

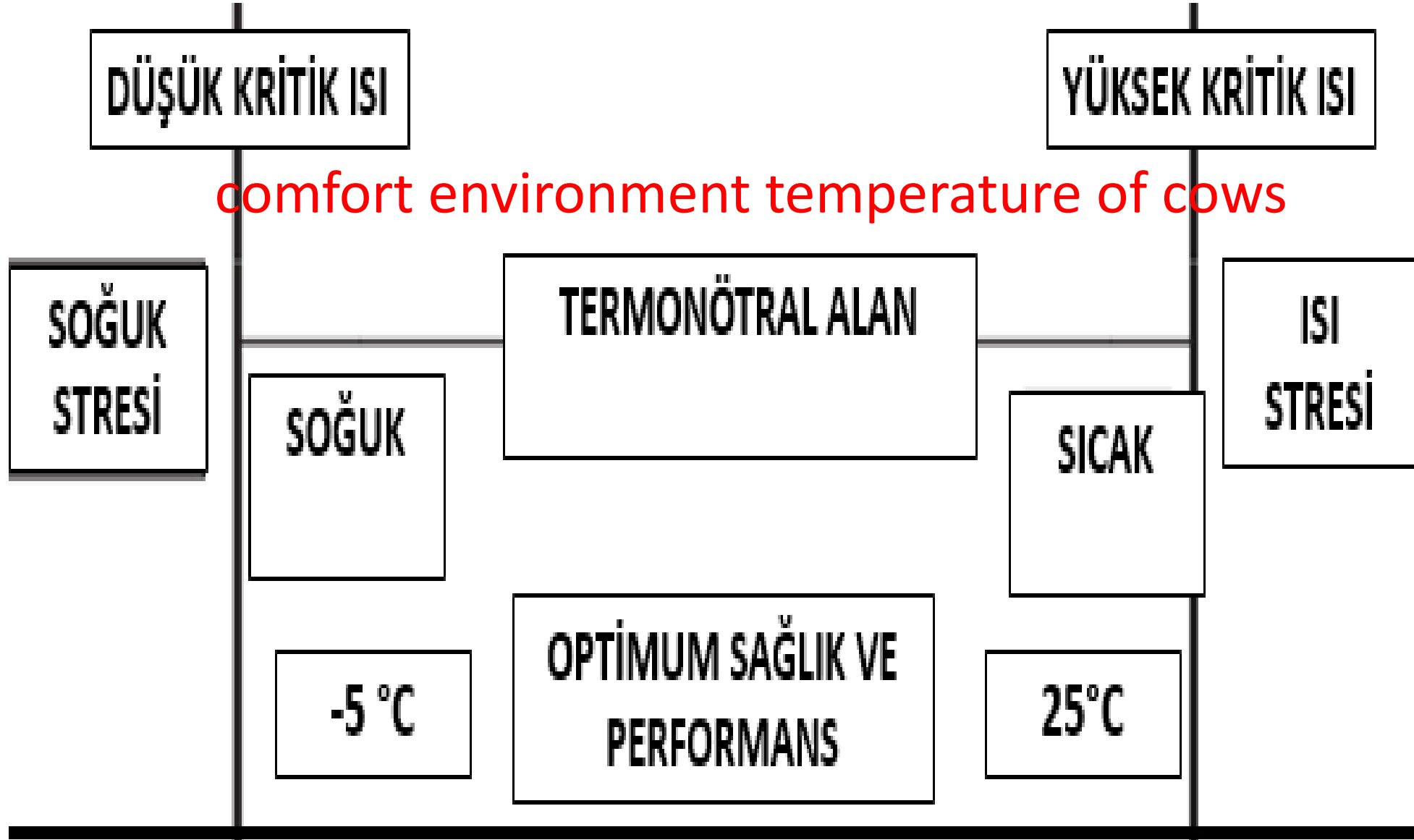


REPRODUCTIVE HERD HEALTH

Doç. Dr. Halit Kanca

TEMPERATURE STRESS AND ITS EFFECTS IN MILK COWS

Temperature Stress



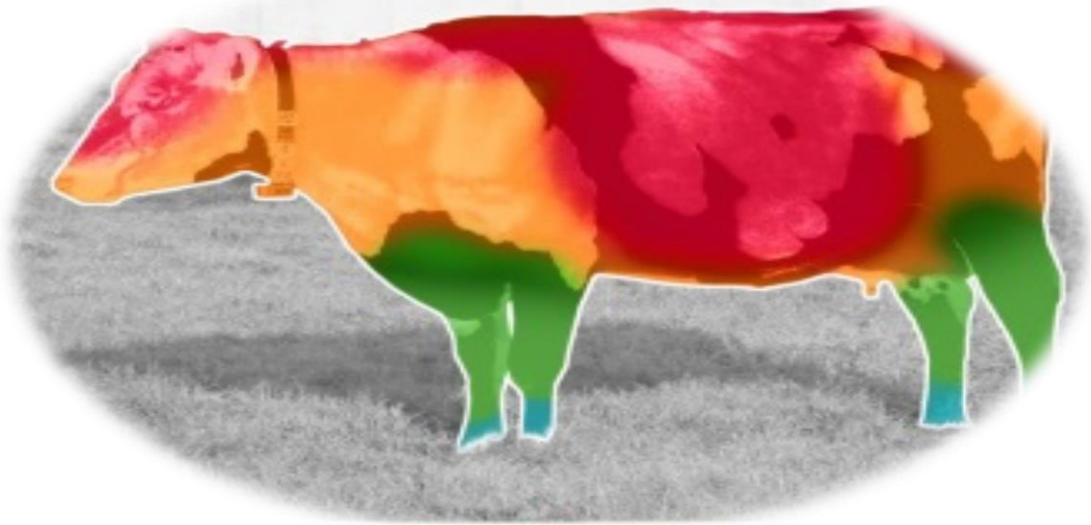
Temperature Stress

cows are cold
more durable



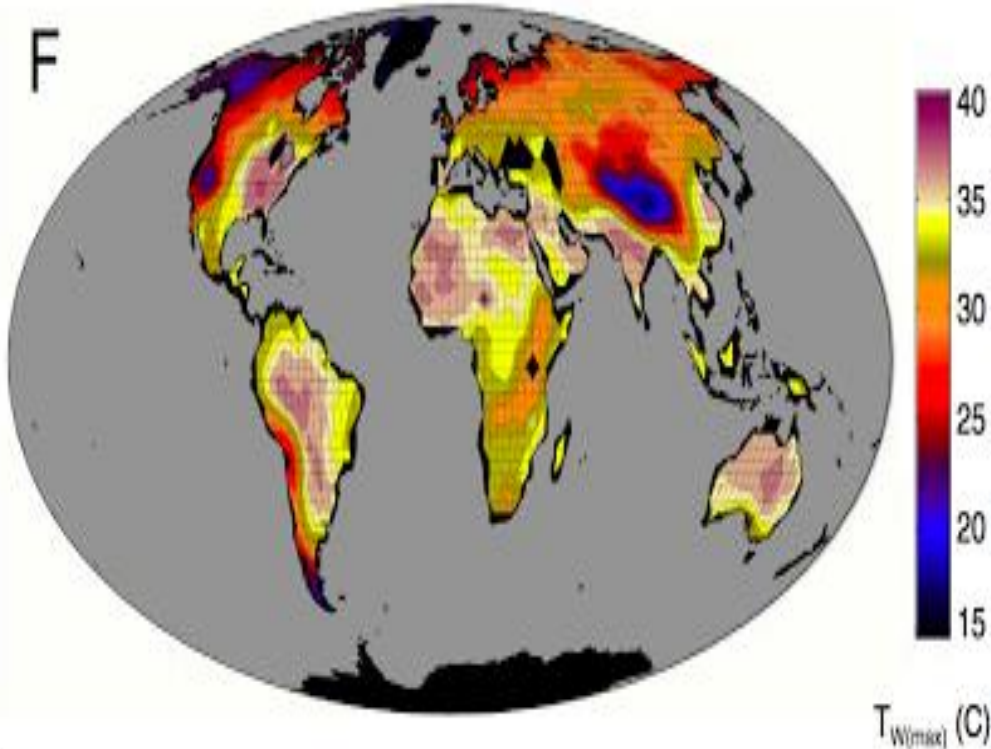
Temperature Stress

SNI > 64



Metabolic transactions + environment -

Respiratory Body surface Israel SNI: 80 ?



(Rick, 2010; Avendano-Reyes, 2012)

Temperature Stress

Isı °C	% Bağıl Nem																		
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
22.0	64	65	65	66	66	67	67	67	68	68	69	69	69	70	70	70	71	71	71
23.0	65	65	66	66	67	67	68	68	68	69	69	70	70	71	71	71	72	72	72
23.5	65	66	66	67	67	67	68	68	69	69	70	70	70	71	71	72	72	73	73
24.0	66	66	67	67	68	68	69	69	70	70	71	71	71	72	72	73	73	74	74
24.5	66	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74	75	75
25.0	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74	75	75	76
25.5	67	68	68	69	69	70	70	71	71	72	73	73	74	74	75	75	76	76	77
26.0	67	68	69	69	70	70	71	71	72	73	73	74	74	75	76	76	77	77	78
26.5	68	69	69	70	70	71	72	72	73	73	74	75	75	76	76	77	78	78	79
27.0	68	69	70	70	71	72	72	73	73	74	75	75	76	77	77	78	78	79	80
28.0	69	69	70	71	71	72	73	73	74	75	75	76	77	77	78	79	79	80	81
28.5	69	70	71	71	72	73	73	74	75	75	76	77	78	78	79	80	80	81	82
29.0	70	70	71	72	73	73	74	75	75	76	77	78	78	79	80	80	81	82	83
29.5	70	71	72	72	73	74	75	75	76	77	78	78	79	80	81	81	82	83	84
30.0	71	71	72	73	74	74	75	76	77	77	78	79	80	81	81	82	83	84	84
30.5	71	72	73	73	74	75	76	77	77	78	79	80	81	81	82	83	84	85	85
31.0	72	72	73	74	75	76	76	77	78	79	80	81	81	82	83	84	85	86	86
31.5	72	73	74	75	75	76	77	78	79	80	81	81	82	83	84	85	86	86	87
32.0	72	73	74	75	76	77	78	79	79	80	81	82	83	84	85	86	86	87	88
33.0	73	74	75	76	76	77	78	79	80	81	82	83	84	85	86	86	87	88	89
33.5	73	74	75	76	77	78	79	80	81	82	83	84	85	85	86	87	88	89	90
34.0	74	75	76	77	78	79	80	80	81	82	83	84	85	86	87	88	89	90	91
34.5	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
35.0	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
35.5	75	76	77	78	79	80	81	82	83	85	86	87	88	89	90	91	91	93	94
36.0	76	77	78	79	80	81	82	83	84	85	86	87	88	89	91	91	93	94	95
36.5	76	77	78	80	80	82	83	83	85	86	87	88	89	90	91	92	93	94	95
37.0	76	78	79	80	81	82	83	84	85	87	88	89	90	91	92	93	94	95	96
38.0	77	78	79	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	98
38.5	77	79	80	81	82	83	84	86	87	88	89	90	92	93	94	95	96	98	99
39.0	78	79	80	82	83	84	85	86	87	89	90	91	92	94	95	96	97	98	100
39.5	78	79	81	82	83	84	86	87	88	89	91	92	93	94	96	97	98	99	101
40.0	79	80	81	83	84	85	86	88	89	90	91	93	94	95	96	97	99	100	101
40.5	80	80	82	83	84	86	87	88	89	91	92	93	95	96	97	99	99	100	102
41.0	80	81	82	84	85	87	88	89	90	91	93	94	95	97	98	99	100	103	103
41.5	80	81	83	84	85	87	88	89	91	92	94	95	96	98	99	100	102	103	104

Stres yok

Hafif

şiddetli

ölüm

(Avendano-Reyes, 2012)

Heat Stress

○ Effect of heat stress

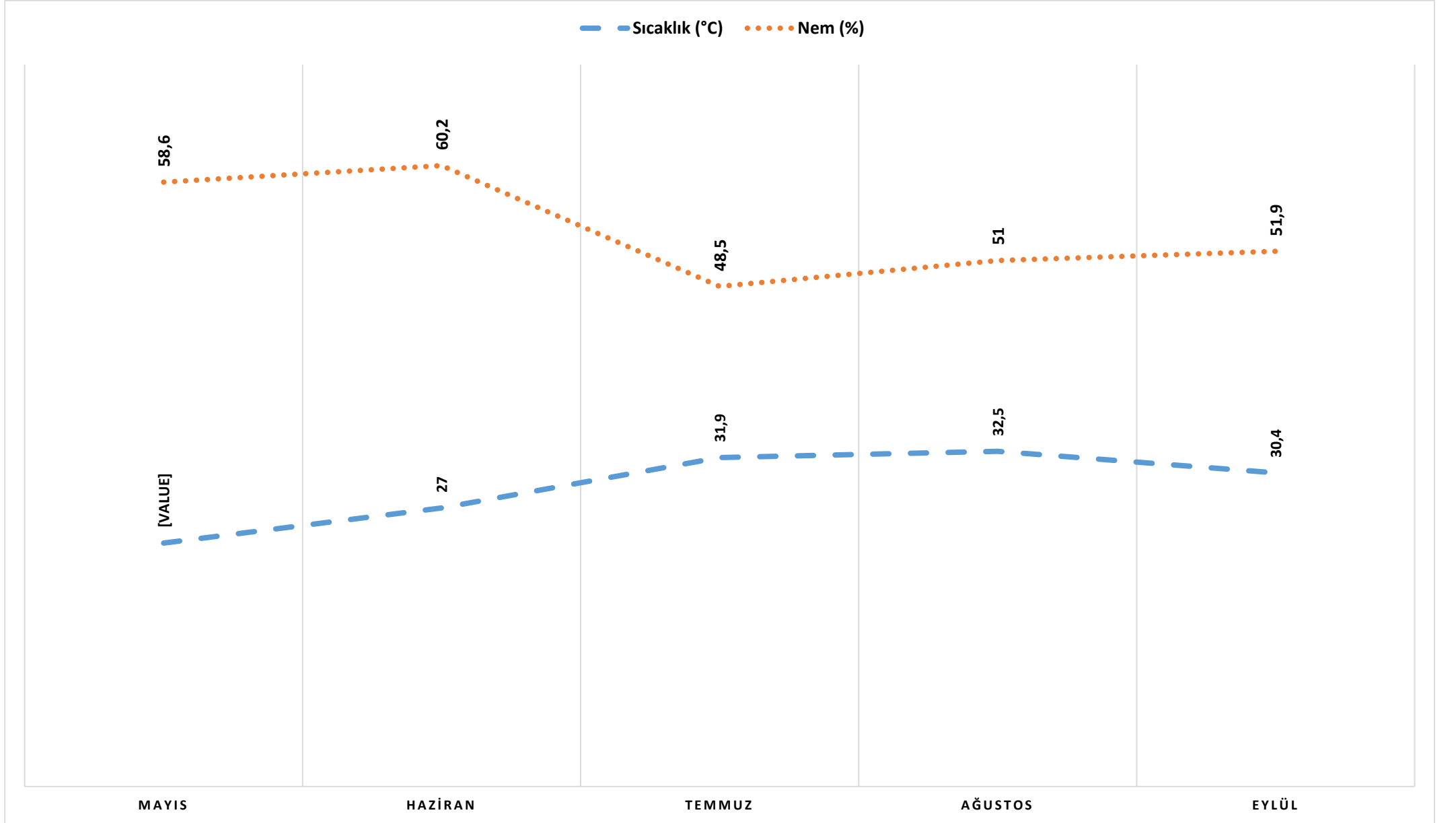
- Reproduction
- **Immune system**
- Metabolism
- Milk production



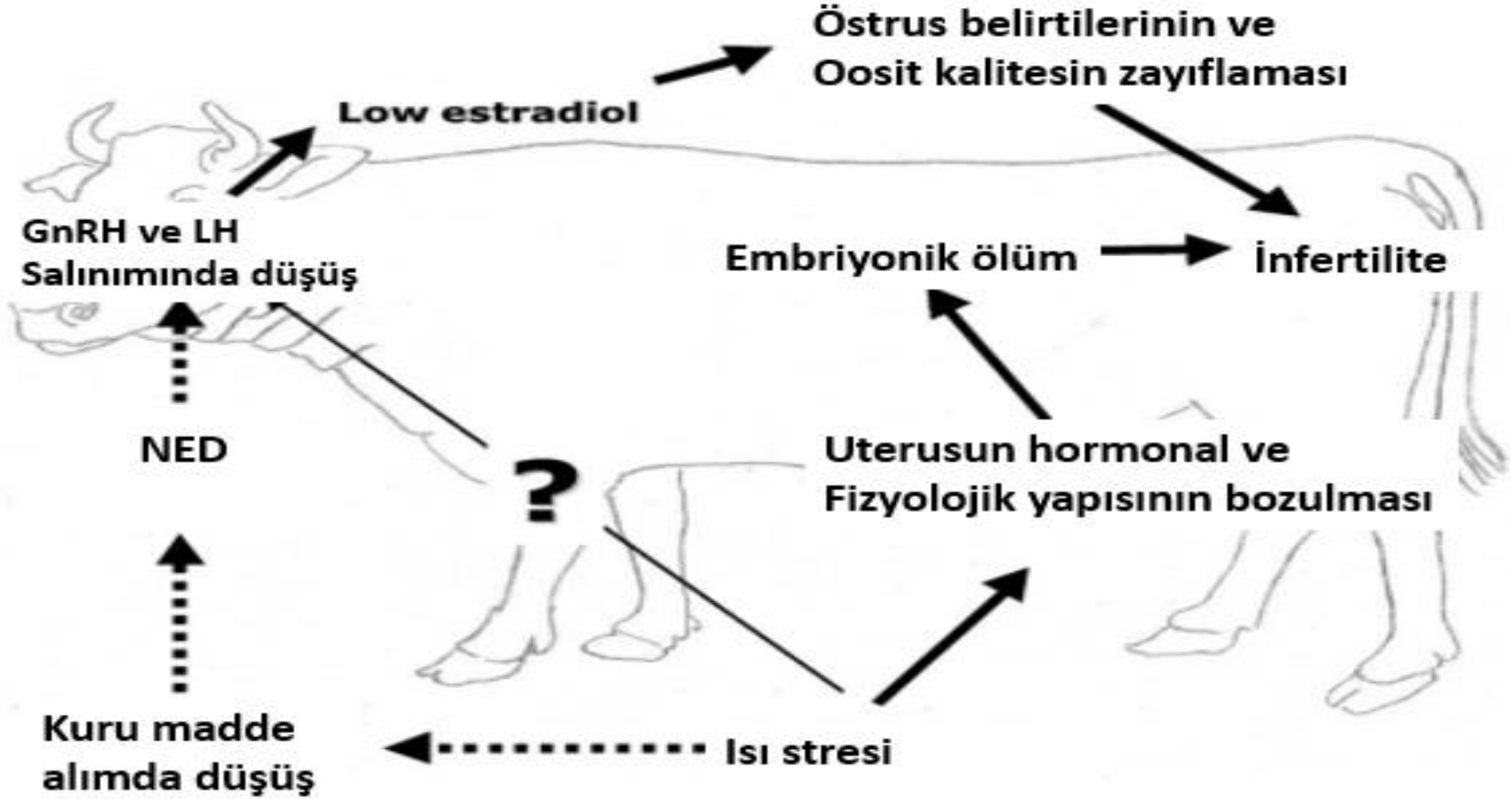
USA

\$ 1.5 billion annual loss

Heat Stress



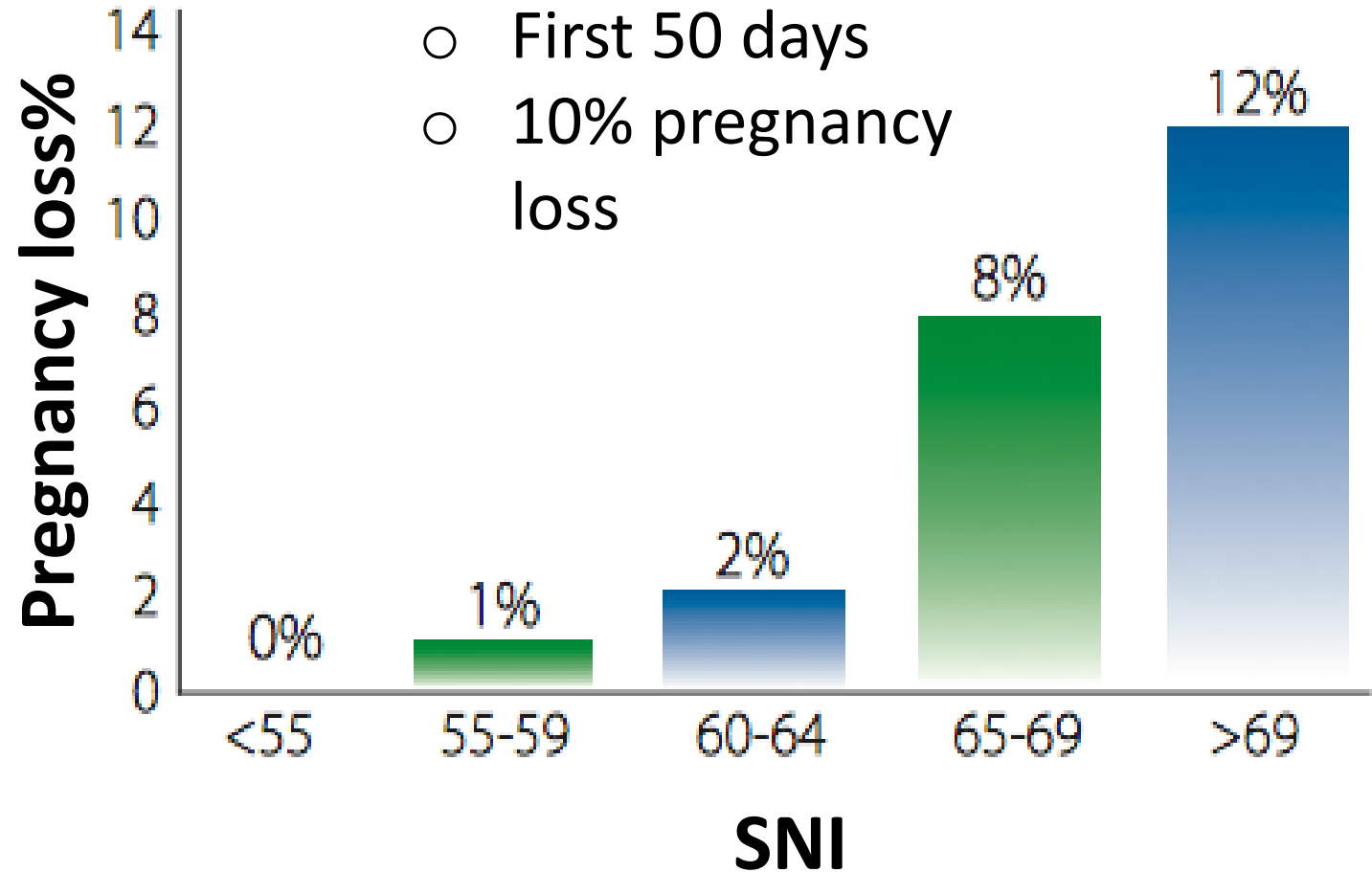
Heat Stress



Effect of heat stress on fertility

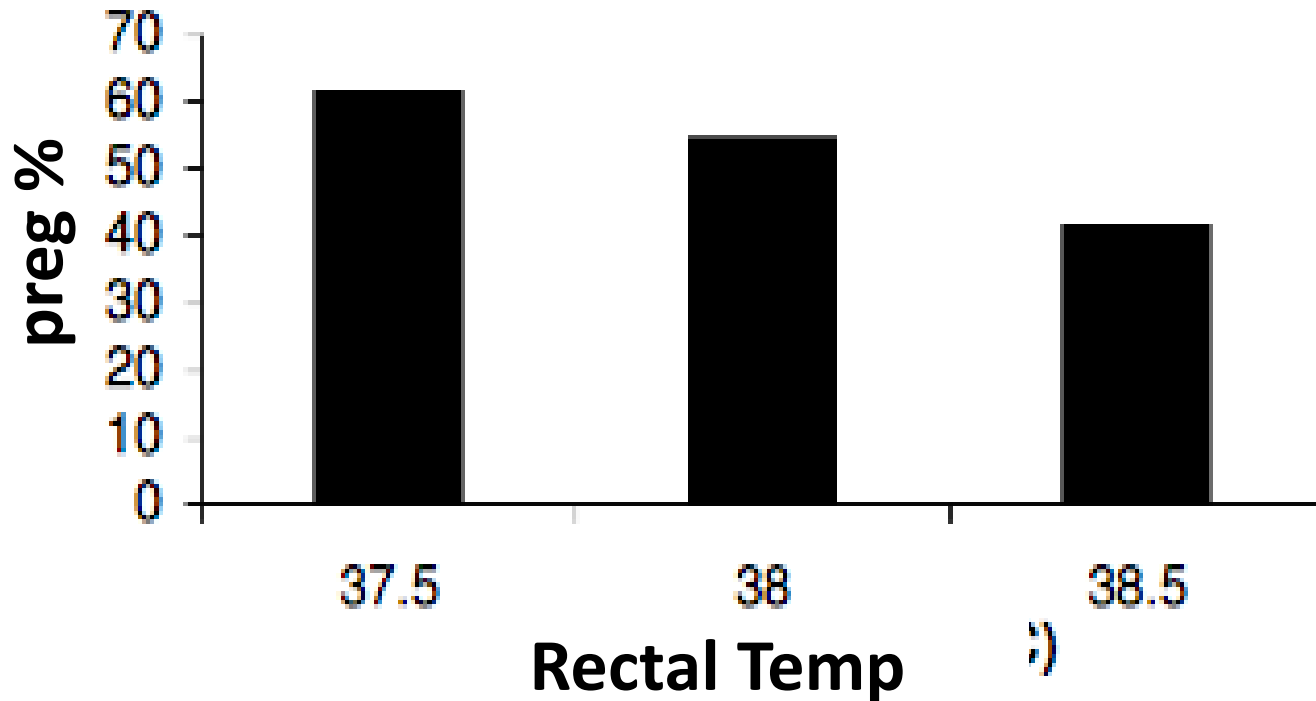
Pre-estrous (10 days) heat stress

- Ovulation and Oocyte delay in maturation
- D.F development problem
- Reduction in blastocyte development ability after fertilization
- Implantation problem



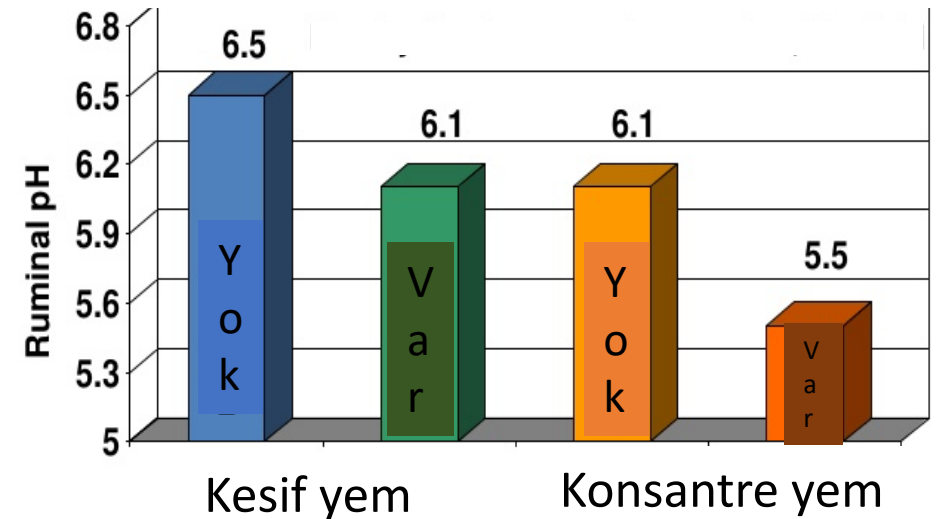
Effect of temperature stress on fertility

THI 1 unit increase,
conception rate 2%



Rumen pH **5,5** ↓

Effect of heat stress on rumen
pH



(Lucy, 2003; Santos 2012)