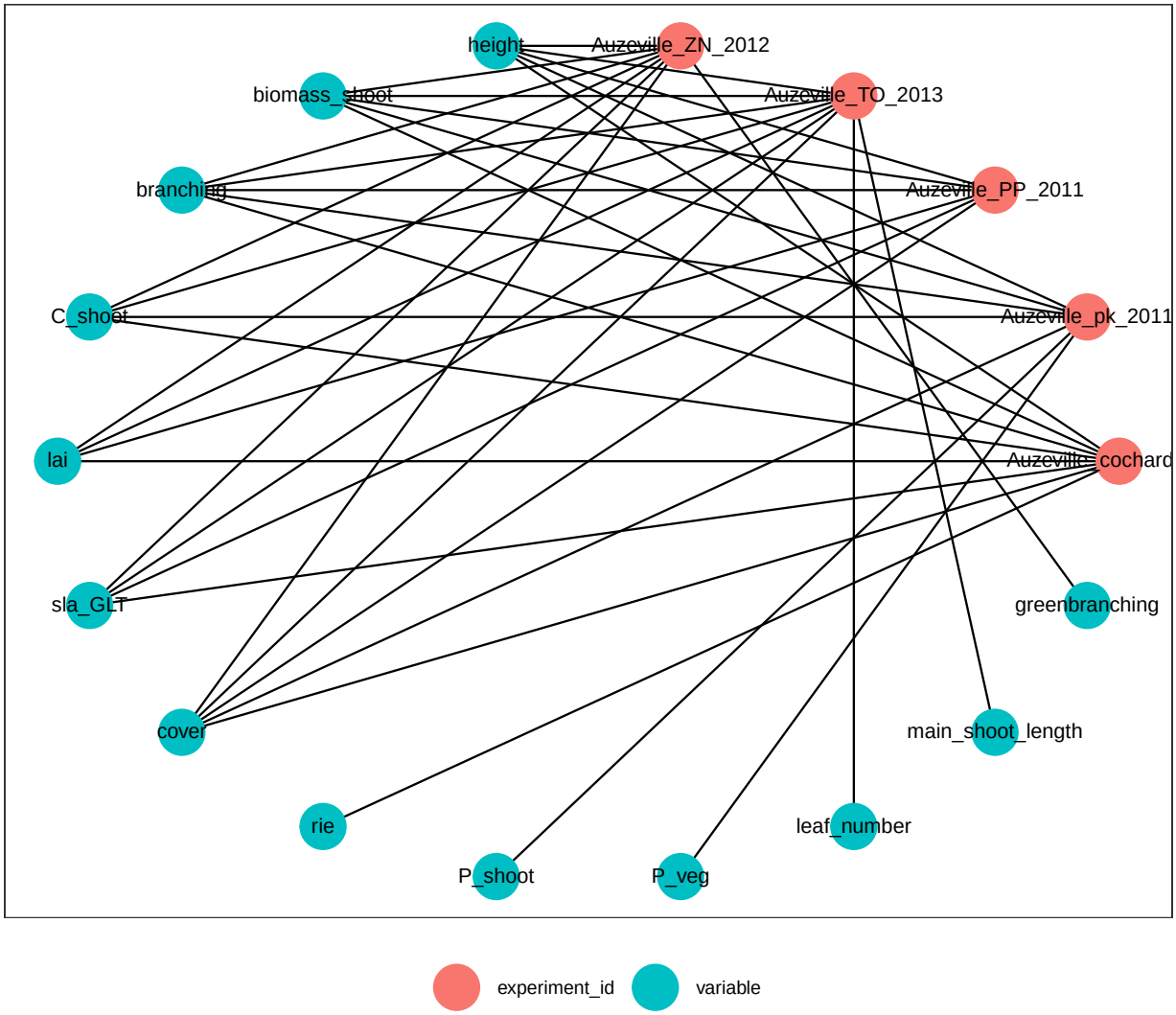
Explore modeling possibilities for the modeling paper

Set data of all experiments

Explore combinations of experiments and plant variables

Durum wheat / fababean

Here is the graph connecting the experimental units and the measured variables in experiments including durum wheat / fababean mixtures. Some variables are only measured once (leaf_number, P in shoot parts etc.).



If we compute all the kcliques within this graph, we get 3 kcliques with 4 experiments or more. We select the kclique with id 3 which contains 54 observations and 6 variables, and 4 out of 5 expeirments including durum

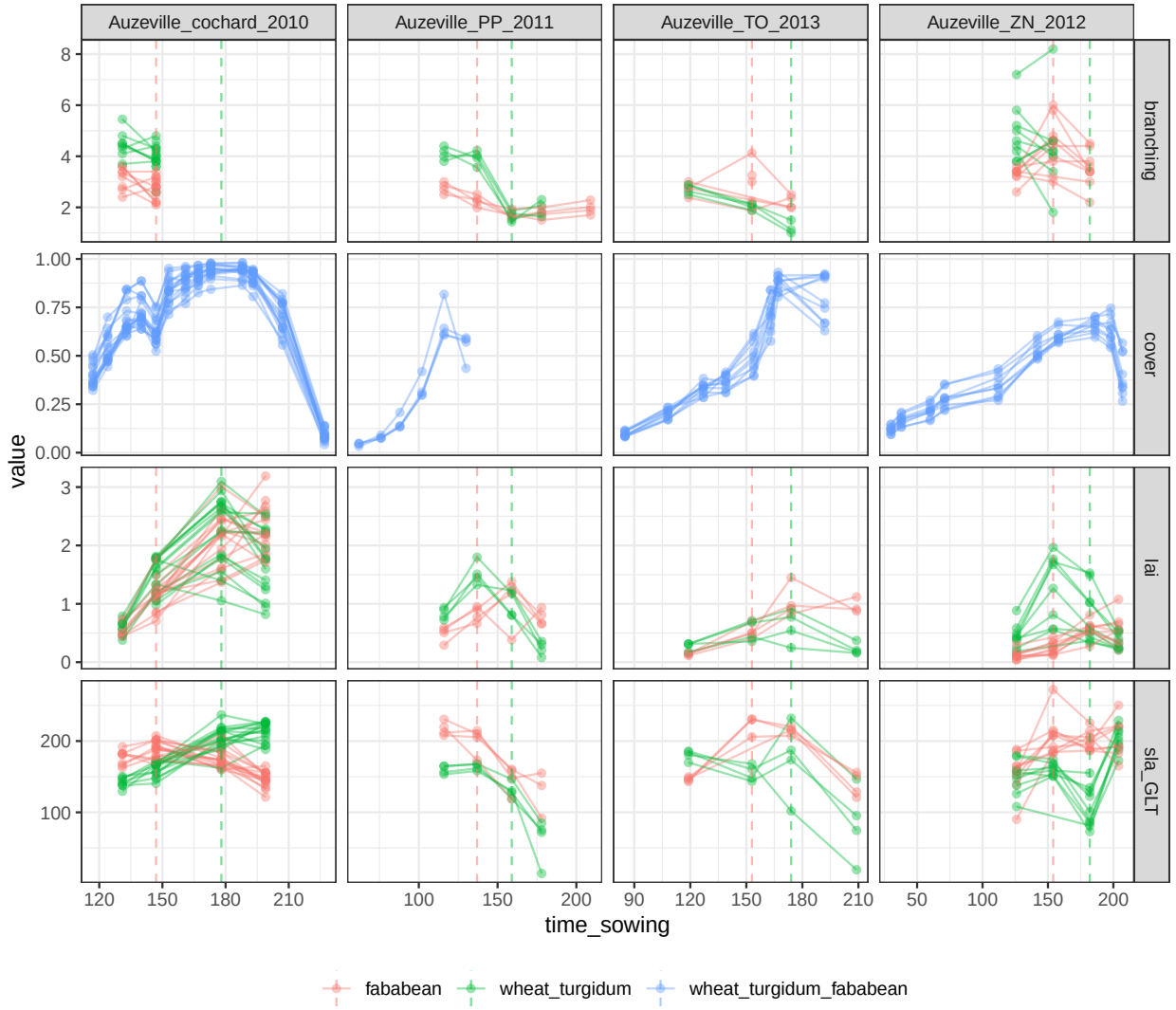
wheat and fababean:

- Shoot's biomass
- Branching
- Cover
- LAI
- Height
- Specific leaf area (green leaves)

kclique_id	n_experiments	n_variables	n_obs	variables
3	4	6	39	biomass_shoot_branching_cover_height_lai_sla_GLT
6	4	5	38	biomass_shoot_branching_C_shoot_cover_height
7	5	4	42	biomass_shoot_branching_cover_height

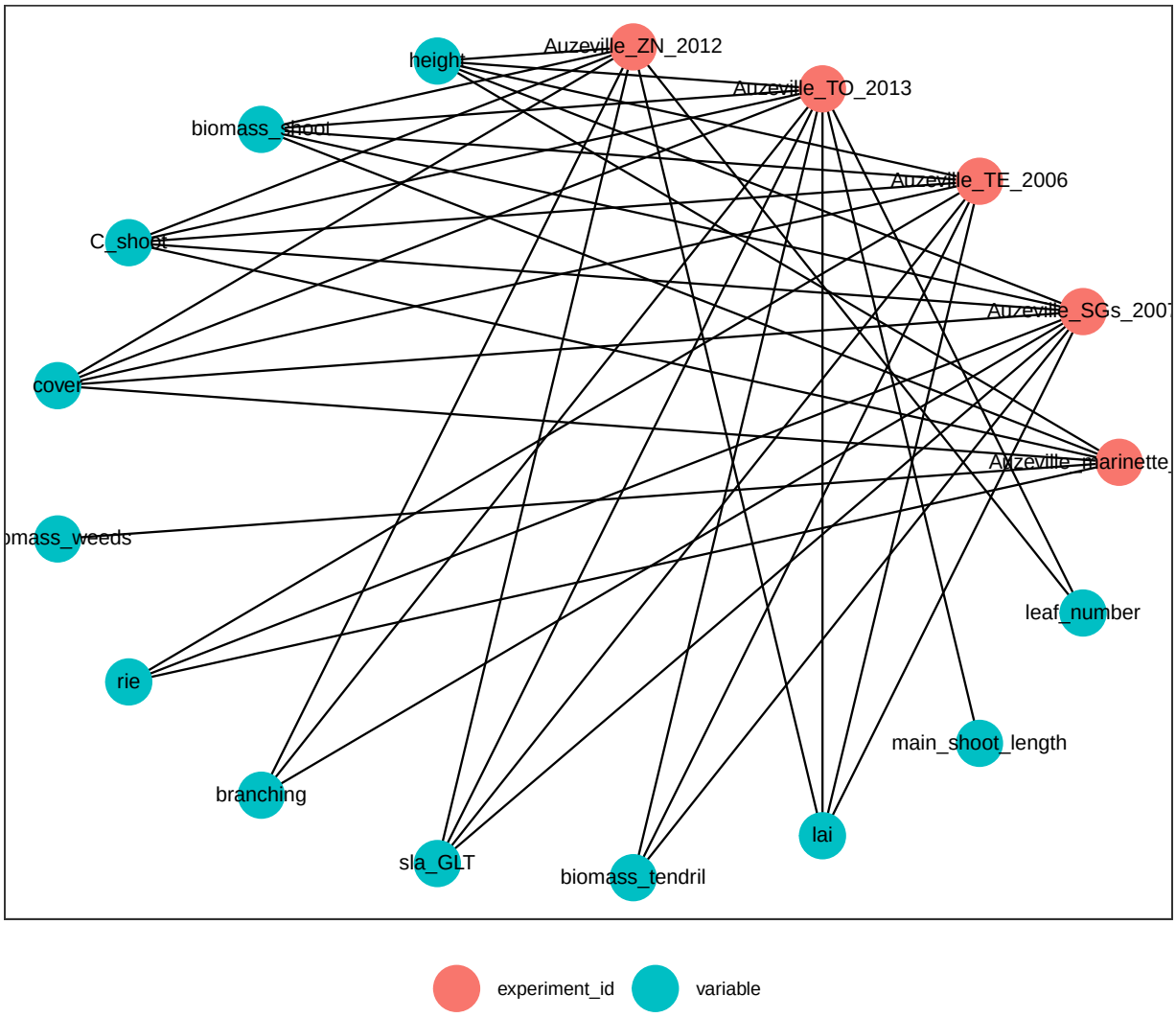
Explore data durum wheat / fababean

Here are the evolutions of each selected variables (except height and biomass, treated in other documents). Dashed lines are the flowering times.



Durum wheat / pea

Here is the graph connecting the experimental units and the measured variables in experiments including durum wheat / pea mixtures. Variables are mostly measured in 3 or 4 experiments.



We select the kclique with id 8 as it contains 6 variables and 47 observations, especially LAI.

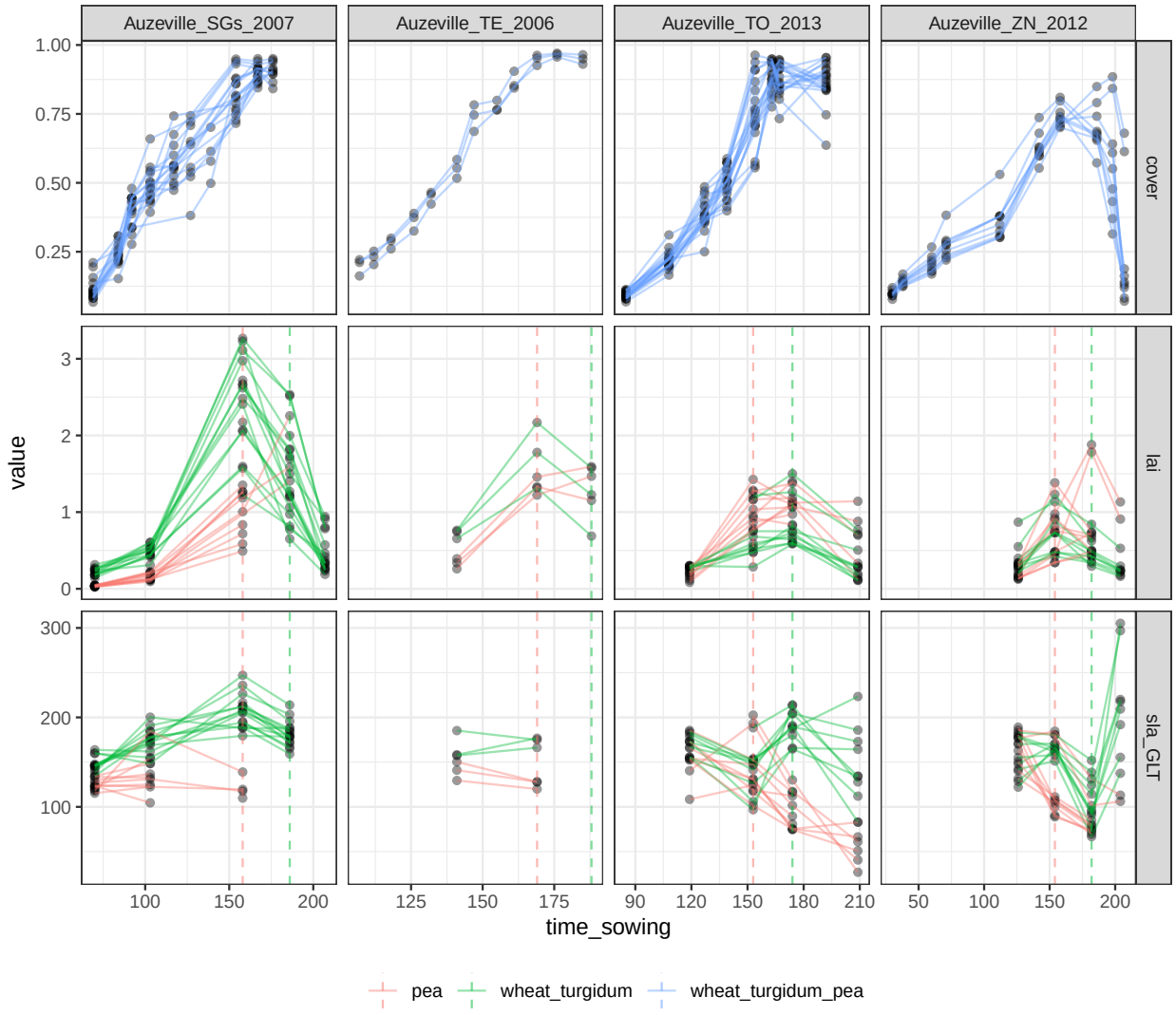
kclique_id	n_experiments	n_variables	n_obs	variables
8	4	6	47	biomass_shoot_C_shoot_cover_height_lai_sla_GLT
9	5	4	53	biomass_shoot_C_shoot_cover_height

Explore data durum wheat / pea

Here are the evolutions of each selected variables (except height and biomass, treated in other documents). Dashed lines are the flowering times.

variable	meaning
sla_GLT	specific leaf area (with tendrils or pods)

variable	meaning
lai	leaf area index



Extract meaningful information from the data

Specific leaf area index will be summarised by taking the maximal value during the crop cycle. Differences between species and IC-SC will be computed.

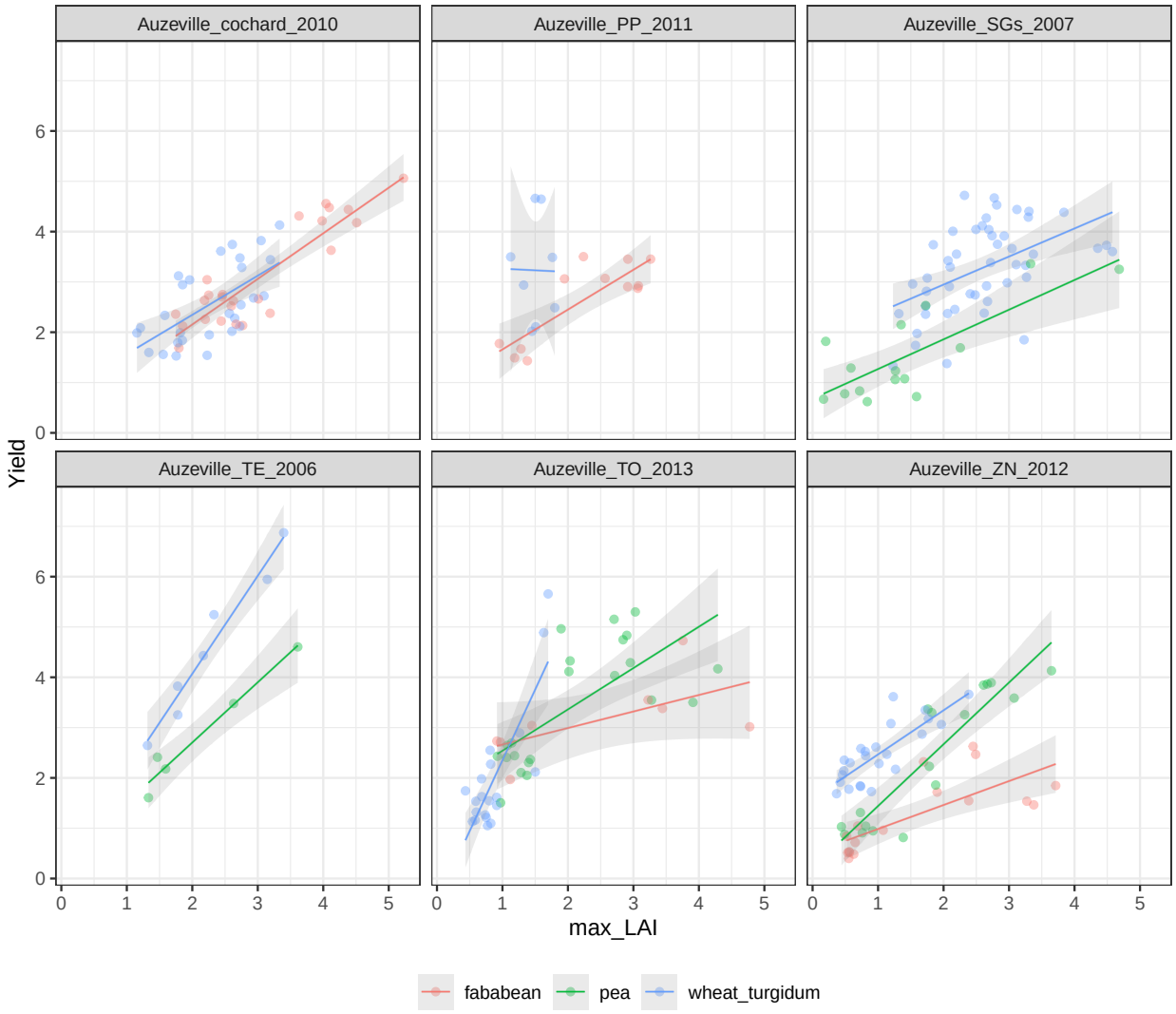
In these experiments, flowering dates are available, which allows us to compute differences between LAI at flowering date of the legume and the cereal.

Cover are measured frequently, we may take the integral during the crop cycle to correlate it with the yield and other performance measures (CE, SE, PLER).

Bivariate relationships

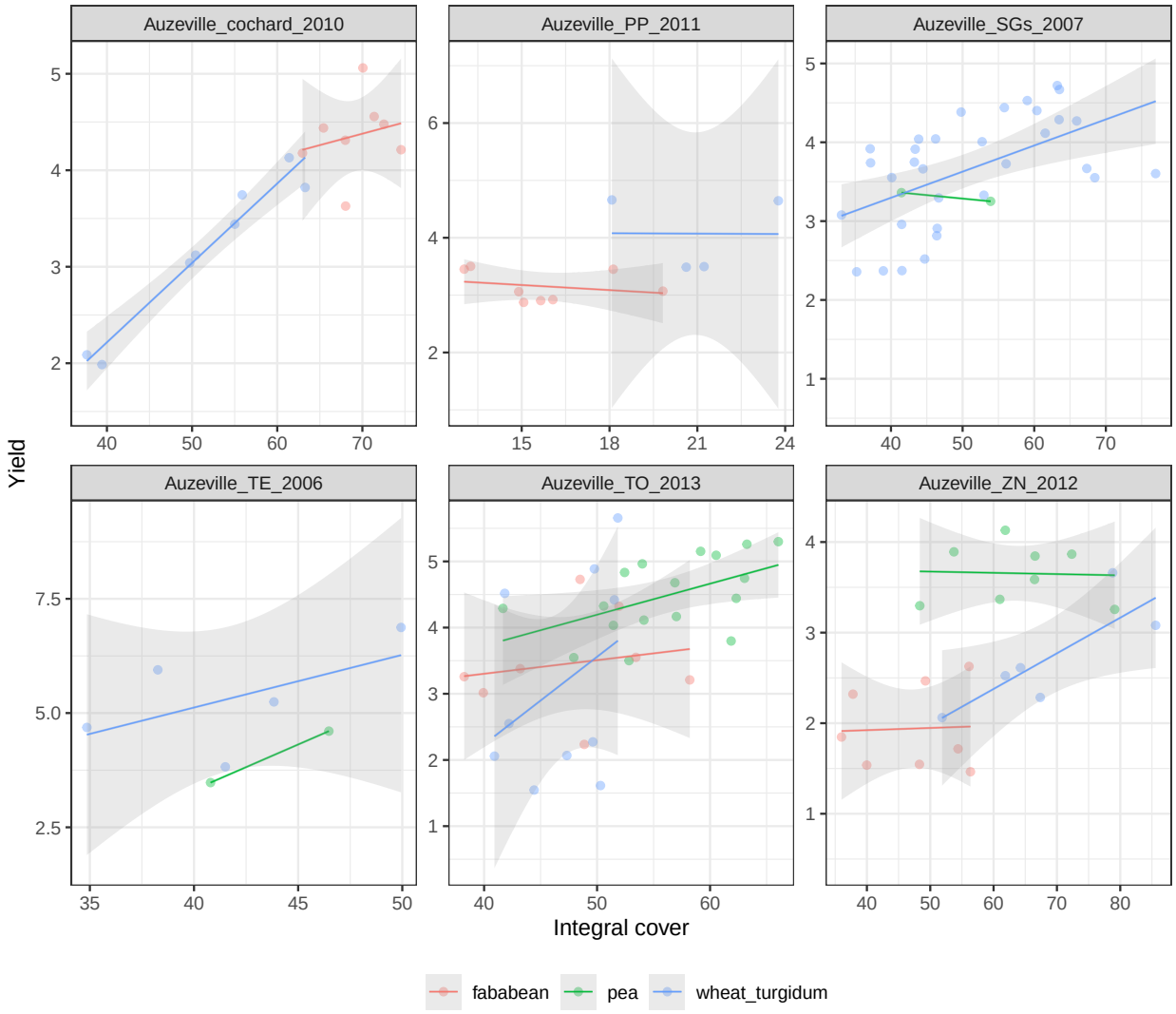
LAI

Max LAI seems to be a good predictor for yield.



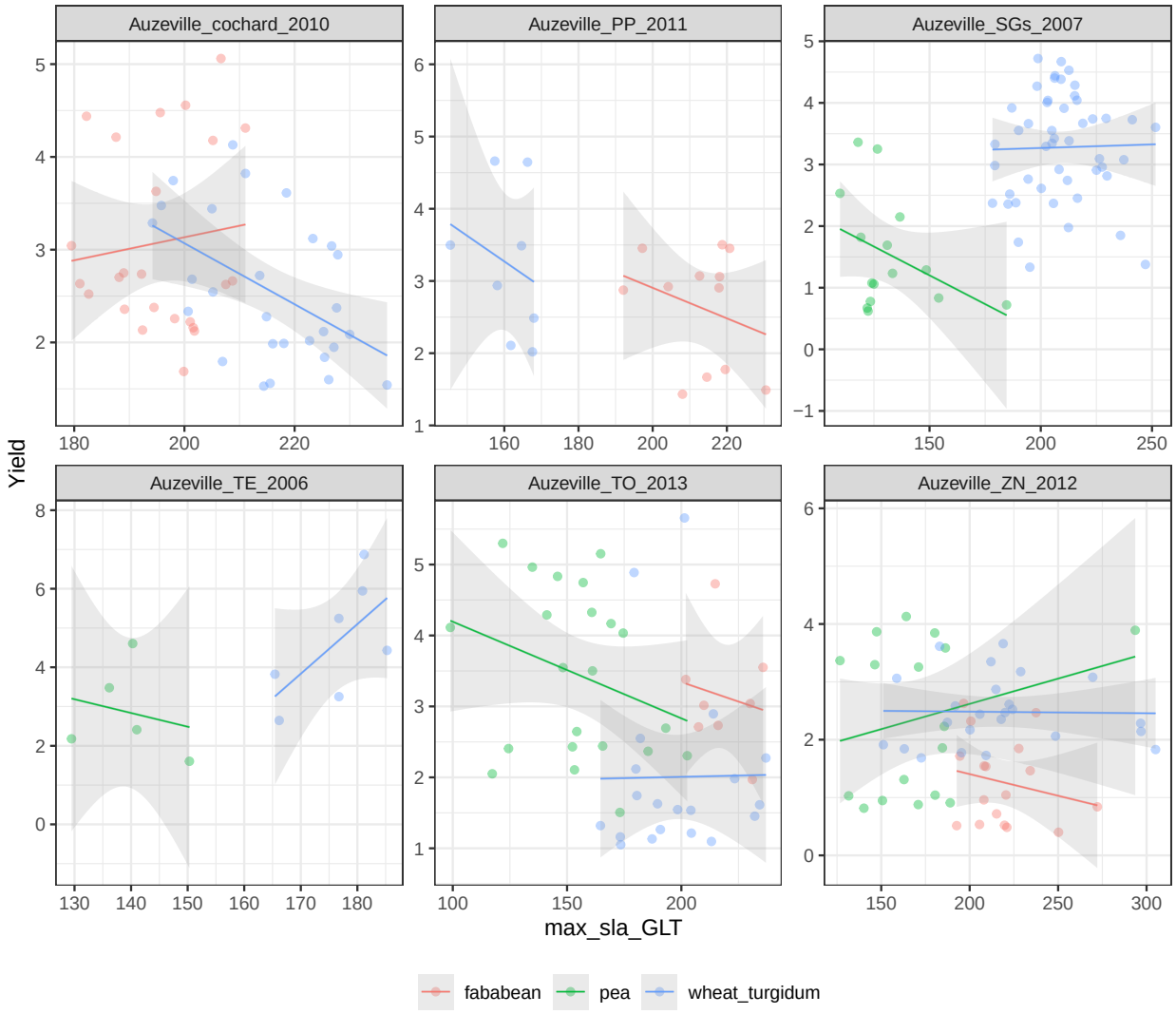
Integral cover

Relationships are weaker with cover integral



Specific Leaf Area

No clear strong relationship between max SLA and yield.


Auzeville_cochard_2010
Auzeville_PP_2011
Auzeville_SGs_2007
Auzeville_TE_2006
Auzeville_TO_2013
Auzeville_ZN_2012
Yield
max_sla_GLT
fababean
pea
wheat_turgidum