**Table S1:** A two-way ANOVA for the effect of Cr, eCO2 treatments and their interaction on the different measured parameters in rice grains (numbers represent F values; ns = non-significant; \*=P < 0.05; \*\*P < 0.01; \*\*\*=P < 0.001).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Giza 181** | | |  | **Sakha 106** | | |
| **Cr** | **eCO2** | **Cr x eCO2** |  | **Cr** | **eCO2** | **Cr x eCO2** |
| Growth/yield |  |  |  |  |  |  |  |
| Cr ug g DW | 433.679\*\*\* | 29.889\*\*\* | 7.531\*\* |  | 702.66\*\*\* | 120.47\*\*\* | 33.73\*\*\* |
| Seed weight | 65.69\*\*\* | 12.37\*\* | 4.26\* |  | 92.987\*\*\* | 71.541\*\* | 5.087\* |
| DW Plant | 80.283\*\*\* | 63.625\*\*\* | 7.065\*\* |  | 41.579\*\*\* | 72.824\*\*\* | 7.541\*\* |
| Grains per plant | 42.5\*\*\* | 7.177\* | 3.941ns |  | 67.218\*\*\* | 71.884\* | 4.031\* |
| Seed size | 35.901\*\*\* | 5.079\* | 3.935ns |  | 53.289\*\*\* | 44.68\* | 5.108\* |
| Protein |  |  |  |  |  |  |  |
| Glutelin | 19.503\*\*\* | 20.228\*\*\* | 0.012ns |  | 22.165\*\*\* | 23.751\*\*\* | 0.017ns |
| Globulin | 25.078\*\*\* | 28.722\*\*\* | 0.339ns |  | 21.548\*\*\* | 19.336\*\*\* | 0.129ns |
| Albumin | 1.873ns | 0.974ns | 0.307ns |  | 3.095\* | 7.088\* | 0.432ns |
| Photosynthesis related paramters |  |  |  |  |  |  |  |
| Photosynthesis | 51.53\*\*\* | 1.986ns | 4.276\* |  | 51.904\*\*\* | 36.958\*\*\* | 4.7905\* |
| Chl b | 14.77\*\*\* | 27.11\*\*\* | 0.54ns |  | 88.047\*\*\* | 2.802ns | 9.232\*\* |
| Chl a | 2.527ns | 0.75ns | 0.848ns |  | 13.82\*\*\* | 29.02\*\*\* | 13.96\*\*\* |
| Chla + Chlb | 59.221\*\*\* | 0.288ns | 3.633ns |  | 22.081\*\*\* | 35.493\*\*\* | 7.886\*\* |
| Caretenoids | 56.831\*\*\* | 28.375\*\*\* | 1.953ns |  | 23.938\*\*\* | 9.614\*\*\* | 2.649ns |
| Antioxidants |  |  |  |  |  |  |  |
| DPPH | 10.594\*\* | 9.605\*\* | 0.892ns |  | 36.086\*\*\* | 8.367\*\* | 0.411ns |
| ABTS | 16.472\*\*\* | 9.682\*\* | 3.023ns |  | 62.515\*\*\* | 31.992\*\*\* | 0.471ns |
| Flavenoids | 0.739ns | 9.28\* | 0.184ns |  | 0.089ns | 0.281ns | 1.408ns |
| Alpha toc | 11.102\*\*\* | 7.071\* | 4.131\* |  | 0.989ns | 0.057ns | 0.396ns |
| Beta toc | 2.091ns | 1.1ns | 1.153ns |  | 1.421ns | 0.034ns | 0.287ns |
| Gamma Toc | 5.687\*\* | 9.009\* | 0.99ns |  | 2.83ns | 2.259\* | 0.412ns |
| Mineral |  |  |  |  |  |  |  |
| P | 6.934\*\* | 2.232ns | 6.211\* |  | 14.039\*\*\* | 20.162\*\*\* | 3.082\* |
| S | 0.586ns | 11.269\*\* | 2.581ns |  | 26.241\*\*\* | 16.463\*\*\* | 1.934ns |
| K | 17.534\*\*\* | 12.192\*\* | 0.369ns |  | 86.66\*\*\* | 34.67\*\*\* | 16.15\*\*\* |
| Mg | 1.244# | 26.32\*\*\* | 1.845ns |  | 11.135\*\*\* | 40.075\*\*\* | 3.721ns |
| Ca | 20.23\*\*\* | 18.89\*\* | 1.37ns |  | 10.048\*\* | 21.46\*\*\* | 0.153ns |
| Na | 0.083ns | 3.473ns | 0.366ns |  | 0.02ns | 1.519ns | 0.358ns |
| Zn | 2.658ns | 19.583\*\*\* | 4.678\* |  | 35.113\*\*\* | 37.843\*\*\* | 6.417\*\* |
| Fe | 1.449ns | 30.008\*\*\* | 2.041ns |  | 13.056\*\*\* | 44.796\*\*\* | 3.658ns |
| Cu | 5.071\* | 11.12\*\* | 1.805ns |  | 42.411\*\*\* | 3.783\* | 1.822ns |
| Mn | 5.071\* | 11.12\*\* | 1.805ns |  | 42.411\*\*\* | 3.783\* | 1.822ns |
| Sugars |  |  |  |  |  |  |  |
| Reducing sugars | 12.015\*\*\* | 0.425ns | 8.508\*\* |  | 45.712\*\*\* | 4.993ns | 6.291\*\* |
| Non reducing sugars | 6.588\*\* | 49.64\*\*\* | 6.597\* |  | 0.457ns | 4.18\*\*\* | 4.472\* |
| Total soluble sugars | 15.588\*\*\* | 9.268\*\* | 14.933\*\*\* | | 16.432\*\*\* | 1.705\*\* | 1.48ns |
| Starch | 7.185\*\* | 0.074ns | 2.154ns |  | 6.277\*\* | 0.057ns | 0.323ns |
| Amylase | 0.843ns | 0.154ns | 6.448\*\* |  | 24.454\*\*\* | 4.468\* | 4.494\* |
| Starch synthase | 4.699\* | 7.221\* | 4.011\* |  | 9.205\*\* | 12.602\*\* | 3.991ns |
| Succinate | 8.51\*\* | 6.37\* | 2.435ns |  | 1.512ns | 0.042ns | 0.309ns |
| Malate | 2.372ns | 1.685ns | 0.978ns |  | 2.481ns | 0.034ns | 0.185ns |
| Citrate | 7.742\*\* | 6.824\* | 2.248ns |  | 1.79ns | 0.122ns | 0.327ns |
| Lactate | 8.119\*\* | 6.601\* | 2.34ns |  | 1.648ns | 0.077ns | 0.318ns |
| Transaconitic acid | 1.137ns | 4.639\* | 0.792ns |  | 1.137ns | 4.639ns | 0.005ns |
| Oxalate | 0.073ns | 12.687\*\* | 2.199ns |  | 4.728\* | 0.107ns | 1.256ns |
| Amino acids |  |  |  |  |  |  |  |
| Proline | 175.6\*\*\* | 392.42\*\*\* | 97.33\*\*\* |  | 28.818\*\*\* | 0.391ns | 0.923ns |
| Glycine | 2.369ns | 21.936\*\*\* | 7.661\*\* |  | 7.312\*\* | 34.524\*\*\* | 35.45ns |
| Serine | 35.95\*\*\* | 41.31\*\*\* | 10.34\*\* |  | 64.664\*\*\* | 1.741ns | 61.53ns |
| Arginine | 22.843\*\*\* | 73.18\*\*\* | 8.168\*\* |  | 35.88\*\*\* | 46.68\*\*\* | 16.54\*\*\* |
| Ornithine | 133.484\*\*\* | 1.177ns | 183.091\*\*\* | | 8.085\*\*\* | 3.243ns | 0.003ns |
| Glutamine | 15.727\*\*\* | 3.812ns | 3.439\* |  | 23.487\*\*\* | 0.032ns | 11.6\*\* |
| Glutamate | 4.192\* | 55.39\*\*\* | 6.835\*\* |  | 35.103\*\*\* | 0.602ns | 2.705ns |
| Aspartate | 33.86\*\*\* | 20.46\*\*\* | 34.19\*\*\* |  | 2.342ns | 0.457ns | 0.455ns |
| Cystine | 7.623\*\* | 1.772ns | 3.506ns |  | 3.567ns | 0.186ns | 13.59\*\*\* |
| Asparagine | 1.067ns | 2.467ns | 0.923ns |  | 99\*\*\* | 264\*\*\* | 60.58\*\*\* |
| Leucine | 38.848\*\*\* | 5.743\* | 5.743\* |  | 1.472ns | 2.427ns | 5.523\*\* |
| Lysine | 10.112\*\* | 5.772\* | 16.374\*\*\* | | 59.95\*\*\* | 763.92\*\*\* | 23.05\*\*\* |
| Histidine | 10.581\*\* | 5.402\* | 19.198\*\*\* | | 16.64\*\*\* | 343.58\*\*\* | 12.05\*\*\* |
| Alanine | 6.337\*\* | 3.183ns | 0ns |  | 0.226ns | 32.15\*\*\* | 2.493ns |
| Isoleucine | 6.545\*\* | 6.192\*\* | 0.126ns |  | 0.702ns | 0.034ns | 0.377ns |
| Methionine | 1.74ns | 0.081ns | 1.489ns |  | 3.735ns | 1.203ns | 0.451ns |
| Threonine | 10.358\*\* | 5.598\* | 17.802\*\*\* | | 38.261\*\*\* | 2.389ns | 0.294ns |
| Valine | 11.887\*\*\* | 7.87\* | 0.189ns |  | 25.73\*\*\* | 14.099\*\* | 5.327\* |
| Phenylalanine | 3.715ns | 2.706ns | 0.106ns |  | 22.648\*\*\* | 4.712ns | 12.24\*\* |
| Tyrosine | 2.977ns | 1.842ns | 2.825ns |  | 2.354ns | 1.384ns | 0.607ns |
| GS | 15.727\*\*\* | 3.812\*\*\* | 3.439ns |  | 23.487\*\*\* | 0.032ns | 11.6\*\*\* |
| GDH | 99.35\*\*\* | 73.86\*\*\* | 20.98\*\*\* |  | 1.533ns | 0.465ns | 4.81\* |
| Fatty acids |  |  |  |  |  |  |  |
| Dodecanoic (C12:0) | 1.137ns | 4.639\* | 0.792ns |  | 1.332ns | 0.23ns | 0.005ns |
| Tetradecanoic (C14:0) | 1.495ns | 38.613\*\*\* | 1.206ns |  | 5.848\*\* | 1.201ns | 3.555ns |
| Pentadecanoic (C15:0) | 1.061ns | 3.44ns | 1.841ns |  | 1.798ns | 0.139ns | 0.444ns |
| Hexadecanoic (C16:0) | 4.481\* | 8.886\*\* | 1.44ns |  | 2.128ns | 1.299ns | 0.302ns |
| Hexadecanoic (C16:1 | 1.879ns | 0.184ns | 0.9ns |  | 9.786\*\* | 26.587\*\*\* | 2.126ns |
| Hexadecadienoic (C16:2) | 1.879ns | 0.184ns | 0.9ns |  | 9.786\*\* | 26.587\*\*\* | 2.126ns |
| Hexadecatrienoic (C16:3) | 1.879ns | 0.184ns | 0.9ns |  | 9.786\*\* | 26.587\*\*\* | 2.126ns |
| Heptadecanoic (C17:0) | 3.581ns | 2.726ns | 0.527ns |  | 0.032ns | 0.062ns | 0.008ns |
| Octadecanoic (C18:0) | 3.603ns | 0.005ns | 1.305ns |  | 4.864\* | 14.728\*\* | 1.188ns |
| Octadecenoic (18:1) | 7.454\*\* | 0.174ns | 0.453ns |  | 1.419ns | 18.062\*\* | 0.503ns |
| Octadecatrienoic (C18:3) | 6.464\*\* | 0.101ns | 0.539ns |  | 5.299\* | 33.529\*\*\* | 0.204ns |
| Eicosanoic (C20:0) | 0.217ns | 8.777\*\* | 0.234ns |  | 0.579ns | 24.942\*\*\* | 1.172ns |
| Eicosadienoic (C20:2) | 0.228ns | 1.244ns | 3.122ns |  | 11.778\*\* | 10.846\*\*\* | 0.259ns |
| Docosanoic (C22:0) | 11.204\*\*\* | 13.224\*\* | 2.418ns |  | 0.37ns | 48.95\*\*\* | 0.042ns |
| Tetracosanoic (C24:0) | 4.472\* | 0.006ns | 1.053ns |  | 7.425\*\* | 0.339ns | 0.12ns |
| Tetracosenoic (C24:1) | 0.617ns | 8.324\* | 0.011ns |  | 11.26\*\*\* | 18.018\*\* | 1.704ns |
| Pentacosanoic (C25:0) | 4.158\* | 6.297\* | 6.247\*\* |  | 11.863\*\*\* | 0.202ns | 2.384ns |
| Hexacosanoic (26:0) | 2.092ns | 0.193ns | 6.89\*\* |  | 4.756\* | 4.8\* | 1.119ns |
| Total saturated FA | 6.548\*\* | 0.207ns | 0.459ns |  | 4.659\* | 4.361\* | 0.395ns |
| Total unsaturated FA | 6.548\*\* | 0.207ns | 0.498ns |  | 4.535\* | 32.004\*\*\* | 0.437ns |