

Plant		Soybean		4(03001)	Primary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Main stem length	20 plants	Measurement	cm (integer)		Length from the cotyledon node to the top node of the main stem
2	Number of main stem nodes	20 plants	Measurement	* (round to the 1st decimal place)		Total number of nodes on the main stem from the cotyledon node to the top node
3	Leaflet shape	Block	Observation	3:Ovate 5:Intermediate 7:Narrow 9:Lanceolate		Length-width ratio of complete leaflet on the middle node of the main stem. Narrow:2.2, ovate:<=1.8
4	Flower color	Block	Observation	1:White 9:Purple		Color of blooming flowers
5	Hypocotyl color	Block	Observation	1:Green 9:Purple		Color of hypocotyl at VC stage
6	Seed-coat color	Block	Observation	1:Yellowish white 2:Yellow 3:Pale green 4:Green 5:Pale brown 6:Brown 7:Black 8:Mottle		Seed-coat color at post-maturity. The lighter color is the base color in the case of mottle seed-coats.
7	Hilum color	Block	Observation	2:Light buff 3:Buff 4:Brown 5:Dark brown 6:Green 7:Dark gray 8:Black 9:Other		
8	Cotyledon color	Block	Observation	2:Yellow 9:Green		Color of peeling of the cutting phase of cotyledon
9	Flowering time	Block	Observation	date		Date on which 40-50% plants have bloomed
10	Maturing time	Block	Observation	date		Date on which 80-90% pods of all plants have turned into mature pod color
11	Seed size	100 seeds	Measurement	g (round to the 1st decimal place)		Mean seed weight based on 100 mature seeds with two replications
12	Stem termination (Growth habit)	Block	Observation	3:Indeterminate 5:Semi-determinate 7:Determinate		Absence or presense of scope at the top of the main stem

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1	Number of branches	20 plants	Measurement	* (round to the 1st decimal place)		Number of branches with two nodes or more
2	Pubescence color	Block	Observation	1:Gray 8:Tawny (Brown)		Pubescence color in the growing period
3	Ratio of number of pods with 3 or more seeds	20 plants	Measurement	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Ratio of number of pods with 3 seeds or more to total number of pods
4	Pod color	Block	Observation	2:Tan 3:Dark tan 4:Brown 5:Slightly dark brown 6:Dark brown 7:Dark gray 8:Black		Color of pod at maturity
5	Seed shape	100 seeds	Observation	1:Spherical 3:Spheroidal 5:Ellipsoidal 7:Sphero-ellipsoidal 9:Long-ellipsoidal		Score based on seed width-length ratio and thickness-width ratio. Spherical:0.9>= & 0.85>=, spherical:0.9>= & 0.84<=, ellipsoidal:0.8-0.9 & 0.85>=, sphero-ellipsoidal:0.8-0.9 & 0.84<=, long-ellipsoidal:0.79<=

Plant		Soybean		4(03001)	Secondary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Resistance to soybean mosaic virus	10 plants	Measurement	3:Low 5:Intermediate 7:High 9:Very high		Score based on the rate of diseased plants inoculated. Low:>=50%, high:11-20%, very high:=0%
2	Resistance to soybean cyst nematode	10 plants	Measurement	1:Extremely low 3:Low 5:Intermediate 7:High 9:Extremely high		Score based on Cyst Index (low:41-65%, high:1-20%, very high:=0%). Cyst Index=(ratings x no. of infested plants involved) / (total number of plants examined x 4) x 100, ratings; 0:null, 1:slight, 2:intermediate, 3:severe, 4:very severe
3	Difficulty of seed coat cracking	200 seeds	Measurement	3:Easy 5:Intermediate 7:Hard 9:Very hard		Score based on the rate of cracking seeds. Easy:>=15%, hard:1-5%, very hard:=0%

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1	Resistance to soybean dwarf virus	100 plants	Measurement	1:Very low 3:Low 5:Intermediate 7:High 9:Very high		Score based on the rate of disease plants during R1 to R6 stage. Very low:>=61%, low:41-60%, high:1-10%, very high:=0%
2	Resistance to phytophthora rot	100 plants	Measurement	1:Very low 3:Low 5:Intermediate 7:High 9:Very high		Score based on the rate of disease plants during V1 to V6 stage. Very low:>=51%, low:31-50%, high:1-10%, very high:=0%
3	Resistance to black root rot	100 plants	Measurement	1:Very low 3:Low 5:Intermediate 7:High 9:Very high		Score based on the rate of disease plants during V1 to V6 stage. Very low:>=51%, low:31-50%, high:1-10%, very high:=0%
4	Resistance to purple seed stain	200 plants	Measurement	1:Very low 3:Low 5:Intermediate 7:High 9:Very high		Score based on the rate of disease seeds with stained area in 2 mm width and more. Very low:>=31%, low:16-30%, high:1-5%, very high:=0%
5	Lodging resistance	Block	Measurement	1:Very low 3:Low 5:Intermediate 7:High 9:Very high		Score based on the rate of plants lodged at 60 degrees angle and more at maturity. Very low:=100% , low:=75%, intermediate=50%, high:=25%, very high:=0%
6	Shattering	100 pods per 10 plants	Measurement	3:Easy 5:Intermediate 7:Hard 9:Very hard		Score based on the rate of opened pods under drying condition. Easy:>=25%, hard:1-9%, very hard:=0%
7	Lowest pod height	20 plants	Measurement	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Height from the cotyledon node to the node of the lowest pod
8	Tolerance to low temperature	Block	Measurement	1:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 9:Very high		Score based on the number of pods and/degree of yield-reduction under low temperature conditions
9	Moisture tolerance	20 plants	Observation	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Score based on the ratio of dead plants and/or yield-decrease under excess moisture condition

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1	Seed yield	Block	Measurement	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High	Degree of seed weight (kilogram per are) based on comparing with standard varieties
2	Protein content		Measurement	1:<=33.9% 3:34.0-36.9% 5:37.0-41.0% 7:42.0-44.9% 9:>=45.0%	Rate of dry weight of seed (N x 6.25)
3	Oil content		Measurement	1:<=14.9% 3:15.0-17.9% 5:18.0-21.9% 7:22.0-24.9% 9:>=25.0%	Rate of dry weight of seed

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1	Free sugar content		Measurement	% (round to the 1st decimal place)		Rate of dry weight of seed
2	Lipoxygenase isozymes (L-1, L-2, L-3)		Measurement	1:Absence of L-1, -2 & -3 2:Absence of L-1 & -2 3:Absence of L-1 & -3 4:Absence of L-2 & -3 5:Absence of L-1 6:Absence of L-2 7:Absence of L-3 8:Presence of L-1, -2 &-3		Analysis with SDS-PAGE
3	7S globulin subunit		Measurement	1:Absence of a, a' & b 2:Absence of a & a' 3:Absence of a & b 4:Absence of a' & b 5:Absence of a 6:Absence of a' 7:Absence of b 8:Presence of a, a' & b		Analysis with SDS-PAGE. a:Alpha type 7S globulin subunut, b:Beta type 7S globulin subunut
4	11S globulin subunit		Measurement	1:Absence of I, IIa & IIb 2:Absence of I & IIa 3:Absence of I & IIb 4:Absence of IIa & IIb 5:Absence of I 6:Absence of IIa 7:Absence of IIb 8:Presence of I, IIa & IIb		Analysis with SDS-PAGE
5	Linolenic acid content		Measurement	% (round to the 1st decimal place)		Mean of the content with two replications analyzed by gas chromatography
6	Linoleic acid content		Measurement	% (round to the 1st decimal place)		Mean of the content with two replications analyzed by gas chromatography