Title: Prairie strips improve biodiversity and the delivery of multiple ecosystem services from corn-soybean croplands

Abstract: Conservation investment in US agriculture has historically emphasized engineering practices or vegetative strategies centered on monocultural plantings of non-native plants, largely excluding native species from cropland. Prairie strips are a new conservation practice that use native grasses and forbs to provide habitat for biodiversity and improve of ecosystem services from agricultural lands. For a decade, the Science-based Trials of Rowcrops Integrated with Prairie Strips (STRIPS) team has researched the impacts of integrating strips of prairie strips amid corn and soybean crops, with strips arranged to arrest run-off on slopes. Replacing 10% of cropland with prairie strips increased biodiversity and ecosystem services with minimal impacts on crop production. Compared with treatments containing only crops, integrating prairie strips into cropland led to greater catchment-level insect taxa richness (2.6-fold), pollinator abundance (3.5-fold), native bird species richness (2.1-fold), and abundance of bird species of greatest conservation need (2.1-fold). Use of prairie strips also reduced total water runoff from catchments by 37%, resulting in retention of 20 times more sediment and 4.3 times more phosphorus. These benefits accrued at levels disproportionately greater than the land area occupied by prairie strips. Social surveys revealed demand among both farm and non-farm populations for the outcomes prairie strips produced. We estimated prairie strips could be used to improve biodiversity and ecosystem services across 3.9 million ha of cropland in Iowa and a large portion of the 69 million ha under similar management in the United States.