



RHS Plant Trials and Awards

Salad Potatoes

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RHS Trials of Salad potatoes

Potato (*Solanum tuberosum*)

In 2003 the Royal Horticultural Society, as part of a continuing assessment of new and established potato cultivars, held a trial of salad potatoes. These are typically lifted around 13 to 20 weeks after planting as small tubers (between 20mm and 40mm in diameter) and have a low dry matter content, so that they remain whole when boiled and are suitable for slicing and eating cold in salads. For this trial entries were obtained from sources available to the general public and grown at Wisley, as well as at Harlow Carr and Rosemoor Gardens for comparison. RHS vegetable trials are conducted as part of our charitable mission to inform, educate and inspire all gardeners, with good, reliable cultivars identified by the Award of Garden Merit after a period of trial.

Objectives

One of the aims of this trial was to evaluate new introductions and to compare them with old established cultivars. It also gave us the opportunity to explore the value of taste testing and to demonstrate the growing of early potatoes at Rosemoor (where there is a higher risk of blight) without the use of fungicidal sprays. The Vegetable Trials Subcommittee assessed the entries and outstanding cultivars were given the Award of Garden Merit. Entries were also described and photographed to provide a lasting record in the RHS Herbarium at Wisley.

Entries

There were 21 entries in the trial submitted by various seed companies in the UK, with three separate sources supplying 'Pink Fir Apple' so that the consistency of this very old cultivar could be gauged.

History

The original wild potatoes, from which the first European tubers came, are found in the Andean mountains of western South America, where there is evidence to show that they have been cultivated for around 7,000 years. Introduced into Britain during the 1590s potatoes remained a curiosity for the botanists' gardens for decades and, while

the aristocracy may have eaten them as an exotic vegetable, the low yield of small knobbly tubers prevented them from becoming a valued food crop. Even as late as 1716 the radish was still more important to the national diet. By the 1750s the potato, having acclimatised to the longer growing day in Europe, was producing a reasonable yield and interest in breeding for commercial use increased so that by 1836 there were 136 different cultivars in England alone. The potato had by then become the nation's staple food and the major food crop for peasant farmers in Ireland. When crops in Ireland and Europe failed between 1845 and 1850, due to potato blight, famine decimated the Irish population and many of these old potato cultivars were lost or abandoned. During this time, as part of its regular assessments of potatoes, the RHS carried out experiments into the causes and control of this devastating disease. This coincided with a heightened enthusiasm for breeding as growers, importing new stocks from America, looked for cultivars that had resistance to blight. By the end of Queen Victoria's reign in 1901 there was a better knowledge of how to prevent blight with resistant cultivars, applications of copper based Bordeaux Mixture and by improved growing practices including the use of fresh, infection free, seed stock each year and earthing up to protect the plant stems from blight spores as well as to reduce the number of green potatoes. Also at this time the importance of the highlands in Scotland and Ireland became recognised as aphid-free areas where seed potatoes could be grown free of the risk of the virus infections that are spread by these pests. After the First World War the Government set up the National Institute of Agricultural Botany (NIAB) to assess and improve plant naming, crop cultivation and pest and disease control. NIAB found that many cultivars were known and sold under several different names ('Up-to-date' was found to have over 200 synonyms). They also worked to ensure that only cultivars highly resistant to wart disease (*Synchytrium endobioticum*, which is now a rare but still notifiable disease) were introduced. Today the potato is the second most important crop in Europe after wheat and breeders continue to search for cultivars with improved eating and keeping qualities, greater pest and disease resistance and also the attractive appearance that supermarkets require.



Left: Chitting potatoes (Photo: Catherine Steinberg)

Front cover: 'Cherie' (Photo: Dr H F Oakley)

Results of the Trial

Ten salad potato cultivars were selected for the Award of Garden Merit [AGM] H3

'Amandine'	'Charlotte'	'Mimi'	'Princess'	'Roseval'
'Annabelle'	'Cherie'	'Pink Fir Apple'	'Ratte'	'Shelley'

H3 = plants hardy outside in some regions or in particular situations or which, whilst usually grown outside in summer, need frost-free protection in winter.

Cultivation

Entries were received at Wisley by the end of January, with visiting members of staff from Harlow Carr and Rosemoor collecting stock from Wisley soon after receipt. The seed potatoes were placed in trays for chitting in a frost-free greenhouse, which encouraged the 'eyes' to produce shoots so that the seed tubers were beginning to grow a few weeks before the soil was warm enough for them to be planted out. It is essential to put the seed tubers in good light as soon as they are purchased so that the shoots, which grow readily in spring, will be stout, strong and green. Chitting in this way enables the tubers to develop more quickly than non-chitted tubers and so means that an earlier harvest is possible, but it is thought by some to be only rarely worth doing with the early varieties.

During the autumn before planting the plots at Harlow Carr, Rosemoor and Wisley were spaded and farmyard manure was incorporated. In spring the ground was forked over and raked. No further fertiliser was added at the RHS Gardens, but most home gardeners will need to add some general fertiliser for the best yield of potatoes. A single row [3.6m long] of each entry was planted, on 19 March at Wisley, between 20 and 31 March at Rosemoor and on 9 April at Harlow Carr. The tubers were planted approximately 8cm deep, spaced 40cm apart in rows 75cm apart. Frost protection was unnecessary at Wisley as the rows had been earthed up twice covering the foliage enough to exclude frost. Had this not been sufficient fleece would have been used to protect the developing shoots from damage. At Wisley irrigation took place after planting and twice more between then and the middle of June, as the rain-fall at Wisley had been below average since March. However, as it had been wet at Harlow Carr for the first week in April, it had not been necessary to irrigate the crop, even though June had been very dry. At Rosemoor, in spite of a very dry summer, the moisture retentive clay soil there also meant that the crop did not need irrigating.

Pests and Disease

No sprays were used on the crops. There was concern that potato blight (*Phytophthora infestans*) would affect the crop at Rosemoor, as in most seasons the disease first arises in about June and usually in the southwest. However, because of the very dry summer, most entries escaped infection and the first signs of blight were not found until 17 July on 'Nicola', 'Lady Felicia' and 'Ratte'. The foliage of these entries was immediately removed to prevent the fungal spores falling or being washed into the soil where they would infect the tubers. All entries, except 'Pink Fir Apple' that requires 22 weeks from planting to produce a worthwhile crop, were lifted on 22 July. 'Pink Fir Apple' began to show signs of blight two weeks later, so the foliage was cut down and the tubers lifted on 5 August.

Generally in a wet season, or if a 'blight infection period' is mentioned on websites or the local news, it would be advisable to use preventative fungicidal sprays such as Bordeaux Mixture or mancozeb (If the latter is used harvest should be delayed for at least seven days after treatment).

At Wisley a white discolouration was found on the lower stems of 'Roseval' and 'Ratte'. Our pathologists identified this as the sexual stage of *Rhizoctonia*, called *Thanatephorus*. This may be associated with stem canker, although none was present on the samples examined.

The incidence of common scab (*Streptomyces scabies*) in the trials was only slight, with 'International Kidney' being the most affected. This problem occurs mainly on light soils that are deficient in organic matter (humus) and is more troublesome in dry summers. It also tends to be made worse by a high pH (trials field at Wisley is pH 7.5). To combat this farmyard manure was incorporated when the sites were prepared and the trials staff monitored soil moisture. Growing potato plants should never be allowed to dry out, but many of the new cultivars are bred for resistance to common scab.

Keeled slugs (*Milax* species), which are the bane of main crop potatoes, usually begin causing significant damage during August and become progressively worse the longer the crop is left in the ground so early potatoes usually escape damage. Fortunately keeled slugs are almost absent from the trials field at Wisley and the very dry summer also helped to limit damage by this pest at Harlow Carr and Rosemoor.

Taste

The perceived excellent flavour of homegrown produce is frequently cited as a reason for growing vegetables and taste has always been included in the process of RHS vegetable trial assessments, although formal, controlled taste tests are not usually possible. For the trial of salad potatoes the members of the Subcommittee tasted cooked samples of each entry and voted on the eating quality. However these taste tests did not produce a consensus; 'Charlotte' was liked by seven of the eleven members present and 'Ratte' by eight, although Mr Randel said that the taste of 'Ratte' was reputed to improve if it were kept for a week or so after lifting. The results from the extensive taste tests by staff at Wisley and Rosemoor Gardens were equally inconclusive. Staff at both Gardens gave 'Amadine' and 'Annabelle' similarly favourable scores however, while 'International Kidney' scored highly with Rosemoor staff it was not liked by Wisley staff and 'Roseval' was liked at Wisley but not at Rosemoor. At the end of judging the Subcommittee observed that, while it is an important part of the overall performance of a cultivar, taste is very subjective.

Award of Garden Merit descriptions

The trial was assessed for the Award of Garden Merit by the Vegetable Trials Subcommittee using the following criteria:

- quality
- depth of eye
- colour of skin
- colour of flesh
- cookability (appearance and taste when cooked)



'Amandine'

Sent by Thompson & Morgan Ltd.

First early. Gives a high yield of uniform, oval shaped tubers, with shallow eyes and a pale yellow, waxy flesh. (A "salad baker" i.e. good for baking with a waxy texture – unusually will be in the amateur market before the wholesale one).

Introduced 1994. Plant height 65cm. Medium sized, oval, white tubers with cream coloured, waxy flesh. Average yield per plant; 26 tubers, weight 1.7 kg.



'Annabelle'

Sent by Unwins Seeds Ltd.

First early. High yield of oval tubers, with shallow eyes and waxy, yellow flesh.

Introduced 2001. Plant height 60cm. Medium sized, oval tubers with white/yellow skins and yellow, waxy flesh. Average yield per plant; 36.5 tubers, weight 1.8 kg.



'Charlotte'

Sent by S E Marshall & Co Ltd, & Thompson & Morgan Ltd.

Second early. Good yield of uniform, oval tubers. Waxy, pale yellow flesh has a good flavour.

Introduced 1981. Plant height 75cm. Medium sized, oval tubers with white skins and yellow waxy flesh. Average yield per plant; 24 tubers, weight 1.6 kg.



'Cherie'

Sent by S E Marshall & Co Ltd.

Gives a good yield of pink skinned, oval tubers with pale yellow, waxy flesh and a good flavour.

Introduced 1997. Plant height 65cm. Medium sized, red skinned tubers with cream coloured, waxy flesh. Average yield per plant; 31.5 tubers, weight 1.5 kg.



'Mimi'

Sent by Thompson & Morgan Ltd.

Produces fairly small, round, uniform, high quality tubers that have an attractive colour. Low yielding, but would be particularly suitable for pot culture.

Introduced 2002. Plant height 50cm. Small, round, red tubers with cream coloured, waxy flesh. Average yield per plant; 32 tubers, weight 0.8 kg.



'Ratte'

Sent by Unwins Seeds Ltd., and Thompson & Morgan Ltd.

Early main crop salad. Oval, with waxy, cream coloured flesh and a good flavour.

Introduced 1872. Plant height 75cm. Small, oval, white skinned tubers with waxy, cream coloured flesh. Average yield per plant; 62 tubers, weight 1.1 kg.
Image



'Pink Fir Apple'

Sent by W Robinson & Son (Seeds & Plants) Ltd, Thompson & Morgan Ltd and Unwins Seeds Ltd.

Late main crop (takes 22 weeks from planting). Produces a useful crop of unusually shaped but fine flavoured, late salad potatoes from very vigorous plants.

Introduced before 1850. Small to medium sized, knobbly, long, oval tubers with red skins and yellow, waxy flesh. Average yield per plant; 43 tubers, weight 1.5 kg.



'Roseval'

Sent by Thompson & Morgan Ltd.

Early main crop salad. Produces a high yield of uniform, oval tubers, with attractive red skins. Retains much of the colour when cooked, which contrasts well with the yellow, waxy flesh.

Introduced 1950. Plant height 85cm. Small to medium sized, oval, red skinned tubers with yellow, waxy flesh. Average yield per plant 51 tubers weighing 1.3 kg.



'Princess'

Sent by Thompson & Morgan Ltd.

First early. Yields well. Oval tubers, which when cooked have a cream coloured, floury flesh and good flavour.

Introduced 2000. Medium sized, oval, yellow tubers with yellow coloured flesh that becomes cream coloured and floury when cooked. Average yield per plant; 37 tubers, weight 1.6 kg.



'Shelley'

Sent by Thompson & Morgan Ltd.

Second early. Uniform, oval tubers with shallow eyes and white flesh

Introduced 2004. Plant height 75cm. Small to medium sized, oval tubers with white skins and white, fairly waxy flesh. Average yield per plant; 38.5 tubers, weight 1.4 kg.

Salad potato selection guide

Cultivars in the trial	Intro.	Type	Skin Colour	Shape	Claimed resistance to pest and disease
'Amandine'	1994	First early	White	Oval	Blight, leaf roll virus, common scab and wart disease.
'Annabelle'	2001	First early	Yellow	Oval	Common scab (some), wart disease and potato cyst nematode.
'Charlotte'	1981	Second early	White	Oval	Blight and slugs.
'Cherie'	1997	Second early	Red	Oval	Blight (some), common scab and leaf roll virus.
'Mimi'	2002	First early †	Red	Round, small	
'Pink Fir Apple'	1850	Late maincrop	Red	Long oval, knobby	Common scab (some).
'Princess'	2000	First early	Yellow	Oval	Blight, common scab and potato cyst nematode.
'Ratte'	1872	Early maincrop	White	Oval	Common scab (some).
'Roseval'	1950	Early maincrop	Red	Oval	
'Shelley'	2004	First early †	White	Oval	Powdery and common scab, and potato cyst nematode.
'Anya'	1996	First early	Red (pale)	Long oval, deep eyes	Blight (some) and common scab.
'Belle de Fontenay'	1885	Early maincrop	White	Oval to long	Common scab (some).
'International Kidney'	1879	Early maincrop	Yellow	Oval	
'Juliette'	1997	Second early	White	Long oval	Blight, common scab and leaf roll virus.
'Lady Felicia'		Discontinued	—	—	Discontinued
'Linzer Delicatess'	1976	Second early	White	Long oval	Blight (some) and common scab.
'Maris Peer'	1962	Second early †	Yellow	Oval	Blight and common scab.
'Nicola'	1973	Early maincrop	White	Long oval	Blight (some) and potato cyst nematode
'Rocket'	1987	First early	White	Round	Common scab, potato cyst nematode.

* awarded as 2nd early † Suitable for container growing

Early potatoes mature in around 100 to 110 days, second earlies 110 to 120 days, and maincrop 125 to 140 days depending on the weather.

Potatoes in containers

Several cultivars are suitable for container growing, and it is also possible to have a crop of new potatoes in time for Christmas using specially prepared cold-stored tubers (available from specialist seed merchants) that are planted in early September and given frost-free conditions. Generally, ordinary garden soil is unsuitable for containers as it is liable to become very compacted with frequent watering. It is therefore common practice to use a loam-based compost or good garden loam with well-rotted organic matter added.



The container should be at least 30cm deep and wide, with drainage holes and a layer of drainage material in the bottom. It should then be part filled to 25cm with the growing medium before three well-spaced tubers are planted at depth of 15cm.



As the foliage develops the potatoes should be 'earthed up' with further soil until the container is full. Container grown plants must be kept well watered and will benefit from feeding with a general-purpose liquid feed.

The Royal Horticultural Society

The RHS is the UK's leading gardening charity dedicated to advancing horticulture and promoting good gardening. Its charitable work includes providing expert advice and information, advancing horticulture, training the next generation of gardeners, helping school children learn about plants, and conducting research into plants, pests and environmental issues affecting gardeners. The RHS Award of Garden Merit plant trial scheme is an important part of this work.

The RHS receives no government grants and for every pound received from members' subscriptions we need to raise more than twice as much again to fund our charitable work. We also rely on donations and sponsorship to supplement income from our garden operations, flower shows, shops and plant centres.

RHS Plant Trials

With so many different types of gardener and so many different cultivars available to them in each group of plants, it is important that a system of recommendation is in place to help with selection at point of sale. These recommendations must be clear and reliable to ensure that of the thousands of plants available in the UK, a proportion are known to be excellent garden plants. The RHS provides this information through its extensive programme of plant trials held at RHS gardens in the UK. The RHS Award of Garden Merit 🏆 signifies the selection of the best cultivar for general garden use.

RHS plant trials serve the professional gardener who wants to know the range of plants available, including the latest breeding and selection programmes, with their distinctive characteristics and provenance. They also serve the amateur who wants to know which plants will grow and perform well in a particular garden situation.

The RHS has an unrivalled resource of knowledge and expertise and is therefore best placed to conduct plant trials for the UK gardening market.

Vegetable Trials Subcommittee

Chairman: Bill Chowings

Vice Chairman: Peter Dawson

John Barker	George Lockie
Ron Butler	Colin Randel
Mike Day	Sarah Wain
Derek Fuller	Ron Watts
David Jeffery	Tony Wilkie

Senders of seed potatoes to the trial

S E Marshall & Co Ltd, 21-22 Regal Road, Wisbech, Cambs PE13 2RF

W Robinson & Son (Seeds & Plants) Ltd, Sunny Bank, Forton, Nr Preston, Lancs PR3 0BN

Thompson & Morgan Ltd, Poplar Lane, Ipswich, Suffolk IP8 3BU

Unwins Seeds Ltd., Impington Lane, Histon, Cambridge CB4 9ZZ

Acknowledgements

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Jim England and staff in Trials at RHS Garden Wisley

Alison Mundie and staff in Trials at RHS Garden Harlow Carr

Dr Chris Prior, Head of Horticultural Sciences

Further reading

Biggs, T. (2003) *Growing Vegetables – The RHS Encyclopedia of Practical Gardening*. Mitchell Beazley, London

Pollock, M. (2002) *RHS Fruit & Vegetable Gardening*. Dorling Kindersley, London

Wilson, A. (1993) *The Story of the Potato through illustrated varieties*. Balding & Mansell, Wisbech

RHS Gardening Advice Service (Sept. 2003) Growing potatoes for the festive season. *The Garden* 128 (9):719

Useful websites

www.potatocrop.com

Specialist site for potato growers and potato industry specialists

www.rhs.org.uk/research/plant_groups/vegetables.asp
RHS Gardening Advice on growing potatoes

www.ecpgr.cgiar.org/databases/crops/potato_cult.htm
European Cultivated Potato Database. A large database of 4000 potato cultivars

RHS Bulletins

Canna: September 2003

Daisies, Yellow, Perennial: September 2004

Delphinium: June 2004

Lavender (hardy): July 2003

Miscanthus: October 2004

Potentilla (shrubby): July 2002

Spiraea japonica (with coloured leaves): November 2003

These bulletins can be viewed at a larger size on the RHS Website

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