

Growing roses without chemicals: transitioning the collection at Auckland Botanic Gardens (New Zealand) 2000–2020

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Abstract

The Rose Garden at Auckland Botanic Gardens displays rose cultivars which perform well and remain healthy in Auckland, New Zealand, without pesticide applications. Miticides, insecticides and fungicides are not used. Suitable cultivars are chosen for public display to inspire gardeners and encourage visitors to make their own rose selections based on personal preferences from an array of proven performers. These are identified to the public as ‘Star Performers’. Here the process of trialling, identifying and displaying old shrub and modern rose cultivars that have achieved Star Performer status over the past 20 years is presented. This work demonstrates the role that botanic gardens can play in promoting sustainable horticultural practices.

Introduction

Roses have a reputation of being difficult to grow and requiring chemicals to ensure plant health. Many public gardens in New Zealand maintain a regular chemical spray regime. However, worldwide the trend towards chemical-free, low-input or low-maintenance roses is growing (Mackay *et al.*, 2008). The use of genetic tools to investigate disease resistance to improve breeding will have an increasing impact in this area (Debener & Byrne, 2014), assisted by the recent sequencing of the rose genome (Smulders *et al.*, 2019). Several schemes based in the USA, such as the American

Rose Trials for Sustainability programme (American Rose Trials for Sustainability[®], n.d.) and Earth-Kind Roses (Aggie Horticulture, n.d.), promote roses that do not require chemical applications to perform well. Some rose gardens and public gardens, such as New York Botanic Garden, have shifted their rose collections to include more sustainable chemical-free cultivars (Kukielski, 2015).

At Auckland Botanic Gardens (ABG) we promote plants to our visitors and home gardeners that do not require chemicals to enable them to grow well. In 2000 we ceased the use of chemicals in the rose collection and progressively culled all poorly

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performing roses to identify those that could be recommended as low maintenance and spray-free.

Plant trials, supported by the promotion of plant health to ensure self-sustaining collections with minimal intervention, are the basis of sustainable gardening practices at ABG. The management goals for trial and research collections are:

- to inform plant selection and publicise recommendations
- to influence the range of plants grown in the Auckland region
- to inform content in our own themed plant collections and visitor centre displays.

Assessment of all plants on an ongoing basis is used to select disease-free plants to build the collection as well as to recommend those we determine as outstanding performers (known as Star Performers) to the public. There is a trial ground at ABG where most trials are undertaken, with an additional Rose Trial bed in the Rose Garden. However, by their nature trials are ongoing and plants throughout the collections are still considered to be under trial. Plants must earn their place and then continue to prove their merit.

Sustainable horticultural practices at Auckland Botanic Gardens

In addition to trialling plants to assess their suitability to Auckland's climate, ABG's horticulturists implement cultivation practices that support plant health and promote abundant life without reliance on fungicides or insecticides. Agrichemicals may have an adverse effect on water quality, soil microbiota and fauna, have non-target impacts on beneficial organisms and affect human health.

We aim to establish communities of plants that are self-sustaining with minimal intervention. Soil health is paramount to plant health, and cultivation practices ensure an abundance of beneficial soil micro-organisms whose competitive activities may suppress soil-borne pathogens. Other practices that support beneficial organisms include minimal soil disturbance as well as the application of compost and organic mulch. Only organically derived, non-synthetic fertilisers are used. Adequate plant spacing, companion planting and planting at the most suitable time of year for the species also support plant health.

In addition to the environmental benefits of sustainable horticultural practices, they are a way to protect visitor safety with the reduction of chemical use. The ideal conditions to apply agrichemicals coincide with days of highest visitor numbers (windless and fine) in a public garden; not using agrichemicals therefore ensures visitor safety is not put at risk.

The Rose Garden at Auckland Botanic Gardens

The first rose collection at ABG was established in 1981 and was on display for the opening of the gardens to the public in 1982 (Fig. 1). By 1989, the Rose Garden had expanded to include the Auckland Rose of the Year trials in partnership with the Rose Introducers of New Zealand (RINZ). The number of rose plants ultimately exceeded 6,000. This collection became known as the 'RINZ Trials' and comprised a monoculture of modern, newly released cultivars owned by RINZ which required a regular chemical spray regime to support them throughout the growing season (Fig. 2). Common pests and diseases of roses include black spot (*Diplocarpon rosae*), powdery mildew (*Sphaerotheca pannosa* var. *rosae*),



Fig. 1 The first Rose Garden in 1985. Photo: Auckland Botanic Gardens.



Fig. 2 A RINZ evaluation day in 1992 with Sam McGredy and Maggie Barry. Photo: Auckland Botanic Gardens.

rust (multiple species of *Phragmidium*), scale insects (Hemiptera: Sternorrhyncha) and mites (the European red spider mite *Panonychus ulmi* and the two-spotted spider mite *Tetranychus urticae*).

A typical pesticide regime recommended by ABG for a home gardener at this time was the use of Supershield® (myclobutanil and tau-fluvalinate), Guardall® (chlorothalonil, thiophanate-methyl and tau-fluvalinate) or Greengard® (chlorothalonil and thiophanate-methyl) (Grant & Flint, 1998). These were to be applied at two- to three-week intervals from September to May. Pruning (in June) was to be followed by three applications of copper and oil.

A trial was carried out by Grant & Flint (1998), comparing the health of roses with no pesticides, based on the existing regime at ABG, and that of roses treated with a commercial regime such as the one recommended above. They deduced that 'there was no need for the commercial regime' and that an 'acceptable result' could be achieved from reduced spraying. At ABG, we would define an 'acceptable result' as having minimal to no pests or diseases throughout the growing season. Current trials at ABG quantify each pest and disease found on a plant by the percentage of the plant affected by that pest or disease; this provides information throughout the season of what pest or disease is present and how much it is impacting the plant.

By the year 2000, the concept of sustainable horticulture was being developed at ABG and the decision was made to reduce applications of pesticides. The RINZ Trials were discontinued at this time because of the development of sustainable horticultural practices that no longer aligned with RINZ practices. The Rose Garden was relocated and redesigned, and in 2001 comprised five

separate themed areas: the Historic Rose Garden, the Reflective Rose Garden, the New Zealand Rose Garden, the Rose Gallery and the Trial Beds. These areas are described below.

Historic Rose Garden

The Historic Rose Garden contains species roses and heritage roses, including some that were introduced to New Zealand in colonial times, as well as some English roses that complement the old-fashioned look and feel (Fig. 3). These are mixed with perennials, annuals and shrubs in a cottage garden style evocative of an early settler's garden. Special consideration is given to roses of historical significance such as *Rosa* 'Slater's Crimson China', thought to be the first ornamental plant introduced to New Zealand.

Reflective Rose Garden

This is a formal display garden containing mainly climbing and floribunda roses with some shrub roses. Roses are grouped according to flower colour, from pastels to bright shades (Fig. 4). The garden displays symmetry in its layout and structure.

New Zealand Rose Garden

This garden contains a mix of recommended garden roses intermingled with predominantly New Zealand native plants that showcase the beauty of both (Fig. 5). The native plants chosen have attractive foliage, texture and form which complement and combine well with roses. Some other exotic plants are included, with self-sown violas and aquilegias for seasonal colour.

The Rose Gallery

The Rose Gallery displays a range of roses that have performed best in our trials. These are supported by low-maintenance plants which do not compete with roses.



Fig. 3 The Historic Rose Garden. Photo: Auckland Botanic Gardens.



Fig. 4 The Reflective Rose Garden. Photo: Auckland Botanic Gardens.



Fig. 5 The New Zealand Rose Garden. Photo: Auckland Botanic Gardens.

The Trial Beds

New roses are introduced to these beds to be tested for their performance in Auckland conditions. Candidates for trial are prioritised to those cultivars produced by breeders that focus on disease resistance. All-new rose accessions (i.e. those that have not previously been evaluated at ABG) are first planted in the Trial Beds.

Rose assessment

Roses are evaluated for their performance and overall health over a minimum of 12 months and longer if necessary. Particular attention is paid to the evaluation of modern cultivars, although some species and heritage types may also be included. Those cultivars that perform well and remain healthy over 1–2 years generally graduate to the Rose Gallery for final confirmation of performance (across several years), and thereafter are promoted

to other display beds. Rose cultivars will be culled if considered too disease-prone, or if they are regarded as having insufficient ornamental merit. The primary assessment criterion is pest and disease resistance; however other characteristics are considered, including their amenity value, abundance and quality of flowers, fragrance and habit.

Roses that are exceptional are labelled as ‘Star Performers’; to receive this accolade, a rose must produce clusters of flowers over a long period of time and not require spraying for pests and diseases. These plants will have received a 9 or 10 in the overall rating. A second layer of plants with proven performance are defined as ‘Recommended Plants’. These plants have consistently performed to high standards in suitable conditions in Auckland and have received an 8 as their overall rating. It is worth noting that there are cases when a cultivar is kept in the

collection despite a lower rating, normally if it has conservation or historical significance, as per our Plant Collection Guidelines. ABG may also be the only place in New Zealand that holds a particular cultivar, and cultivar conservation is just as important as threatened species conservation. The rating system is primarily for providing advice to the public about plant selection, and although it informs the selection of plants for our display gardens it is not the only mechanism for driving plant selection. Conservation and research specimens are equally important for botanic gardens to incorporate into their collections.

Over 570 cultivars were included in the RINZ Trials during the time they were at ABG, with between 50 and 200 cultivars added to the trial annually. With the loss of specialist rose nurseries, there are far fewer roses being introduced to the market. Between 10 and 20 new roses are available each year, which has significantly reduced the numbers trialled at ABG. However, over 400 cultivars are displayed at ABG, which provides plenty of choice for every gardener.

Table 1 in the Appendix presents results from summer surveys of flowering and pest and disease occurrence. Flowering records were taken weekly, although with Covid-19 lockdowns and other restrictions, there were a few weeks between 31 December 2020 and 15 January 2021, and between 6 February 2021 and the end of March 2021, when the survey could not be carried out. A complete flowering period was therefore not collated. Flowering records ceased at the end of February 2021. Despite this setback the data do provide a good indicator of flowering period. Pest and disease observations were made twice during the season, in October 2020 and late January 2021. The percentage of a pest or disease observed was recorded as

the percentage of the plant affected. Any pest or disease with an incidence of over 20 per cent observed has been noted in Table 1 in the Appendix. Fewer pests and diseases were seen in October compared to January when conditions were more humid. Overall ratings were assessed during peak flowering in early December 2020. Some cultivars were not given ratings for one of a number of reasons:

- They were not yet flowering.
- They were not growing in ideal conditions; for example, the soil conditions were poor or plants had insufficient space due to crowding.
- They had been recently pruned.

Cultural practices in the Rose Garden mirror sustainable horticulture practices applied throughout ABG. Curators of the Rose Garden ensure plants are well spaced to ensure adequate airflow and reduce the humidity preferred by fungi. Pruning takes place in June each year, which ensures healthy growth and promotes plants shaped to maximise airflow. Rose monocultures are avoided, with preference given to a diverse range of companion plantings. Companion plantings can comprise perennials or annuals and species native to New Zealand, to ensure habitats for predatory insects which can assist in controlling any pests and diseases that may occur.

Conclusion

Eighteen rose cultivars are promoted as Star Performers on leaflets and on our Plants for Auckland website database (Auckland Botanic Gardens, 2020), and a further 41 are Recommended Plants. Star Performers are mainly floribunda or shrub-type roses. This study has shown that a wide range of roses can be grown in Auckland without the

use of chemicals, and the authors believe that chemical-free cultivation supports a healthier garden. Star Performers help ensure Auckland gardeners have success with their plant selection, and although this forms the backbone of our plant collections, consideration is also given to roses of conservation or historical significance in order to meet our core role in plant conservation.

Acknowledgements

We would like to thank Christine Low and Karah Lockman for collecting flowering records.

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Appendix

Table 1 Summary information for 256 roses from flowering season 2020–2021.

DNR = did not rate because the plant was not in flower or had been cut back. The incidence of pests and diseases is shown as a percentage, and the month in which the plant produced flowers is indicated with an X. Star Performers, with a rating of 9 or 10, are indicated with two asterisks (**) and Recommended Plants, with a rating of 8, are indicated with three (***). The flowering period is indicative only. A rating of 8 or higher means that the plant remains in the collection. If it achieved a lower score, historical significance as a cultivar or conservation value is considered before culling.

Name	Rating	Pests and diseases	Flowering period				
			Oct	Nov	Dec	Jan	Feb
<i>Rosa</i> Absolutely Fabulous	8***		x	x	x	x	x
<i>Rosa</i> 'Aglaiá'	8***		x				
<i>Rosa</i> 'Alain Blanchard'	7						
<i>Rosa</i> Albéric Barbier	8***		x	x	x		
<i>Rosa</i> 'Alchemist'	4		x	x	x		
<i>Rosa</i> 'Alexandre Girault'	9**				x	x	x
<i>Rosa</i> 'Aloha'	6		x	x	x	x	x

Name	Rating	Pests and diseases	Flowering period				
			Oct	Nov	Dec	Jan	Feb
<i>Rosa</i> 'Amadis'	8***		x	x			
<i>Rosa</i> 'Anaïs Ségalas'	9**	25% black spot in late Jan	x	x			
<i>Rosa</i> 'Anemone'	5			x			
<i>Rosa</i> 'Ann Endt'	8***			x	x		
<i>Rosa</i> 'Apricot Scentasia	2	50% black spot in early Oct	x	x			
<i>Rosa</i> 'Arabella	6		x	x			
<i>Rosa</i> 'Archiduc Joseph'	9**		x	x	x	x	
<i>Rosa</i> 'Astra Desmond'	8***						
<i>Rosa</i> 'Australia Felix'	6	20% black spot in late Jan	x	x	x	x	
<i>Rosa</i> 'Avalanche	DNR			x	x	x	x
<i>Rosa</i> 'Ayrliès'	5	20% black spot in late Jan		x	x		
<i>Rosa</i> 'Baby Faurax'	7	50% black spot in late Jan		x			
<i>Rosa</i> 'Ballerina'	6	100% black spot in late Jan		x	x	x	
<i>Rosa</i> 'Balmain Climber	8***		x	x	x	x	
<i>Rosa banksiae</i> 'Alba Plena'	8***		x	x			
<i>Rosa banksiae</i> 'Lutea'	8***		x	x	x		
<i>Rosa</i> 'Bantry Bay'	7		x	x	x		
<i>Rosa</i> 'Beach Baby	6			x	x	x	x
<i>Rosa</i> 'Belle de Crécy'	7			x	x		
<i>Rosa</i> 'Belle Poitevine'	7		x	x			
<i>Rosa</i> 'Bert Mulley'	7	75% black spot in late Jan	x	x	x	x	
<i>Rosa</i> 'Black Boy'	5		x	x			
<i>Rosa</i> 'Blackberry Nip	DNR	50% powdery mildew in late Jan		x	x	x	x
<i>Rosa</i> 'Blush Noisette'	6	20% black spot in late Jan	x	x			
<i>Rosa</i> 'Bright as a Button	8***		x	x			
<i>Rosa</i> 'Brilliant Pink Iceberg	7		x	x	x	x	x
<i>Rosa</i> 'Buff Beauty'	7		x	x	x		
<i>Rosa</i> 'Burgundy Iceberg	DNR		x	x	x	x	x
<i>Rosa</i> 'Canterbury	DNR			x			
<i>Rosa</i> 'Cécile Brunner'	8***		x	x	x	x	
<i>Rosa</i> 'Céline Forestier'	6		x	x		x	x
<i>Rosa</i> 'Chanelle'	6						
<i>Rosa</i> 'Charles de Mills'	7		x	x			
<i>Rosa</i> 'Cherokee Latham'	8***		x	x			
<i>Rosa</i> 'Chevy Chase'	8***			x	x		

Name	Rating	Pests and diseases	Flowering period				
			Oct	Nov	Dec	Jan	Feb
<i>Rosa</i> Chloe	6	25% black spot in late Jan		x	x		
<i>Rosa</i> Christchurch Remembers	7						
<i>Rosa</i> City of Hastings	7		x	x	x	x	x
<i>Rosa</i> 'Claire Jacquier'	8***		x	x	x	x	
<i>Rosa</i> 'Climbing Devoniensis'	7		x	x	x		
<i>Rosa</i> 'Climbing Pinkie'	9**		x	x	x	x	x
<i>Rosa</i> Cocktail	DNR			x			
<i>Rosa</i> Coconut Ice	6		x	x	x	x	x
<i>Rosa</i> 'Compassion'	7		x	x		x	
<i>Rosa</i> 'Comtesse du Cayla'	DNR		x				
<i>Rosa</i> 'Cornelia'	5		x	x			
<i>Rosa</i> Courage	6						
<i>Rosa</i> 'Crepuscule'	9**			x			
<i>Rosa</i> Cupcake	DNR			x	x		
<i>Rosa</i> Cupid	DNR				x	x	
<i>Rosa</i> Darcey Bussell	DNR				x	x	x
<i>Rosa</i> 'De la Grifferaie'	6		x	x			
<i>Rosa</i> 'Delicata'	7		x	x			
<i>Rosa</i> 'Dimples'	5		x	x			
<i>Rosa</i> 'Dortmund'	7		x	x			
<i>Rosa</i> Dublin Bay	8***		x	x	x	x	
<i>Rosa</i> 'Duc de Fitzjames'	DNR		x	x		x	
<i>Rosa</i> 'Duchesse de Brabant'	DNR		x	x	x	x	x
<i>Rosa</i> 'Dunwich Rose'	7		x	x			
<i>Rosa</i> 'Dupontii'	7	30% black spot in late Jan		x	x		x
<i>Rosa</i> Eglantyne	7	25% black spot in late Jan		x	x		x
<i>Rosa</i> Eiffel Tower 2000	5		x	x	x	x	x
<i>Rosa</i> Elina	8***		x	x			
<i>Rosa</i> Everlasting Love	6		x	x	x		
<i>Rosa</i> Eye Candy	7		x	x	x	x	x
<i>Rosa</i> Eye in the Sky	8***		x	x			
<i>Rosa</i> Eye of the Tiger	7						
<i>Rosa</i> Eyes for You	DNR		x	x	x	x	x
<i>Rosa</i> 'F J Grootendorst'	6		x	x	x	x	x
<i>Rosa</i> 'Falkland'	6		x	x			

Name	Rating	Pests and diseases	Flowering period				
			Oct	Nov	Dec	Jan	Feb
<i>Rosa</i> 'Fantin-Latour'	8***	25% black spot in late Jan		x	x		
<i>Rosa</i> 'Felicia'	7		x	x	x	x	
<i>Rosa</i> Fellowship	9**		x	x	x	x	x
<i>Rosa</i> Fiona	5		x	x	x	x	x
<i>Rosa</i> Fireball	2		x	x	x	x	x
<i>Rosa</i> Flamboyance	6		x	x	x	x	x
<i>Rosa</i> Flower Carpet Gold	8***		x	x			
<i>Rosa</i> Flower Carpet Red	9**			x			
<i>Rosa</i> Flower Carpet Scarlet	10**				x	x	
<i>Rosa</i> Fond Memories	8***		x	x	x	x	x
<i>Rosa</i> For Your Eyes Only	8***		x	x	x		
<i>Rosa</i> 'Francis E. Lester'	7		x	x	x	x	
<i>Rosa</i> 'Friesia'	DNR		x	x	x	x	x
<i>Rosa</i> Frilly Jilly	5		x	x	x	x	x
<i>Rosa</i> 'G. Nabonnand'	8***			x			
<i>Rosa</i> 'Général Galliéni'	6		x	x			
<i>Rosa</i> 'Général Schablikine'	7		x	x			
<i>Rosa</i> Gertrude Jekyll	6		x	x	x	x	x
<i>Rosa</i> 'Ghislaine de Féligonde'	8***		x	x			
<i>Rosa</i> 'Golden Wings'	6		x	x	x	x	
<i>Rosa</i> Graham Thomas	8***						
<i>Rosa</i> 'Gruss an Aachen'	DNR				x	x	x
<i>Rosa</i> Guy Savoy	5		x	x	x	x	x
<i>Rosa</i> 'Gwen Nash'	7		x	x			
<i>Rosa</i> 'Hansa'	8***		x	x	x	x	x
<i>Rosa</i> 'Henry Kelsey'	DNR		x	x			
<i>Rosa</i> Iceberg	8***			x	x	x	x
<i>Rosa</i> Indigo Knights	8***		x	x	x	x	
<i>Rosa</i> 'Irish Rich Marbled'	5			x			
<i>Rosa</i> 'Isabella Sprunt'	6		x	x			
<i>Rosa</i> John Clare	5			x	x	x	x
<i>Rosa</i> Kaiteri Gold	7	25% black spot in late Jan	x	x	x	x	x
<i>Rosa</i> 'Karl Foerster'	6		x	x			
<i>Rosa</i> Kordes Robusta	7	Some aphids	x	x			
<i>Rosa</i> 'La Belle Sultane'	7		x	x			

Name	Rating	Pests and diseases	Flowering period				
			Oct	Nov	Dec	Jan	Feb
<i>Rosa</i> 'Lady Huntingfield'	7		x	x			
<i>Rosa</i> 'Lady Waterlow'	DNR		x	x	x	x	x
<i>Rosa</i> 'Lamarque'	DNR		x	x	x	x	x
<i>Rosa</i> Lavender Dream	7			x	x		
<i>Rosa</i> 'Lavender Lassie'	7			x	x		
<i>Rosa</i> Leander	5		x	x			
<i>Rosa</i> Leaping Salmon	7		x	x	x	x	x
<i>Rosa</i> Lichfield Angel	DNR			x	x	x	x
<i>Rosa</i> Linda Campbell	DNR		x	x			
<i>Rosa</i> Little Miss Perfect	4	100% black spot in late Jan		x	x	x	x
<i>Rosa</i> Looking Good	DNR			x	x	x	x
<i>Rosa</i> 'Louis XIV'	DNR		x	x			
<i>Rosa</i> 'Louise Odier'	7		x		x		
<i>Rosa</i> Love Me Do	6			x	x	x	x
<i>Rosa</i> Loving Memory	5		x	x	x		
<i>Rosa</i> Lucetta	DNR	20% black spot in late Jan	x	x	x	x	x
<i>Rosa</i> 'Madame Alfred Carrière'	7		x	x	x	x	x
<i>Rosa</i> 'Madame Antoine Mari'	8***		x	x	x	x	
<i>Rosa</i> 'Madame Grégoire Staechelin'	4		x	x	x		
<i>Rosa</i> 'Madame Hardy'	DNR	20% black spot in late Jan					
<i>Rosa</i> 'Madame Lombard'	6	50% black spot in late Jan	x	x			
<i>Rosa</i> 'Madeleine Selzer'	5		x	x	x		
<i>Rosa</i> 'Maman Cochet'	7		x				
<i>Rosa</i> 'Mari Dot'	6		x	x			
<i>Rosa</i> 'Marie Nabonnand'	6		x	x			
<i>Rosa</i> 'Marie Pavié'	5		x	x	x		
<i>Rosa</i> Marjorie Fair	DNR			x			
<i>Rosa</i> 'Marjory Palmer'	9**						
<i>Rosa</i> Mary Rose	6		x	x	x	x	x
<i>Rosa</i> 'Matt Prin'	DNR			x			
<i>Rosa</i> 'Meg'	6		x	x			
<i>Rosa</i> Memorial Day	DNR			x	x	x	x
<i>Rosa</i> Midnight Rambler	8***		x	x			
<i>Rosa</i> Modern Miss	6			x	x	x	x

Name	Rating	Pests and diseases	Flowering period				
			Oct	Nov	Dec	Jan	Feb
<i>Rosa</i> Monticello	7	50% black spot in late Jan	x	x			
<i>Rosa</i> Moody Dream	7		x	x			
<i>Rosa</i> Moondance	5			x			
<i>Rosa</i> 'Moonlight'	7		x	x	x	x	x
<i>Rosa</i> Morning Mist	DNR						
<i>Rosa</i> 'Mozart'	9**			x	x	x	
<i>Rosa</i> 'Mrs Herbert Stevens'	6	30% black spot in late Jan		x			
<i>Rosa</i> 'Mrs Inge Poulsen'	6			x			
<i>Rosa</i> 'Mrs R. M. Finch'	9**		x	x	x	x	x
<i>Rosa</i> Munstead Wood	6			x			
<i>Rosa</i> My Josephine	DNR		x	x	x	x	x
<i>Rosa</i> My Mum	9**				x	x	x
<i>Rosa</i> Natchez	8***			x	x	x	
<i>Rosa</i> Nelson Girls	7		x	x	x	x	x
<i>Rosa</i> NZ Gardener	DNR			x	x	x	x
<i>Rosa</i> 'Old Blush'	DNR		x	x		x	
<i>Rosa</i> 'Ormiston Roy'	6		x	x			
<i>Rosa</i> 'Parkdirektor Riggers'	6		x	x	x	x	x
<i>Rosa</i> Parnell Heritage	6			x			
<i>Rosa</i> 'Paul Transon'	DNR			x	x		
<i>Rosa</i> 'Paul's Himalayan Musk'	DNR		x	x			
<i>Rosa</i> Pavlova	7		x	x			
<i>Rosa</i> 'Peace'	6	50% black spot in late Jan	x	x			
<i>Rosa</i> 'Perle d'Or'	6		x	x			
<i>Rosa</i> 'Phyllis Bide'	6			x	x	x	x
<i>Rosa</i> Pierette	6		x	x			
<i>Rosa</i> Pierre de Ronsard	5			x			
<i>Rosa</i> 'Pink Grootendorst'	6	30% rust	x	x			
<i>Rosa</i> Pink Ice	9**		x	x	x	x	x
<i>Rosa</i> 'Pink Perpétue'	7		x	x	x	x	
<i>Rosa</i> 'Pompon de Paris'	DNR		x	x	x		
<i>Rosa</i> Princess Alexandra of Kent	6			x	x	x	x
<i>Rosa</i> Princess Anne	7		x	x	x	x	
<i>Rosa</i> Princess of Wales	7		x	x	x	x	x
<i>Rosa</i> Purple Pizzazz	DNR		x	x	x	x	

Name	Rating	Pests and diseases	Flowering period				
			Oct	Nov	Dec	Jan	Feb
<i>Rosa</i> 'Purple Sage'	6			x			
<i>Rosa</i> 'Queen of the Musks'	6	25% black spot in late Jan	x	x	x	x	
<i>Rosa</i> 'Rawiri Taiwhanga'	DNR		x	x			
<i>Rosa</i> Red Flame	6		x	x			
<i>Rosa</i> Red Meidiland	8***						
<i>Rosa</i> 'Reine des Violettes'	5	30% powdery mildew in late Jan	x	x			
<i>Rosa</i> 'Restless'	6		x	x			
<i>Rosa</i> 'Rêve d'Or'	4		x	x	x	x	x
<i>Rosa</i> 'Rosenfest'	7						
<i>Rosa</i> 'Rosette Delizy'	6		x	x			
<i>Rosa</i> 'Roundelay'	5		x	x			
<i>Rosa</i> 'Ruby Alison'	8***			x			
<i>Rosa</i> Rugelda	7			x			
<i>Rosa rugosa</i> 'Rosaeraie de l'Hay'	9**		x	x			
<i>Rosa</i> 'Russelliana'	7			x			
<i>Rosa</i> 'Safrano'	DNR				x		
<i>Rosa</i> 'Sanders White'	7		x	x	x	x	x
<i>Rosa</i> Santana	5						
<i>Rosa</i> Scentasia	5		x	x	x	x	x
<i>Rosa</i> Scentimental	6	25% black spot in late Jan		x	x	x	x
<i>Rosa</i> 'Schoener's Nutkana'	5		x	x	x	x	
<i>Rosa</i> Scott Base	DNR		x	x	x	x	x
<i>Rosa</i> 'Sea Foam'	7			x	x		
<i>Rosa</i> Serendipity	9**		x	x	x	x	x
<i>Rosa</i> 'Serratipetala'	6		x				
<i>Rosa</i> Sexy Remy	DNR				x	x	x
<i>Rosa</i> Sharifa Asma	7		x	x	x	x	x
<i>Rosa</i> 'Single Cherry'	4		x	x			
<i>Rosa</i> 'Sir Cedric Morris'	8***	30% black spot in late Jan	x	x			
<i>Rosa</i> Sir John Betjeman	6						
<i>Rosa</i> Sir Tristram	6		x	x			
<i>Rosa</i> 'Slater's Crimson China'	6		x	x	x		x
<i>Rosa</i> Social Climber	6		x	x			
<i>Rosa</i> 'Sombreuil'	7		x	x	x	x	
<i>Rosa</i> 'Sophie's Perpetual'	6						

Name	Rating	Pests and diseases	Flowering period				
			Oct	Nov	Dec	Jan	Feb
<i>Rosa</i> Sophy's Rose	6		x	x	x	x	x
<i>Rosa</i> Souvenir de Louis Amade	6		x	x			
<i>Rosa</i> 'Souvenir de Madame Léonie Viennot'	8***		x	x	x	x	x
<i>Rosa</i> 'St Hilda's Rose'	DNR			x			
<i>Rosa</i> St. Mary's Rose	5	50% black spot in late Jan		x	x	x	x
<i>Rosa</i> Starship	8***			x	x	x	
<i>Rosa</i> 'Suitor'	DNR				x		
<i>Rosa</i> Summer Passion	9**	20% black spot in late Jan			x	x	x
<i>Rosa</i> Summer Wine	6		x	x			
<i>Rosa</i> Surrey	7						
<i>Rosa</i> Swany	DNR		x				
<i>Rosa</i> 'Tea Rambler'	DNR			x			
<i>Rosa</i> Teasing Georgia	DNR			x			
<i>Rosa</i> 'The Active'	6		x	x	x	x	x
<i>Rosa</i> The Alexandra Rose	7		x	x			
<i>Rosa</i> 'The Bishop'	6		x	x			
<i>Rosa</i> The Chelsea Rose	6		x	x			
<i>Rosa</i> The Dark Lady	DNR	50% powdery mildew in late Jan		x	x	x	x
<i>Rosa</i> 'The Fairy'	9**				x	x	x
<i>Rosa</i> The Wedgwood Rose	6			x	x	x	
<i>Rosa</i> 'Topaz Jewel'	7		x	x		x	
<i>Rosa</i> Tropical Delight	9**			x	x	x	x
<i>Rosa</i> Uetersen	8***		x	x	x	x	x
<i>Rosa</i> 'Vanity'	7		x	x	x	x	x
<i>Rosa</i> 'Veilchenblau'	5	30% black spot in late Jan					
<i>Rosa</i> Warm Wishes	8***	20% black spot in late Jan		x	x	x	
<i>Rosa</i> 'Wedding Day'	8***			x	x		
<i>Rosa</i> Westerland	8***			x	x		
<i>Rosa</i> 'White Cockade'	5		x	x			
<i>Rosa</i> 'White Duchesse de Brabant'	5		x	x			
<i>Rosa</i> White Romance	6		x	x	x	x	x
<i>Rosa</i> 'White Sparrieshoop'	7						
<i>Rosa</i> 'Wickwar'	8***		x	x			
<i>Rosa</i> Wild Cherry	8***		x	x	x	x	x

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<i>Rosa</i> 'William Baffin'	6			x	x	x	x
<i>Rosa</i> 'William Lobb'	6					x	
<i>Rosa</i> 'Wind Chimes'	DNR						
<i>Rosa</i> Windermere	DNR			x	x	x	x
<i>Rosa</i> 'Yesterday'	6						
<i>Rosa</i> 'Yvonne Rabier'	6		x	x	x	x	x