PERSISTENCE

If at first you don't succeed, try try again. There is much to learn about growing plants from seed. Trial and error is common practice; so if you don't try you will not learn; and if you don't learn you can't teach and if you don't teach you're not carrying out the I.P.P.S. motto.

Seed Treatment of New Zealand *Sophora* Species With Concentrated Sulphuric Acid To Hasten Germination

Eric J. Appleton
Appletons Tree Nursery Ltd, 1748 Main Road South, Wakefield, Nelson

INTRODUCTION

Sophora microphylla and *Sophora tetraptera* are small trees with attractive yellow flowers in spring. Their mature seeds have hard yellow seed coats, which must be scarified to allow the entrance of moisture before germination can begin. Unscrarified seed can lie in the soil for many years without germinating. If only a few seedlings are needed the hard coat can be cut with secateurs or a sharp knife at the end farthest from the micropyle. Soaking in water for 24 h will swell the seed to twice its size and it can be sown.

SULPHERIC ACID TREATMENT

If larger quantities of plants are required, consistently good results have been achieved by soaking dry seed in 96% commercial grade sulphuric acid initially for 1 h. Full protective clothing is advisable to protect skin, eyes, and clothing from accidental acid spillage. Use glass jars to hold the seed and pour the acid carefully over the seed, which will rise in the jar. Stir regularly with a glass or wooden rod to avoid the seed setting in a solid lump. Time the treatment carefully. If red blotches appear on the seed coat remove from the acid. When 60 min has passed pour the seed and acid into a stainless steel kitchen sieve held by a plastic funnel over a heavy-duty plastic container clearly labelled "Used Acid". The acid can be re-used several times even though it is now black. Thoroughly rinse the seed in the sieve with running water, collecting the diluted acid-rinse in a plastic container for disposal. The seed is now soaked in clean water for 48 h. Some or most of the seed will swell and must be separated from the nonswollen seed.

The South African technique of using a sugar solution to separate germinating from non-germinating *Eucalyptus* seed may have application here. Non swollen seed must be redried before re-treating with acid. Seedlots vary considerably in the total time needed in acid to achieve close to 100% germination. Usually a 30-min acid treatment is used as a second treatment if the majority swelled after the first 60-min treatment.

Trials with boiling water or near boiling water poured on to *Sophora* seed have given variable results, whereas acid treatment has given consistently good results.

The third New Zealand species *Sophora* 'Little Baby' [syn. *S. prostrata*] has a brown or black seedcoat that appears softer. A warm water soak may be sufficient to swell the seed; only if this fails should acid be tried for a short period. Trials continue.

TAKE CARE

- Never add water to acid; it will react violently and splash acid out of the container.
- Never add acid to damp seed; the seed will get very hot and cook.
- Never put acid in metal containers; it is highly corrosive.
- Always wash acid off clothes or skin immediately.

Seed Collection, Treatment, and Storage

Graham Milligan
Milligan Seeds, P O Box 23, Dipton, Southland

INTRODUCTION

When a packet of seed arrives on your desk, it is to all intents and purposes dead. It doesn't appear to move, grow or breathe. Unfortunately it sometimes is dead on arrival (DOA). Most species of plants flower and once pollinated, develop into seed. Once seed is shed it goes through a period of conditioning that allows it to germinate when conditions are near optimum so as to ensure maximum survival. In most cases this conditioning involves removal of chemical inhibitors surrounding or within the seed coat. These inhibitors are removed by; washing (rain), acid drench (bird and animal digestive system), temperature (stratifying), light, fungal, or a combination of the above.

We are fortunate that by collecting and storing seed we are able to hold seed in a relatively dormant state until we germinate. To do this we need to understand and apply the methodology needed to break down the chemical inhibitors. Substitutions for natural conditionings can be used to facilitate ease of germination. These include:

1) Washing in clean water — often several times over a period of days. (This is why I recommend overhead watering of the seed trays rather than capillary watering).
2) Adding a few drops of household detergent or a few drops of lemon juice to enhance cleaning.
3) Washing in a "cola"-based soft drink.
4) Stratifying by utilising a refrigerator.
5) Exposing the seed to light whilst in the seed tray.

My job as a seed collector/supplier is to ensure seed isn't DOA. To do this one must have a basic understanding of the seed. This differs between species and often within species (provenance).