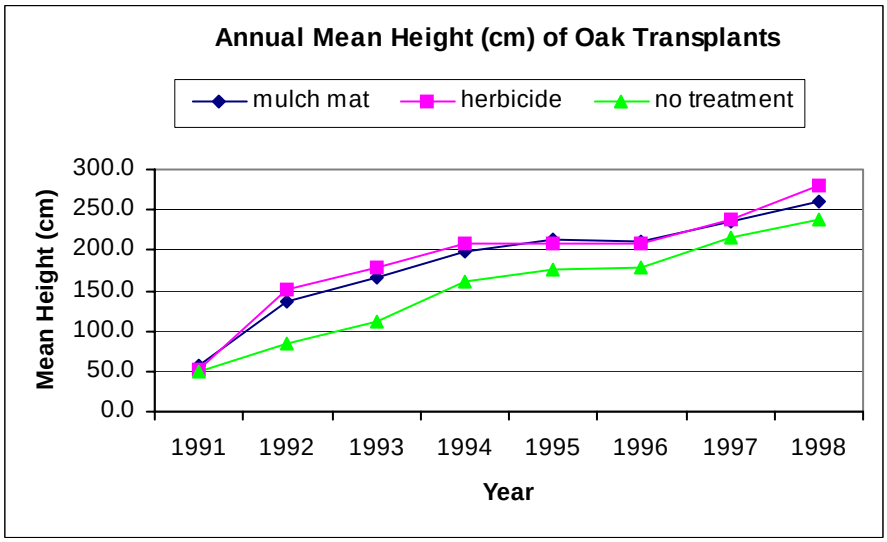
THE DODNOR COPSE TREE PLOT

Janet Ager

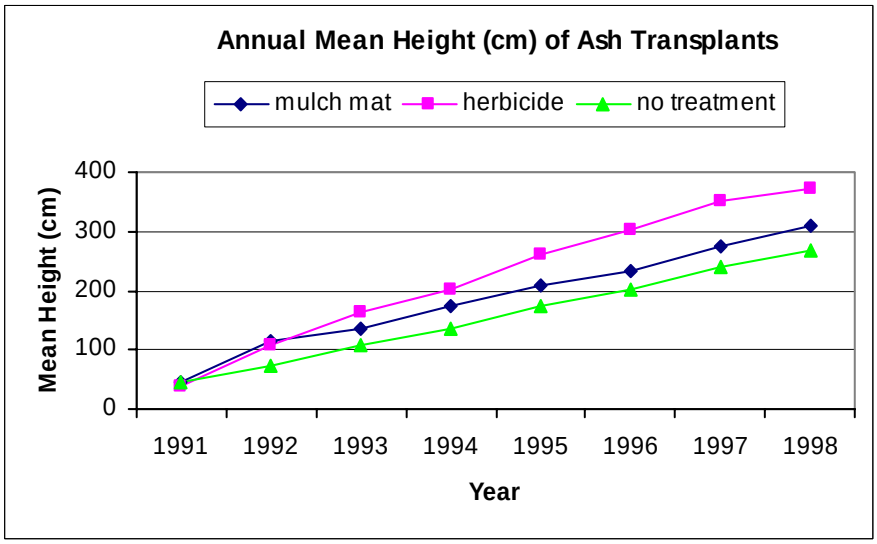
In November 1990, Medina Valley Centre planted about 600 trees in an area between Medina Valley Centre and Dodnor Creek as part of National Tree Week. 144 of these were planted in an experimental plot to investigate different methods of weed control on tree growth. When trees are planted, surrounding vegetation competes for water and nutrients, and in order for young trees to establish properly, some form of weed control needs to be applied for at least three years (Davies, 1987). Competition for resources such as water and space occurs between field layer plants and young trees. Weed control, either by application of a suitable herbicide or by covering the area with a black plastic mulch mat, eliminates this competition, and hence assists the growth of trees. For purposes of comparison, some areas had no weed control measures.

The trees selected for the experimental plot were oak and ash. Half the trees were "whips", that is trees which have a single stem and no side shoots, which are approximately 90cm tall when planted. The remainder were "transplants". This term covers any young tree which has been lifted and replanted to give it more space to grow. The transplants are generally smaller than the whips and have side shoots. To prevent damage to the young trees from rabbits, it was necessary to protect them with rabbit spirals (for the whips) or with brown-tinted, 1.2m high tree shelters with stakes (for the transplants). Overall there were twelve plots with twelve trees in each plot– oak transplants, oak whips, ash transplants and ash whips treated either with mulch mats or herbicide or given no treatment.

Each year between 1991 and 1998 the height of each tree and their basal diameter were measured and recorded. The following graphs show mean heights for oak transplants and ash transplants each year under the different weed control treatments.

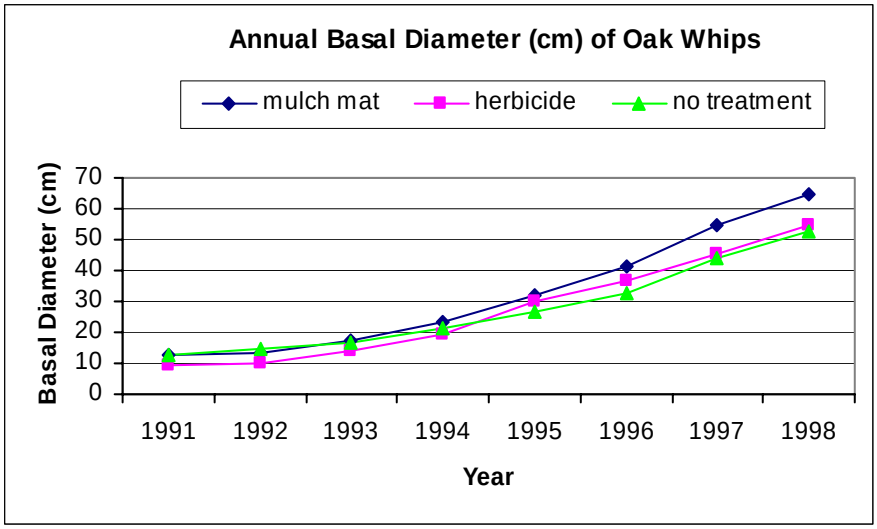


Oak transplants: it is clear by the second year that the mulch mats and herbicide have had an effect on the height of oak transplants as the rate of increase for 1991 - 1992 is greater for both these sets of trees than for the untreated trees. This difference in height is then sustained for the duration of the experiment, although there is no further significant gain.

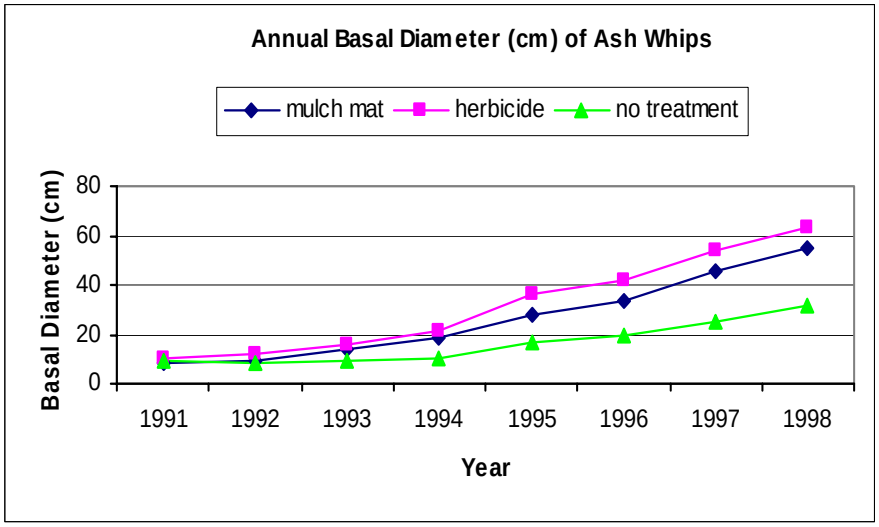


Ash transplants: for 1991 – 1992 the rate of increase in height is greater for trees treated with mulch mats and those sprayed with herbicide than for the untreated trees. In 1994 - 1995, the rate of growth for trees treated with herbicide increases again slightly, and also again in the fifth year. Each time these differences are sustained.

The following graphs show mean basal diameters for oak whips and ash whips under the different weed control treatments.



Oak whips: the untreated trees got off to a good start with the highest rate of growth in basal diameter during the first year but following that, their growth rate was lower than the trees treated with mulch mats and the trees sprayed with herbicide, which quickly overtook them. The trees treated with both mulch mats and with herbicide increased at a similar rate until 1995 – 1996 when the trees treated with mulch mats had a significantly greater increase and sustained that difference for the duration of the experiment.



Ash whips: the rate of increase in basal diameter was significantly lower for the untreated trees for each year. Trees treated with mulch mats and trees sprayed with herbicide increased at a similar rate until 1994 – 1995 when the rate of increase for trees in the herbicided plots was significantly greater. Thereafter the rate of increase is similar again.

The graphs show that both herbicide and mulch mats have a positive effect on the growth rate of trees and, in most cases, herbicide gives the best performance. The effect is noticeable in both the height of the trees and their basal diameters. Overall, ash trees responded better to the weed control treatments than oak trees. The differences between the treated and untreated trees are far greater in the ash than in the oak, both in terms of height and basal diameter, particularly those treated with herbicide. The results obtained for oak are less conclusive; however this could be related to the slow growth pattern of oak trees.

Applying weed control treatments to young trees does, therefore, give them an advantage in terms of both height and basal diameter growth. The untreated trees still grew well and steadily, but at a slightly lower rate that the trees which were treated. Mulch mats are perhaps able to give longer-term assistance as once they are placed they are permanent whereas herbicide has to be reapplied each year. In this case, herbicide was applied each spring for five years and, as there is no apparent change in growth rate following the end of herbicide application, one could assume by this time it had done its job of giving the trees an initial boost.

Yet of the 144 trees planted just four died – one ash whip with mulch mats, one oak transplant with mulch mats, one oak transplant with no treatment and one oak whip with herbicide. This indicates a mortality of 2.8%. Arguably, therefore, in these plots weed control treatment may have been unnecessary.

References:

Davies, R.J. (1987)
Trees and Weeds, Forestry Commission Handbook 2, (HMSO, London).

Riley, A. & Herbert, R. (1994)
Seeing the wood for the trees—making the most of tree planting schemes, *School Science Review*, **76** (274): 81-85.