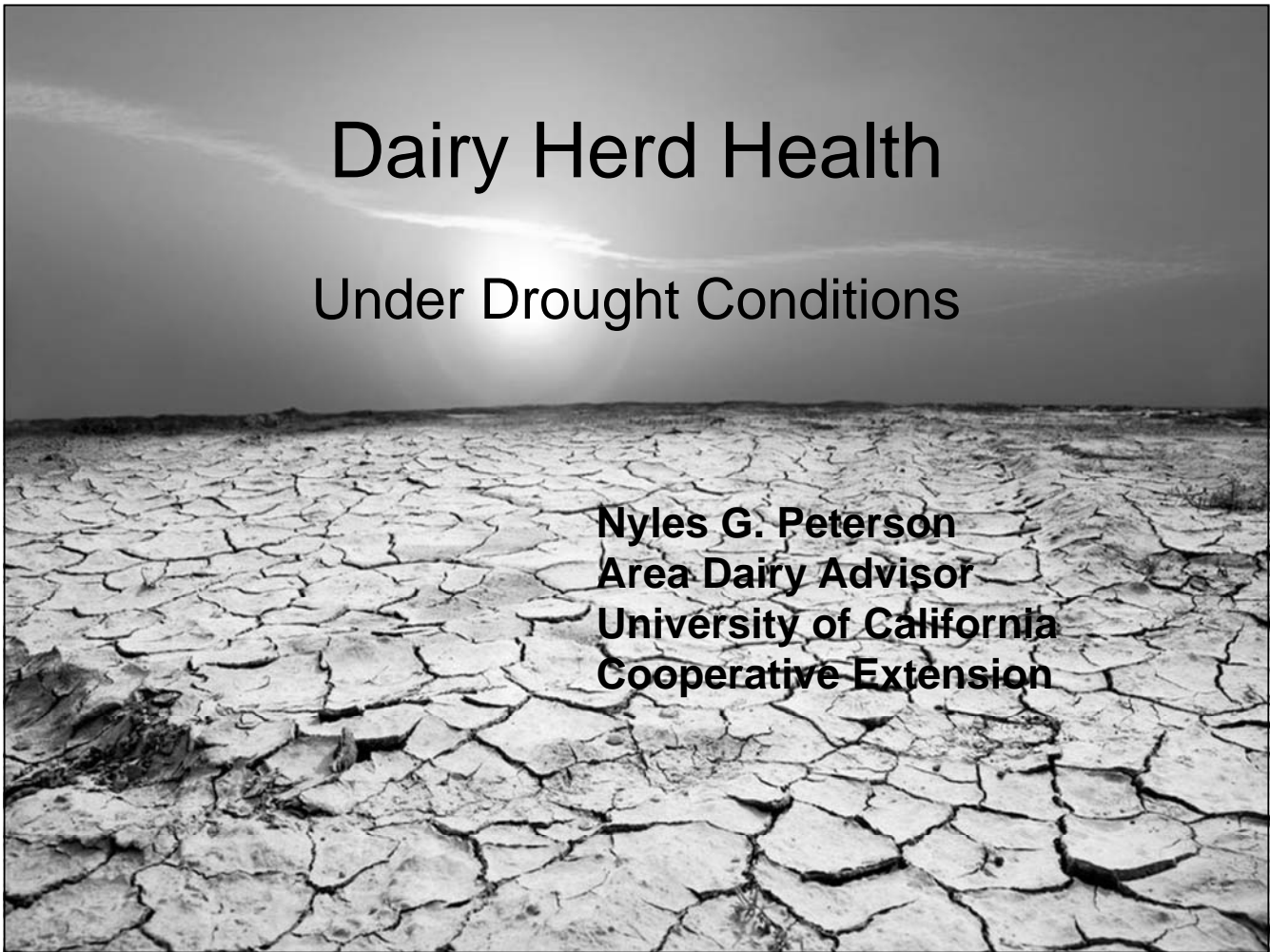


Dairy Herd Health

Under Drought Conditions

Nyles G. Peterson
Area Dairy Advisor
University of California
Cooperative Extension



U.S. Drought Monitor California

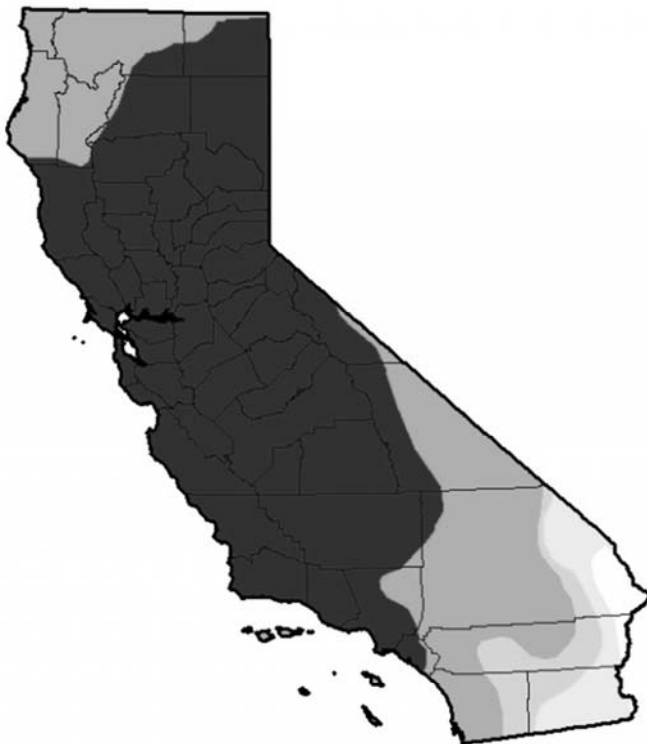
January 14, 2014

(Released Thursday, Jan. 16, 2014)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.43	98.57	94.18	89.91	62.71	0.00
Last Week <i>1/7/2014</i>	1.43	98.57	94.25	87.53	27.59	0.00
3 Months Ago <i>10/15/2013</i>	2.65	97.35	95.95	84.12	11.36	0.00
Start of Calendar Year <i>12/01/2013</i>	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year <i>10/1/2013</i>	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago <i>1/15/2013</i>	34.20	65.80	53.58	21.57	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

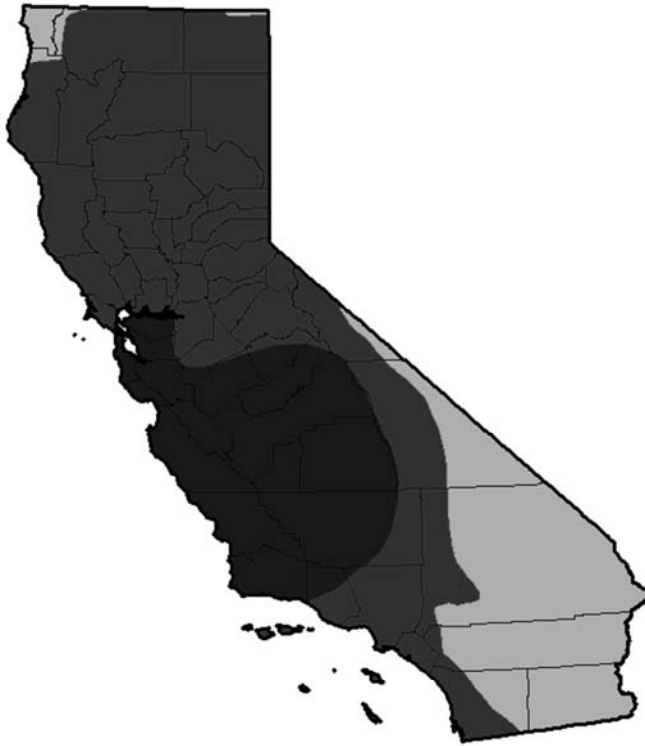
Eric Luebbehusen
 U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor California

May 20, 2014
(Released Thursday, May. 22, 2014)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	100.00	76.68	24.77
Last Week 5/13/2014	0.00	100.00	100.00	100.00	76.68	24.77
3 Months Ago 2/18/2014	0.00	100.00	94.54	90.82	68.30	14.62
Start of Calendar Year 12/01/2013	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year 10/01/2013	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago 5/21/2013	0.00	100.00	98.16	46.25	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Michael Brewer
NCDC/NOAA



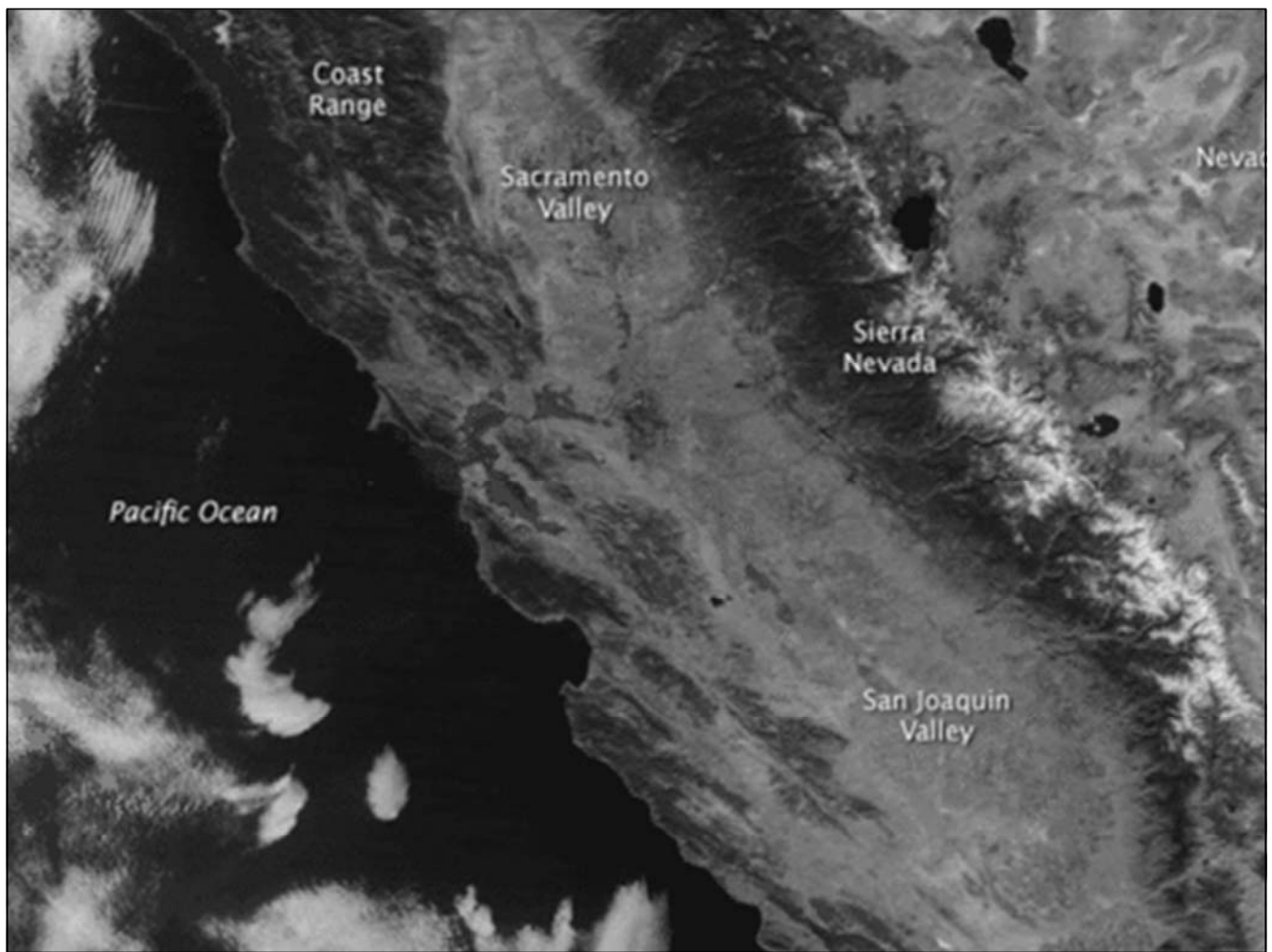
<http://droughtmonitor.unl.edu/>





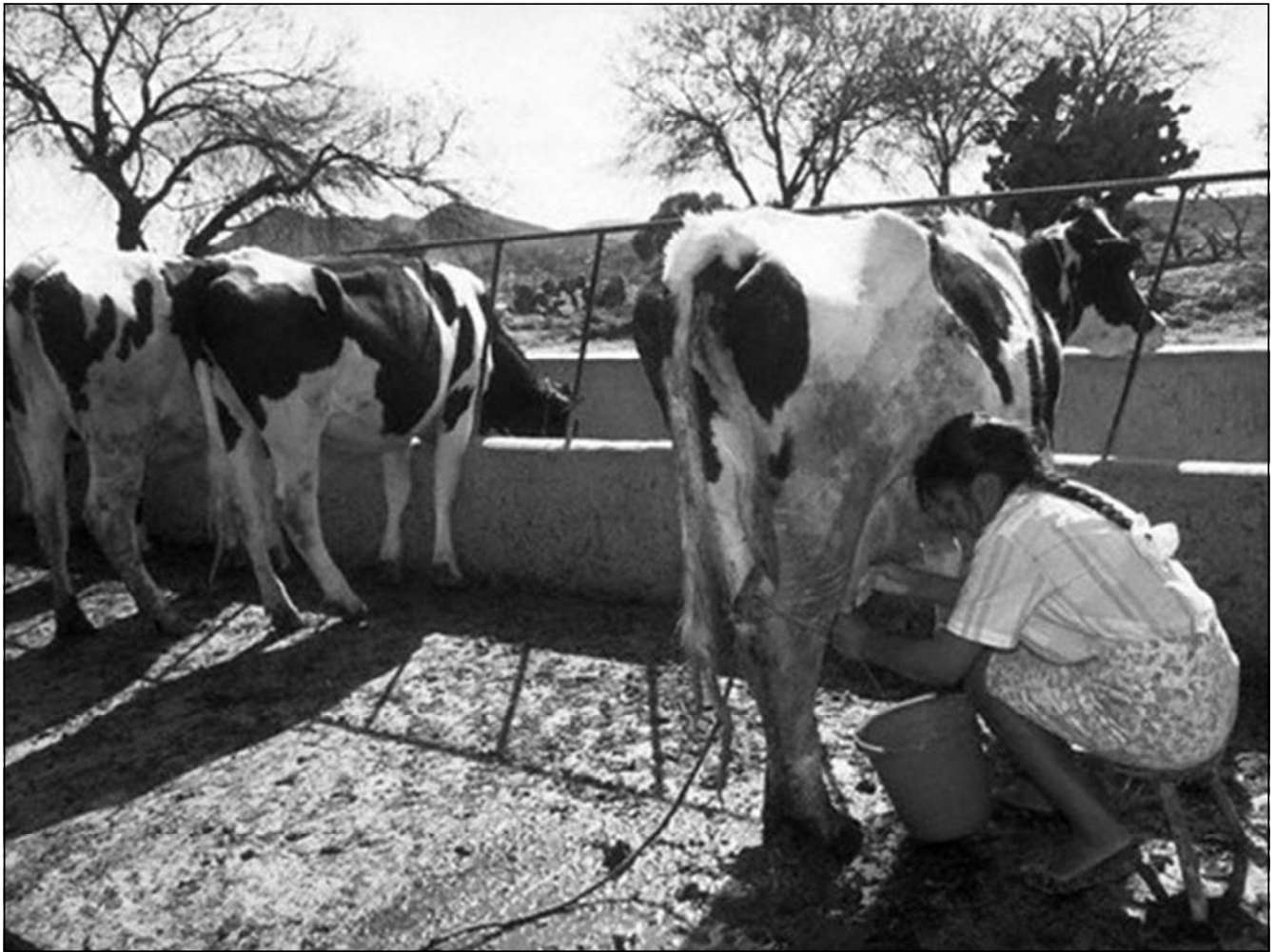
Sierra Snow Pack

- The California state snow survey on April 1, 2014 found that the snowpack contained just 32% of the average water content at that time of year, when snowpack typically reaches its annual peak. This placed 2014 among the lowest water-content years on record since such data began in 1930.



California Suffers Astonishingly Fast Snowpack Melt

- In California's Sierra Nevada Mountains, where runoff from the spring snowpack provides much-needed water supplies during the dry season, half of the snowpack's liquid water equivalent melted in just the past week in some areas, due to temperatures that soared as high as 12 degrees Fahrenheit above average of early April, according to the U.S. Drought Monitor.



Drought-stressed cattle can suffer from the following:

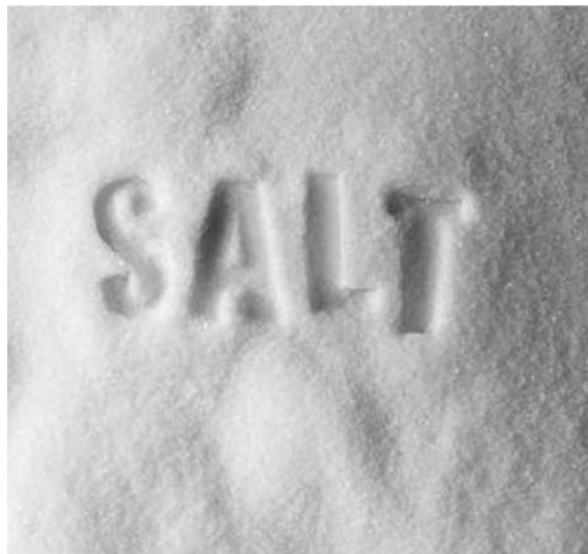
- Dehydration
- Heat stress
- Malnutrition





High Salinity in Drinking Water

- >10,000 ppm salts will reduce water intake and high salt intakes can cause neurological problems/signs.



Heat Stress



Revised Temperature Humidity Index For Lactating Dairy Cows

Temperature		% Relative Humidity																			
°F	°C	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135
72	22.2	65	65	65	65	66	67	67	67	68	68	69	69	70	70	71	71	72	72	73	73
73	22.8	65	65	66	66	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74
74	23.3	65	66	66	67	67	68	68	69	70	70	71	71	72	72	73	73	74	74	75	75
75	23.9	66	66	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74	75	75
76	24.4	66	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74	75	75	76
77	25.0	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74	75	75	76	76
78	25.6	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74	75	75	76	76	77
79	26.1	67	68	69	69	70	70	71	71	72	72	73	73	74	74	75	75	76	76	77	77
80	26.7	68	68	69	70	70	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78
81	27.2	68	69	70	70	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78
82	27.8	69	69	70	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79
83	28.3	69	70	70	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79
84	28.9	70	70	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79
85	29.4	70	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80
86	30.0	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80	80
87	30.6	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80	80	81
88	31.1	71	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80	80	81	81
89	31.7	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80	80	81	81
90	32.2	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80	80	81	81	82
91	32.8	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80	80	81	81	82	82
92	33.3	73	74	74	75	75	76	76	77	77	78	78	79	79	80	80	81	81	82	82	83
93	33.9	74	74	75	75	76	76	77	77	78	78	79	79	80	80	81	81	82	82	83	83
94	34.4	74	75	75	76	76	77	77	78	78	79	79	80	80	81	81	82	82	83	83	84
95	35.0	75	75	76	76	77	77	78	78	79	79	80	80	81	81	82	82	83	83	84	84
96	35.6	75	76	76	77	77	78	78	79	79	80	80	81	81	82	82	83	83	84	84	85
97	36.1	76	76	77	77	78	78	79	79	80	80	81	81	82	82	83	83	84	84	85	85
98	36.7	76	77	77	78	78	79	79	80	80	81	81	82	82	83	83	84	84	85	85	86
99	37.2	77	77	78	78	79	79	80	80	81	81	82	82	83	83	84	84	85	85	86	86
100	37.8	77	78	78	79	79	80	80	81	81	82	82	83	83	84	84	85	85	86	86	87
101	38.3	78	78	79	79	80	80	81	81	82	82	83	83	84	84	85	85	86	86	87	87
102	38.9	78	79	79	80	80	81	81	82	82	83	83	84	84	85	85	86	86	87	87	88
103	39.4	79	79	80	80	81	81	82	82	83	83	84	84	85	85	86	86	87	87	88	88
104	40.0	79	80	80	81	81	82	82	83	83	84	84	85	85	86	86	87	87	88	88	89
105	40.6	80	80	81	81	82	82	83	83	84	84	85	85	86	86	87	87	88	88	89	89
106	41.1	80	81	81	82	82	83	83	84	84	85	85	86	86	87	87	88	88	89	89	90
107	41.7	81	81	82	82	83	83	84	84	85	85	86	86	87	87	88	88	89	89	90	90
108	42.2	81	82	82	83	83	84	84	85	85	86	86	87	87	88	88	89	89	90	90	91
109	42.8	82	82	83	83	84	84	85	85	86	86	87	87	88	88	89	89	90	90	91	91
110	43.3	82	83	83	84	84	85	85	86	86	87	87	88	88	89	89	90	90	91	91	92
111	43.9	83	83	84	84	85	85	86	86	87	87	88	88	89	89	90	90	91	91	92	92
112	44.4	83	84	84	85	85	86	86	87	87	88	88	89	89	90	90	91	91	92	92	93
113	45.0	84	84	85	85	86	86	87	87	88	88	89	89	90	90	91	91	92	92	93	93
114	45.5	84	85	85	86	86	87	87	88	88	89	89	90	90	91	91	92	92	93	93	94
115	46.1	85	85	86	86	87	87	88	88	89	89	90	90	91	91	92	92	93	93	94	94
116	46.6	85	86	86	87	87	88	88	89	89	90	90	91	91	92	92	93	93	94	94	95
117	47.2	86	86	87	87	88	88	89	89	90	90	91	91	92	92	93	93	94	94	95	95
118	47.7	86	87	87	88	88	89	89	90	90	91	91	92	92	93	93	94	94	95	95	96
119	48.3	87	87	88	88	89	89	90	90	91	91	92	92	93	93	94	94	95	95	96	96
120	48.8	87	88	88	89	89	90	90	91	91	92	92	93	93	94	94	95	95	96	96	97

Stress Threshold (68) Respiration rate exceeds 60 BPM. Milk yield losses begin. Repro losses detectable. Rectal Temperature exceeds 38.5°C (101.3°F)

Mild-Moderate Stress (70) Respiration Rate Exceeds 75 BPM. Rectal Temperature exceeds 39°C (102.2°F)

Moderate-Severe Stress (80) Respiration Rate Exceeds 85 BPM Rectal Temperature exceeds 40 °C (104°F)

Severe Stress (90). Respiration Rate 120-140 BPM. Rectal Temperature exceeds 41 °C (106°F)

DEG	RELATIVE HUMIDITY																				
F	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
75																	72	72	73	73	75
80																					
85																					
90																					
95																					
100																					
105																					
110																					
115																					
120																					

¹THI = (Dry-Bulb Temp. °C) + (0.36 dew point Temp., °C) + 41.2)

If more than two cows out of 10 have respiratory rates exceeding 100 breaths per minute, then immediate action should be taken to reduce heat stress.

THI between 72 and 78



mild stress

THI between 79 and 88



moderate stress

THI between 89 and 98



severe stress

THI above 98



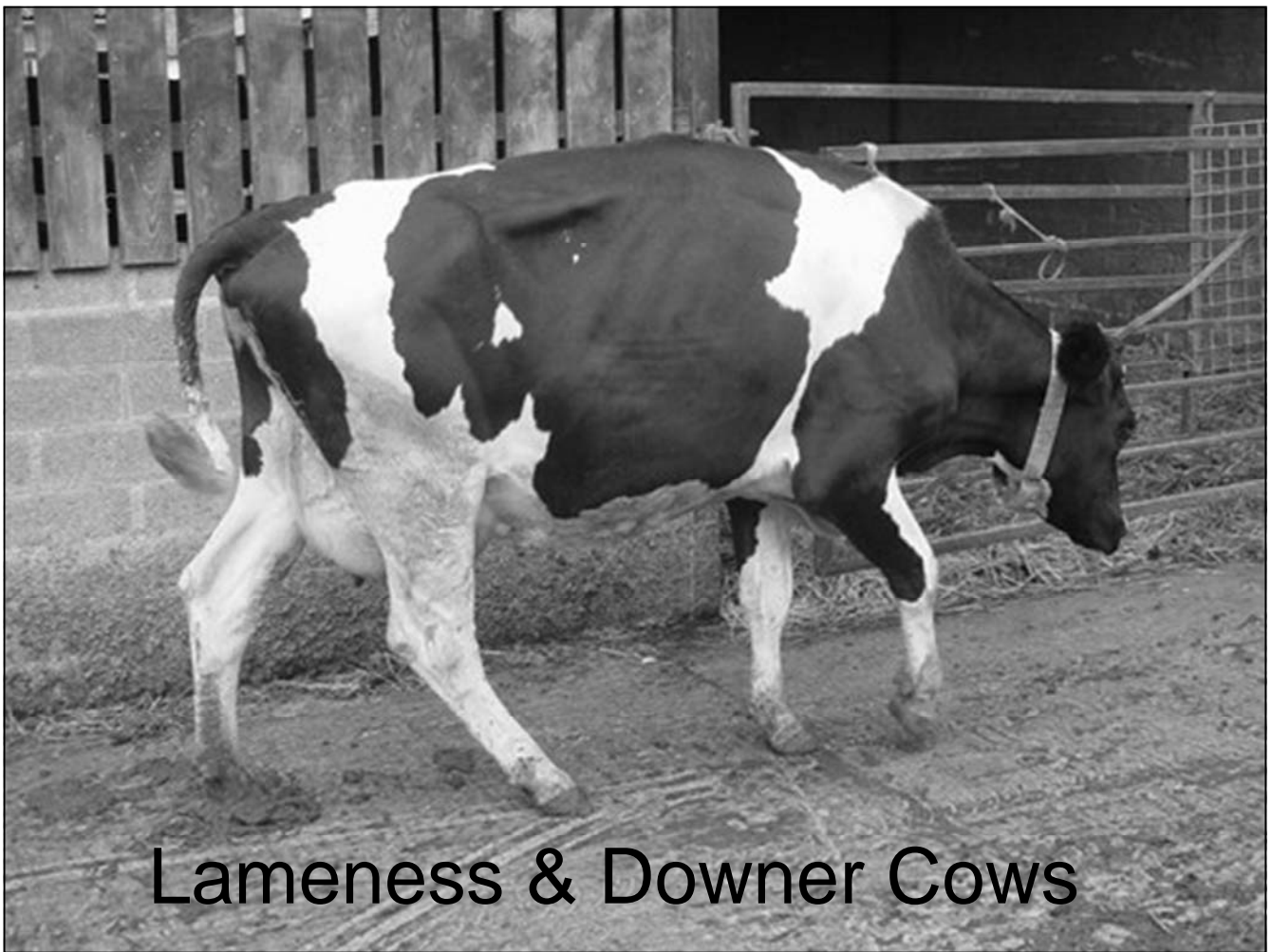
DEAD COWS!

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- Severe Stress (90). Respiration Rate 120-140 BPM. Rectal Temperature exceeds 41 °C (106°F)

Drought-stressed cattle can exhibit

- Low fertility
- Low milk production
- Abortion
- immunosuppression
- Retained Afterbirth
- Uterine prolapses
- Dystocia (abnormal labor or birth)





Lameness & Downer Cows

Drough-stressed Feeds should first be tested for the following:

Commodity	Nutritional Value	Nitrates	Aflatoxin	Other
Corn	X		X	
Cottonseed	X		X	Gossypol
Soybeans	X			Nightshade
Haylage	X	X		Weeds
Silage	X	X	If indicated	Mold count/ID
Hay	X	X		Weeds
Hay w/Sweetclover				Dicumerol

Drought-stressed Grain Poisoning

- Aflatoxins > 600 PPB
- Nitrate
- Plant Cyanide



Nitrate Nitrogen in forages

ppm	Recommendations
< 1000	Safe to feed under all condition
1000 -1500	Safe for non pregnant animals
1500 - 2000	Limit to < 50% of ration
2000 – 3500	Limit to 35 % ration – No preg
3500 – 4000	Limit to 25% ration – No Preg
> 4000	DO NOT FEED

Drought-stressed corn plant Nitrate Nitrogen

Plant Part	ppm
> leaves	64
> Ears	17
> Upper 1/3 of stalk	153
> middle 1/3 of stalk	803
> Lower 1/3 of stalk	5,524



- **Raise cutter bar
12 – 18 inches
off the ground**

Check Water Supply for Nitrates



Toxic Levels in Sick Cows



Making Changes

