

## DO COVER CROPS REDUCE TILE DRAIN FLOW?

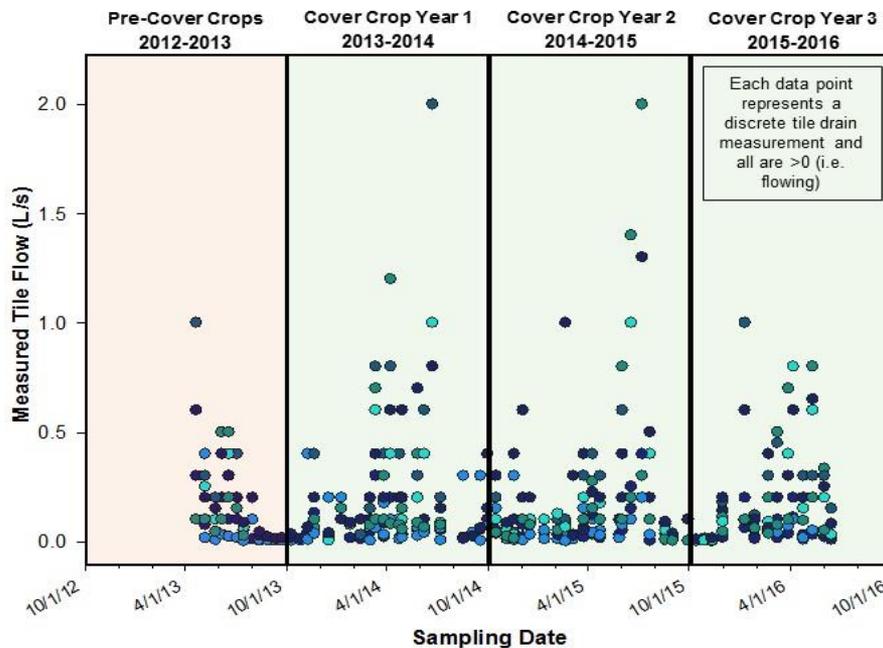
- In Spring 2016, some Midwestern farmers reported clogged tile drains and attributed this to cover crop roots. It is unknown why roots were found in some tiles but not others, but researchers at Purdue & USDA NRCS are investigating possible causes.
- Here we present 4 years of tile drain flow data collected as part of a long-term project on water quality impacts of cover crops. We hope these data can contribute to dialogue on whether cover crops influence tile drain function.



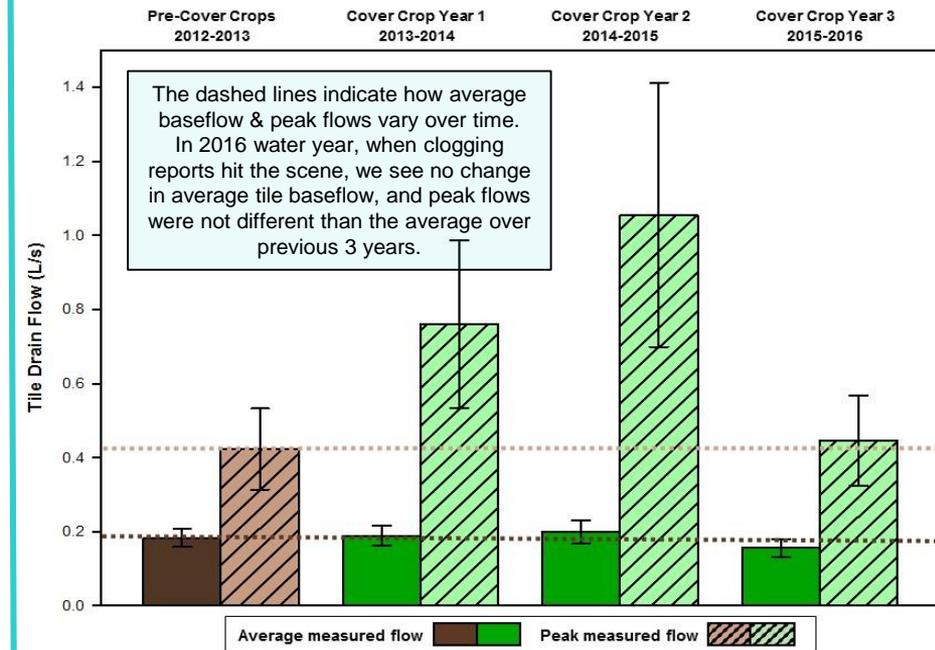
## MONITORING in Kosciusko County

- We have measured instantaneous tile drain flow every two weeks since April 2013 at ~25 tile drain outlets in the Shatto Ditch.
- At each tile, we recorded instantaneous flow (in L/s), except when stream was in flood, which submerged tile drain outlets.
- In the 2013 water year (Oct 2012 - Sept 2013) Shatto Ditch Watershed had cover crops on ~12% of croppable acres. From 2013 onwards, cover crop planting has been sustained at ~70% of croppable acres.

## RESULTS so far



- The scatterplot shows instantaneous flow measurements for individual tile drains over 4 years (one year before cover crops, and 3 years afterwards at ~70% watershed).
- Although there is seasonal variation in individual tile flows during each year, and across years, we see no significant reductions in tile flow after cover crop planting.



- The bar graph shows average +/- standard error for tile drain baseflow and peak flow during each water year.
- There was no statistical difference between water years, including comparison between years before cover crops and after widespread planting (at ~70% of croppable acres).

- OUTCOMES**
- In Shatto Ditch Watershed, we have not seen a change in tile drain flow under cover crops.
  - Our year-round monitoring of instantaneous flow on 25 tile drains does not show evidence suggesting that tile drainage capacity has been reduced since cover crops.
  - Finally, if you suspect tile root blockage, please contact your local NRCS office for a detailed examination of your site conditions.