**Supplementary table 3**: Interaction effect of seed type, date of sowing and year on seed weight per spike, HUE, and Seed yield of chia

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Seed type | Date of sowing\* | Seed weight per spike (g) | Heat Use efficiency(kg ha−1 ℃ day−1) | Seed yield (kg/ha) |
| 2021-22 | 2022-23 | MeanS×D | 2021-22 | 2022-23 | MeanS×D | 2021-22 | 2022-23 | MeanS×D |
| W | S1‒1st Jul | 0.527h-k | 0.604ef | 0.565e | 0.28r | 0.32o-q | 0.30m | 617.0rs | 694.2m-q | 655.6fg |
| W | S2‒15th Jul | 0.548h | 0.617ef | 0.582de | 0.33opq | 0.37mn | 0.35k | 688.2n-q | 753.3g-k | 720.7cd |
| W | S3‒1st Aug | 0.56gh | 0.612ef | 0.586de | 0.42kl | 0.42jk | 0.42i | 794.7d-h | 780.4f-j | 787.5b |
| W | S4‒15th Aug | 0.544hi | 0.628de | 0.586de | 0.47gh | 0.45h-j | 0.46gh | 811.6d-e | 746.5i-j | 779.1b |
| W | S5‒1st Sept | 0.544hi | 0.526h-k | 0.535f | 0.53de | 0.45hijk | 0.49f | 812.5d-f | 677.0o-q | 744.8c |
| W | S6‒15th Sept | 0.49k-n | 0.501j-m | 0.495g | 0.58bc | 0.44i-k | 0.51c-e | 814.9c-f | 589.3st | 702.1de |
| W | S7‒1st Oct | 0.497j-m | 0.466m-p | 0.481gh | 0.60ab | 0.43jk | 0.52cd | 793.3d-h | 549.3tu | 671.3ef |
| W | S8‒15th Oct | 0.435o-q | 0.456n-q | 0.445ij | 0.62a | 0.37mn | 0.49ef | 750.9h-k | 439.0vw | 594.9h |
| W | S9‒1st Nov | 0.428p-r | 0.431p-r | 0.429jk | 0.60ab | 0.31q | 0.46gh | 696.1m-p | 366.4yzA | 531.2i |
| W | S10‒15th Nov | 0.42qr | 0.393rs | 0.406k | 0.49fg | 0.26r | 0.38j | 547.9tu | 305.4BC | 426.6j |
| W | S11‒1st Dec | 0.358st | 0.345tu | 0.352l | 0.32pq | 0.23st | 0.27n | 410.4wx | 309.0BC | 359.7k |
| W | S12‒15th Dec | 0.315uv | 0.293v | 0.304m | 0.22t | 0.20t | 0.21p | 338.0z | 311.9BC | 325.0l |
| W | S13‒1st Jan | 0.24w | 0.211w | 0.225n | 0.08wx | 0.12v | 0.10r | 155.8E | 226.2D | 191.0n |
| W | S14‒15th Jan  | 0.145x | 0.139x | 0.142o | 0.04yzA | 0.06xy | 0.05s | 91.0FG | 115.9EF | 103.5o |
| W | S15‒1st Feb | 0.136x | 0.138x | 0.137o | 0.02A | 0.02zA | 0.02t | 38.0h-k | 52.1GH | 45.1p |
| B | S1‒1st Jul | 0.711ab | 0.701b | 0.706ab | 0.34opq | 0.34n-p | 0.34kl | 742.4i-l | 740.8j-l | 741.6c |
| B | S2‒15th Jul | 0.727ab | 0.719ab | 0.723a | 0.38m | 0.39lm | 0.39j | 785.9e-i | 795.3d-h | 790.6b |
| B | S3‒1st Aug | 0.742a | 0.705ab | 0.724a | 0.44ijk | 0.45h-k | 0.44h | 835.8a-d | 833.3a-d | 834.5a |
| B | S4‒15th Aug | 0.693bc | 0.740a | 0.717a | 0.50fg | 0.50e-g | 0.50d-f | 858.2a-c | 826.5b-e | 842.4a |
| B | S5‒1st Sept | 0.658cd | 0.720ab | 0.689b | 0.56c | 0.53de | 0.55ab | 874.0a | 808.5d-f | 841.2a |
| B | S6‒15th Sept | 0.629de | 0.692bc | 0.661c | 0.60ab | 0.52ef | 0.56a | 860.7ab | 698.9l-p | 779.8b |
| B | S7‒1st Oct | 0.622d-f | 0.588fg | 0.605d | 0.56cd | 0.52ef | 0.54b | 722.9k-n | 663.0pq | 693.0de |
| B | S8‒15th Oct | 0.533h-j | 0.626d-f | 0.579de | 0.60ab | 0.46hi | 0.53bc | 720.3k-o | 544.1u | 632.2g |
| B | S9‒1st Nov | 0.506i-l | 0.498j-m | 0.502g | 0.63a | 0.39lm | 0.51c-e | 734.2k-m | 461.1v | 597.6h |
| B | S10‒15th Nov | 0.47l-o | 0.463m-p | 0.467hi | 0.58bc | 0.35no | 0.46g | 651.6qr | 405.1w-y | 528.3i |
| B | S11‒1st Dec | 0.422qr | 0.438o-q | 0.43jk | 0.37mn | 0.28r | 0.32l | 481.8v | 374.0x-z | 427.9j |
| B | S12‒15th Dec | 0.37st | 0.438o-q | 0.404k | 0.26rs | 0.21t | 0.23o | 390.2xy | 324.0A-C | 357.1k |
| B | S13‒1st Jan | 0.249w | 0.245w | 0.247n | 0.11vw | 0.15u | 0.13q | 206.3D | 286.5C | 246.4m |
| B | S14‒15th Jan  | 0.165x | 0.163x | 0.164o | 0.05yz | 0.05yz | 0.05s | 107.1F | 107.3F | 107.2o |
| B | S15‒1st Feb | 0.161x | 0.149x | 0.155o | 0.02A | 0.02zA | 0.02t | 45.3H | 54.9GH | 50.1p |