proc import out=work.scabiosa

datafile="C:\Users\hauge\Documents\Daten\Martin\_Andrzejak\dat\_sca\_new.xlsx"

DBMS = XLSX;

run;

data scabiosa;

set scabiosa;

log\_size = log(size);

run;

\*\*\* plant size as dependent variable;

\*\*\* untransformed data;

proc mixed covtest data=scabiosa;

by season;

class Season Climate Plot Pollination Ind\_ID;

model Size = Climate Pollination Climate\*Pollination /ddfm=contain residuals;

random Plot(Climate);

lsmeans Climate Pollination;

run;

\*\*\* plant size as dependent variable;

\*\*\* log-transformed data;

proc mixed covtest data=scabiosa;

by season;

class Season Climate Plot Pollination Ind\_ID;

model log\_size = Climate Pollination Climate\*Pollination /ddfm=contain residuals;

random Plot(Climate);

lsmeans Climate Pollination;

run;

\*\*\* viable seeds as dependent variable;

\*\*\* subplot error = Ind\_ID(Pollination\*Plot\*Climate);

\*\*\* without plant size as random covariate;

proc mixed covtest data=scabiosa;

class Season Climate Plot Pollination Ind\_ID;

model Viable\_seeds = Climate Pollination Climate\*Pollination

Season Season\*Climate Season\*Pollination Season\*Climate\*Pollination /ddfm=contain residuals;

random Plot(Climate) Ind\_ID(Pollination\*Plot\*Climate) Season\*Plot(Climate);

repeated Season / subject=Ind\_ID type=ar(1);

lsmeans Climate Pollination Season;

lsmeans Climate\*Pollination Climate\*Season / slice=Climate;

lsmeans Pollination\*Season / slice=Season;

run;

\*\*\* subplot error = Ind\_ID(Pollination\*Plot\*Climate);

\*\*\* with plant size as random covariate;

proc mixed covtest data=scabiosa;

class Season Climate Plot Pollination Ind\_ID;

model Viable\_seeds = Climate Pollination Climate\*Pollination

Season Season\*Climate Season\*Pollination Season\*Climate\*Pollination /ddfm=contain residuals;

random Size Plot(Climate) Ind\_ID(Pollination\*Plot\*Climate) Season\*Plot(Climate);

repeated Season / subject=Ind\_ID type=ar(1);

lsmeans Climate Pollination Season;

lsmeans Climate\*Pollination Climate\*Season / slice=Climate;

lsmeans Pollination\*Season / slice=Season;

run;