| Plant | Squash 1 |  |  | 08003) Primary essential character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 1 | Seed length | 10 seeds | Measurement | mm (round to the 1st decimal place) | Length of dried ripe seeds |
| 2 | Color of seed coat | 10 seeds | Observation | $0:$ No seed coat $1:$ White $2: M i l k y$ white or gray white 3:Light yellow 4:Light yellowish brown 5:Yellowish brown 9:Black | Color of seed coat of dried ripe seeds |
| 3 | Size of cotyledon | 5 plants | Measurement | cm (round to the 1st decimal place) | Width of fully expanded cotyledons |
| 4 | Plant type | 5 plants | Observation | 1:Dwarf 2:Intermediate 3:Climbing | At the time of the first fruit setting or 3 months after sowing |
| 5 | Shape of stem | 5 plants | Observation | 3:Round 5:Intermediate 7:Pentagonal | Shape of cross section at the 5 th-10th nodes on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 6 | Leaf size | 5 plants | Observation | ```1:Extremely small 2:Very small 3:Small 4:Slightly small 5:Intermediate 6:Slightly large 7:Large 8:Very large 9:Extremely large``` | Size of the 6th-10th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 7 | Depth of sinus of leaves | 5 plants | Observation | ```0:Absent 1:Extremely shallow 2:Very shallow 3:Shallow 4:Slightly shallow 5:Intermediate 6:Slightly deep 7:Deep 8:Very deep 9:Extremely deep``` | Depth of sinus of the 6 th -10 th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 8 | Leaf spots | 5 plants | Observation | 0 :Absent 1:Almost none 2:Extremely few 3:Very few 4:Few 5:Intermediate 6:Some 7:Many 8:Very many 9:Extremely numerous | Quantity of spots or checks of the 6th-10th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 9 | Length of petiole | 5 plants | Observation | 1:Extremely short 2:Very short 3:Short <br> 4:Slightly short 5:Intermediate 6:Slightly <br> long 7:Long 8:Very long 9:Extremely long | Length of petiole of the 6th-10th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 10 | First pistillate flower bearing node | 5 plants | Observation | ```0:Not bearing 1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high``` | Average order of node which bears the first female or bisexual flower |


| Plant S | Squash |  |  | Primary essential character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 11 | Sex type | 5 plants | Observation | ```1:Androecious 2:Monoecious 3:Hermaphroditic and monoecious 4:Andromonoecious 5:Gynomonoecious 6:Gynoecious 7:Hermaphroditic 8:Male sterile 9:Female sterile``` |  |
| 12 | Fruit shape (1) | 5 plants, 5 fruits | Observation | $\begin{aligned} & \text { 1:Globular 2:Flattened 3:Disk 4:Cylindrical } \\ & 5: \text { Oval } 6: \text { Heart shaped 7:Pyriform 8:Dumbbell } \\ & \text { 9:Other } \end{aligned}$ | Shape of fully ripe fruit. If none of these ranks apply, choose '9' and select from 'No.13'. |
| 13 | Fruit shape (2) | 5 plants, 5 fruits | Observation | ```1:Elongate 2:Elongate and curved 3:Crooked neck 4:Turbinate superior 5:Turbinate inferior 6:Crowned 7:Other``` | Shape of fully ripe fruit |
| 14 | Fruit pleat | 5 plants, 5 fruits | Observation | 0:Absent 1:Extremely shallow $2:$ Very shallow 3:Shallow 4:Slightly shallow $5:$ Intermediate 6:Slightly deep 7:Deep 8:Very deep 9:Extremely deep | Fruit pleat of fully ripe fruit |
| 15 | Predominant fruit skin color | 5 plants, 5 fruits | Observation | $\begin{array}{llll}\text { 1:White } & \text { 2:Gray } 3: \text { Yellow } & \text { 4:Gray } & \text { green } \\ \text { 5:Green } & \text { 6:Orange } & 7: \text { Red } & \text { 8:Brown } \\ \text { 9:Black }\end{array}$ | Predominant color is the color covering the largest surface area of the fully ripe fruit. In case two colors have the same area, the lighter color is considered to be the predominant one. |
| 16 | Secondary fruit skin color | 5 plants, 5 fruits | Observation | ```0:Absent 1:White 2:Gray 3:Yellow 4:Gray green 5:Green 6:Orange 7:Red 8:Brown 9:Black``` | Secondary color is the color covering the second largest area of the fully ripe fruit. In case two colors have the same area, the darker is considered to be the secondary one. |
| 17 | Fruit weight | 5 plants, 5 fruits | Measurement | kg (round to the 1st decimal place) | Weight of fully ripe fruit |
| 18 | Flesh color | 5 plants, 5 fruits | Observation | $\begin{aligned} & \text { 1:White 2:White green 3:Light yellow } \\ & 4: \text { Yellow } 5: \text { Deep yellow 6:Orange yellow } \\ & 7: \text { Orange } 8: \text { Peach 9:Other } \end{aligned}$ | Flesh color of fully ripe fruit |
| 19 | Shape of peduncle | 5 plants, 5 fruits | Observation | 3:Round 5:Medium 7:Pentagonal-octagonal | Shape of peduncle of fully ripe fruit |


|  | Plant | Squash |  |  | 08003) | Primary essential character |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters |  | No. of samples | Methods |  | Rank or measurement unit | Remarks |
| 20 | Character of base of peduncle |  | 5 plants, 5 fruits | Observation | 1:Soft <br> out <br> coned <br> cylind | lindric 2:Soft coned 3:Soft fanned ightly hard cylindric 5:Slightly hard Slightly hard fanned out 7:Hard 8:Hard coned 9:Hard fanned out | Hardness and shape of the part where the peduncle attached to fruit |


| Plant S | Squash |  |  | 08003) Primary optional character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 1 | Condition of seed coat | 10 seeds | Observation | ```1:Extremely smooth 2:Very smooth 3:Smooth 4:Slightly smooth 5:Intermediate 6:Slightly rough 7:Rough 8:Very rough 9:Extremely rough``` | Condition of seed coat of dried mature seed |
| 2 | Shape of funiclus trace of seed | 10 seeds | Observation | 1:Rounded 2:Polygonal 3:Slant $4:$ Level $5:$ Pointed | Shape of funiculus trace of dried ripe seed |
| 3 | Thickness of seed margin | 10 seeds | Observation | ```0:Not thickened 1:Extremely thin 2:Very thin 3:Thin 4:Slightly thin 5:Intermediate 6:Slightly thick 7:Thick 8:Very thick 9:Extremely thick``` | Thickness of margin of dried ripe seed |
| 4 | Condition of seed margin | 10 seeds | Observation | 3:Smooth 4:Slightly smooth 5:Intermediate 6:Slightly serrated 7:Serrated | Condition of margin of dried mature seed |
| 5 | Color of seed margin | 10 seeds | Observation | 1:Gray white 2:Gray yellow 3:Gray yellowish brown 4:Yellowish brown 5:Light brown 6:Silver green 7:Silver blue 8:Black 9:Other | Color of margin of dried ripe seed |
| 6 | Shape of cotyledon | 5 plants | Observation | 1:Rounded 3:Short oval 5:Oval 7:Long oval | Observe at the time when cotyledon fully expanded |
| 7 | Color of cotyledon | 5 plants | Observation | 3:Light green 4:Slightly light green 5:Green 6:Slightly dark green 7:Dark green | Observe at the time when cotyledon fully expanded |
| 8 | Length of hypocotyl | 5 plants | Measurement | cm (round to the 1st decimal place) | Measure at the time when cotyledon fully expanded |
| 9 | Diameter of hypocotyl | 5 plants | Measurement | mm (round to the 1st decimal place) | Measure at the time when cotyledon fully expanded |
| 10 | Plant vigor | 5 plants | 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 | Evaluate at the time of the first set or 3 months after sowing |


| Plant | Squash |  | 10 | 08003) Primary optional character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 11 | Softness of stem | 5 plants | Observation | ```1:Extremely soft 2:Very soft 3:Soft 4:Slightly soft 5:Intermediate 6:Slightly hard 7:Hard 8:Very hard 9:Extremely hard``` | Softness of stem at 5th-10th nodes which sets the first fruit or on the strongest stem at 3 months after sowing |
| 12 | Thickness of stem | 5 plants | Observation | ```1:Extremely thin 2:Very thin 3:Thin 4:Slightly thin 5:Intermediate 6:Slightly thick 7:Thick 8:Very thick 9:Extremely thick``` | Diameter of stem at 5 th-10th nodes which sets the first fruit or on the strongest stem at 3 months after sowing |
| 13 | Internode length | 5 plants | Measurement | cm (round to the 1st decimal place) | Average length of internode at 5th-10th node on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 14 | Branching habit | 5 plants | 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 | Evaluate based on the number of branches at the time of the first fruit set or 3 months after sowing |
| 15 | Number of tendrils | 5 plants | Observation | $\begin{aligned} & 0: \text { Absent 1:Almost none } 2: \text { Extremely few } \\ & 3: \text { Very few } 4: \text { Few } 5: \text { Intermediate } 6: \text { Some } \\ & 7: \text { Many } 8: \text { Very many } 9: \text { Extremely numerous } \end{aligned}$ | Observe at the time of first fruit setting |
| 16 | Leaf shape | 5 plants | Observation | 1:Ovoid 2:Slightly ovoid 3:Round 4:Slightly round 5:Intermediate 6:Slightly angular 7:Angular | Shape of the 6th-10th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 17 | Condition of leaf margin | 5 plants | Observation | 3:Smooth 4:Slightly smooth 5:Intermediate 6:Slightly serrated 7:Serrated | Condition of margin of the 6th-10th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 18 | Spot color of leaf | 5 plants | Observation | 0:Absent 1:Light green 2:Silver 3:Light green and silver 4:Other | Spot color of the 6th-10th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 19 | Texture of pubescence on leaf | 5 plants | Observation | ```0:Absent 1:Soft hairy 2:Hard hairy 3:Hard``` | Texture of pubescence of the 6th-10th leaves on stem which sets the first fruit or on the strongest stem at 3 months sowing |


| Plant S | Squash 10 |  |  | 08003) Primary optional character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 20 | Density of pubescence on leaf | 5 plants | Observation | ```0:Absent 1:Extremely thin 2:Very thin 3:Thin 4:Slightly thin 5:Intermediate 6:Slightly dense 7:Dense 8:Very dense 9:Extremely dense``` | Density of pubescence of the 6th-10th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 21 | Leaf color | 5 plants | Observation | 3:Light green 4:Slightly light green 5:Green 6:Slightly dark green 7:Dark green | Color of the 6th-10th leaf on stem which sets the first fruit or on the strongest stem at 3 months after sowing |
| 22 | Color of flower | 5 plants | Observation | 1:White 2:Yellow 3:Orange 4:Other | Flower color at the time of the first fruit set or 3 months after sowing |
| 23 | Time to first female flowering | 5 plants | Observation | ```0:No female flower 1:Extremely short 2:Very short 3:Short 4:Slightly short 5:Intermediate 6:Slightly long 7:Long 8:Very long 9:Extremely long``` | Average days to the first female or bisexual flowering |
| 24 | Time to first male flowering | 5 plants | Observation | ```0:No male flower 1:Extremely short 2:Very short 3:Short 4:Slightly short 5:Intermediate 6:Slightly long 7:Long 8:Very long 9:Extremely long``` | Average days to the first male flowering |
| 25 | Fruit rib shape | 5 plants, 5 fruits | Observation | 0:Absent 1:Round 2:Intermediate 3:V-shaped | Fully ripe fruits |
| 26 | Shape of stem-end of fruit | 5 plants, 5 fruits | Observation | ```1:Depressed 2:Slightly depressed 3:Flattened 4:Slightly rounded 5:Rounded 6:Slightly pointed 7:Pointed``` | Fully ripe fruits |
| 27 | Shape of blossom-end of fruit | 5 plants, 5 fruits | Observation | ```1:Depressed 2:Slightly depressed 3:Flattened 4:Slightly rounded 5:Rounded 6:Slightly pointed 7:Pointed``` | Fully ripe fruits |
| 28 | Shade of predominant fruit skin color | 5 plants, 5 fruits | Observation | 3:Light 4:Slightly light 5:Intermediate 6:Slightly dark 7:Dark | Fully ripe fruits |
| 29 | Design produced by secondary fruit skin color | 5 plants, 5 fruits | Observation | 0 :No secondary color 1:Speckled 2:Spotted 3:Striped 4:Streaked 5:Bisectional 6:Other | Fully ripe fruits |


| Plant | Squash |  |  | 08003) Primary optional character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 30 | Fruit skin texture | 5 plants, 5 fruits | Observation | ```1:Smooth 2:Grainy 3:Finely wrinkled 4:Shallowly wavy 5:Netted 6:With warts 7:With spines 8:Knoted 9:Other``` | Fully ripe fruits |
| 31 | Glossiness of fruit skin | 5 plants, 5 fruits | Observation | ```0:Absent 3:Weak 4:Slightly weak 5:Intermediate 6:Slightly prominent 7:Prominent``` | Fully ripe fruits |
| 32 | Bloom on fruit skin | 5 plants, 5 fruits | Observation | ```0:Absent 1:Extremely weak 2:Very weak 3:Weak 4:Slightly weak 5:Intermediate 6:Slightly prominent 7:Prominent 8:Very prominent 9:Extremely prominent``` |  |
| 33 | Size of blossom end | 5 plants, 5 fruits | Observation |  | Fully ripe fruits |
| 34 | Height of fruit | 5 plants, 5 fruits | Measurement | cm (round to the 1st decimal place) | Fully ripe fruits |
| 35 | Width of fruit | 5 plants, 5 fruits | Measurement | cm (round to the 1st decimal place) | Fully ripe fruits |
| 36 | Hardness of fruit skin | 5 plants, 5 fruits | Observation |  | ```Fully ripe fruits. Soft:easily marked by fingernail, intermediate:difficult to mark with fingernail, hard:impossible to mark with fingernail``` |
| 37 | Flesh thickness | 5 plants, 5 fruits | Observation |  | Evaluate based on the flesh thickness index (flesh thickness/radius of fruit $x$ 100), $1:<$ $15,2: 16-22,3: 23-29,4: 30-36,5: 37-43,6: 44-$ $50,7: 51-57,8: 58-64,9:>65$ |
| 38 | Brightness of flesh color | 5 plants, 5 fruits | Observation | 3:Bright 4:Slightly bright 5:Intermediate 6:Slightly dark 7:Dark | Fully ripe fruit |
| 39 | Length of peduncle | 5 plants, 5 fruits | Measurement | cm (round to the 1st decimal place) | Fully ripe fruit |


|  | Plant $\quad$ Squash | Squash |  | 08003) Primary optional character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 40 | Thickness of peduncle | 5 plants, 5 fruits | Observation | 1:Extremely thin $2:$ Very thin $3:$ Thin 4:Slightly thin 5:Intermediate 6:Slightly thick 7:Thick 8:Very thick 9:Extremely thick | Fully ripe fruit. The part of the center of peduncle |


| Plant | Squash |  |  | 08003) Secondary essential character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 1 | Resistance to fusarium wilt | 5 plants | 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 | Artificial inoculation for young seedling or natural infection in field |
| 2 | Resistance to powdery <br> mildew | 5 plants | 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 | Artificial inoculation for young seedling or natural infection in field |
| 3 | Resistance to virus diseases | 5 plants | 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 | Artificial inoculation for young seedling or natural infection in field |
| 4 | Resistance to <br> Phytophthora rot | 5 plants | 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 | Artificial inoculation for young seedling or natural infection in field |
| 5 | Earliness | 5 plants | Observation | 1:Extremely early $\quad 2:$ Very early $\quad 3:$ Early 4:Slightly early 5:Intermediate $6:$ Slightly late 7:Late 8:Very late 9:Extremely late | Date of harvesting half the plants investivated |


| Plant | Squash |  |  | Secondary optional character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 1 | Resistance to bacterial spot | 5 plants | 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``` | Artificial inoculation for young seedling or natural infection in field |
| 2 | Resistance to insects | 5 plants | 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``` | Artificial inoculation for young seedling or natural infection in field |
| 3 | Resistance to nematodes | 5 plants | 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 | Artificial inoculation for young seedling or natural infection in field |
| 4 | Tolerance to low temperature | 5 plants | 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 | Seedling or field test |
| 5 | Tolerance to high temperature | 5 plants | 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``` | Seedling or field test |
| 6 | Excess water tolerance | 5 plants | 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 | Seedling or field test |


| Plant | Squash |  |  | 08003) Tertiary essential character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 1 | Degree of continuous female flowering | 5 plants | 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 at the end of harvesting time, exclude dwarf species |
| 2 | Days to harvesting | 5 plants, 5 fruits | Observation | $\begin{aligned} & \text { 1:Extremely short } 2: \text { Very short } 3: \text { Short } \\ & 4: \text { Slightly short } 5: \text { Intermediate } 6: \text { Slightly } \\ & \text { long 7:Long 8:Very long 9:Extremely long } \end{aligned}$ | Average number of days from flowering to harvest |
| 3 | ```Predominant fruit skin color at maturity for table use``` | 5 plants, 5 fruits | Observation | $\begin{array}{llll}\text { 1:White } & 2: G r a y & 3: \text { Yellow } & 4: \text { Gray } \\ \text { 5reen } \\ \text { 5:Green } & \text { 6:Orange } & 7 \text { :Red } & 8: \text { Brown } \\ 9: \text { Black }\end{array}$ | Fruit at maturity for table use |
| 4 | Shade of predominant fruit skin color at maturity for table use | 5 plants, 5 fruits | Observation | 3:Light 4:Slightly light 5:Intermediate 6:Slightly dark 7:Dark | Fruit at maturity for table use |
| 5 | Bitterness of flesh | 5 plants, 5 fruits | Sensory | ```0:Absent 1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high``` | Bitterness of flesh at full or table use maturity |


| Plant S | Squash |  |  | 08003) Tertiary optional character |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Characters | No. of samples | Methods | Rank or measurement unit | Remarks |
| 1 | Flesh texture | 5 plants, 5 fruits | Sensory | 1:Fibrous 2:Spongy 3:Mealy $\quad$ 4:Intermediate 5:Sticky $\quad$ 9:Other | Flesh texture at full or table use maturity |
| 2 | Firmness of flesh | 5 plants, 5 fruits | Sensory | $\begin{aligned} & \text { 1:Extremely soft } 2: \text { Very soft } 3: \text { Soft } \\ & 4: \text { Slightly soft } 5: \text { Intermediate } 6: \text { Slightly } \\ & \text { hard } 7: \text { Hard } 8: \text { Very hard } 9: \text { Extremely hard } \end{aligned}$ | Hardness of flesh at full or table use maturity |
| 3 | Eating quality | 5 plants, 5 fruits | Sensory | 1:Extremely low 2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high 9:Extremely high | Eating quality at full or table use maturity |
| 4 | Dry matter percentage of flesh | 5 plants, 5 fruits | 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 | Dry matter percentage of flesh at full or table use maturity. Low:approximately 10-15\%, intermediate:20-25\%, high:30-35\% |
| 5 | Keeping quality | 5 plants, 5 fruits | 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 | Keeping quality of fruit at table use maturity. Low: approximately 1 week. Intermediate:1 month, high:3 months |
| 6 | Soluble solid content | 5 plants, 5 fruits | Measurement | \% (round to the 1st decimal place) | Brix value of flesh |

