 - LCA: Impacts of beef much higher than pork or poultry meat
- ⇒ **Beef production is under pressure!**

Goals of this study:

- Identify hot-spots in beef supply chain
- Determine reduction potentials for environmental impacts

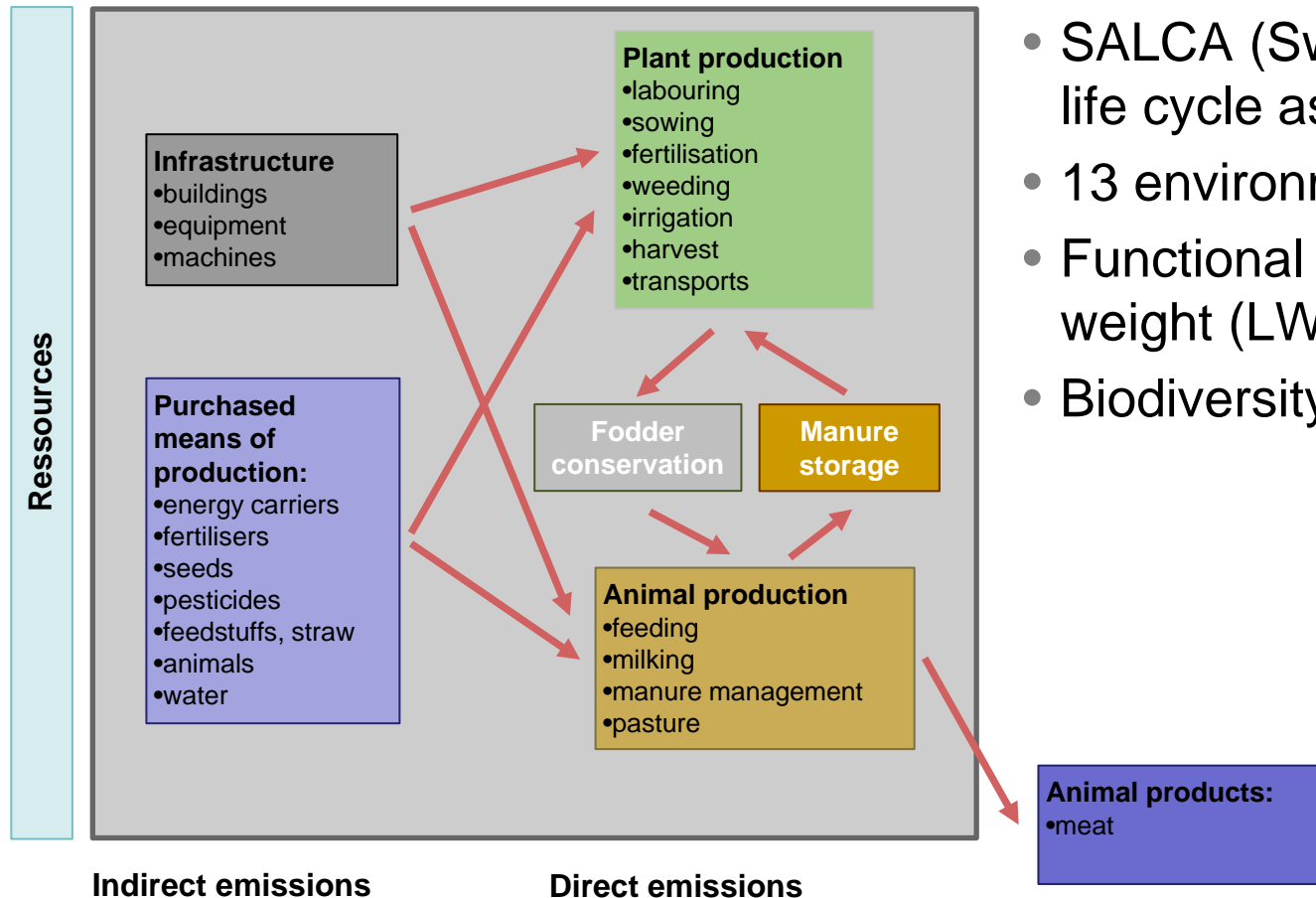




Methods

Life cycle assessment (LCA): cradle to farm gate

System boundary = farm gate



- SALCA (Swiss agricultural life cycle assessment)
- 13 environmental impacts
- Functional unit: kg live weight (LW)
- Biodiversity assessment



Systems analysed

	System	Abbreviation	Data
Bull fattening	Switzerland PEP	BF_conv_CH	Model farms (swiss average)
	Switzerland organic	BF_org_CH	Model farms (swiss average)
	Germany	BF_conv_DE	Literature (typical production system)
Suckler cow systems	Switzerland PEP	SC_conv_CH	Model farms (swiss average)
	Switzerland organic	SC_org_CH	Model farms (swiss average)
	Brazil	SC_BR	Literature (typical production system)

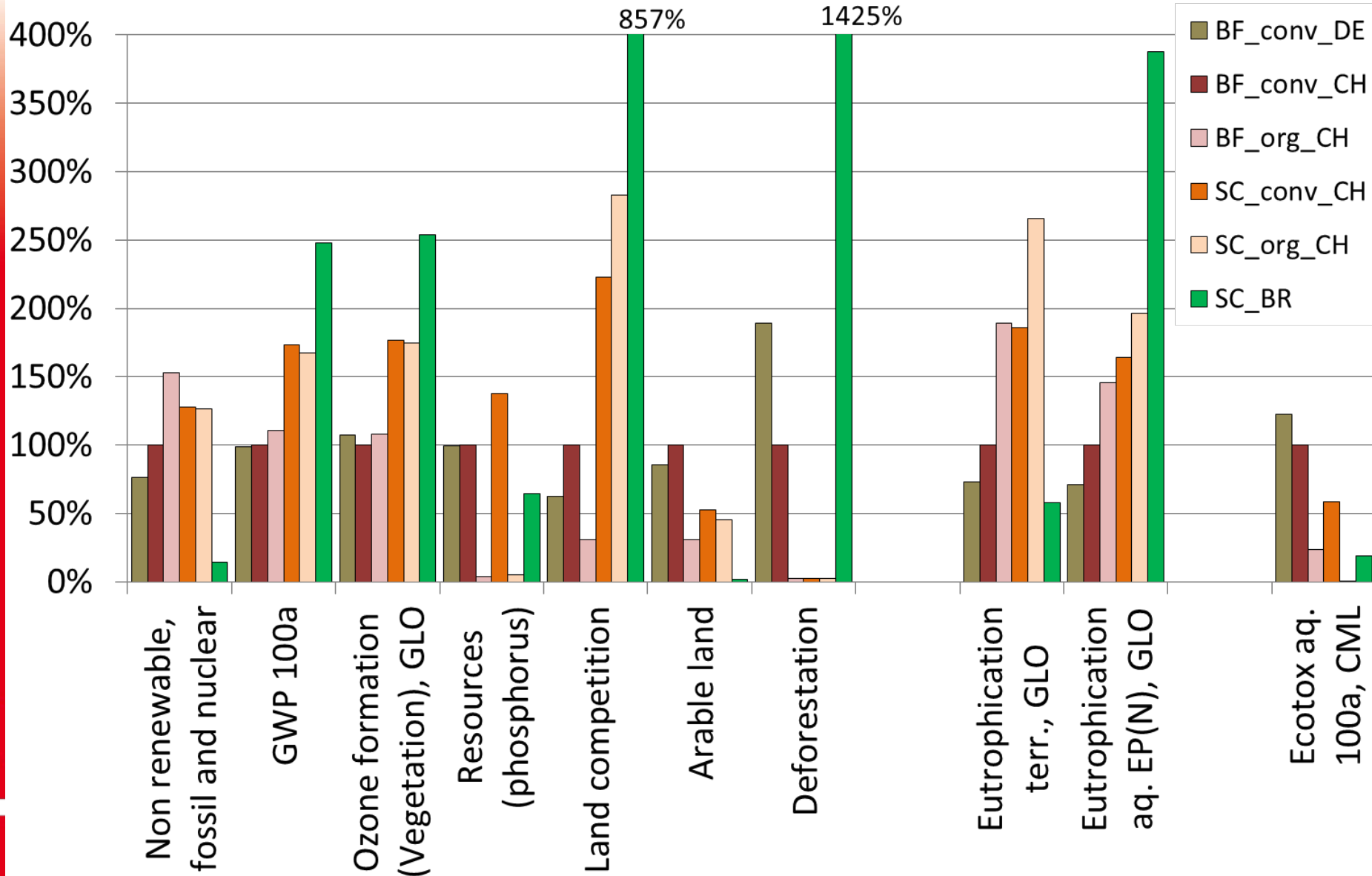


Production parameters

	BF_conv_DE	BF_conv_CH	BF_org_CH	SC_conv_CH	SC_org_CH	SC_BR
Starting age [weeks]	10	4	4	-	-	-
Daily weight gain [g/d]	1 200	1 049	747	987	987	650
Slaughter age [months]	21	15	22	10	10	24
Final weight [kg LW]	700	525	538	366	366	470
Pasture [days / year]	-	27	166	133	133	365
Concentrate intake [kg/animal]	1 135	716	109	125	125	-

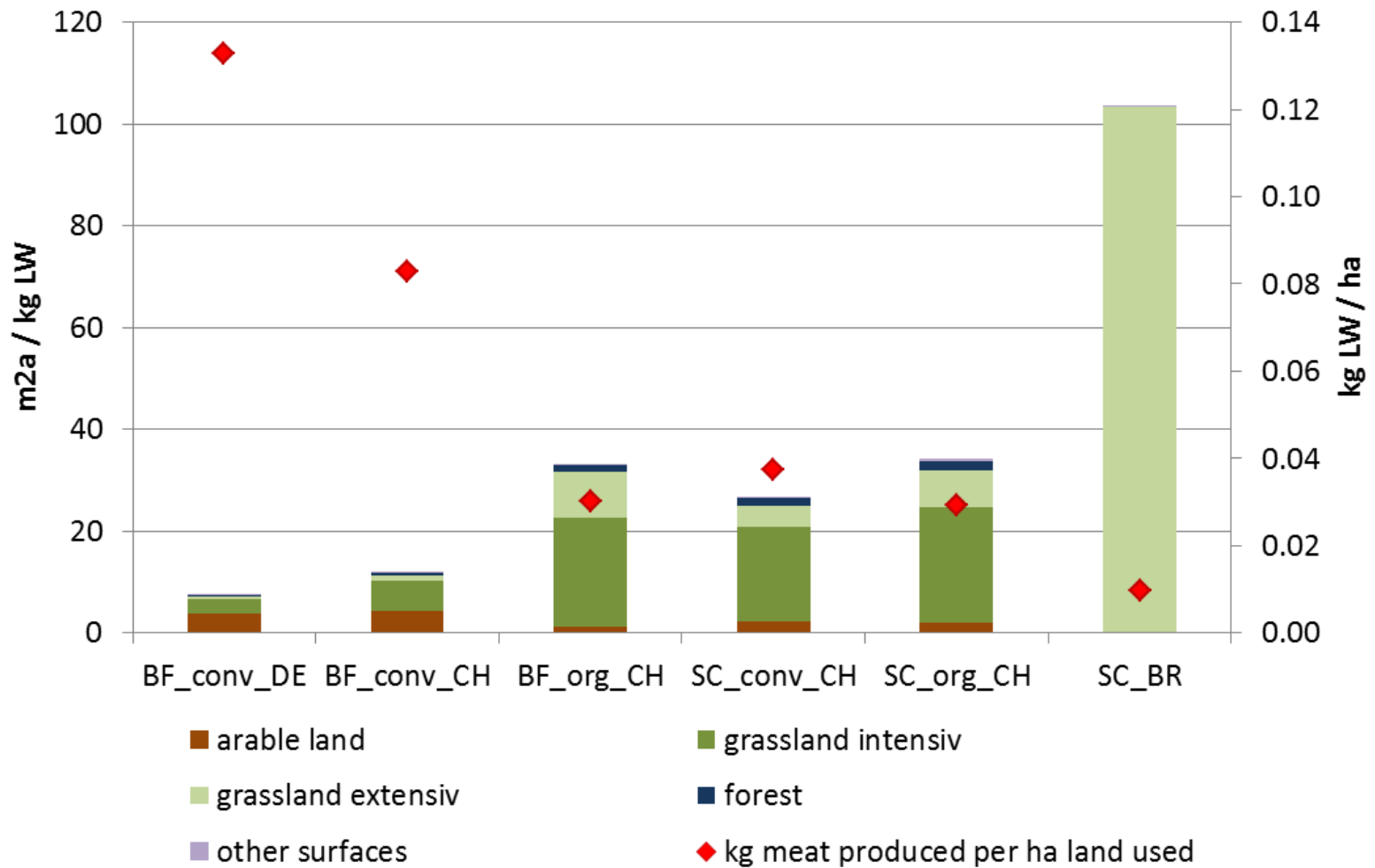


Overview: Env. Impacts per kg meat



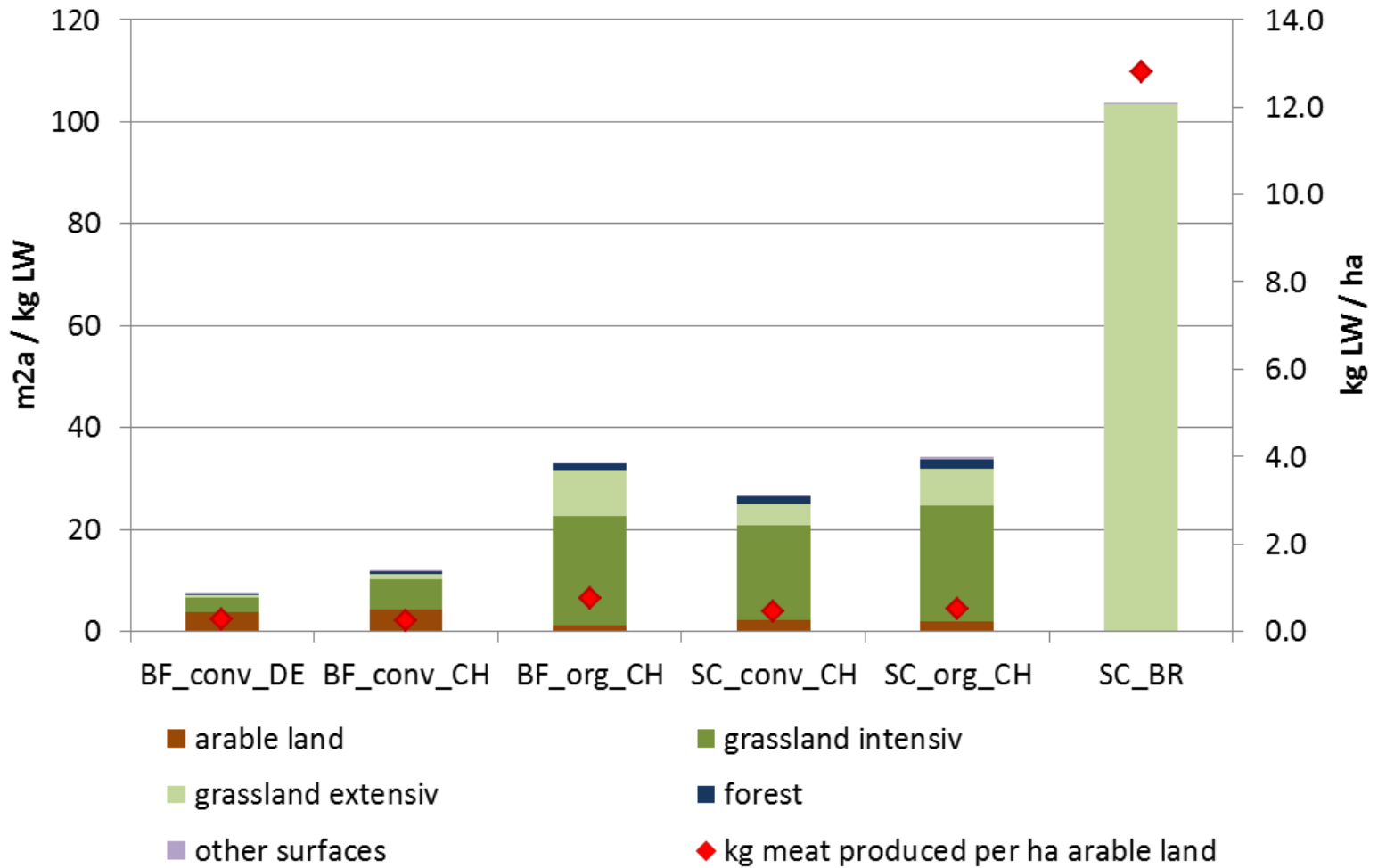


Land use per kg meat produced



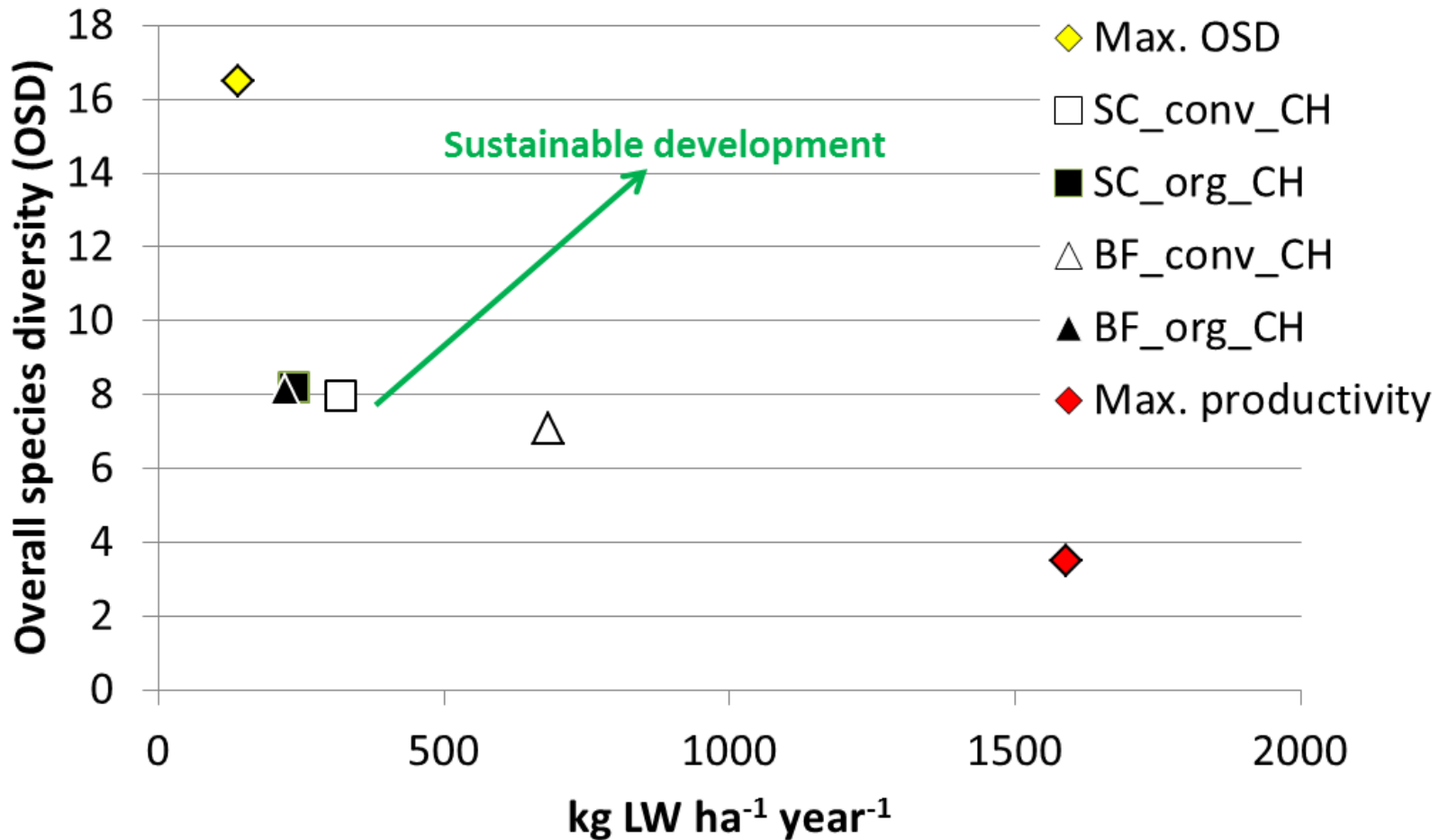


Land use per kg meat produced





Biodiversity assessment





Conclusions

- **3 main factors** determine env. impact of beef production:
 - **Design** of the system (bull fattening / suckler cows)
 - **Efficiency** of the system
 - Composition of feed and **feedstuff** production
 - **Suckler cow systems:**
 - Due to **allocation** of mother cow high results for many categories, but advantages for arable land use, deforestation, ecotoxicity
 - Rely on **grasslands**
 - Higher **biodiversity** potential
- ⇒ **No overall advantages for one system**
- ⇒ **Improvements require detailed analysis**
- ⇒ **Possible alternative: Combination of milk production with bull fattening based on grassland**