Mounding site preparation for forest restoration: Survival and short term growth response in *Quercus robur* L. seedlings

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Abstract

Mounding site preparation for forest restoration: survival and short term growth response in *Quercus robur* L. seedlings control of natural vegetation during afforestation and reforestation is necessary to avoid economical losses through growth reduction and mortality in seedlings. The present field experiment, carried out on *aground-water* influenced site with planted oak, included three site preparation treatments and undisturbed control (C). The treatments were: repeated herbicide application III). mounding site preparation (MSP). and mounding site preparation in combination with repeated herbicide application (MSP + The mounds were 25 in long. 2 in wide and 20 cm high inverted mounds on humus, and this method is sometimes also called bedding. Seedlings were monitored fur 3 years and at the end of the experiment 909c of oak seedlings survived in the various site preparation methods compared with 58% in the undisturbed control. The best growth was obtained when mounding site preparation was combined with repeated herbicide treatment. producing live times greater seedling biomass compared with the control. Mounding site preparation resulted in equal growth of seedlings compared with repeated herbicide application. Interference front vegetation had a strong negative effect on seedling growth while mounding site preparation itself resulted in a positive seedling growth response. We conclude that mounding site preparation is an efficient tool for forest managers in establishing oak stands and is a good alternative to herbicide treatment on certain sites. On the other hand, a relatively large disturbance area and deep soil disturbances may impair recreational values and destroy archaeological remains.

Keywords: Conversion; Regeneration; Seedlings; Soil preparation; Weed competition

I. Introduction

European temperate broadleaved forest types previously covered much larger areas than they do today (Hannah et al.. 1995; Bradshaw and Undbladh, 2005) and restoration of these forests is believed to be a step towards sustainable forestry (e.g. Spiecker et al., 2004; Stanton and Madsen, 2005). Since the beginning of the nineteenth century'. many original broadleaved woodlands have ken replaced by conifer plantations (Kenk and Guelme, 2001). Although economically attractive for the forest owner, these plantations have often proven to he unstable and are subject to windthrow, drought damage and ultimately forest decline (Oleskog and Löf, 2005). Other negative effects associated with conifer plantation (include enhanced accumulation of organic material. abundant grass colonization