Influence of High-Residue Rye on Palmer Amaranth Seed Persistence

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The impact of high-residue rye and fallow systems on freshly harvested Palmer amaranth was evaluated over time. Seeds were buried in areas with a 5-year history of high-residue rye and strip tillage and an adjacent field with a history of conventional tillage. Plastic cassettes with mesh were filled with soil and 100 seed before burial. These cassettes were exhumed at 20 intervals over the course of several years (2016-2021). Recovered seed were evaluated for viability in the laboratory by testing for seed coat firmness. Intact seeds were placed into petri dishes and evaluated for germination. Data was regressed to fit an appropriate model for seed viability and rye/no-rye treatments. Differences between high-residue rye and fallow systems could identify specific factors that regulate Palmer amaranth persistence.