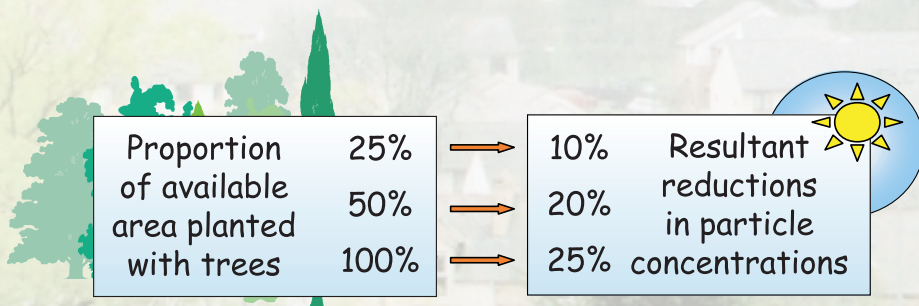


2. How big is the effect?

We wanted to see the effect of various tree-planting schemes on the deposition of pollutants in the West Midlands so once again we used computer models that simulate atmospheric dispersion, transport and deposition.

In our tree survey of West Midlands, the area of land in each sampled hectare that was potentially available for tree-planting in the future was noted. This was used to calculate a land class average 'future planting potential' area, or FPP. We used the computer models to plant the FPP areas with 'instant' mature woodland, and then calculated the change in atmospheric concentration of PM10 (particles smaller than about 10 μm aerodynamic diameter)*. There were reductions in PM10 concentration with each scenario as shown below.



3. Human health

The main concern over airborne particles in cities is their effect on human health. A number of epidemiological studies have shown that a rise in PM10 concentrations of $10 \mu\text{g m}^{-3}$ (as a 24 hour average) is associated with an increase in mortality of 1%. The reduction in PM10 concentrations which would result from future tree planting would therefore be beneficial to human health. Quantifying this benefit is more difficult. However, using these health statistics and our predictions of the effects of tree planting on urban air quality, we estimate that doubling the number of trees in the West Midlands could reduce excess deaths due to particles in the air by up to 140 per year.

*We used PM10 because the Government's air quality standard for particles ($50 \mu\text{g m}^{-3}$ as a 24 hour running mean) is based on this definition of size. These particles are believed to be small enough to reach the lungs.