Bias in proofs of non-random used sires

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August 27th 2017

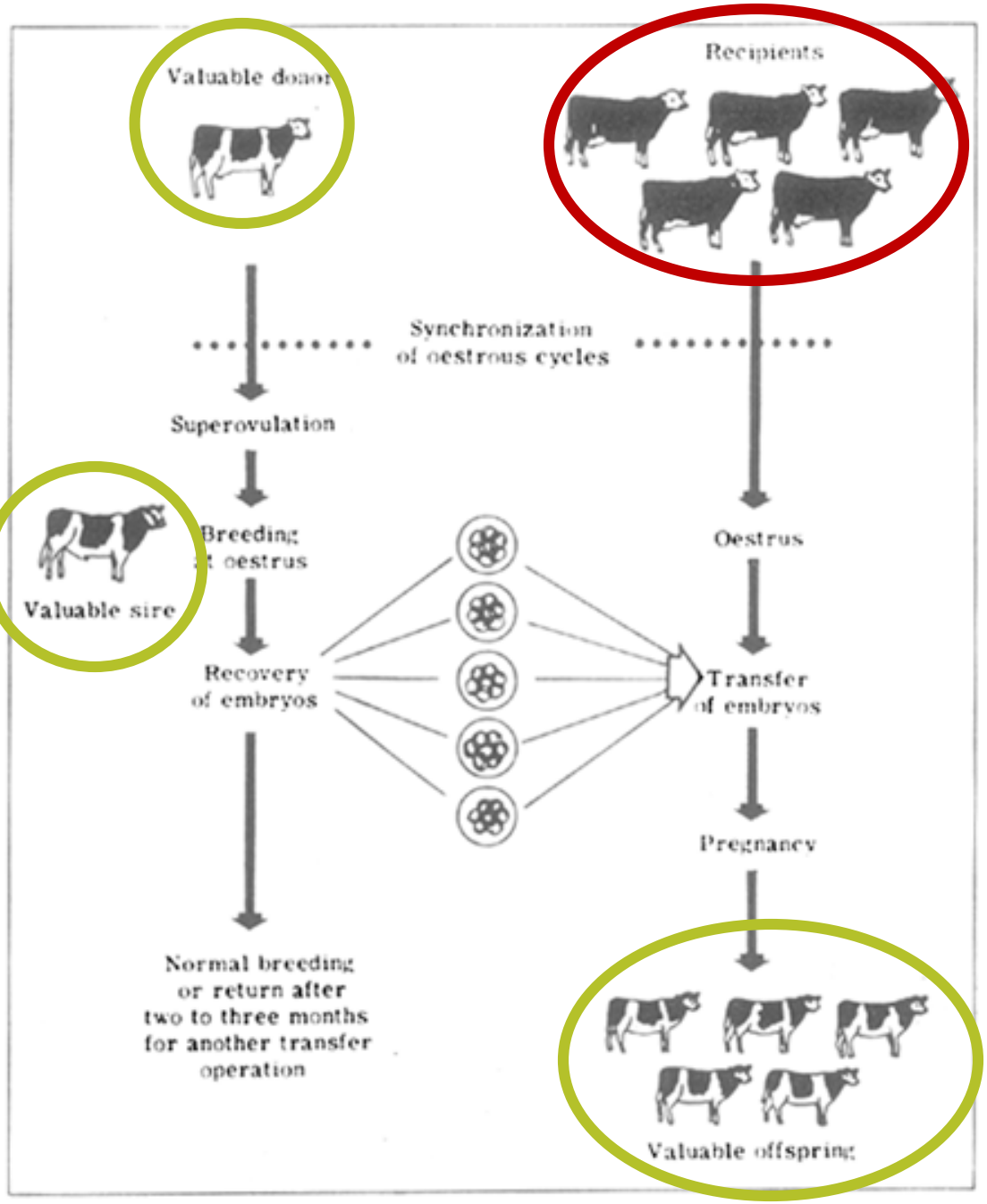
Background – supersonic sires

High prices for young high ranked genomic bulls
'Supersonic sires'

Special matings elite females with highly ranked young bulls (mostly ET)

Farms with top management and special treatment of (ET) progeny

Bias (overestimation) of the (first) proofs of an non randomly used sire


Valuable donor
Recipients
Synchronization
of oestrous cycles
Superovulation
Valuable sire
Breeding
at oestrus
Oestrus
Recovery
of embryos
Transfer
of embryos
Pregnancy
Normal breeding
or return after
two to three months
for another transfer
operation
Valuable offspring

Situation Canada / USA

Canada

- No impact for bulls <30% daughters from ET
- Overestimation for sires >30% ET daughters
  - Adjustment since April 2014
  - For every 1% increase in ET daughters (over 30%) reduction of sire proof
    - 5,5 kg for Milk
    - 0,38 kg for Fat
    - 0,18 kg for Protein
    - 0,05 points for each of conformation traits

USA

- No impact found for % daughters from ET

Data and analysis

- EBVs from April 2010 till December 2015
- Discover number of progeny born from ET that contributed to the EBV
  - Based on birthdate animal and calf date dam
- Compare EBV for kg milk, kg fat and kg protein
  - EBV with highest % ET daughters
  - EBV December 2015

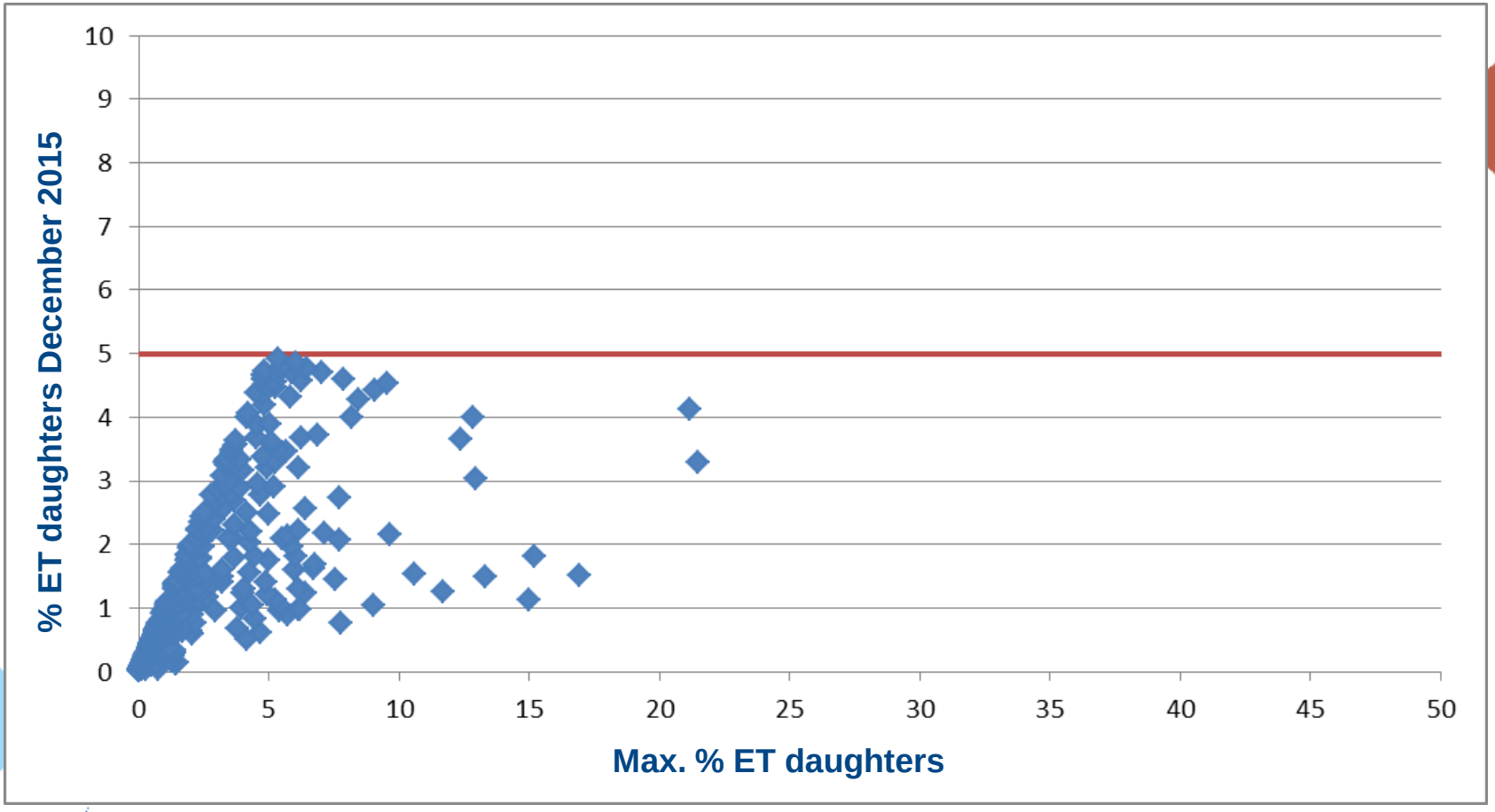
Taken into acount:

- Number of daughter is increased
- % ET daughters is decreased

Analysis I

EBV with highest % ET daughters vs. EBV December 2015

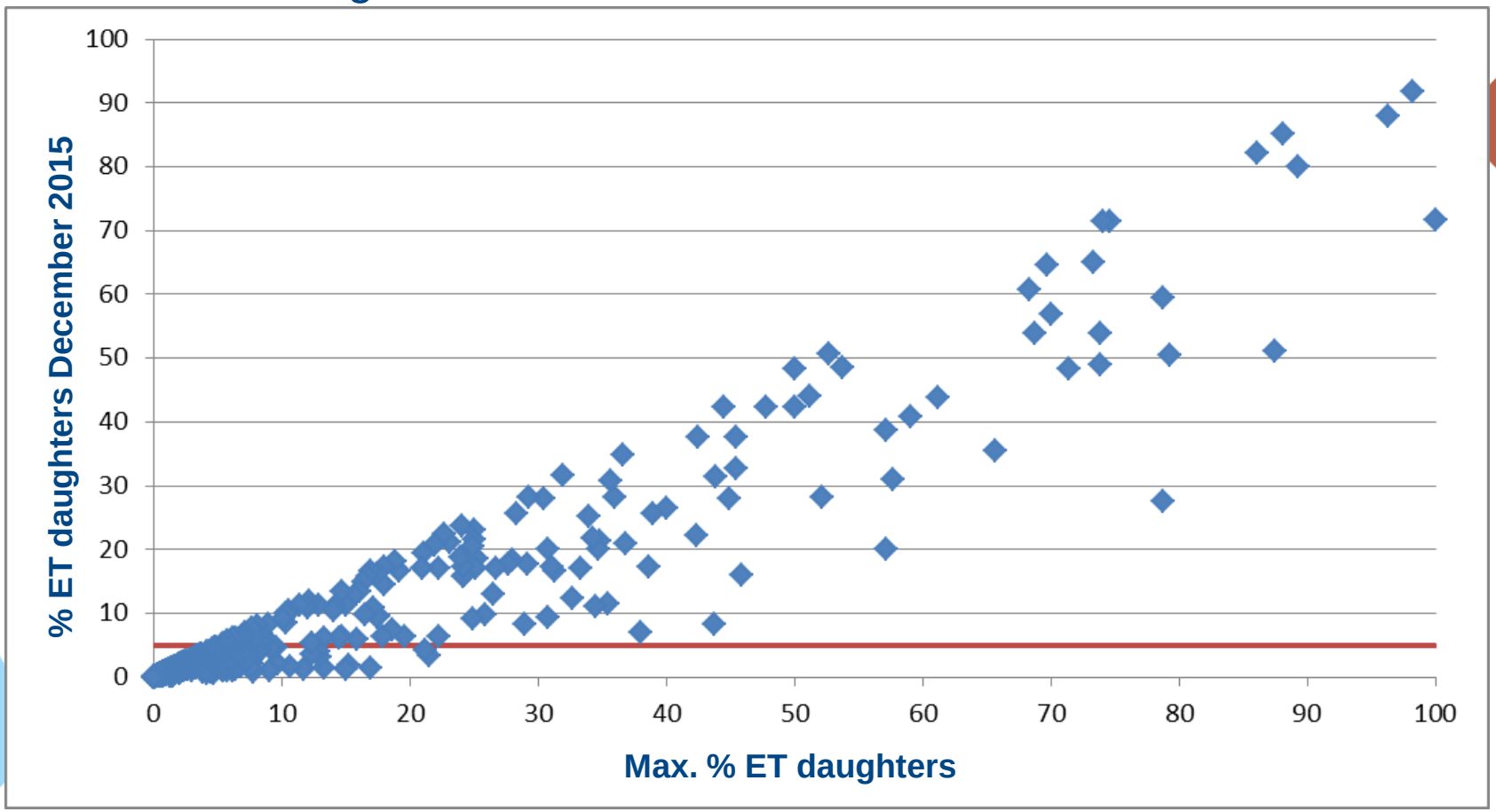
- % ET daughters December 2015 < 5%



Analysis II

Recent years more and more supersonic sires

- Also sire with >30% ET daughters
- % ET daughters in December 2015 not <5%



Model – ASREML

Analysis I:

EBV_153 = b1 * ET% + EBV_max_ET + base

Analysis II:

EBV_153 = b2 * diff_ET% + EBV_max_ET + base

EBV_153 : EBV December 2015 (kg milk, kg fat, kg protein, conformation)

b1 * ET% : max % ET daughters per sire (covariate)

b2 * diff_ET% : difference in % ET daughters between proof with max % ET daughters and December 2015 (covariate)

EBV_max_ET : EBV (kg milk, kg fat, kg protein, conformation) for proof with max. % ET daughters

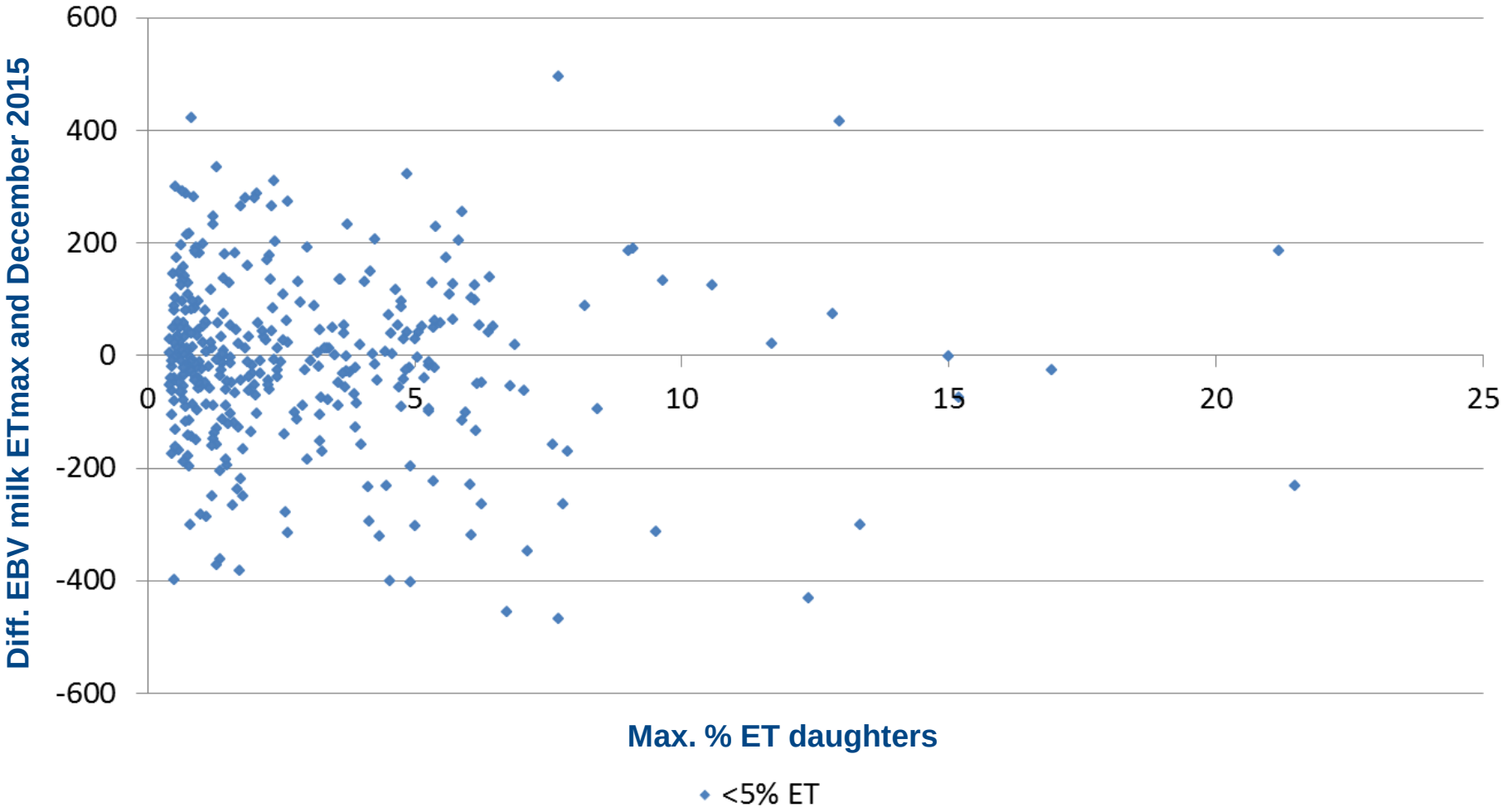
Base : base of the EBV for the proof with max. % ET daughters

Results – Analysis I

Analysis I				
% ET	# sires maxET	# sires FWS_153	EBV milk maxET	EBV milk 153
0-9	474	485	386	391
10-19	9		351	374
20-29	2		817	842

Difference gives an impression of the over- / underestimation

Results – Analysis I

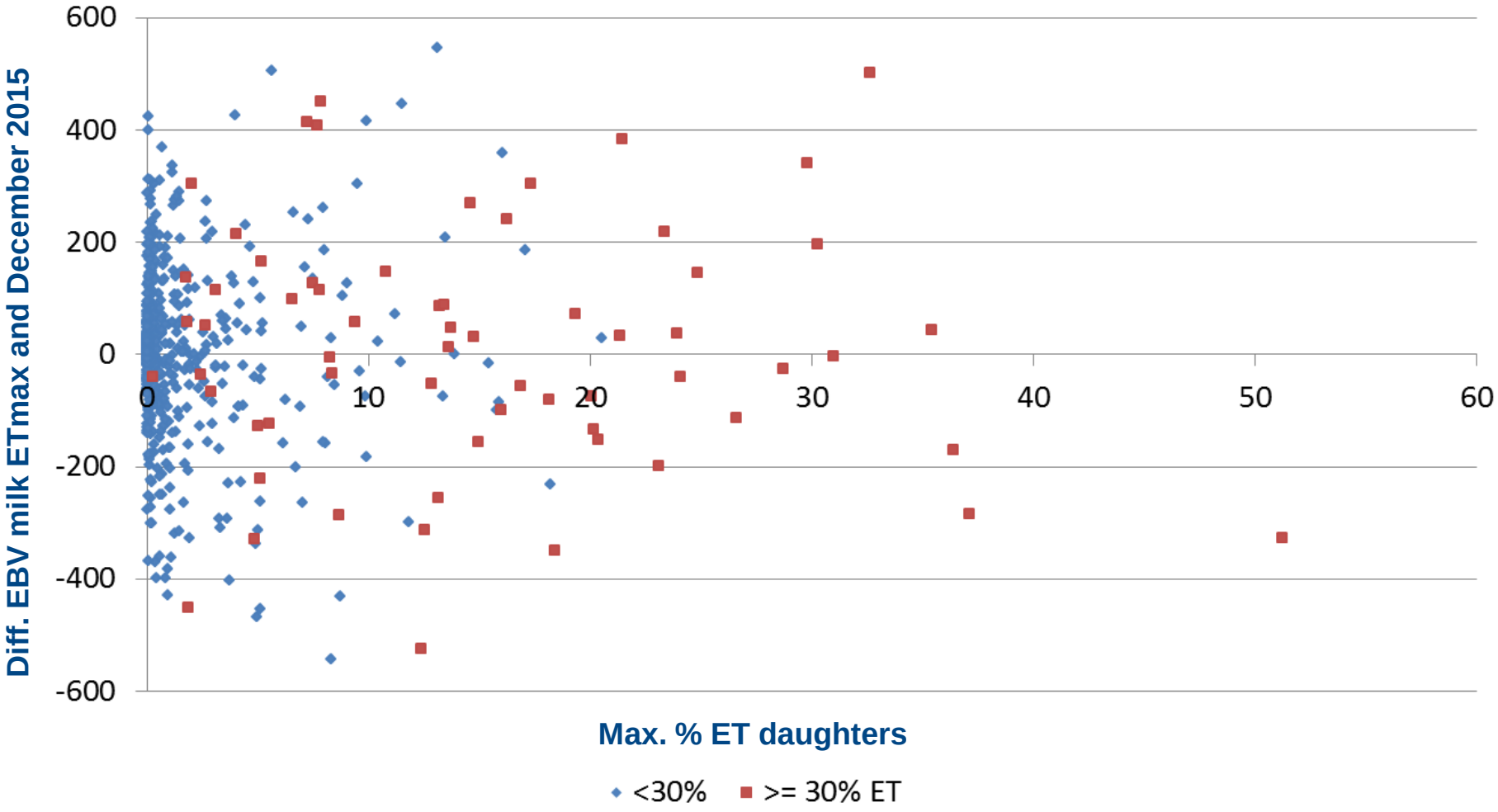


Results – Analysis II

Uitgebreide analyse					
% ET	# sires maxET	# sires EBV_153	Decrease %ET	EBV milk maxET	EBV milk 153
0-9	505	538	0,7	390	388
10-19	46	47	5,4	551	538
20-29	29	21	7,9	866	843
30-39	22	10	13,9	704	669
40-49	12	10	13,1	944	917
50-59	8	7	17,3	654	736
60-69	6	3	14,7	803	804
70-79	9	4	20,1	961	989
80-89	4	3	13,2	1222	1213
90-100	3	1	15,8	544	355

Difference gives an impression of the over- / underestimation

Results – Analysis II



Regression coefficient

Trait	Analysis	Regression coefficient	SE
Kg milk	Analysis I	4,0	2,2
	Analysis II	0,3	1,0
	Analysis II >30%	2,9	2,9

Besides the correction for base, 4 kg milk per % ET daughters should be added to the EBV with max. % ET daughters to get the EBV of December 2015

This indicates a little underestimation

Also for Analysis II

SE's are very large!

Regression coefficient

Trait	Analysis	Regression coefficient	SE
Kg milk	Analysis I	4,0	2,2
	Analysis II	0,3	1,0
	Analysis II >30%	2,9	2,9
Kg fat	Analysis I	0,02	0,09
	Analysis II	-0,02	0,04
	Analysis II >30%	0,03	0,09
Kg prot	Analysis I	0,06	0,07
	Analysis II	0,02	0,03
	Analysis II >30%	0,06	0,08
INET	Analysis I	1,4	0,8
	Analysis II	-1,2	0,4
	Analysis II >30%	-0,7	0,6

Regression coefficient

Trait	Analysis	Regression coefficient	SE
Frame	Analysis I	-0,03	0,06
	Analysis II	0,01	0,03
	Analysis II >30%	-0,05	0,05
Type	Analysis I	0,18	0,08
	Analysis II	-0,06	0,03
	Analysis II >30%	0,12	0,09
Udder	Analysis I	0,07	0,03
	Analysis II	-0,03	0,02
	Analysis II >30%	0,00	0,03
Feed and	Analysis I	-0,03	0,03
legs	Analysis II	0,04	0,02
	Analysis II >30%	0,02	0,03

Conclusions

- The analyzes do not show a clearly effect of % ET daughters on the EBV of a sire
- Results tend to an underestimation instead of an overestimation of the EBV
- Recommendable to repeat the analysis as soon as more sires with a max % ET daughters > 30% have decreased their % ET daughters below 5%

Thank you for your attention

Questions?

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