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Development of Regulations to reduce Phosphorus Losses from Agriculture in the U.S. and Europe

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Abstract Text:

To protect water quality, regulations have been developed to minimize phosphorus losses from agricultural operations in many areas. The development of these regulations has taken many different paths with varying levels of inputs from politicians, state agencies, lawyers and the scientific community. There is also great variability between watersheds, states and countries in the mitigation options selected, due to differences such as predominant type of agriculture, climate and politics. Many of the regulations target animal producers due to concerns over the efficient recycling of manure nutrients. Sometimes specific practices are mandated, such as nutrient management plans, manure application setbacks or the use of feed manipulation to decrease manure nutrient concentrations. However, farmers often have flexibility to choose from a suite of management practices to decrease phosphorus losses, such as when a Phosphorus Index is used. To maximize the benefits to water quality, while minimizing costs and inconvenience to farmers and tax payers who often subsidize implementation, it is essential that the most appropriate management options are used in each situation. We will give examples of how mitigation options have been adopted in the US and Europe, and evaluate how successful they have been towards achieving their aims of improving water quality.

Impact Statement:

As regulations covering nutrient management, especially manure nutrient management, there is a need to make sure that regulations are science based. This work contrasts how regulations have been developed in the U.S. and Europe and compares the outcomes. The lessons learned will help us continue to improve water quality using a combination of voluntary and mandatory measures.