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WHY HERITAGE CHOOKS ARE BEST

plant stunning AQUILEGIAS

ISSUE 123 2021
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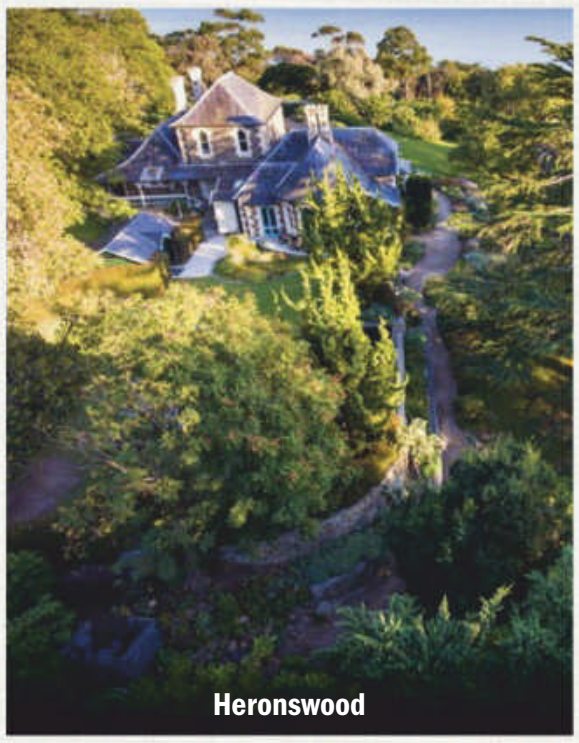
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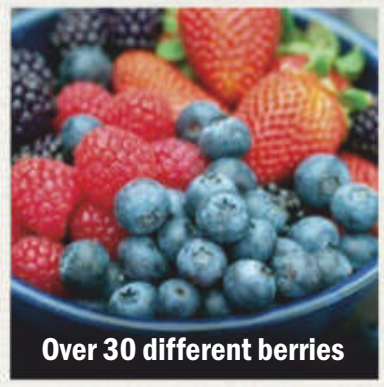
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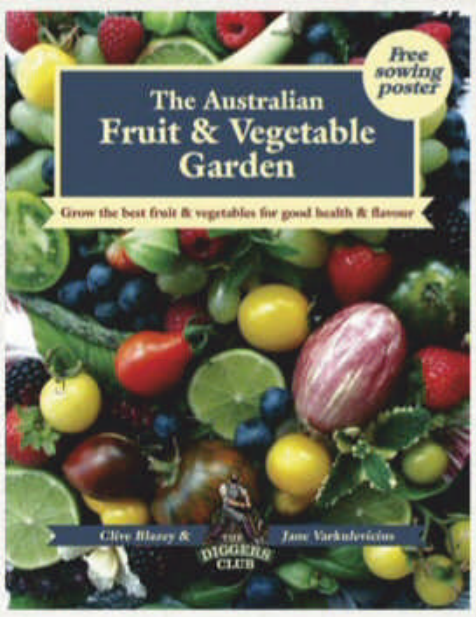

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organic gardening

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It will soon be time to prepare your cool season garden and plan what to grow. You'll find top tips, what you can plant now and pest alerts for your patch.

CHECK OUT FEATURE ARTICLES, READ BLOGS OR SUBSCRIBE AT ORGANICGARDENER.COM.AU

OUR COVER

COVER PHOTO BY KIRSTEN BRESCIANI. HEAD TO PAGE 26 TO READ ABOUT THE IMPORTANCE OF HEIRLOOM VEGETABLES AND HERITAGE FRUITS AND HOW WE CAN ENSURE THEY KEEP ON BEING AVAILABLE TO US ALL.

> NEXT ISSUE ON SALE MARCH 25, 2021

COVER PHOTO BY KIRSTEN BRESCIANI. OTHER PHOTOS: TOP: ALAMY/BOTTOM: HELEN MCKERRAL.

organic living

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STOP MAKING ME FEEL BAD!

When I come across stories like Little Oak Farm, I groan. How can one family achieve so much, be so together, have their sustainable life so on track? We have featured plenty of their type over recent years – they know who they are!

Suburban Existence in Melbourne, taking over a small apartment garden and communal space and turning it into a wonderland of abundance. Or Jade Miles and family at Black Barn Farm, going much bigger in rural Victoria with organic apple orchards, vegie plots aplenty, Toulouse geese roaming!

And of course, I regularly get the Milkwood permaculture crew's newsletter – Kirsten Bradley and Nick Ritar. Oh, so what are they doing now? Growing more mushrooms, making their own pasta, expanding their bees, moving to Tasmania, starting from scratch, and more – so much more than me!

I did expand our home's solar panels to 6.6kw, and I added some raised beds, the chooks are still laying, the tomatoes gave plenty before they succumbed to wilt. Still, it pales into insignificance alongside these self-reliance champions. When will they stop, do they relax?

But what I learnt from these stories, is that the Pips and Hugos of this world love what they are doing (Little Oak Farm page 64). They are immersed in it. They also work extremely hard, often packing in all the regular stuff – work, kids, schooling, alongside the sustainable living. In fact, as Pip and Hugo say: "It's become who we are."

The couple left an inner-Sydney apartment for a 30-hectare property at Cygnet, Tassie. Gradually, exhaustingly, over a decade they turned it into a way of life.

It helps that Pip has design qualifications, while Hugo's Chilean heritage means food and sharing with family and friends is everything. Raise pigs and make your own chorizo sausage? No problem! Raise chooks, bees and a daughter, Inès – no problem!

Of course we don't feature these stories to dishearten you. They are there for inspiration, pointing the way, showing what can be done, seeding ideas, helping others.

Many of you may have achieved similar self-reliant lives. But we all have different skill levels, energy levels. Some mere mortals like me play sport for goodness sake when they could be building sandstone walls!

Before I go, I must mention our feature articles on heirloom plants (page 26) and seed saving (page 32). Justin Russell has done a fabulous job on the former, explaining why heirlooms are so important and how he fell in love with them, while Helen McKerral provides an in-depth guide to all aspects of seed saving – invaluable when looking to save money and expand into more unusual varieties.

Steve Payne

From left: Pip and Hugo; preserving fresh fruit gets them through the winter; chooks enjoy scrounging.

PHOTO STEVE: MARTHA BEASLEY. OTHER PHOTOS: @ LIFE_AT_LITTLE_OAK_FARM.

mail

PEARS IN TROUBLE

I have two pears, one 'Williams' and one 'Bartlett'. Last spring the blossoms were eaten by ants. I banded the trunks this year and have been protecting the blossoms from frost with horticultural fleece. The 'Williams' pear is thriving and covered in blossoms. The 'Bartlett' has nasty little ill-formed buds that are dark and not opening properly (but no ants). I researched possible problems and pictures of blossom blast look most like mine. We did have five inches (127mm) of rain one weekend in Yass! I have read that severe cold and wet sets it off. Should I persevere for next year or cut my losses and replace it with a new tree in a better spot? I read that it's not usually able to be fixed.
Margaret Olsen, Yass (NSW)

Dear Margaret,
Pear blossom blast isn't common in Australia but it is a possibility during the kind of cold, wet conditions you've experienced. In other contexts, this problem is known as bacterial canker. It's a disease caused by the bacterium *Pseudomonas syringae*, and it commonly affects fruiting and ornamental trees by entering winter pruning cuts or wounds in the bark. In your case, the blossoms may have been injured by a late frost (despite your efforts with frost cloth), giving the bacteria an entry point and causing the blossoms and leaf tips to die back. You shouldn't need to remove or replace the tree. It should be possible to cut the plant back to healthy wood. Burn the infected prunings. Note that the disease spreads easily via infected tools, so sterilise secateurs with straight metho between pruning cuts.
Justin Russell

Above: 'Williams' pear tree.

Above: Different types of pots add colour and fun to any garden.

SEEKING A SLOTH

Thanks for this most enjoyable and informative magazine. Could you tell me where I can purchase the sloth hanging basket shown on page 57 of issue 121? I love it.
Bronte Clark, via email

Hi Bronte,
I'm glad you loved the sloth planter and enjoy *OG*. My daughter bought this and a delightful whale pot online from: sproutwellgreenhouses.com.au/product/hanging-sloth-planter-2/. Have fun filling your pots with plants!
Penny Woodward

NATIVE BEE CORRECTION

There was a typo in 'The Native Buzz' (OG 119) we would like to correct. On page 48 it stated there are 17 species of stingless bees in Australia. The correct figure is 11. Native bee experts have confirmed there are six species in the genus *Tetragonula* and five species in the genus *Austroplebeia*.

PHOTO: TOP: ALAMY/BOTTOM: PENNY WOODWARD

NETTLE MEMORIES

I spent the first 40 years of my life in Kent in the UK, and grew up on five acres (2 ha) with dogs, cats, ponies, chickens, geese, sheep and sometimes a pair of pigs. My memories of nettles are from regularly falling into them or trying to get through them to catch a recalcitrant pony or herd of sheep. This was usually followed by a mad hunt for a dock leaf (*Rumex obtusifolius*) to rub over the nettle rash, the sap of which instantly soothed your skin. My parents didn't like to use weed killer so there were plenty of nettles. They provide food for a variety of beautiful butterflies in the UK. My granny used to tell about using nettles to make delicious and nutritious soup during the war – "free food".
Georgina Liley, Albany (WA)

Above: Stinging nettle (*Urtica dioica*).

WINNING WORDS

Marvellous memories Georgina. We'd love to send you a copy of *The Sustainable House Handbook* by Josh Byrne as thanks.

GET IN TOUCH

PLEASE INCLUDE YOUR TOWN/SUBURB. PHOTOS ARE HELPFUL, AND ANY DETAILS SUCH AS CLIMATE AND SOIL. THE MORE INFORMATION WE HAVE THE BETTER.

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PHOTO: ALAMY

news

A WILD BANANA FUTURE

Wild bananas in Papa New Guinea could be the key to protecting this favourite fruit from climate change and pests and diseases, according to a report by ABC Rural.[1]

Belgium-based scientist Sebastien Carpentier recently led an expedition to Papua New Guinea to collect and conserve the genetics of these wild bananas, genes which are now stored in the world's largest banana gene bank in Leuven, Belgium. Dr Carpentier is a team leader with the Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT).

"The gene bank of Bioversity International contains currently 1617 accessions," Dr Carpentier explains. "Those are mainly cultivated bananas. The wild diversity is underrepresented and some of them are or will become on the red list of endangered species. Hence the initiative for the collection missions on wild bananas."

One of the aims of the program is to have a back-up in case of natural habitat loss. But protecting and encouraging diversity also means unique traits (for example, the superior water-use efficiency of the *Musa balbisiana*) can be adapted to help cultivated varieties resist future climate change effects such as drought.

"Our aim is to get banana agriculture more sustainable with less inputs of pesticides and water," Dr Carpentier says.

The work also aims to support local populations to protect the environment, while all material is collected under the protection of the International Plant Treaty for fair and equal sharing.

1. 'Scientists race to find wild, ancient bananas to save the popular fruit from climate change' by John Daly, abc.net.au/news/rural/2020-11-26/ancient-bananas-in-png-can-save-the-worlds-favourite-fruit/12917960

Above: A Papua New Guinea farmer holding some of the local red bananas.

SYDNEY EDIBLE GARDEN TRAIL

After successfully running the Sydney Edible Garden Trail as a virtual event in 2020, it returns this March 20–21 as a physical trail with gardens open for visits.

The trail will feature home gardens, school and community gardens, large and small, showcasing sustainable practices from composting to organic gardening for home food security.

Costa Georgiadis, of ABC *Gardening Australia*, will also be hosting live feeds from a number of gardens in a virtual event, on the weekend of February 27 and 28.

WHERE: Various Sydney gardens
WHEN: Physical Trail: March 20–21; Virtual Trail: February 27/28
COST: From $25 per adult with access to over 50 gardens. Family and children's tickets are also available. Virtual Trail: $6.36 (including admin fee)
DETAILS: sydneyediblegardentrail.com

Right: Costa Georgiadis will be hosting live feeds for the Sydney Edible Garden Virtual Trail.

RECYCLE YOUR POTS

An exciting new recovery and recycling program has been announced for polypropylene plastic pots, trays, labels and stakes used by the horticultural industry. Long awaited by landscapers, nursery people and home gardeners, this will allow us to close the loop on horticultural polypropylene.

The Australian Packaging Covenant Organisation (APCO) in partnership with Greenlife Industry Australia (GIA) has secured funding for the program. From early 2021, GIA and APCO will work closely with the horticultural sector across Australia, including the Landscape Association and Horticulture Innovation, on the design and implementation of an industry-endorsed network of collection points for plant packaging.

PHOTO TOP LEFT: SEBASTIEN CARPENTER

ORGANIC GARDENER READER OFFER

This month the team at **Garden Express** brings readers of ABC *Organic Gardener* magazine this very special offer.

Mega Gardener's Favourite Collection

jam-packed with all your favourite spring-flowering bulbs

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The Mega Gardener's Favourite Collection is the perfect way to give your patio or garden a lift. This great selection is made up of your favourite beautiful, easy-to-grow spring-flowering bulbs that are also perfect for growing in pots or containers.

This is a very popular collection as it includes 10 of the bestselling varieties from the Garden Express spring bulb range, collected together at a saving of over 45%. Valued at $129.80, this collection represents amazing value at only $70 and is exclusive to ABC *Organic Gardener* magazine readers.

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Planting for the future

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Bags of vegies

The new Vegebag, from the well-known Vegepod creators, is container gardening with a difference. Designed to function like a greenhouse, the polyethylene knitted mesh, which also protects crops from UV and pests, helps manage temperatures by allowing water and air to penetrate. With a hard exterior base and a simple wicking system, you'll soon be growing a delicious range of veg, from leafy greens to tomatoes and broccoli. Available from vegepod.com.au for $89.

Tools to go

Whether you plan to spend time tidying up your garden or head out to help with a local bushcare project, this Forestry Tools bush regeneration kit is ready to go! A four-pocket leather tool pouch with a leather belt, the kit will be handy with just the tools you need for a good tidy up. The Bush Regen Kit 2 costs $160 and includes Barnel B175 heavy-duty pruners, an Australian-made aluminium narrow trowel, Barnel Z210 150mm folding saw and a Mundial 15cm knife. For more details, visit: forestrytools.com.au

Planting ahead

Join Australia's largest community of gardeners at The Diggers Club, which for over 40 years has been helping its members grow rare heirloom varieties full of flavour and beauty. Members receive seasonal magazines, 20 per cent off all products, access to horticultural experts, free entry to the Diggers gardens in Victoria and eight free packets of seeds per year. Plus, if you join for two years you will receive four packets of free herb or vegie seeds to add to your autumn patch. For details and to join visit: diggers.com.au/join

ILLUSTRATION: ISTOCK

Autumn planting

February/March is the last call for overwintering vegies in cool climates. So, if that's the plan and you are looking for heirloom or open-pollinated seeds, Seed Freaks have over 400 different seed varieties to choose from. They specialise in rare beans and also have a range of around 200 tomato varieties (for the warmer months or the tropics). All heirloom or open-pollinated seeds are $3.50 and 90 per cent are grown organically in Tasmania. Visit seedfreaks.com.au to find out what seeds are available.

Head to page 26 for our feature on growing heirloom varieties.

Permaculture living

Ready to get the skills you need to create down-to-earth resilience in times of change, while learning from home? Join David Holmgren (who originated the permaculture concept with Bill Mollison in the late '70s) and the Milkwood crew of experts in this live online course. Running for 12 weeks and with a fully supported student forum, you can learn from the comfort of your own home and get the skills you need to start your own permaculture projects. For more information visit: milkwood.net/courses

Go to page 89 for a chance to win one online course.

Pots that last

Every gardener knows about the plastic punnet challenge – we all have too many and they break easily. The new silicone punnets from Mr Fothergill's don't crack, crush, rot or become brittle, making them an ideal sustainable addition to the garden. The punnets also help regulate soil temperature – important when growing from seeds and cuttings. A bonus is that the flexible silicone allows for easy removal of seedlings when ready to plant out. When you're done, simply wash them out and start sowing your next lot of seeds. Available as a twin pack at Bunnings and independent garden retailers nationwide, $17.95. Visit: mrfothergills.com.au

Solar-powered irrigation

Gardena's solar-powered AquaBloom Kit is a simple watering solution for areas without access to a tap and electricity. Great for planter boxes and pot plants on balconies, terraces and patios, the kit is easy to install and will water up to 20 plants equally with its micro-drip system powered by solar panels that charge batteries and an integrated pump that carries the water to the plants. A great solution when going away on holidays, or just set to automatic irrigation throughout the year. Available from Bunnings and independent hardware stores, $199. Visit: gardena.com/au

the best of your ABC

Not a patch on the locals

Gavin McGrath is hardly a doyen when it comes to organic gardening, but thanks to his regular gardening correspondent Rob Pelletier, he is less of a mug around the vegie patch than he used to be. You can hear them chatting on ABC Local Radio in Ballarat and across south-west Victoria every other Wednesday just after 10am. We asked Gavin about the show and the region.

What do you enjoy most about your conversations with the local gardeners? Regular listeners will know I'm a little "green" (as in inexperienced) as a gardener, so I'm just as likely to learn something new from them as they are from me. The best part is when they flick through photos of what they are up to so we can have a stickybeak. Some of the projects are brilliant.

Do people discuss drought/bushfires/climate change much with you and are attitudes changing? Not all the time but certainly during summer. One of our popular topics is how to get the most out of a garden using the least amount of water. I think people are learning to adapt.

Can you tell us a little about the food and cultural life across Victoria's south-west? If you can think of something you like, you can probably find it here – you just have to do a little exploring. There's the Great Ocean Road and Daylesford for starters, but also a rich selection of wineries, restaurants and places to visit.

Do you have a garden? If so what's growing in it? My wife Nat and I have had a crack at broccoli, carrots, lettuce and strawberries. Unfortunately, we tried some herbs and they took over the whole vegie patch. My skillset is limited. I'm safest looking after lawns and shrubs, and leaving the vegie patch to Nat.

DISCOVER THE BEST OF THE ABC

- *Gardening Australia* returns on Friday, February 12. But you can still get your fill of gardening inspo watching missed episodes on iview.
- Check out organicgardener.com.au for blogs, gardening tips, competitions and the latest news.

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ABC RADIO CENTRAL COAST
SATURDAY 9AM
ABC CENTRAL WEST
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ABC ILLAWARRA
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SATURDAY 9.30AM
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SATURDAY 8.30AM
ABC NEW ENGLAND NORTH WEST
SATURDAY 8.30AM
THURSDAY 9.30AM
ABC NORTH COAST
SATURDAY 8.30AM
ABC RIVERINA
SATURDAY 8.30AM
ABC SOUTH EAST
WEDNESDAY 10AM
SATURDAY 9AM
ABC WESTERN PLAINS
THURSDAY 9.35AM, FORTNIGHTLY
SATURDAY 8.30AM

WA

ABC RADIO PERTH, ABC GREAT SOUTHERN, ABC SOUTH WEST, ABC GOLDFIELDS ESPERANCE
ABC KIMBERLEY, ABC PILBARA, ABC MIDWEST AND WHEATBELT
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SATURDAY 9AM
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FRIDAY 10AM
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FRIDAY 10AM
ABC FAR NORTH
FRIDAY 10AM
SATURDAY 8.30AM

SA

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ABC BALLARAT
WEDNESDAY 10.20AM FORTNIGHTLY
ABC GOULBURN MURRAY
TUESDAY 9.40AM
ABC SOUTHWEST VICTORIA
THURSDAY 7.20AM FORTNIGHTLY
ABC WIMMERA
THURSDAY 9.40AM

ACT

ABC RADIO CANBERRA
SATURDAY 8.30AM

TAS

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GETTING FRUITY

THESE HERITAGE GEMS PROVIDE FRUIT FOR THE PICKING, WRITES PENNY WOODWARD.

FACT FILE

Many potted heritage fruit trees can be planted in autumn, when they can quickly establish in still-warm soil. Water well after planting and keep well-watered through dry periods. Once new growth starts in spring, feed and mulch well. Alternatively wait until bare-rooted trees and vines are available in winter.

'CARDINAL' GRAPE

VITIS VINIFERA 'CARDINAL'

Also known as 'Red Cardinal', this lovely old grape bears loose bunches of large, red-purple seeded fruit early in the season. A tough well-known home garden cultivar, it originally came from California in the late 1930s, and is mainly eaten fresh or sun dried to produce raisins. 'Cardinal' is a vigorous grower, needing strong support from a pergola or sturdy timber frame. Top dress with compost and mulch over the soil each spring. Water regularly, especially while the fruit is growing and swelling. In high humidity, prune to thin the foliage to prevent powdery mildew (if affected, spray with milk diluted with water 1:9). Prune hard in winter back to the main framework, leaving spurs with only two basal buds. Cardinal is heat and humidity tolerant and very cold-tolerant when dormant, but new growth can be damaged by temperatures below -3°C.

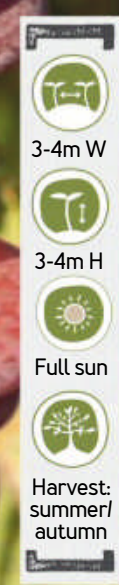

PHOTO: ALAMY

CLIMATE ZONE KEY:

TROPICAL · SUBTROPICAL · ARID/SEMI-ARID · WARM TEMPERATE · COLD TEMPERATE

'BROWN TURKEY' FIG

FICUS CARICA 'BROWN TURKEY'

All figs are easy-to-grow, deciduous trees but 'Brown Turkey' is particularly resilient, doing well in both dry and humid regions as well as temperate climates. Plant into good composty soil in a sunny position with good drainage. These heritage figs, originally from Provence in France, can eventually get very big, both tall and wide, but are also happy having their roots constrained in a large pot. Smaller trees are easier to net to protect fruit from birds, bats, rats and possums. Purple-brown fruits are sweet, with pale-pink, richly flavoured flesh. Eat fresh, or cut in half and dry for later. Figs also make delicious jam and are easily bottled. In winter, prune back by one half to one third as fruit usually only grows on new wood. This cultivar quite often bears two crops, with the main crop in autumn and a breba crop that will over-winter to ripen in spring. Figs won't ripen once picked.

MEDLAR

MESPILUS GERMANICA

Medlars are deciduous small fruiting trees in the rose family that have been grown and eaten since medieval times. They thrive in cooler climates, in a sunny position with well-drained, reasonable soil. The lovely open, white flowers are followed by the unusual dark-brown, rounded fruit. Pick fruit when hard and inedible in late autumn and leave for 1-2 weeks in a cool, dark spot until they soften and flesh becomes brown and mushy. This is known as 'bletting'. The flesh smells of ripe apples, has the texture of custard and tastes like honey. I love them. Louis Glowinski in his seminal fruit book says, "If approached without bias and preferably with closed eyes, the taste is delicious." Eat bletted fruit by scooping out the flesh from the skin and removing the large seeds or just mix the flesh with thick cream. Add to cakes, biscuits and desserts or make them into jams and jellies that combine well with gamey meats.

'BEURRE BOSC' PEAR

PYRUS COMMUNIS 'BEURRE BOSC'

My favourite heritage pear, this one originated from Belgium in the first decade of the 1800s. Buttery and delicious when soft, I prefer to eat them while still hard and crisp. For me this heritage pear is the epitome of perfect pear flavour. Plant trees into deep, rich, slightly acid soil, in a sunny position. Trees need to be cross-pollinated by another pear cultivar such as 'Williams' or 'Doyenne Du Comice' and need 800 chill hours so are not suited to warmer climates. Dwarf trees are best for an average garden, and can be planted into pots or espaliered. Full-sized trees need a lot of space. Feed during spring, summer and autumn with compost and well-rotted manure, and keep well watered. Harvest the russet-skinned, bell-shaped fruit while it is still firm but snaps easily from the tree when fruit is lifted. Fruit will gradually ripen over coming days or even weeks. Refrigerate for longer storage.

PHOTOS: TOP: ALAMY/CENTRE & BOTTOM: PENNY WOODWARD.

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TOP TIP

IN HOT WEATHER, CAULIFLOWER HEADS CAN GET SUNBURNT EASILY, AFFECTING THE FLAVOUR AND COLOUR. PROTECT PLANTS BY TYING THE OUTER LEAVES TOGETHER OVER THE TOP.

THE QUIET ACHIEVER

AFTER YEARS OF INDIFFERENCE FROM GARDENERS AND COOKS, CAULIFLOWER IS HITTING THE BIG TIME IN THE VEGIE WORLD. KAREN SUTHERLAND GIVES THE LOWDOWN ON GROWING AND PREPARING IT.

Let's say you've kicked some winners with kale, bewitched broccoli and conquered cabbage. You can trade tales of the horrors of cabbage moth with the most venerable of vegetable growers. You've been expanding your patch, and you're up for a new challenge – so why not give cauliflower a crack?

Cauliflower has come to prominence of late and, thankfully, is no longer thought of as so bland it needs to be coated in cheesy sauce to be loved. Having found new friends in the paleo, vegan and gluten-free communities, it now shines as a low carbohydrate 'rice'. Whole-baked cauliflower is unexpectedly divine and is even more amazing when you're baking your own homegrown, chemical-free head.

This brassica is the ultimate background performer, ticking away in the garden for so long that you kind of forget it's there, then emerging triumphant and fulsome. If you have space and patience, it is tremendously rewarding.

Origins

Cauliflower's name comes from the Latin words *caulis* (cabbage) and *flōs* (flower). Cauliflower, *Brassica oleracea* Botrytis Group, is in the Brassicaceae family which also includes broccoli, cabbage, Brussels sprouts and kale. This flowering cabbage was mentioned as 'cyma' in the 1st century CE by Pliny the Elder in his *Natural History*.

By the 12–13th century, Arabian botanists described cauliflowers as originating from Cyprus and there was a trade in seeds for many years between Cyprus and Western Europe. In 1597, John Gerard's *Herball* first used the Latin name 'cole fiore', meaning 'flowered cabbage'. At the same time, cauliflowers began to appear in French cookbooks and were already grown in Italy.

The good stuff

Cauliflower is a low-calorie, high-fibre food, with good levels of vitamins C and K and some B vitamins. Importantly, cauli contains high levels of health-promoting phytochemicals such as carotenoid antioxidants (in green cauliflower) and glucosinolates.

The purple colour in cauliflowers such as 'Sicily Purple' comes from anthocyanins. These are water-soluble pigments found in many other plants and plant-based products, such as red wine, and well-known for their anti-inflammatory, anti-viral and anti-cancer benefits. Nutrients and phytochemicals are retained best by eating cauliflower lightly steamed or sautéd. Cauliflower is best avoided if you have low thyroid function as it is goitrogenic, meaning it affects thyroid hormone production.

Left: Purple cauliflower, such as 'Sicily Purple', gets its colour from health-promoting anthocyanins.

PHOTO: KIRSTEN BRESCIANI

From above: Thinning out cauliflower seedlings; the 'Green Macerata'; harvesting cauliflower.

TOP TIP

WHILE YOU'RE WAITING FOR YOUR CAULIFLOWERS TO GROW, INTERPLANT WITH SOME QUICKER GROWING VEGETABLES THAT YOU CAN HARVEST FIRST. LEAFY LETTUCES, SPRING ONIONS, RADISHES AND HAKUREI TURNIPS ARE ALL SUITABLE.

Cultivation from seed to curd

Growing cauliflower is not a casual commitment! The growth times are long (more than two months), as well as requiring fertile, well-drained soil, full sun, regular watering, and stable daytime temperatures between 21–29°C.

Choose a bed that hasn't grown any brassicas, including kale or broccoli, for the last three years – this crop rotation will minimise pest and disease problems.

If possible, prepare your soil four weeks before planting seedlings by checking the pH. Cauliflowers like an acid soil with pH from 5.5–7, so if your soil is too acidic (less than 5.5), use lime or dolomite lime to raise the pH, or sulphur if your soil is too alkaline (over pH 7). Simple pH kits can be purchased from your local nursery. Then, add plenty of organic matter to help with soil moisture retention and microbial levels. Spread around 50mm of compost and 25mm of well-rotted fowl manure over the surface before forking through evenly.

Make sure your bed has good drainage as cauliflowers won't tolerate wet feet.

When to sow?

In cooler regions, sow in spring and autumn, but in autumn make sure plants are well established before really cold weather slows growth. Conversely, if spring sown seed or plants are not growing strongly before hot weather arrives, then they may be adversely affected, too. By choosing different cultivars, harvests can occur from winter through spring and well into summer. In sub-tropical and tropical climates, sow cauliflower seeds or seedlings in early autumn for a winter harvest, choosing quick maturing cultivars such as 'Snowball' or 'Mini'.

Sowing the seeds

Cauliflower seeds are usually viable for four years in good storage conditions. Choose good-quality, fresh seeds to give yourself the best chance of success. I've found that planting quite small brassica seedlings gives the best chance of a good harvest, as long as they are protected from pests!

To sow seeds directly, after preparing your soil, ensure it's broken down to a fine tilth and raked level. Sow seeds around 40cm apart in rows up to 45cm apart, pushing each seed in gently to a depth of around 0.5cm. Firm the soil on top of each seed and water with a fine spray. Keep moist. Plant two seeds in each spot then cut the weakest one off at ground level in a couple of weeks.

To plant in punnets, sow seeds in seed-raising mix to a depth of 0.5cm. Water once or twice daily while seedlings emerge over the next two weeks and until they're ready for planting a couple of weeks later.

As seedlings emerge, whether in the punnet or in the ground, fertilise with liquid seaweed and an all-purpose liquid feed, both diluted to the rates given on the bottle for seedlings.

For planting, space seedlings the same as for seeds, to allow them to grow to their best size. Mini cauliflower varieties can be planted more closely. Water your newly transplanted seedlings in with diluted seaweed solution to help prevent transplant shock.

PHOTO: TOP LEFT: ISTOCK/TOP RIGHT: THE GARDEN COLLECTION

Watering

Sudden dry or hot weather can cause issues with flavour and head formation, so mulch around your plants to keep soil temperatures even, and be sure to water regularly and deeply. Using a drip system close to the roots can help with water getting to where its needed, or in a small garden you might pull back the mulch gently at the base of each plant when hand watering. Avoid overhead sprays, which can encourage mildew, especially in humid conditions.

Fertilising

Best results are achieved with ongoing fertilising once heads, known as curds, start to grow. Feed your cauliflower weekly with diluted liquid seaweed as well as a nutrient-rich liquid feed, such as compost tea or worm leachate tea, or a commercial complete fertiliser. Liquid seaweed increases plant wall thickness and therefore resistance to diseases and pests, as well as giving better tolerance to extreme temperatures.

Pests and problems

The worst cauliflower pests are the dreaded cabbage moth, as well as other moths and aphids, and slugs at harvest time. For aphids, place yellow plastic dishes half-filled with water near your plants to attract aphids to a watery grave. Cabbage moths can be deterred by fake 'moths' cut out from white, plastic ice-cream lids and attached to the end of thin stakes, then put into the garden as if the moths are hovering over the plants.

HARVESTING

Cut heads when they are tight and before the curds start to open up. As cauliflowers are heat sensitive, pop your harvested caulis in the crisper section of your fridge if you're not planning to use them straightaway.

Alternatively net your plants soon after planting. I now grow all my brassicas inside insect-excluding mesh – worth the effort to set up given there is no cabbage moth or aphid anxiety! If you get caterpillars on your plants, use homemade soap spray (make by dissolving two tablespoons of soap flakes into one litre of water) or, if you're losing the battle, use *Bacillus thuringiensis* (Bt), also sold as Dipel. This is a biological control that affects only caterpillars, which takes a couple of days to work, so keep up removal by hand while you're waiting. Catch slugs with jars of beer set into the soil near ground level. Also, protect by placing plastic garden pots with a hole cut in base over the top.

In hot weather, cauliflower heads can get sunburnt easily, affecting the flavour and colour. Protect plants by tying the outer leaves together over the top of each plant or seek out varieties such as 'Self Blanche'.

PHOTO: GAP PHOTOS

TAKE YOUR PICK

VARIETY	DESCRIPTION	WEEKS TO HARVEST FROM TRANSPLANT	NOTES
'ALL YEAR ROUND'	Dwarf plant, medium, white head	13–15	F1 hydrid; best in cool climates
'GREEN MACERATA'	Vibrant green, 1–1.2kg head	9–11	Italian, vigorous, early bearing; frost tolerant
'MINI'	Small, firm, white head, dwarf plant	9	Good for warmer regions
'PALEFACE'	Large, white heads	16–20	Developed in WA, can be slow to start
'PHENOMENAL EARLY'	Large, firm, white head	11–14	Good for warmer regions
'PURPLE SICILY' 'VIOLET SICILIAN'	Large, purple heads; milder, sweeter flavour than white	15–17	From early 1800s, good pest resistance; probably a broccoli-cauli cross
'ROMANESCO'	Bright-green, large head that forms a fractal pattern; nutty flavour	12–16	From 16th century Italy, probably a broccoli cauli cross; Frost tolerant
'SELF BLANCHE'	Medium, white head	11–13	Abundant leaves to protect head from sun
'SNOW BALL'	Early, white, tight head	9–12	German from 1700s; bred for summer and autumn harvest

PHOTO: ALAMY

Left: 'Purple Sicily' is also called 'Violet Sicilian'.
Above: The 'Romaneso' head forms a fractal pattern.

PHOTOS: LEFT: GAP PHOTOS LEE AVISON DESIGN MAUREEN SAWYER/RIGHT: ISTOCK

Seed saving

As brassicas cross-pollinate easily, many varieties have been lost. If you would like to save your own seeds, remember that most heirloom cauliflowers in Australia, except for 'Snow Ball', are biennials, so they will take two growing seasons to produce seed. *The Seed Savers Handbook* recommends that plants should be separated by 360–900m from any other *Brassica oleracea* to remain true to type. Alternatively, just make sure that only one brassica species is in flower at a time. See page 32 for our 'Essential Guide to Seed-saving'. og

IN THE KITCHEN AND BEYOND

A versatile vegetable: the French eat cauliflower raw as crudites, while Italians prefer it pickled in a mixed jar of giardiniera. It's tasty whether steamed, roasted, stir-fried or deep-fried in batter. It adds flavour to a soup or curry. Add young leaves to any dish and cut older leaves and the stems to cook in slower, longer-cooking dishes like minestrone soup.

Cauliflower can cause gas, which can be reduced by adding carminative herbs and spices, such as winter savoury leaves or fennel and cumin seeds and ground coriander. Flavourwise, other good partners for cauliflower are turmeric, garlic, cheese, almond and mustard.

Cauli has risen in popularity in recent years due to its suitability for a number of special diets, from gluten free to keto. It can be pulsed into 'rice', used to make pizza bases or even added to smoothies. Finally, don't forget to treat your chickens, who will always love a feed on cauliflower stems and leaves.

SOURCES

If in a hurry, you might strike it lucky and find heirloom seedlings at your local nursery (if not, hybrids will do but you can't save seed). Otherwise, here are some suppliers:

- The Diggers Club: diggers.com.au
- Eden seeds: edenseeds.com.au
- Goodman Seeds: goodmanseeds.com.au
- Greenpatch Organic Seeds & Plants: greenpatchseeds.com.au
- Life-force Seeds: lifeforceseeds.com.au
- The Lost Seed: thelostseed.com.au
- Seedfreaks: seedfreaks.com.au
- Southern Harvest: southernharvest.com.au

PHOTO: KIRSTEN BRESCIANI

Our precious HEIRLOOMS

HEIRLOOM VEGIES AND HERITAGE FRUIT PROVIDE BEAUTY, FLAVOUR, DIVERSITY AND RESILIENCE IN A FAST-CHANGING WORLD. BUT IN ORDER TO SAVE THEM, WE NEED TO GROW THEM. JUSTIN RUSSELL TELLS THEIR STORY.

When it comes to growing heirloom vegies, every enthusiast falls down the rabbit hole via a different route. For some, it is the promise of supreme flavour. For others it is an ancestral connection. For others again, it is something as simple as exceptional beauty. After seeing a cob of luminescent 'Glass Gem' corn, who wouldn't want to give it go? For me, a lover of words, my passion for growing heirlooms started with the names.

The first tomato I grew was the exotic sounding 'Rouge de Marmande'. Then there was 'Dragon's Tongue' bean. The mysterious 'Drunken Woman' lettuce. 'Bull's Blood' beetroot. And perhaps the best named vegetable of all time, 'Old Women Meet and Gossip', a kale variety from Ethiopia. To be honest, I didn't really care what they tasted like and whether they were superior to hybrid varieties in some way. I was totally fascinated by their monikers.

Today, after growing heirlooms for more than 20 years, I've come to learn that they're so much more than names. Seeds are not inanimate objects. They tell stories of people and places, ways of growing and above all resilience in the face of hardship and sometimes, gross injustice. Native American farmer Rowen White, a Mohawk seed keeper (sierraseeds.org), believes that seeds contain ancestral memories and therefore have the power to reconnect people to culture and create a fairer food system.

Heirloom vegies and fruits offer beauty, colour, flavour and a connection to our ancestors.

Top: The 'Cherokee Trail of Tears' bean.
Above: 'Glass Gem' corn.

"Encoded in these seeds are ceremonies and seed songs and lineages and migration stories," White says. "When we have a relationship to these seeds and eat them at our kitchen tables, then we begin to call all of that richness back into our lives again."

The small, black, 'Cherokee Trail of Tears' bean you may hold in the palm of your hand, has a very real story to tell. In the late 1830s, a relocation march was forced upon the Cherokee people of southeastern America by the US government. During brutal winter conditions at least 4,000 people died, many from exposure, others from disease and murder. The Cherokee that survived were made to scratch out an existence on unfamiliar lands in Oklahoma, which were designated as "Indian Territories". Seeds were carried in the pockets of survivors. These were planted in the new lands, saved, and handed down to subsequent generations. 'Cherokee Trail of Tears' bean now serves as a living memorial to those who died, and the injustices of colonisation.

Heirlooms and ownership

This story begs the question, what defines an heirloom plant? Is it just a variety that has been handed down through generations? There is no fixed, agreed upon definition so I define heirlooms like this: where F1 hybrids are plants owned by corporations, heirlooms are plants held in common by everyday people.

This plays out in practical ways. If you try to save seed from a hybrid (made from crossing two parent plants), particularly an F1 hybrid, the offspring won't look like the plant you saved seed from (see 'Creating hybrids' below). That is, it won't grow true to type. Heirlooms differ in that they are open-pollinated, which means a particular variety (technically, a cultivar) will grow true to type from saved seed.

All this means that heirlooms can be grown and shared for many generations. F1 hybrids must be purchased anew every year from the corporation that has ownership, and here's the thing: despite all the rhetoric about "feeding the world" and the "Green Revolution", corporatised agriculture is actually mostly about profit, and the ultimate way to maintain profits is to make food growers (gardeners and farmers)

Creating hybrids

Hybrids can occur accidentally in nature or deliberately when a gardener, farmer or seed company crosses two different cultivars of the same species in an attempt to develop particular characteristics. These are then selected over seven or more generations until the seed is stable and grows true to the parent. These are sometimes called modern heirlooms.

F1 (first filial) hybrid seeds and the plants grown from them, result from two different plants being bred on themselves and selected over several generations for a particular characteristic (such as long storage for one plant and simultaneous fruiting for the other), resulting in two 'pure lines'. Once stabilised the breeder then cross-pollinates these two lines, producing F1 hybrid seeds that will grow plants showing the required characteristics of both lines. F1 hybrid seed are deliberately unstable after the first generation so that seed can't be collected and regrown by the gardener or farmer to get the same results.

PHOTO: TOP: GAP PHOTOS LYNN KEDDIE/BOTTOM: ALAMY

TOP 5 HEIRLOOMS *to plant now*

1 BROCCOLI 'PURPLE SPROUTING' – One of my all-time favourites, this non-heading broccoli produces a mass of purple florets in late winter and spring. Plant in early autumn for a long growing season.

2 BEETROOT 'CHIOGGIA' – A wonderful variety that originated in a market town north of Venice. Decorative and delicious with red and white candy stripe bulbs topped by tasty, spinach-like greens.

3 PEA 'ALDERMAN' – A traditional shelling pea from the UK that grows to 2m tall and produces an abundant crop of fat, green pods. The flavour of the shelled peas is simply wonderful!

4 CARROT 'KURODA' – A quick-growing Japanese variety that produces chunky roots with red-orange flesh. Great for heavier soils and copes with subtropical conditions.

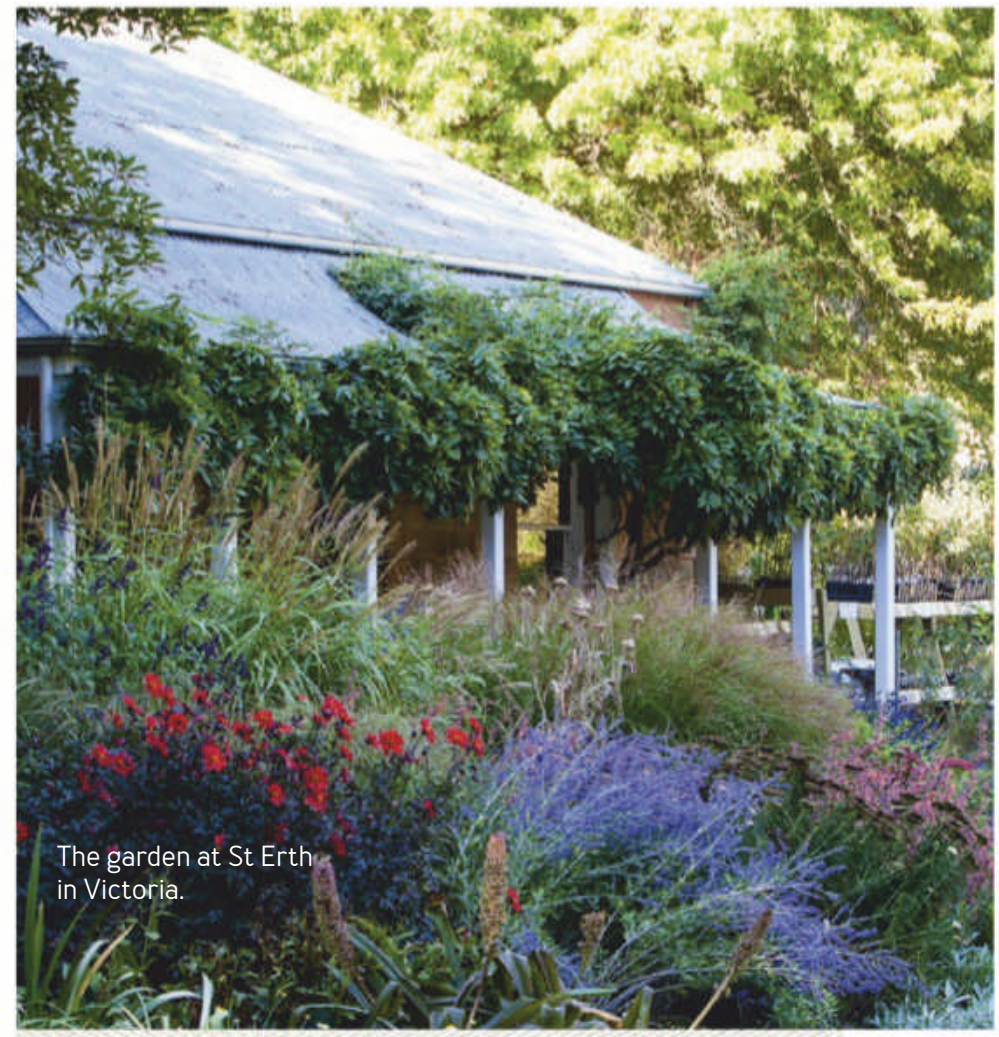
5 ONION 'BARLETTA' – An old Italian variety that produces flat, white, sweet bulbs in just three months. Plant in late summer or early autumn for a harvest before the winter solstice.

pay continually for seeds they were once able to save and replant for free. Food sovereignty advocates argue that everyone should have the ability to determine what they grow and eat. This is only possible if seeds are open-pollinated and held in common ownership.

The saddest part is that since the advent of industrial agriculture, globally, thousands of unique fruit and vegetable cultivars have been lost from gardens and farms. Gradually, small seed companies specialising in heirlooms have been swallowed up by big companies more interested in hybrids. It is estimated that in the last century developed countries have lost more than 90 per cent of cultivars.

There is also the issue of nutrition. Many developers of F1 hybrid vegetable varieties, being primarily interested in profits, want their seeds to bear crops that resist pests, are super abundant, can be picked all at once, transported long distances, and will display well on a supermarket shelf. The trade off in achieving these goals is a dilution of nutrients in hybrid vegetable varieties.

Not so with heirlooms. These varieties are usually lower yielding than hybrids, but what they lack in numbers they certainly make up for with nutrients. This nutrient density is a boon for eaters in two ways. One is better quality food with greater health effects. The second is more pleasurable food with gobsmacking flavour – we can taste the nutrients!



The garden at St Erth in Victoria.

PHOTO: THE DIGGERS CLUB

Digging the future

No organisation in Australia has done more to preserve and distribute heirlooms than The Diggers Club. Established in the late 1970s by Clive and Penny Blazey, the inspiration for Diggers was Gerrard Winstanley, a 17th century English radical who founded an activist group known as the True Levellers. Contemporaries called them the Diggers, because they occupied land that had been privatised by enclosures, tearing down hedges and filling in ditches so that they could plant vegetables and feed the crops to the poor. The Blazeys set up their business with an equally radical purpose: to rescue old and interesting vegetable varieties that were being dropped by large seed merchants.

The first Diggers catalogue, published in 1978, featured 300 heirloom vegetable and flower varieties. The business flourished in the ensuing decades, to the point that the most recent Diggers seed annual was sent to 76,000 members. It featured more than 350 varieties of heirloom vegetables and fruit, and 100 varieties of flowers.

In 2011, the Blazeys gifted ownership of their business, along with two historic family owned gardens – Heronswood on the Mornington Peninsula and St Erth in the central highlands – to a newly established charity. The Diggers Foundation has a simple, but profound aim: "To encourage and inspire gardeners to create beautiful and productive gardens for a sustainable future."

Stories to tell

CUCUMBER 'LEMON' Not all heirloom veg is completely above board. This unfortunate cucumber, which is actually a ripper to grow and lovely to eat, was the product of a snake oil salesman who claimed he used an orange blossom plucked from his daughter's wedding bouquet to pollinate a cucumber. The result was a "true lemon cucumber", which he sold at the exorbitant price of $1 per seed! In truth, citrus and cucurbits will not cross pollinate and the round, lemon yellow, zesty tasting fruit is simply the result of traditional plant breeding and was introduced to the US in 1894. It's a great variety for growing on a trellis.

LETTUCE 'FORELLENSCHLUSS' There are lots of beautiful heirloom lettuce varieties in cultivation, but my favourite, and I would argue the most beautiful of all, is 'Forellenschluss'. It's an Austrian variety whose name loosely translates as "speckled trout". Kind of odd, right, until you see the plant. It's a cos or romaine style lettuce with lime green leaves that are artfully splashed with spots and blotches of maroon, resembling the markings on a trout's back. The leaves taste as good as they look, and the plant is a good variety to grow as a bolt-resistant summer lettuce.

PUMPKIN 'QUEENSLAND BLUE' As the name suggests this homegrown heirloom originated in Beaudesert, Queensland, sometime during the early 20th century. No-one's quite sure when but there is a record of seed being sent to the US in 1932, so it was probably bred in the years during or just after the First World War. What is known for sure is that this pumpkin produces a glaucous coloured fruit with enough flavoursome flesh to keep the average family in pumpkin soup for a fortnight. I remember my Pa growing Queensland Blues on his Brisbane market garden and on many occasions, I was served roasted "blue" alongside sliced lamb for Sunday lunch. Queensland Blue is a national treasure!

POTATO 'PINK EYE' I was once asked whether I have a favourite vegetable. Off the top of my head I said, yes, the potato. It remains so to this day. My favourite spuds are waxy, and one of the best waxy spuds of all is the Tasmanian bred beauty, the 'Pink Eye'. It has nothing to do with irritated eyes. The name refers to the small indentations scattered around the tuber, which are coloured pink against the rest of the creamy-white skin. 'Pink Eye' was developed around 1900 at South Arm, a peninsula to the southeast of Hobart. Here, it thrived in salt spray and sandy soil, earning a reputation as one of the world's easiest to grow and most delicious to eat

Top: 'Forellenschluss' lettuce.

Above: 'Queensland Blue' origins date back to 1900s.

PHOTO: TOP: ALAMY/BOTTOM: ISTOCK

Top: The Tasmanian 'Pink Eye'.
Above: 'Broad Ripple Yellow Currant'.

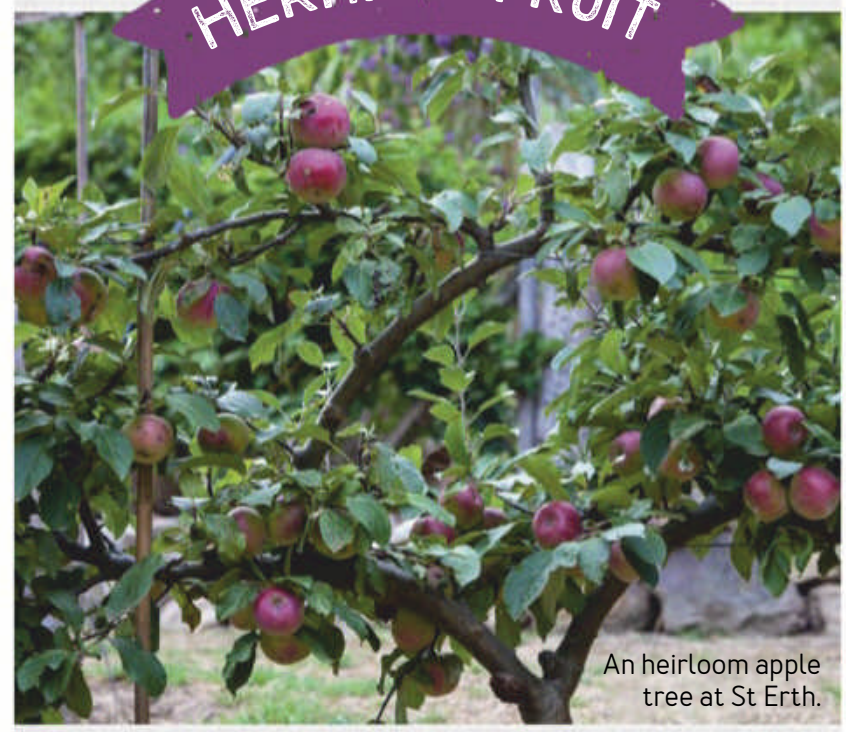
potatoes. It's still available from seed potato sellers in winter and if you're in a temperate climate, it's definitely worth a go.

TOMATO 'BROAD RIPPLE YELLOW CURRANT'

Sometimes the best heirlooms aren't the biggest, or the flashiest. This little currant sized tomato is pretty enough, but what really sets it apart is its wonderful story of triumph over adversity. You're probably wondering about the name? Well, Broad Ripple is a neighbourhood in Indianapolis. The tomato in question was thought to be extinct, until some keen eye spotted it growing out of a crack in the sidewalk in the aforementioned neighbourhood. It was pulled up, transplanted and survived. Seed is now available all over the world and is grown by tomato enthusiasts who enjoy prolific crops of bright yellow fruit produced on tough, vigorous vines.

PHOTO: TOP: ALAMY/BOTTOM: THE DIGGERS CLUB/FAR RIGHT: THE DIGGERS CLUB

HERITAGE FRUIT



An heirloom apple tree at St Erth.

Just like heirloom vegies, fruiting plants can be handed down through the generations. In fact, if you plant an 'Isaac Newton' apple, also known as the 'Flower of Kent', you're planting a tree with the exact same DNA as the tree in Lincolnshire under which the famous physicist developed his theory of gravity. There's a simple reason for this – nearly every apple tree is grafted with scions that were historically taken as cuttings from the original tree.

The other thing to note is that fruiting plants aren't immune from genetic modification or corporate control. Many old varieties have been lost over the last hundred years as they've fallen out of favour with orchardists. Thankfully, there are numerous groups in Australia and overseas dedicated to conserving heritage fruiting plants, including some excellent nurseries.

For more information visit: heritagefruitssociety.org

SUPPLIERS

You can get heirloom seeds from a variety of sources, including online sellers and gardeners giving them away. However, not all online sellers are reputable. Look for sellers with a strong track record. These include:

- **The Diggers Club:** diggers.com.au
- **Eden Seeds:** edenseeds.com.au
- **Green Harvest:** greenharvest.com.au
- **Greenpatch Organic Seeds:** greenpatchseeds.com.au
- **Heirloom Harvest:** heirloomharvest.com.au
- **Inspirations Vegetable Seeds:** vegetableseeds.net.au
- **The Lost Seed:** thelostseed.com.au
- **Rangeview Seeds:** rangeviewseeds.com.au
- **Royston Petrie:** rpseeds.com.au
- **Seed Freaks:** seedfreaks.com.au
- **Southern Harvest:** southernharvest.com.au

Also look for seed saver groups in your area and start saving seeds yourself: seedsavers.net

> *Turn the page for our Essential Guide to Seed Saving.*

Allium seed heads cut down for drying and seed-saving.

PHOTO: ALAMY

Essential guide to SEED SAVING

HELEN MCKERRAL EXPLORES HOW NATURE SPREADS SEEDS, THE VALUE OF SAVING SEED FROM YOUR GARDEN, AND HOW TO DO IT.

For countless generations of farmers, home gardeners and First Nations peoples worldwide, saving their own vegetable and crop seeds to replant was not optional: it meant survival. Vegetables were open pollinated by whatever bees and insects were about, and this, plus deliberate crosses by farmers and gardeners, created numerous heirloom varieties suited to different conditions and tastes not only in Australia, but around the globe.

Although many of us now buy seeds from our local nursery or seed supplier, this is a relatively recent development, and saving seed from your own garden to replant the following year has many wonderful benefits.

Why save seed?

Saving seed is fun, and watching a plant's entire life cycle makes you a better gardener. When you plant seeds back into your garden, you notice where seedlings thrive, and better understand their cultivation requirements, such as the thyme that germinates only in my drystone walls. And I'm often amazed at how many vegetables prefer sawdust paths over meticulously prepared beds!

Saving seed saves you money, and you'll also become more sustainable by further reducing the food miles on your dinner table. As well, you'll be part of a global seed-saving community: when rare varieties grow in many gardens, they are unlikely to be lost.

If you collect seeds from the healthiest, strongest, most productive plants year after year, you select those that do best in your local microclimate – in effect, a breeding program that adapts plants ever more closely to your specific garden conditions.

In fact, since beginning to save seeds, I've often had more success than with commercial seeds. Once, I was even too successful: thinking to save time, I banged ripe parsnip seed heads against the ground in areas I wanted sown. Unfortunately, they came up in a carpet so thick that I then spent many, many hours thinning them out! The seeds in those heads equalled dozens of commercial seed packets, and it was super fresh, with high germination rates. I still sow vegetables that way, but much more carefully!

Vegies gone to seed attract insects.

Right: Salsify seed will be blown by the wind.

Finally, some unusual varieties, such as glossy angelica, grow only from fresh seed, rarely available commercially, so collecting your own ensures you keep them.

Pollination, hybrids and heirlooms

Many vegetables and most fruit trees are pollinated by insects, notably bees, but others, such as corn and avocadoes, are wind-pollinated. Species pollinated by wind must be planted close together, or in a block. Other vegetables such as tomatoes, lettuce, and silverbeet are also self-fertile (self-pollinating), so they don't need pollen from another flower or plant to fruit or set seed.

Heirlooms are open-pollinated and reliably stable, with offspring indistinguishable from parents. This means you can collect your own and plant seeds that will grow true to the parent plant. These seeds belong to everyone (refer to 'Our precious heirlooms' on page 26 for more details on this type of seed). However, some cultivars in your garden may hybridise naturally. Certain vegetables are more prone to this – self-fertile tomatoes generally breed true, but squashes are more likely to cross. This can be beneficial, resulting in interesting flower colours, or pumpkins with unusual shapes.

DID YOU KNOW?

THE OLDEST VIABLE SEEDS TO SUCCESSFULLY GROW NEW PLANTS ARE TRULY ANCIENT. THEY INCLUDE A 1,200-YEAR-OLD LOTUS SEED FROM A LAKE BED IN CHINA, A 2,000-YEAR-OLD DATE PALM SEED EXCAVATED FROM THE RUBBLE OF AN ANCIENT SITE IN ISRAEL, AND, ASTONISHINGLY, SILENE GROWN FROM TISSUE CULTURE EXTRACTED FROM 32,000-YEAR-OLD SEEDS FOUND IN SQUIRREL BURROWS IN SIBERIAN PERMAFROST!

To minimise natural hybridisation, plant just one variety of the vegetable, or make sure they flower at different times, and/or use insect exclusion net or bags over the buds you wish to collect from. When flowers open, pollinate using a little paintbrush to transfer pollen, and re-bag. Collect seed when fruit ripens.

Brassica seed pods developing.

How to save seed

Letting flowers and vegetables seed means leaving them in the ground past their 'prime', but it's simply another satisfying harvest. Yes, beds look somewhat messy during seasonal changeovers, but it's natural in a healthy garden.

You need fewer plants than you think for seed: an individual plant usually produces dozens, if not thousands, of seeds.

When improving soil for subsequent crops in your garden, work around the plant(s) left behind for seed, or start crops in pots, transplanting after removing seed plants.

It's essential to save seed from your best plants. For all leafy and root vegetables, choose the last plant to go to seed, otherwise you'll be selecting for plants that bolt (set seed early in the season).

When selecting root vegetables, scrape away a little soil to ensure your selection is not only slow to bolt but also has thick roots. Conversely, the best seed for fruiting vegetables comes from the fruit of those that fruit early.

Choose disease-free plants, or at least the healthiest ones. However, tomatoes and capsicums must be disease-free, because viruses can be carried in seeds.

TOMATO TIP

Fermenting tomato seeds before storage improves germination and removes several seed-borne diseases. Simply scoop out seeds and place in a jar with a cup of water. Screw on the lid, shake, and leave on a kitchen counter. Shake daily for a few days until scummy, then decant the scum and water – viable seeds sink. Drain seeds in a sieve, then dry completely on paper towel for at least a week.

Separating seed

Shaking in jar of water

All stages: including sieved and dry seed.

PHOTOS: HELEN MCKERRAL/TOMATO TIP: TOP: GAP THOMAS ALAMY/CENTRE & BOTTOM: GAP DAVE BEVAN

When to collect

Annual plants will set seed at the end of the season before the plant dies. Perennial plants, which grow for more than one year, generally flower and set seed every year. However, biennial plants will grow for one year and then flower, set seed and die in the second year, so will need to stay in the ground longer if you want to collect seed. In tropical and sub-tropical regions, biennials will often grow as annuals.

Seed is often ripe just before pods or capsules are completely dry, or fruits are fully ripe. You may need to net or bag fruit or seed heads against pests during ripening.

How to collect

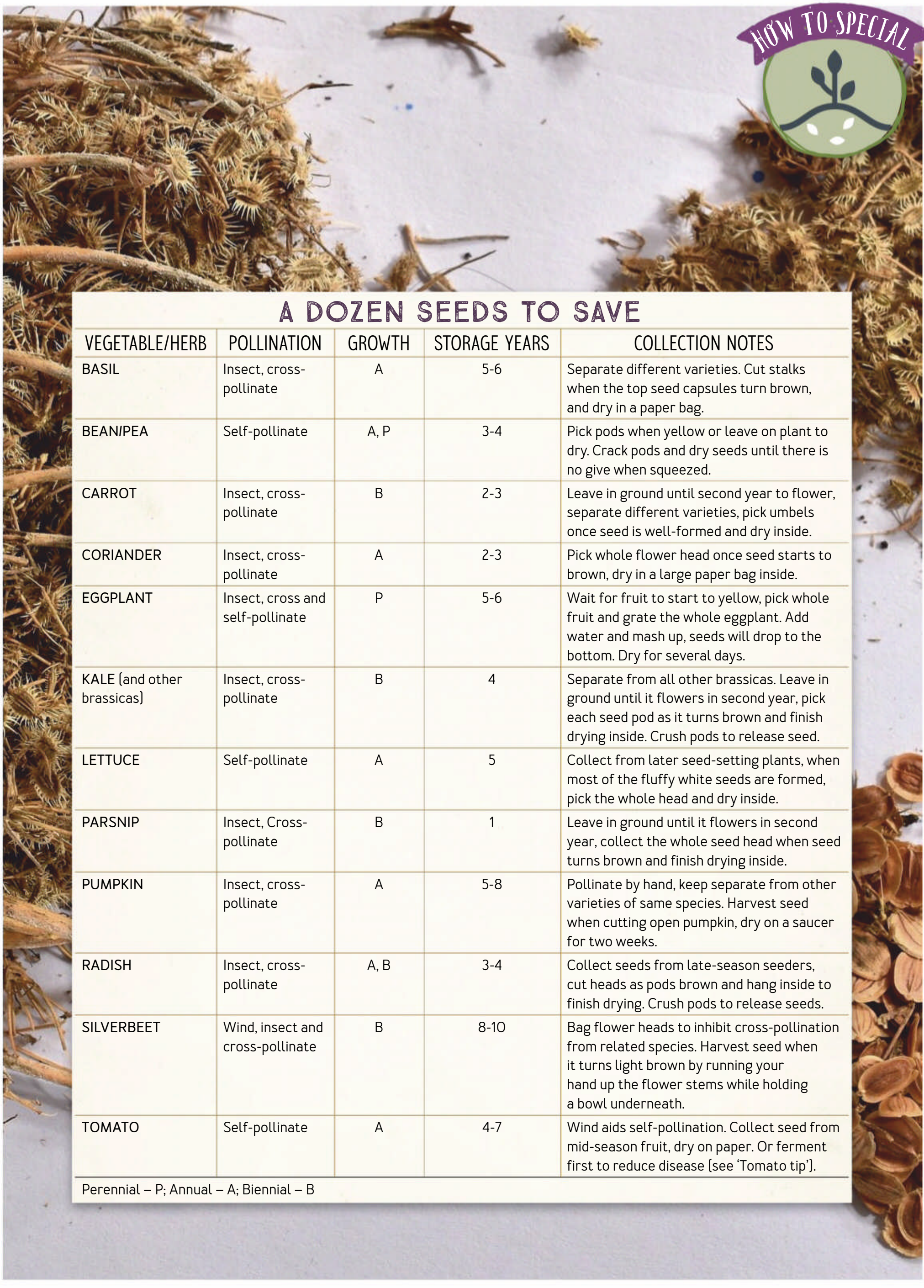
Cut entire seed heads and invert over a tub or newspaper in a dry place, or in a paper bag. Shake seeds off immediately, or let them fall later if not yet dry. Sieve larger seed to remove debris, or winnow smaller seed: place in a shallow, curved bowl, and blow across the surface. Shake the bowl several times, continuing to blow until only seeds are left in the bottom.

From fruit, scoop out or extract seeds, and dry thoroughly on clean paper towel. Remove beans and peas from dry pods.

Store in small, clean, sealed glass jars in a dry, cool, dark place – a bedroom cupboard is fine, or the refrigerator. Avoid sheds with fluctuating temperatures. Some seeds remain viable for lengthy periods, but others, such as carrots, are best sown within the year.

Top left: Collect sweetpea seeds to replant every year.
Top: Red dragon climbing beans hung to dry.
Above: Celery seed heads upended ready for collection.
Opposite: Carrot seed (left and top) and parsnip seed.

To kill insect pests, add a little diatomaceous earth to the jar and shake to coat seeds. If you have a vacuum sealer, this not only kills insects, but also extends seed viability.



A DOZEN SEEDS TO SAVE

VEGETABLE/HERB	POLLINATION	GROWTH	STORAGE YEARS	COLLECTION NOTES
BASIL	Insect, cross-pollinate	A	5-6	Separate different varieties. Cut stalks when the top seed capsules turn brown, and dry in a paper bag.
BEAN/PEA	Self-pollinate	A, P	3-4	Pick pods when yellow or leave on plant to dry. Crack pods and dry seeds until there is no give when squeezed.
CARROT	Insect, cross-pollinate	B	2-3	Leave in ground until second year to flower, separate different varieties, pick umbels once seed is well-formed and dry inside.
CORIANDER	Insect, cross-pollinate	A	2-3	Pick whole flower head once seed starts to brown, dry in a large paper bag inside.
EGGPLANT	Insect, cross and self-pollinate	P	5-6	Wait for fruit to start to yellow, pick whole fruit and grate the whole eggplant. Add water and mash up, seeds will drop to the bottom. Dry for several days.
KALE (and other brassicas)	Insect, cross-pollinate	B	4	Separate from all other brassicas. Leave in ground until it flowers in second year, pick each seed pod as it turns brown and finish drying inside. Crush pods to release seed.
LETTUCE	Self-pollinate	A	5	Collect from later seed-setting plants, when most of the fluffy white seeds are formed, pick the whole head and dry inside.
PARSNIP	Insect, Cross-pollinate	B	1	Leave in ground until it flowers in second year, collect the whole seed head when seed turns brown and finish drying inside.
PUMPKIN	Insect, cross-pollinate	A	5-8	Pollinate by hand, keep separate from other varieties of same species. Harvest seed when cutting open pumpkin, dry on a saucer for two weeks.
RADISH	Insect, cross-pollinate	A, B	3-4	Collect seeds from late-season seeders, cut heads as pods brown and hang inside to finish drying. Crush pods to release seeds.
SILVERBEET	Wind, insect and cross-pollinate	B	8-10	Bag flower heads to inhibit cross-pollination from related species. Harvest seed when it turns light brown by running your hand up the flower stems while holding a bowl underneath.
TOMATO	Self-pollinate	A	4-7	Wind aids self-pollination. Collect seed from mid-season fruit, dry on paper. Or ferment first to reduce disease (see 'Tomato tip').

Perennial – P; Annual – A; Biennial – B

PHOTOS: HELEN MCKERRAL

Naturalising magic

Once plants begin seeding in your garden, you'll be amazed at where they pop up – places that suit them best are often not the ones you think! If they aren't in the way, leave them: these plants are almost always healthier and more productive than those from seeds sown into perfectly prepared seedbeds.

In my garden, heirloom picking lettuces, parsley, parsnip, celery, carrots, radish, chives, rocket, kale, dill and more, seed for an almost year-round supply. Wild cherry tomato seedlings don't germinate until December, but are usually amongst the first to fruit and last to finish. Take note of nature's hints: in this instance, an indication of how late soil warms in my garden, and a guide as to when to transplant seedlings. Collecting seed from naturalised plants is even better than collecting from ones you've sown.

Annual flowers may naturalise, too. Aquilegias, honesty and hellebores naturalise in my garden without being invasive. When first sowing any uncommon plant that might naturalise, first collect all seed, scatter a little, and sow the rest into a tray. This will help to manage the extremes of low germination or an invasion.

Encourage seeds to naturalise by not mulching too thickly in summer, and let mulch thin further in autumn so seed falls on clean ground. If autumn rains are late, irrigate with efficient sprinklers rather than drippers for a few weeks to promote germination while soil is warm.

In spite of my embarrassment of riches with parsnip seedlings, I still pull entire plants of other vegetables (lettuce, dill) and swish or bash seed heads in areas that might suit them, or throw spent seeding plants there as an easy way to spread them.

Top left: Chives, erigeron and brassicas seed in my garden.
Above: Heirloom 'Freckles' lettuce naturalising in a pot.
Left: Removing beans from dried pods.

PHOTOS: TOP LEFT AND ABOVE: HELEN MCKERRAL/LEFT: MILKWOOD.

SMART SEEDS AND DISPERSAL

Seeds and their capsules are wonders of evolution. Each tiny package of genetic material with its clever wrapping has been honed over millions of years to spread to the right place at the right time. Some seeds even escape with a bang! Remember, the clever wrapping is not the seed itself, and needs to be dried, removed or winnowed. Also, extra adaptations to cold, drought or fire mean some seeds need special treatment after storage to germinate (see chart on page 37). Seeds of course need help to get to a new location – here are some examples of natural seed dispersal:

- **WATER** Cranberry harvest is a spectacular example, where berries float down streams and across lakes. Coconuts float, too, perfectly adapted to the ocean with waterproof shells and their own fresh water supply inside to start germination when they arrive on distant shores. Some mangrove seeds fall and float vertically, rooting rapidly as soon as they touch a suitable substrate, whereas others germinate attached to the tree before falling, so that roots dibber into the mud!

- **WIND** The ways in which seeds use wind to disperse are astonishing. Some, such as maples, have winged seeds ('samaras') to helicopter away. Dandelions use parachutes in the form of fluffy attachments. Others, such as orchid seeds, are minute or light and flattened, to float on the faintest current. And others, such as poppies, have pepper-pot capsules on swaying long stalks to scatter rolling seeds.

- **ANIMALS AND PEOPLE** Caltrop's pointy spikes, goosegrass burrs, grass seeds' barbs and acaena's devilishly hooked spines (once in your socks, they are there forever; believe me, just throw away that pair!) are all designed to hitchhike on fur, skin, clothes or rubber tyres.

A second strategy gives delicious nuts, seeds and fruits a chance to spread: enticement to be eaten, followed by discarding the large indigestible seed (mango); or to eat the lot, and deposit seeds elsewhere (berries). Blackberry and emu bush seeds need to pass through the gut of a bird to germinate. Squirrels bury acorns, ants carry seeds inside nests... the adaptations are endless.

- **FIRE AND MORE** Many Australian native plants, such as banksia, have woody seed capsules to protect seeds from fire, opening afterwards to drop seeds into sunny, nutrient-rich ash beds.

Some seeds, such as those of the Californian poppy and broom, have pods that open with explosive force to scatter seeds.

Top: Ornamental poppies have a pepper shaker capsule with small openings at top for distributing seed.

Bottom: Australian natives such as banksias have woody cones to protect seeds against fire.

PHOTOS: HELEN MCKERRAL

More information

- *The Seed Savers Handbook*, Seed Savers Network, 2010
- *Growing Australian Native Plants from Seed*, Murray Ralph, Bushland Horticulture
- *The Seed Garden*, Lee Buttala and Shanyn Siegel, Seed Savers Exchange
- **Visit:** seedsavers.net

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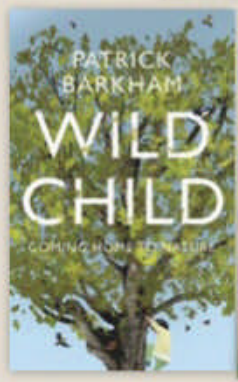

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DID YOU KNOW?

Aquilegias are terrific in a vase: cut them early in the morning, as buds begin to open. In the US, species such as *Aquilegia formosa* and *A. canadensis* include hummingbirds amongst their pollinators.

Aquilegia vulgaris 'White Barlow'. Right: *A. vulgaris* 'Pink'.

Bewitching bonnets

HELEN MCKERRAL HAS LONG BEEN CAPTIVATED BY THE STUNNING, BEE-ATTRACTING AQUILEGIAS.

Fairies' hats, granny's bonnets, doves at a dish… it's plain that more than one gardener has been bewitched by the evocative nodding flowers of plants otherwise known as columbines, or aquilegias.

Aquilegias have been popular in gardens for centuries and are portrayed in medieval paintings as well as in heraldic emblems. Fifteenth century cooks used them to colour recipes and to treat ulcers and nervous disorders, but one suspects the cure was worse than the disease because, although a few species are edible, all parts of the most common ones contain toxins in varying amounts so should not be eaten. Gardeners today grow aquilegias for their beautiful ferny foliage and stunning display of flowers.

Bees and butterflies also love them – in my Adelaide Hills garden they buzz with insect life from October to December.

PHOTOS: HELEN MCKERRAL

In my garden, aquilegias are the prime 'naturalising' perennial.

Even better for home gardeners is that they hybridise (cross-pollinate) so readily that, if you plant just a few colours and forms, you'll end up with almost every possible variety. I began with purple, white and the double 'Nora Barlow' and now have literally dozens of different single, double and starry varieties in purple, pale and dark pink, blue, mauve, white, black and bicolour ones. 'Leprechaun Gold' has lovely gold and green variegated foliage that looks great even when the plant isn't in bloom. Aquilegias will grow in all climate zones but do best in regions with cold winters. In climates with warmer winters they must be planted in autumn, need a semi-shaded position and may not last for more than a single season (so it's best to collect seed for resowing each year).

Family matters

Aquilegia is a genus of around 70 Northern Hemisphere species of short-lived deciduous perennials in the Ranunculus family. Relatives include buttercups, hellebores, clematis and anemones. Numerous aquilegia hybrids, both natural and cultivated, exist, with most growing 70–100cm tall. Flowers are usually spurred, sometimes spectacularly so; those without spurs are described as stellate or clementine, as they resemble clematis flowers.

With their large, spurred blooms in bicolour shades of pink, yellow, red, white and blue, *A. caerulea* hybrids (eg *A.* x *hybrida* 'McKana Giant') are widely available. However, my favourites are *A. vulgaris* varieties with their smaller, nodding flowers: they are outstanding in woodland and sheltered gardens where they naturalise into gorgeous drifts of colour in spring. Colours range from white through to a purple so dark as to be almost black, and the flowers may be single, double, starry or rosiform.

I've also enjoyed finding unusual species and varieties at farmers' markets, specialist perennial nurseries and seed suppliers.

Naturalising wonders

Aquilegias, particularly *A. vulgaris*, are the prime 'naturalising' perennial in my garden: they seed freely, filling gaps with colour without becoming invasive. Other gardens in cool regions of Victoria and Tasmania are different, so test by collecting seed initially, especially if you live near bushland. I don't let them seed near my vegetable garden because they are large, deep-rooted plants that aren't easily pulled. I also remove them while still small from pots and gravel paths, where they love to pop up; elsewhere, they seem to find places that suit them best, in neither full sun nor deep shade. Plant a range of colours and forms, and they'll reproduce and expand in number, form and hue throughout any garden with the right microclimate.

Clockwise from left: 'Nora Barlow'; *Aquilegia atrata*; cranebills are the classic aquilegia companion; *A. vulgaris* 'Double Pale Blue'.

PHOTOS: HELEN MCKERRAL

VARIETY	BEST FEATURES
A. vulgaris 'Nora Barlow'	Double starry pink and white flowers
A. vulgaris 'Leprechaun Gold'	Compact gold and green variegated foliage
A. chrysantha, *A. longissima*	Long-spurred yellow flowers
A. canadensis and hybrids	Bright, nodding red and yellow flowers
A. vulgaris 'Barlow Rose'	Very pretty double, soft pink flowers
A. vulgaris 'Hensol Harebell'	A floriferous blue variety
A. caerulea cultivars	Two-toned, large flowers

Left: Aquilegia seed is black and shiny.

Below right: *A. alpina.*

Propagate your own

You can easily propagate aquilegias from seed collected in late spring to early summer. Pods are ready when they change colour from green to yellow, feel dry rather than sticky, rattle when shaken, and/or when capsules have begun to open. Ripe seed is black and shiny.

Either immediately sow seed shallowly into trays of seed-raising mix, or store in a cool, dry place and sow in situ *with* autumn rains but *before* soil temperature drops significantly. Simply scatter seed in the areas of the garden you'd like them to grow. Or, if sowing into trays, replant seedlings into the ground in spring, or prick out when 5cm tall into small pots or tubes.

Established clumps are easily divided. Just dig up, hose soil from the roots, and slice with a sharp knife, ensuring buds each have a corresponding bunch of roots. Space plants 40–60cm apart.

Old friends

Aquilegias complement many other old-fashioned spring-flowering perennials.

Marguerite daisies, especially heritage single white varieties, are hardy and, when planted to the northwest of your aquilegias, provide shelter the latter needs. Similarly, try them near the base of climbing supports for clematis, honeysuckle, rambling roses or hardenbergia, where they'll brighten shaded, empty spaces with colour.

True geraniums, or cranesbills, thrive in the same part-sun conditions that aquilegias like. Other old fashioned perennials like verbena, phlox, shasta daisies, peonies and delphiniums, or annuals such as stock, snapdragons and candytuft are also classic combos.

In slightly more or dappled shade, try them with sweet violets, hostas, hellebores, campanulas and forget-me-nots. Choose varieties with pale or bright flowers that stand out well in shade, rather than dark blues and blacks that vanish into the shadows.

Tips and ideas

- Mass plant to highlight complementary colours.
- Deadhead to extend flowering, allowing final flowers to seed.
- Remove old leaves in autumn; fresh ones emerge soon after.
- Let them naturalise: they'll fill gaps without you needing to do anything other than leave seedlings behind when you weed (see 'Naturalising wonders').
- In warmer regions, underplant deciduous trees with aquilegias to show off the pastel colours: they'll get plenty of light during winter, and sun protection in summer.
- Mix taller varieties into planters or large, wide pots.

HOW TO GROW

SUN: Aquilegias need good light to flower well but, with our summers so much hotter than in the Northern Hemisphere, it's best to give them protection from afternoon sun that shrivels flowers and shortens the life of your display. Morning sun only, or positions under deciduous trees where they receive full sun in late winter and early spring, but dappled shade in late spring and summer, are ideal.

SOIL: Aquilegias tolerate most soils except for very acid or unimproved ones. Neither are they greedy: add a little manure or blood and bone, fertilise with a mulch of rotted compost in winter, and aquilegias will reward you with a stunning display every spring.

WATER: Although Northern Hemisphere plants, aquilegias need less water than you might expect, because here they grow and set seed before the hottest time of year, when they conveniently enter summer dormancy. This means that, in my sheltered Mediterranean climate garden (rainfall approximately 900mm, primarily between autumn and spring), they naturalise in parts that receive no artificial irrigation. Conversely, they loathe waterlogging, so provide good drainage.

A. x hybrida

PESTS AND DISEASES

Few pests bother aquilegias. Green aphids attack flower stems occasionally but I've never sprayed them and plants always seem to manage. Other insects sometimes nibble off new growth, and fungal disease may blacken leaves in excessively damp, shady conditions without sufficient air circulation but, if provided with moist soil during their growing season, plus mulch, aquilegias are surprisingly hardy plants for Mediterranean and temperate climate regions.

Green aphids on flower stems.

A. 'Barlow'.

BUYING SEED OR PLANTS

Buy flowering potted plants in spring and plant into moist soil, watering regularly for the first summer. Seed is cheaper, though, and can be planted from summer into autumn. Perennials in punnets are also great value-for-money: buy several punnets for a stunning display not only for one year, but for at least five more (or a lifetime if you collect seed!). Summer and autumn plantings have time to establish strong clumps and flower beautifully the following spring.

Some cottage garden nurseries and mail-order suppliers also stock unusual species such as yellow *A. chrysantha*, blue *A. flabellata*, or red *A. canadensis*, *A. formosa* and their cultivars.

TRY: mrfothergills.com.au lambley.com.au renaissanceherbs.com.au southernharvest.com.au birchgrovegardens.com.au

PHOTOS: HELEN MCKERRAL

PLAN AHEAD

IT WILL SOON BE TIME TO PREPARE YOUR COOL SEASON GARDEN AND PLAN WHAT TO GROW.

This is an in-between time, with summer heat still raging in many regions, but cooler autumn nights not far away. While you finish harvesting your summer crops, it's a good opportunity to plan for autumn and winter plantings. These would include brassicas such as kale, broccoli, cabbage, Brussels sprouts and cauliflower (see page 20) as well as alliums like garlic, shallots and old-fashioned potato onions.

Consider crop rotation to minimise diseases being carried from one year to the next in the soil. This simply means remembering where you planted these crop families last year and the year before, and planting them in a different spot this year.

It's also a good time to check commercial seed company websites to identify rare or unusual cultivars of vegies that can be planted now, as well as regrowing old favourites using seed you may have already collected.

Penny Woodward

Above: Sprouting purple broccoli.

PHOTO: ISTOCK

TROPICAL
Leonie Shanahan

MUST DO: Clean up gardens. Nourish food gardens with compost and mulch, and water with seaweed, fish emulsion and worm casting solution.

PLANT NOW: Plant heirloom seeds for their flavour, nutrients and to save the seeds. Try 'Hong Kong' broccoli, cultivated over 4000 years ago. Every part of the plant is edible. Another of interest is celtuce (*Lactuca sativa* var. *asparagine*), a non-hearting stem lettuce – a French heirloom from the 1700s said to be higher in vitamin C than other lettuces.

TOP TIP

Passionfruit vines need strong support. Grow in well-drained soil, in full sun with good air flow but protected from wind. Feed with lots of organic matter, regular fertiliser, magnesium (water with magnesium sulphate in the form of Epsom salts: 1 tablespoon to 10L water), trace elements (rock dust is a good source) and keep soil mulched. Foliar feed with liquid seaweed monthly. Fruit drops to the ground when ripe. After fruiting, prune back by one third. Plant a new vine every two years as they are short lived.

SUBTROPICAL
Leonie Shanahan

PEST ALERT: Fruit piercing moth, *Eudocima* species. Go outside at night with a torch, if you see a moth with red, glowing eyes and orange on its wingspan, you have this night moth. They puncture the ripe and ripening fruit then suck the juice out. The fruit rots, falls and goes brown. The only solution is to bag fruit or pick early before they strike. The moth attacks citrus, mangoes, papaws and persimmons.

TOP TIP

Spend time talking with older gardeners, especially those who save seed, to learn about best garden practice and best seeds to grow in your area. Ask about successful, unusual plants – often they will share seeds that are not available from seed companies, for example, 'First Fleet' lettuce.

ACTION ALERT: Prepare garden beds (weed, feed and mulch) for the most productive time of year – winter. Order your organic/heirloom seeds. A planting scheme could include: beans, borage, peas, carrots, leeks, sage and cucumber.

Top: You can eat both the leaves and stem of celtuce.
Right: Damage caused by fruit piercing moth.

PHOTOS: TOP: ALAMY/BOTTOM: LEONIE SHANAHAN/ILLUSTRATION: ISTOCK

Above: A jujube (*Ziziphus jujuba*).
Left: White borage.

ARID/SEMI-ARID

Helen McKerral

RARE HERBS: Plant rare varieties of common herbs – the more gardeners who grow them, the less likely they are to be lost. White borage is a pretty alternative to blue, but don't grow them together or you'll end up with mostly blue (white is recessive). Buy from specialist suppliers and then collect seed regularly as it develops.

PLANT NOW: Jujubes or Chinese dates (*Ziziphus jujuba*) are small trees with delicious fruit that are eaten fresh like mini apples, or dried when they become chewy and sweet. Plants are heat, drought and salt tolerant and love long, hot summers. Plant named cultivars when soil is moist after opening rains, or while they are deciduous in winter.

TOP TIP

Unusual heirloom vegetables and heritage fruit are often not commercially available even from specialist suppliers, but local garden clubs, farmers' markets, seed-saver groups and rare fruit societies are other places to find them.

PHOTO: TOP: ISTOCK/LEFT: HELEN MCKERRAL

WARM TEMPERATE

Penny Woodward

TOP TIP

Prepare your soil 6–8 weeks beforehand for late March to May garlic planting. Either sow green manure and dig in at least three weeks before planting. Or spread well-rotted cow, sheep or horse manure, and compost, over the surface of the bed, lightly fork into the top few centimetres or allow the worms to do the work for you. Water well and keep moist to hasten break down.

PEST ALERT: The last of the heat will continue to stress plants and provide perfect conditions for mites. Look for pale mottled leaves. To control, spray water under and on top of leaves, or use a potassium based soap spray, or wettable sulphur. Water-stressed plants are more likely to attract mites.

PLANT NOW: Plant seeds of some unusual plants in the celery family like the heirloom 'Red Stem' celery, Chinese celery or the Australian native, 'Island Sea' celery (*Apium insulare*).

'Island Sea' celery.

PHOTO: RIGHT: PENNY WOODWARD/ILLUSTRATION: ISTOCK

SEED SAVING

Gourd

There are edible and ornamental varieties of different shapes and sizes in the gourd family, and it's easy to save the large seed collected from these plants.

- Some will have a very hard 'shell' others are more brittle. All gourds are ready to pick for seed saving when the whole vine has died back and the gourd is dried and a tan colour. You can confirm this by tapping the gourd, if they sound hollow and make a 'rattle' sound, the seeds are dry inside.
- Open the shell and empty seeds out. Rub off the dry flesh with your hands. Store seeds in paper bag or seed packet.
- Alternatively, seeds can be stored naturally in the unopened gourd, open when the seed is needed. Seed is viable for four years.
- To use the gourd shell for craft (vases, bowls, painting, musical instruments), the gourd needs to be fully dried over many months.

Leonie Shanahan

Build a BAMBOO TRELLIS

Trellises keep climbing plants off the ground, minimising disease and making harvesting easier. Depending on the season and climate, examples are peas, beans, cucumbers, pumpkins and melons.

You need

- 17 x 2m poles (I've used bamboo):
  - 12 for verticals
  - 1 for the cross pole
  - 4 for horizontals
- Twine
- 4 short metal stakes (optional)

In this pictured example, poles are placed 50cm apart, resulting in a structure that is 2.5m long and 1.2m wide at the base.

1. Insert the end poles in the ground, cross them over at the top and tie together. Lay a pole horizontally where the poles intersect and tie.

2. Insert middle poles 50cm apart, evenly spaced and tie on.

3. Add two poles horizontally to each side, one third of the way up the trellis and tie on, then add poles two thirds up the structure. If the trellis needs more strength, add metal stakes to each corner pole.

4. Weave twine around each pole in the gaps as shown, or use fibre netting.

Leonie Shanahan

Measure distances between poles.

Add horizontal poles for strength.

Finished trellis secured by stakes.

PHOTOS: LEONIE SHANAHAN

COLD TEMPERATE

Penny Woodward

MUST DO: Use up existing compost so your compost bins are ready for the abundance of autumn leaves. Or create a simple compost heap by piling up the leaves and add manure and kitchen scraps to increase the nutrient profile. Water and turn regularly. Alternatively make a simple chicken wire tube about 1m in diameter and fill it with leaves and other fine garden scraps.

TOP TIP

When buying garlic cloves for planting, if they've come from a different climate or soil to your own, they may take a few years to adapt to the new conditions. In the first year you may only get small bulbs. But if you save and replant, they will do better in the second year, and even better in the third. This is particularly true if the garlic comes from a warmer climate to a cold climate.

PLANT NOW: As soon as we start getting the first cooler nights, plant seeds of Asian greens such as bok choy, tatsoi, gai lan and wong bok.

Plant bok choy as soon as cooler nights start.

PHOTOS: ISTOCK

WHAT TO PLANT AND SOW NOW

PLANT/SOW	FEBRUARY	MARCH
ASIAN GREENS		
BASIL		
BEANS: FRENCH/CLIMB		
BEETROOT		
BROCCOLI		
BRUSSELS SPROUTS		
CABBAGE		
CARROT		
CAULIFLOWER		
CELERY/CELERIAC		
DAIKON		
EGGPLANT		
HERBS/MEDITERRANEAN		
KALE		
KOHLRABI		
LEEK		
LETTUCE		
ONION		
PARSLEY		
PARSNIP		
PEAS		
RADISH		
ROCKET/ARUGULA		
SILVERBEET		
SPRING ONION		
SWEDE		
TARO/COCO YAM		
TOMATO		
TURNIP		

OUR CLIMATE ZONE MAP IS A SIMPLIFIED VERSION OF A BUREAU OF METEOROLOGY MAP. FOR MORE DETAILED CLIMATIC INFORMATION IN RELATION TO CITIES AND MAJOR TOWNS, GO TO: BOM.GOV.AU/JSP/NCC/CLIMATE_AVERAGES/CLIMATE-CLASSIFICATIONS/INDEX.JSP

Bringing organic learning to classrooms

The launch of our new resource for schools is bringing organics into the classroom, giving children a greater awareness of where their food comes from.

Here at Australian Organic Limited, education is a primary tool used to spread the organic word and encourage a greater understanding of what it means to grow, produce and buy certified organic products. That's why the re-launch of our Australian Organic Schools program in November 2020 is a vital, and exciting, part of what we do.

The new program, 'Why Organic?', contains free resources surrounding a range of key topics to bring organic learning into schools. The aim is to increase student and educator awareness on organic principles and practices and how they interact and impact on environmental systems. Students learn from a range of topics, including farming methods, healthy soils, where food comes from and healthy food choices.

Organic principles cross a range of different areas, starting at the very basics of farming and production. Sustainable and regenerative, made without harmful synthetic chemicals and pesticides, and allowing animals to be truly free-range are just some of main principles. All these add up to better health all round for humans, animals and the environment.

If there's anything we've learned from recent awareness campaigns such as the National Farmers' Federation's #BackOnTrack, it's that we need to better connect with our farmers and with primary production. Getting children used to the notion of where food comes from, how it is produced and educating them as to why organic is a better choice for our bodies and the environment will give them the tools they need to make more informed decisions in their adult lives.

Australian Organic Schools is a proud member of Primary Industries Education Foundation Australia (PIEFA), a not-for-profit teaching resources foundation formed through a collaboration between the Australian Government, primary industries organisations and the education sector.

"Primary Industries Education Foundation Australia is very excited to support the newly created Australian Organic Schools curriculum resources for K-10 students," says Luciano Mesiti, Chief Executive Officer at PIEFA. "These brand-new, curriculum linked teaching units provide excellent learning support tools for teachers to improve organic food and fibre education in Australian schools."

Australian Organic Limited Chief Executive Officer, Niki Ford, says the program aims to educate children about key organic principles and practices in a fun and interactive format.

"Being a mother myself, I believe it is more important than ever to teach children where their food and fibre comes from. With nearly 86 per cent of all Australians living in urban areas, it is imperative to connect children with what they consume.

"The Australian Organic Schools program is designed to be easy to teach and fun to learn," Ms Ford says. "We hope all teachers and children enjoy the program and begin to seed thinking about the foundation of Australian agriculture and the sustainability of the environment around them."

Educators can register on the Australian Organic Schools website to download free resources, including lesson plans and activities. There are also free organic gardening guides for eager green thumbs.

For more details visit: organicschools.com.au

AUSTRALIAN ORGANIC SCHOOLS

Australian Organic

PHOTO: ISTOCK

Last year's bushfires on Kangaroo Island have left wildlife and scientists struggling, see page 76.

PHOTO: NICOLAS RAKOTOPARE / THREATENED SPECIES RECOVERY HUB

welcome to ORGANIC LIVING

INSIDE: ★ DRYING PRODUCE ★ LITTLE OAK FARM ★ SCIENTISTS IN NEED

Packing in the flavour

IN HIS NEW BOOK *THE ARTISAN KITCHEN*, CHEF AND SUSTAINABLE LIVING EXPERT JAMES STRAWBRIDGE SHOWS HOW TO USE AGE-OLD TECHNIQUES SUCH AS PRESERVING AND FERMENTING TO MAKE THE BEST OF PRODUCE. HERE, LEARN THE BASICS OF DRYING AND DEHYDRATING – PERFECT FOR LATE SUMMER AND AUTUMN CROPS.

James Strawbridge's new book brings together all he believes about good-quality food: slowing down, using seasonal and local produce, and bringing together a community, including family, other gardeners and growers, as well as other foodies.

"Sourcing local and seasonal ingredients is my passion, and then preserving them to be enjoyed over the coming days, weeks, and months is intoxicating," James writes in *The Artisan Kitchen*. "For too long we've been separated from the ingredients that go into our cooking, but now, we're rediscovering that connection and realising how accessible artisan food is."

Working with seasonal produce using artisanal skills such as preserving, drying and fermenting means you not only make the most of your harvest, but can then share the results throughout the year. Here's how to extend the joy of your crop that little bit longer.

Facing page: Dried apples (see recipe on page 59).
Above: James Strawbridge.

DEHYDRATING

DRIED FOODS FOR CRISP OR CHEWY, INTENSELY FLAVOURSOME PRESERVATION.

Skill level: EASY

Timings: 4–12 HOURS, depending on produce and drying method

THE SCIENCE

Moisture extraction

Drying food is as simple as it sounds. The basic technique is to thinly slice produce to maximise its surface area so that warm air can pass over it and draw out moisture, thus preventing the growth of unwanted bacteria. The key to effective drying is good air circulation, a constant temperature, and avoiding direct contact with moisture. The result is an intense experience, as the flavours have been packed together closely in the drying process.

Preparation

Pre-treating produce before dehydrating isn't essential but may help maintain colour, nutrients and texture. For example, coating apples or pears in lemon juice will avoid browning, since the ascorbic acid creates a barrier between the enzymes in the flesh and the oxygen, slowing the oxidisation process that leads to browning. Tough-skinned veg and fruit with a natural protective wax, on the other hand, benefit from blanching. This thermal treatment increases the permeability of cell membranes, which in turn increases the rate of moisture removal. It also destroys the enzymes that would otherwise survive the dehydration process and cause the food to deteriorate. Meat and fish, which have a high moisture content, generally require brining or dry-salt curing first – the salt draws out much of the moisture by osmosis, speeding up the drying process and inhibiting surface microbes.

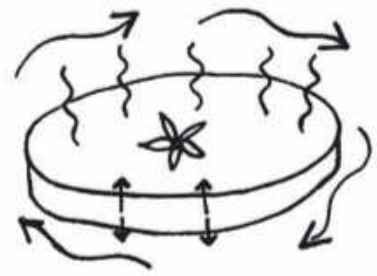
Conditions

Controlling the temperature during dehydration is vital. The aim is to remove moisture as quickly as possible without affecting the flavour, texture and nutritional value of the produce. If the heat is too high, food may case-harden, meaning it will feel dry on the outside, yet moisture will still be trapped inside. If the temperature is too low, the drying time is significantly increased and bacteria may survive and multiply before the food has dried.

Above: Slice produce thinly and space it out on drying racks to maximise airflow.

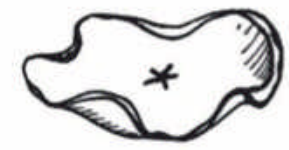
DEHYDRATING APPLE SLICES

Maximum airflow, dry air, and a constant temperature are key to controlled moisture removal.



A flow of dry air encourages water to migrate from the interior to the surface, where it evaporates.

Too much heat can cause case-hardening, when surface sugar "bakes" to form a seal that prevents further moisture loss.



A fully dehydrated apple slice will shrink from cellular collapse due to the loss of water content.

DRIED APPLES

With the abundance of apples in autumn, it makes perfect sense not only to preserve the fruit over winter, but also intensify its flavour into a sweet treat for snacking or using in other recipes. Dried apple adds a delicious punch of flavour when used in stuffing and sausages. You can substitute pears, but the dehydrator will need to run for an extra hour, as pears tend to be wetter.

Makes: 800g

INGREDIENTS
10 dessert apples (about 1kg)
Juice of 1 lemon (optional)

EQUIPMENT
Spray bottle (optional)
Dehydrator (optional)
Silicone baking sheet (optional)
Airtight container or freezer bags

METHOD
1. Peel, core, and slice the apples into rings and then segments. (Peeling isn't obligatory – the skin can give the dried pieces a nice, slightly chewy texture. Try them both ways and stick with what you prefer.)
2. If the apple slices start to discolour, use a spray bottle to spritz them with lemon juice before dehydrating or dip them in a solution made with 1 tablespoon of lemon juice and 1 litre of water. Drain and dry them well.
3. If using a dehydrator, lay the slices on the drying racks, spaced out to allow good airflow, and dry at 50°C for 6–8 hours. Alternatively, spread the slices out on a silicone baking sheet and dry in the oven for 5–8 hours at 65°C with the fan on and the door slightly ajar to allow moisture to escape. The higher temperature allows for heat loss due to the open door.
4. Remove the slices when they are dry and leathery. Aim for 15–20 per cent weight loss. I like them to come out before they become crunchy, but it's up to you.
5. Allow the dried apple slices to cool at room temperature for 30 minutes, then store in a cupboard in an airtight glass jar or sealed bag. They should keep fresh for at least 3–6 months, if not longer.

EXPERT TIPS

- Most foods can be dried in a dehydrator or an oven at around 40–50°C, though meat requires a higher temperature of around 70°C to kill off unwanted pathogens.
- The ideal temperature for storing dried food is 10–16°C. Keep it safe from moisture and insects, in glass jars with tight lids or in vacuum-sealed bags.
- To rehydrate dried fruit and veg, cover with boiling water and soak for 5–15 minutes. Alternatively, cover with cool water for 1–2 hours until rehydrated.
- Dehydrated food absorbs moisture like a sponge, so can come alive when rehydrated in marinades, juices or alcohol.

THE POSSIBILITIES

GOURMET DEHYDRATING

DEHYDRATING IS PROBABLY THE OLDEST PRESERVING METHOD THERE IS, AND THE BEAUTY OF THIS RELATIVELY SIMPLE PROCESS IS THAT YOU CAN HAVE A GO AT DRYING ALMOST ANYTHING.

Foraged favourites

- When a growing season is fleeting, you want to preserve those precious tastes in as many ways as you can.
- Make instant dashi stock from dried nettles, seaweed and ceps. Add miso and boiling water with noodles for an umami-rich broth.
- Make intensely flavoured powders by grinding dried produce such as wild garlic in a spice blender.
- With such a short wild-fruit season, I like to dehydrate blackberries, haw berries and alpine strawberries, then blitz for a fruity crumb (pictured at right) to use in granola and herbal teas.

Flavoured salts

- Sprinkle fragrant or spicy salt blends over a dish or use as the base of an aromatic cure.
- Blitz dried chillies into a fine flake and combine with sea salt for a spicy sprinkle.
- Dried seaweed flakes are excellent for making your own seaweed butter.

Fruit and veg crisps

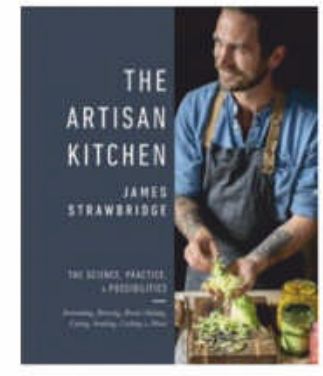
- Fruit and veg crisps are a healthy treat and can add a great textural element to meals.
- Reduce food waste by drying out apple peel into crunchy crisps that are delicious on a bowl of yoghurt or chopped into granola.
- Plate up kale crisps (see recipe below) with preserved lemons, anchovy, calendula petals and fresh mint. Sprinkle with olive oil and sea salt for a mouth-watering, mineral-rich dish.

> Every year my children receive a huge bag of dried apple rings from my mum and her husband – it's a family tradition that just keeps growing in popularity.

Try ...
KALE CRISPS

Blanch 150g kale in boiling water for a few seconds, then plunge into a bowl of ice-cold water to lock in the colour and flavour. Remove the woody stems and veins, then chop the kale into crisp-sized pieces. Massage with a drizzle of oil, and try adding some fermented chilli and garlic powder for a special treat. Spread out evenly on a rack in your dehydrator at 40°C or on a baking sheet lined with parchment in an oven at 50°C for 3–5 hours. Check after 3 hours and every 30 minutes or so thereafter until crunchy. Store in an airtight container and consume within 1–2 weeks.

This is an edited extract from *The Artisan Kitchen* by James Strawbridge (Dorling Kindersley & Penguin Random House, $49.99). Photography by John Hersey.



DRIED CALENDULA AND ROSE PETALS MAKE INCREDIBLE FLORAL SALTS FOR SEASONING LAMB OR MELTED CHOCOLATE.

IN SEASON

Fruit

APPLE
AVOCADO
BANANA
CUMQUAT
DRAGON FRUIT
FIG
GRAPES
KIWIFRUIT
LIME
NASHI
PASSIONFRUIT
PAWPAW
PEAR
PEPINO
POMEGRANATE
QUINCE
WATERMELON

Vegetables

AMARANTH
BEANS
BEETROOT
CAPSICUM
CELERY-STEM TARO
CUCUMBER
EGGPLANT
LETTUCE
PARSNIP
POTATO
PUMPKIN
SWEETCORN
TOMATILLO
TOMATO
ZUCCHINI

Herbs

BASIL
CHINESE CELERY
DILL
FIVE-SEASONS HERB
MITSUBA
OREGANO
PERILLA (SHISO)
SWEET MARJORAM

HARVEST NOTES

Apples

By growing different heritage apple trees it's possible to harvest apples from January to July with one of the first being 'Vista Bella' and one of the last 'Sturmer'. If you cohabit with cockatoos, rosellas, possums, bush rats and fruit bats, then you'll need to net your trees. Ripe apples should pick easily by just lifting the fruit, or you can check the colour and taste. If you're still not sure, cut one in half and see if the seed is well-developed and dark brown. Once picked, eat fresh or store in a cool, dark room or shed, or refrigerate, for variable lengths of time depending on the cultivar. Alternatively bottle, freeze, dry or make into jelly, juice or cider; or cook by stewing or baking.

Pepino

Pepino are cold-tender, short-lived perennial bushes in the tomato family that produce medium, elongated fruit in summer and autumn. The delicious melon-flavoured fruit with overtones of cucumber, have yellow-to-orange flesh when fully ripe, with soft-green to cream purple-striped skins. Pick fruit with a short stem using scissors or secateurs when they're still firm but with a little give to the flesh. Eat immediately or store in a bowl for a few days; or in the fridge for a few weeks. Delicious just eaten fresh scooped out of the skin (although some like to eat the skin too), or added to fruit salad, or a savoury salad as well as sauces and chutney.

Penny Woodward

PHOTO & ILLUSTRATIONS: ISTOCK

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PHOTOS: PIP STEELE-WAREHAM

Little Oak Farm is who we are

MOVING FROM INNER-CITY SYDNEY TO RURAL TASMANIA WAS A BIG CHALLENGE FOR PIP AND HUGO. TEN YEARS ON, THEY SHARE WITH LEANNE CROKER THE JOYS OF THEIR COTTAGE AND SURROUNDS, NOW FILLED WITH CHOOKS, FRUIT TREES AND A VEGIE PATCH THAT PROVIDES BUMPER HARVESTS.

Almost 10 years after they moved to a property they call Little Oak Farm, just outside Cygnet in the Tasmanian Huon Valley, Pip Steele-Wareham and Hugo Lazo can honestly admit they had no idea what they were doing when they bought the land. But that didn't stop them – a good thing, considering they had big dreams with very little experience.

"We're a bit fly by the seat of our pants people. We will just go: let's do this," Pip says. "And that's what we decided to do, and everyone thought we were absolutely bonkers. There weren't many people doing it back then [2011]."

Living in Sydney with full-time jobs that meant they worked ridiculously long hours, the adventurous couple began to long for something new. So when they found a property that ticked all the boxes (an original house, acres for fresh produce and animals, close to a vibrant community), they snapped it up.

"It wasn't our dream house, it wasn't our dream property, but we knew we could do a lot with it," Pip explains.

Above: Pip and Hugo's 110-year-old cottage.

Opposite: Pip and Hugo want their daughter Inès to be grounded in a life filled with nature and all it provides.

ALL PHOTOS: PHYLLIDA STEELE-WAREHAM @LIFE_AT_LITTLE_OAK_FARM

Top left: Pip, Inès, Hugo and Wednesday love their new life.
Top: Pip's plans for the garden and house.
Above: New raised beds and striking sandstone wall.

Going deeper

The idea was to produce food and as the property included 30 acres (12 hectares), there was plenty of room. But a lot of land means a lot of work, and Pip and Hugo found it all a bit harder than expected.

"We started everything at the same time," Pip says. "When you don't really know what you are doing, you sort of dive in just wanting to plant something because that's the most seductive part of gardening. We didn't really understand our soil and the part position plays: where the sun was, where our shade was."

They cleared land, started breeding pigs and planted a garden to provide them with food and flowers. All while commuting two hours a day to and from the property to their full-time jobs in Hobart to keep the money coming in.

About five years into being on their property, Pip decided she wanted to get out of marketing and events and started a horticultural course, which shifted everything. The problem was the lessons she learnt meant big changes at the property. Basically everything had to come out, but that left room for a more planned use of space.

"My design head started to kick in," explains Pip, who also has a design degree. "Once I had the horticultural knowledge and it was getting well-rounded, I had the head space to think, 'What actually looks good – what works well together'."

So three years ago they pulled up the whole front cottage garden and started anew.

"We realised we had such terrible soil in the front," Pip says. "It was just sand and it was facing direct north with no protection from the sun."

The solution was to create new garden beds with composting paths that were really deep, building insulation around the beds. They also put a flower border around the vegetable garden to provide some protection and now have a cover crop in the orchard. All this has been done in just two acres around the house. There's another 30 acres or so, which at the moment is half bush and half paddocks.

So much to do

Even when living in the city, Hugo found watering the plants in their small vegie patch relaxing. Now with an office that looks out on the garden, even late

The power of flowers

Central to the beauty that has been an important aspect of Pip's design, depicted in drawings and watercolours, is the house and its cottage garden. When they bought the house it was very dark, very pink and red. So it was all about bringing in light and being able to see the garden, such as the cherry tree in blossom from the lounge.

"During winters in this part of Tassie the days can be super short, so we crave that light and space," Hugo says.

Soon all the windows will be turned into French doors, letting in all the colour and fragrance of the cottage garden, which features roses and perennials.

Another reason why they love the cottage garden so much is that it attracts so many birds.

"We are such bird nerds — they are amazing the way as soon as you build that habitat and the shelter is available, they arrive," Pip says. "And they become part of the seasonal routine as well, you get used to seeing them at certain times of the year, and you wonder when they're going to show up if they haven't shown up."

Top: A quince tree with the chook coop (built by Hugo) in the background.

Above: Chickens scrounging in the vegie patch.

Left: The colourful cottage garden.

Below: French doors open to a purpose-built outdoor kitchen and the food garden.

Bottom: The living room has been opened up to let in light and garden views.

nights making sure their garden is ready for the hot weather ahead can't dampen his love of their home.

With Hugo's Chilean background, food is big! There is even an indoor and purpose-built outdoor kitchen, which leads to the food garden. It creates a space to share with family and friends the goodness of their harvest, which more often than not Hugo himself has bottled and preserved for future use.

"Being Chilean, part of everything we did was big family barbecues – sharing our food and culture," Hugo explains. "So that's a big part of what we've done. I've tried to grow plants and food that are reminiscent of that culture. That's why we had pigs – because I couldn't get a good chorizo sausage here."

The herd of pigs was sold a couple of years ago (there's a lot of work involved with pigs, moving them around a property so they don't destroy one piece of land), but they now have one or two so Hugo can still make his chorizo. They also have chickens.

"When we first started we had a lot of Sussex because everyone told us they were a good dual breed bird," Hugo says. "But I like Australorps. They are good layers and have a great temperament, and they are just stunning birds to look at. I'm a bit like Pip in that sense: as much as I want things to be practical and functional, I like pretty things, too."

Loving and learning from nature

Ten years on, Pip and Hugo know what they are dealing with, both in terms of their property and the climate.

"I get lots of people contacting me, asking how do I do this and that. And I say just start – start and make mistakes and stuff it up. And then once you think you are getting a better idea, create a masterplan," Pip says. "That is the thing we did not do – we never had a masterplan in the beginning. We were just going off willy nilly, creating a tonne of work for ourselves. Whereas now, we know what's happening in the next five to 10 years."

But you can't be too rigid, either, says Hugo. "Your garden has to evolve as well – you won't just do it once and then just sit back," he says.

Learning to work with the changing seasons, especially regarding food crops, is also vital.

"When we get to autumn, you are likely to not see us because we're just head down, bum up harvesting and trying

to preserve. Because you get so much all at once," Hugo says.

In spring they will be swimming in spinach and broccolis and cauliflowers.

"It's about eating it all, but also picking it all, blanching it all, freezing it all. Then you'll go through this period of December, when other than things like potatoes, you are really just waiting," Pip says.

"Then you hit February and all of a sudden it's everything again. All of the stone fruit is ready in January, then apples start coming later and your pears and then tomatoes, corn," Pip says. "It's just a constant until winter: madly picking and preserving. We always do enough passata to last us a year until the next season. And there's nothing like fresh passata from your toms in the middle of winter."

The future

"Little Oak is very much our belief system now, rather than just a project we took on once," Hugo says. "We are very connected to the nature in this spot It's become who we are. We don't know how we would live any other way anymore.

"We also want this to be normal for Inès," Pip says. "It was normal for me to live in the bush and to have nature everywhere. My dad was a bushie and I spent a lot of time in nature. We want it to be grounding for Inès. We were grounded in other things when we were young – the hope is that this is something that never really leaves her."

You can follow Pip, Hugo, Inès and their dog Wednesday on Instagram: @life_at_little_oak_farm

Below: Plenty of tomatoes for homemade passata.

POLYTUNNEL PRODUCE

Pip and Hugo now have a polytunnel, which has made a big difference to what they can grow, and when. The polytunnel is one of the reasons they have a raspberry harvest so early in Tasmania, which keeps their daughter Inès happy.

"A quarter of the polytunnel is raspberries for an early crop – we also have an outside crop of raspberries. We also have tomatoes, tamarillos, eggplant – all the heat lovers," Pip says.

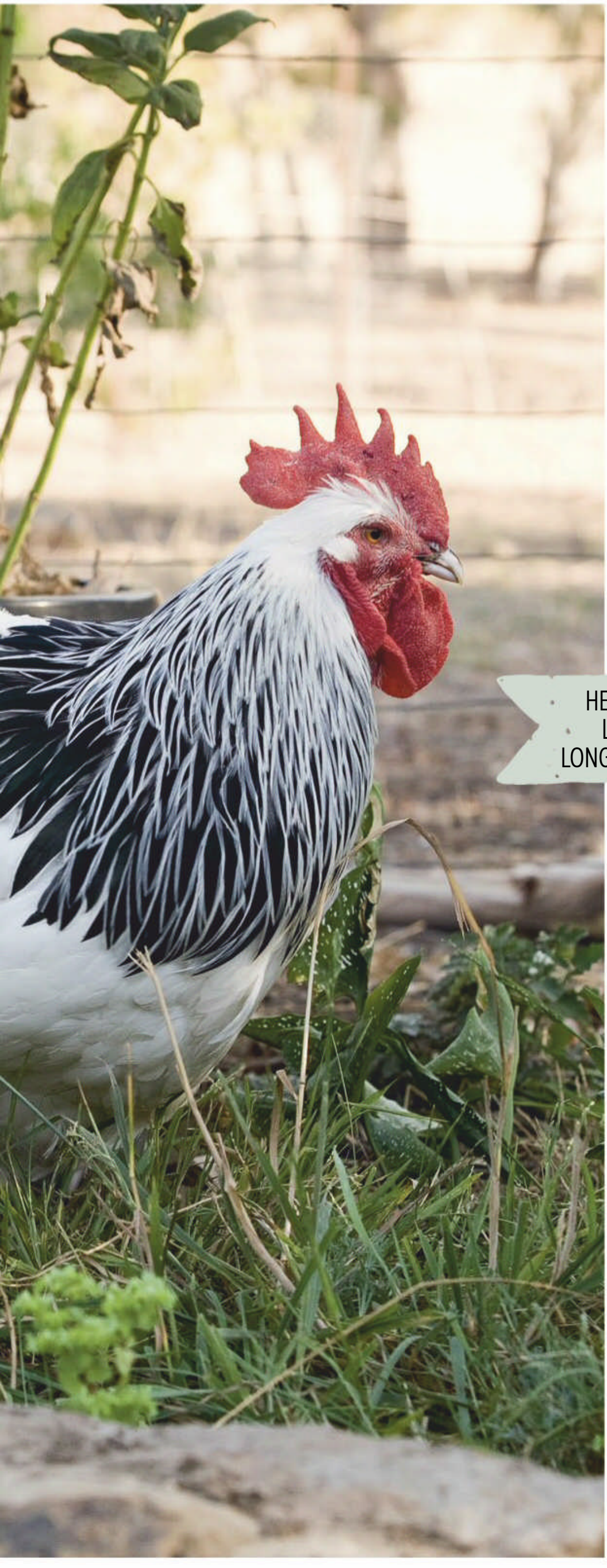
The polytunnel does most of its work over the summer/autumn period.

"Everything in there is so hungry and it gets so hot in there that the soil just gets depleted so easily," Pip explains.

"By the time we pull everything out it's exhausted. So we will put through a green manure, cutting it down and turning it in. Then we start putting down the blood and bone, and biochar and manures – turning it all in –and straw. It then cooks for a while and then we just put the toms straight in."

For more information about extending your crop with a greenhouse or polytunnel visit: organicgardener.com.au/blogs/greenhouse-growing

PHOTO: JESSAMY MILLER



Heritage HENS

HERITAGE POULTRY BREEDS ARE SLOW-GROWING, LONG-LAYING AND ONE OF THE KEYS TO OUR LONG-TERM FOOD SECURITY, WRITES JESSAMY MILLER.

If you grow heirloom vegetables for their variety and authentic flavour, why not complement these with a heritage breed of fowl? The top performers of yesteryear, these breeds are productive, hardy and long-lived. While they have struggled to compete against recent hybrids, our heritage breeds are beautiful, well adapted to our climate, and a repository of valuable genetic diversity.

Heritage poultry have historical significance, having been developed before the mid 20th century and being among the foundation breeds of the modern poultry industry. By choosing to raise these breeds, we can help preserve their diverse practical traits – a valuable insurance against future food security challenges. One of the most notable traits is their ability to lay well into their older years, while males remain fertile and active. Hybrids by contrast are bred to produce lots of eggs in their first few years and are not typically long-lived.

Heritage breeds are adapted to outdoor management, thrive in a range of conditions, and are able to engage in natural activities, such as mating and scratching. They also have moderate-to-slow growth, developing over a natural timeline which results in qualities such as more flavoursome meat, for example.

Light Sussex are ideal for families.

A bit of history

The early commercial poultry industry in Australia was based on a range of purebreds. Langshans were standouts in 1907, while in 1922–23, Australorps set a world egg-laying record. By the 1940s, the industry was 66 per cent White Leghorns, 18 per cent Australorps, 5 per cent Langshans, and 11 per cent other breeds.

In 1948 there was a complete quarantine ban on all poultry into Australia. This protected poultry from disease, but meant that breeds in Australia became genetically separate from similar breeds elsewhere, with many now considered unique.

Selective breeding in the 1950s influenced the egg industry to move to crossbreds, and the broiler was developed. Hormones in chicken were banned by the 1960s, though the broiler's fast growth had already made hormones unnecessary. In 1970, 100 per cent of commercial layers were crossbreds, predominantly White Leghorn x Australorp.

The quarantine ban was lifted in the 1990s to allow the importation of hybrids like the ISA brown, which boasts high productivity at the expense of other traits and quickly took over the caged bird egg industry.

Heritage breeds are likely to be more expensive than hybrids as they have greater rarity value, but their attractive appearance, fascinating history and sociable nature, added to the other traits already mentioned, mean they are perfect for the organic gardener. Here are a few of the best to choose from.

SUSSEX

A true old-fashioned fowl, the Sussex (pictured pages 70–71) was developed in the 1800s as a table bird to supply the London market. Bred from the Dorking, it was considered a better layer and graced every rural Sussex cottage. The Sussex was formally acknowledged as a breed in England in 1903 and by 1915 Sussex classes were common at Australian poultry shows.

It was kept on farms as a dual-purpose fowl (for eggs and meat) but underwent selection for improved laying qualities, and was often crossed with Indian Game for the table. The hens lay a moderate number of eggs, and retain broodiness and mothering abilities.

Sussex take everything in their stride, and are ideal for families. They are hardy in most climates except very hot, as their profuse feathering and large frame leaves them vulnerable to heat stress.

Available varieties include Light (white), Speckled, Buff and Coronation, in large and bantam. Sussex won't destroy the garden like a more active breed, but when they dig a crater to dust bath in, expect a decent hole. And they love food; you have been warned!

LEGHORN

The Riverine Grazier of May 8, 1877 stated: 'If a man keeps Leghorns, he must have no garden, or he must cover the top of his hen yards. That Leghorns are great layers and active hens there can be no denying, but they are great flyers.' Clearly the Leghorn (pictured above) has not changed in 150 years.

Small-bodied layers called Leghorns originated in Northern Italy, near the port of Leghorn (Livorno in Italian). They were imported into America in 1852, then exported to England in 1870, where they were crossed with Minorcas to add size.

Present in Australia from the 1880s, Leghorns were the mainstay of the government-run laying tests that ran up to the 1980s and were considered the elite athletes of the laying industry. After years of dominance, Leghorns lost favour as commercial birds when brown-shelled eggs replaced white in popularity. These days they are kept for their elegance as a show fowl and reliability as backyard layers.

Leghorns come in large and bantam, in colours including Brown, White and Black, with Black now considered the best layer. They lay large white eggs, and are busy, active birds. Hens rarely go broody.

Leghorns can be flighty and require calm management. They prefer not to be confined and make ideal helpers for any garden project that involves digging, scratching or breaking down weeds and scraps.

PHOTOS FROM FAR LEFT: ALAMY/ISTOCK/ALAMY.

AUSTRALORP

The Australorp (pictured above) is the quintessential Aussie chook. It started as the Black Orpington, a dual-purpose breed developed in the UK and imported into Australia after 1890. Here, Orpingtons were outcrossed with Minorcas, White Leghorns and Langshans, transforming it into an excellent egg producer.

The Hawkesbury Agricultural College held a six-month egg-laying contest in 1902 with Black Orpingtons the surprise winners. Their success caused worldwide interest and improved Orpingtons were imported into England and America in the early 1920s. A new name was required; the Australorp was chosen.

Utility flocks of Australorps were retained by the laying industry in Australia to breed the crossbreds used as layers for decades. Exhibition Australorps followed a different trajectory: fanciers selected for beauty, abundant feathering and a larger frame, not utility properties. Today there are few of the small bodied laying strain available, but most are the exhibition style.

These stately birds have big black eyes and slate legs and come in Black, Blue and White, in large and bantam. They are relaxed, tend to rule the roost and love their tucker.

The exhibition strain are only moderate layers of middling-sized, tinted (between white and brown) eggs, but look simply stunning on the lawn.

PLYMOUTH ROCK

Like many heritage breeds, Plymouth Rocks (pictured top right) have suffered from the vagaries of fashion. This dual-purpose breed was developed in America in the late 1800s from a combination of breeds including Black Spanish, Grey Dorking, Dominique, Black Java and more. Multiple strains were created which were amalgamated into the Plymouth Rock, America's first recognised poultry breed.

The Barred Rock was admitted into the American Standard in 1874 and imported into Australia around the same time, causing a splash. It quickly achieved high numbers due to its reputation for laying ability, table properties and sheer size, as well as the appeal of the attractive barred feathering.

After initial popularity, the breed quite quickly fell from top position, replaced by the Orpington and Wyandotte. However, their utility qualities meant Barred Plymouth Rocks (usually known as Barred Rocks) were a common sight in farm flocks throughout the last century, and the White Rock was a major contributor worldwide to the female broiler breeder line. These days, Rocks are fair layers of medium, white-shelled eggs and available in Barred as well as: White, Buff, Black and Partridge.

Developed as the ideal farm fowl, Rocks are still an excellent choice for a smallholding; combining a relaxed nature with hardiness, longevity, and good brooding and mothering qualities.

Other top choices

There are many more heritage breeds to choose from, here are a few that might take your fancy:

- Anconas are smart, active birds that remain excellent layers of large, creamy-white shelled eggs.
- The Silver Grey Dorking is a traditional English table bird with a long history, and is a real backyard beauty.
- The Hamburgh is a stunning breed with excellent heat tolerance and laying persistence.
- Wyandottes are placid natured with gorgeous feathering, and were kept as dual-purpose fowls.
- The Australian Langshan is economical and hardy and is still the top purebred layer.

Clockwise from top left: The Silver Grey Dorking is a real backyard beauty; Anconas are very active; the placid-natured Wyandotte; Hamburghs are persistent layers.

WHERE TO BUY

To view heritage breeds, have a day out at a local poultry or agricultural show. Most breeds have a breed club, which will offer advice and contacts for stock. These are listed in the directory pages of *Australasian Poultry magazine*, and usually have a searchable Facebook page or website. Try to buy stock from your general area as they will be well adapted to local conditions. Online sites such as Gumtree can also be useful for sourcing stock but buyer beware!

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ON THE FRONTLINE

MANY SCIENTISTS AND RESEARCHERS DEALING WITH THE IMPACTS OF ENVIRONMENTAL CATASTROPHES ARE STRUGGLING TO COPE WITH THE TRAUMA AND WHERE TO GET SUPPORT, WRITES GEMMA CONROY.

When ecologist Daniella Teixeira visited her bushfire-ravaged study site on Kangaroo Island, South Australia, in February 2020, the scale of the damage hit her hard.

Teixeira, an ecologist at the University of Queensland, felt numb and deeply sad as she set foot among the blackened trees and melted nest boxes that were once home to the glossy black-cockatoos she studied during her PhD. The fires had burnt through one-third of the island since they started in December 2019.

"Going back to the sites where I did my research was the hardest thing," says Teixeira. "It was like a graveyard."

But Teixeira was unsure about where to seek support for the emotional toll she was experiencing. She was also discomfited to hear other researchers urging the community to focus on action instead of anxiety and sadness.

"It's concerning that some people are creating yet another stigma around mental health," says Teixeira. "Most conservationists got into this job because they love the natural world, so why shouldn't we feel anything?"

Silent grief

At a time when climate change is exacerbating bushfires, bleaching coral reefs, and melting glaciers, many researchers are grappling with how to cope with the stress of working at the forefront of environmental catastrophes. The problem is, few people are talking about it, says Cristian Román-Palacios.

"These kinds of questions are never asked in science," says Román-Palacios, an ecologist at the University of Arizona. "There's not a lot of psychological support."

In 2019, a group of marine scientists published a letter in *Science* calling for academic institutions

Above: Daniella Teixeira surveys her field site at Kangaroo Island after the 2019/20 bushfires.

PHOTOS: NICOLAS RAKOTOPARE / THREATENED SPECIES RECOVERY HUB

A Glossy black-cockatoo, an endangered species found on Kangaroo Island.

Daniella Texeira inspects a fallen nest box on Kangaroo Island that was damaged during the bushfire.

to support the mental health of environmental scientists. While mental health services are often provided for those working in healthcare, disaster relief and the military, specialised support for researchers who have been impacted by traumatic environmental events is lacking, the authors write.

They argued that training employees, debriefing after traumatic events, support from colleagues and supervisors, and counselling would help create a healthier working environment for scientists.

Steve Simpson, one of the letter's co-authors, says he has seen some environmental scientists switch disciplines or leave science altogether due to a lack of support.

"The danger is losing good scientists because they just can't take it," says Simpson, a marine biologist at the University of Exeter in the UK.

He adds that allowing researchers to process their feelings of grief or distress will lead to better outcomes in the long run.

"The reputation of institutions depends on people doing good work," says Simpson. "If we have mechanisms that help us look after each other, then we can do better science and keep fighting for what we think is important."

No easy solution

Although support groups are important for normalising emotional responses to ecological loss, they are not a simple fix for the mental health challenges researchers may face, says Maggie Turp, psychologist and member of the Climate Psychology Alliance, an international group exploring mental health support strategies for climate scientists and activists.

In 2019, Turp ran a free support group for researchers and staff working at the London School of Economics' Grantham Research Institute on Climate Change and the Environment for one term. Climate scientists in the group said that dealing with hostile responses from the public when breaking 'bad news' and the pressure to remain objective were the most emotionally taxing aspects of their work.

But Turp also noticed that some researchers appeared less comfortable talking about their personal feelings in front of their boss and colleagues. Such professional hierarchies can create a "whole other level of complication that cuts through what you're trying to do", says Turp. "This is something that needs to be considered when setting up support groups in departments."

Establishing larger groups with researchers from across different departments and institutions could be a solution, says Turp. "That way, you avoid having a closed circle of people working in the same place."

While conversations about mental health support are becoming more widespread in the conservation community, Euan Ritchie says that institutions need to facilitate better work-life balance for researchers facing ecological devastation.

"One of the best things institutions can do is to simply allow people time to properly grieve and not place unfair work expectations on individuals," says Ritchie, a wildlife ecologist at Deakin University in Australia. "I don't have many colleagues that aren't adversely affected in some way by what's happening to our natural world."

For Teixeira, the bushfires have been a wake-up call to prioritise self-care. She has also connected with likeminded conservationists through the Instagram account @mind.mystory and Lonely Conservationists, a blog where researchers and other conservation workers can discuss their mental health.

"It helps to know that other people feel the same way and that I'm not alone in feeling these things," says Teixeira. og

This is an extract of the article 'More help needed for scientists on the frontline of ecosystem loss' by Gemma Conroy, from *The Best Australian Science Writing 2020*, edited by Sara Phillips (NewSouth Publishing, $32.99). The article first appeared at natureindex.com.

DRIVING CHANGE

ORGANIC GOLF, ANYONE? MEET THE COURSE SUPERINTENDENT WHO IS MAKING THE GAME SAFER FOR PEOPLE AND WILDLIFE BY DITCHING CHEMICALS AND EMBRACING SOIL BIOLOGY. BY SIMON WEBSTER.

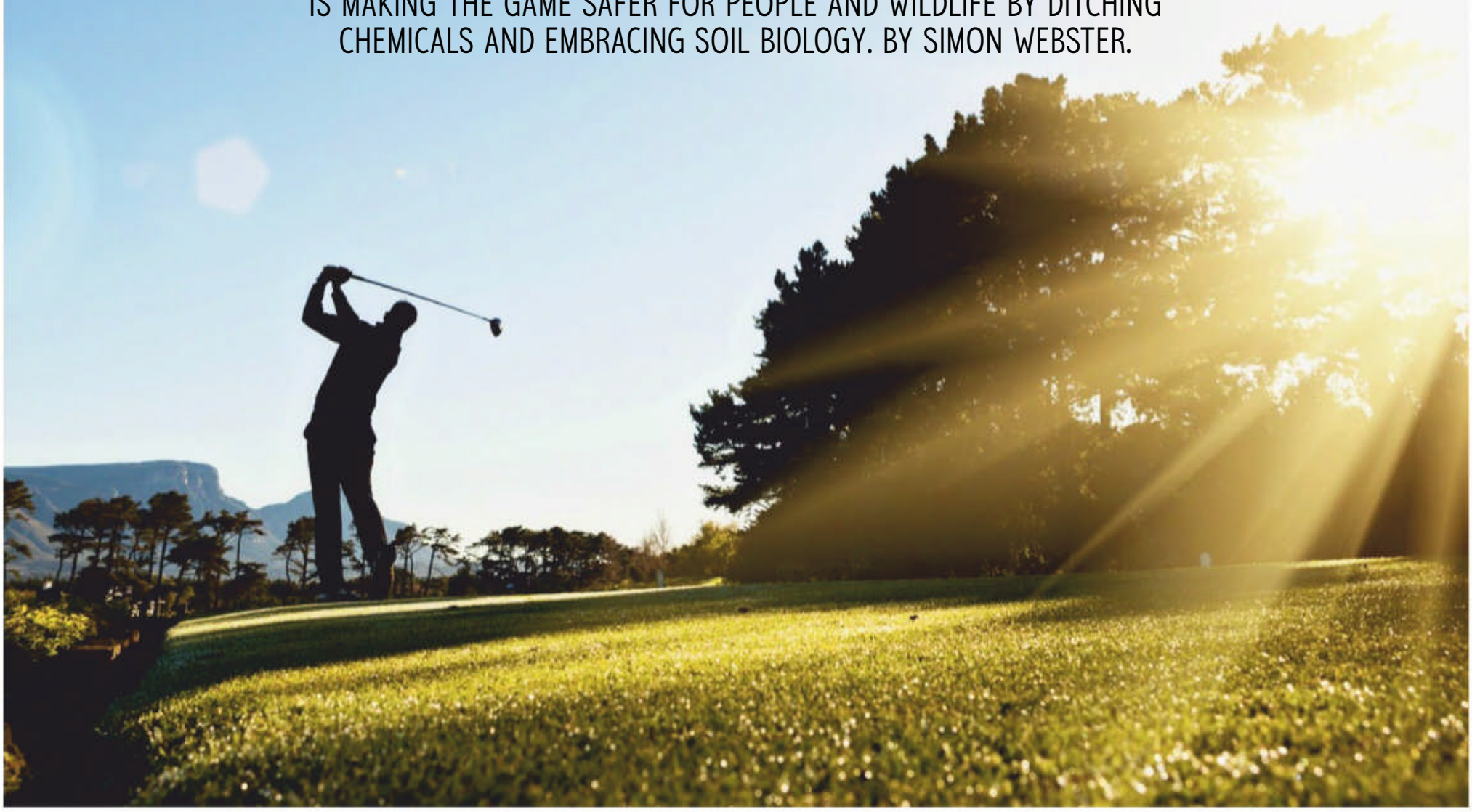


PHOTO: ISTOCK

As many city dwellers have sought green space during COVID-19 lockdowns, golf courses have become de facto parks and public recreation areas. And the people using them have loved what they have found; regardless of what you think of golf, its courses protect large swathes of urban green, and are havens for wildlife. But one drawback of golf courses – for golfers and anyone else who might wander them – is the chemicals that are used on them to control pests, weeds and plant diseases.

One Aussie course superintendent, Andrew Glen, is working to change that.

In 2016, after 32 years in the golf course construction and maintenance industry, Glen took charge of a new 10-hole short course at the KDV Sport complex, on Queensland's Gold Coast. Having long held an interest in organics, he decided this was a perfect opportunity to see if he could manage a course without chemicals. When he explained to his bosses the potential benefits, including the cost savings of not having to set up a chemical warehousing and wash-down facility, they gave him the green light.

Inspired by organic farming methods, Glen started out with microbes.

"Basically, the goal initially was to re-establish biology in the soil," he explains. "There's different ideologies in regards to organic processes. You've got Korean natural farming, permaculture, the soil food web… I've looked into all of them and taken what I thought was the best practices to match what we want to do."

With regular applications of a wide range of biology – using everything from microbe brews made from worm castings to ready-made cocktails of effective micro-organisms – Glen set about restoring life to the dead soil of this new golf course, built on the site of an old course.

"My theory was, the more diverse the better," he says. "And pretty much everything is sourced locally.

By using microbes indigenous to your environment, they're better suited to where you are."

Feeding time

Next, Glen had to feed all this new biology, using organic food sources that microbes love. "You feed the biology, not the plant, and the biology converts it into food for the plant," he says.

Glen ditched his mower catchers and instead returned the grass clippings to the turf (with frequent mowing, golfers don't even notice them). There, they become the main source of food for the growing population of bacteria, fungi and other organisms in the soil.

The course is thriving. And the need for inputs – in terms of microbes and food – is reducing as the soil starts to look after itself. Whereas in the early days Glen added biology to fairways once a month, for example, it's now once a quarter.

"We're weaning off our inputs," he says. "After a period of time we hope we won't need to add much at all. In an orchard, you're taking nutrients and minerals away from the plant, in the form of apples, and you have to replenish that, but we're not taking away anything."

Glen says the course stays surprisingly green even through drought, and is attracting a marked increase in wildlife, including birds, insects and reptiles. He is particularly pleased that not only are staff, golfers and neighbours spared any exposure to chemicals, but the sensitive local waterways are protected, too.

He hopes more golf courses will take an organic approach.

"We've proved it can be done," he says. "We're not really seeing a downside at the moment."

HOLES-IN-ONE

FIVE YEARS ON, ANDREW GLEN REPORTS A RANGE OF BENEFITS:

- Rich, steady grass growth.
- Few weeds – thanks to a fungal-dominated biology that favours perennial grass growth over annual weeds.
- Only one pest infestation (mole crickets, which were easily controlled with the introduction of predatory nematodes).
- No disease outbreaks.
- A large reduction in water needs, thanks to the soil's better structure (courtesy of the microbes' useful habit of turning plant matter into new soil).
- More mycorrhizal fungi, which bring minerals and water to the plant that would be otherwise be out of reach.
- No risk to the health of the staff, golfers, wildlife, neighbours or the environment.
- Reduced costs: no need for chemicals, chemical storage facilities, chemical wash-down bays, or protective spray equipment.

Top left: Andrew Glen.

Below: Picnickers on Melbourne's Royal Park Golf Course during the lockdown last October.

PHOTOS: TOP LEFT: SIMON WEBSTER/BELOW: GETTY IMAGE/ABOVE: ISTOCK.

Above: Golf courses provide a haven for people and wildlife.

Chemical attraction

There has been a reduction in chemical use on golf courses in the past decade or so, and an increased use of natural strategies such as integrated pest management, drought-tolerant grasses and water harvesting and recycling.

Attitudes are definitely changing for the better, but most courses still apply chemicals of some sort, including fungicides, insecticides, herbicides, growth regulators, turf pigments and synthetic fertilisers.

Professor Brian Wilson, of the University of British Columbia, Canada, says golf courses have come under plenty of criticism over the years for their environmental impact. As well as the damaging effects of chemicals on humans and wildlife, such as fish and aquatic organisms, they've been associated with the destruction of habitat, and excessive water use (particularly in dry areas).

But, overall, golf's attitude towards the environment has improved since the 1960s, when some industry figures were staunchly anti-green, says Wilson, co-author of *The Greening of Golf: Sport, Globalisation and the Environment*.

Bruce Macphee, senior agronomist with the Australian Golf Course Superintendents Association, agrees there have been significant changes here in Australia, too.

Macphee argues that golf courses often do environmental good: they can be wildlife sanctuaries, protect topsoil and water resources, and improve air quality and moderate temperatures in our cities.

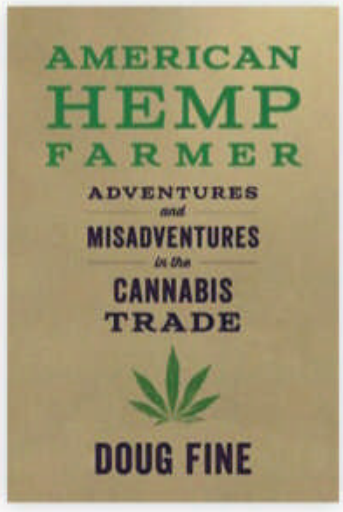
On the field

Andrew Glen also manages a football field organically that is often used by professional footballers. "The Richmond football team stayed at our hotel," he says. "Being a Tigers supporter, I was glad they were training on our chemical-free field."

"The use of bio-stimulants, organic-based fertilisers and beneficial microbes are all seen as part of a well-balanced maintenance program, which has seen less reliance on chemicals," he says. og

NOTE: Kabi Golf Course on the Sunshine Coast (Qld) is believed to be the first Australian course to be managed organically. The property included a restaurant, organic orchard and land set aside for wildlife but isn't operating at present.

reviews



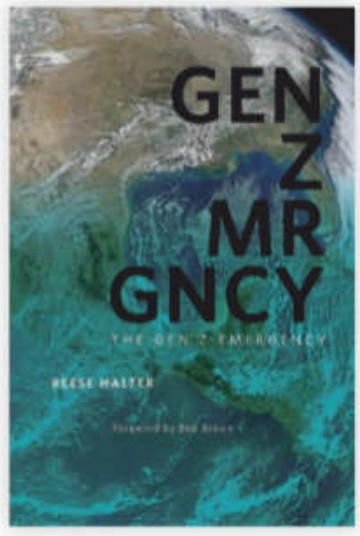
AMERICAN HEMP FARMER: ADVENTURES AND MISADVENTURES IN THE CANNABIS TRADE

Doug Fine

CHELSEA GREEN PUBLISHING, 2020, $34

What about growing hemp? I'm talking about the non-psychoactive plant closely related to cannabis. It's a health food, a medicine, is made into cloth and used as a building material. Doug Fine has the inside story on how you can not only grow it for a living but also grow it regeneratively so that you protect the soil, environment and climate. One of the fastest growing agricultural industries in the US, this ancient crop is hemmed around by regulations and a lack of markets in Australia (see: abc.net.au/news/2020-05-07/hemp-smoothies-muesli-among-creative-uses-of-first-edible-crop/12196510). So if you're thinking of growing it, this book, written by 'a maverick journalist and solar-powered goat herder' with a vision of how things could be, is a vital and entertaining read.

Penny Woodward



THE GEN Z EMERGENCY

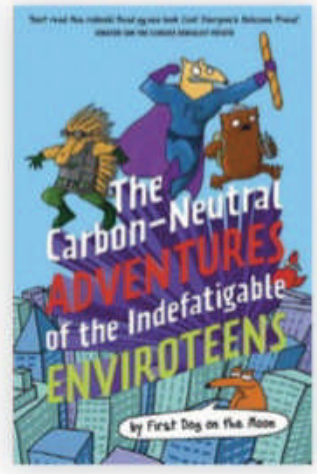
Reese Halter

EARTHCALLINGSOS.COM, 2020, $25 (+ POST)*

For those like me who can't keep track of the various 'Gens', Gen Z is the newest generation given a moniker, being born after 1996 and making up a quarter of the world's population. They may be the end of the alphabet, but for Reese Halter, Gen Z are the hope of the planet. Halter, an occasional and valued contributor to *OG*, has been fighting for planet Earth for decades and has written numerous calls to action, such as *Love! Nature* (2018). In this latest entreaty, he sets up a conversation with three Gen Z activists, exploring the extinction crisis and climate crisis but also the way forward with success stories, strategies for political and social change – all the while showing deep empathy for all life forms on the planet.

Steve Payne

** This book is available from: drreese.com/books*



THE CARBON-NEUTRAL ADVENTURES OF THE INDEFATIGABLE ENVIROTEENS

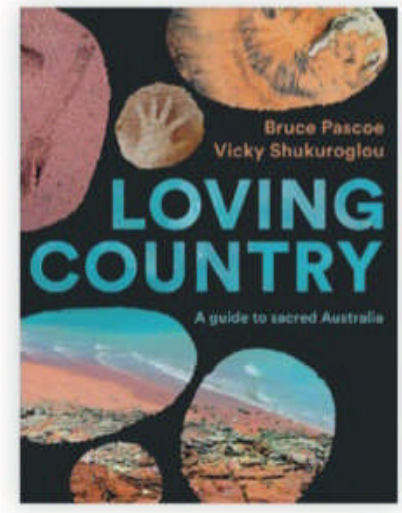
First Dog on the Moon

ALLEN & UNWIN, 2020, $16.99

The blurb on the cover of this hilariously twisted and subversive graphic novel (aimed at kids but really for anyone) from *The Guardian*'s cartoonist says it all: "Don't read this rubbish! Read my new book Coal: Everyone's Delicious Friend" – Senator Ian, the Climate Denialist Potato. Or this snippet: "No mother, I shan't eat another morsel of kale until you show me your realistic implementation schedule for nationwide Utility-Scale Solar Photovoltaics (that is a network of solar panel 'farms' so big it could power whole cities.)"

The Enviroteens – Binky, aka The Monotreme, Worried Norman (once bitten by a radioactive croissant and now Pastry Person), and Letitia, an occasionally bossy science-wombat and genius inventor – are on a mission to stop the impending disaster of climate change and save the world. Can they do it?

Steve Payne



LOVING COUNTRY

Bruce Pascoe and Vicky Shukuroglou

HARDIE GRANT, 2020, $45

If travelling through COVID normal Australia, we now have the chance to see some regions through the eyes of First Nations peoples. Bruce Pascoe and Vicky Shukuroglou have written about our country's sacred places with the help and oversight of local communities. In the introduction Pascoe asks us to "Enjoy the book, embrace this country and learn, really learn about Aboriginal Australia." From the lands of the Bidjara and Karingbal language groups at Carnarvon Gorge, west to Broome and the Yawuru language group, all the way south to Bruny Island and the Nuenonne language, and countless places in between, we are introduced to the people, country and wildlife (both plants and animals). Through these stories and expansive photography we gain the precious gift of seeing Australia in a profound new light.

Penny Woodward

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USAGE L.P.M	4.1	6	7.3	9.1	10	10.7	13

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APPROX. LITRES/MIN	2.5	3.0	3.5	4.5	6.5

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By the end of the 12 weeks, you will have a personalised action plan, and a new community with which you can share ideas. You will also have the skills to transform your daily habits and decisions into meaningful and useful projects – ones that have far-reaching, positive outcomes for all.

This prize includes a premium access pass to the Milkwood Permaculture Living course, which entitles the winner to:

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For more details visit: milkwood.net/courses

HOW TO ENTER

SIMPLY ANSWER IN 30 WORDS OR LESS:

WHAT DOES RESILIENCE MEAN TO YOU?

ONLINE: organicgardener.com.au – click on the 'WIN! COMPETITION' tab and enter your details and response.

POST: Milkwood Permaculture Living Course, nextmedia, Locked Bag 5555, St Leonards, NSW 1590

Competition is open to Australian residents only. Entry opens at midnight AEST on Thursday 4 February 2021 and closes at 11.59pm AEST on 24 March 2021. This is a game of skill and entrants must answer in 30 words or less, 'What does resilience mean to you?' One winner will receive an online permaculture course, worth $439. Entries will be judged on 22 April 2021 at the promoter's premises. Full T&Cs are available at organicgardener.com.au.

Escape to the country

SIMON WEBSTER REVEALS THE TRUTH ABOUT THE 'GOOD LIFE'.

All of a sudden, everyone wants to move to the country. In the normal scheme of things, selling a rural property can take years, as you wait for ~~an idiot~~ the right buyer to come along. These days, the 'Sold' sign gets slapped on the farm gate before the 'For sale' sign, which can lead to some confusion (they really shouldn't do it that way).

If you are thinking of swapping city for bush, go for it. You won't regret it. But please bear in mind the following top 10 truths about the 'good life'.

1. Machines will break, animals will die. This was the advice the seller of our property gave us on the day he handed over the keys, with a tear in his eye, after three decades of devotion to this little patch of dirt. Then he skipped off into the sunset, jumped in the air, and clicked his heels on the way out. He was right. Manure happens. All too often. Try to be Zen about this.

2. You will learn to fix pumps. You will spend many hours struggling to join pipes together, searching for damp patches of grass, wading into ice-cold creeks wielding a monkey wrench, and explaining to the family why there's nothing coming out of the tap. You will want to tell someone to stick their Zen up their downpipe. But try to be Zen about this, too.

3. You will own a rain gauge. And you will record rainfall amounts on a chart that you will have on prominent display on your fridge. Strange but true.

4. People will help you. Some people – generally in rural supplies stores – will make you feel stupid. But they will be far outnumbered by the people who offer advice and assistance for no reason other than to be helpful. This is also strange but true.

5. Your vegie patch won't always look amazing. When it does, grab a deckchair, a cuppa, and sit back and enjoy.

6. You will live in close proximity to snakes. And rats. And ticks. And possibly bullrouts (a type of stonefish), which will poison you for having the temerity to step foot in a creek. Amazingly, this will soon feel normal.

7. You will still go to supermarkets. At first you will feel this is something to be ashamed of. Then, after you've run into all your neighbours, local market gardeners and self-sufficiency gurus in the checkout queue, you will realise it's as normal as bullrouts.

8. Your house will become one giant spider's web. So stay in touch with old friends. When they announce they're going to visit, you'll clean.

9. You will feel overwhelmed. Every now and then, you will look around and see only rampant weeds, broken fencing, the crumbling driveway, and the leaking tank. It will feel like everything is out of control. That's because it is. Go and spend some time working on the pump to take your mind off it.

10. Your kids would rather help you in the garden than go on screens. As if. You're moving to the country; not Shangri-La.

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