

PRODUCTIVITY IN SILVOARABLE AGROFORESTRY

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Much has been made of the environmental benefits of agroforestry, but it is also a highly efficient production system. An agroforestry experiment was started in 1992 with four poplar hybrids grown in rows with 6.4 metres between trees, and with either cereals grown in 10-metre-wide alleys between the rows or with fallow alleys (to give 'control' trees). The presence of crops lowered timber yields (calculated from annual measurements of heights and diameters at breast height of trees grown with cereals compared with control trees) and the presence of the trees depressed crop yields (also measured annually and compared with yields from control monocropped areas). Tree heights were significantly depressed ($P \leq 0.05$) from 1994, and diameters from 1995. Crop yields were significantly depressed every year from 1996, except for in 1999. However, calculating the combined yields as the Land Equivalent Ratio (LER) for each year where

$$LER = \left(\frac{\text{annual_alleycrop_yield}}{\text{annual_control_crop_yield}} \right) + \left(\frac{\text{annual_alleycropped_tree_yield_increment}}{\text{annual_control_tree_yield_increment}} \right)$$

gave values of more than 1.0 every year up to 2002. This shows that total biomass production per land area was higher than for either crops or trees alone. This has benefits both in terms of carbon sequestration and also for freeing up agricultural land for re-wilding by concentrating production in smaller land areas.

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