

# Lower Global Warming Potential and Higher Yield of Wet Direct-Seeded Rice in Central China

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## **p15. Lower Global Warming Potential and Higher Yield of Wet Direct-Seeded Rice in Central China**

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Direct-seeded rice is a promising option because it saves water and labor, and it increases productivity. Nonetheless, few studies have evaluated the transition from traditionally transplanted rice to direct-seeded rice. Here we compared yield, water productivity and greenhouse gas emissions of dry direct-seeded rice, wet direct-seeded rice and transplanted rice in Central China in two consecutive years. We grew four rice cultivars: Huanghuazhan, LvdaoQ7, Yangliangyou6 and Yliangyou1. We measured grain yield, yield components, water consumption, water productivity, and greenhouse gas emissions. Our results show that the grain yield of wet direct-seeded rice was 10.8 % higher than that of transplanted rice, when averaged across cultivars and both years. Grain yield of dry direct-seeded rice and transplanted rice was similar. Water productivity of dry direct-seeded rice was 11.6% higher than that in transplanted rice. Water productivity of wet direct-seeded rice was 13.4% higher than that in transplanted rice. Global warming potential was 76.2 % lower for dry direct-seeded rice and 60.4 % lower for wet direct-seeded rice, than for transplanted rice. Wet direct-seeded rice was found to be more susceptible to lodging than dry direct-seeded rice and transplanted rice. Overall, wet direct-seeded rice is the best system for Central China due to higher grain yield and water productivity, and lower global warming potential. Dry direct-seeded rice may also be suitable for some regions where water is scarce for soil puddling during land preparation.

**keywords:** dry direct-seeded rice, wet direct-seeded rice, transplanted rice, grain yield, water productivity, greenhouse gas emission