AUGLAIZE COUNTY
Engineering Department
P.O. Box 59
1014 S. Blackhoof Street
Wapakoneta, Ohio 45895

TELEHONE 419-739-6520
FAX 419-739-6521
Email: doug@augcoeng.com

Douglas Reinhart
COUNTY ENGINEER

SPONSOR TESTIMONY FOR HB 340

Good afternoon Chair Wiggam, Vice Chair Stevens, Ranking Member Kelly and members of the committee.

Thank you for the opportunity to offer sponsor testimony to Representative Cupp's HB 340. For the past six years I have been a member of a task force that was comprised of multiple governmental agencies along with the Ohio Farm Bureau and other interested parties.

I am here to testify on behalf of the County Engineer's Association of Ohio of which I am the co-chair of the Association's Legislative Committee. I currently finished my 36th year as Auglaize County Engineer and was the County's Assistant County Engineer and Drainage Engineer nine years prior to that. During those 45 years I have assisted in the completion of 285 drainage petitions covering 121 miles of subsurface tile mains, 150 miles of open channel and 117 miles of logjam removal on the St. Marys and Auglaize Rivers. I have seen petitions as small as 30 lineal feet of 6" subsurface tile effecting two landowners with 30 acres to as long as the 52 mile logjam removal project on the Auglaize River which effected 11,000 parcels and drained 157,000 acres. These petitions addressed the drainage needs of not just agricultural land, but included critical drainage and the elimination of flooding to single family homes, subdivisions and public highways including county, township, municipal and Ohio Department of Transportation highways. Petitions have been filed by not only landowners, but also municipalities, townships, Ohio Department of Transportation and the Auglaize County Commissioners.

Ohio's original drainage laws date back to the 1860's which is apparent when reading some of the antiquated language that exists today. Some of the major revisions occurred in 1957 when the maintenance section of the petition process (ORC 6137) was added and in the late 1960's when the petition process through the Soil and Water Board of Supervisors was added through a bill known as Senate Bill 160. One of the last substantial revisions occurred in 1986 when the width of the permanent easements was adjusted while as governmental agencies worked with the Ohio Farm Bureau. Since that point in time, only a few relatively minor revisions have been made.

It was the Task Forces charge to:
One; involve all those who have past experience with the petition process for their input.

Two; clarify the processes to remove an ambiguity causing varied interpretations to the multiple steps:
Three; Parallel the required steps regardless of whether the petition was filed with the Board of County Commissioners (ORC 6131); Joint Board of County Commissioners (ORC 6133) or Soil and Water Board of Supervisors (ORC 940):
Four; Implement the use of modern technology to view, survey and provide information to the petitioners and general public. Recently my department implemented the use of a drone to use in a power point to the landowners better "see" where the problem areas are which are sometime quite difficult to view on foot.

When the petition process through the Soil and Water Board of Supervisors was created in the late 1960's (Section 940), many of code requirements were quite different from a petition filed with the County Commissioners and that has caused confusion and questions. HB 340 not just clarifies both processes but parallels and streamlines their steps so regardless of who the petitioner decides to be the agency to process the petition, the steps are similar resulting in a more streamline process with construction coming to fruition and the drainage problem solved.

The language now in the Joint County Ditch Petition process (ORC 6133) does not clarify who the "lead" agency is in the process leading to confusion, questions and sometimes resulting in outside council being hired costing the petitioners additional administrative fees. HB 340 clarifies who the "lead" county is and specifies who is the chairperson of the joint board, clerk, auditor, prosecutor, etc. for the project.

HB 340 increases the width of the permanent filter strip from 4' to a minimum of 10'. Attached is a portion of an Ohio State University Extension fact sheet # AEX-467 which was developed by OSU professor Larry Brown. This study shows that a 10' wide filter strip can remove as much as 70%-88% of the sediment from the adjacent fields from entering into a stream. I'm sure this sediment has many unwanted attachments that will pollute our streams, rivers, inland lakes and Lake Erie. I wish to commend the Ohio Farm Bureau for stepping up and supporting this language in HB 340. It clearly shows that the agricultural community is truly supportive of clean water throughout Ohio.

I wish to thank the committee for being able to testify in support of HB 340 and outlining just a few of the major updates. I would be more than happy to answer any questions the committee many have.

Respectfully submitted,

Douglas Reinhart, P.E., P.S.

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Auglaize County Engineer

AEX-467

THE OHIO STATE UNIVERSITY EXTENSION

Extension FactSheet

Agricultural Engineering, 590 Woody Hayes Dr., Columbus, OH 43210

Vegetative Filter Strips: Application, Installation and Maintenance

Rob Leeds
Extension Associate
Indian Lake HUA

Larry C. Brown
Assistant Professor
Agricultural Engineering
Extension Specialist, Water Management

Marc R. Sulc
Assistant Professor
Agronomy
Extension Specialist, Forage

Larry VanLieshout
Research Associate
Agronomy

The loss of sediment, plant nutrients and crop protection products, such as pesticides, from cropland has been identified as a significant environmental problem. Researchers, and state and federal agencies, have developed best management practices (BMPs) to help control the movement of potential agricultural pollutants into water resources. Vegetative filter strips have been identified as a BMP that has the potential to remove substantial amounts of sediment, and some nutrients and pesticides, from cropland and urban runoff.

Understanding the proper application, installation and maintenance aspects of filter strips is important for the landowner or farmer, especially before investing time and money. This publication summarizes the key aspects of the application, installation and maintenance of filter strips for Ohio conditions. Filter-strip function and some research findings from across the United States are included. This fact sheet is intended for farmers and landowners who have a basic knowledge of best management practices, and for educational, technical and regulatory agency personnel who work with farmers and landowners in Ohio.

Extension Fact Sheet AEX-466 provides a general overview of filter strips, and AEX-468 summarizes the economic benefits of various filter strip options compared to a corn-soybean rotation. In addition, much of the water terminology used in this publication is defined in AEX-460. These and other publications are available through your county office of Ohio State University Extension. For technical assistance with the planning, design and layout of a filter strip, contact your county USDA-Soil Conservation Service (SCS) office.

Filter Strips

Filter strips are land areas of either planted or indigenous vegetation, situated between a potential, pollutant-source area and a surface-water body that receives runoff (Figure 1). The term "buffer strip" is sometimes used interchangeably with filter strip, but filter strip is the preferred usage. Runoff may carry sediment and organic matter, and plant nutrients and pesticides that are either bound to the sediment or dissolved in the water. A properly designed and operating filter strip provides water-quality protection by reducing the amount of sediment, organic matter, and some nutrients and pesticides, in the runoff at the edge of the field, and before the runoff enters the surface-water body. Filter strips also provide localized erosion protection since the vegetation covers an area of soil that otherwise might have a high erosion potential.

Often constructed along stream, lake, pond or sinkhole boundaries, filter strips installed on cropland not only help remove pollutants from runoff, but also serve as habitat for wildlife, and provide an area for field turn rows and haymaking. In some instances, a filter strip could be used as pasture in a controlled-grazing, livestock management system, if livestock are kept fenced out of the stream or lake. Additionally, filter strips may provide increased safety by moving machinery operations away from steep stream and ditch banks.

Filter strips are an edge-of-the-field best management practice. They often are used in conjunction with other sound agricultural and land management practices, such as contour plowing, pest scouting, conservation tillage, crop rotations, strip cropping, soil testing, and proper nutrient and pest management. Because of their potential environmental benefits, filter strips are recommended by a number of state and federal agencies as an urban and agricultural best management practice. A summary of many Ohio programs that support the installation of filter strips, including grass/legume and forested filters, is provided in AEX-468.

Processes

The purpose of a filter strip is to trap sediment, plant nutrients, organic matter and chemicals as runoff from cropland or urban areas passes through the vegetated area. Filter strips generally are more effective in trapping sediment, and therefore, sediment-bound nutrients and pesticides, than soluble nutrients and pesticides. Nutrients that bind to sediment include phosphorus and ammonium; soluble nutrients include nitrate. In addition, the filter will be much more effective when the runoff passes through

Field research on filter-strip width, using grass as the filter material, has been conducted in Indiana, Iowa, Maryland, and Virginia (Table 1). The results indicate that filter strips are very effective in removing sediment from runoff, with the average reduction ranging from 56 to 95 percent, depending on soil characteristics, slope, rainfall and runoff conditions, and filter width. Most of the studies in Table 1 evaluated only 2 filter widths. Filter-strip width is an important factor, but the Indiana study results indicated that a filter width greater than 8′ showed very little increase in effectiveness, at least for those study conditions. The results from the Iowa demonstrations indicated no improvement in filter effectiveness beyond a 30-foot filter width.

For those filter-width studies where sediment, phosphorus and nitrogen trapping were evaluated, the results indicate that filter strips were more effective in consistently removing sediment than either phosphorus or nitrogen. The results for nitrogen and phosphorus removal were highly variable; total phosphorus removal ranged from 0 to 83 percent, and total nitrogen removal ranged from 27 to 87 percent.

The results summarized in Table 1 generally are typical of most filter-strip studies, especially for sediment trapping. A limited number of other studies have evaluated filter-strip trapping of nitrogen and phosphorus, suspended organic matter and some pesticides. In general, the range in the results is quite large, and results are highly variable. In a Virginia study that evaluated nitrate and ammonium trapping, nitrate removal ranged from 46 to 75 percent, but ammonium losses from the filter actually increased. Over a range of filter-strip applications, work in Illinois, Georgia (15 years), and elsewhere have documented a 10 to 90 percent reduction in nitrate concentrations for forested and grass filter strips, and a range of -114 to 85 percent reduction in phosphorus concentrations (a negative number indicates an increase). A recent study in Iowa indicated a 28 to 35 percent removal for the pesticide atrazine for a 15-foot long filter, compared to a 51 to 60 percent removal for a 30-foot filter.

The interaction between the form of the compound (i.e., soluble nitrate versus soil-bound ammonium; soluble versus soil-bound phosphorus; and soluble versus soil-bound pesticides), soil characteristics (clay and organic matter content, infiltration rate, permeability, etc.) and the type of vegetation in the filter is a complex problem to evaluate. Research on the use of filter strips for trapping sediment, organic matter, and plant nutrients for both agricultural and urban applications needs to be continued. However, since the research on pesticides is very limited, efforts here should be increased.

Application

The proper application of a filter strip should consider the type and quantity of the potential pollutant (sediment, nutrient, pesticide, organic matter, etc.), soil characteristics (clay and organic matter content, infiltration rate, permeability, etc.), slope steepness, shape and area of the field draining into the filter. The type of vegetation applicable to the climatic conditions in your area, and time of year to properly establish that vegetation, also are important considerations. Remember that a filter strip is an edge-of-the-field best management practice, and should be used in conjunction with other best management practices that are designed to reduce erosion and agricultural chemical loss within the field.

Table 1. Average percent removal of pollutants in runoff[1].

Location	Rainfall Source	Soil Texture	Slope (%)	Flow Conditions[2]	Filter Strip Width (feet)	Sediment	Percent Removal Nitrogen[3]	Phosphorus
Indiana (1979)	Rainfall Simulator	Silt loam	OLF	2	56	—[4]	—	—
				4	70	—	—	—
				8	94	—	—	—
				12	95	—	—	—
Virginia (1989)	Rainfall Simulator	Silt loam	11–16	OLF	15	70	54	61
					30	84	73	79
				CF	15	83	83	85
					30	93	82	87
Maryland (1989)	Rainfall Simulator	Sandy loam	3–4	OLF	15	66	0	27
					30	83	48	46
Iowa[5] (1991)	Natural Rainfall	Silt loam	7	OLF	10	72	—	—
					20	83	—	—
					30	97	—	—
			12	OLF	10	88	—	—
					20	90	—	—
					30	96	—	—
Virginia (1992)	Natural Rainfall	Silt loam	4–12	OLF	13	65	—	—
					26	65	—	—
Iowa (1993)	Rainfall Simulator	Silt loam	3–6	OLF	15	72	—	—
					30	76	—	—

[1] Percent removal compared to similar conditions with no vegetative filter strip.
[2] Characteristics of runoff as it entered filter strip; OLF — shallow uniform overland flow; CF — concentrated flow.
[3] Values given are for total nitrogen and total phosphorus.
[4] Data not collected in this study.
[5] Demonstration sites were not replicated; sediment removal for 40- and 60-foot wide filters were generally same as for 30-foot width.