

| Plant | | Japanese bunching onion | | 449 | Primary essential character | |
|-------|-------------------------------|-------------------------|-------------|---|-----------------------------|--|
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 1 | Plant type | 30 plants | Observation | 1:Extremely erect 3:Erect 5:Intermediate 7:Spreading 9:Extremely spreading | | Angle between leaf blades in harvest time |
| 2 | Leaf blade color | 10 plants | Observation | 1:Extremely light 3:Light 5:Intermediate 7:Dark 9:Extremely dark | | Leaf blade color in harvest time |
| 3 | Degree of leaf waxiness | 10 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Amount of leaf waxiness in harvest time |
| 4 | Leaf blade length | 10 plants | Measurement | cm (integer) | | Leaf blade length of the longest leaf |
| 5 | Number of pseudostems | 10 plants | Measurement | Pseudostems (round to the 1st decimal place) | | Number of externally-observable pseudostems per plant |
| 6 | Red color of pseudostem | 10 plants | Observation | 0:Colorless 1:Extremely light 3:Light 5:Intermediate 7:Dark 9:Extremely dark | | Red color of pseudostem in harvest time |
| 7 | Tightness of leaf sheath neck | 10 plants | Observation | 1:Extremely loose 3:Loose 5:Intermediate 7:Tight 9:Extremely tight | | Tightness of leaf sheath neck in harvest time |
| 8 | Tightness of leaf sheath | 10 plants | Measurement | 1:Extremely loose 3:Loose 5:Intermediate 7:Tight 9:Extremely tight | | Tightness of leaf sheath in harvest time |
| 9 | Pseudostem length | 10 plants | Measurement | cm (integer) | | Leaf sheath length of the outermost leaf after preparation |

| Plant | | Japanese bunching onion | | 449 | Primary optional character | |
|-------|---|-------------------------|-------------|--|----------------------------|---|
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 1 | Pigmentation of pseudostem (seedling stage) | 10 plants | Observation | 0:Colorless 5:Light 9:Dark | | Anthocyanin pigmentation at seedling stage |
| 2 | Degree of leaf bending | 30 plants | Observation | 1:Extremely low 3:Low 5:Intermediate 7:High 9:Extremely high | | Observe stand plants after a strong wind blow |
| 3 | Number of leaves | 10 plants | Measurement | Leaves (round to the 1st decimal place) | | Number of externally-observable leaves of the thickest pseudostem |
| 4 | Width of flattened leaf blade | 10 plants | Measurement | mm (integer) | | Maximum width of the longest leaf blade. Flatten the cylindrical leaf blade to measure. |
| 5 | Interval between leaf blade bases | 10 plants | Measurement | mm (integer) | | Distance between the leaf blade base of outermost leaf after preparation and that of the next |
| 6 | Shape in cross section of leaf blade bases | 10 plants | Observation | 3:Circle 5:Ellipse 7:Long ellipse | | Shape in cross section of leaf blade bases in harvest time |
| 7 | Angle of gathering of leaf sheath | 10 plants | Observation | 3:Obtuse 5:Intermediate 7:Acute | | Angle of top edge of leaf sheath to level line |
| 8 | Diameter of pseudostem at the middle | 10 plants | Measurement | mm (integer) | | Diameter of pseudostem after preparation |
| 9 | Diameter of pseudostem at the base | 10 plants | Measurement | mm (integer) | | Maximum diameter of pseudostem around its base |
| 10 | Internal tillering rate | 30 plants | Measurement | % (integer) | | Percentage of pseudostems with internal tillers. Observe the cross-cutting of pseudostem at the middle. |
| 11 | Number of leaves composing a pseudostem | 10 plants | Measurement | Leaves (round to the 1st decimal place) | | Observe the cross-cutting of pseudostem at the middle |

| Plant | | Japanese bunching onion | | 449 | Primary optional character | |
|-------|---|-------------------------|-------------|--|----------------------------|---|
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 12 | Number of pseudostems(in blanching culture) | 10 plants | Measurement | Pseudostems (round to the 1st decimal place) | | Number of externally-observable pseudostems per plant |
| 13 | Pseudostem length(in blanching culture) | 10 plants | Measurement | cm (integer) | | Leaf sheath length of the outermost leaf after preparation |
| 14 | Diameter of pseudostem at the middle(in blanching culture) | 10 plants | Measurement | mm (integer) | | Diameter of pseudostem after preparation |
| 15 | Internal tillering rate(in blanching culture) | 50 plants | Measurement | % (integer) | | Percentage of pseudostems with internal tillers. Observe the cross-cutting of pseudostem at the middle. |
| 16 | Number of leaves composing a pseudostem(in blanching culture) | 10 plants | Measurement | Leaves (round to the 1st decimal place) | | Observe the cross-cutting of pseudostem at the middle |
| 17 | Scape length | 10 plants | Measurement | cm (integer) | | Scape length in flowering time |
| 18 | Number of floret | 10 plants | Measurement | Florets (round to the 1st decimal place) | | Number of florets per umbel |
| 19 | Flower stalk length | 30 florets | Measurement | mm (round to the 1st decimal place) | | Flower stalk length in flowering time |
| 20 | Seed weight | 1000 seeds | Measurement | mg (round to the 1st decimal place) | | Weight of one dried seed |

| Plant | | Japanese bunching onion | | 449 | Secondary essential character | |
|-------|-----------------------------|-------------------------|-------------|--|-------------------------------|---|
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 1 | Rust resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 2 | Purple blotch resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 3 | Bolting time | 50 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 | | Base on the date when 50% of plants have bolted |
| 4 | Start of flowering time | 50 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 | | Base on the date when 50% of plants have started flowering |
| 5 | End of flowering time | 50 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 | | Base on the date when 50% of plants have completed flowering |

| Plant | | Japanese bunching onion | | 449 | Secondary optional character | |
|-------|---------------------------------|-------------------------|-------------|--|------------------------------|---|
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 1 | Phytophthora blight resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 2 | Downy mildew resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 3 | Yellow dwarf resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 4 | Basal rot resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 5 | Botrytis leaf blight resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 6 | Bacterial soft rot resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 7 | Onion thrips resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 8 | Stone leek leafminer resistance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Natural infection(In artificial inoculation, use 20 plants) |
| 9 | Heat tolerance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Degree of heat tolerance in growing condition |
| 10 | Drought tolerance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Degree of drought tolerance in growing condition |
| 11 | Moisture tolerance | 50 plants | Observation | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Degree of moisture tolerance in growing condition |
| 12 | Growth under low temperature | 50 plants | Observation | 0:Winter dormant 1:Extremely low 3:Low 5:Intermediate 7:High 9:Extremely high | | Degree of growth under low temperature in growing condition |

| Plant | | Japanese bunching onion | | 449 | Secondary optional character | |
|-------|-------------------|-------------------------|-------------|---|------------------------------|--|
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 13 | Wintering ability | 50 plants | Observation | 1:Extremely low 3:Low 5:Intermediate 7:High 9:Extremely high | | Degree of wintering ability in growing condition |

| Plant | Japanese bunching onion | | | 449 | Tertiary essential character | |
|-------|-------------------------|----------------|-------------|--------------------------|------------------------------|---------------------------------------|
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 1 | Foliage weight | 10 plants | Measurement | g (integer) | | Fresh foliage weight per plant |
| 2 | Pseudostem weight | 10 plants | Measurement | g (integer) | | Fresh weight of pseudostems per plant |

| Plant | | Japanese bunching onion | | 449 | Tertiary optional character | |
|-------|--|-------------------------|-------------|---|-----------------------------|---|
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 1 | Leaf blade hardness | 10 plants | Sensory | 1:Extremely soft 3:Soft 5:Intermediate 7:Hard 9:Extremely hard | | Leaf blade hardness by feeling with the hand |
| 2 | Pseudostem firmness(in blanching culture) | 10 plants | Sensory | 1:Extremely soft 3:Soft 5:Intermediate 7:Hard 9:Extremely hard | | Pseudostem firmness by feeling with the hand |
| 3 | Foliage weight(in blanching culture) | 10 plants | Measurement | g (integer) | | Fresh foliage weight per plant |
| 4 | Pseudostem weight(in blanching culture) | 10 plants | Measurement | g (integer) | | Fresh weight of pseudostems per plant |
| 5 | Dry matter ratio of pseudostem(in blanching culture) | 10 plants | Measurement | % (integer) | | 100 x dry weight / fresh weight |
| 6 | Pseudostem pungency(in blanching culture) | 5 plants | Sensory | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Sensory evaluation by fresh eating |
| 7 | Sugar content of pseudostem(in blanching culture) | 5 plants | Measurement | % (round to the 1st decimal place) | | Brix of the tissue sample sliced off at the middle of pseudostem |
| 8 | Pyruvic acid production of pseudostem (in blanching culture) | 5 plants | Measurement | mg/g (round to the 1st decimal place) | | Pyruvic acid production of the tissue sample sliced off at the middle of pseudostem |
| 9 | Glucose content of pseudostem (in blanching culture) | 5 plants | Measurement | mg/g (round to the 1st decimal place) | | Glucose content of the tissue sample sliced off at the middle of pseudostem |
| 10 | Sucrose content of pseudostem (in blanching culture) | 5 plants | Measurement | mg/g (round to the 1st decimal place) | | Sucrose content of the tissue sample sliced off at the middle of pseudostem |

| | | | | | | |
|-------|---|-------------------------|-------------|---|-----------------------------|--|
| Plant | | Japanese bunching onion | | 449 | Tertiary optional character | |
| No | Characters | No. of samples | Methods | Rank or measurement unit | | Remarks |
| 11 | Fructose content of pseudostem (in blanching culture) | 5 plants | Measurement | mg/g (round to the 1st decimal place) | | Fructose content of the tissue sample sliced off at the middle of pseudostem |
| 12 | Dry matter ratio of foliage | 10 plants | Measurement | % (integer) | | 100 x dry weight / fresh weight |
| 13 | Leaf blade pungency | 5 plants | Sensory | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Sensory evaluation by fresh eating |
| 14 | Pseudostem pungency | 5 plants | Sensory | 1:Extremely weak 3:Weak 5:Intermediate 7:Strong 9:Extremely strong | | Sensory evaluation by fresh eating |
| 15 | Sugar content of pseudostem | 5 plants | Measurement | % (round to the 1st decimal place) | | Brix of the tissue sample sliced off at the middle of pseudostem |