

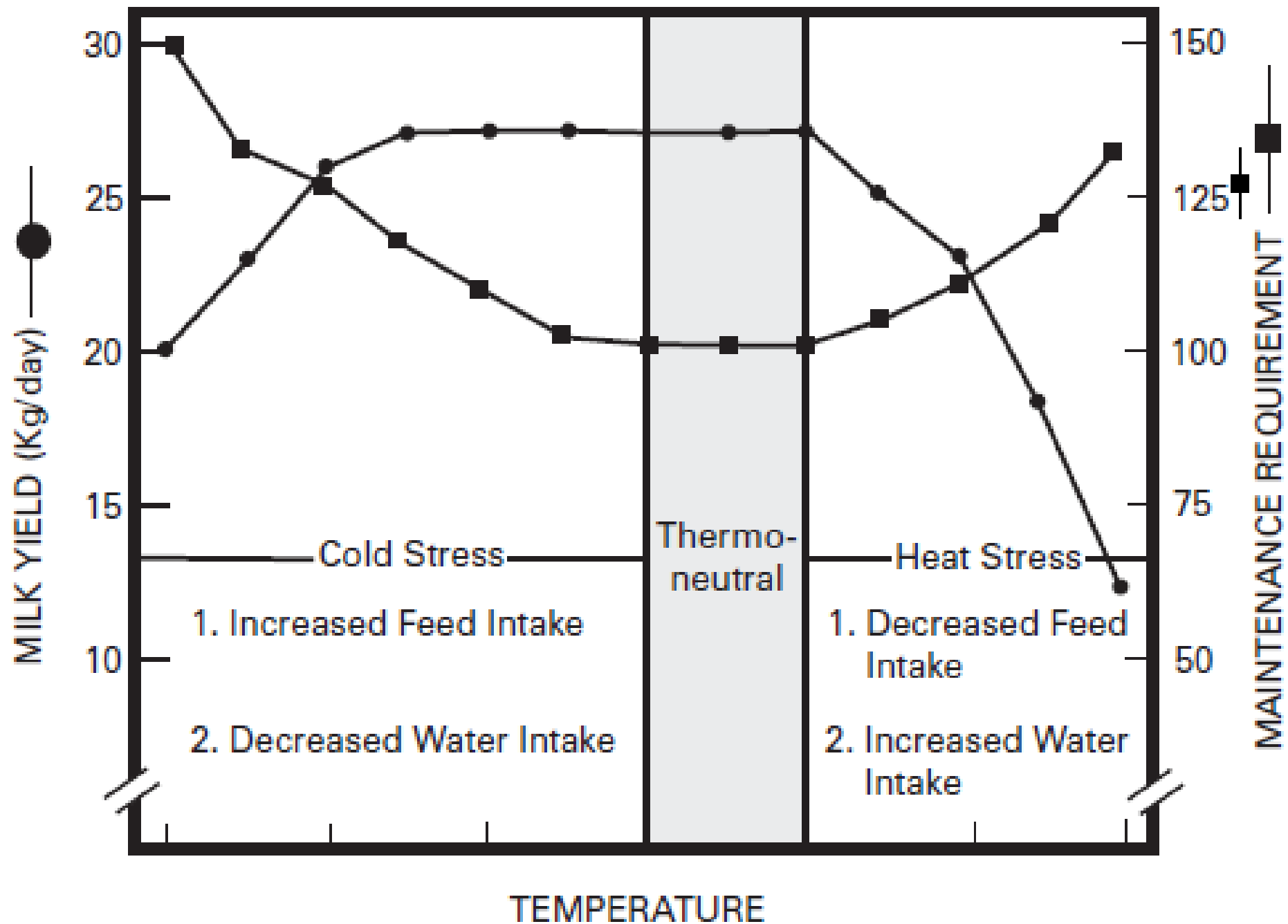
Livestock Animal Environmental Management





Heat Stress Effects

- ↓ Reproductive efficiency and performance
- ↓ Reduced feed intake
- ↓ Reduced milk production, rates of gain, feed efficiency, etc.
- ↓ Health related issues, diseases, etc.



Typical Thermoneutral Zones

<u>Species</u>	<u>Temperature (°F)</u>
Cattle	32-77
Calves	50-68
Pigs	50-80
Goats	40-68
Sheep	30-88 - ??

Temperature Humidity Index (THI)										
Relative Humidity %										
°F	C	20	30	40	50	60	70	80	90	100
72	22	66	66	67	68	69	69	70	71	72
75	24	68	69	70	70	71	72	73	74	75
79	26	70	71	72	73	74	75	77	78	79
82	28	72	73	74	76	77	78	80	81	82
86	30	74	75	77	78	80	81	83	84	86
90	32	76	77	79	81	83	84	86	88	90
93	34	78	80	82	84	85	87	89	91	93
97	36	80	82	84	86	88	90	93	95	97
100	38	82	84	86	89	91	93	96	98	100
104	40	84	86	89	91	94	96	99	101	104

No heat stress

Moderate heat stress

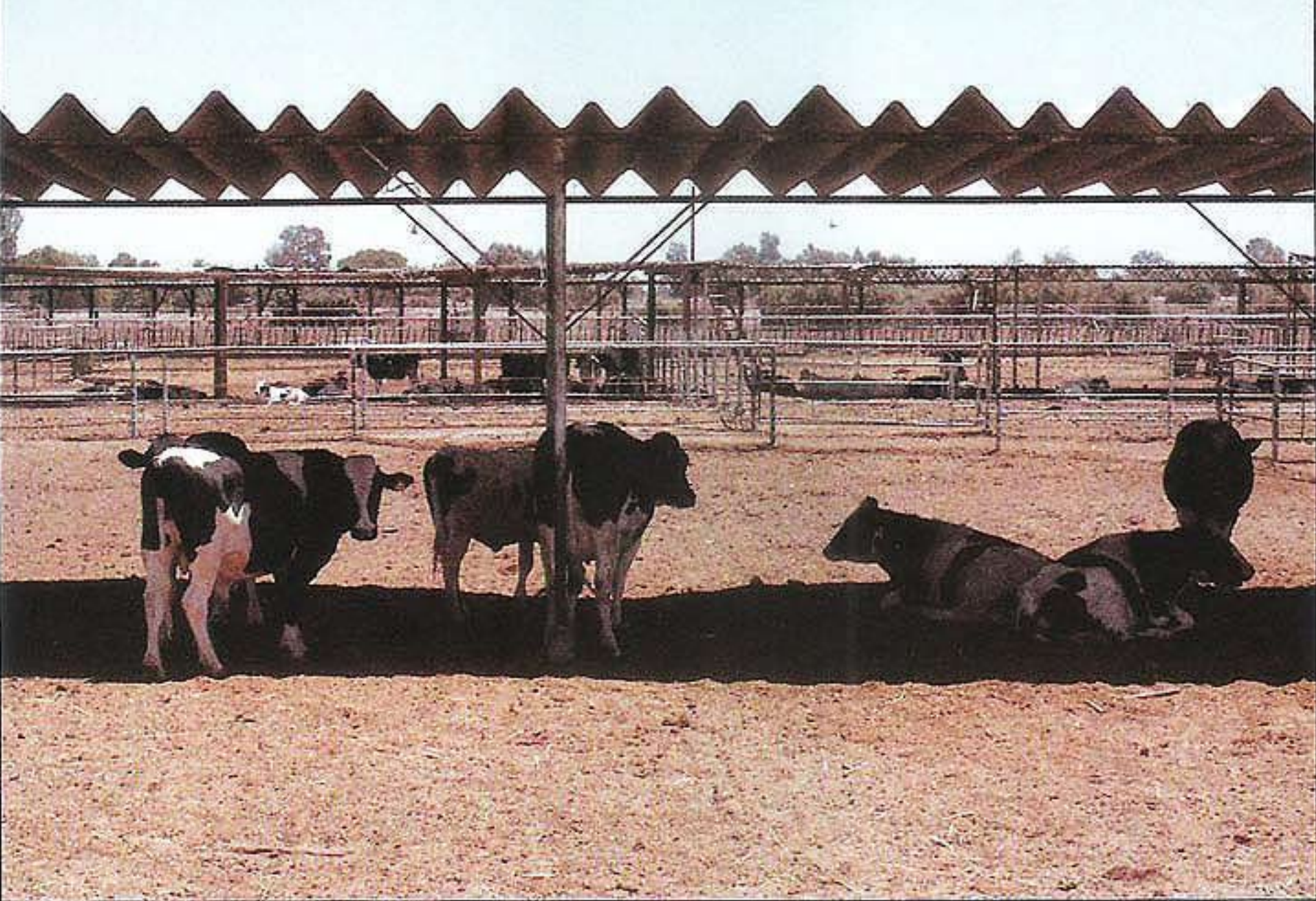
Severe heat stress

Dead cows

1. Water
2. Feeding
3. Housing
 - Shade
 - Shelter
 - Fans
 - Sprinklers
 - Pasture
4. Breeding
5. Animal comfort

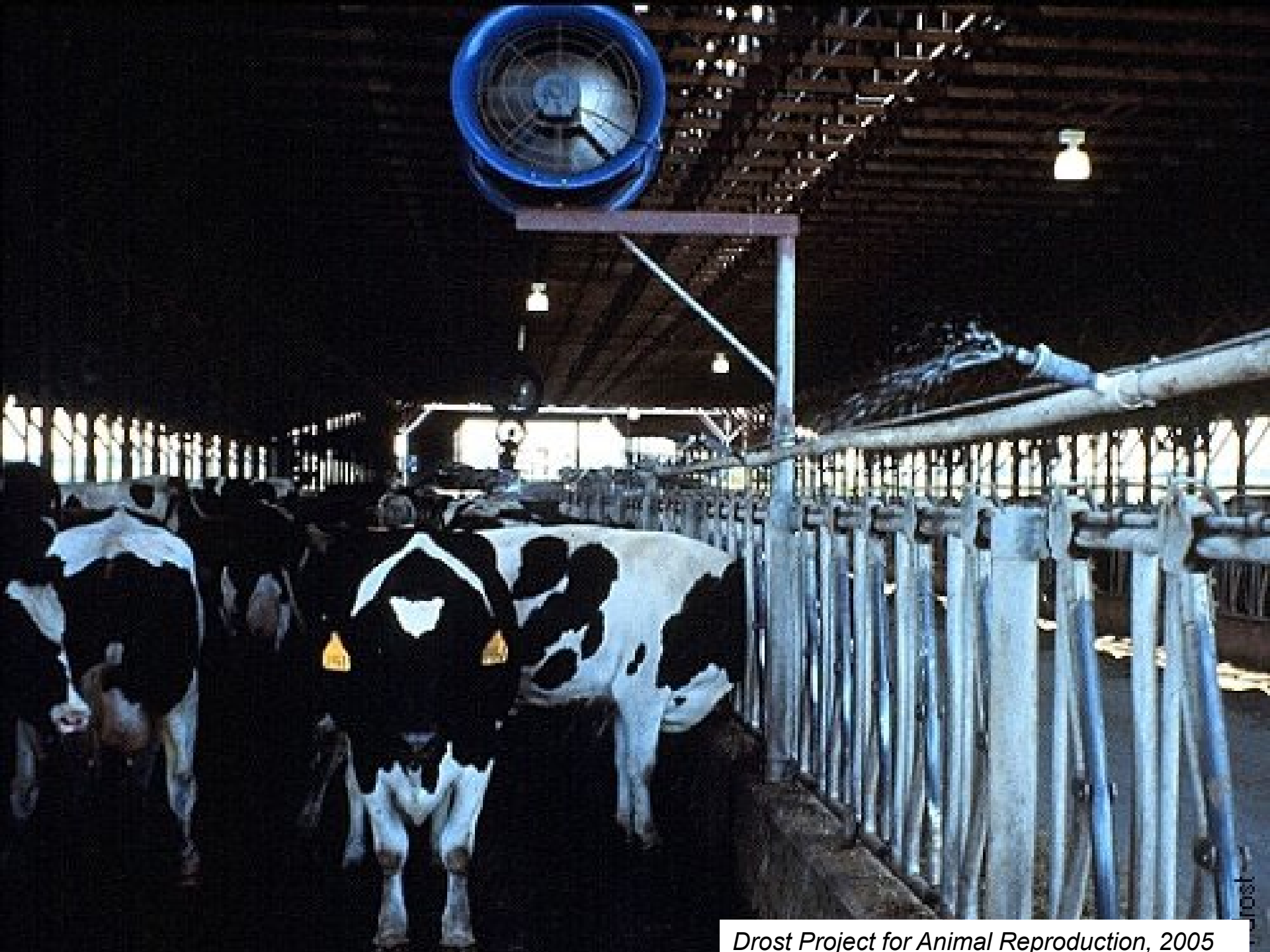


*Onderwijsgek, Nederlands: Koeien onder
een kastanjeboom in Willeskop. 2012*



Mexicali Dairy

University of California Agriculture: <http://californiaagriculture.ucanr.edu/landingpage.cfm?article=ca.v045n05p18&fulltext=>





Drost Project for Animal Reproduction, 2005



Breeds of Livestock Website: Oklahoma State University
<http://www.ansi.okstate.edu/breeds/>





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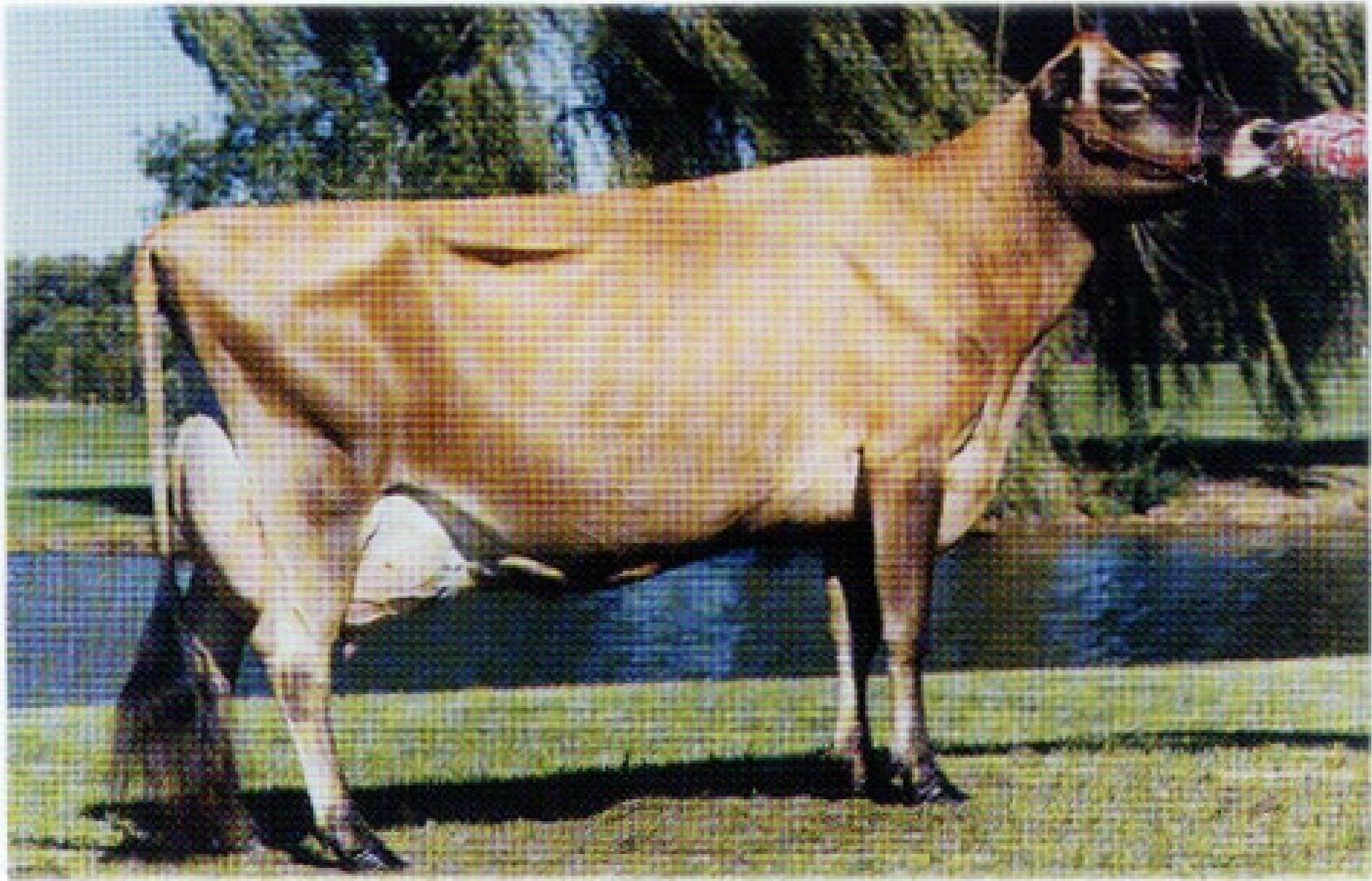
Santa Gertrudis: Composite 5/8 Shorthorn, 3/8 Brahman



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Holstein



Jersey