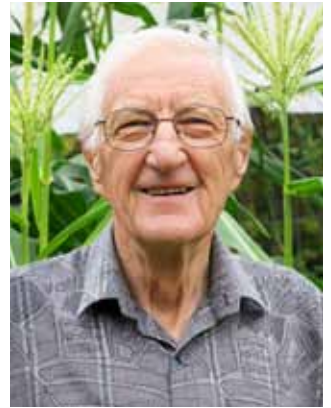


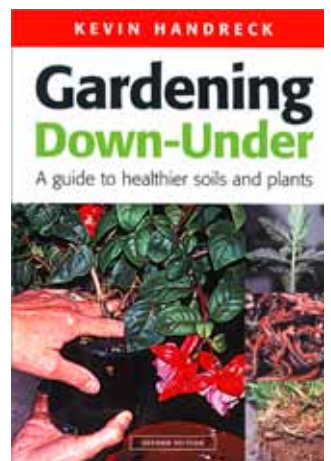
# best potting mixes

WE ASKED SCIENTIST KEVIN HANDRECK TO ROADTEST THE LEADING POTTING MIXES SOLD IN GARDEN CENTRES. GET READY FOR A FEW BIG SURPRISES!



## The potting mix expert: Kevin Handreck

Kevin Handreck is Australia's leading expert on potting mixes and soils in gardens. While working as a research scientist in the CSIRO Division of Soils in Adelaide, he served as the Chairman of the Standards Australia committee that established the Australian Standard for potting mixes. Though Kevin is now retired from CSIRO, he still consults to the potting mix and nursery plant production industries. He is also the author of the top-selling bible on soils for gardens: 'Gardening Down-Under' (CSIRO Publishing).





what we did

'Burke's Backyard' bought bags of 30 leading brands of potting mix, 10 each from NSW, Vic and SA, and had them delivered to Kevin to test at his home in Adelaide. As well as his scientific tests of what was inside each bag (see Kevin's report, page 76), Kevin also roadtested

the mixes by growing the same plant in all of them ('Sweet Bite' tomatoes). Based on their value for money, quality and performance, as measured by Kevin's tests, 'Burke's Backyard' has compiled lists of our recommended potting mixes and those we can't recommend.

**KEVIN'S PLANT TESTS** To test each potting mix, Kevin planted single 'Sweet Bite' tomato seedlings into each of two pots with no fertiliser added, two pots with 3g of controlled-release fertiliser added per litre of potting mix, and two pots with 6g of controlled-release fertiliser added per litre of potting mix. These six plants for each bag of potting mix being tested were grown in a glasshouse and watered carefully every day for 19 days during November 2012. The testing was done in Adelaide where the tap water is alkaline which may have affected some results slightly.



The 'ticks logo' is the Australian Standards certification logo to look for when buying potting mixes.

## POTTING MIX STANDARDS

In theory there are two grades of potting mix sold in garden centres: Premium and Regular, according to the Australian Standard. Both are designed to provide a good quality potting mix you can trust. However, as the Australian Standards system is voluntary, some cheaper potting mixes don't conform to the Australian Standard, so these are effectively a third type of mix sold in bags: the non-Standard mixes.

**PREMIUM MIXES (red ticks logo):** these must conform to Australian Standards regarding their content and quality (ie, wettability, air-filled porosity, pH, plus other tests). They also have controlled-release fertiliser added, enough for plant growth for at least a month or two.

**REGULAR MIXES (black ticks logo):** these must also conform to Australian Standards regarding their content and quality, but they are not required to include controlled-release fertiliser. That is, they need fertilising immediately when you plant into them.

**NON-STANDARD MIXES:** as these potting mixes haven't been submitted for Australian Standards testing, who knows what's in them? That's one of the things Kevin Handreck's tests aimed to find out.

Photos by Kevin Handreck, Brent Wilson



## BURKE'S BACKYARD'S RECOMMENDATIONS

**TOP PICK!** The best value-for-money, excellent performing mix in Australia is Envirogreen Big W Regular Standard Mix. It's made by Amgrow. An Amgrow spokesman says the Envirogreen mix is made by them to the same formulation as the Amgrow Regular potting mix. The ingredients are the same except in Vic and SA, where urea is used instead of chicken poo.



### Best in NSW

- 1 Yates with Dynamic Lifter Regular Standard Mix
- 2 (Equal): Richgro Premium Standard Mix
- 2 (Equal): Scotts Osmocote Multi-purpose Premium Standard Mix

### Best in Vic

- 1 Yates Waterwise Premium Standard Mix
- 2 Scotts Osmocote Professional Premium Standard Mix

### Best in SA

- 1 Envirogreen (Big W) Regular Standard Mix
- 2 Hortico All Purpose Regular Standard Mix
- 3 Yates Citrus and Fruit Regular Standard Mix

## value for money

Certified Australian Standard mixes are the best buy. From our tests, some Regular Standard mixes offer by far the best value for money. Though these mixes are not required to have enough fertiliser for immediate growth for a month or two, a number did have this fertiliser in them as a bonus. Premium standard mixes are good, but they are more expensive. Avoid non-Standard mixes – they failed our tests. Of great concern is the result that indicates that the Standards compliance testing by the independent SAI appears to be inadequate. That is, the Standards certification itself is not entirely reliable.

## Not recommended by Burke's Backyard

Some of the potting mixes Kevin Handreck road-tested didn't perform so well, so we can't recommend them, based on the product samples he tested. These mixes are:

- Attunga Big Value Mix non-Standard Mix (Vic)
- Brunnings Ezywetter non-Standard Mix (SA)
- Brunnings Organic Nursery Grade Non-Standard Mix (Vic)
- Miracle Gro Organic Choice Premium Standard Mix (SA & Vic)
- Richgro All Purpose non-Standard Mix (NSW)
- Richgro all Purpose non-Standard Mix (Vic)
- The Green Gardener Regular Standard Mix (NSW)

**WE MADE EVERY EFFORT** to test the bags of potting mixes fairly. For instance we avoided old-looking or broken bags. For economic reasons, we could only test one bag of each mix. It is possible that we unknowingly purchased a lone bad bag.

If this happened, it still raises the issue of quality control from the manufacturer. Even our own recommendations, above, were sent to Kevin Handreck for scrutiny and amendment prior to publication. Our recommendations represent our

expert opinion as to which are the best mixes to buy and those best avoided, based on our testing. As always, we deliver these findings without fear or favour and totally unaffected by any commercial relationships. **Don Burke**

## KEVIN'S REPORT

Soil expert Kevin Handreck's full report runs to several pages and includes a series of results charts. We have published this detailed report online at the 'Burke's Backyard' website [www.burkesbackyard.com.au](http://www.burkesbackyard.com.au) but on these pages we present an edited summary of Kevin's report findings.

### PRICE

Prices ranged from 12 to 68 cents per litre. The most expensive were the Premium mixes (average 38.5 cents per litre). Regular mixes averaged 23.5 cents, non-Standard mixes 17.9 cents.

### GROWTH TESTS

The Australian Standard lists a wide range of tests, including several which

need to be carried out in a laboratory. They are therefore expensive and so were not done for this assessment. As a substitute for the laboratory tests, I grew 'Sweet Bite' tomato plants in the mixes, both as they came from their bags, and with controlled-release fertiliser (Nutricote Magenta: 140 day release time; 14-6.1-11.6 NPK) added at either a low rate (3g/L) or a high rate (6g/L).

### WETTABILITY

In many ways the worst problem with potting mixes is that when they dry out, they tend to become water-repelling. That is, it is very difficult to re-wet the mix and the plant becomes sick and may die. Normal watering just goes down the sides of the mix and fails to wet it. Manufacturers of Standard mixes add wetting agents to their mix to overcome this problem initially. However, wetting agents only last for around six months, so you'd need to add more twice a year. Several of the non-Standard mixes were extremely difficult to wet. If they dried out you would need to dunk the pots in water for some hours to re-wet the mix. Several of the Premium and Regular Standard mixes did not conform to the wettability provisions of the Standard either. This is a very serious failing in these mixes and it highlights both quality control problems with the manufacturers and monitoring problems with the Standards Certification system.

iron and other trace elements for adequate growth. The optimum range for potting mixes is 5.3 to 6.5, but for most home garden situations a pH up to 7 can be tolerated by most plants. Most of the 30 mixes had acceptable pH values. Of the rest, four had slightly high pH values and three had low values. The worst was a Green Gardener mix from NSW, at pH 3.7.

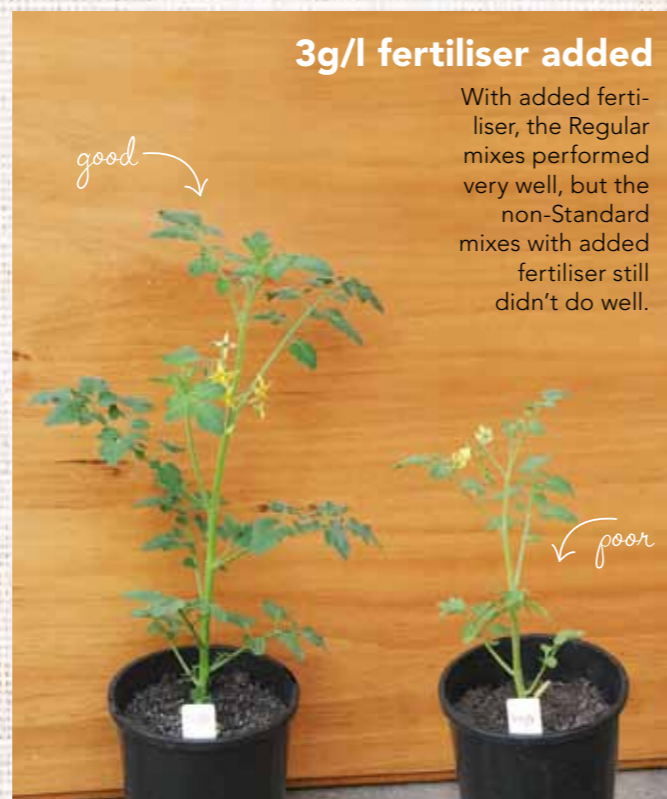
## Non-Standard potting mixes

When we tried to grow tomatoes in non-Standard potting mix without adding any fertiliser, plant growth ranged from nil to very poor in these mixes. Even when we added fertiliser to many non-Standard mixes, the plant growth remained poor.



### zero fertiliser

Premium mixes come with fertiliser added, and so we tested all mixes without adding fertiliser. 13 of the 15 premium mixes did well. The non-Standard mixes fared poorly.



### 3g/l fertiliser added

With added fertiliser, the Regular mixes performed very well, but the non-Standard mixes with added fertiliser still didn't do well.



**GOOD:** Scotts Osmocote Premium Potting Mix.



**POOR:** Brunnings Organic Nursery Grade non-Standard mix



**GOOD:** Envirogreen Big W Regular Standard potting mix



**POOR:** Richgro All Purpose non-Standard.

## Premium mixes

The Standard requires that Premium mixes must contain sufficient levels of all plant nutrients to give good initial (a month or two) plant growth without any extra fertiliser: 13 of the 15 Premium mixes lived up to this requirement, but two didn't.

### THE BOTTOM LINE

Most of the Premium mixes performed well. The bad performance of the two Miracle Gro mixes leads us to conclude that the manufacturer of this mix does not have an adequate in-house testing protocol. We also conclude that SAI, which is charged with supervising compliance with this Standard, is doing less than an adequate job.

So, for Premium mixes, sticking to mixes produced by Amgrow (includes Envirogreen and Nu Erth), Brunnings, Debco, Grow Better, Richgro, Scotts, Swanes and Yates should ensure excellent plant growth without the need to apply fertiliser for a couple of months.

There are some mixes in the Regular grading group that are as good as Premium mixes. Most of the others performed well with some extra fertiliser.

Most of the non-Standard mixes are cheap and nasty. You might occasionally strike one that gives adequate plant growth with a high dose of fertiliser, but the majority of those assessed would

## Regular mixes

The Standard requires that Regular mixes contain adequate levels of all trace elements and secondary elements, but there is no requirement for the major nutrients nitrogen, phosphorus and potassium. So, gardeners need to add fertiliser to these mixes at potting. We were surprised that half of the Regular mixes assessed grew excellent tomato plants without added fertiliser.

### pH

If the pH of a potting mix is too low (too acidic) plants can suffer deficiencies of nutrients such as calcium or from toxicities of nutrients such as manganese. If it is too high (too alkaline) some plants are unable to take up enough

have either given very disappointing growth or would have killed your plants.

### ADDED FERTILISER?

How do you know whether or not to add fertiliser at potting? If the mix contains poultry manure (eg, Dynamic Lifter) our results suggest that you can hold extra fertiliser for a couple of months. For brands other than the Green Gardener, add 3-6g/L of a controlled-release fertiliser at potting.

### RECOMMENDATIONS

Buy only Standard grade potting mixes produced by larger companies. Premium mixes from these companies should give excellent plant growth, but obviously at a premium price. If your budget does not stretch to a Premium mix, the combination of a Regular mix and a small addition of controlled-release fertiliser at potting should give you excellent results for a little over half the cost of a Premium mix. Be kind to your plants: do not expose them to non-Standard mixes.

## OUR BEST BUY

Buy a good Regular Standard mix, plus a tub of controlled-release fertiliser, which you add to the mix at the rate of 3-6g per litre of potting mix.