


RELATIVE HUMIDITY VS. TEMPERATURE AND VAPOR PRESSURE DIFFERENCE (VPD) CHART

°F	VAPOR PRESSURE DIFFERENCE IN KILOPASCAL (kPa) UNITS																	°F	
	(For Millibar Units (mbar), Multiply Values Below by 10)																		
	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55		1.60
	WEEKS 1 to 2							WEEKS 3 to 4					Weeks 5 to 9						
RELATIVE HUMIDITY																			
86	83%	82%	80%	79%	78%	77%	75%	74%	73%	72%	72%	69%	68%	67%	66%	65%	63%	62%	86
85	82%	81%	79%	78%	77%	76%	74%	73%	72%	71%	70%	68%	67%	66%	65%	64%	62%	61%	85
84	81%	80%	79%	77%	76%	75%	74%	72%	71%	70%	69%	67%	66%	65%	64%	62%	61%	60%	84
83	81%	79%	78%	77%	75%	74%	73%	71%	70%	69%	68%	66%	65%	64%	62%	61%	60%	59%	83
82	80%	79%	77%	76%	75%	73%	72%	71%	69%	68%	67%	65%	64%	63%	61%	60%	58%	57%	82
81	79%	78%	76%	75%	74%	72%	71%	70%	68%	67%	65%	64%	63%	61%	60%	58%	57%	56%	81
80	79%	77%	76%	74%	73%	71%	70%	69%	67%	66%	64%	63%	61%	60%	59%	57%	56%	54%	80
79	78%	76%	75%	73%	72%	70%	69%	68%	66%	65%	63%	62%	60%	59%	57%	56%	54%	53%	79
78	77%	76%	74%	73%	71%	69%	68%	66%	65%	63%	62%	60%	59%	57%	56%	54%	53%	51%	78
77	76%	75%	73%	72%	70%	68%	67%	65%	64%	62%	61%	59%	57%	56%	54%	53%	51%	50%	77
76	76%	74%	72%	71%	69%	67%	66%	64%	62%	61%	59%	58%	56%	54%	53%	51%	49%	48%	76
75	75%	73%	71%	70%	68%	66%	65%	63%	61%	60%	58%	56%	54%	53%	51%	49%	48%	46%	75
74	74%	72%	70%	69%	67%	65%	63%	62%	60%	58%	56%	55%	53%	51%	49%	48%	46%	44%	74
73	73%	71%	69%	68%	66%	64%	62%	60%	59%	57%	55%	53%	51%	50%	48%	46%	44%	42%	73
72	72%	70%	68%	66%	65%	63%	61%	59%	57%	55%	53%	52%	50%	48%	46%	44%	42%	40%	72
71	71%	69%	67%	65%	63%	61%	59%	58%	56%	54%	52%	50%	48%	46%	44%	42%	40%	38%	71
70	70%	68%	66%	64%	62%	60%	58%	56%	54%	52%	50%	48%	46%	44%	42%	40%	38%	36%	70
69	69%	67%	65%	63%	61%	59%	57%	55%	52%	50%	48%	46%	44%	42%	40%	38%	36%	34%	69
68	68%	66%	64%	62%	59%	57%	55%	53%	51%	49%	47%	44%	42%	40%	38%	36%	34%	32%	68
67	67%	65%	62%	60%	58%	56%	54%	51%	49%	47%	45%	42%	40%	38%	36%	34%	31%	29%	67
66	66%	63%	61%	59%	56%	54%	52%	50%	47%	45%	43%	40%	38%	36%	34%	31%	29%	27%	66
65	64%	62%	60%	57%	55%	53%	50%	48%	45%	43%	41%	38%	36%	34%	31%	29%	26%	24%	65
64	 Indoor Agricultural Division					51%	48%	46%	44%	41%	39%	36%	34%	31%	29%	26%	24%	21%	64
63						49%	47%	44%	41%	39%	36%	34%	31%	29%	26%	24%	21%	19%	63
62						47%	45%	42%	39%	37%	34%	31%	29%	26%	24%	21%	18%	16%	62
61						45%	43%	40%	37%	34%	32%	29%	26%	24%	21%	18%	15%	13%	61
60						43%	41%	38%	35%	32%	29%	26%	24%	21%	18%	15%	12%	9%	60

Growth stage values complements of HIGHTIMES Magazine, Skye Hanke and Harry Resin, March 09, 2017.

VAPOR PRESSURE DIFFERENCE (VPD)

Vapor Pressure Difference, or VPD, is a measure of the difference (or deficit) between the pressure exerted by the moisture currently in the air and the pressure at saturation. VPD units are most often expressed in standard pressure units such as kilopascals (kPa) and millibars (mbar).

Vapor Pressure Difference (VPD) is a means to evaluate risk to a crop from disease caused by high moisture. VPD is a much better indicator than relative humidity alone because it uses a wide range of temperature and humidity combinations that result in equivalent VPD's.

VPD Chart shows that 70°F/44% has a VPD of 1.40. Equal VPD's are found at 73°F /50%, 76°F /54%, 80°F /60%, 84°F /65% and 86°F /67%. Any of these combinations of temperature/humidity have the same VPD.

VPD and How it relates to Dehumidification Sizing and Capital cost

At a given VPD the capital cost for MSP Dehumidification equipment decreases with an increase in room temperature. For example: If MSP Dehumidifier, rated at 73°F/50%, were rerated at 80°F/60%, the size and capital cost for MSP equipment would drop by more than 300%.

VPD SUMMARY OF BENEFITS

- ❖ A measurement of the potential for plants to release water vapor to the surrounding air
- ❖ Much better indication of the evaporation potential than Relative Humidity and is capable of better reflecting how a plant “feels”.
- ❖ VPD at 73°F /50%, 76°F /54%, 80°F /60% and 84°F /65% are equivalents.
- ❖ Simple nearly straight-line relationship to the rate of evapotranspiration.
- ❖ Using VPD as a guide, instead of relative humidity, reduces dehumidification equipment capital and operating Costs

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