

HIGHLAND BIRCHWOODS

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INFORMATION SHEET 6

GUIDANCE FOR DIRECT SEEDING OF BIRCH

This is an interim sheet, for use in autumn 1996, providing information on the collection, storage and sowing of birch seed for the purpose of supplementing natural regeneration or establishing a stand of birch. Both tree species of birch are covered. A more comprehensive production will be available early in 1997.

SEED COLLECTION AND STORAGE

Seed, in catkins, can be collected from trees when dry, usually starting in early September. Collection should precede the natural peaks shedding, in the last weeks of September and first weeks of October. Seed should be released from the collected catkins by rubbing between hands. It is important that the seed is very dry before storage and it will normally require further drying by spreading on trays in a dry, well ventilated space. Storage over the winter should be in as close to airless conditions as possible (in a polythene bag with the air sucked out) in the cold, fridge or equivalent, until spring.

In order not to compromise seed production in subsequent years cutting of branches should be restricted to the minimum necessary to ensure a good sample of seed trees on the site. Collection is by cutting well-laden branches and can take place slightly earlier, in late August. Branch material should be taken into a well ventilated building and spread onto a suitable surface from which seed can be retrieved (a tarpaulin) and allowed to dry until catkins begin to fall apart. Storage is as set out above.

SOWING SEED

There are three alternatives for sowing seed: Autumn, directly after harvest; spring and spring pre-chitted.

As one of the smallest native tree seeds birch seedlings have a limited capacity for surviving periods of drought. Drought is most commonly experienced by birch seedlings over the winter period when frost heave lifts seedlings out of the soil exposing them to desiccating winds. In early summer, particularly over recent years, many spring germinated seedlings have succumbed to the long periods of limited rain. The decision of whether to sow seed in autumn or spring must be related to the type of ground on which it is to be sown. In areas that do not suffer from winter frosts, but tend to be dry in early summer, autumn sowing may be advisable. Alternatively, areas that are prone to frost but have a relatively high water carrying capacity may be more suitable for spring sowing.

Sowing should be timed, particularly in spring, with a damp spell of weather in order to promote early germination and root establishment. Fine sand can be used to aid dispersal, reduce moisture loss and help prevent seed blowing away. Mix the sand with the seed and sow at a rate of 2 grams of seed per square metre.

Pre-chitting removes the uncertainty of germination and introduces material to the site which can very quickly establish itself and get beyond the vulnerable early growth stages before the onset of summer. It is imperative that pre-chitted seed is sown when the ground is damp. Pre-chitting is achieved by removing the seed from cold store and soaking in cold water for 48 hours. The seed is then put back in the fridge wet for a further fortnight, after which time the swollen seed will be showing signs of germinating. Care is required when sowing to avoid clumping of the wet material.

CHOICE OF SITE

Success of direct seeding operations will be determined by careful selection of ground on which the different species of birch are sown. Silver birch establishes and grows best on fertile, freely drained soils (brown earths), shallow rocky soils as well as morainic silts and sands. In contrast Downy birch is best suited to wetter, slightly flushed upland soils such as peats and peaty gleys where there is a lateral movement of water.

SOIL PREPARATION

Ground preparation is not always necessary. Birch seeds need to germinate on bare soil to stand a good chance of surviving. There fore, in order to achieve a high rate of successful regeneration a reasonable proportion of the ground should be open. The optimum size for bare ground patches is about 25 square centimetres, according to Miles and Kinnaird (1979), and may already be present in a semi-natural sward. Larger areas are prone to frost heave.

Where ground preparation is necessary, the principle is to use the minimum level of intervention required to achieve the objectives of management . Where it is necessary to create conditions for germination, whether in dense grass swards or to increase the proportion of suitable ground, the objectives of the scheme will determine the appropriate method used. In many places timber is not a serious option. Equally, there may be potential for serious competition from aggressive competitors, such as thistle, docken or ragwort. In both these cases hand screening is preferred to mechanical scarification, and should be carried out immediately prior to sowing.

Where timber is desirable and a serious prospect (TGA, *et al, in prep.*) dense carpets of seedlings are required. In this case, should the ground require preparation to promote dense seedling establishment a more comprehensive method, such as patch or strip scarification may be appropriate.

REFERENCES

Sources of information include the personal experience of Highland Birchwoods staff, Chris Nixon, FC NRS and published literature, such as;

- Miles & Kinnaird (1979) The establishment & regeneration of birch, juniper and Scots pine in the Scottish Highlands. Scottish Forestry 33, 102 - 119
- Pelham *et al* (1984) **Variation in, and reproductive capacity of, *Betula pendula* and *B pubescens***
Proceedings of the Royal Society Edinburgh 85B, 27 - 41
- Worrell (1993) Environmental impacts and the effectiveness of different forestry ground preparation practices. SNH ?