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| Title of Entry                       | : Altering the Conventional Rice Production System through Innovative Water Saving Rice Planting Technologies in Punjab, Pakistan |
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**Abstract** : Altering the Conventional Rice Production System through Innovative Water Saving Rice Planting Technologies in Punjab, Pakistan Hafiz Mujeeb Ur Rehman\* & Malik Muhammad Akram On-Farm Water Management Punjab, Okara \*Corresponding author: hafizmujeeb@gmail.com Short Running Title: Water-Efficient Innovative Technologies for Rice Abstract: Due to severe water shortage and farm labour scarcity in Pakistan, it seems difficult to grow rice crop with conventional method (puddled, flooded & transplanted) in Punjab, Pakistan. Hence, to combat water and labour shortage in current rice production system, demonstration of water and labour-efficient innovative technologies like aerobic rice and alternate wetting and drying (AWD) were done at 05 locations of three main sites in Punjab, Pakistan during 2013-14. A good correlation ( $r = 0.8117$ ) between paddy yield and productive tillers  $m^{-2}$  was a strong indicative of the influence on paddy yield by tillers in positive direction. Aerobic rice enhanced productive tillers enormously (48.61%) which consequently affected paddy yield. However, non-significant differences were found among the treatments for panicle length and thousand-grain weight. Technology caused a significant influence on irrigation water saving ( $r = 0.9507$ ). On an average, aerobic rice saved irrigation water by 25% whereas AWD resulted in 32% water saving. Aerobic rice not only saved irrigation water but also enhanced paddy yield by 27.28% (5.35 t ha<sup>-1</sup>) over flooded rice. Whereas, AWD caused a slight increase in paddy yield (8.49%) over farmer's practice along with the significant water saving. Maximum paddy yield resulted from dry direct seeding was owing to the optimization of plant population and improved tillering over other planting techniques. A net return of Rs. 32,250 ha<sup>-1</sup> was acquired from aerobic rice technology over conventional production system due to an added yield return and reducing the production cost. Aerobic rice used significantly less irrigation water and had higher crop productivity, and AWD realized maximum water saving without any yield loss.

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