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Conservation Tillage, an Efficient Tool for Sustainable Crop Production

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Abstract—*Conservation tillage (CT) is practiced on 45 million ha world-wide, predominantly in North and South America but its uptake is also increasing in South Africa, Australia and other semi-arid areas of the world. To achieve sustainability or sustainable intensification, many problems have to be solved including - land degradation, water stress, climate change, deforestation, overexploitation of resources etc. Conservation tillage'(CT), this involves soil management practices that minimize the disruption of the soil's structure, composition and natural biodiversity, thereby minimizing erosion and degradation, but also water contamination (Anonymous, 2001). CT can improve soil structure and stability thereby facilitating better drainage and water holding capacity that reduces the extremes of water logging and drought. These improvements to soil structure also reduce the risk of runoff and pollution of surface waters with sediment, pesticides and nutrients and as a whole aid in crop production with less energy, time and money. Reducing the intensity of soil cultivation lowers energy consumption and the emission of carbon dioxide, while carbon sequestration is raised though the increase in soil organic matter (SOM). Under conservation tillage, a richer soil biota develops that can improve nutrient recycling and this may also help combat crop pests and diseases. The greater availability of crop residues and weed seeds improves food supplies for insects, birds and small mammals. And as a whole it helps in balancing the environment and sustainable growth & development in agriculture sector meeting the demand for food security which creates main challenges in increasing population.*