Physical and Biological Constraints to the Productivity of Rice and Wheat in Nepal. (A06-devare172231-Oral)

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Abstract:

The importance of physical constraints to yield within the rice-wheat system in the mid-hills and Indo-Gangetic Plain (Tarai) of Nepal was determined by comparing yields obtained from plots subjected to tillage and crop establishment treatments. Biological constraints to yield were addressed using soil solarization as a diagnostic tool. Rice and wheat yields from deep tilled vs. conventionally tilled plots were compared, as were yields from puddled and unpuddled rice monocropped plots and unpuddled rice-blackgram intercropped plots. There was a significant effect of tillage in the Tarai, and a slight crop establishment effect in the mid-hills. However, under optimal water management, solarization had the most signifcant and profound effect on both, rice and wheat yields at the two sites, suggesting that biological constraints to yield were more important than physical constraints at these sites. Weed biomass, pathogenic root fungi, and parasitic nematodes were compared in solarized and non-solarized sites. The causes of the yield advantages from solarization varied from site to site, but were shown to be correlated with control of weeds and pathogenic fungi.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 3:15 pm

Keywords:

soil solarization, tillage, rice yield, wheat yield