ABSTRACT

The experiment entitled "Effect of tillage and tree biomass on growth, yield and quality of oats (Avena sativa L.)" was conducted during rabi seasons of 2005-06 and 2006-07 at Indian Grassland and Fodder Research Institute, Jhansi 284 003.

One pass of MB Plough + two pass of cultivator formed bigger size of clods in field preparation during both the years of experimentation. However, small size of clods were formed in one pass of cultivator + one pass of rotavator. The differences in clod formation were marginal due to different litter biomass of tree species. Plant population (initial and final), height, tillers/plant, LAI, were significantly influenced in fodder oats in one pass of cultivator + rotavator. The effect was found maximum at 50 DAS. One pass of cultivator (1) + rotavator (1) gave marginally more Gross and net income (Rs/ha) from oats fodder i.e. RS. 32893.30 and 33019.80 Gross income, 13770.00 and 13896.80 net income (Rs/ha) during 2005-06 and 2006-07, respectively.

Maximum organic carbon, available nitrogen, phosphorus and potassium were observed in one pass of cultivator and rotavator and these were found maximum in application of Subabool biomass 2 t/ha + 40 kg N/ha through urea. Further this treatment combination also gave maximum Crude Protein content (%), soil organic carbon, available nitrogen, phosphorus, potassium and soil moisture. Maximum energy output 74144.70 MJ/ha in tractor tillage was observed in MB Plough (1) + cultivator (2) in 2005-06 and 74295.55 MJ/ha in cultivator (1) + rotavator (1) during 2006-07 followed by disc harrow and cultivator tillage operations. Crude protein content as well as protein yield were more in one pass of cultivator and rotavator at different stages of crop growth.

The allelopathic effects on germination of field crops was reduced on each successive increase in the addition of tree litter biomass from 4 to 8 and 12 % on dry weight basis in oats, maize, sorghum and mustard.