

Plant		Spinach		106(08022)	Primary essential character
No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Seed shape	100 grains	Observation	1:Smooth 3:Mixed (smooth > prickly) 5:Mixed 7:Mixed (prickly > smooth) 9:Prickly	Mixed (smooth>prickly):smooth 70% and prickly 30%, mixed:smooth 50% and prickly 50%, mixed (prickly>smooth):smooth 30% and prickly 70%
2	Plant posture	30 plants	Observation	3:Erect 4:Semi-erect 5:Intermediate 6:Semi-spread 7:Spread	Observe at harvest stage. Semi-erect:Ujyo, intermediate:Jiromaru, spread:King of Denmark
3	Number of leaves	20 plants	Measurement	(integer)	Average value at harvest stage (autumn sowing)
4	Length of leaf	20 plants	Measurement	cm (integer)	Use the largest leaf blade and take the average value of 20 plants at harvest stage
5	Width of leaf	20 plants	Measurement	cm (round to the 1st decimal place)	Use the largest leaf blade and take the average value of 20 plants at harvest stage
6	Leaf color	20 plants	Observation	1:Very pale green 2:Pale green 3:Light green 4:Slightly light green 5:Green 6:Slightly dark green 7:Dark green 8:Very dark green 9:Extremely dark green	Color of the largest leaf blade. Light green:Jiromaru, intermediate:Ujyo, dark green:King of Denmark
7	Wrinkles of leaf	20 plants	Observation	0:None 1:Extremely few 2:Very few 3:Few 4:Slightly few 5:Intermediate 6:Some 7:Many 8:Very many 9:Extremely many	Observe the largest leaf. Very few:Ujyo, slightly few:Viroflay, intermediate:Novel, many:Yugiri
8	Lobation of leaf margin	20 plants	Observation	0:None 1:Extremely shallow 2:Very shallow 3:Shallow 4:Slightly shallow 5:Intermediate 6:Slightly deep 7:Deep 8:Very deep 9:Extremely deep	Observe the largest leaf. None:Nobel, slightly shallow:Viroflay, intermediate:Ujyo, deep:Minsterland
9	Leaf shape	20 plants	Observation	2:Nippon type 3:Ujyo type 5:King of Denmark type 7:Nobel type 8:Yugiri type	Observe the largest leaf
10	Main root color	20 plants	Observation	0:Absent 1:Extremely light 2:Very light 3:Light 4:Slightly light 5:Intermediate 6:Slightly deep 7:Deep 8:Very deep 9:Extremely deep	Pigmentation of anthocyanin

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No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Leaf luster	20 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	Observe the largest leaf blade at harvest stage. Low:Nippon, intermediate:Ujyo, high:Viroflay
2	Shape of leaf tip	20 plants	Observation	1:Sharp 3:Slightly sharp 5:Intermediate 7:Slightly round 9:Round	Observe the largest leaf tip at harvest stage
3	Petiole length	20 plants	Measurement	cm (round to the 1st decimal place)	Use the largest leaf and take the average value of 20 plants at harvest stage
4	Petiole thickness	20 plants	Measurement	mm (integer)	Use the largest leaf and take the average value of 20 plants at harvest stage
5	Color of proximal part of petiole	20 plants	Observation	0:None 1:Extremely light 2:Very light 3:Light 4:Slightly light 5:Intermediate 6:Slightly deep 7:Deep 8:Very deep 9:Extremely deep	The pigmentation of anthocyanin. None:King of Denmark, intermediate:Houyou, deep:Minsterland
6	Thickness of mesophyll	20 plants	Observation	1:Extremely thin 2:Very thin 3:Thin 4:Slightly thin 5:Intermediate 6:Slightly thick 7:Thick 8:Very thick 9:Extremely thick	Thin:Nippon, intermediate:Ujyo, thick:King of Denmark

Plant		Spinach		106(08022)	Secondary essential character
No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Earliness of growth	30 plants	Measurement	Days (integer)	Number of days from sowing to harvest in autumn
2	Bolting	30 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	Early:Ujyo, intermediate:Houyou, late:Nobel, very late:King of Denmark
3	Resistance to downy mildew	30 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	Investige symptoms by natural infection or inoculation test. Intermediate:Minsterland

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No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Number of tillers	30 plants	Measurement	Number per plant (round to the 1st decimal place)	Average value of 30 plants at harvest stage
2	Cold tolerance	30 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 leaf injury, tip burn and elongation of leaves
3	Resistance to virus diseases	30 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	Symptoms by natural infection or inoculation test. Intermediate:Ujyo
4	Molybdenum deficiency	30 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	The degree of natural occurrence. Intermediate:Houyou

Plant	Spinach		106(08022)	Tertiary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Plant weight	30 plants	Measurement	g (integer)	Average value of 30 plants at harvest stage

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No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Taste	30 plants	Sensory	1:Poor 2:Slightly poor 3:Suitable 4:Slightly good 5:Good 6:Slightly superior 7:Superior 8:Very superior 9:Extremely superior	The sensory test about the tenderness, fibrousness and sweetness. Use samples after boiling for 2 min.