



Tropentag, September 19-21, 2012, Göttingen -
Kassel/Witzenhausen

“Resilience of agricultural systems against crises”

Conservation Agriculture: Is it the Way Forward for Resilient Rainfed Farming Systems in India?

VIVEK KUMAR SINGH¹, NILS TEUFEL², DHIRAJ KUMAR SINGH², DEEPAK K. SINGH¹, S.
POONIA¹, M.L. JAT¹

¹*International Maize and Wheat Improvement Centre (CIMMYT), India*

²*International Livestock Research Institute (ILRI), India*

Abstract

Past food surpluses in India were mainly achieved by intensifying irrigated farming systems. However, crop yields in these favourable areas have not greatly increased for more than a decade. In order to meet future food needs and to foster economic development among the rural poor, there is a growing consensus that development efforts must prioritize rainfed agricultural systems where current productivity is low and soils are often degraded. Rainfed agriculture in India occupies 67% of the net sown area, contributing 44% of food grains and supporting 40% of the population. Climate change has influenced the recurrence and spread of drought in these regions, increasing production risks. In total, some 450 M Indians earn their livelihoods under rainfed conditions. This paper addresses the economic and environment viability of conservation agriculture (CA) in rainfed farming systems of Jharkhand, India. Conventional *vs.* conservation agriculture practices are compared within the IFAD supported project “Sustainable Intensification of Smallholder Maize-Livestock Farming Systems in Hill Areas of South Asia” to examine the potential of conservation agriculture in a rainfed context. Overall, 27 group interviews have been conducted in 9 blocks of 3 districts in Jharkhand after stratified random sampling. The results are also based on 2 on-station trails and 118 village level trails of maize-wheat farming systems. Despite low productivity, severe soil erosion and associated socio-economic constraints in these farming systems, there is scope to minimise soil disturbance and enhance productivity for sustainable intensification through tailored and location-specific modifications of resource conserving technologies (RCT’s). The results indicate that improved water management, the implementation of conservation agriculture (CA) principles, improved agronomic practices and the introduction of modern crop cultivars could double or even triple yields. The maize yield of on-station maize trial was 7.6 t ha⁻¹ compared to the state average of only 1.8 t ha⁻¹. Although, the proposed technologies have the potential to reduce production costs up to 30% while increasing production and enriching the soil for sustainable intensification and increased climate resilience, questions remain how researchers, policy makers, extension agents, governments and donor agencies can more effectively disseminate these beneficial technologies for adoption by smallholder farmers?

Keywords: Conservation agriculture, Jharkhand, RCT’s, smallholder