Cross breeding – an update

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Den Europæiske Landbrugsfond for Udvikling af Landdistrikterne:
Danmark og Europa investerer i landdistrikterne

Ministeriet for Fødevarer, Landbrug og Fiskeri

LDP 2020

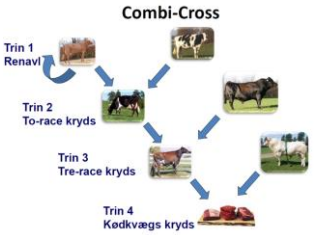
Se Den Europæiske Landbrugsfond for Udvikling af Landdistrikterne

SEGES has a plan for 2020

- 40 % of herds is using planned crossbreeding programs of some kind within the dairy cow herd
- 150.000 beef*dairy crosses slaughtered
- Replacement rate down to 32 %.
  - This can only achieved through strict control of number of heifers (preferable by use of beef semen) and improved feeding and management. Furthermore use of crossbreeding within the dairy herd will help.

Why use cross breeding?

- Dairy cross (Combi-Cross):
  - +130.000 DKK in herd with 200 cows



- Beef cross:
  - +160.000 DKK in herd with 200 cows
    - Mostly due to reduced rearing costs
  - Beef (50%) + KSS (60%)
  - Possibility to have more cows not included

Good production results among Danish crosses

Same yield | Better fertility | Better health

	Milk kg	Fat kg	Protein kg	Insemination interval days	Number of inseminations	Udder treatments, %
1. lactation	- 98	+ 10	+ 4	- 6	- 0,10	- 9
2. lactation	- 381	+ 2	- 3	- 6	- 0,08	- 21

Therefore improved survival

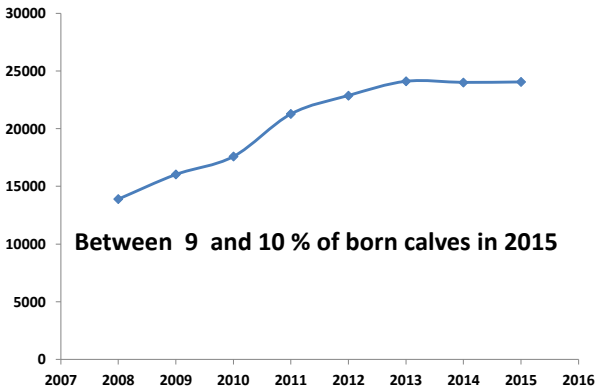
Survival until 2nd calving, %	+ 4
Survival until 3rd calving, %	+ 12

Results from one of the Combi-Cross demonstration herds

		Hol		Jer X Hol	
			Cows		Cows
1. lactation	Kg milk	8773	56	7845	47
	Kg fat	376	56	411	47
	Kg protein	305	56	299	47
	Kg F+P	681	56	710	47
	Days from clv. to 1. ins.	85	48	91	40
	Days 1. to last ins.	29	49	21	40
	Number of ins.	1.72	47	1.70	40
	Number of mastitis tr.	0.06	49	0.16	43

Dairy cross

Number of born crossbreed heifer calves in DK



Advisory concept
– backbone for expansion of dairy crossbreeding I

- Documentation
  - Breed comparisons
  - Cross bred systems
  - Heterosis effects
- New results
  - Based on national data
  - International results
- Good ”stories”
  - In magazines
  - In pictures

Advisory concept
– backbone for expansion of dairy crossbreeding II

- SimHerd Crossbred
- New insemination plan program
- DMS print out
  - Following the principles from Combi- Cross print out:

	JER/HF /HF	RDC /JER/HF	JER/ RDC/ HF	HF	RDC/ HF /HF	JER/ HF /RDC	JER/ HF /	HF /JER /RDC	HF /umf	JER/ umf	HF /HF /
Antal forv. kviekalve fra aktuelle drægtigheder	13	19	21			2		2			
Kviekalve 0-3 mdr.	06393 06398 06404 06417 06443 06460	06405 06406 06409 06416 06426 06435 06448 06451 06452	06389 06420 06421 06439 06444 06455	06410		06446	06429	06390 06414 06428 06437 06440 06445			
ANTAL DYR	6	9	6	1	0	1	1	6	0	0	0
First lactation cows											
	05988										
ANTAL DYR	80	0	12	0	0	14	10	0	0	3	0

SimHerd Crossbred

- Each animal in the herd will be simulated
- Herd specific assumptions will be used (as done in normal SimHerd simulations)
- Each animal will be given genetic level dependent on breed frequencies
- Each animal will be given heterosis effects dependent on breed frequencies of parents
- Both Combi-Cross schemes and rotational crossbreeding schemes can de evaluated
- **Output: Annual net return per slot**

Printout from DMS

Performance of crossbred cows

	Herd XXXXX	RDM		HOL		RDM X HOL		RDM X (HOLX RDM)	
		Perf.	No. cows	Perf.	No. cows	Perf.	No. cows	Perf.	No. cows
1. lactation	Kg Milk	9401	97	10224	18	10281	48	10228	62
	Kg Fat	354	97	345	18	365	48	371	62
	Kg protein	335	97	348	18	355	48	356	62
	Kg F+P	689	97	692	18	720	48	727	62
	Days calv. to 1. ins	77	82	94	15	80	36	83	50
	Days 1. to last ins	34	27	28	16	30	37	27	51
	Calv. int. to 2. calv.	386	43	403	9	381	24	383	33
	Freq. mastitis	0,11	83	0,13	16	0,13	45	0,20	59

- All combinations of sire-, MGS and G-MGS breeds
- Performance of same cows for all traits
- More traits and more lactations
- Published in spring 2016

Beef cross

Number of beef inseminations on dairy cows

Liharotusiemennykset lypsykarjoissa viimeisten 12 kk aikana

Rotu	Suomi	Ruotsi	Tanska	Yhteensä
Charolais	6 000	6 000	4 000	16 000
Limousine	25 000	5 000	8 000	38 000
Simmental	6 000	6 000	5 000	17 000
Angus	17 000	5 000	2 000	24 000
Blondi	32 000	600	5 000	37 600
Hereford	2 000	7 000	600	9 600
Belgian sininen	0	0	87 000	87 000
Yhteensä	**88 000**	**29 600**	**111 600**	**229 200**

Knowledge and tools

– backbone for expansion of beef crossbreeding

- X-index
- Breed statistics
- New insemination plan program
- Simulation results
  - Hjortø et al., 2015, JDS
  - Ettema et al., 2016, JDS

X-index
– Compares beef bulls are across breeds

X-index is a breeding value that helps Danish dairy farmers to select beef sires that produce the economically best crossbred calves

Traits included:
- g/daily net gain
- EUROP classification
- Still birth
- Calving ease

Conclusion

- Production results confirm the SEGES goals on crossbreeding
- Soon the tools needed to handle crossbreeding are available
- Increased Nordic cooperation will be good