

Eco-Sourcing: Fact or Fad

Lawrie Metcalf AHRH



Introduction

Among those keen on growing native plants, particularly for regeneration and similar projects, the term "eco-source" has become quite a "buzz word". But what does it mean? Quite simply, it refers to plants that have been sourced and propagated from those that grow naturally in the local area, so that they can be used for re-planting somewhere in that area. If, for some reason or another, there are few or no suitable species actually growing in that area then the usual practice is to obtain propagation material from the nearest available source.

What are the reasons for eco-sourcing plants?

Firstly, it is generally supposed that because certain plants occur naturally in a particular area or region, that they must be the forms best suited for that area or region because they have evolved there. Therefore, it stands to reason, so the supposition goes, that plants propagated from local sources must automatically be the best ones to plant in that area or region.

Secondly, there is the "dreaded" problem of what is known as "genetic pollution". By bringing in plants from outside the local area they are going to cross with the local forms, thereby upsetting the whole gene structure of the local populations. Actually, "genetic pollution" has also become another "buzz word" phrase.

Local is best?

Let us look at the common supposition that, because plants have had hundreds or maybe even thousands of years to adapt to the local climate and conditions that they must be the best ones for that particular area. In some instances that

may be true, but in others it is not necessarily so. Have you ever noticed how, in some districts, particular species of native plants never look completely happy. They may have sparse growth and lack vigour, or may be prone to the attacks of a particular pest. Presumably they have had hundreds of years to adapt to local conditions and yet their growth is not what might be expected of a plant that is supposed to be so well adapted

Secondly, there is the "dreaded" problem of what is known as "genetic pollution".

to local conditions. Plants brought-in from outside may sometimes outperform plants of local origin. For example, during last summer's (2000-2001) disastrous drought many trees of *Pittosporum eugenioides* all around the Nelson area were showing signs of stress. In my own garden *P. eugenioides* that I had brought up from Southland, apart from a few fallen leaves, which is quite normal in dry conditions, showed no signs of stress whatsoever. I hasten to add, that one specimen in particular is in the driest part of the garden where it has a great deal of root competition and yet it appeared to be quite happy. Even local plants do not always fare well in times of climatic diversity. In any case, my own observations have been that local plants of *Pittosporum eugenioides* do not appear to show any noticeable superiority over those from other sources.

"Genetic Pollution"

"Genetic pollution" is another buzz term that has gained quite a lot of

currency. It is a term that strikes fear into the hearts of some. Firstly, there is a widely held assumption that different clones of a species must be genetically distinct. For example, those who hold this to be true, automatically assume that *Pittosporum eugenioides* from Marlborough, for example, must be genetically distinct from the same species obtained from other localities. It is very easy to make such assumptions, but the truth of the matter may be very different.

Is Marlborough-sourced *Pittosporum eugenioides* genetically distinct from Nelson-sourced *P. eugenioides*, or are they just adaptations to their local areas? The only way to be certain would be to carry out DNA tests on the 7 various clones to find out if it was so and I am not certain that any such work has actually been done. Just because one clone has a different appearance from another, it is all too easy to assume that the two must be genetically distinct. Genetically, there may be no noticeable difference. It may well be that they are nothing more than just climatic or habitat variations. The case has yet to be proven.

In any case, have those who vigorously defend the theory of genetic purity never heard of hybrid vigour? It may well be that the out-crossing of a species of local origin with a clone from another locality may not be the bad thing that we are told that it could be. Such a cross may well produce a plant that is more vigorous and better adapted to the local conditions. Therefore, introducing different clones, even if they are genetically different, may not necessarily be a bad thing.

This so-called genetic pollution already exists on quite a wide scale over large areas of the country. Just to give an example, let us consider

Riccarton Bush, in Christchurch. Riccarton Bush is an isolated pocket of the ancient swamp forest that once covered parts of the Canterbury Plains, particularly in the vicinity of Christchurch. With the passage of time it has become completely surrounded by suburbia. Especially in the older gardens that bordered the bush there was always a strong accent on the planting of native plants. Presumably, most of those planted were obtained from local nurseries and were of unknown provenance. Certainly, many probably originated from sources outside of the Christchurch area.

These older gardens actually back onto the boundary fence of the Riccarton Bush, and after a period of 70 years or more, the native plants in those gardens have had ample opportunity to cross with the same species that grow over the bush fence line. *Pittosporum tenuifolium*, *P. eugenioides*, *Myrsine australis*, *Podocarpus totara*, *Plagianthus regius*, *Coprosma robusta*, *Cordyline australis* and *Sophora microphylla* are just some of those growing in adjoining gardens. In my association with Riccarton Bush I cannot say that I have ever noticed any obvious ill effects from the crossing of all of these "foreign" clones with the species naturally growing in the bush. I would venture to state that probably nobody else has either. And yet when any regenerative planting is carried out in the bush, those responsible take pains to ensure that such plants are sourced from mother stock growing within the bush.

Do the birds and insects that live in the bush voluntarily confine themselves to the bush and not venture into neighbouring gardens in search of food? I feel that any honest person would have to agree that they do not. Therefore, the chances of so-

What of wind pollinated plants?

The proponents of eco-sourcing also apparently overlook the effects of wind pollination on genetic purity. Pollen is known to travel great distances, as evidenced by the fact that podocarp pollen is found in Chatham Islands peat deposits and yet podocarps do not grow on the Chathams. The Chatham Islands lie some 800 kilometres to the east of mainland New Zealand, which gives an indication of just how far pollen can travel. Therefore, it is ludicrous to imagine that, for example, podocarps growing along the eastern side of the country are going to be pollinated only by those growing locally, thus preserving their genetic purity, and are going to reject the vast quantities of pollen that blows across from western districts, every time there is a westerly air system. The simple fact of the matter is that for thousands of years they have been pollinated from whatever pollen happens to blow their way.

Bee and bird pollinated plants

Honeybees will travel up to about five kilometres to collect nectar and to gather pollen. It is not inconceivable that, as a result of their foraging activities, they could easily transfer pollen from a supposedly different clone of a particular species to another clone of the same species in an adjoining locality. Similarly, birds have the ability to travel great distances from one food source to another. Those native birds that so many people are actively trying to attract to their properties, by planting suitable food plants, do not have any qualms about travelling to whatever food source is available. They are not going to say that because nearby areas may contain genetically different clones that they will not go and feed off them. Tuis and bellbirds, in particular, can be quite migratory, ranging far and wide to visit particular food sources when they are in season.

called "genetic pollution" occurring must happen quite frequently.

I think that it would be true to state that so-called "genetic pollution" has been going on since time immemorial. Regardless of what gardeners and scientists may feel, plants have been doing their best to seek pollen from sources other than their own. Think of all those species that have wind pollinated flowers. They do not set up barriers to prevent their flowers from being pollinated by pollen from the adjoining valley, the other side of the mountain range, or from an off-shore island.

I must add that where a re-vegetation project is to be

undertaken in a natural area, such as a national park, scenic reserve or similar type of situation, I feel that it is preferable that all material planted be propagated from locally sourced material. It is only when people are undertaking planting on farms, in their own gardens, maybe even in towns and cities that I feel that insistence on using eco-sourced material really has to be queried. To conclude, it is yet to be proven that local variants of most species of plants are so genetically distinct that they should be kept segregated from each other.

