

INNOVATIVE SUSTAINABLE ORGANIC BEEF PRODUCTION SYSTEM WHERE QUALITY REPLACES QUANTITY



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Kvægafgiftsfonden

BACKGROUND

Most organic bull calves from dairy production in Denmark are sold to conventional fattening.

Only a few steers (2½ years) are produced within the organic system

The organic rules require:

- milk-feeding until 3 months of age
- grazing for 6 months per year
- at least 60% roughage in the ration

AIM OF THE GROBEAT PROJECT

To invent a novel beef production strategy that offers a diversity of beef products, which score high in relation to:

- Animal welfare
- Biodiversity
- Climate

Furthermore, the idea is that meat- and sensory quality of the beef products – together with the storytelling of the production system will address :

“less is more”

Thereby facilitates healthier eating of the consumers, and provide the organic dairy sector with credibility for “license to produce”

AIM GROBEAT II

- Holistic approach – aim to keep the calves in the organic system
- Focus on climate:
 - Diet: reduced meat intake – ‘less is more’
 - Production: least possible climate impact:
 - utilize the growth potential of the individual animal
 - use feed that can not be used direct as human food
- Focus on animal welfare:
 - cow-calf systems
- Focus on biodiversity
 - extensive grazing
- Focus on sustainability in the entire food chain:
 - Including producer's economy

AIM GROBEAT III

This novel organic beef production concept producing three types of beef:

A: 8 months steers - rosé veal

B: 16 months steers - medium red beef

C: 26 months steers - red beef from

Hypothesis: Performance as well as meat quality would be as good as similar types of conventional beef.

To improve growth performance in the young calves, culled dairy foster cows rear the calves.

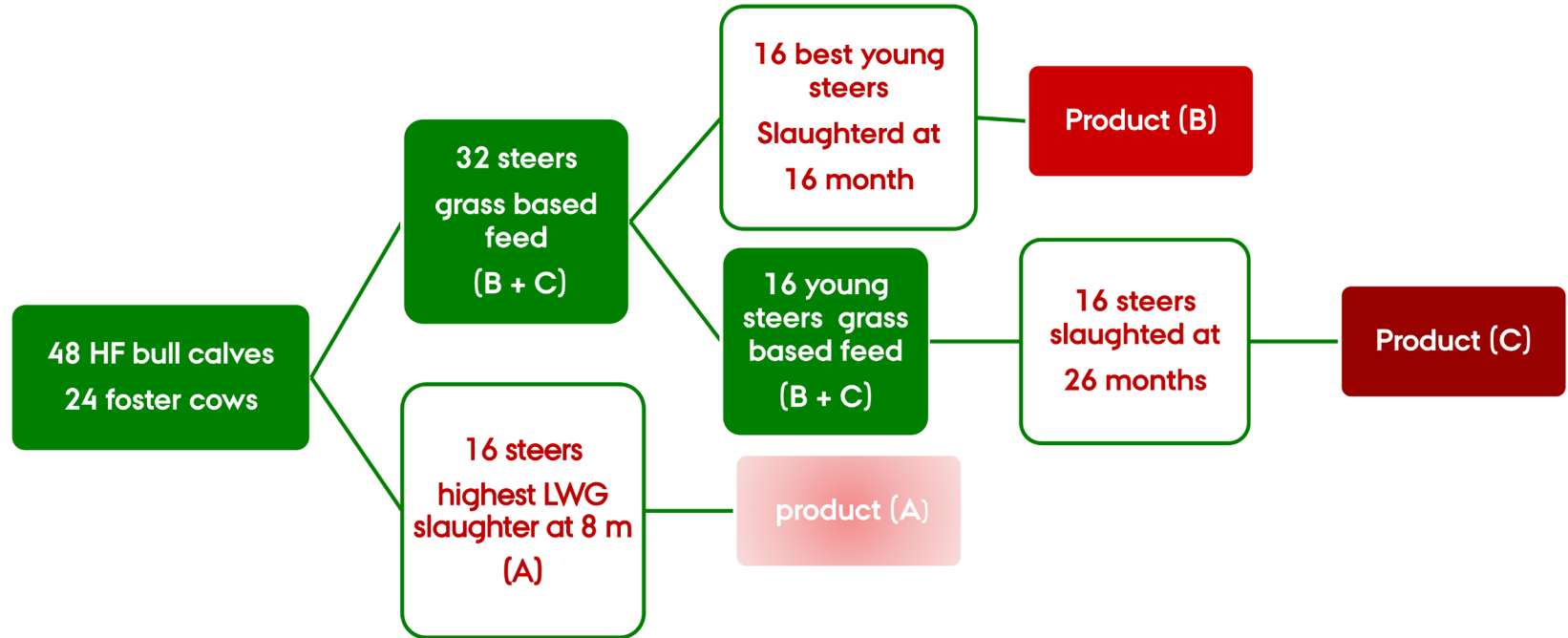


P R O J E C T
GrOBEat
Grass-fed Organic Beef for Sustainable Eating

HYPOTHESIS

		Meat quality – Taste	Climate impact
A: Rosé – 8 m		*	***
B: Medium red - 16 m		**	**
C: Red beef - 26 m		***	*

EXPERIMENTAL DESIGN

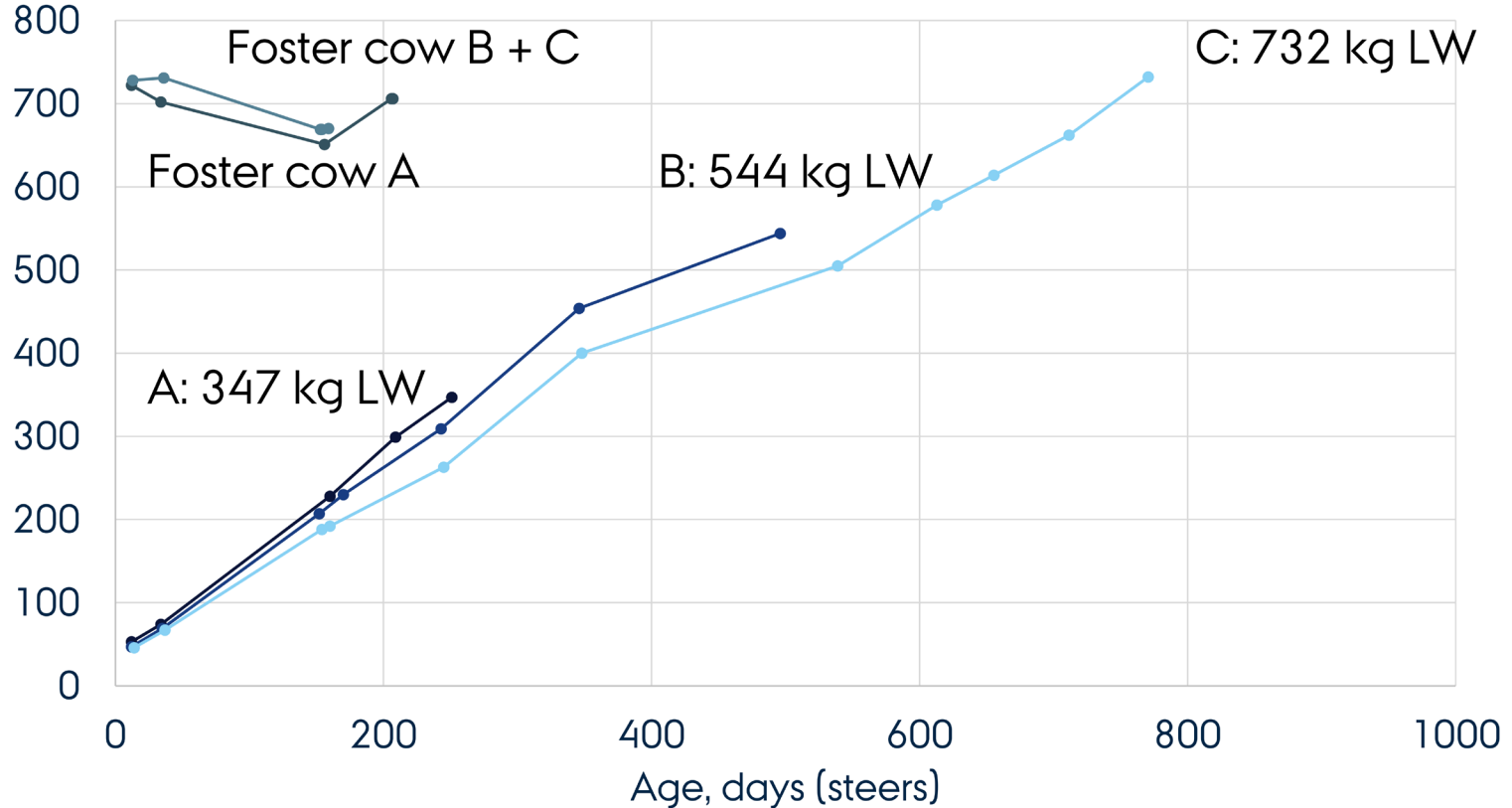


PRELIMINARY RESULTS



LIVE WEIGHT DURING EXPERIMENT STEERS AND FOSTER COWS

Kg live weight



LIVE WEIGHT GAIN

		Steers			Foster cow	
		A	B	C	A	B+C
LW Start, kg		53	47	46	722	728
LW slaughter, kg		347	544	732	706	670
Days, total		239	484	757	194	146
- Hereof at pasture		126	267	367		
Live weight gain - total, kg		294	497	686	-16	-58
LWG – pasture, kg		154	228	296		
Daily gain - total, g/d		1230	1027	907	-82	-397
Daily gain at pasture, g/d		1222	854	807		

ESTIMATED FEED PER PRODUCED STEER, KG DM

		Steers		
		A	B	C
Feed for steers				
Milk from foster cow		233	188	188
Feed		472	1136	3025
Grazing		193	1193	1988
Total feed, kg DM (excl milk)		665	2329	5013
Feed for foster cow (w. 2 calves)				
Feed		1226	567	567
Grazing		1975	1793	1793
Total feed per steer				
Feed		1085	1605	3308
Grazing		1181	2089	2885
Total, kg DM		2266	3694	6193

FEED USE PER KG LIVE WEIGHT GAIN

		Steers		
		A	B	C
Total feed steers incl cow				
Feed		1085	1605	3308
Grazing		1181	2089	2885
Total, kg DM		2266	3694	6193
LWG, kg		286	468	657
<i>(steer + ½cow)</i>		<i>(294-8)</i>	<i>(497-29)</i>	<i>(686-29)</i>
Feed use, kg DMI/kg LWG		7,9	7,9	9,4

FEED EFFICIENCY PER PRODUCED STEER

		Steers			Bull calf
		A	B	C	9 months Conv.
Total feed steers incl cow					
Feed		1085	1605	3308	1469
Grazing		1181	2089	2885	0
Total, kg DM		2266	3694	6193	1469
LWG, kg		286	468	657	350
<i>(steer + ½cow)</i>		<i>(294-8)</i>	<i>(497-29)</i>	<i>(686-29)</i>	
Efficiency, DMI/kg LWG		7,9	7,9	9,4	4,2

LAND USE (LU) PER STEER AND PER KG LWG

		Steers		
		A	B	C
LU per steer	ha			
Grass clover silage		0,08	0,11	0,25
Maize silage		0,02	0,04	0,04
Barley		0,05	0,05	0,05
Total feed		0,15	0,20	0,34
Grazing – intensive		0,21	0,28	0,19
Grazing – extensive		0	0,23	0,83
Total ha		0,36	0,72	1,35
Per kg LWG,	m ²			
Feed		5,1	4,2	5,2
Grazing – intensive		7,6	6,1	2,8
Total - land in rotation		13	10	8
Grazing – extensive		0	5	13
Total - incl. extensive		13	15	21

LAND USE (LU) PER STEER AND PER KG LWG

		Steers			Bull calf
		A	B	C	9 m Conv.
LU per steer	ha				
Grass clover silage		0,08	0,11	0,25	
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LU per kg LWG,	m ²				
Feed		5,1	4,2	5,2	8
Grazing – intensive		7,6	6,1	2,8	0
Total land in rotation		13	10	8	8
Grazing – extensive		0	5	13	0
Total m²		13	15	21	8

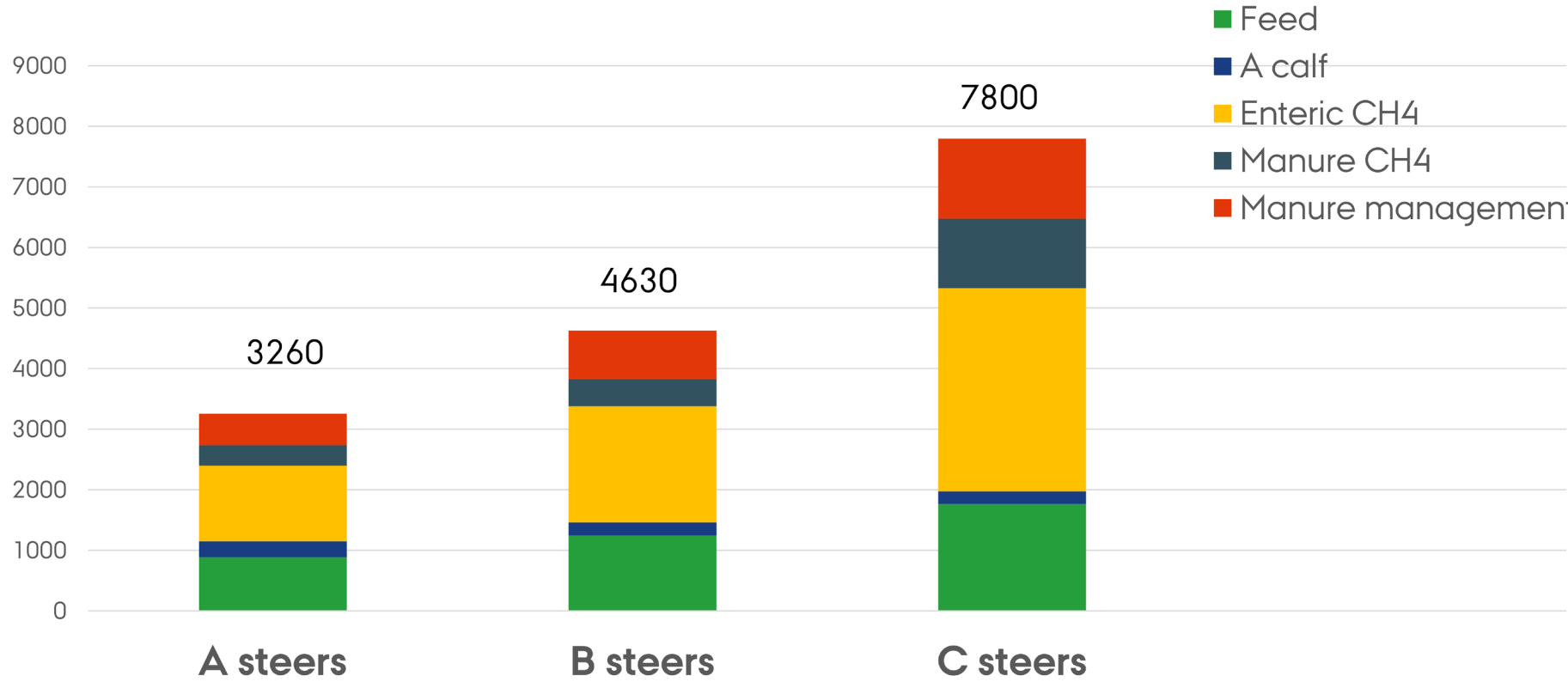
POTENTIAL DISAPEARED FRACTION OF BIODIVERSITY (PDF)

		Steers		
		A	B	C
Contribution to PDF-index				
Grass clover silage		-70	-99	-229
Maize silage		67	108	108
Straw		0	2	83
Barley		134	147	136
Rapeseed cake		81	53	106
Grazing – intensive		-193	-256	-167
Grazing – extensive		0	-789	-2820
Total PDF-index		19	-834	-2782
PDF-index, per kg LWG,		0,07	-1,8	-4,2

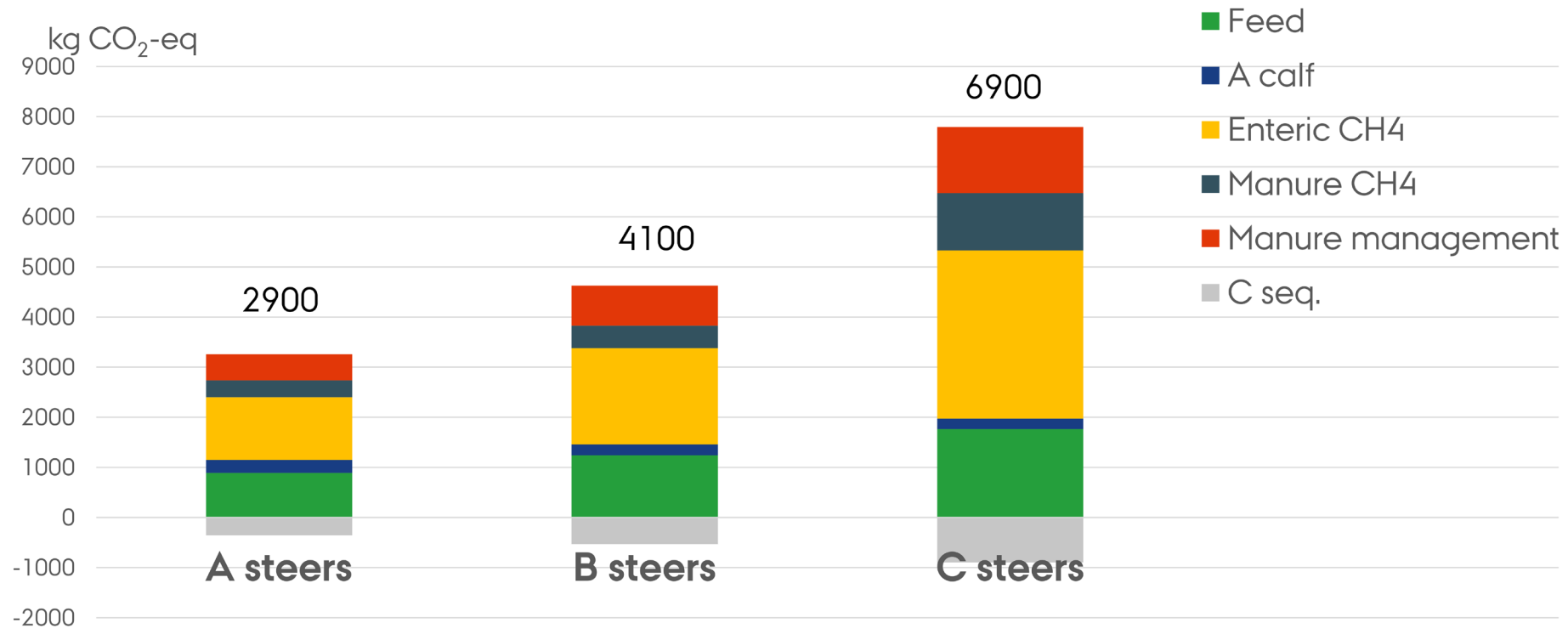
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Grazing – intensive		-193	-256	-167	
Grazing – extensive		0	-789	-2820	
Total PDF-index		19	-834	-2782	1538
PDF-index, per kg LWG		0,07	-1,8	-4,2	4,4

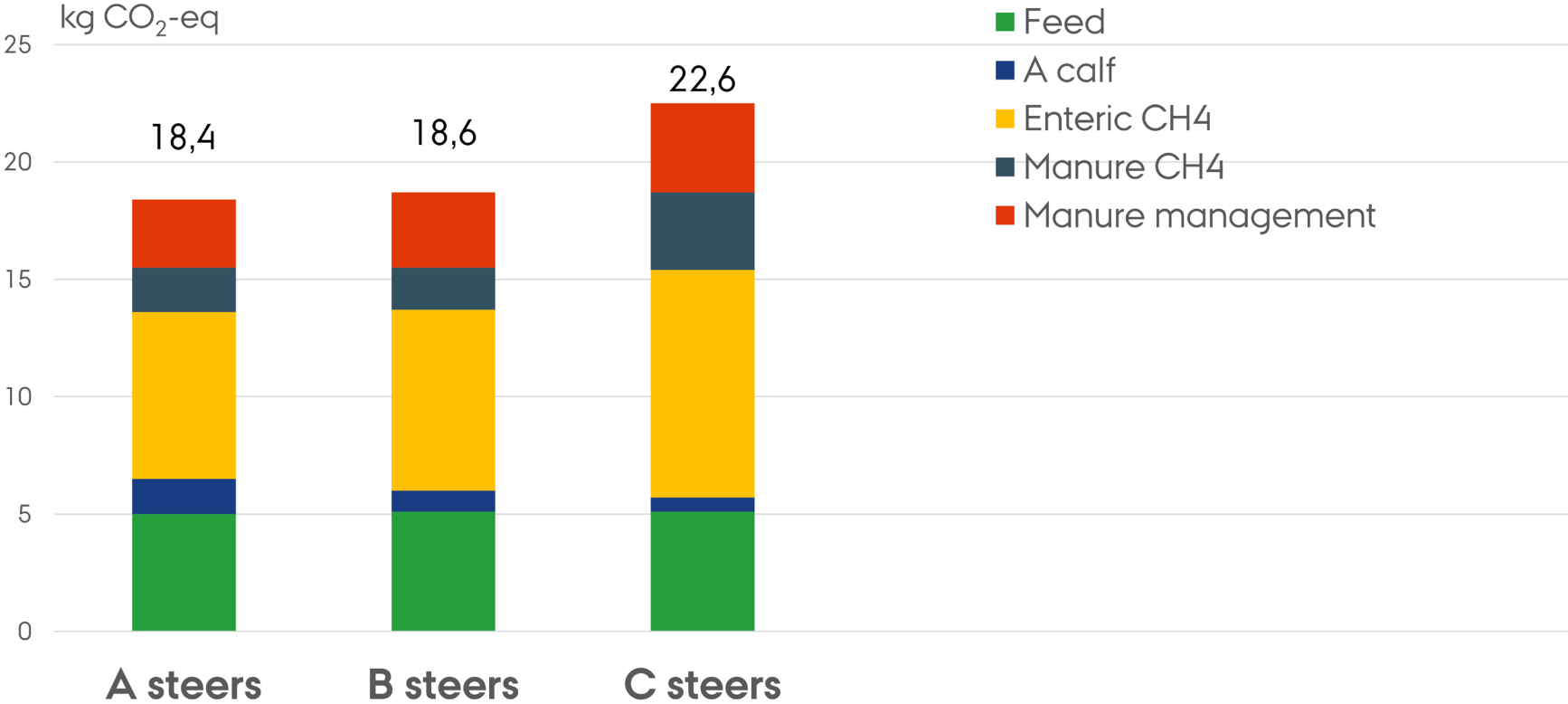
CARBON FOOTPRINT (CF) PER STEER, KG CO₂



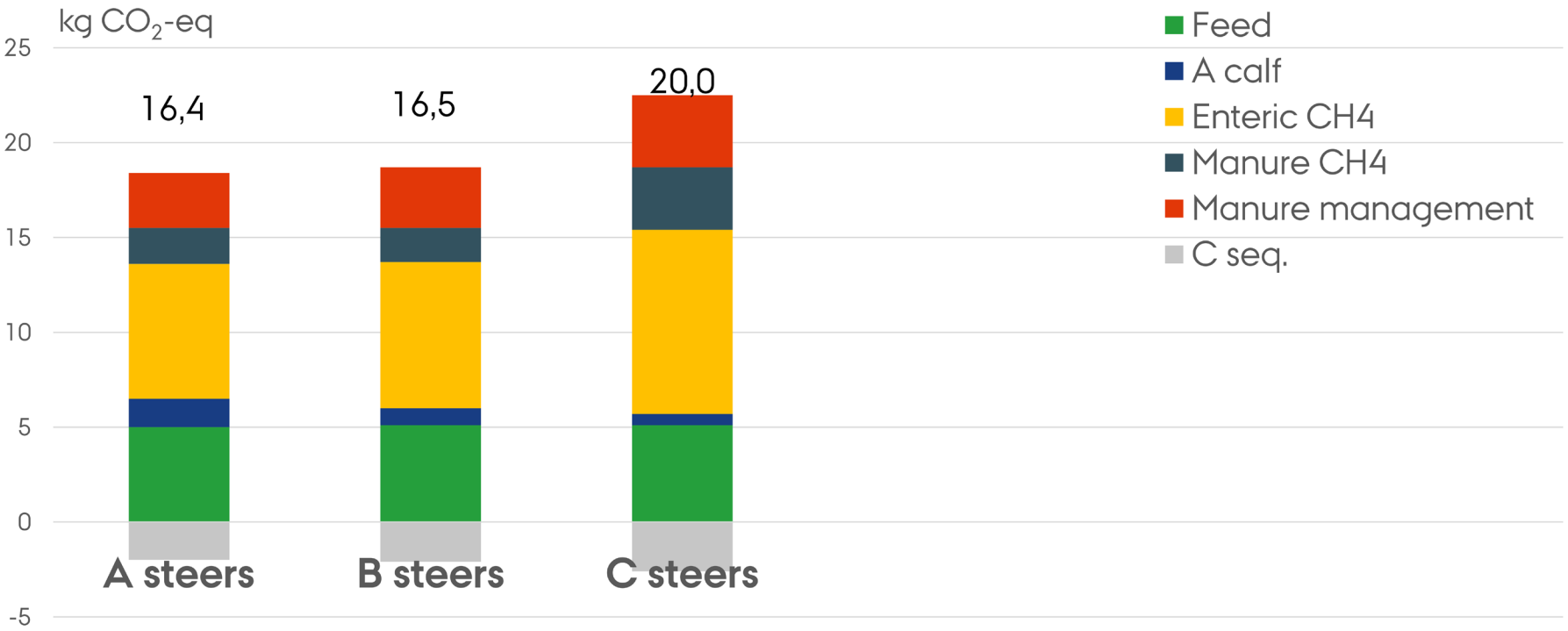
CF PER STEER – SOIL C SEQ.



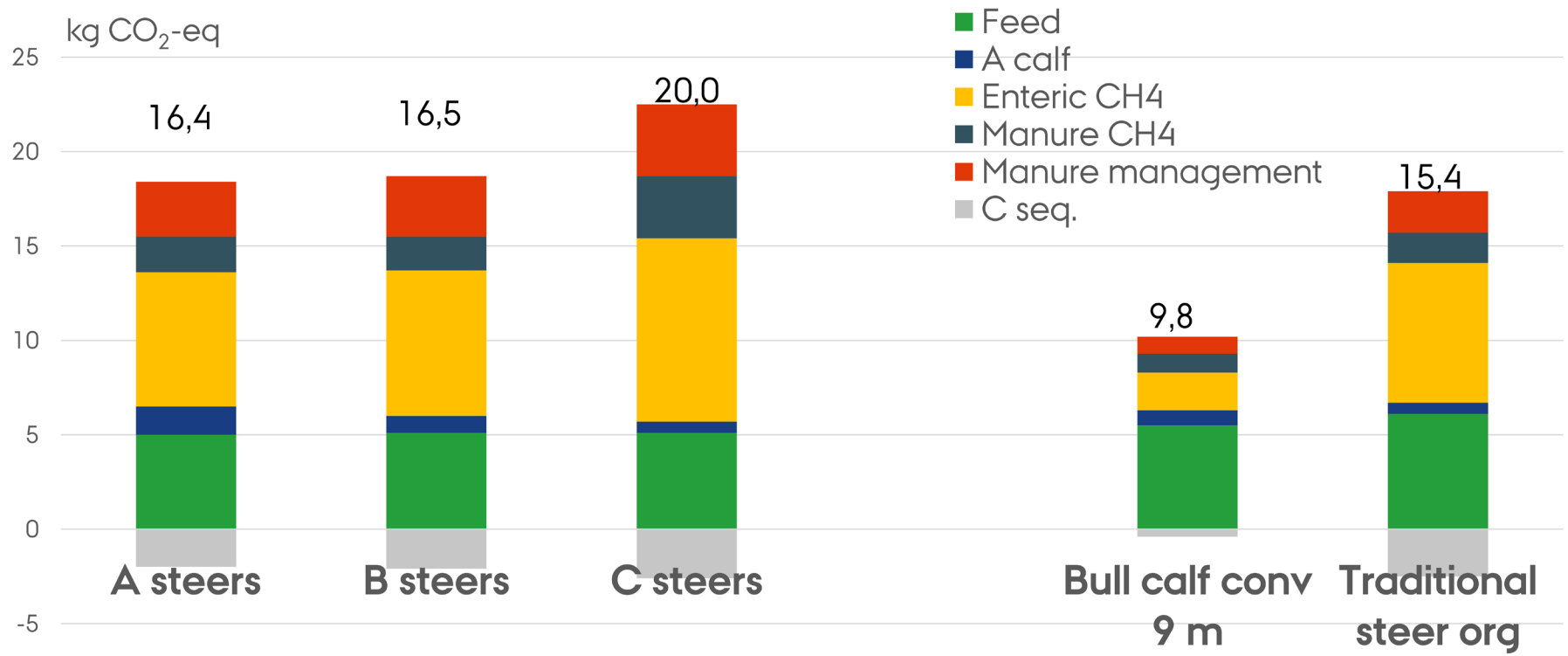
CF PER KG CARCASS

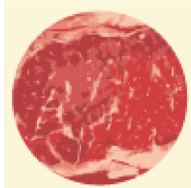
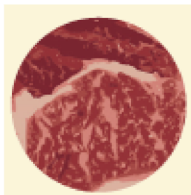


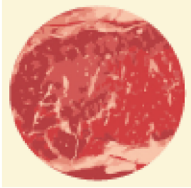
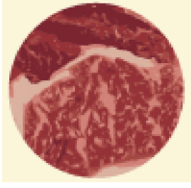
CF PER KG CARCASS – SOIL C SEQ.



CF PER KG CARCASS – SOIL C SEQ.



		Climate impact	Land use total	Bio- diversity	Meat quality	Consumer satisfaction
A: Rosé 8 m		**	**	**	**	**>
B: Medium 16 m		**	**	**	**	**>
C: Red 26 m		*	*	***	***	***
Conv. 9 m		***	***	*	*	**

		Climate impact	Land use Farm land	Bio- diversity	Meat quality	Consumer satisfaction
A: Rosé 8 m		**	**	**	**	**>
B: Medium 16 m		**	**	**	**	**>
C: Red 26 m		*	***	***	***	***
Conv. 9 m		***	***	*	*	**

“Less is more”



Thank you for your attention



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