A farmer grows large amounts of a certain crop. On average, the yield per plant has been 0.75 kg. The farmer has improved the soil in which the crop grows, and she claims that the yield per plant has increased. A random sample of 10 plants grown in the improved soil is chosen. The yields, x kg, are summarised as follows.

$$\Sigma x = 7.85 \qquad \Sigma x^2 = 6.19$$

(i) Test at the 5% significance level whether the farmer's claim is justified, assuming a normal distribution. [7]

(ii) Find a 95% confidence interval for the population mean yield for plants grown in the new soil. [3]