

TILLAGE STRATEGIES FOR IMPROVING PRODUCTIVITY AND SOIL HEALTH IN SEMI- ARID TROPICS

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ABSTRACT

Tillage practices along with source of nutrients based study was conducted in maize-blackgram rotation during 2000-2004 at Dryland farming Research Station, Arjia, Bhilwara (Raj), for improving productivity and soil health in the region. Results revealed that maximum maize grain equivalent yield was recorded in conventional tillage and 50 percent inorganic + 50 per cent organic fertilizers. Organic carbon and infiltration rate was recorded higher in conventional tillage with 100 % organic fertilizer followed by low tillage with herbicide and once weeding along with 100 % organic fertilizer. Bulk density decreased with addition of organic fertilizer and tillage. Soil physical properties increases with addition of organic fertilizer irrespectively of tillage practices while the value of soil physical properties were observed higher in conventional tillage practices as compared to low tillage.

Key words: Maize, Blackgram, Low Tillage, Conventional Tillage, Energy Use Pattern, B.:C, Sustainability Yield Index, Soil Health

INTRODUCTION

Tillage is the basic soil management strategy to alleviate soil related constraints to crop production in dryland areas to conserve rain water in-situ. Use of organic sources along with chemical fertilizers not only conserve moisture and reduces erosion but also increase the overall productivity of soil (Gohil et al., 2001, Patil and Sheelavantar, 2001 and Patidar, 2001). Proper tillage operations coupled with organic manure have positive impact on good crop stand, growth and grain yield. Optimum tillage prevents soil erosion in high rainfall regions and incorporation of stubbles further reduces erosivity. Weeds are the major problems for dry land crops and the yield is greatly affected if weeds are not removed in time. So the effect of anti-tillage with the control of weeds either