

Plant		Bluegrass		458	Primary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Plant height	15 plants	Measurement	cm (integer)		Height from the ground to the tip of main stem at the heading stage or the first crop
2	Panicle length	15 plants	Measurement	cm (round to the 1st decimal place)		Length from the base to the tip of panicle at the full heading stage
3	Leaf length	15 plants	Measurement	cm (round to the 1st decimal place)		Length of the first leaf blade below flag leaf
4	Leaf width	15 plants	Measurement	mm (round to the 1st decimal place)		Width of the widest part of the first leaf blade below flag leaf
5	Date of first heading	15 plants	Observation	date		Average date when the first panicle of each plant has emerged
6	Stem thickness	15 plants	Measurement	1:Extremely slender 2:Very slender 3:Slender 4:Slightly slender 5:Intermediate 6:Slightly thick 7:Thick 8:Very thick 9:Extremely thick		Long diameter of the internode just below the panicle on the longest stem at heading stage or the first crop
7	Spreading of plant	15 plants	Obs.&Measr.	1:Extremely small 2:Very small 3:Small 4:Slightly small 5:Intermediate 6:Slightly large 7:Large 8:Very large 9:Extremely large		Plant spreading estimated by measuring length x width of a plant

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1	Plant type	15 plants	Observation	1:Erect 2:Almost erect 3:Semi-erect 4:Almost semi-erect 5:Intermediate 6:Almost intermediate 7:Semi-prostrate 8:Almost prostrate 9:Prostrate		Angle that outer main stems make with the horizontal from the internode elongation to heading stage
2	Seedling vigor	15 plants	Observation	1:Extremely poor 2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly vigorous 7:Vigorous 8:Very vigorous 9:Extremely vigorous		Amount of growth 4 weeks after sowing
3	Leaf color	15 plants	Observation	1:Extremely light green 2:Very light green 3:Light green 4:Slightly light green 5:Intermediate 6:Slightly dark green 7:Dark green 8:Very dark green 9:Extremely dark green		Greenness of leaf blades at heading stage under the standard fertilizer application
4	Texture of leaf	15 plants	Observation	1:Extremely tender 2:Very tender 3:Tender 4:Slightly tender 5:Intermediate 6:Slightly rough 7:Rough 8:Very rough 9:Extremely rough		Texture of leaf blade by touching
5	Number of panicles	15 plants	Obs.&Mear.	0:None 1:Almost none 2:Extremely few 3:Very few 4:Few 5:Intermediate 6:Some 7:Many 8:Very many 9:Extremely many		Number of panicles at the full heading time or the first crop
6	Anthocyanin pigmentation of leaf sheath	15 plants	Observation	0:Not colored 1:Extremely light 2:Very light 3:Light 4:Slightly light 5:Intermediate 6:Slightly dark 7:Dark 8:Very dark 9:Extremely dark		Degree of anthocyanin pigmentation of leaf sheath
7	Anthocyanin pigmentation of seed	15 plants	Observation	0:Not colored 1:Extremely light 2:Very light 3:Light 4:Slightly light 5:Intermediate 6:Slightly dark 7:Dark 8:Very dark 9:Extremely dark		Degree of anthocyanin pigmentation of seed
8	Seed size	15 plants	Obs.&Mear.	3:Small 4:Slightly small 5:Intermediate 6:Slightly large 7:Large		Seed size measured crosswise or observed
9	Weight of 1000 seeds	15 plants	Measurement	mg (round to the 2nd decimal place)		Weight of 1000 seeds estimated by sampling 100 seeds from the mixture of 15 plants with 4 replications

Plant		Bluegrass		458	Secondary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Stem rust resistance	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Resistance to Puccinia graminis based on degree of the infection by artificial inoculation or planting in an infected field
2	Stripe rust resistance	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Resistance to Puccinia striiformis based on degree of the infection by artificial inoculation or planting in an infected field
3	Yellow leaf rust resistance	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Resistance to Puccinia poae-nemoralis based on degree of the infection by artificial inoculation or planting in an infected field
4	Greening in early spring	15 plants	Observation	1:Extremely early 2:Very early 3:Early 4:Slightly early 5:Intermediate 6:Slightly late 7:Late 8:Very late 9:Extremely late		Earliness of sprouting in early spring
5	Plant vigor in autumn	15 plants	Observation	1:Extremely poor 2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly vigorous 7:Vigorous 8:Very vigorous 9:Extremely vigorous		Amount of growth in autumn
6	Yellow coloration in early winter	15 plants	Observation	1:Not colored or extremely light 2:Very light 3:Light 4:Slightly light 5:Intermediate 6:Slightly dark 7:Dark 8:Very dark 9:Extremely dark		Degree of yellow coloration after frost
7	Regrowth	15 plants	Observation	1:Extremely poor 2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly good 7:Good 8:Very good 9:Excellent		Amount of regrowth after the first cutting

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1	Melting-out resistance	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Resistance to Drechslera poae based on degree of the infection
2	Powdery mildew resistance	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Resistance to Blumeria graminis based on degree of the infection
3	Snow mold disease resistance	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Resistance to main snow mold fungus based on degree of the infection (note the name of snow mold disease)
4	Shade tolerance	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Amount of growth under shaded conditions
5	Drought tolerance	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Drought tolerance estimated by degree of the damage under drought conditions
6	Termination of growth	15 plants	Observation	1:Extremely early 2:Very early 3:Early 4:Slightly early 5:Intermediate 6:Slightly late 7:Late 8:Very late 9:Extremely late		Date when plants ceased growing from late autumn to early winter
7	Summer survival	15 plants	Observation	1:Extremely poor 2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly good 7:Good 8:Very good 9:Excellent		Degree of wilting in summer or amount of growth in early autumn
8	Overwintering ability	15 plants	Observation	1:Extremely poor 2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly good 7:Good 8:Very good 9:Excellent		Degree of wilting in winter or amount of growth in early spring

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No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Fresh yield in spring	3 replications	Measurement	kg/a (integer)		Fresh yield in spring harvested from an area of more than 1 square meters area of the 4 square meter plot at each cutting
2	Dry matter ratio in spring	3 replications	Measurement	% (round to the 1st decimal place)		Dry matter ratio in spring estimated by sampling 300 to 500 g fresh sample and drying it at 70 centi degrees for 48 hours
3	Dry matter yield in spring	3 replications	Calculation	kg/a (integer)		Fresh weight x dry matter ratio/100 in spring
4	Fresh yield in summer	3 replications	Calculation	kg/a (integer)		Fresh weight in summer harvested by the same way as fresh yield in spring
5	Dry matter ratio in summer	3 replications	Calculation	% (round to the 1st decimal place)		Dry matter ratio in summer measured by the same way as dry matter ratio in spring
6	Dry matter yield in summer	3 replications	Calculation	kg/a (integer)		Dry matter yield in summer calculated by the same way as dry matter yield in spring
7	Fresh yield in autumn	3 replications	Calculation	kg/a (integer)		Dry matter yield in autumn harvested by the same way as fresh yield in spring
8	Dry matter ratio in autumn	3 replications	Calculation	% (round to the 1st decimal place)		Dry matter ratio in autumn measured by the same way as dry matter ratio in spring
9	Dry matter yield in autumn	3 replications	Calculation	kg/a (integer)		Dry matter yield in autumn calculated by the same way as dry matter yield in spring
10	Tolerance to mowing	3 replications	Observation	1:Extremely poor 2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly good 7:Good 8:Very good 9:Excellent		Mowing tolerance based on the sod density after the last mowing under frequent mowings at low-level cutting for a few years

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11	Sod density	3 replications	Observation	1:Extremely sparce 2:Very sparce 3:Sparce 4:Slightly sparce 5:Intermediate 6:Slightly dense 7:Dense 8:Very dense 9:Extremely dense		Sod density under frequent mowing at low height (20 mm)
12	Crude protein	3 replications	Measurement	% (round to the 1st decimal place)		Ratio of crude protein content on dry matter base by Kjeldahl method or near infrared spectroscopy (NIRS)
13	Acid detergent fiber (ADF)	3 replications	Measurement	% (round to the 1st decimal place)		Ratio of ADF content on dry matter base by acid detergent-acetone washing
14	Neutral detergent fiber (NDF)	3 replications	Measurement	% (round to the 1st decimal place)		Ratio of NDF content on dry matter base by neutral detergent-acetone washing
15	Acid detergent lignin (ADL)	3 replications	Measurement	% (round to the 1st decimal place)		Ratio of ADL content on dry matter based by acid detergent-acetone washing
16	Mono-and oligosaccharides	3 replications	Measurement	% (round to the 1st decimal place)		Ratio of non-structural carbohydrates on dry matter base by colorimetric analysis with anthrone reagent after extraction in ammonium oxalate solution
17	Cyanogenetic glucoside	3 replications	Measurement	ppm (round to the 3rd decimal place)		Content of cyanogenetic glucoside on dry matter base by colorimetric analysis in alkali picrate solution
18	Saponin	3 replications	Measurement	ppm (round to the 2nd decimal place)		Saponin content on dry matter base by thin layer chromatography after alcohol extraction
19	Development of rhizomes	15 plants	Obs.&Mear.	1:Extremely poor 2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly good 7:Good 8:Very good 9:Excellent		Development of rhizomes estimated by number and weight of rhizomes and spreading of the plant
20	Degree of apomixis	15 plants	Observation	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		Degree of apomixis estimated by the uniformity in progeny test

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21	Dry matter digestibility	15 plants	Measurement	% (round to the 1st decimal place)	Ratio of digestible dry matter discerned by in vitro enzyme method or or near infrared spectroscopy (NIRS)