

RANKING OF TREES ACCORDING TO DAMAGE OF SEWAGE PIPES

In landscape design, it is important to select tree species whose roots are less likely to enter sewage and drainage pipes. Few quantitative data have been available for California landscape architects and contractors which would help them to recognize the species that notoriously block sewage pipes. Recently two Australian scientists, B.P. Wilkins and R. J. Turner, published results of their five-year study investigating 460 cases of drainage pipe blockage by the roots of more than 60 woody ornamentals planted in Sydney. Such a large sample allowed them to rank the different tree species according to frequency of damage and probability of occurrence. These results are very precious for California landscape architects and contractors because most of the species investigated in Sydney are planted here.

From this table it is apparent that of the 460 cases, figs, eucalypti, willows, liquidambar and jacarandas were most frequently found to cause damage. Members of the family Moraceae most frequently plug pipes, and in some cases (i.e. figs) their roots were capable of blocking a drain 90 feet from the tree stem. Also trees that enjoy swampy conditions in their natural habitat, such as *Melaleuca* sp. and *Salix* sp., are notorious for causing damage. Even smaller shrubs such as oleander and camellia showed an unexpectedly high incidence of damage to pipes.

The data also revealed the occurrence of a significantly higher number of pipe blockages during the fall and winter period than throughout the growing season. This might

Table: Ranking of Woody Ornamentals Based on Their Frequency of Sewage and Drainage

Rank	BOTANICAL NAME	PIPE DAMAGE BY ROOTS %
1	<i>Ficus</i> spp.	15.9
2	<i>Eucalyptus</i> spp.	12.2
3	<i>Salix</i> spp.	11.3
4	<i>Liquidambar</i> spp.	6.3
5	<i>Jacaranda</i> spp.	6.1
6	<i>Populus</i>	4.6
7	<i>Nerium oleander</i>	4.3
9	<i>Acer</i> spp.	2.4
10	<i>Cinnamomum camphora</i>	2.2
11	<i>Wisteria</i> spp.	2.0
12	<i>Cupressus</i> spp.	1.7
13	<i>Fraxinus</i> spp.	1.5
13	<i>Morus</i> spp.	1.5
14	<i>Prunus</i>	1.3
15	<i>Callistemon</i> spp.	1.1
15	<i>Grevillea robusta</i>	1.1
16	<i>Camellia</i> spp.	0.9
17	<i>Ulmus</i> spp.	0.7
18	<i>Hedera</i> spp.	0.4
19	<i>Escallonia</i> spp.	0.2
19	<i>Magnolia</i> spp.	0.2
19	<i>Malus</i> spp.	0.2
19	<i>Pittosporum undulatum</i>	0.2
19	<i>Quercus</i> spp.	0.2
19	<i>Thuja plicata</i>	0.2
19	<i>Tristania laurina</i>	0.2

suggest that root growth continues in drainage and sewage pipes during the fall and winter, or perhaps because these seasons are associated with frequent rains, the failure of drainage is noticed more often than during the dry summer.

Conclusions and Recommendations

Correct selection of tree species will result in fewer pipe blockages, fewer tree removals, and less labor for root cutting.

Near and above pipes, plant palms, ferns and monocotyledons because they develop roots in a very tight rootball close to the stem.

Although roots have been accused of causing much damage to pipes, in most instances searching roots entered through a crack. Therefore use P.V.C. pipes. P.V.C. pipes and their joints are more flexible; as a result, they are less likely to crack after soil settling. Additionally, their joints are sealed and water leakage is prevented.

Remember, if roots are cut in the pipe, they will respond with rapid re-growth of a thick mat of finer roots (the same as when a stem is topped), resulting in a fast blockage of the pipes. Therefore replacement of the affected section with P.V.C. pipe is more lasting and usually prevents tree removal.

Roots grow more easily in loose or sandy soils where their distribution will be even. However, in situations where a landscape must be done in rock or clay soils, the probability is that roots will grow alongside pipes where soil was disturbed by trenching. Plant trees a few yards away from the trench and use bottlebrush, shrubby grevilleas and junipers.

Never plant figs, eucalypti, willows, liquidambar, jacarandas, poplars, oleanders, maples and camphor trees near sewage or drainage pipes or septic sinks.

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