

| <b>Source</b>         | <b>Df</b> | <b>Sum Sq</b> | <b>Mean Sq</b> | <b>F value</b> | <b>Pr(&gt;F)</b> | <b>Proportion</b> | <b>Accumulated</b> |
|-----------------------|-----------|---------------|----------------|----------------|------------------|-------------------|--------------------|
| <b>ENV</b>            | 2         | 68194         | 34097          | 147.43         | 6.19E-60         | NA                | NA                 |
| <b>REP(ENV)</b>       | 6         | 139557        | 23260          | 100.57         | 5.08E-109        | NA                | NA                 |
| <b>BLOCK(REP*ENV)</b> | 162       | 81240         | 501            | 2.17           | 4.49E-14         | NA                | NA                 |
| <b>GEN</b>            | 323       | 277957        | 861            | 3.72           | 1.39E-69         | NA                | NA                 |
| <b>GEN:ENV</b>        | 646       | 485286        | 751            | 3.25           | 5.04E-84         | NA                | NA                 |
| <b>PC1</b>            | 324       | 385781        | 1191           | 5.15           | 0.00E+00         | 79.3              | 79.3               |
| <b>PC2</b>            | 322       | 100731        | 313            | 1.35           | 1.00E-04         | 20.7              | 100                |
| <b>Residuals</b>      | 1764      | 407964        | 231            | NA             | NA               | NA                | NA                 |
| <b>Total</b>          | 3549      | 1946710       | 549            | NA             | NA               | NA                | NA                 |

**Supplementary Table 1.** AMMI analysis table. Two interactions principal component axis (IPCA) were fitted and significant at 5% probability error.