

Table S.14. Winterhardiness and turf traits of accessions from Afghanistan evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 220178	7.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 220528	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 220597	6.8	30	1.1	15	--	0	12.0	1	--	0	--	0	--	0
PI 317452	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Afghanistan	6.5	120	1.0	60	--	0	12.0	1	--	0	--	0	--	0

Table S.14. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	score	n	score	n	score	n	score	n	cm	n
PI 220178	--	0	--	0	--	0	--	0	--	0
PI 220528	--	0	--	0	--	0	--	0	--	0
PI 220597	--	0	--	0	--	0	--	0	--	0
PI 317452	--	0	--	0	--	0	--	0	--	0
All Afghanistan	--	0	--	0	--	0	--	0	--	0

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.15. Winterhardiness and turf traits of accessions from Algeria evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 † †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 231571	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231572	6.0	30	1.1	15	3.0	1	13.0	1	16.0	1	3.0	1	5.0	1
PI 231575	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231576	6.1	30	1.5	15	5.0	4	11.4	5	16.8	4	5.4	5	5.0	4
PI 231577	5.6	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231579	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231580	5.7	30	1.4	15	3.0	1	14.5	2	14.0	1	2.0	2	6.0	1
PI 231581	6.0	29	1.0	14	--	0	--	0	--	0	--	0	--	0
PI 231583	5.8	30	1.1	15	1.0	1	16.0	1	--	0	3.0	1	4.0	1
PI 231584	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231585	5.8	30	1.1	15	--	0	4.0	1	--	0	--	0	--	0
PI 231586	6.1	30	1.1	15	--	0	10.0	1	--	0	--	0	--	0
PI 231587	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231589	5.9	30	1.1	15	--	0	1.0	1	--	0	--	0	--	0
PI 231590	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231591	5.8	30	1.1	15	--	0	9.0	1	--	0	--	0	--	0
PI 231593	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231594	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231616	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Algeria	5.9	569	1.1	284	3.9	7	10.7	13	16.2	6	4.1	9	5.0	7

Table S.15. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 231571	--	0	--	0	--	0	--	0	--	0
PI 231572	7.0	1	5.0	1	6.0	1	4.0	1	17.0	1
PI 231575	--	0	--	0	--	0	--	0	--	0
PI 231576	6.8	5	4.6	5	5.6	5	3.4	5	25.8	4
PI 231577	--	0	--	0	--	0	--	0	--	0
PI 231579	--	0	--	0	--	0	--	0	--	0
PI 231580	6.5	2	3.0	2	6.0	2	3.5	2	25.0	1
PI 231581	--	0	--	0	--	0	--	0	--	0
PI 231583	5.0	1	3.0	1	6.0	1	3.0	1	21.0	1
PI 231584	--	0	--	0	--	0	--	0	--	0
PI 231585	--	0	--	0	--	0	--	0	--	0
PI 231586	--	0	--	0	--	0	--	0	--	0
PI 231587	--	0	--	0	--	0	--	0	--	0
PI 231589	--	0	--	0	--	0	--	0	--	0
PI 231590	--	0	--	0	--	0	--	0	--	0
PI 231591	--	0	--	0	--	0	--	0	--	0
PI 231593	--	0	--	0	--	0	--	0	--	0
PI 231594	--	0	--	0	--	0	--	0	--	0
PI 231616	--	0	--	0	--	0	--	0	--	0
All Algeria	6.6	9	4.1	9	5.8	9	3.4	9	23.7	7

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.16. Winterhardiness and turf traits of accessions from Australia evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 275660	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 284821	5.9	29	1.0	14	--	0	--	0	--	0	--	0	--	0
PI 284822	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 284823	5.7	30	1.1	15	2.0	1	15.0	1	14.0	1	3.0	1	4.0	1
PI 284824	6.0	30	1.1	15	2.0	1	10.0	2	15.0	1	3.0	1	4.0	1
PI 284825	5.9	30	1.1	15	1.0	1	11.0	1	--	0	3.0	1	5.0	1
PI 284826	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 285101	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Australia	5.9	239	1.0	119	1.7	3	11.5	4	14.5	2	3.0	3	4.3	3

Table S.16. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 275660	--	0	--	0	--	0	--	0	--	0
PI 284821	--	0	--	0	--	0	--	0	--	0
PI 284822	--	0	--	0	--	0	--	0	--	0
PI 284823	8.0	1	5.0	1	6.0	1	3.0	1	14.0	1
PI 284824	7.0	1	5.0	1	5.0	1	3.0	1	20.0	1
PI 284825	8.0	1	5.0	1	4.0	1	3.0	1	20.0	1
PI 284826	--	0	--	0	--	0	--	0	--	0
PI 285101	--	0	--	0	--	0	--	0	--	0
All Australia	7.7	3	5.0	3	5.0	3	3.0	3	18.0	3

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.17. Winterhardiness and turf traits of accessions from Belgium evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 187221	6.1	30	1.7	15	1.3	3	15.5	4	2.0	1	3.7	3	3.7	3
PI 187222	7.2	30	1.1	15	--	0	14.0	1	--	0	--	0	--	0
PI 234442	6.0	30	1.6	15	4.3	4	12.2	5	15.5	4	4.5	4	4.5	4
PI 418721	6.1	30	1.7	15	5.3	4	12.8	4	15.3	4	3.0	4	4.0	4
PI 577253	5.8	30	2.3	15	5.6	5	10.6	8	18.0	5	4.0	5	4.2	5
PI 598435	6.0	30	2.7	15	5.1	8	12.8	9	13.0	7	3.6	8	3.9	8
PI 598436	6.1	30	1.5	15	4.3	3	11.6	5	13.7	3	3.0	3	4.0	3
PI 598437	6.0	30	2.3	15	2.2	6	13.1	7	11.0	5	4.2	6	4.8	6
All Belgium	6.2	240	1.9	120	4.2	33	12.5	43	13.9	29	3.8	33	4.2	33

Table S.17. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 187221	7.3	3	4.7	3	5.0	3	3.0	3	19.0	3
PI 187222	--	0	--	0	--	0	--	0	--	0
PI 234442	7.0	4	5.3	4	4.0	4	3.0	4	30.5	4
PI 418721	6.8	4	3.8	4	4.8	4	3.3	4	21.5	4
PI 577253	6.6	5	4.2	5	4.6	5	2.4	5	22.4	5
PI 598435	6.5	8	4.4	8	5.1	8	2.6	8	17.1	8
PI 598436	7.0	3	4.3	3	3.7	3	2.7	3	26.3	3
PI 598437	7.7	6	4.8	6	4.5	6	3.2	6	21.7	6
All Belgium	6.9	33	4.5	33	4.6	33	2.9	33	21.9	33

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.18. Winterhardiness and turf traits of accessions from Cyprus evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 198958	5.8	30	1.1	15	--	0	7.0	2	--	0	--	0	--	0
PI 204085	6.7	30	1.1	15	--	0	15.0	1	--	0	--	0	--	0
PI 204086	5.6	30	1.1	15	--	0	5.0	1	--	0	--	0	--	0
PI 206376	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 206377	6.6	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 277845	6.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 277848	6.2	30	1.2	15	7.0	1	13.5	2	18.0	1	1.5	2	4.0	1
All Cyprus	6.2	210	1.1	105	7.0	1	10.2	6	18.0	1	1.5	2	4.0	1

Table S.18. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 198958	--	0	--	0	--	0	--	0	--	0
PI 204085	--	0	--	0	--	0	--	0	--	0
PI 204086	--	0	--	0	--	0	--	0	--	0
PI 206376	--	0	--	0	--	0	--	0	--	0
PI 206377	--	0	--	0	--	0	--	0	--	0
PI 277845	--	0	--	0	--	0	--	0	--	0
PI 277848	6.5	2	4.5	2	4.5	2	3.0	2	17.0	1
All Cyprus	6.5	2	4.5	2	4.5	2	3.0	2	17.0	1

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.19. Winterhardness and turf traits of accessions from the Czech Republic evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 182857	7.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 321397	5.7	30	2.1	15	4.8	4	11.7	6	14.5	4	4.8	4	5.3	4
All Czech Republic	6.5	60	1.5	30	4.8	4	11.7	6	14.5	4	4.8	4	5.3	4

Table S.19. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	score		score		score		score		cm	
PI 182857	--	0	--	0	--	0	--	0	--	0
PI 321397	7.8	4	5.3	4	5.0	4	3.0	4	20.0	4
All Czech Republic	7.8	4	5.3	4	5.0	4	3.0	4	20.0	4

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.



Table S.20. Winterhardiness and turf traits of accessions from Denmark evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 196422	6.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 196423	6.0	30	1.7	15	3.2	5	14.8	5	15.0	3	4.2	5	4.0	5
PI 200322	6.3	30	1.6	15	2.3	4	12.8	6	14.3	3	3.5	4	4.5	4
PI 225825	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Denmark	6.3	120	1.3	60	2.8	9	13.7	11	14.7	6	3.9	9	4.2	9

Table S.20. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 196422	--	0	--	0	--	0	--	0	--	0
PI 196423	7.0	5	4.4	5	4.8	5	3.6	5	19.0	5
PI 200322	6.8	4	5.0	4	5.0	4	2.8	4	26.0	4
PI 225825	--	0	--	0	--	0	--	0	--	0
All Denmark	6.9	9	4.7	9	4.9	9	3.2	9	22.1	9

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.21. Winterhardiness and turf traits of accessions from England evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 418702	5.8	30	1.2	15	2.5	2	4.5	2	13.5	2	5.5	2	4.5	2
PI 577265	5.6	30	1.1	15	6.0	1	13.0	1	19.0	1	4.0	1	5.0	1
PI 619012	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 619024	5.4	30	1.1	15	2.0	1	11.0	1	10.0	1	4.0	1	5.0	1
All England	5.7	120	1.1	60	3.3	4	8.3	4	14.0	4	4.8	4	4.8	4

Table S.21. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 418702	7.5	2	5.0	2	4.5	2	3.0	2	18.5	2
PI 577265	8.0	1	5.0	1	6.0	1	3.0	1	20.0	1
PI 619012	--	0	--	0	--	0	--	0	--	0
PI 619024	5.0	1	5.0	1	3.0	1	2.0	1	19.0	1
All England	7.0	4	5.0	4	4.5	4	2.8	4	19.0	4

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.22. Winterhardiness and turf traits of accessions from France evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
31494-03	4.8	30	2.5	15	3.2	9	9.8	10	12.0	9	4.4	10	5.6	9
31498-03	4.8	30	1.9	15	3.4	5	8.8	6	9.2	5	4.0	5	6.6	5
31502-03	4.9	30	1.3	15	1.0	1	9.5	4	--	0	4.7	3	3.0	1
31504-03	5.3	30	2.1	15	4.8	5	10.8	6	14.0	5	4.2	5	5.6	5
31505-03	5.0	30	1.8	15	4.6	5	9.5	4	12.3	4	5.5	4	6.8	5
31511-03	5.0	30	2.3	15	5.3	6	9.2	6	13.7	6	5.3	6	5.7	6
31512-03	4.7	30	1.4	15	2.0	2	6.3	4	9.0	2	3.5	2	2.5	2
31523-03	5.0	30	1.7	15	3.8	4	12.4	5	11.0	4	4.3	4	5.0	4
31531-03	5.0	30	3.3	15	2.3	6	11.9	9	10.0	4	5.8	6	5.7	6
31543-03	5.3	30	2.6	15	3.5	8	9.3	10	12.5	6	4.3	9	6.0	8
PI 418725	5.8	30	1.9	15	3.0	4	12.9	7	16.3	4	3.2	5	4.5	4
PI 418726	6.1	30	1.3	15	6.0	2	12.7	3	16.5	2	3.5	2	4.5	2
PI 418728	6.0	30	1.1	15	3.0	1	9.0	1	11.0	1	5.0	1	5.0	1
PI 418730	5.9	30	2.0	15	2.0	3	17.0	3	12.0	3	4.0	3	4.7	3
PI 418731	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 418737	5.7	30	1.9	15	2.8	4	15.2	6	13.5	4	5.6	5	5.5	4
PI 418738	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 418739	5.8	30	1.1	15	7.0	1	9.0	1	18.0	1	3.0	1	3.0	1
PI 418740	6.1	30	2.1	15	3.7	3	13.7	3	15.7	3	6.7	3	5.3	3
PI 418741	5.8	30	1.1	15	--	0	8.0	1	--	0	--	0	--	0
PI 418743	5.8	30	1.5	15	3.0	2	11.5	2	12.0	2	3.5	2	4.5	2
PI 577255	6.1	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 577257	5.7	30	1.3	15	4.0	3	9.8	4	17.0	3	3.3	3	3.3	3
PI 598439	5.8	30	1.3	15	1.0	2	15.0	2	--	0	4.0	2	5.0	2
PI 610795	5.8	30	1.1	15	1.0	1	18.0	1	--	0	4.0	1	4.0	1
PI 628693	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
W6 9286	6.0	30	1.1	15	2.0	1	9.0	1	16.0	1	3.0	1	4.0	1
W6 9300	5.7	30	1.7	15	2.3	4	13.3	4	14.5	4	4.5	4	4.8	4
All France	5.6	840	1.6	420	3.4	82	11.1	103	13.0	73	4.5	87	5.3	82

Table S.22. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
31494-03	6.1	10	5.4	10	6.5	10	4.1	10	15.3	9
31498-03	7.6	5	5.6	5	6.4	5	3.4	5	23.2	5
31502-03	6.3	3	6.3	3	6.0	3	3.7	3	11.0	1
31504-03	7.4	5	5.2	5	6.0	5	3.6	5	20.2	5
31505-03	7.3	4	6.0	4	6.8	4	4.3	4	21.2	5
31511-03	8.0	6	5.7	6	6.3	6	3.8	6	21.7	6
31512-03	8.0	2	6.5	2	6.5	2	4.0	2	12.5	2
31523-03	7.3	4	5.5	4	6.5	4	3.5	4	18.5	4
31531-03	7.0	6	6.0	6	6.0	6	4.3	6	18.0	6
31543-03	7.2	9	4.6	9	5.2	9	4.0	9	20.1	8
PI 418725	6.6	5	4.6	5	5.0	5	3.3	4	23.5	4
PI 418726	7.5	2	5.0	2	4.0	2	3.0	2	25.5	2
PI 418728	7.0	1	6.0	1	6.0	1	3.0	1	17.0	1
PI 418730	8.3	3	5.7	3	3.7	3	3.3	3	19.7	3
PI 418731	--	0	--	0	--	0	--	0	--	0
PI 418737	8.4	5	4.4	5	5.0	5	3.6	5	23.8	4
PI 418738	--	0	--	0	--	0	--	0	--	0
PI 418739	9.0	1	6.0	1	6.0	1	1.0	1	25.0	1
PI 418740	7.0	3	5.0	3	5.3	3	4.0	3	25.0	3
PI 418741	--	0	--	0	--	0	--	0	--	0
PI 418743	7.0	2	3.5	2	4.5	2	3.0	2	21.0	2
PI 577255	--	0	--	0	--	0	--	0	--	0
PI 577257	7.0	3	4.7	3	4.7	3	2.7	3	20.0	3
PI 598439	7.0	2	5.0	2	5.5	2	3.0	2	14.5	2
PI 610795	8.0	1	5.0	1	4.0	1	2.0	1	24.0	1
PI 628693	--	0	--	0	--	0	--	0	--	0
W6 9286	6.0	1	4.0	1	5.0	1	3.0	1	25.0	1
W6 9300	7.3	4	4.5	4	4.8	4	3.0	4	21.3	4
All France	7.2	87	5.2	87	5.6	87	3.6	86	20.1	82

Table S.22. (Continued)

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† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.23. Winterhardiness and turf traits of accessions from Greece evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 199252	7.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 223178	5.8	30	1.3	15	2.0	1	12.0	1	13.0	1	4.0	1	6.0	1
PI 231597	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231598	5.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231599	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231602	5.6	30	1.2	15	9.0	1	15.0	1	23.0	1	3.0	1	4.0	1
PI 231618	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 249752	5.3	30	1.3	15	1.5	2	13.0	2	7.0	1	2.0	2	4.5	2
PI 504539	5.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Greece	5.8	270	1.1	135	3.5	4	13.3	4	14.3	3	2.8	4	4.8	4

Table S.23. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 199252	--	0	--	0	--	0	--	0	--	0
PI 223178	7.0	1	4.0	1	5.0	1	3.0	1	24.0	1
PI 231597	--	0	--	0	--	0	--	0	--	0
PI 231598	--	0	--	0	--	0	--	0	--	0
PI 231599	--	0	--	0	--	0	--	0	--	0
PI 231602	7.0	1	4.0	1	5.0	1	3.0	1	14.0	1
PI 231618	--	0	--	0	--	0	--	0	--	0
PI 249752	6.0	2	5.5	2	2.5	2	2.5	2	17.0	2
PI 504539	--	0	--	0	--	0	--	0	--	0
All Greece	6.5	4	4.8	4	3.8	4	2.8	4	18.0	4

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.24. Winterhardiness and turf traits of accessions from Hungary evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 290369	6.4	30	1.3	15	4.0	1	13.5	2	16.0	1	4.0	2	5.0	1
PI 290370	6.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Hungary	6.4	60	1.1	30	4.0	1	13.5	2	16.0	1	4.0	2	5.0	1

Table S.24. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 290369	6.0	1	5.0	2	5.0	2	3.0	1	25.0	1
PI 290370	--	0	--	0	--	0	--	0	--	0
All Hungary	6.0	1	5.0	2	5.0	2	3.0	1	25.0	1

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.



Table S.25. Winterhardiness and turf traits of accessions from Iran evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 222527	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 227020	4.9	29	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 229476	6.2	30	1.1	15	--	0	3.0	1	--	0	--	0	--	0
PI 229702	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 230260	5.7	30	1.1	15	3.0	1	7.0	1	9.0	1	4.0	1	4.0	1
PI 231619	6.2	29	1.0	14	--	0	--	0	--	0	--	0	--	0
PI 547390	7.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Iran	6.0	208	1.0	104	3.0	1	5.0	2	9.0	1	4.0	1	4.0	1

Table S.25. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 222527	--	0	--	0	--	0	--	0	--	0
PI 227020	--	0	--	0	--	0	--	0	--	0
PI 229476	--	0	--	0	--	0	--	0	--	0
PI 229702	--	0	--	0	--	0	--	0	--	0
PI 230260	9.0	1	6.0	1	7.0	1	4.0	1	12.0	1
PI 231619	--	0	--	0	--	0	--	0	--	0
PI 547390	--	0	--	0	--	0	--	0	--	0
All Iran	9.0	1	6.0	1	7.0	1	4.0	1	12.0	1

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.26. Winterhardiness and turf traits of accessions from Italy evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
31476-03	4.9	30	2.4	15	2.9	7	11.0	9	13.8	5	4.3	8	5.4	7
31477-03	5.1	30	3.1	15	3.1	9	12.3	9	10.4	7	5.0	9	5.7	9
31480-03	5.1	30	3.7	15	4.0	11	12.8	11	12.4	11	4.2	11	5.2	11
31482-03	5.3	30	3.8	15	3.5	11	11.6	13	11.1	11	4.7	11	5.1	11
31484-03	5.1	30	3.1	15	3.4	8	12.8	8	13.6	8	5.8	8	6.5	8
31487-03	5.4	30	3.1	15	4.2	9	12.9	11	11.4	9	4.7	9	5.3	9
PI 217439	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 233823	6.2	30	1.1	15	--	0	17.0	1	--	0	--	0	--	0
PI 418704	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 418705	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 418706	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 418712	6.7	30	1.1	15	1.0	1	9.5	2	--	0	4.0	1	6.0	1
PI 418713	5.8	30	1.3	15	2.0	1	13.0	1	12.0	1	5.0	1	5.0	1
PI 418714	6.2	30	1.1	15	--	0	6.0	1	--	0	--	0	--	0
PI 418715	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 418717	5.7	30	6.5	15	6.5	14	14.3	14	15.4	14	4.4	14	4.0	14
PI 577252	5.4	30	1.2	15	7.5	2	7.5	2	12.0	2	3.0	2	4.5	2
PI 598429	5.7	30	1.2	15	8.0	1	10.0	3	16.0	1	4.0	1	6.0	1
PI 598430	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598431	5.7	30	1.1	15	1.0	1	12.0	1	--	0	6.0	1	5.0	1
PI 598433	6.1	30	7.0	15	5.5	15	12.2	15	12.7	15	4.9	15	4.1	15
PI 598434	5.7	30	4.3	15	5.2	11	12.6	11	12.3	11	3.6	11	4.3	11
PI 598928	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598931	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598935	5.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598937	5.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610928	5.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610931	5.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610932	4.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0

Table S.26. (Continued)

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 610942	5.1	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610962	5.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 632473	5.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 632474	6.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 632538	4.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 632553	5.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 632575	5.1	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Italy	5.6	1080	1.8	540	4.5	101	12.3	112	12.7	95	4.6	102	4.9	101

Table S.26. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
31476-03	7.0	8	6.3	8	6.3	8	3.5	8	19.6	7
31477-03	6.1	9	6.0	9	5.8	9	3.7	9	19.9	9
31480-03	6.5	11	5.5	11	5.8	11	3.8	11	19.3	11
31482-03	6.6	11	5.9	11	5.7	11	4.2	11	19.5	11
31484-03	6.5	8	6.0	8	6.5	8	4.0	8	19.5	8
31487-03	7.1	9	5.4	9	6.2	9	3.3	9	20.6	9
PI 217439	--	0	--	0	--	0	--	0	--	0
PI 233823	--	0	--	0	--	0	--	0	--	0
PI 418704	--	0	--	0	--	0	--	0	--	0
PI 418705	--	0	--	0	--	0	--	0	--	0
PI 418706	--	0	--	0	--	0	--	0	--	0
PI 418712	7.0	1	5.0	1	6.0	1	4.0	1	16.0	1
PI 418713	8.0	1	4.0	1	5.0	1	3.0	1	25.0	1
PI 418714	--	0	--	0	--	0	--	0	--	0
PI 418715	--	0	--	0	--	0	--	0	--	0
PI 418717	6.9	14	3.8	14	4.1	14	3.7	14	18.1	14
PI 577252	8.5	2	5.0	2	6.5	2	3.5	2	15.0	2
PI 598429	7.0	1	4.0	1	4.0	1	2.0	1	20.0	1
PI 598430	--	0	--	0	--	0	--	0	--	0
PI 598431	8.0	1	6.0	1	6.0	1	4.0	1	23.0	1
PI 598433	7.1	15	4.6	15	5.4	15	3.7	15	16.1	15
PI 598434	6.5	11	3.9	11	5.5	11	3.9	11	16.7	11
PI 598928	--	0	--	0	--	0	--	0	--	0
PI 598931	--	0	--	0	--	0	--	0	--	0
PI 598935	--	0	--	0	--	0	--	0	--	0
PI 598937	--	0	--	0	--	0	--	0	--	0
PI 610928	--	0	--	0	--	0	--	0	--	0
PI 610931	--	0	--	0	--	0	--	0	--	0
PI 610932	--	0	--	0	--	0	--	0	--	0

Table S.26. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 610942	--	0	--	0	--	0	--	0	--	0
PI 610962	--	0	--	0	--	0	--	0	--	0
PI 632473	--	0	--	0	--	0	--	0	--	0
PI 632474	--	0	--	0	--	0	--	0	--	0
PI 632538	--	0	--	0	--	0	--	0	--	0
PI 632553	--	0	--	0	--	0	--	0	--	0
PI 632575	--	0	--	0	--	0	--	0	--	0
All Italy	6.8	102	5.1	102	5.6	102	3.8	102	18.6	101

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.27. Winterhardiness and turf traits of accessions from Libya evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 231565	6.1	30	1.3	15	5.0	2	17.3	3	13.0	2	4.0	2	4.5	2
PI 231567	6.8	30	1.1	15	--	0	19.0	1	--	0	--	0	--	0
PI 231568	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231569	6.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Libya	6.2	120	1.1	60	5.0	2	17.8	4	13.0	2	4.0	2	4.5	2

Table S.27. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 231565	9.0	2	5.0	2	4.5	2	3.5	2	18.0	2
PI 231567	--	0	--	0	--	0	--	0	--	0
PI 231568	--	0	--	0	--	0	--	0	--	0
PI 231569	--	0	--	0	--	0	--	0	--	0
All Libya	9.0	2	5.0	2	4.5	2	3.5	2	18.0	2

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.28. Winterhardiness and turf traits of accessions from Luxembourg evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 418722	6.0	30	2.5	15	6.3	8	14.0	8	16.5	8	4.0	8	4.3	8
PI 418723	5.9	30	2.9	15	3.7	6	13.8	6	14.7	6	4.7	6	4.8	6
PI 577254	5.9	30	2.0	15	4.0	6	11.6	8	13.5	6	4.2	6	5.0	6
All Luxembourg	5.9	90	2.5	45	4.8	20	13.1	22	15.1	20	4.3	20	4.7	20

Table S.28. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 418722	7.4	8	5.0	8	4.3	8	3.1	8	20.9	8
PI 418723	7.5	6	4.2	6	4.7	6	3.2	6	23.8	6
PI 577254	7.8	6	4.5	6	4.5	6	3.0	6	19.7	6
All Luxembourg	7.6	20	4.6	20	4.5	20	3.1	20	21.4	20

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.29. Winterhardiness and turf traits of accessions from Morocco evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 231595	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 516605	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598839	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598847	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598854	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598869	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598877	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598879	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598890	6.1	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598892	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598902	7.1	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598904	7.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598907	7.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 632590	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231595	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Morocco	6.2	420	1.0	210	--	0	--	0	--	0	--	0	--	0



Table S.29. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 231595	--	0	--	0	--	0	--	0	--	0
PI 516605	--	0	--	0	--	0	--	0	--	0
PI 598839	--	0	--	0	--	0	--	0	--	0
PI 598847	--	0	--	0	--	0	--	0	--	0
PI 598854	--	0	--	0	--	0	--	0	--	0
PI 598869	--	0	--	0	--	0	--	0	--	0
PI 598877	--	0	--	0	--	0	--	0	--	0
PI 598879	--	0	--	0	--	0	--	0	--	0
PI 598890	--	0	--	0	--	0	--	0	--	0
PI 598892	--	0	--	0	--	0	--	0	--	0
PI 598902	--	0	--	0	--	0	--	0	--	0
PI 598904	--	0	--	0	--	0	--	0	--	0
PI 598907	--	0	--	0	--	0	--	0	--	0
PI 632590	--	0	--	0	--	0	--	0	--	0
PI 231595	--	0	--	0	--	0	--	0	--	0
All Morocco	--	0	--	0	--	0	--	0	--	0

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.30. Winterhardiness and turf traits of accessions from the Netherlands evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 189153	6.4	30	1.1	15	--	0	12.0	1	--	0	--	0	--	0
PI 189154	6.3	30	1.5	15	3.7	3	13.5	4	18.3	3	4.7	3	3.7	3
PI 189156	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 189157	6.4	30	1.1	15	2.0	1	10.0	1	6.0	1	2.0	1	4.0	1
PI 201185	7.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 201187	5.9	30	2.5	15	2.5	8	10.8	9	11.8	8	4.1	8	4.5	8
PI 201188	6.2	30	2.2	15	2.2	5	18.2	5	12.0	4	4.0	5	4.6	5
PI 201190	6.1	30	1.7	15	2.0	3	14.6	5	10.0	3	4.3	3	4.7	3
PI 577258	5.4	30	3.2	15	3.7	10	11.9	11	14.3	9	4.3	10	4.9	10
PI 598444	5.7	30	2.0	15	3.2	5	13.2	9	16.0	4	3.8	5	3.8	5
PI 598445	6.1	30	1.3	15	4.0	2	10.5	2	16.5	2	4.0	2	4.5	2
All Netherlands	6.2	330	1.7	165	3.0	37	12.9	47	13.5	34	4.1	37	4.5	37

Table S.30. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 189153	--	0	--	0	--	0	--	0	--	0
PI 189154	8.0	3	4.3	3	3.0	3	3.0	3	21.3	3
PI 189156	--	0	--	0	--	0	--	0	--	0
PI 189157	9.0	1	3.0	1	5.0	1	2.0	1	20.0	1
PI 201185	--	0	--	0	--	0	--	0	--	0
PI 201187	8.1	8	4.6	8	5.0	8	2.6	8	28.1	8
PI 201188	7.4	5	4.2	5	5.6	5	2.8	5	19.4	5
PI 201190	7.3	3	4.3	3	4.0	3	2.3	3	25.7	3
PI 577258	6.7	10	4.4	10	4.5	10	2.6	10	20.9	10
PI 598444	5.8	5	4.6	5	5.4	5	2.8	5	18.2	5
PI 598445	6.0	2	4.0	2	4.0	2	3.0	2	27.0	2
All Netherlands	7.2	37	4.4	37	4.7	37	2.7	37	22.6	37

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.31. Winterhardiness and turf traits of accessions from New Zealand evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 189391	6.9	30	1.3	15	4.0	1	20.0	1	17.0	1	4.0	1	6.0	1
PI 189392	6.2	30	1.1	15	2.0	1	13.0	1	11.0	1	4.0	1	5.0	1
PI 449303	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All New Zealand	6.3	90	1.1	45	3.0	2	16.5	2	14.0	2	4.0	2	5.5	2

Table S.31. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 189391	6.0	1	4.0	1	7.0	1	4.0	1	26.0	1
PI 189392	7.0	1	4.0	1	3.0	1	3.0	1	18.0	1
PI 449303	--	0	--	0	--	0	--	0	--	0
All New Zealand	6.5	2	4.0	2	5.0	2	3.5	2	22.0	2

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.32. Winterhardiness and turf traits of accessions from Norway evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 577269	5.6	30	5.5	15	4.8	13	15.4	13	15.2	13	3.6	13	3.9	13
PI 577270	5.8	30	4.5	15	4.2	12	15.3	12	14.9	12	3.8	12	3.9	12
PI 610802	6.3	30	3.6	15	4.3	9	14.8	11	16.6	9	4.1	9	3.8	9
PI 610803	6.2	30	4.6	15	4.4	12	13.9	13	17.2	11	3.8	12	3.7	12
PI 619003	5.7	30	2.4	15	4.3	6	13.8	9	14.8	6	3.3	7	3.8	6
All Norway	5.9	150	4.1	75	4.4	52	14.7	58	15.8	51	3.7	53	3.8	52

Table S.32. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 577269	6.9	13	4.5	13	4.7	13	2.8	13	19.6	13
PI 577270	7.0	12	4.8	12	4.5	12	3.0	12	20.3	12
PI 610802	7.7	9	3.9	9	5.0	9	3.2	9	17.3	9
PI 610803	7.9	12	4.3	12	4.1	12	2.6	12	17.1	12
PI 619003	7.4	7	4.6	7	5.1	7	3.6	7	20.8	6
All Norway	7.3	53	4.4	53	4.6	53	3.0	53	18.9	52

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.33. Winterhardiness and turf traits of accessions from Poland evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 267058	6.4	30	1.1	15	1.0	1	15.0	1	--	0	2.0	1	4.0	1
PI 274637	6.1	30	1.1	15	4.0	1	12.0	1	13.0	1	7.0	1	4.0	1
PI 283614	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Poland	6.1	90	1.0	45	2.5	2	13.5	2	13.0	1	4.5	2	4.0	2

Table S.33. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 267058	8.0	1	4.0	1	4.0	1	2.0	1	20.0	1
PI 274637	9.0	1	5.0	1	4.0	1	4.0	1	20.0	1
PI 283614	--	0	--	0	--	0	--	0	--	0
All Poland	8.5	2	4.5	2	4.0	2	3.0	2	20.0	2

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.34. Winterhardiness and turf traits of accessions from Portugal evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 231604	6.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231605	6.1	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 231606	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Portugal	6.3	90	1.0	45	--	0	--	0	--	0	--	0	--	0

Table S.34. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 231604	--	0	--	0	--	0	--	0	--	0
PI 231605	--	0	--	0	--	0	--	0	--	0
PI 231606	--	0	--	0	--	0	--	0	--	0
All Portugal	--	0	--	0	--	0	--	0	--	0

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.35. Winterhardiness and turf traits of accessions from Romania evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 311075	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 418707	6.1	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 418709	5.8	30	1.5	15	3.3	3	14.7	3	16.7	3	4.0	1	4.0	3
PI 577266	5.9	30	6.5	15	5.8	12	16.4	13	15.8	12	3.6	12	5.6	12
PI 577267	6.5	30	1.4	15	3.0	1	22.0	1	14.0	1	3.0	1	4.0	1
PI 598453	5.9	30	6.9	15	5.2	13	13.6	14	14.5	13	4.2	14	4.9	13
PI 598454	5.7	29	5.0	14	6.1	13	12.3	14	18.5	13	4.7	13	5.3	13
PI 610804	6.1	30	3.7	15	4.6	11	14.0	11	17.1	11	3.9	11	4.6	11
PI 610806	5.9	30	4.9	15	4.9	12	14.6	12	16.0	12	4.4	12	5.3	12
PI 610820	5.8	30	7.2	15	4.6	14	14.3	15	14.3	14	4.8	14	5.5	14
PI 619033	5.5	30	5.2	15	4.6	14	12.4	14	13.3	14	4.9	14	5.9	14
All Romania	6.0	329	4.0	164	5.0	93	14.0	97	15.6	93	4.4	92	5.3	93



Table S.35. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit †		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 311075	--	0	--	0	--	0	--	0	--	0
PI 418707	--	0	--	0	--	0	--	0	--	0
PI 418709	9.0	3	4.0	1	3.0	1	3.0	3	20.0	3
PI 577266	8.5	12	4.1	12	5.2	12	3.8	12	27.1	12
PI 577267	7.0	1	4.0	1	6.0	1	4.0	1	26.0	1
PI 598453	7.2	14	4.3	14	4.7	14	3.9	14	23.5	13
PI 598454	8.2	13	4.8	13	5.7	13	3.5	13	28.2	13
PI 610804	8.4	11	4.3	11	4.2	11	3.4	11	24.2	11
PI 610806	8.5	12	4.8	12	5.8	12	3.6	12	28.1	12
PI 610820	7.8	14	4.6	14	5.9	14	3.8	14	25.1	14
PI 619033	8.1	14	5.0	14	5.2	14	3.8	14	25.6	14
All Romania	8.1	94	4.6	92	5.2	92	3.7	94	25.8	93

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.36. Winterhardiness and turf traits of accessions from the former Soviet Union evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 268333	6.6	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 440474	5.8	30	4.9	15	3.6	10	14.1	10	15.4	10	4.3	10	5.7	10
PI 440475	5.5	30	4.3	15	6.8	12	12.8	12	18.1	12	4.2	12	4.6	12
PI 502412	5.4	30	7.2	15	5.2	14	14.1	14	16.4	14	3.9	14	4.5	14
PI 502413	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 502414	6.1	30	2.1	15	3.1	7	15.0	7	16.6	7	4.3	7	4.6	7
PI 611036	5.7	30	1.5	15	5.0	2	12.0	2	12.5	2	4.5	2	5.0	2
PI 611044	6.0	30	6.7	15	6.8	15	13.7	15	15.8	15	3.5	15	5.2	15
All Soviet Union	5.9	240	3.6	120	5.4	60	13.8	60	16.3	60	4.0	60	4.9	60

Table S.36. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 268333	--	0	--	0	--	0	--	0	--	0
PI 440474	8.1	10	5.6	10	5.5	10	3.6	10	23.5	10
PI 440475	7.9	12	4.5	12	5.3	12	3.6	12	23.5	12
PI 502412	7.0	14	4.1	14	5.1	14	3.6	14	23.8	14
PI 502413	--	0	--	0	--	0	--	0	--	0
PI 502414	7.7	7	5.1	7	3.7	7	3.4	7	23.6	7
PI 611036	8.5	2	5.0	2	5.0	2	3.5	2	21.5	2
PI 611044	6.7	15	3.9	15	4.7	15	3.5	15	24.4	15
All Soviet Union	7.4	60	4.5	60	5.0	60	3.5	60	23.7	60

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.37. Winterhardiness and turf traits of accessions from Spain evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 234048	5.9	30	1	15	--	0	--	0	--	0	--	0	--	0
PI 423136	6.6	30	1	15	--	0	--	0	--	0	--	0	--	0
PI 423137	6.1	30	1.1	15	--	0	10.0	1	--	0	--	0	--	0
PI 512321	5.7	30	2.2	15	3.3	3	14.7	3	13.5	2	3.7	3	3.3	3
All Spain	6.1	120	1.3	60	3.3	3	13.5	4	13.5	2	3.7	3	3.3	3

Table S.37. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 234048	--	0	--	0	--	0	--	0	--	0
PI 423136	--	0	--	0	--	0	--	0	--	0
PI 423137	--	0	--	0	--	0	--	0	--	0
PI 512321	5.7	3	4.7	3	5.7	3	3.0	3	22.3	3
All Spain	5.7	3	4.7	3	5.7	3	3.0	3	22.3	3

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.38. Winterhardiness and turf traits of accessions from Sweden evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 198070	6.3	30	2.1	15	3.0	5	16.3	7	13.4	5	4.0	5	4.0	5
PI 381114	5.8	30	6.1	15	5.4	15	15.5	15	13.5	15	3.9	15	3.9	15
All Sweden	6.1	60	4.1	30	4.8	20	15.8	22	13.5	20	3.9	20	4.0	20

Table S.38. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 198070	7.8	5	4.2	5	5.2	5	2.8	5	18.8	5
PI 381114	6.3	15	4.4	15	5.4	15	2.9	15	19.3	15
All Sweden	6.7	20	4.4	20	5.4	20	2.9	20	19.2	20

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.39. Winterhardiness and turf traits of accessions from Switzerland evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 418732	5.7	30	1.1	15	3.0	1	8.0	2	13.0	1	4.5	2	5.0	1
PI 418733	6.2	30	1.4	15	1.0	1	12.3	3	--	0	4.0	2	5.0	1
PI 418736	6.2	30	1.1	15	7.0	1	14.0	1	23.0	1	4.0	1	5.0	1
PI 577256	6.1	30	1.2	15	4.0	2	9.0	1	11.0	2	4.0	1	4.0	2
PI 598440	5.5	30	1.3	15	3.5	2	14.0	2	14.0	2	4.5	2	5.0	2
PI 598441	6.2	30	1.1	15	7.0	1	8.0	1	13.0	1	5.0	1	6.0	1
PI 598443	5.9	30	2.1	15	4.1	7	14.0	7	17.7	7	4.4	7	4.6	7
PI 610821	5.6	30	1.5	15	3.0	2	14.0	3	12.0	2	3.0	1	5.5	2
PI 610825	5.7	30	3.4	15	4.5	10	9.9	11	11.1	10	4.1	11	4.7	10
W6 9290	5.5	30	1.1	15	--	0	16.0	1	--	0	5.0	1	--	0
W6 9297	5.5	30	2.1	15	3.5	4	13.3	6	14.0	3	4.0	4	4.8	4
All Switzerland	5.8	330	1.6	165	4.1	31	12.0	38	13.8	29	4.2	33	4.8	31

Table S.39. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 418732	6.5	2	5.0	2	6.0	2	3.5	2	15.0	1
PI 418733	6.0	2	5.0	2	5.0	2	3.0	2	21.0	1
PI 418736	8.0	1	5.0	1	7.0	1	3.0	1	25.0	1
PI 577256	5.0	1	6.0	1	5.0	1	4.0	1	15.5	2
PI 598440	7.0	2	4.0	2	4.0	2	2.5	2	27.5	2
PI 598441	5.0	1	7.0	1	7.0	1	4.0	1	12.0	1
PI 598443	8.1	7	4.6	7	5.1	7	3.7	7	21.3	7
PI 610821	7.0	1	5.0	1	5.0	1	3.0	1	17.0	2
PI 610825	6.7	11	4.9	11	4.6	11	3.3	11	21.6	10
W6 9290	6.5	2	4.0	1	6.0	1	4.5	2	--	0
W6 9297	7.3	4	4.0	4	4.5	4	3.6	5	19.3	4
All Switzerland	7.0	34	4.8	33	5.0	33	3.5	35	20.5	31

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.40. Winterhardiness and turf traits of accessions from Tunisia evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 598909	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598911	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598913	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598916	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610924	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610925	5.3	30	1.1	15	--	0	8.0	1	--	0	--	0	--	0
PI 610926	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610958	5.8	30	1.1	15	--	0	7.0	1	--	0	8.0	1	--	0
All Tunisia	5.8	240	1.0	120	--	0	7.5	2	--	0	8.0	1	--	0



Table S.40. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 598909	--	0	--	0	--	0	--	0	--	0
PI 598911	--	0	--	0	--	0	--	0	--	0
PI 598913	--	0	--	0	--	0	--	0	--	0
PI 598916	--	0	--	0	--	0	--	0	--	0
PI 610924	--	0	--	0	--	0	--	0	--	0
PI 610925	--	0	--	0	--	0	--	0	--	0
PI 610926	--	0	--	0	--	0	--	0	--	0
PI 610958	7.0	1	5.0	1	7.0	1	4.0	1	--	0
All Tunisia	7.0	1	5.0	1	7.0	1	4.0	1	--	0

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.41. Winterhardiness and turf traits of accessions from Turkey evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 170521	7.5	30	1.1	15	--	0	5.0	1	--	0	--	0	--	0
PI 174259	6.9	29	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 204879	5.6	29	1.0	14	--	0	--	0	--	0	--	0	--	0
PI 204880	5.6	30	1.1	15	--	0	6.0	1	--	0	--	0	--	0
PI 205278	5.6	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 277847	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 368893	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 545614	6.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 545665	5.7	30	1.1	15	--	0	8.0	1	--	0	--	0	--	0
PI 577250	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 577272	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 577273	5.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598510	6.1	30	1.1	15	--	0	12.5	2	--	0	--	0	--	0
PI 598512	5.4	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598514	5.1	30	1.1	15	9.0	1	15.0	1	17.0	1	3.0	1	4.0	1
PI 598516	5.6	30	1.3	15	3.0	1	11.0	1	13.0	1	5.0	1	3.0	1
PI 598517	5.9	30	2.4	15	1.7	9	16.6	9	13.8	6	3.8	9	4.4	9
PI 598519	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598520	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
W6 11256	5.5	30	1.5	15	2.5	2	10.3	4	12.0	2	4.0	2	4.5	2
W6 11322	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
All Turkey	5.9	628	1.1	314	2.5	13	13.0	20	13.7	10	3.9	13	4.3	13

Table S.41. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 170521	--	0	--	0	--	0	--	0	--	0
PI 174259	--	0	--	0	--	0	--	0	--	0
PI 204879	--	0	--	0	--	0	--	0	--	0
PI 204880	--	0	--	0	--	0	--	0	--	0
PI 205278	--	0	--	0	--	0	--	0	--	0
PI 277847	--	0	--	0	--	0	--	0	--	0
PI 368893	--	0	--	0	--	0	--	0	--	0
PI 545614	--	0	--	0	--	0	--	0	--	0
PI 545665	--	0	--	0	--	0	--	0	--	0
PI 577250	--	0	--	0	--	0	--	0	--	0
PI 577272	--	0	--	0	--	0	--	0	--	0
PI 577273	--	0	--	0	--	0	--	0	--	0
PI 598510	--	0	--	0	--	0	--	0	--	0
PI 598512	--	0	--	0	--	0	--	0	--	0
PI 598514	7.0	1	4.0	1	6.0	1	3.0	1	13.0	1
PI 598516	8.0	1	5.0	1	5.0	1	3.0	1	17.0	1
PI 598517	7.8	9	4.3	9	5.8	9	3.9	9	17.2	9
PI 598519	--	0	--	0	--	0	--	0	--	0
PI 598520	--	0	--	0	--	0	--	0	--	0
W6 11256	6.5	2	3.5	2	5.0	2	3.0	2	20.5	2
W6 11322	--	0	--	0	--	0	--	0	--	0
All Turkey	7.5	13	4.2	13	5.6	13	3.6	13	17.4	13

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.42. Winterhardiness and turf traits of accessions from the United States evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 632517	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 632527	6.0	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 634278	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
W6 20490	5.7	30	1.1	15	1.0	1	8.0	1	--	0	3.0	1	4.0	1
All USA	5.8	120	1.0	60	1.0	1	8.0	1	--	0	3.0	1	4.0	1

Table S.42. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 632517	--	0	--	0	--	0	--	0	--	0
PI 632527	--	0	--	0	--	0	--	0	--	0
PI 634278	--	0	--	0	--	0	--	0	--	0
W6 20490	6.0	1	5.0	1	6.0	1	3.0	1	14.0	1
All USA	6.0	1	5.0	1	6.0	1	3.0	1	14.0	1

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.43. Winterhardiness and turf traits of accessions from Wales evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
PI 577259	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 577260	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 577262	5.8	30	1.1	15	--	0	1.0	1	--	0	--	0	--	0
PI 577264	5.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 577271	5.6	30	1.1	15	2.0	1	9.0	1	10.0	1	4.0	1	4.0	1
PI 595043	6.3	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 595046	5.8	30	1.1	15	4.0	1	13.0	2	12.0	1	3.0	1	6.0	1
PI 595047	6.4	30	1.2	15	3.0	1	16.0	1	18.0	1	4.0	1	5.0	1
PI 598447	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598448	5.8	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598450	5.7	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 598452	6.4	30	1.1	15	--	0	1.0	1	--	0	--	0	--	0
PI 610814	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610816	6.2	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610817	5.6	30	1.1	15	--	0	6.0	1	--	0	--	0	--	0
PI 610819	5.8	30	1.1	15	--	0	5.0	1	--	0	--	0	--	0
PI 610824	5.5	30	1.1	15	1.0	1	11.0	1	--	0	3.0	1	5.0	1
PI 610828	5.9	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 610829	5.5	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 619000	6.0	30	1.1	15	--	0	11.5	2	--	0	--	0	--	0
PI 619001	6.2	30	1.1	15	2.0	1	9.5	2	6.0	1	4.5	2	7.0	1
PI 619002	5.8	30	1.1	15	--	0	6.0	2	--	0	--	0	--	0
PI 619018	5.8	30	1.1	15	3.0	1	10.0	1	15.0	1	3.0	1	5.0	1
PI 619554	5.9	30	1.2	15	2.0	1	10.5	2	16.0	1	3.0	1	4.0	1
All Wales	5.9	720	1.1	360	2.4	7	8.9	18	12.8	6	3.6	8	5.1	7

Table S.43. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
PI 577259	--	0	--	0	--	0	--	0	--	0
PI 577260	--	0	--	0	--	0	--	0	--	0
PI 577262	--	0	--	0	--	0	--	0	--	0
PI 577264	8.0	1	--	0	--	0	4.0	1	--	0
PI 577271	7.0	1	5.0	1	5.0	1	3.0	1	20.0	1
PI 595043	--	0	--	0	--	0	--	0	--	0
PI 595046	8.0	1	4.0	1	6.0	1	2.0	1	20.0	1
PI 595047	9.0	1	6.0	1	4.0	1	3.0	1	22.0	1
PI 598447	--	0	--	0	--	0	--	0	--	0
PI 598448	--	0	--	0	--	0	--	0	--	0
PI 598450	--	0	--	0	--	0	--	0	--	0
PI 598452	--	0	--	0	--	0	--	0	--	0
PI 610814	--	0	--	0	--	0	--	0	--	0
PI 610816	--	0	--	0	--	0	--	0	--	0
PI 610817	--	0	--	0	--	0	--	0	--	0
PI 610819	--	0	--	0	--	0	--	0	--	0
PI 610824	9.0	1	4.0	1	5.0	1	3.0	1	20.0	1
PI 610828	--	0	--	0	--	0	--	0	--	0
PI 610829	--	0	--	0	--	0	--	0	--	0
PI 619000	--	0	--	0	--	0	--	0	--	0
PI 619001	6.5	2	6.0	2	6.0	2	3.5	2	25.0	1
PI 619002	--	0	--	0	--	0	--	0	--	0
PI 619018	7.0	1	4.0	1	5.0	1	3.0	1	24.0	1
PI 619554	7.0	1	6.0	1	4.0	1	2.0	1	17.0	1
All Wales	7.6	9	5.1	8	5.1	8	3.0	9	21.1	7

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.44. Winterhardiness and turf traits of accessions from the former Yugoslavia evaluated at St. Paul and Becker, MN

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
31431-03	5.4	30	2.8	15	3.8	8	11.5	10	12.9	8	4.0	9	4.6	8
31432-03	5.0	30	1.2	15	5.0	2	9.5	2	6.0	2	3.0	2	5.0	2
31463-03	5.3	30	1.3	15	6.5	2	14.0	2	12.5	2	5.0	2	5.0	2
31473-03	5.1	30	2.1	15	4.2	6	8.3	7	11.6	5	4.5	6	5.2	6
PI 250969	5.3	30	1.9	15	2.4	5	9.6	7	11.3	4	4.6	5	4.0	5
PI 251141	5.3	30	1.3	15	6.0	4	10.3	4	16.0	4	3.3	4	3.3	4
PI 251142	5.8	30	1.7	15	7.0	2	14.7	3	18.5	2	4.0	2	5.5	2
PI 251224	6.0	30	1.1	15	1.0	1	15.0	1	--	0	1.0	1	3.0	1
PI 251557	6.1	30	1.0	15	--	0	--	0	--	0	--	0	--	0
PI 255470	6.5	30	1.2	15	3.0	1	15.0	1	15.0	1	3.0	1	5.0	1
PI 277846	5.4	30	1.3	15	2.5	2	13.7	3	15.0	1	3.0	2	4.0	2
PI 418701	5.7	29	5.1	15	2.8	12	13.9	14	11.6	10	4.4	14	4.3	12
All Former Yugoslavia	5.6	359	1.8	180	3.8	45	11.8	54	12.6	39	4.1	48	4.4	45

Table S.44. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit †		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
31431-03	7.4	8	4.9	9	5.1	9	3.9	8	20.0	8
31432-03	7.0	2	4.5	2	5.0	2	3.0	2	14.5	2
31463-03	5.5	2	4.5	2	6.0	2	3.5	2	20.5	2
31473-03	6.0	6	5.7	6	6.2	6	3.2	6	19.0	6
PI 250969	7.2	5	4.8	5	5.8	5	3.2	5	16.8	5
PI 251141	7.0	4	4.5	4	5.0	4	2.5	4	14.5	4
PI 251142	7.5	2	3.5	2	5.5	2	3.5	2	22.0	2
PI 251224	7.0	1	4.0	1	5.0	1	2.0	1	18.0	1
PI 251557	--	0	--	0	--	0	--	0	--	0
PI 255470	8.0	1	4.0	1	5.0	1	3.0	1	22.0	1
PI 277846	6.5	2	4.0	2	5.5	2	3.0	2	12.5	2
PI 418701	6.8	12	4.4	14	5.3	14	3.6	12	20.3	12
All Former Yugoslavia	6.9	45	4.7	48	5.4	48	3.3	45	18.6	45

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.



Table S.45. Winterhardiness and turf traits of check varieties and populations evaluated at St. Paul and Becker, MN.

Accession	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality		Autumn Turf Quality	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		cm		cm		score		score	
Brightstar SLT	5.1	300	3.1	150	3.6	88	10.4	96	10.4	75	5.3	91	5.5	88
Citation Fore	5.2	300	3.2	150	2.7	88	10.6	106	9.6	73	5.5	95	6.1	88
MHT	5.1	300	4.6	150	3.4	121	10.6	124	11.0	94	5.6	120	5.8	121
MSP	5.4	300	2.8	150	3.9	89	10.3	102	11.9	77	5.3	92	5.9	89
NK 200	5.9	300	4.8	150	6.0	128	13.1	137	16.4	124	4.0	129	4.1	128
Pizzazz	4.8	300	2.8	150	3.2	78	9.5	88	10.6	59	5.4	80	5.9	78
Ragnar II	5.5	300	2.2	150	3.5	47	11.6	53	11.7	40	4.5	50	5.4	47
WH x TQ	5.4	300	4.0	150	5.0	107	11.8	117	13.5	101	4.6	112	5.3	107
All Checks	5.3	2400	3.4	1200	4.1	746	11.1	823	12.3	643	5.0	769	5.4	746

Table S.45. (Continued)

Accession	Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit ‡		Spreading Vigor §	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
	score		score		score		score		cm	
Brightstar SLT	6.9	91	6.7	91	6.6	91	4.0	91	17.0	88
Citation Fore	6.6	95	6.7	95	6.6	95	4.1	95	16.7	88
MHT	7.0	121	6.4	120	6.6	120	4.1	121	19.0	121
MSP	7.7	93	6.5	92	6.4	92	4.0	93	19.2	89
NK 200	6.6	129	4.3	130	4.6	129	3.0	129	19.6	128
Pizzazz	6.9	79	6.8	80	6.8	79	4.0	79	17.7	78
Ragnar II	7.4	49	5.3	50	5.9	50	3.8	49	17.5	47
WH x TQ	6.4	109	5.4	110	6.0	111	3.6	109	19.1	107
All Checks	6.9	766	6.0	768	6.1	767	3.8	766	18.4	746

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

Table S.46. Winterhardiness and turf traits of orphaned accessions at St. Paul and Becker, MN.

Accession	Country	Seedling Vigor		Tiller Survival 2005		Tiller Survival 2006		Spring Growth 2005 †		Spring Growth 2006 †		Summer Turf Quality	
		$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
		score		score		score		cm		cm		score	
PI 202451	Argentina	6.3	30	1.1	15	--	0	5.0	1	--	0	--	0
PI 306292	Bolivia	6.2	30	1.1	15	--	0	7.0	1	--	0	--	0
PI 628717	Bulgaria	5.3	30	1.9	15	3.3	4	11.2	6	11.3	3	3.8	5
PI 265351	Chile	6.2	30	1.0	15	--	0	--	0	--	0	--	0
PI 249751	Crete	6.0	30	1.3	15	2.0	1	10.3	3	13.0	1	3.5	2
PI 239730	Egypt	6.4	30	1.0	15	--	0	--	0	--	0	--	0
PI 197270	Finland	6.2	30	1.3	15	2.0	1	14.5	2	16.0	1	5.0	1
PI 234779	Germany	5.8	30	1.1	15	--	0	9.0	1	--	0	--	0
PI 254898	Iraq	5.4	30	1.0	15	--	0	--	0	--	0	--	0
PI 220878	Ireland	6.1	29	1.0	14	--	0	--	0	--	0	--	0
PI 410155	South Africa	6.9	30	1.0	15	--	0	--	0	--	0	--	0

Table S.46. (Continued)

Accession	Country	Autumn Turf Quality		Crown Rust Incidence		Turf Color		Leaf Texture		Growth Habit †		Spreading Vigor §	
		$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
		score		score		score		score		score		cm	
PI 202451	Argentina	--	0	--	0	--	0	--	0	--	0	--	0
PI 306292	Bolivia	--	0	--	0	--	0	--	0	--	0	--	0
PI 628717	Bulgaria	4.5	4	7.8	5	4.6	5	6.0	5	3.4	5	17.5	4
PI 265351	Chile	--	0	--	0	--	0	--	0	--	0	--	0
PI 249751	Crete	5.0	1	7.0	2	4.5	2	5.0	2	3.5	2	22.0	1
PI 239730	Egypt	--	0	--	0	--	0	--	0	--	0	--	0
PI 197270	Finland	4.0	1	4.0	1	5.0	1	5.0	1	3.0	1	18.0	1
PI 234779	Germany	--	0	--	0	--	0	--	0	--	0	--	0
PI 254898	Iraq	--	0	--	0	--	0	--	0	--	0	--	0
PI 220878	Ireland	--	0	--	0	--	0	--	0	--	0	--	0
PI 410155	South Africa	--	0	--	0	--	0	--	0	--	0	--	0

† Spring growth was measured in mid-May as the length of an average tiller that survived winter.

‡ Growth habit is expressed on a scale of 1 (all tillers prostrate) to 5 (all tillers erect).

§ Spreading vigor was measured in October 2005 as the diameter in cm of each spaced plant.

