ABSTRACT

Vegetative filter strips are strips of vegetation planted at the end of an agricultural field. These plants filter out the nitrogen (N) and phosphorus (P) from the field runoff water.

Our goal this summer was to build a query-able database containing information on filter strip efficiencies and their related variables. This database contains information about filter strip and field dimensions in different locations around the U.S. and will help farmers and researchers come to conclusions about how implement and manage efficient filter strips.

RESULTS

Examples of the data reflected in the database:

- Dosskey et al. found that wider strips tend to increase efficiency; however, if a strip is too wide it adds unnecessary cost.
- For a given strip width, the load trapped is also related to the pollutant load, type of pollutant, and dimensions of the field such as area and slope. These field dimensions along with weather patterns determine the runoff load that encounters the filter strip.
- A larger runoff load for a given filter strip width decreases the trapping efficiency for that strip, as does a higher slope, and increased concentration of the pollutant.

The database currently contains 67 rows and 55 columns of data, and 12 locations around the United States. As more filter strip data is found, more data will be added to the database. Some examples of variables listed in the database include filter strip width and length, field width and length, yearly precipitation, fertilizer application, filter strip vegetation type, field agriculture type, grazing management, N and P inflow concentrations, climate, and soil type among many others.

FUTURE WORK

- Mikaela will continue developing the database.
- More datapoints will be added as they're found.
- The database will be published in a webpage format.
- Graphics will be set up to visualize the information.

ACKNOWLEDGMENTS

This research was completed as a part of ReNUWIt (Re-inventing the Nation’s Urban Water Infrastructure) at Colorado School of Mines, with Mikaela Algren as my research mentor, and in the Landis Sustainability Research Group, with PI Dr. Amy Landis. Thank you to Dr. Pamela McLeod for coordinating the REUs.

REFERENCES