

SOIL STERILISATION FOR OUTDOOR SEEDLING PRODUCTION

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Soil sterilisation is needed primarily to control annual weeds in the seedbed. The average nursery propagates many cultivars and although weed-control using pre-emergence herbicides is suitable for a few cultivars it is risky or damaging to many seedlings. Mechanical weed-control is not very effective in a typical damp season.

Soil sterilisation gives further benefits because it can control soil-borne diseases and stimulates crop growth.

In a survey of 15 British seedling nurseries the typical sterilisation operation involves the following:

Timed in September, Basamid (dazomet) Granular is applied at standard rate (380kg per ha) to a moist soil using a Sisis Lo-spread applicator. Incorporation to a depth of 15cm (6 in.) is made using a rotavator. To seal the soil surface 80% of nurseries lay polythene, the remainder roll and irrigate.

Using standard rate Basamid and polythene covering, materials cost is some £ 1300 per ha at 1989 prices. Including the labour cost of application, incorporation and covering, a figure of £ 1450 is probable.

A contractor will charge £ 1800 per ha, which is competitive if allowance is made for capital expense and maintenance of machinery.

To put this expense into perspective, the value of a seedling crop after one year's growth can be £ 40,000 per ha.

In Holland, metham-sodium liquid injected into the soil is used widely. This material decays to form the same active sterilant gas as does Basamid. The chemical is soil injected by a contractor and the soil is sealed by rolling.

In France and the USA, methyl bromide gas is more widely used. Both countries manufacture the injection machinery.

MAKING THE MOST OF STERILISATION

Ensure adequate soil moisture content at the time of sterilisation. Fifty percent of field capacity is ideal.

Cultivate soil well. Clods of soil resist sterilisation.

Do not sterilise a greater depth of soil than you need. David Antill of Stockbridge House EHS, has shown that lettuce drilled into soil, sterilised with half-rate Basamid incorporated to half depth (8 cm.; 3 in.), results in good weed control in the crop.

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If you have a soil that seals with rolling, without need for polythene cover, consider a step better. Rather than the usual heavy roller towed passively, substitute a lightweight powered roller that will improve the surface seal by smearing rather than compaction.

UK contractors using metham sodium and methyl bromide are getting better equipped. Both chemicals are probably every bit as effective if properly used, according to Dutch and American contractors. U.K. contractors charges are currently £ 2500 per ha for methyl bromide at the standard 750kg per ha, and £ 1540 per ha for metham sodium at 800 litres per ha (51% formulation). This rate of metham sodium is as used in Holland and is some three times more than normally used in Britain for nematode control; despite this the cost appears very attractive.