

# AGROSTIS LOW TEMPERATURE GERMINATION STUDY

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## Summary

Three *Agrostis* species were planted to evaluate the establishment rate under early spring planting conditions of 7 cultivars of creeping bentgrass along with three velvet bentgrass and two colonial bentgrass cultivars. Soil temperatures at planting were less than 50°F (Table 1), which were recorded using 8 temperature sensors placed in unseeded check plots. Soil temperatures, initial emergence and percent cover along with weed encroachment were recorded to assess *Agrostis* vigor under low temperature. *Agrostis* species and cultivars were compared with the establishment characteristics of Barbeta perennial ryegrass (PRG).

PRG required fewer days and lower soil temperatures to achieve 10, 50 and 90% cover following initial emergence (Table 1). To achieve 50 and 90% cover, all colonials (Tiger II, Capri) and some creeping bentgrass cultivars (Penncross, 13-M) were statistically equal to PRG. Fewer days and lower soil temperature to achieve 10, 50, and 90% cover were generally associated with less ingress of broadleaf weeds into test plots. On average, velvet bentgrass entries performed poorly and were associated with more weeds and greater number of days and higher soil temperatures required to achieve 10, 50 and 90% cover especially when compared to colonial bentgrass entries (Table 1).

This is year one of a two year field study that will be repeated in 2014. The funding for this research is kindly provided by the New England Regional Turfgrass Foundation.

## Entries and Plot number

### Creeping bentgrass

1. T-1
2. Penncross
3. L-93
4. 007
5. 13-M
6. Declaration
7. Memorial

### Velvet bentgrass

8. Villa
9. Greenwich
10. SR-7200

### Colonial bentgrass

11. Tiger II
12. Capri

### Check

13. No seed
14. Barbeta perennial ryegrass



River  
Road

Weather  
Station

## AGROSTIS LOW TEMPERATURE GERMINATION STUDY PLOT PLAN & ENTRY NUMBERS

	12	4	14	13	6	9	5
BLOCK A	8	3	7	2	10	1	11
	4	2	7	3	6	13	8
BLOCK B	11	14	5	12	10	9	1
	2	12	14	11	13	4	7
BLOCK C	1	10	3	9	8	6	5



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Table 1. Days and soil temperature (°F) to achieve 10, 50 and 90% grassy cover among *Agrostis* species and cultivars following planting on 8 April, 2013.

Entry no. Species-cultivar	Emergence†			Rate of increase over 10 to 90% grassy cover per day and soil temp (°F)		Days following initial emergence:			Soil temperature following initial emergence:			Weed count (35 DAP) Broadleaf No. plot <sup>-1</sup>
	Date	DAP Days	Soil Temp -----°F-----	Cover d <sup>-1</sup> %	Cover °F <sup>-1</sup> %	10%	50%	90%	10%	50%	90%	
	-----°F-----			-----°F-----			-----°F-----			-----°F-----		
Creeping bentgrass	2013											
15. T-1	18 Apr	10	49.6	4.8de‡	16.7d	8.6bc	15.3abc	22.7a-d	51.3cd	53.2bcd	55.4abc	116ab
16. Penncross	18 Apr	10	49.6	7.3bc	22.2bc	6.8def	12.5cd	18.4bcd	50.7cd	52.5cde	54.5cd	10ef
17. L-93	18 Apr	10	49.6	5.56cde	20.2bcd	8.2bcd	15.4ab	23.2abc	51.1cd	53.2bcd	55.6abc	64cd
18. 007	20 Apr	12	50.7	5.0de	17.1cd	6.4ef	13.9bcd	22.7a-d	51.4bc	53.4bc	56.1ab	41c-f
19. 13-M	18 Apr	10	49.6	8.7ab	24.8ab	9.3abc	14.0bcd	18.4bcd	51.3cd	52.9cd	54.5cd	77abc
20. Declaration	18 Apr	10	49.6	4.5e	15.9d	7.6cde	15.9a	25.5abc	51.1cd	53.4bc	56.1ab	59cde
21. Memorial	18 Apr	10	49.6	9.6a	25.1ab	9.4abc	14.0bcd	19.6bcd	51.3cd	52.9cd	54.9bc	67bcd
Species average	-	-	-	6.5A§	20.3A	8.1B	14.4B	21.5B	51.1B	53.1B	55.2B	62AB
Velvet bentgrass												
22. Villa	21 Apr	13	50.7	5.6cde	19.9bcd	9.1abc	15.8ab	23.3abc	52.2a	54.1ab	56.3ab	128a
23. Greenwich	21 Apr	13	50.7	5.4cde	20.2bcd	10.3ab	17.5a	25.5ab	52.5a	54.7a	56.7a	90abc
24. SR-7200	21 Apr	13	50.7	5.1de	18.8cd	10.8a	17.5a	26.4a	52.2ab	54.7a	56.8a	65cd
Species average	-	-	-	5.4B	19.7A	10.1A	17.0A	25.1A	52.3A	54.5A	56.5A	94A
Colonial bentgrass												
25. Tiger II	20 Apr	12	50.7	5.5cde	17.6cd	5.3f	12.4cd	21.1a-d	51.1cd	52.9cde	55.8abc	27def
26. Capri	18 Apr	10	49.6	6.7bcd	24.7ab	7.6cde	12.7cd	17.8cd	50.9cd	52.5de	54.3bcd	24def
Species average	-	-	-	6.1AB	21.1A	6.4C	12.5B	19.4C	51.1B	52.7B	55.0B	25B
Check												
27. No seed	-	-	-	-	-	-	-	-	-	-	-	87ab
28. Barbeta PRG	17 Apr	9	49.6	7.8ab	29.7a	6.2ef	11.3d	16.4d	50.5d	51.8e	53.2d	7f
LSD (0.05)	-	-	-	2.0	5.2	1.7	3.0	7.0	0.7	0.9	1.5	50

†Emergence date and DAP=number of days to emergence following planting and soil temperature at initial emergence.

‡Numbers followed by the same lower case letter(s) are not statistically different ( $\alpha=0.05$  level) for comparison among cultivars.

§Numbers followed by the same upper case letter(s) are not statistically different ( $\alpha=0.05$  level) for comparison among species.