

Plant		Sugarcane		440	Primary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Auricle shape	Block	Observation	1:Sloping transitional 2:Straight transitional 3:Ascending/descending 4:Deltoid 5:Dentoid 6:Uniform 7:Calcariform 8:Lanceolate 9:Falcate		
2	Ligule shape	Block	Observation	1:Deltoid 3:Strap 5:Crescent 7:Bow-shape		Crescent:NCo310, NiF8
3	Bud shape	Block	Observation	1:Ovate 2:Long triangle 3:Short triangle 4:Rhomboid 5:Pentagonal 6:Wide wing ovate 7:Round 8:Unevenness ovate 9:2nd wing ovate		
4	Plant tillering	Block	Measurement	Number/square meter (round to the 1st decimal place)		Count number of tillers at the maximum tillering stage
5	Leaf canopy (canopy structure)	Block	Observation	1:Droopy 3:Semi-droopy 5:Intermediate 7:Erect 9:Compact erect		Observe expanding leaf at active growth period. Intermediate:NCo310, erect:NiF8
6	Tasseling	Block	Observation	1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Slightly profuse 7:Profuse 8:Very profuse 9:Extremely profuse		Count number of stalks with tassels at harvest time. Profuse:NCo310, NiF8
7	Stalk erectness	Block	Observation	3:Curbed 4:Slightly curbed 5:Intermediate 6:Slightly straight 7:Straight		Observe harvested stalks. Intermediate:NCo310, straight:NiF8
8	Stalk morphology	Block	Observation	1:Cylindrical 2:Tumescent 3:Bobbin 4:Conoidal 5:Obconoidal 6:Curved		Observe internode shape at harvest time
9	Stalk color	Block	Observation	1:White 2:Cream 3:Yellow 4:Yellowish green 5:Green 6:Yellowish brown 7:Brown 8:Red 9:Purple		Record unexposed stalk color at harvest time. Yellowish green:NCo310, NiF8
10	Stalk length	10 stalks	Measurement	cm (integer)		Measure after removing the leaves from the top to the +5th node at ripening stage
11	Stalk diameter	10 stalks	Measurement	mm (integer)		Measure minor axis at the middle of internode with mid point of stalk at ripening stage

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1	Bud germination	Block	Measurement	% (round to the 1st decimal place)		% = (germinated buds/planted buds) x 100 at the full germination period
2	Ratoon shoot	Block	Measurement	% (round to the 1st decimal place)		% = (ratoon shoots/harvest stalks) x 100 on the 1st top-dressing day
3	Early elongation	Block	Observation	1:Extremely poor 2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly good 7:Good 8:Very good 9:Excellent		Observe and judge stalk length or plant height. Intermediate:NCo310, good:NiF8
4	Leaf length	10 leaves	Measurement	cm (integer)		Measure from the dewlap to the tip of the 2nd or 3rd expanded leaf from the top
5	Leaf width	10 leaves	Measurement	cm (round to the 1st decimal place)		Measure at the broadest region of the 2nd or 3rd expanded leaf from the top
6	Leaf color	Block	Observation	3:Light green 4:Slightly light green 5:Green 6:Slightly dark green 7:Dark green		Observe the degree of a green color. Green:NCo310
7	Anthocyanin on leaf blade	Block	Observation	0:Absent 1:Extremely light 2:Very light 3:Light 4:Slightly light 5:Intermediate 6:Slightly dark 7:Dark 8:Very dark 9:Extremely dark		Observe the degree of anthocyanic coloration at the early growing stage. Absent:NCo310, light:NiF8
8	Hairiness of leaf blade	Block	Observation	0:Absent 1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Slightly abundant 7:Abundant 8:Very abundant 9:Extremely abundant		Absent:NCo310
9	Threshability	Block	Observation	1:Self thrashing 2:Very loose 3:Loose 4:Slightly loose 5:Light 6:Slightly light 7:Moderate 8:Very tight 9:Tight		Loose:NiF8, moderate:NCo310
10	Auricle insertion	Block	Observation	3:Top 4:Near the top 5:Middle 6:Near the bottom 7:Bottom		Top:NiF8
11	Leaf sheath length	10 leaves	Measurement	cm (round to the 1st decimal place)		Measure the sheath at the 6th expanded leaf from the top

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12	Leaf sheath color	Block	Observation	0:Absent 1:Extremely light 2:Very light 3:Light 4:Slightly light 5:Intermediate 6:Slightly dark 7:Dark 8:Very dark 9:Extremely dark		Observe the degree of anthocyanin pigmentation at the early growing stage. Absent:NCo310, light:NiF8
13	Wax bloom on leaf sheath	Block	Observation	0:Absent 1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Slightly abundant 7:Abundant 8:Very abundant 9:Extremely abundant		At ripening stage. Intermediate:NCo310, abundant:NiF8
14	Leaf sheath hairiness	Block	Observation	0:Absent 1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Slightly abundant 7:Abundant 8:Very abundant 9:Extremely abundant		At ripening stage. Absent:NCo310, extremely little:NiF8
15	Wax bloom on stalk	Block	Observation	0:Absent 1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Slightly abundant 7:Abundant 8:Very abundant 9:Extremely abundant		At ripening stage. Intermediate:NCo310, abundant:NiF8
16	Dewlap shape	Block	Observation	1:Deltoid 2:Descending deltoid 3:Square deltoid 4:Ascending deltoid 5:Wide squarish 6:Long squarish 7:Ascending ligulate 8:Crescent 9:Wide crescent		At the middle growing stage. Descending deltoid:NCo310, NiF8
17	Sponginess	10 stalks	Observation	0:Absent 1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Slightly large 7:Large 8:Very large 9:Extremely large		Observe cross sections at middle position of internodes of the mid point of stalk at ripening stage. Absent:NCo310, NiF8
18	Pithiness	10 stalks	Observation	0:Absent 1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Slightly large 7:Large 8:Very large 9:Extremely large		Observe cross sections at middle position of internodes of the mid point of stalk at ripening stage. Little:NCo310, NiF8
19	Bud insertion	Block	Observation	3:Low 4:Slightly low 5:Even 6:Slightly high 7:High		Observe the position of bud apex to growth ring. Slightly high:NCo310, NiF8
20	Bud prominence	5 stalks	Observation	2:Concave 3:Flat 4:Slightly flat 5:Intermediate 6:Slightly convex 7:Convex 8:Very convex 9:Extremely convex		Slightly convex:NCo310, very convex:NiF8

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21	Root band width	Block	Observation	1:Extremely narrow 2:Very narrow 3:Narrow 4:Slightly narrow 5:Intermediate 6:Slightly wide 7:Wide 8:Very wide 9:Extremely wide	Slightly narrow:NiF8, intermediate:NCo310
22	Bud wing size	5 stalks	Observation	1:Extremely narrow 2:Very narrow 3:Narrow 4:Slightly narrow 5:Intermediate 6:Slightly wide 7:Wide 8:Very wide 9:Extremely wide	Intermediate:NiF8, slightly wide:NCo310
23	Number of nodes with aerial roots	5 stalks	Measurement	Nodes/stalk (round to the 1st decimal place)	Measure nodes above ground
24	Arrowing	Block	Measurement	date	Record the date of the first full arrowing

Plant		Sugarcane		440	Secondary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Resistance to sugarcane mosaic virus	Block	Obs.&Measr.	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		% = (stalks with the symptom/investigated stalks) x 100, classified by the % from May - Aug. Low:NCo310, high:NiF8
2	Smut disease resistance	Block	Obs.&Measr.	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		% = (stalks with the symptom/investigated stalks) x 100, classified by the % and result of the artificial inoculation from Oct.- Dec. Extremely low:NCo310, high:NiF8
3	Pokkah boeg disease resistance	Block	Obs.&Measr.	1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high		% = (stalks with the symptom/investigated stalks) x 100, classified by the % during Jul.- Sep.
4	Leaf scorch disease resistance	Block	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		Classified by the observation of leaf blade from Oct.- Dec. intermediate:NCo310, high:NiF8
5	Yellow spot disease resistance	Block	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		Classified by the observation of symptom on the leaf blade from Jun.- Oct. Low:NCo310, high:NiF8
6	Rust disease resistance	Block	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		Classified by the observation of symptom on the leaf blade from Jul.- Nov. High:NCo310
7	Yellow rust disease resistance	Block	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		Classified by the observation of symptom on the leaf blade from Jul.- Nov. Low:NCo310, high:NiF8
8	Stalk breakage by wind	Block	Measurement	% (round to the 1st decimal place)		% = (broken stalks/investigated stalks) x 100, just after passage of a typhoon
9	Drought tolerance	Block	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 growth damage and dried leaves by drought. High:NCo310

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1	Leaf scald disease resistance	Block	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		Classified by the observation of leaf blade from May - Jul. High:NC0310
2	Borer damage to stalks	Block	Measurement	% (round to the 1st decimal place)		% = (damaged stalks/investigated stalks) x 100, in July
3	Lodging	Block	Observation	0:None 1:Extremely little 2:Very little 3:Little 4:Slightly little 5:Intermediate 6:Some 7:Much 8:Very much 9:Extremely much		None:less than 10%, little:25%, intermediate:50%, much:75%, extremely much:100% lodging. Before harvest time
4	Frost tolerance	Block	Observation	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Low: all the leaves and growing points dead; slightly low: only spindles are surviving; intermediate: half of leaves dead; slightly high: red stripe appears on leaves; high: almost no observed damage. Observe 1 week after frost.
5	Growth crack	10 stalks	Measurement	% (round to the 1st decimal place)		Measure after striping and removing top (+ 5th node) at ripening stage. % = (number of internodes with growth crack/number of internodes investigated)
6	Ratoon stunting disease resistance	Block	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		Low:Ni9, high:NiF8

Plant		Sugarcane		440	Tertiary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Cane yield	Block	Measurement	Kg/a (round to the 1st decimal place)		Measure the weight of millable stalks
2	Brix	10 stalks	Measurement	% (round to the 1st decimal place)		Estimated by the milled juice by a Refractometer at ripening stage
3	Polarization	10 stalks	Measurement	% (round to the 1st decimal place)		Estimated the milled juice by Horne's method at ripening
4	Purity (apparent purity)	10 stalks	Calculation	% (round to the 1st decimal place)		% =(polarization/brix) x 100 at ripening stage
5	Fiber	10 stalks	Measurement	% (round to the 1st decimal place)		% =(dried bagasse weight x fresh bagasse weight)/(sample bagasse weight x millable stalk weight)
6	Maturity	Block	Measurement	1:Extremely early 2:Very early 3:Early 4:Slightly early 5:Intermediate 6:Slightly late 7:Late 8:Very late 9:Extremely late		Measure brix or polarization from Nov.- May (bimonthly). Early:NiF8, slightly late:NCo310
7	Yield component type	Block	Observation	1:Stalk number type 3:Semi-stalk number type 5:Intermediate type 7:Semi-stalk weight type 9:Stalk weight type		Judge from stalk diameter and stalk number at ripening stage. Semi-stalk number type:NCo310, semi-stalk weight type:NiF3

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No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Regional adaptability	Block	Others	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High	Judge from yield performance and brix, wide:NCo310