Supplemental data 1. SAS code for linear mixed model

```sas
proc mixed data=a covtest noclprint noitprint noinfo ;
  classes rep block site entry;
  model GY = site / solution ;
  random rep(site) block(rep site) entry entry*site / solution ;
  * To get like adjusted means for random genotypes;
     ODS listing exclude solutionF solutionR lsmeans fitstatistics ;
     ODS output solutionF = fix;
     ODS output solutionR = rand;
run;

data grandmn;
  set fix;
  mean = estimate;
  dummy = 1;
data effects;
  set rand;
  if effect = 'entry';
  reffect = estimate;
  dummy = 1;
data blups;
  merge grandmn effects;
  by dummy;
  blup = mean + reffect;
  keep parm mean reffect blup;
proc print data=blups;
run;
```