Potato virus Y still limits seed potato production

More acreage of highly susceptible potato varieties?

Changes in virus strains caused increased incidence?

More or different aphids?
Are soybean aphids causing PVY incidence to increase?
Certification data can be used to track long term changes in potato health

Can certification data be used to determine the importance of soybean aphid in PVY spread?

(Following data is from Russ Groves laboratory, UW-Entomology)
Publically held data can be combined with seed data to study PVY spread

NASS Cropland Data Layer – CropScape
http://nassgeodata.gmu.edu/CropScape/

R. Groves
UW-Entomology
Publically held data can be combined with seed data to study PVY spread

R. Groves
UW-Entomology
Cropland data + Certification data =
Year is a significant variable for PVY incidence

** denotes above average mean PVY incidence

R. Groves
UW-Entomology
Farm is a significant variable for PVY incidence
Variety is a significant variable for PVY incidence

Percent of lots at foundation, certified, and rejected classes

R. Groves
UW-Entomology
Variety, Farm, and Year do not account for all variation in PVY incidence

Does location matter?

Do soybean fields make worse neighbors for potato than oats?
Variety, Farm, and Year do not account for all variation in PVY incidence

Crops in each field were identified for 2006-2012

PVY levels in certified fields were added to the data set
Forage crops make fine neighbors for potato.

\[ Y_{ij} \sim \text{Poisson}(\text{incidence (mean forage dist}_{ij})) \] – Cross correlation

\[ (R = 0.05, P = 0.901) \]
Soybean crops make fine neighbors for potato.

\[ Y_{ij} \sim \text{Poisson}(\text{incidence (mean soybean dist}_{ij})) \] – Cross correlation

\[(R = 0.04, P = 0.798)\]
Potato is a poor neighbor for seed potato.

\[ Y_{ij} \sim \text{Poisson}(\text{incidence (mean potato dist}_{ij})) \] – Cross Correlation

\[ R = 0.18, \ P = 0.081 \]
What recommendations do we now make?

Sell high-incidence PVY seed lots outside of Antigo

Sell PVY\textsuperscript{NTN}-containing lots to non-seed areas

Work with your neighbors so that early generation seed plots are not planted by high risk potato fields.
Is the landscape information from Antigo useful in the San Luis Valley?

You already have the data to do this analysis yourselves...

What will you find?
Three important differences in San Luis Valley

1. More isolated from other potato regions
2. Commercial farmers use locally-produced seed potatoes
3. Year-out rule allows commercial farmers to replant for 1 year
Potato MopTop Virus – it is spreading...

1. More isolated from other potato regions
2. Commercial farmers use locally-produced seed potatoes

PMTV vector causes powdery scab

http://umaine.edu/publications/2437e/