Weed Reduction and Increased Residue Decomposition by Foraging Waterfowl in Winterflooded Ricefields. (A08vangroenigen025701-Oral)

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Abstract:

We quantified agronomic benefits of foraging waterfowl in winter flooded rice fields in the Sacramento Valley of California (U.S.A.). Fifteen winter flooded rice fields along a 105 km long transect, each with 5 pairs of waterfowl exclosures and control plots were used to measure residue decomposition in spring, and weed biomass and grain yield at harvest. Experimental exclusion of waterfowl resulted in a significant increase in remaining residue from 1014 to 1233 kg ha-1 across the transect At seven sites with high waterfowl activity, remaining residue increased from 836 to 1549 kg ha-1 when waterfowl were excluded from the plot. Grassy weed biomass increased from 44 to 91 kg ha-1 over the whole transect in absence of waterfowl. At seven sites with high waterfowl activity the grassy weed biomass more than doubled in the absence of waterfowl from 89 to 204 kg ha-1. No significant yield effect could be detected. A 15N tracer experiment indicated N cycling within the agroecosystem is altered by waterfowl activity. Winter flooding rice fields resulted in mutual benefits for waterfowl and agriculture that could be of particular significance in organic farming systems.

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