	Plant Sugar				441		Primary essential character	
No	Io Characters		No. of samples	Methods		Rank or measurement unit		Remarks
1	Polyploid	У	30 plants	Observation		1:Haploid 2:Diploid 4:Anisoploid 6:Triploid 8:Tetraploid 9:Polyploid		Number of chromosomes in young leaves
2	Number of	germs	Block	Observation		3:Monogerm 7:Multigerm		Judged by seed shape
3	Red coloration of Block hypocotyl of seedling		Block	Observati	on	1:Absent or extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Some 7:Much 8:Very much 9:Extremely abundant		Rate of red colored plants at seedling stage
4	4 Plant type Block		Block	Observati	tion 1:Erect 4:Slightl 6:Slightl 8:Nearly		2:Nearly erect 3:Semi-erect y semi-erect 5:Intermediate y semi-prostrate 7:Semi-prostrate prostrate 9:Prostrate	At the full growing stage
5	Leaf shape Block		Block	Observati	on	1:Very th lanceolat shape 7:	nin 2:Thin 3:Lanceolate 4:Slightly e 5:Intermediate 6:Slightly heart Heart shape 8:Wide 9:Very wide	At the full growing stage
6	Root length 10 plants		10 plants	Measureme	nt	cm (round to the 1st decimal place)		Length of true tap roots over 2 cm diameter at harvest stage
7	7 Root shape Block Obs		Observati	on	1:Short conic 2:Slightly short conic 3:Conic 5:Long conic-column 7:Long conic 8:Long 9:Very long		At harvest stage	
8	8 Branched roots Block		Block	Observati	on	1:Almost 4:Few 5: many 9:E	none 2:Extremely few 3:Very few Intermediate 6:Some 7:Many 8:Very Extremely many	At harvest stage

	Plant Sugar beet		4		441		Primary optional character	
No	Cha	racters	No. of samples	Method	s		Rank or measurement unit	Remarks
1	Leaf lengt	-h	10 plants	Measurement		cm (round to the 1st decimal place)		Length from the petiole base to the leaf top at the full growing stage
2	Leaf numbe	er	10 plants	Measurement		(round	to the 1st decimal place)	Number of leaves of over 5 cm in length at the full growing stage
3	Leaf color		Block	Observatio	vation 1:Ex 4:SI darl		ly light 2:Very light 3:Light y light 5:Intermediate 6:Slightly ark 8:Very dark 9:Extremely dark	Degree of greenness of leaves at the full growing stage
4	Leaf shrinkage Block		Block	Observatio	on	1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Some 7:Much 8:Very much 9:Extremely much		Degree of leaf shrinkage at the full growing stage
5	Laminae size 10 plants		10 plants	Observatio	on	1:Extreme 4:Slightl large 7:	ly small 2:Very small 3:Small y small 5:Intermediate 6:Slightly Large 8:Very large 9:Extremely large	Size of leaf at the full growing stage
6	6 Leaf petiole length		10 plants	Measurement		cm (round	to the 1st decimal place)	Length of petiole at the full growing stage (the largest leaf)
7	Leaf petiole width 10 plants		10 plants	Measuremen	nt	mm (round	to the 1st decimal place)	Width of petiole at the full growing stage (central part of petiole of the longest leaf)
8	Root circuit 10 plants Measurement		nt	cm (round to the 1st decimal place)		Circuit of the widest part of a root at harvest stage		
9	Crown size 10 plants Measurement		nt	1:Extremely small 2:Very small 3:Small 4:Slightly small 5:Intermediate 6:Slightly large 7:Large 8:Very large 9:Extremely large		Judged based on the ratio of root weight to crown weight at harvest stage		
10	Exposed ci	cowns	Block	Observatio	bservation		none 2:Extremely few 3:Very few Intermediate 6:Some 7:Many 8:Very Xtremely many	Degree of exposure of crown
11	Root wrinł	cles	Block	Observatio	on	1:Very fe 9:Very ma	w 3:Few 5:Intermediate 7:Many ny	Degree of wrinkling on roots at harvest stage

Plant		Sugar beet		441	41 Primary optional character			
No	Characters No. of samples		Methods		Rank or measurement unit		Remarks	
12	Flesh quality		Block	Observation	1:Very so 9:Very ha	oft 3:Soft 5:Intermediate 7:Ha ard	ırd	Judged by the difficulty of cutting roots at harvest stage

	Plant	Sugar beet		441	Secondary essential character		
No	o Characters		No. of samples	Methods	5	Rank or measurement unit	Remarks
1	Bolting tolerance		1 block, 30 plants	Measuremen	l:Ext low 8:Ver	cremely low 2:Very low 3:Low 4:Slight 5:Intermediate 6:Slightly high 7:High cy high 9:Extremely high	Judged by the degree of bolting in field at harvest stage or induce bolting artificially by low temperature long day treatment (5 centi degree, 15 hours illumination for 35-45 days)
2	Resistance Cercospora	e to a	Block	Observatio	n 1:Ext low 8:Ver	cremely low 2:Very low 3:Low 4:Slight 5:Intermediate 6:Slightly high 7:High cy high 9:Extremely high	Judged by fungi inoculation or symptom occurrence in an untreated field

Plant		Sugar beet	beet		441	Secondary optional character	
No	Characters		No. of samples	Methods	5	Rank or measurement unit	Remarks
1	Tolerance to excessive Blo		Block	Observatio	on % (rc	ound to the 1st decimal place)	Ratio of rotten plants at harvest stage in field of excess water by irrigation in mid to late July
2	Resistance to B Rhizoctonia root rot		Block	Observatio	on 1:Ext low 8:Ver	rremely low 2:Very low 3:Low 4:Slightly 5:Intermediate 6:Slightly high 7:High ry high 9:Extremely high	Judged by fungi inoculation or symptom occurrence in an untreated field
3	Resistance blight	e to foliage	Block	Observatio	on 1:Ext low 8:Ver	rremely low 2:Very low 3:Low 4:Slightly 5:Intermediate 6:Slightly high 7:High ry high 9:Extremely high	Judged by fungi inoculation or symptom occurrence in an untreated field
4	4 Resistance to beet Block   necrotic yellow vein virus		Block	Obs.&Measr	r. 1:Ext low 8:Ver	cremely low 2:Very low 3:Low 4:Slightly 5:Intermediate 6:Slightly high 7:High cy high 9:Extremely high	Judged by fungi inoculation or symptom occurrence in an untreated field
5	Resistance Aphanomyce	e to es root rot	Block	Observatio	on 1:Ext 9:Ext	cremely low 3:Low 5:Intermediate 7:High cremely high	Judged by symptom occurrence in an untreated infested field

	Plant Sugar beet		441		441		Tertiary essential character	
No	Characters No. of samples		Methods			Rank or measurement unit	Remarks	
1	1 Root weight 3 r		3 replications	Measurement		kg/a (integer)		At harvest stage
2	Sugar con	tent in root	3 replications	Measuremer	nt	% (round	to the 2nd decimal place)	At harvest stage
3	Amino-nit:	rogen content	3 replications	Measuremer	nt I	meq/100 g	(round to the 2nd decimal place)	At harvest stage
4	Sodium com	ntent	3 replications	Measuremer	nt I	meq/100 g	(round to the 2nd decimal place)	At harvest stage
5	Potassium	content	3 replications	Measuremer	nt I	meq/100 g	(round to the 2nd decimal place)	At harvest stage
6	Sugar yie	ld	3 replications	Calculatio	on	kg/a (int	eger)	At harvest stage

Plant		Sugar beet			441	Tertiary optional character	
No	No Characters		No. of samples	Methods	3	Rank or measurement unit	Remarks
1	1 Impurity index			Calculatio	on % (round	to the 2nd decimal place)	At harvest stage, (3.5 Na + 2.5 K + 10 alpha - amino nitrogen)/sugar content x 100
2	Top weight 3 replications		Measuremen	nt kg/a (int	eger)	At harvest stage	
3	Top/root :	ratio	3 replications	Calculatio	on * (round	to the 2nd decimal place)	At harvest stage