

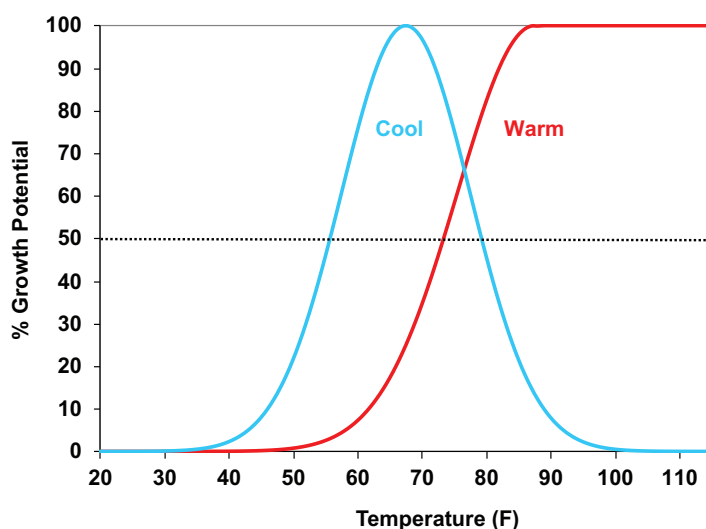
Reference



Growth Potential Values for cool season and warm season turf

We developed the growth potential model to explain myriad of ways in which weather impacts turf growth. The model considers turf growth to be good when the growth potential (GP) is between 50% and 100% (the best possible growth occurs at a GP of 100%). However, when weather conditions are either too hot or too cold for optimal turf growth, the GP falls below 50%, and turf becomes progressively more stressed. When the GP falls to 10% or lower, growth is extremely limited. Examples of growth potential graphs for selected U.S. locations are on the reverse side of this handout.

Percent Turfgrass Growth Potential							
Average Temp		Cool Season	Warm Season	Average Temp		Cool Season	Warm Season
C	F	%GP	%GP	C	F	%GP	%GP
0.0	32	0	0	23.3	74	84	51
0.6	33	0	0	23.9	75	78	56
1.1	34	0	0	24.4	76	73	61
1.7	35	0	0	25.0	77	67	66
2.2	36	1	0	25.6	78	61	71
2.8	37	1	0	26.1	79	55	75
3.3	38	1	0	26.7	80	49	80
3.9	39	1	0	27.2	81	43	84
4.4	40	2	0	27.8	82	38	88
5.0	41	3	0	28.3	83	32	92
5.6	42	3	0	28.9	84	28	95
6.1	43	4	0	29.4	85	24	97
6.7	44	6	0	30.0	86	20	99
7.2	45	7	0	30.6	87	16	100
7.8	46	9	0	31.1	88	14	100
8.3	47	11	0	31.7	89	11	100
8.9	48	14	0	32.2	90	9	100
9.4	49	16	1	32.8	91	7	100
10.0	50	20	1	33.3	92	6	100
10.6	51	24	1	33.9	93	4	100
11.1	52	28	1	34.4	94	3	100
11.7	53	32	1	35.0	95	3	100
12.2	54	38	2	35.6	96	2	100
12.8	55	43	2	36.1	97	1	100
13.3	56	49	3	36.7	98	1	100
13.9	57	55	4	37.2	99	1	100
14.4	58	61	4	37.8	100	1	100
15.0	59	67	5	38.3	101	0	100
15.6	60	73	7	38.9	102	0	100
16.1	61	78	8	39.4	103	0	100
16.7	62	84	10	40.0	104	0	100
17.2	63	88	11	40.6	105	0	100
17.8	64	92	14	41.1	106	0	100
18.3	65	96	16	41.7	107	0	100
18.9	66	98	19	42.2	108	0	100
19.4	67	100	22	42.8	109	0	100
20.0	68	100	25	43.3	110	0	100
20.6	69	100	29	43.9	111	0	100
21.1	70	98	32	44.4	112	0	100
21.7	71	96	37	45.0	113	0	100
22.2	72	92	41	45.6	114	0	100
22.8	73	88	46	46.1	115	0	100



Equation for calculating growth potential

The optimum temperature for cool season turf is 67.5F, and for warm season turf is 87.5F. The variance is set to 10 for cool season turfgrasses and 12 for warm season turfgrasses. Warm season grasses are not restricted by temperatures above 87.5.

$$100 \times e^{\left(-\frac{1}{2} \left(\frac{\text{average temperature} - \text{optimum growth temperature}}{\text{variance}} \right)^2 \right)}$$

Growth potential graphs for select U.S. locations

Percent growth potential of cool (blue line) and warm-season turf (red line).

