

Influence of season, physiological state and production system on dairy cows welfare assessment

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Objectives

- Animal welfare: a societal issue
- Assessment methods
 - Management-based
 - Animal-based
- Usefulness
 - Labels
 - Auto-evaluation / Improvement
- Conditions of implementation
 - Variation factors / Single assessment value ?

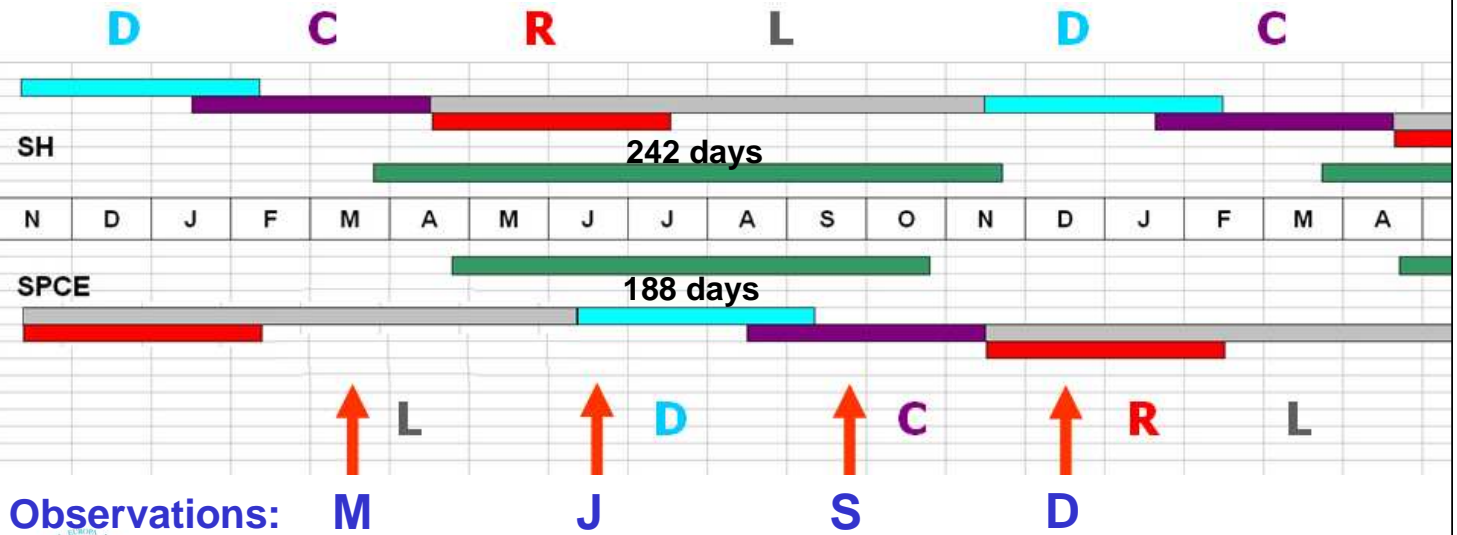


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Protocol

- 2 herds in one domain:
 - 37 cows (HN,MO) Grazing System (SH), 79 ha grass
 - 60 cows (HN,MO) Mixed Crop Dairy System (SPCE), 154 ha

Physiological state: **D**ry, **C**alving, **R**eproduction, **L**actation



Observations: **M** **J** **S** **D**



Welfare assessment



Principles	Criteria	Measures
Good feeding	1 Absence of prolonged hunger	Body condition score
	2 Absence of prolonged thirst	Water provision (water points, water flow, cleanliness)
Good housing	3 Comfort around resting	Time to lie down Cleanliness
	4 (Thermal comfort)	Humidity, temperature, air flow
	5 Ease of movement	Tethering Access to outdoor
Good health	6 Absence of injuries	Lameness Integument alterations
	7 Absence of disease	Respiratory, digestive, reproductive problems, downer cows, mortality
	8 Absence of pain induced by management procedures	Disbudding/dehorning Tail docking
Appropriate behaviour	9 Expression of social behaviours	Agonistic behaviours
	10 Expression of other behaviours	Access to pasture
	11 Good human-animal relationship	Avoidance distance
	12 Positive emotional state	Qualitative behaviour assessment

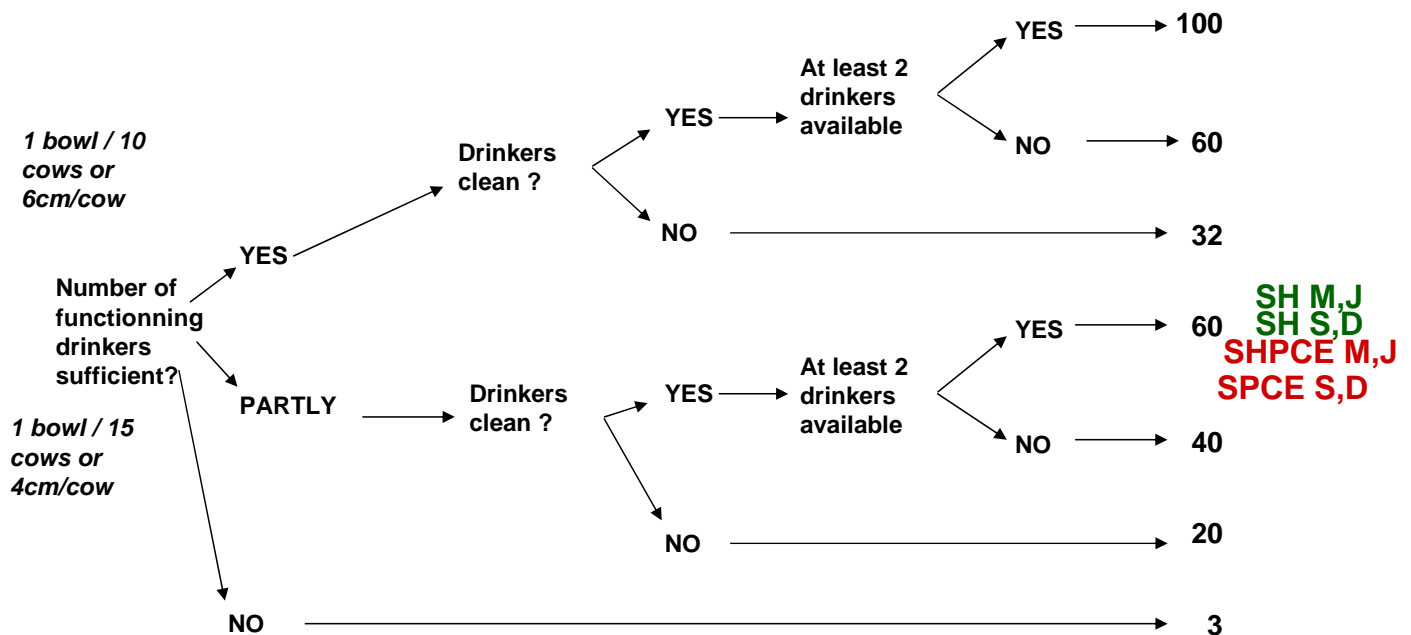


First set of criteria

- Management-dependent



Criterion 2: Thirst



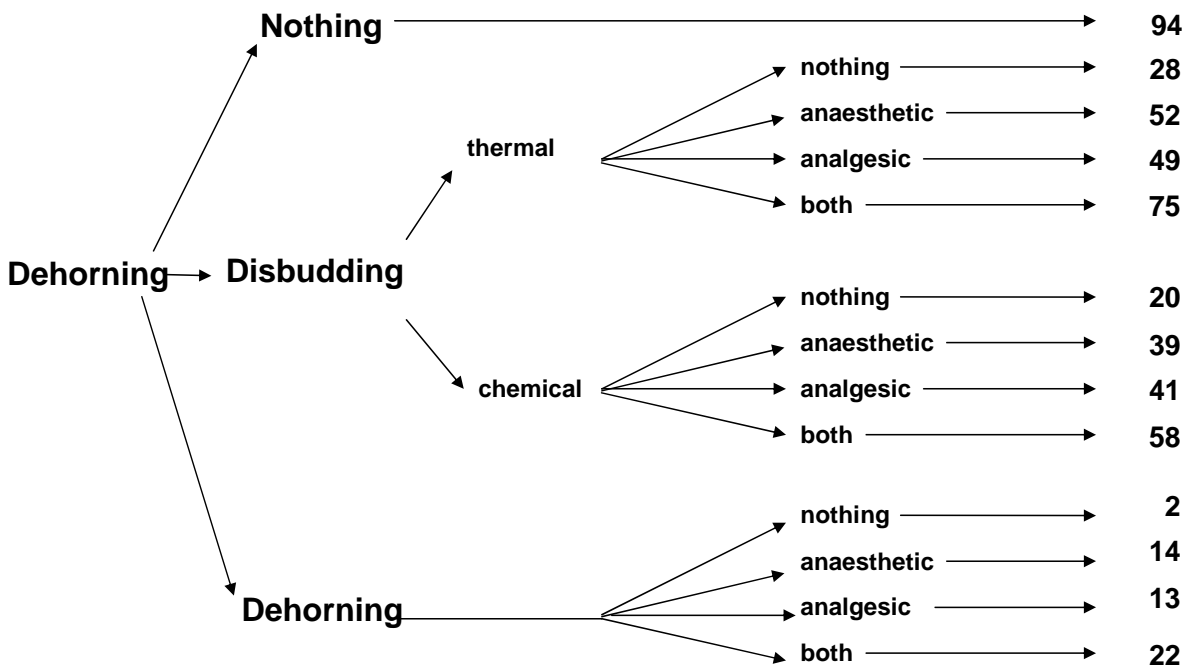


Criterion 5: Ease of movement

- Not tethered cows: score 95



Criterion 8: Pain (disbudding-dehorning/ tail docking)

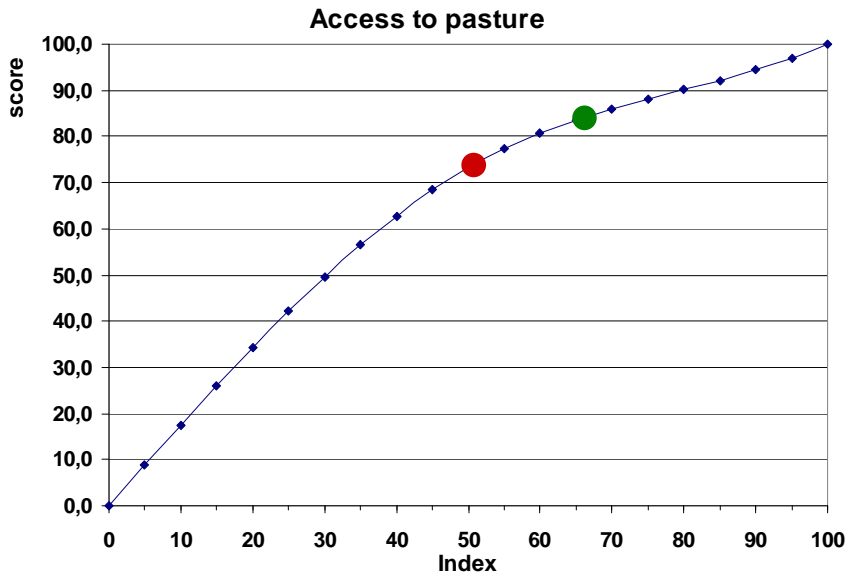




Criterion 10: Access to pasture

Nb of days > 6h /day outdoors

	d. outdoors	Index	Score
SH	242	66,30	84,20
SPCE	188	51,50	74,60



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Second set of criteria

- Season or season x management system dependent

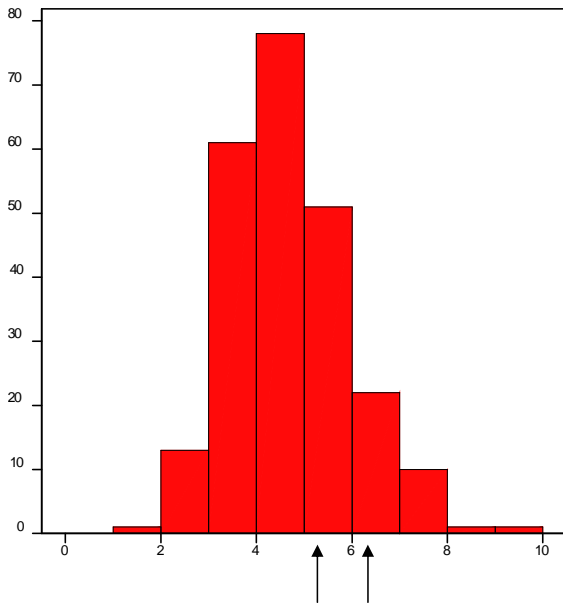


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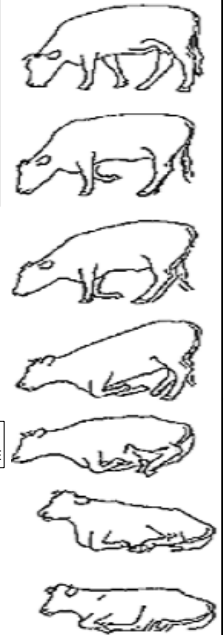
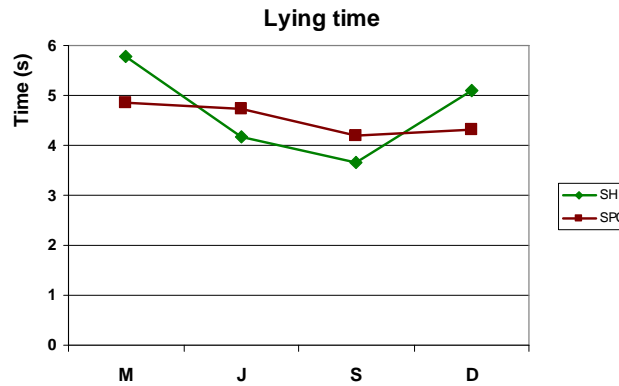
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Criterion 3: Comfort / lying time



	M	J	S	D
SH	5,789 (M)	4,171 (N)	3,668 (N)	5,105 (N)
SPCE	4,847 (N)	4,729 (N)	4,185 (N)	4,312 (N)



Bornes : (171=71,8%) 5,20s (47=19,7%) 6,30s (20=8,4%)



Criterion 3: Comfort / cleanliness



Score 0

Score 2



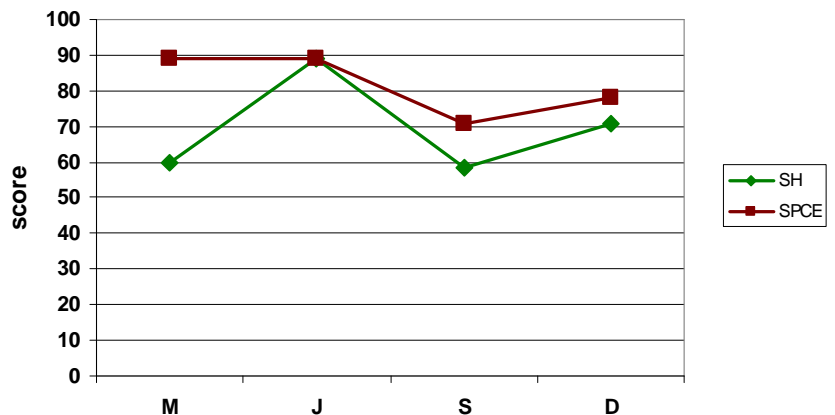
Score 0

Score 2

criteria	normal	moderate	serious
lying down time	≤5,20s	5,20s < ≤6,30s	>6,30s
lying off zone	≤3%	3% < ≤5%	>5%
collision	≤20%	20% < ≤30%	>30%
cleanliness lower legs	≤20%	20% < ≤50%	>50%
cleanliness upper legs	≤10%	10% < ≤19%	>19%
cleanliness udder	≤10%	10% < ≤19%	>19%

points: 0 4 9

Comfort

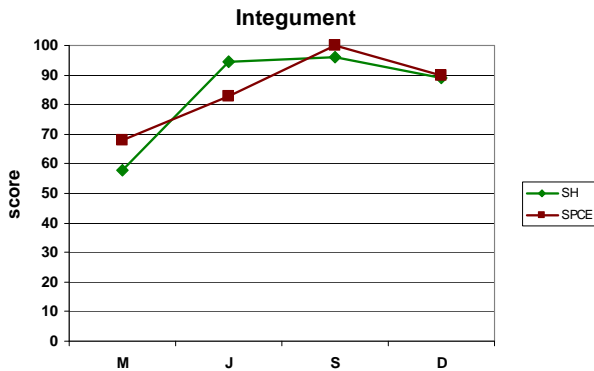




Criterion 6: Injuries



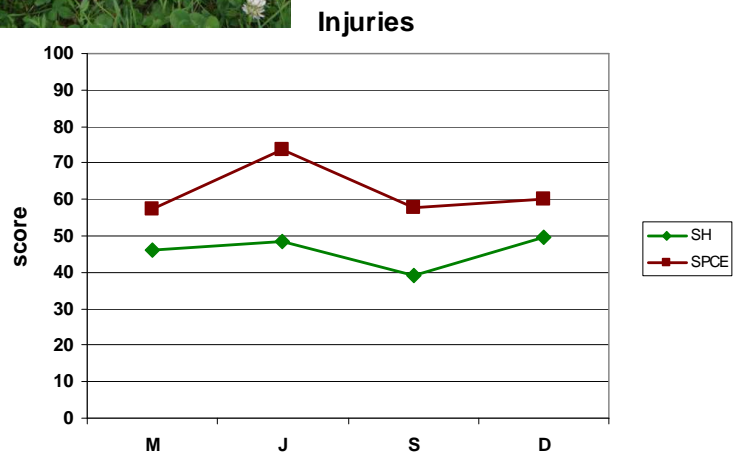
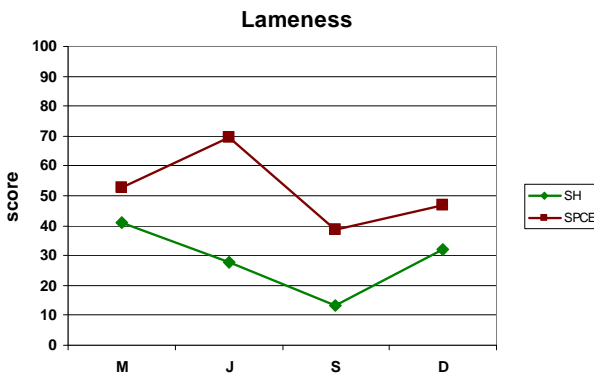
No hairless patch © Winckler BOKU | Hairless patch (tarsal joint) © Brinkmann BOKU | Hairless patch (carpal joint) © Brinkmann BOKU



No lesion © Winckler BOKU | Lesion (tarsal joint) © Brinkmann BOKU



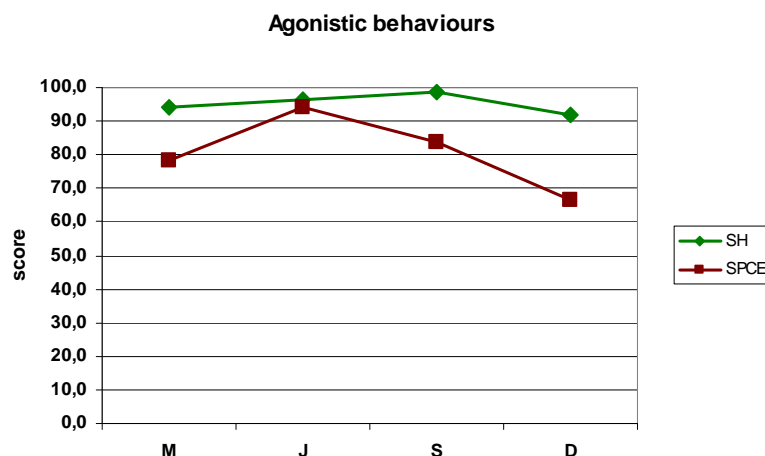
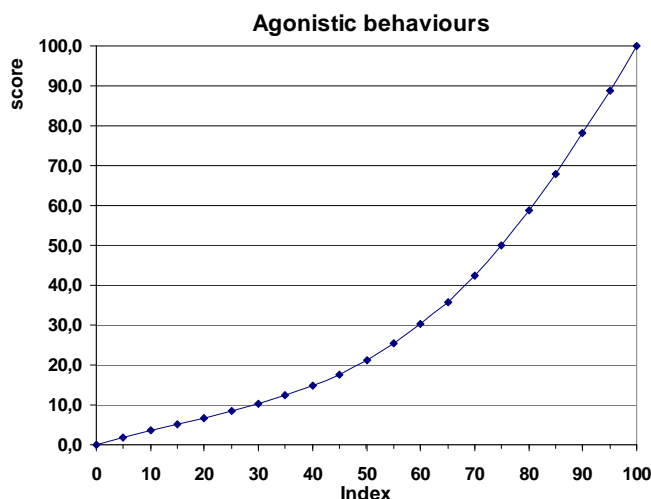
No swelling | Swelling (carpal joint)



Criterion 9: Agonistic behaviours

Head butts, Displacement, Chasing, Fighting, Chasing-up

System	Date	HB	D+	Index	Score
SH	M	6,67	7,78	97,4	94,0
SH	J	5,95	3,57	98,6	96,5
SH	S	1,52	1,52	99,5	98,6
SH	D	8,11	10,81	96,5	92,0
SPCE	M	13,28	34,38	90,2	78,2
SPCE	J	13,75	5,00	97,5	94,1
SPCE	S	15,18	23,21	92,8	83,8
SPCE	D	36,51	49,21	84,3	66,5





Criterion 11: Human-animal relationship

Avoidance distance in the barn

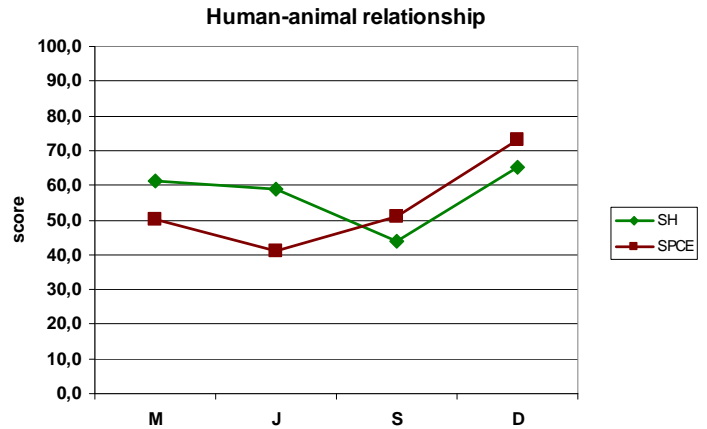
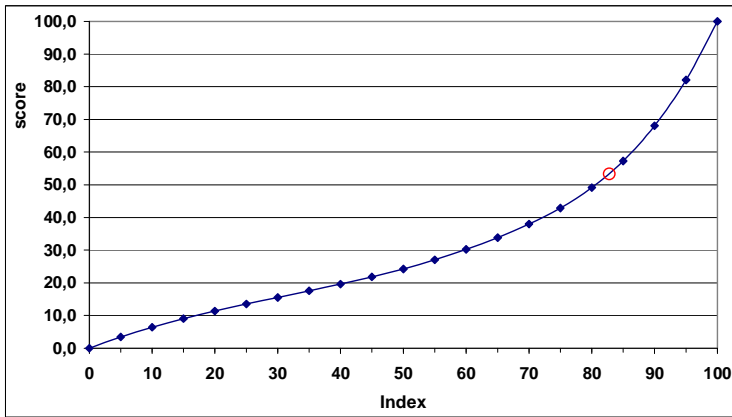


distance	pts	nb	%
0	0	53	24,88
>0;<50	3	112	52,58
50 - 100	11	42	19,72
>100	26	6	2,82
		213	100,00

$$I = 100 - ((3\% \cdot 3 + 11\% \cdot 11 + 26\% \cdot 26) / 26)$$

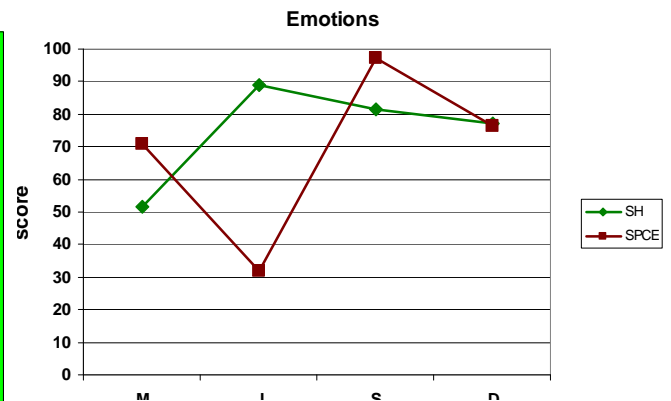
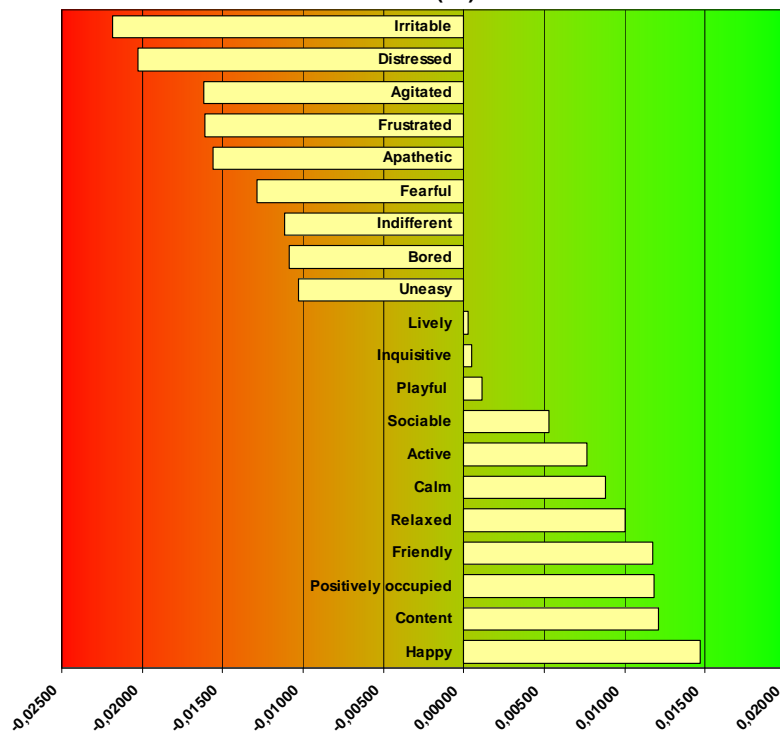
I = 82,8

score = 53,4



Criterion 12: Emotions

Emotions (20)

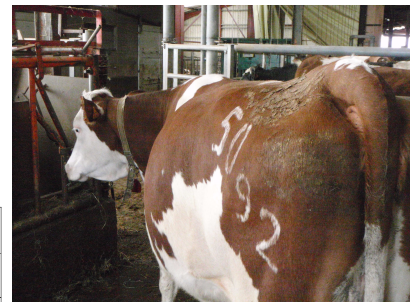
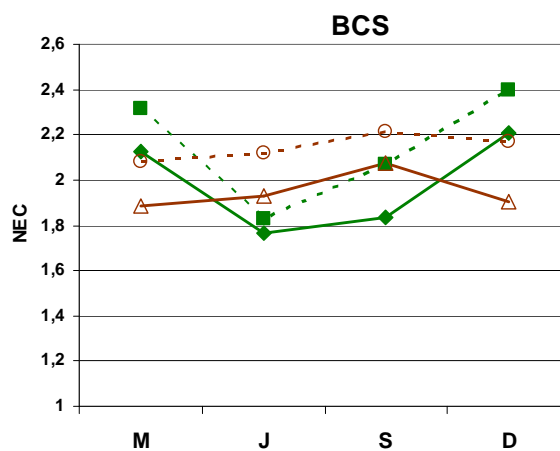
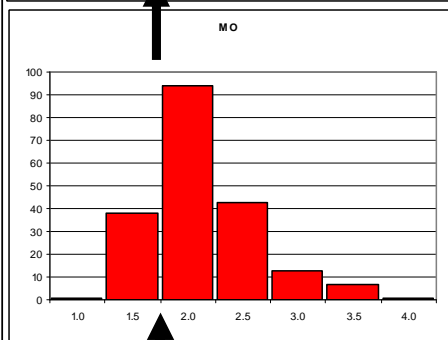
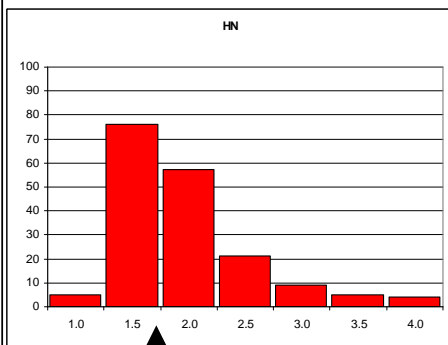


Third set of criteria

- System x physiological status x breed dependent



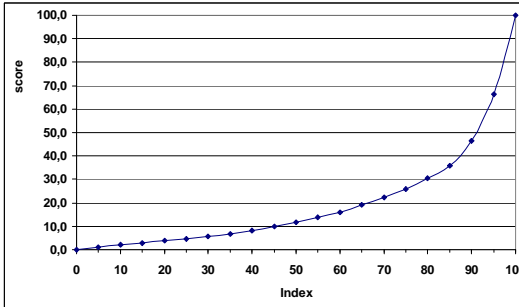
Criterion 1: Good Feeding (BCS)



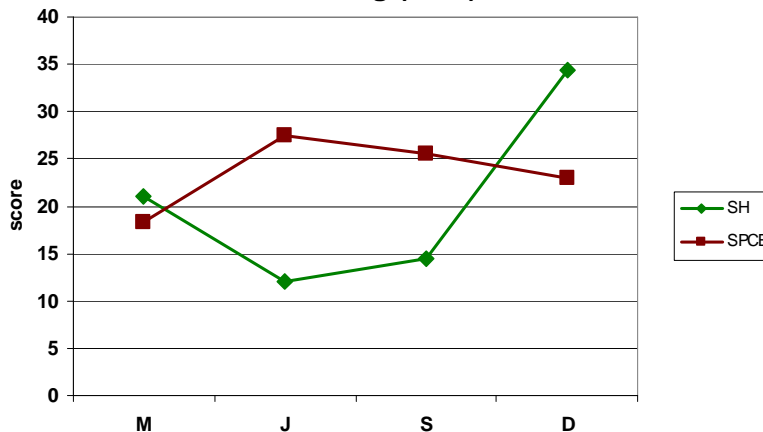


Criterion 1: Good Feeding (BCS)

System	Date	<2	>=2	Index	Score
SH	M	14	30	68,2	21
SH	J	22	23	51,1	12
SH	S	16	21	56,8	14,5
SH	D	5	26	83,9	34,4
SPCE	M	22	39	63,9	18,3
SPCE	J	11	36	76,6	27,4
SPCE	S	12	35	74,5	25,6
SPCE	D	18	44	71	23



Feeding (BCS)



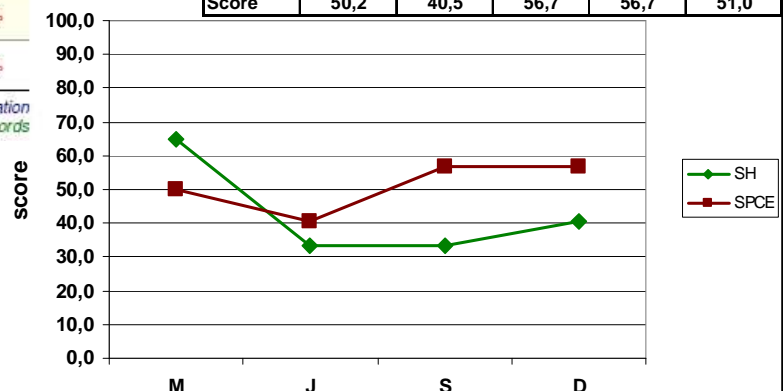
Criterion 7: Diseases

Table 3: Thresholds defined by experts for the different measures.

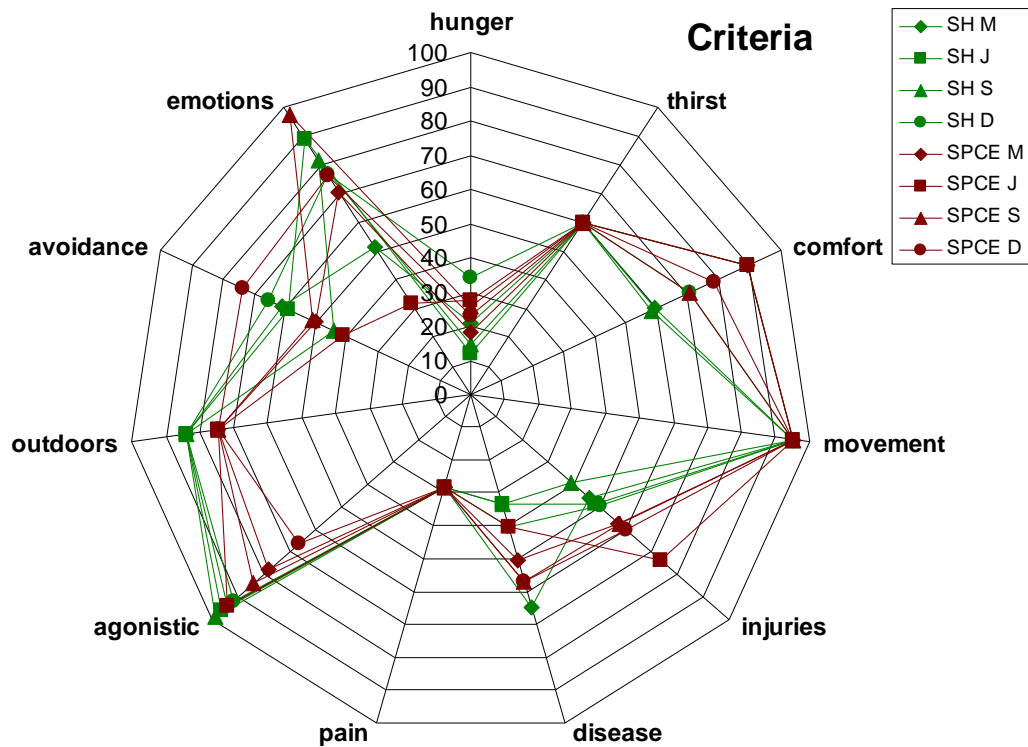
Measure	Way used to collect the information*	Description of the measure	T _U	T _L
Nasal discharge	M ₁ Visit	% of animals with nasal discharge	5%	10%
Ocular discharge	M ₂ Visit	% of animals with ocular discharge	3%	6%
Coughing	M ₃ Visit	nb of coughs (during 15 min) nb of animals in the herd	4%	8%
Increased respiratory rate	M ₄ Visit	% of animals with an increased respiratory rate	5%	10%
Diarrhoea	M ₅ Records	% of animals with diarrhoea	3%	6%
Mastitis	M ₆ Records	nb of cases of mastitis during a year nb of animals in the herd	10%	20%
Vulvar discharge	M ₇ Visit	% of animals with vulvar discharge	3%	6%
Dystocia	M ₈ Records	nb of cases of dystocia during a year nb of animals in the herd	4%	8%
Downer cows	M ₉ Records	nb of downer cows during a year nb of animals in the herd	3%	6%
Mortality	M ₁₀ Records	nb of dead animals* during a year nb of animals in the herd	2%	4%

Blue: direct observation
Green: farm records

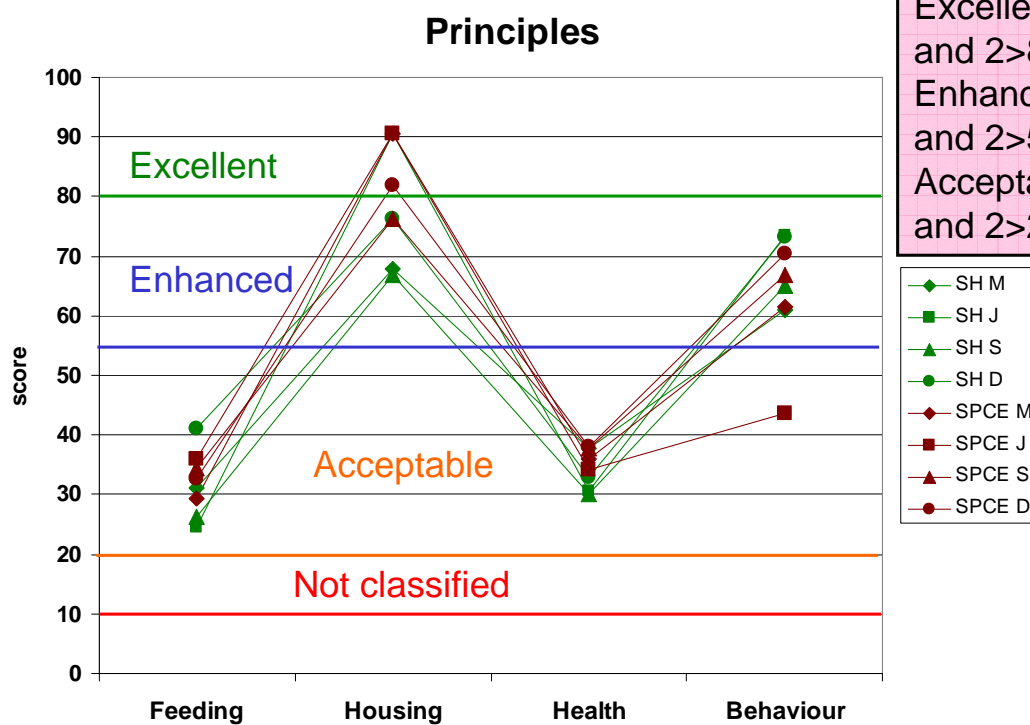
	M	J	S	D	mean
SH					
déch nas	0,00	2,22	0,00	0,00	0,56
déch ocul	4,44	24,44	0,00	0,00	7,22
toux	0,00	0,00	2,50	0,00	0,63
respir	0,00	0,00	0,00	0,00	0,00
diarrhées	0,00	0,00	0,00	0,00	0,00
CCS	2,27	10,97	17,98	5,27	9,12
déch vulv	0,00	0,00	0,00	0,00	0,00
dystocies	4,50	8,99	9,02	9,28	7,95
couch	0,00	0,00	0,00	0,00	0,00
mortalité	2,25	2,25	4,51	2,32	2,83
Index	87,5	62,5	62,5	70,8	70,83
Score	64,7	33,4	33,4	40,5	43,00
SPCE					
déch nas	3,23	3,51	0,00	0,00	1,68
déch ocul	3,23	19,30	1,79	0,00	6,08
toux	0,05	0,00	1,79	0,00	0,46
respir	0,00	0,00	0,00	0,00	0,00
diarrhées	1,61	0,00	0,00	0,00	0,40
CCS	14,11	10,22	13,82	22,87	15,25
déch vulv	0,00	0,00	0,00	0,00	0,00
dystocies	5,02	4,91	4,88	4,86	4,92
couch	0,00	0,00	0,00	0,00	0,00
mortalité	0,00	0,00	0,00	1,62	0,40
Index	79,2	70,8	83,3	83,3	79,2
Score	50,2	40,5	56,7	56,7	51,0



Overview



Principles scores: Global assessment



Excellent: all principles >55, and 2 >80
 Enhanced: all principles >20, and 2 >55
 Acceptable: all principles >10, and 2 >20



Conclusions

- The welfare status is changing during the year
 - Indoor / outdoor
 - Feeding regime
 - Physiological status
- Identification of situations, conditions, practices unfavourable to animal welfare in order to set up corrective / preventive measures



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Thank you for your attention



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