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**WINTER SHELTER FOR AGRICULTURAL STOCK, by D.Patch and R.Lines**

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### **Abstract**

In lowland Britain particularly, farmers turn their attention to unmanaged woodlands as a source of winter shelter for stock. There is little quantified knowledge of the effect of cattle or sheep on the short and long term growth of trees. This note reviews existing experience and research undertaken in a commercial conifer plantation.

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### **Introduction**

1. In the past, grazing animals - the forebears of present day agricultural stock - wandered freely through woodlands and grazed wherever food was available. More recently farmers and foresters have kept their interests apart. However, farmers are under increasing pressure to manage their land more intensively with the result that they are turning to unmanaged broadleaved woodlands as a source of winter shelter for beef cattle and sheep.
2. Maturing commercial broadleaved woodlands frequently have an herbaceous ground flora but its value as a food source may be minimal. However, both coniferous and broadleaved woodlands will provide some shelter from the elements for stock. But what is the likely effect of the stock on the trees?

### **Existing Experience**

3. Where stock has been introduced into woodlands the exercise has been based on trial and error. Some young plantations have been successfully weeded by grazing sheep (Makeson-Sandbach 1970), but intensive supervision was required to ensure that the sheep were moved on as soon as browsing of the trees started.
4. Mature broadleaved woodlands have been fenced and young beef cattle turned in for the winter, to benefit from the shelter, with the bulk of the food being supplied by the farmer. However, the number of stock that a piece of woodland can support and over what period must be a matter for trial and error.

### **Benefits to Agricultural Stock**

5. Farm stock out-wintered in a woodland benefit from the protection from cold winter winds and prolonged damp periods as shown by a shorter time taken to attain a slaughter weight that animals exposed to the full winter weather. Ewes out-wintered in woodlands have lower lamb mortalities than sheep in the open (MacBrayne 1981). However, care must be taken to ensure that adequate food, water and mineral licks are always available for the stock. In addition, before introducing stock, the area must be cleared of poisonous plants, which might be eaten (*"Poisonous plants and fungi in Britain animal and human poisoning"* should be consulted on this subject).

## Effects of Agricultural Stock on the Woodland

6. Beef cattle in a woodland will first trample undergrowth, push over young trees and graze the ground flora even when food is provided *ad libitum*. As a result all unprotected natural regeneration will be destroyed and the ground flora may be radically altered (Linhart and Whelan, 1980). Sheep will have a similar effect but over a longer period of time. If too many animals are in the woodland, food becomes scarce, or the diet lacks fibre or minerals, the stock and particularly the cattle will turn their attention to the bark of mature trees. Initially the thin barked species and young stems such as coppice shoots will be stripped from ground level to about 2 metres but subsequently all trees may suffer. Bark stripping may permit entry of pathogens or the trees may be killed directly by girdling.
7. Stock will congregate where they are fed and watered and at particular points they find favourable. Even freely-drained sandy soils may become poached (compacted) at these points; the dung and urine will also accumulate and puddle the soil. Tree roots in the soil will suffer from water-logging and may die. The treading will cause erosion round the trees and damage the root buttresses. Where there are slopes, stock in woodland may lead to erosion. Open drains, as in many woodlands on heavy soils, are a potential hazard to stock which may break down the drain sides so that they become ineffective, thus further worsening the soil conditions.
8. The use of preserved agricultural fodder crops to feed over-wintered stock could increase the weed population in the woodland. These weeds could prove costly to control.
9. In a comparative trial at Shin Forest, Scotland, the girth increment of Scots pine (*Pinus sylvestris*) standing near feeding troughs was found after one year to be significantly lower than trees in the control cattle-free area (Lines, R. 1979). This difference was detectable even though there was no visible damage to the trees. However, within the cattle enclosure stem diameter increment increased with distance away from troughs; it is suggested, therefore, that on some soils the addition of light dressings of dung and nitrogen may eventually produce an enhanced increment when compared with trees in cattle free areas. It is not possible to say whether this enhanced increment over part of the wood balances the deleterious effect nearer the feeding troughs.

## Management of Woodlands Used for Winter Shelter

10. Use of the same piece of woodland for a number of years is likely to lead to a slow decline in the condition of mature trees, especially those near feeding and watering points. Areas must either be used in a succession so that recovery can occur or replanting and protection of trees must be undertaken. If a piece of woodland can be divided by fencing into several areas and each used in rotation for over-wintering stock, natural regeneration may be possible. All areas should be managed in accordance with sound silvicultural practices.
11. On many private estates and farms in lowland Britain small woodlands may be used for over-wintering stock. In these circumstances annual use of the same area could lead to the eventual degeneration of the whole woodland. Positive management is essential therefore to either preserve a strip of woodland around an open central area or to establish new trees within the wood as and when gaps in the canopy occur. Such trees must be adequately protected to prevent animal damage.
12. Experience relates to woodlands being regarded purely as shelter. Farmers may wish to consider cultivating between trees to improve vegetation and so provide fresh fodder which can be supplemented by imported food. The effect of such agricultural management on existing trees has not been investigated.

## Conclusion

13. Multiple use of woodlands for timber production and over-wintering of agricultural stock appears feasible where freely drained, coarse textured soils are stocked with a stand of mature thick barked trees. Intensive management of both the trees and the stock will be needed to prevent long-term deterioration of the trees and ultimately the shelter. To be justifiable, therefore, any increase in agricultural stock value as a result of the winter shelter provided by the trees should more than offset the reduced increment of the trees, any decrease in timber value associated with decay as a result of wounding, and the generally increased cost of managing and protecting woodland.

## References

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Produced by-  
O.N. Blatchford  
Principal Research Communications Officer  
Forest Research Station  
Alice Holt Lodge  
Wrecclesham  
Nr Farnham  
Surrey

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