“Moisture-dependent Mechanisms of Iron Mobilization by Phenazine-1-Carboxylic Acid-Producing *Pseudomonas synxantha* 2-79 in Wheat Rhizospheres”

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Phenazine-1-carboxylic acid (PCA) is an electron shuttle with demonstrated roles in the antagonism of fungal plant pathogens, biofilm development, and iron respiration. In dryland wheat rhizospheres in the low-precipitation zone of the Columbia Plateau, pseudomonads produce this compound in concentrations exceeding 1 µg/g root. However, the impact of PCA on soil Fe cycling is unknown. Using moisture-controlled mesocosms, we found that wheat rhizospheres inoculated with the PCA-producing strain *P. synxantha* 2-79 were dramatically enriched with poorly crystalline Fe relative to rhizospheres inoculated with an isogenic PCA-deficient mutant. Moreover, the subsequent impacts upon Fe translocation by wheat and Fe mineralogy were moisture-dependent. These findings have important implications for crop nutrition, turnover of mineral-associated organic matter, and redox-sensitive disease dynamics in fields harboring rhizobacteria that produce PCA and other electron shuttles.