Non-CO_2 Greenhouse Gases: Methane

Source/Sectors: Agriculture/Rice Cultivation

Technology: Water management (A.3.3.1)

Description of the Technology:
All rice in the United States is grown on flooded fields. One of the most important factors affecting methane emissions is the water management system under which rice is grown. Under continuously flooded conditions, rice fields have higher methane emissions than those that are not flooded. Other factors that influence methane emissions from flooded rice fields include fertilization practices (especially the use of organic fertilizers), soil temperature, soil type, rice variety, and cultivation practices (USEPA, 2006a).

Specific water management technological options to reduce CH_4 emissions from rice cultivation include:

- Water management – Changes in the water management regime to reduce time over which anaerobic conditions in flooded field occur would reduce methane emissions (Graus *et al.*, 2004). Full midseason drainage may reduce methane emissions (USEPA, 2006b).
- Shallow flooding – In this option, rice paddies are marginally covered by flood water, with the water table fluctuating 5 to 10 cm above and below soil surface (USEPA, 2006b).
- Upland rice – Using upland rice, which can grow in dry land, can eliminate flood water in the field to reduce methane formation and emissions (USEPA, 2006b).

Effectiveness: Fair

Implementability: Fair

Reliability: Fair

Maturity: Fair

Environmental Benefits: Methane emission reduction.

Cost Effectiveness: None reported.

Industry Acceptance Level: Low

Limitations: Upland rice production potential at the same levels of input is much lower than wetland rice.

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