



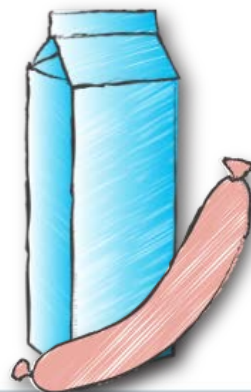
Valuing leftover streams through livestock: Impact of livestock system and productivity

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September 28th 2017, Vienna



Dual challenge of the food system








Feeding leftover streams



Default livestock: avoiding feed-food competition!

Amount of animal protein

Article	Protein per capita per day (g)	 Food waste	 Co-products	 Marginal land	 Crop-residues	 Products
Elferink et al. (2008)	27		x			meat
Smil (2014)	9		x	x	x	meat
Schader et al. (2015)	9		x	x		meat, milk, eggs
Van Kernebeek et al. (2016)	7	x	x			meat, milk
Van Zanten et al. (2016)	21	x	x	x		meat, milk

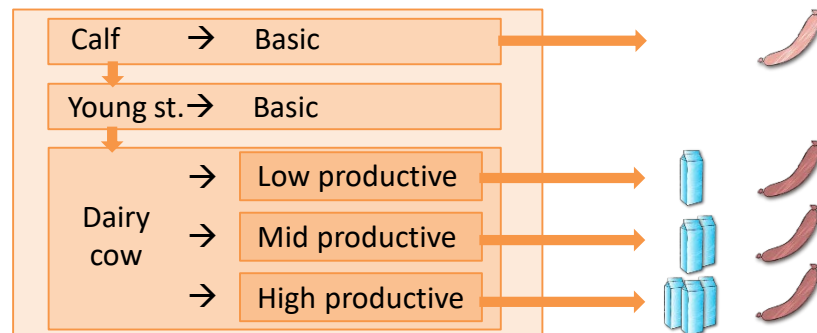
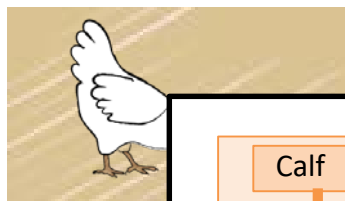
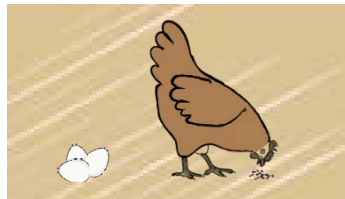
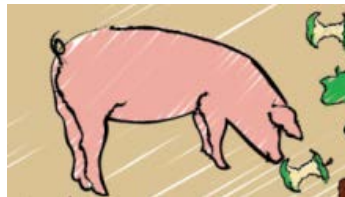
Which combination of livestock systems, differing in production level, can optimally convert leftover streams into animal protein.

The optimisation model






Input



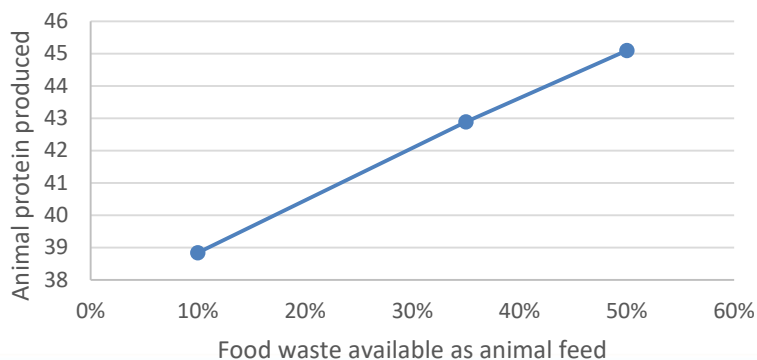
Output



Preliminary results

Article	Protein per capita per day (g)	 Food waste	 Co-products	 Marginal land	 Crop-residues	 Products
Elferink et al. (2008)	27		x			meat
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Van Hal et al. (...)	43	x	x	x		meat, milk, eggs

Sensitivity to waste availability



Nutrient	Output	DRI	% DRI
Protein (g)	42.89	57	75.24%
VitD (µg)	1.18	15	7.84%
VitB12 (µg)	5.79	4	144.64%
Calcium (mg)	1290.76	750	172.10%
Iron (mg)	1.00	6.5	15.32%
Zinc (mg)	5.85	6.85	85.34%
Selenium (µg)	49.60	70	70.85%



Preliminary results

livestock

g product/cap/day

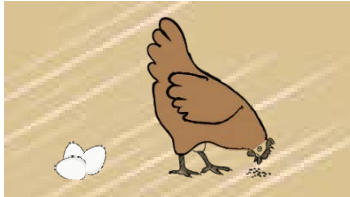
g protein/cap/day



Low: 1,183,295
Mid:
High:

Meat: 0.51

0.11

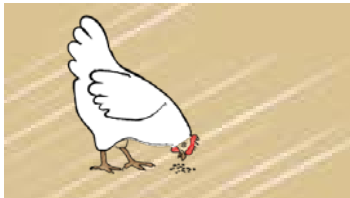


Low: 7,230,407
Mid:
High:

Meat: 0.02

Eggs: 0.54

0.07



Low:
Mid:
High:



Low: 7,645,044
Mid: 23,008,565
High: 7,186,392

Milk: 1,139.28

Meat: 38.49

42.71



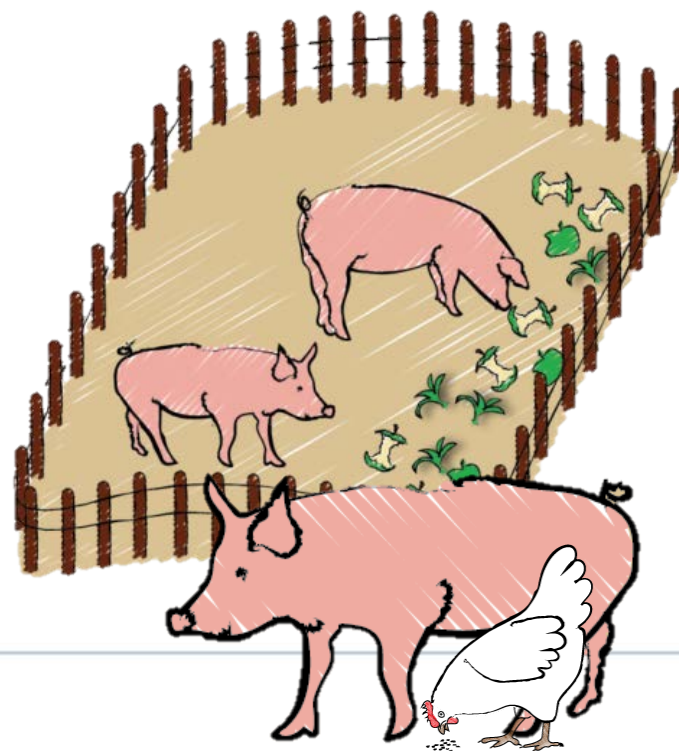
Low:
Mid:
High:



The ruminant dilemma: the trade-off between food security and global warming.

Thank you

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Illustrations by Birgit Boogaard

Kuwona

Advice, Training & Illustrations
in Agriculture and Sustainable Development

Preliminary results

Number of dairy cows in different scenarios of food waste availability

