

Prediction of Yield from Carcass Grading by EUROP and Video Image Analysis

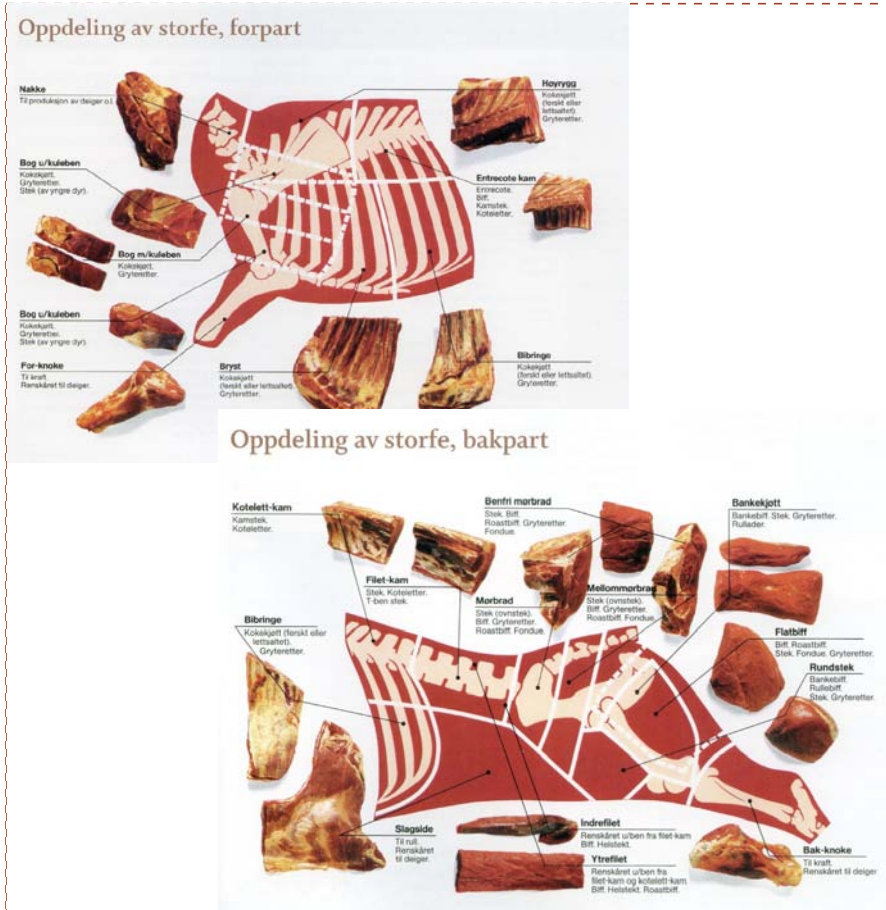
Poster and oral presentation at 55th International Congress of Meat Science and Technology

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Some important definitions

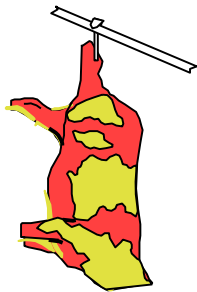
- A "Cutting pattern" is a figure or description of how a carcass should be cut or deboned"
- "Yield" = weight % of each cut of warm weight
- "Cut quality" = cutting in accordance with specifications



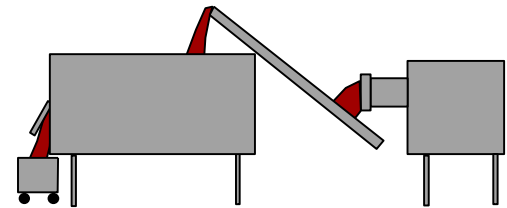
Aim of the study

Predict yield from carcass information
to sort and cut optimally for quality and earnings

→ weight, conformation class, fat group,
category, age and breed



$$Y = k + x_i + E$$



Material and methods

- Trial 1

- 1001 beef carcasses
- Non-commercial pilot plant
- EUROP

→ Cutting pattern "14%"

- Trial 2

- 36 beef carcasses
- Commercial cutting plant
- EUROP
- Video Image Analysis

→ Cutting pattern "Hamburger I" (16-18%) and "5%"

Results (Coefficients of determination - R²)

Cutting pattern	Hindquarter							Forequarter							
	14% N=1001	Hamb N=36	Hamb N=36	Hamb N=36	5% N=36	5% N=36	5% N=36	14% N=1001	Hamb N=36	Hamb N=36	Hamb N=36	5% N=36	5% N=36	5% N=36	
	Conf.	Conf.	Conf. VIA	Direct VIA	Conf.	Conf. VIA	Direct VIA	Conf.	Conf.	Conf. VIA	Direct VIA	Conf.	Conf. VIA	Direct VIA	
Tenderloin	81,0	80,0	82,2	87,0	78,2	81,0	81,2								
Striploin	91,7	66,5	66,6	82,0	72,4	74,5	90,2								
Eye of round		14,9	29,6		10,1	12,3									
Forerib								93,1	49,9	48,6	77,0	40,0	37,3	84,7	
M.m. 4% fat contents *	73,3	23,9	23,0	64,0	11,5	14,6	61,3	76,1	24,9	21,3	79,8	3,3	5,7	57,2	
M.m. 5% fat contents *	61,1	7,8	7,0	79,5	31,8	4,5	63,1	72,3	34,4	32,9	63,4	37,2	40,2	74,6	
M.m. 14% fat contents *	86,7	7,0	10,7		31,3	35,1	81,5	92,8	16,5	9,9		48,1	35,5	83,2	
M.m. 21% fat contents *	70,8	14,9	13,3		15,5	38,7	52,6	71,4	24,2	15,6		31,8	24,3	62,3	
M.m. total	95,2							96,9							
Meatfat	89,4	38,5	55,7	69,7	57,1	54,0	71,9	84,2	58,8	53,4	73,5	22,4	28,6	77,1	
Top sirloin butt	94,7	84,9	88,7	92,6	54,1	53,5	87,0								
Inside round	94,6	69,0	76,1	85,7	73,7	80,1	89,3								
Beef round knuckle	93,0	39,0	34,7	92,6	79,4	84,0	88,2								
Beef strips		16,6	19,2	59,8	20,5	33,5	65,0								
Flank	71,1														
M.m. 28-30% fat contents *		9,1	4,4												
M.m. 16-18% fat contents (Hamb)*		13,7	13,9	78,7											
Shoulder clod roast								94,9	70,7	70,2	84,8	82,4	78,8	87,8	
Senew	67,5	38,4	37,7	70,3	29,9	29,3	66,9	33,4	34,4	36,9	64,7	26,3	24,7	61,0	
Offal	32,7							35,8							
Bone	91,5							92,2							

Results

- Conformation, Conformation VIA and Direct VIA (N=36) produced similar results, but Direct VIA produced highest R^2
- Not satisfactory R^2 for manufacturing meat (N=1001)
 - Impossible to calibrate the cutters

Conclusion

- Detailed carcass information can be used to improve planning and logistics
- The yield estimates may be applied for internal benchmarking
- The potential to collect added values are significant

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