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Economic importance of traits of Angus breed in organic system

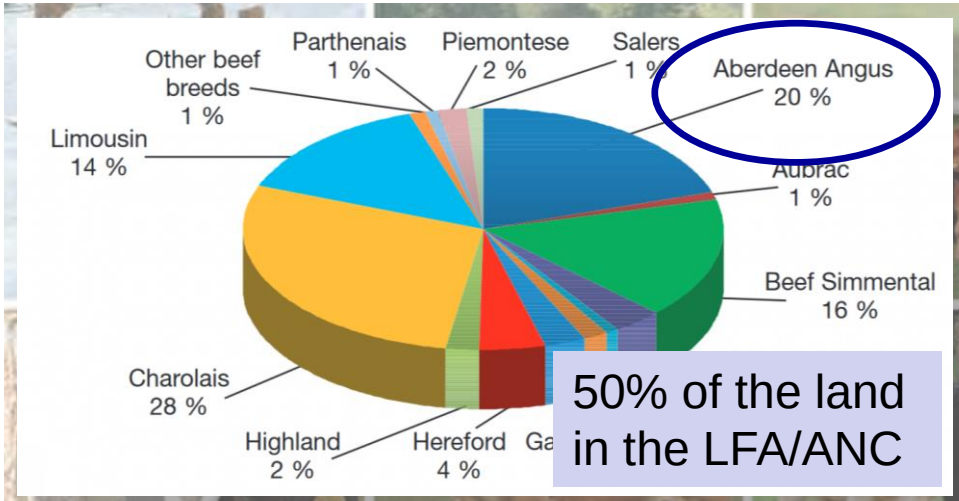
Krupová Z., Krupa E., Přibyl J., Kašná E., Wolfová M.

krupova.zuzana@vuzv.cz

Institute of Animal Science, Prague, Czech Republic

VÚŽV
Institute of Animal Science

Actual situation in the Czech Republic



50% of the land in the LFA/ANC

Breeding of beef cattle:

230 ths. cows (+3%/yr)

10% of cows in PT

Data recorded & processed

(CBBA; CMBC; Institute of Animal Science)

ICAR *certification*

✓ ***EBV*** *for* ***22 traits*** + ***new*** (BLUP AM)

(**growth**, **calving** perf., **exterior, muscling, longevity**)

direct & maternal / ♂, ♀, heifers

Simple SI (relative BV)

Economic Selection Index

Economic weights (EWs)

The aim:
calculate economic weights of the **selection** traits & **others** (16 in total) **for AA breed**

Material & Methods (1)

Aberdeen Angus (AA)

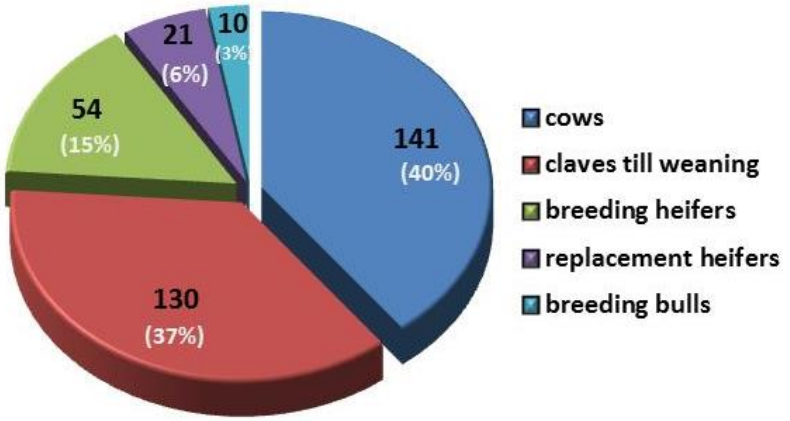
- ✓ naturally **polled**
- ✓ early **maturity**
- ✓ no **calving** difficulties
- ✓ excellent **fertility**
- ✓ good **carcass** value

Breeding goal:

24-28 mo. at 1st calving
95% easy
95 calves weaned (365d CI)
Prefered high: ADG, muscling and longevity

Production system

- ❖ Max. use of natural resources & min. of external inputs & adapted to conditions (*IFOAM, 2008*)
- ❖ 540 ha/farm, 0.26 cow/ha agr.land, 74% perm.grass. (own economic evaluation of AA)
- ❖ outdoor on pasture, shelters in winter
- ❖ pure breeding & crossing
- ❖ natural mating
- ❖ sold: breeding animals & fattening
- ❖ herd structure:



Material & Methods (2)

Economic weights (EWs) of traits

- **direct impact** of given trait on farm **profit (↑ by 1 unit)**
- **bio-economic model** of the program **EWBC** (**ECOWEIGHT**; Wolf et al., 2013)
- ≈ 600 input data (herd structure, production, costs, revenues)

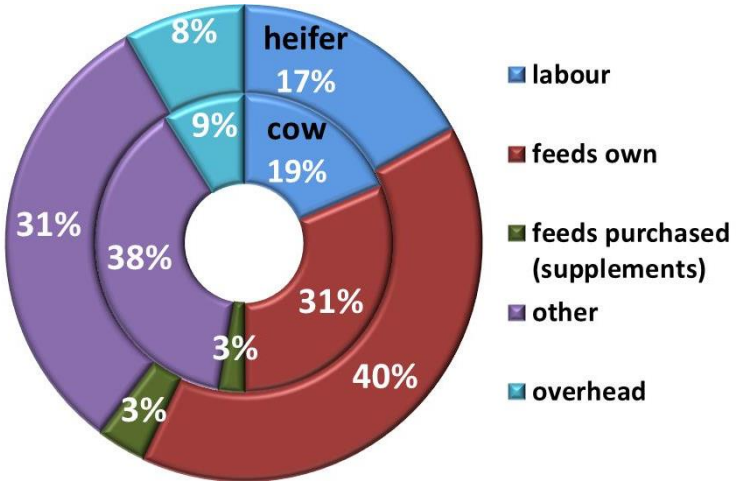
User's Manual for the Program Package ECOWEIGHT (C Programs for Calculating Economic Weights in Livestock), Version 6.0.4. Part 1: Programs EWBC (Version 3.0.4) and EWDC (Version 2.2.3) for Cattle

by Jochen Wolf, Marie Wolfová and Emil Krupa

16th December 2013

Input data

Annual cost: 854 € per cow
427 € per heifer



	Trait (unit)	Mean	GSD
actual	**Birth weight of calves** (kg)	**37**	**1.5**
	Weight gain of calves from birth to 120d (kg)	**148**	**7.2**
	from 120 to 210d (kg)	**115**	**10.2**
	from 210 to 365d (kg)	**243**	**21.5**
	Calving performance (class)	**1.013**	**0.03**
evaluated	Fleshiness (class)	4.206	0.025
	Fat covering (class)	1.951	0.012
	Dressing percentage (%)	0.65	1.1
	Productive lifetime of cows (year)	8.12	0.89
other	Losses of calves at calving (%)	0.32	0.11
	Losses of calves from till weaning (%)	3.2	0.99
	Mature weight of cows (kg)	680	20.5
	Conception rate of heifers (%)	97	1.2
	Conception rate of cows (%)	94	1.8
	RFI of breeding heifers (kg DM/d)	0	0.13
	RFI of adult animals (kg DM/d)	0	0.23

Results (1)

Marginal EWs of actual criteria + news

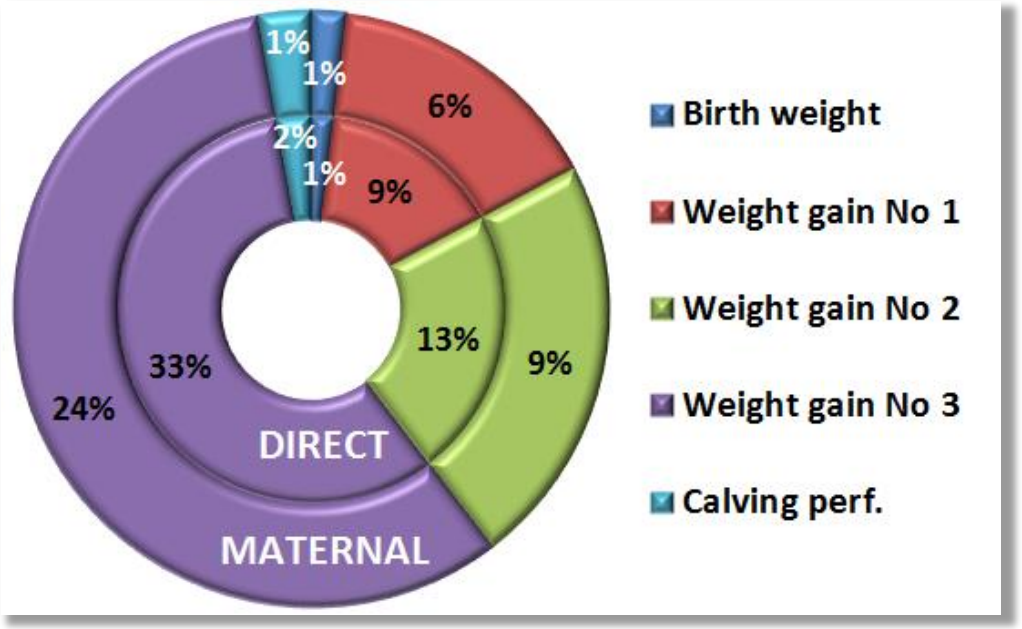
	Trait (unit)	EW (€/unit/♀/yr) direct	EW (€/unit/♀/yr) maternal
actual	**Birth weight of calves** (kg)	2.1	1.5
	Weight gain of calves from birth to 120d (kg)	3.5	2.5
	from 120 to 210d (kg)	3.6	2.6
	from 210 to 365d (kg)	4.4	3.2
	Calving performance (class)	-158	-116
evaluated	Fleshiness (class)	-31	
	Fat covering (class)	-2.0	
	Dressing percentage (%)	0.7	
	Productive lifetime of cows (year)		50
other	Losses of calves at calving (%)	-22	-16
	Losses of calves from till weaning (%)	-23	-17
	Mature weight of cows (kg)		-0.6
	Conception rate of heifers (%)	0.7	
	Conception rate of cows (%)		8.6
	RFI of breeding heifers (kg DM/d)	-34	
	RFI of adult animals (kg DM/d)		-46

Impact of the traits among each other not considered **to avoid double counting**

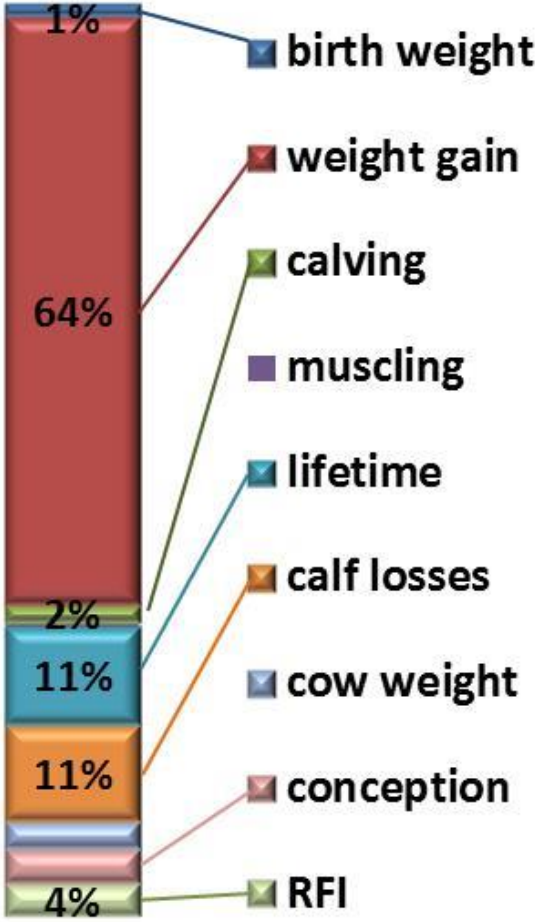
Results (2)

Relative EWs (%) – direct & maternal component

Actual selection candidates



All traits



Conclusion

- ✓ **weight gain of claves** the most important (***64%***)
- ✓ **productive lifetime** the next selection candidate (breeding objective done)
  - ✓ **EW (*11%*)**
  - ✓ **EBV under evaluation**
- ✓ **survival of calves** till weaning (***11%***)
- ✓ **conception rate** of ♀ (***11%***)
- ✓ **RFI** (***4%***) = lower price of feed (pasture) and extensity

Future benefits for the AA population:

- ✓ **routine testing** & **genetic parameters** & **EBV** of new traits
- ✓ **discussion** with breeders & **construct economic** SI (variants)
- ✓ **calculate** predicted **sel. response** & **optimise** the ΔG

Thank you for attention

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