| Plant | Amaranth | 519 | Primary essential character |
|---|---|---|---|

| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
|---|---|---|---|---|---|
| 1 | Plant: time of beginning of emergence of inflorescence | Block | Observation | date | Observed at inflorescence emergence stage: 50 % of plants ear over 1 cm |
| 2 | Plant: time of flowering | Block | Observation | date | Observed at flowering stage: 40 to 50 % of plants begin to bloom (checked by the existence of anther and pollen) |
| 3 | Plant: time of maturity | Block | Observation | date | Observed at mature stage: 50 % of plants produce mature seeds |
| 4 | Stem: color | Block | Observation | 3:Green 4:Yellow 5:Pink 6:Red 7:Purple | Observed at full flowering stage |
| 5 | Leaf blade: color | Block | Observation | 1:Light green 3:Medium green 5:Dark green 7:Red | Observed at full flowering stage |
| 6 | Inflorescence: color | Block | Observation | 3:Yellow 4:Green 5:Pink 6:Red 7:Purple 8:Brown | Observed at full flowering stage |
| 7 | Inflorescence: type | Block | Observation | 1:Amarantiform 9:Glomerulate | Observed at full flowering stage |
| 8 | Inflorescence: shape | Block | Observation | 1:Drooping 3:Spreading 5:Upright 7:Other | Observed at mature stage |
| 9 | Inflorescence: length | 10 plants | Measurement | cm (integer) | Inflorescence length from top to flag leaf in main stem at mature stage |
| 10 | Plant: length | 10 plants | Measurement | cm (integer) | Measured length of plant from base to top at mature stage |
| 11 | Seed: color | Block | Observation | 1:White 3:Yellow 5:Pink 7:Brown 9:Black | Observed at mature stage |

| Plant | Amaranth | 519 | Primary optional character |
|---|---|---|---|

| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
|---|---|---|---|---|---|
| 1 | Cotyledon: intensity of reddish coloration | Block | Observation | 1:Absent 3:Weak 5:Medium 7:Strong | Observed within 3 to 6 days after emergence |
| 2 | Hypocotyl: intensity of reddish coloration | Block | Observation | 1:Absent 3:Weak 5:Medium 7:Strong | Observed within 3 to 6 days after emergence |
| 3 | Plant: time of harvest for vegetable | Block | Observation | date | (Leafy amaranth) Observed at harvest stage: plant height reaches approximately 25 cm |
| 4 | Young leaf: length | 10 plants | Measurement | cm (round to the 1st decimal place) | Measured on the young plant with 6 to 8 leaves |
| 5 | Young leaf: width | 10 plants | Measurement | cm (round to the 1st decimal place) | Measured on the young plant with 6 to 8 leaves |
| 6 | Young leaf: ratio length/width | 10 plants | Measurement | 3:Small 5:Medium 7:Large | Measured on the young plant with 6 to 8 leaves |
| 7 | Young leaf: position of widest point | Block | Observation | 3:In middle towards base 5:Moderately towards base 7:Strongly towards base | Observed on the young plant with 6 to 8 leaves |
| 8 | Young leaf: prominence of veins | Block | Observation | 3:Weak 5:Medium 7:Strong | Observed on the young plant with 6 to 8 leaves |
| 9 | Young leaf: main color on upper side | Block | Observation | 1:Light green 3:Medium green 5:Dark green 7:Red 9:Purple | Observed on the young plant with 6 to 8 leaves |
| 10 | Young leaf: distribution of secondary color on upper side | Block | Observation | 3:Colored basal area 5:Central blotch 7:Colored margin and veins | Observed on the young plant with 6 to 8 leaves |
| 11 | Young leaf: color on the lower side | Block | Observation | 3:Green 5:Red 7:Purple | Observed on the young plant with 6 to 8 leaves |
| 12 | Leaf: margin | Block | Observation | 1:Entire 9:Sinuate | Observed at vegetative stage, just before inflorescence emergence |

| Plant | Amaranth | 519 | Primary optional character |
|---|---|---|---|

| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
|---|---|---|---|---|---|
| 13 | Stem: color of stripes | Block | Observation | 1:Absent 3:Light green 5:Red 7:Purple | Observed at full flowering stage |
| 14 | Petiole: intensity of reddish coloration | Block | Observation | 1:Absent 3:Weak 5:Medium 7:Strong | Observed at full flowering stage |
| 15 | Leaf blade: presence of blotch | Block | Observation | 1:Absent 9:Present | Observed at full flowering stage |
| 16 | Leaf blade: color of blotch | Block | Observation | 1:Green 3:Silvery 5:Red 7:Purple | Observed at full flowering stage |
| 17 | Leaf blade: distribution of blotch | Block | Observation | 1:Chimaera 2:Vein 3:Center 4:Margin 5:V-shaped 6:Entire 7:Amorphous | Observed at full flowering stage |
| 18 | Inflorescence: attitude | Block | Observation | 1:Upright 3:Weakly recurved 5:Moderately recurved 7:Strongly recurved | Observed at full flowering stage |
| 19 | Inflorescence: length of bract relative to utricle | Block | Observation | 3:Shorter 5:Equal 7:Longer | Observed at mature stage |
| 20 | Plant: number of branches per main stem | 10 plants | Measurement | Number per plant (round to the 1st decimal place) | Number of first lateral branches (over 30 cm length with leaves and flowers) on mein stem. Measured at mature stage |
| 21 | Stem: size | 10 plants | Measurement | mm (round to the 1st decimal place) | Measured size of stem on the base at mature stage |
| 22 | Seed: shape | Block | Observation | 1:Ellipsoid 9:Discoid | Observed on dry seeds at harvest time |
| 23 | Seed: perisperm type | 10 grains | Measurement | 1:Non-glutinous 9:Glutinous | Observed by reaction to potassium iodide solution |
| 24 | Seed: weight per 1000 seeds | Block | Measurement | g (round to the 1st decimal place) | Calculated by measuring the 100 seeds at harvest time |

| Plant | Amaranth | 519 | Secondary essential character |
|---|---|---|---|

| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
|---|---|---|---|---|---|
| 1 | Lodging tolerance | Block | Observation | 3:Weak 5:Medium 7:Strong | Observed at mature stage |
| 2 | Insect resistance | Block | Observation | 3:Weak 5:Medium 7:Strong | Observed through a cultivation period (record insect name as far as you know) |
| 3 | Mosaic disease resistance | Block | Observation | 3:Weak 5:Medium 7:Strong | Extent of mosaic-like symptoms on leaf surface. Observed through a period of time |
| 4 | Bacterial wilt resistance | Block | Observation | 3:Weak 5:Medium 7:Strong | Observed at early growth stage |
| 5 | Stem rot resistance | Block | Observation | 3:Weak 5:Medium 7:Strong | Observed until vegetative stage, just before inflorescence emergence |

| Plant | Amaranth | 519 | Secondary optional character |
|---|---|---|---|

| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
|---|---|---|---|---|---|
| 1 | Cold resistance for vegetable | Block | Observation | 3:Weak 5:Medium 7:Strong | (Leafy amaranth) Cold torelance is evaluated by seed germination and seedling growth tests under low temparature |
| 2 | Hot resistance for vegetable | Block | Observation | 3:Weak 5:Medium 7:Strong | (Leafy amaranth) Heat torelance is evaluated by seedling growth test under high temparature |
| 3 | Viviparity | Block | Observation | 3:High 5:Medium 7:Low | Observed at harvest time |

| Plant | Amaranth | 519 | Tertiary essential character |
|---|---|---|---|

| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
|---|---|---|---|---|---|
| 1 | Seed yield | Block | Measurement | kg/a (round to the 1st decimal place) | Weight of natural dried seed per unit ares (1 are) |
| 2 | Glossiness of grain | Block | Observation | 1:Glossy 9:Powdery | Observed by transillumination survey method (Glossy: transmissive, Powdery: non-transmissive) |

| Plant | Amaranth | 519 | Tertiary optional character |
|---|---|---|---|

| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
|---|---|---|---|---|---|
| 1 | GBSSI genotype | | Measurement | 1:Functional 9:Non-functional | Determined by genotyping |
| 2 | Amylose content in grains | | Measurement | % (round to the 1st decimal place) | Measured by autoanalyzer, etc. |
| 3 | Ascorbic acid content | | Measurement | mg/100g f.w. (round to the 1st decimal place) | Measured by High-performance liquid chromatography (HPLC), reflectometer (such as RQflex), etc. |
| 4 | Oxalic acid content | | Measurement | mg/g d.w. (round to the 1st decimal place) | Measured by High-performance liquid chromatography (HPLC) , etc. |
| 5 | Rutin content | | Measurement | mg/g d.w. (round to the 1st decimal place) | Measured by High-performance liquid chromatography (HPLC) , etc. |
| *6 | Sucrose content | Block | Measurement | mg/g d.w. (round to the 1st decimal place) | Measured by High-performance liquid chromatography (HPLC) , etc. |
| *7 | Glucose content | Block | Measurement | mg/g d.w. (round to the 1st decimal place) | Measured by High-performance liquid chromatography (HPLC) , etc. |
| *8 | Fructose content | Block | Measurement | mg/g d.w. (round to the 1st decimal place) | Measured by High-performance liquid chromatography (HPLC) , etc. |
| *9 | Total polyphenol content | Block | Measurement | mg/g d.w. (round to the 1st decimal place) | Measured by Folin-Ciocalteu method, etc |
| *10 | Antioxidant activity | Block | Measurement | mol Trolox/g (round to the 1st decimal place) | Measured by DPPH free radical scavenging assay, etc |

* Unlisted item in Genebank Descriptor