|  |  |
| --- | --- |
| **Trait** | **Code numbers of 19 qualitative trait** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| Leaf sheath color LSC | Green  | Red  | Purple | — | — | — | — | — | — |
| Leaf color of seedling LCS | Green  | Chartreuse | Violet green | — | — | — | — | — | — |
| Bristle color BC | Yellow |  Green  | Purple | — | — | — | — | — | — |
| Bristle length BL | Exremly short  | Short  | Long  | Exremly long  | — | — | — | — | — |
| Protecting glume color PGC | Chartreuse |  Green  | Purple | — | — | — | — | — | — |
| Stigma color STC | White  | Yellow | Purple | — | — | — | — | — | — |
| Anther color AC | White  | Yellow | Orange  | — | — | — | — | — | — |
| Seed color SC | White  | Yellow | Orange  | Red  | Cyan | Brown | Black |   |  |
| Kernel color KC | White  | Buff | Yellow | Pewter | — | — | — | — | — |
| Seedling leaf attitude SLA | Upthrow | Semi-upthrow | Flat  | Downthrow | — | — | — | — | — |
| Blooming leaf attitude BLA | Upthrow | Semi-upthrow | Flat  | Downthrow | — | — | — | — | — |
| Tiller habit TH | Weak  | Medium | Strong | — | — | — | — | — | — |
| Branch habit BH | Weak  | Medium | Strong | — | — | — | — | — | — |
| Peduncle shape PS | Upright | Semi-bent | Bent |  Bow down | — | — | — | — | — |
| Ear compactness EC | Loose  | Medium | Tight |  | — | — | — | — | — |
| Spike density SD | Sparse  | Semi-sparse | Semi-compact | Compact | — | — | — | — | — |
| Ear shape ES | Chicken beak  | Spindle | Cylindrical | Stick | Duckbill  | Cat claw | Buddha hand |  |  |
| Shattering habit SH | Weak  | Medium | Strong | Extremly strong | — | — | — | — | — |
| Lodging resistance LR | Extremly strong | — | Strong | — | Medium | — | Weak  | — | Extremly weak  |

**Table S1: Phenotype code numbers of 19 qualitative trait**