



## RHS Plant Trials and Awards

# Sweet Peppers

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# RHS Trial of Sweet Peppers

## Sweet Peppers

(*Capsicum annuum* var. *annuum* Grossum Group)

In 2005 the Royal Horticultural Society, as part of a continuing assessment of new and established cultivars for cultivation in an unheated plastic tunnel, held a trial of sweet peppers. 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

The trial aimed to compare and evaluate a range of sweet pepper cultivars, including those with long fruits, to raise awareness of the variety of shapes and colours available and to demonstrate the cultivation of this crop in an unheated plastic tunnel. The Vegetable Trials Subcommittee assessed the entries and outstanding cultivars for garden use 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 55 entries in the trial, submitted by various seed companies in the UK, Europe and USA.

## Background

A member of the *Solanaceae* family, *Capsicum* originated in South America and is believed to have emerged in the area bordering southern Brazil and Bolivia. Grown domestically in the Mexico area from around 2,500 BC, the travels of Christopher Columbus resulted in peppers being

introduced to Spain and then widely to other parts of the world including India. There are records of them being known in Britain in 1548. With their comparatively short growing season, peppers from the *Capsicum annuum* var. *annuum* Grossum Group were found to grow well in the Mediterranean climate and because of their crisp texture and mild, sweet flavour they became one of the staples of 'traditional' recipes in that area.

Sweet peppers and chillies are both derived from the same species, *Capsicum annuum* (the name from the Latin *capsa*, meaning box, in reference to their squarish shape) and most species of *Capsicum* contain capsaicin, a chemical that can produce a strong burning sensation in the mouth. The amount of capsaicin in peppers is highly variable and, dependent on genetics, results in peppers with varied amounts of perceived heat. In the sweet peppers (*Capsicum annuum* var. *annuum* Grossum Group) the gene is recessive, so the fruits do not contain capsaicin. In this form the group has become an important 'green' vegetable crop globally, especially in temperate regions.

Classified as a berry, the fruit of a pepper plant is found in colours ranging from green, yellow, red, purple, black, brown, white and orange and in a variety of shapes including round, blocky or long. The fruits are commonly eaten when green, although still immature at this stage, as well as when they have matured, changed colour and are sweeter. The green fruits found in the supermarkets will be fully developed fruits that are not yet ripe, usually from cultivars that would ripen to red, as the ripe orange and yellow fruits can be sold at a higher price. There are a few cultivars that have been raised to be sweeter while still unripe such as 'Staygreen', but although they have been bred to remain green from August to October, they would eventually ripen to red given suitable conditions.

## Cultivation

Seed was sown on 11 March into P84 modules of peat reduced compost, watered with Revive (a soil treatment of natural micro-organisms that encourages soil fertility and healthy plant growth) and germinated on a heated bench. When large enough to handle, the seedlings were pricked out on 25 April into 9cm pots of peat reduced potting compost, watered with Revive (1ml/litre) and grown on at 18°C in a greenhouse where a biological control programme was used to combat aphids, white fly, thrips and red spider mite. Plants were staked and tied in as needed.

During autumn 2004, double-chop, mushroom compost was incorporated into the soil in the plastic tunnel and the soil was sterilized. Planting took place on 16 May 2005, when four plants of each entry were set out, side-by-side, 43cm apart in rows 75cm apart. Paths of 120cm wide ran the length of the plastic tunnel between the double rows of entries. A drip irrigation system had been installed and plants could have been given a liquid feed through a diluter had this become necessary. Natural predators were introduced to biologically control insect pests.



Above: Sweet pepper trial in plastic tunnel

Front cover: 'Ace'

(Photos by: Jacquie Gray)

## Pests and Diseases

The main pests of this crop are whitefly, thrips and red spider mite. *Encarsia formosa* was introduced regularly to control the whitefly and one bag of *Amblyseius* per plant was used to control thrips. Red spider mite did not affect the trial, but regular misting would have deterred this pest. Several of the lower hanging fruits were damaged by mice that gnawed through the flesh to get at the seeds. Traps had to be used to control the mice, but the Garden's resident cat was also encouraged to patrol the tunnel.

In early August, following the very hot weather, some fruits developed scorch marks due to blossom end rot. This develops due to localised calcium deficiency within the fruit cells, resulting in discolouration and cell collapse. The disorder can be due to the growing medium being very acidic, to conditions around the plant's roots being too dry and preventing the plant from taking up sufficient calcium or, as was the case in the trial, to heat stress. One plant, which had developed yellowed and distorted leaves, was removed and tested by the Pathology Department for virus infection. It was found to have been infected with tomato spotted wilt virus, which is vectored by thrips. The thrips were being controlled but, as the virus is highly infectious, it was decided to destroy any plant that showed similar signs of infection and three other plants were immediately removed.

## Findings

At intervals, throughout the growing season, the Subcommittee inspected the plants for growth, habit, health and vigour. They noted that the plants had grown more vigorously and bigger because they had been planted directly into the soil, rather than being planted in grow-bags or pots.

The Subcommittee commented on the range of different shapes and colours available in sweet peppers and on their versatility in salads and cooking. They noted that sweet peppers are as easy to grow as tomatoes, requiring similar conditions, with several cultivars well suited to growing in pots. Productive plants may need staking and stringing up to avoid branches breaking off from the weight of fruit. Most entries still had small, unripe fruits on them when the trial was cleared on 18 October 2005

## Taste

Whole fruits of each entry were roasted on an open tray in an oven at 180°C for 20 to 30 minutes, until collapsed and tender. They were cooled in covered dishes to re-absorb their juices and flavours and then de-seeded and sliced for the Subcommittee to taste. The cooked appearance, texture and flavour were included in the Subcommittee's individual assessments, but formal, controlled taste tests were not possible. Members of the Subcommittee did note that the purple-fruited cultivars appeared less attractive when cooked and were of the opinion that their striking colour would be better appreciated raw in salads.

## Award of Garden Merit (AGM)

Sixteen sweet pepper cultivars received the Award of Garden Merit [AGM] H2

'Ace'	'Diablo'
'Redskin'	'Ariane'
'Friggitello'	'Sweet Spot'
'Atris'	'Gourmet'
'Topboy'	'Bell Boy'
'Gypsy'	'Topepo Rosso'
'Calimero'	'Mohawk'
'Topgirl'	'Corno di Toro Rosso'

H2 = requires unheated glass



Early assessment of growth

## Judging

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

- quality
- appearance
- thickness of flesh
- taste

# Award of Garden Merit Sweet Peppers



## 'Ace'

Sent by Simpson's Seeds.

Productive plants produce uniform, blocky-shaped, fleshy fruits that ripen from mid-green to a bright, attractive red. This cultivar was previously awarded AGM (H2) 1998.

*Plant growing to 90cm. Blocky fruits have flesh of medium thickness. Average fruit 7.5cm wide, 9cm long. First ripe fruit 22 August. 12 ripe and 5 green fruits picked from one plant.*



## 'Ariane'

Sent by Kings Seeds.

Early cropping and productive. Blocky shaped fruits ripen from mid-green to an attractive orange. This cultivar was previously awarded AGM (H2) 1998.

*Plant growing to 75cm. Fruits are blocky and thick walled. Average fruit 8cm wide, 8cm long. First ripe fruit 22 August. 10 ripe fruits picked from one plant.*



## 'Atris'

Sent by Kings Seeds.

Plants give a good yield of long, pointed, horn-shaped, fleshy fruits that have a good flavour. Fruits ripen from mid-green to an intense, deep red that darkens with maturity.

*Plant growing to 150cm. Fruits are long, horn-shaped and thick walled. First ripe fruit 31 August. Average fruit 6cm wide, 21cm long. 20 ripe and 33 green fruits picked from one plant.*



## 'Bell Boy'

Sent by D T Brown.

Blocky-shaped fruits ripen from dark green to shining red. Previously awarded AGM (H2) 1993

*Plant growing to 80cm. Fruits are blocky with medium-thick walls. Average 8cm wide, 12cm long. First ripe fruit 22 August. 13 ripe and 15 green fruits picked from one plant*

## 'Calimero'

Sent by Samuel Dobie & Son.

Uniform, round, smooth, small to medium sized fruits that are good for stuffing and have a good flavour. Maturing from mid-green to bright red.

*Plant growing to 100cm. Fruits are round with thick flesh. Average 5.5cm wide, 4.5cm long. First ripe fruit 22 August. 39 ripe and 8 green fruits picked from one plant*



## 'Corno di Toro Rosso'

Sent by Bakker Brothers.

Open-pollinated cultivar. Later cropping. Long, horn shape, very fleshy fruits that have a good flavour. Maturing from pale green to bright red.

*Growing to 150cm. Fruits are long, horn-shaped with thick walls. Average 4cm wide, 22cm long. First ripe fruit 22 August. 16 ripe and 9 green fruits picked from one plant.*



## 'Diablo'

Sent by Olter Sementi SRL. Also offered by A L Tozer.

Very productive plants produce large, pointed, horn shape fruits that have a very good flavour. Fruits ripen from mid-green to an attractive, bright red.

*Plant growing to 150cm. Large fruits are long, horn-shaped and have thick walls. Average 5cm wide, 20cm long. 14 ripe and 7 green fruits picked from one plant.*



## 'Friggitello'

Sent by Johnsons Seeds.

Open-pollinated cultivar. Productive plants with small fruits that are long, slim and pointed. Ripening from mid-green to red, the versatile, sweet flavoured fruits have the appearance of a hot pepper and are also suitable for stir-fry and pickling.

*Plant growing to 120cm. Fruits are a small, slim horn shape with fairly thick walls. Average 2.5cm wide, 14cm long. 76 ripe and 10 green fruits picked from one plant.*





### 'Gourmet'

Sent by John Bertinat Seeds.

Open-pollinated cultivar. Uniform crop of blocky-shaped, fleshy fruits that have a sweet flavour. Maturing from dark green to a good bright orange.

*Plant growing to 75cm. Fruits are blocky with thick walls. Average 8cm wide, 10cm long. 9 ripe fruits picked from one plant.*

### 'Sweet Spot'

Sent by D T Brown.

Attractive, long, slim fruits ripen from pale yellow-cream to bright orange-red.

*Plant growing to 120cm. Horn shaped fruits with thick walls. Average 5cm wide, 19cm long. 36 ripe and 4 cream fruits picked from one plant.*



### 'Gypsy'

Sent by Suttons Consumer Products Ltd.

Plants give a high yield and are early cropping. Long, blocky fruits with a good flavour that ripen from pale green to an attractive, bright red. This cultivar was previously awarded AGM (H2) 1993.

*Plant growing to 100cm. Fruits are long, blocky with fairly thick walls. Average 7cm wide, 11cm long. 21 ripe and 2 green fruit picked from one plant.*

### 'Topboy'

Sent by Pro-Veg Seeds Ltd Seeds Ltd.

Mid to late cropping, medium to large, beef tomato shape that is good for stuffing. Fleshy fruits mature from mid-green to bright yellow.

*Plant growing to 100cm. Globe shaped fruits, with thick flesh. Average 10cm wide, 5cm long. 14 ripe and 3 green fruits picked from one plant.*



### 'Mohawk'

Sent by Suttons Consumer Products Ltd.

Medium-sized, blocky fruits that ripen from dark green to bright yellow, have a good flavour. Dwarf-growing plants are well suited to growing in pots.

*Plant growing to 50cm. Blocky fruits have medium-thick walls. Average 6.5cm wide, 9cm long. 16 ripe and 3 green fruits picked from one plant.*

### 'Topepo Rosso'

Sent by and available from Seeds of Italy.

Open-pollinated. Productive, early cropping plants. Medium size, beef tomato shape that is good for stuffing. Attractive fruits mature from dark green to bright red and have a good flavour.

*Plant growing to 80cm. Round fruits with thick flesh. Average 8cm wide, 7cm long. 15 ripe and 3 green fruits picked from one plant.*



### 'Redskin'

Sent by Suttons Consumer Products Ltd.

Small to medium fruits with a long blocky shape that ripen from dark green to a glossy, dark red. Compact plants give a high yield and are well suited to growing in pots.

*Plants growing to 60cm. Fruits are blocky with medium-thick walls. Average 6.5cm wide, 9cm long. 14 ripe and 5 green fruit picked from one plant.*

### 'Topgirl'

Sent by Pro-Veg Seeds Ltd Seeds Ltd.

Early cropping, medium size, beef tomato shape that is good for stuffing. Fruits mature from pale green to red and have a good flavour. Dwarf-growing plants are well suited to growing in pots.

*Plant growing to 50cm. Globe shaped fruits with thick walls. Average 8cm wide, 5cm long. 17 ripe fruits picked from one plant.*



# Selection guide



AGM (H2) awarded 2005



AGM (H2) awarded 2005 subject to availability



Cultivars	Height	Colour matures from		Shape	AGM
'Mohawk'	Up to 60cm	dark green to yellow-orange			
'Redskin' (1)	Up to 60cm	dark green to red			
'Topgirl' (2)	Up to 60cm	pale green to red			
'Ace'	60cm –90cm	medium green to red			
'Ariane' (3)	60cm –90cm	medium green to orange			
'Bell Boy'	60cm –90cm	dark green to red			
'Gourmet' (4)	60cm –90cm	dark green to orange			
'Jolly Giallo' (5)	60cm –90cm	medium green to yellow			
'Vesna'	60cm –90cm	pale green to red			
'White Cloud Improved'	60cm –90cm	very pale green to pale yellow			
'Topepo Rosso'	60cm –90cm	dark green to red			
'Gypsy'	90cm – 120cm	pale green to red			
'Marconi Red Patio' (6)	90cm – 120cm	pale green to red			
'Calimero'	90cm – 120cm	medium green to red			
'Topboy' (7)	90cm – 120cm	medium green to yellow			
'Friggitello' (8)	90cm – 120cm	medium green to red			
'Sweet Spot'	90cm – 120cm	very pale green to orange-red			
'Atris'	Over 120cm	medium green to red			
'Corno di Toro Rosso'	Over 120cm	pale green to red			
'Diablo'	Over 120cm	medium green to red			



## AGM subject to availability

### 'Jolly Giallo'

Sent by Olter Sementi SRL.

Large, blocky-shaped, fleshy fruits that have a sweet flavour. Maturing from mid-green to an attractive, glossy, bright yellow.

*Plant growing to 90cm. Fruits are blocky with thick walls. Average 9cm wide, 11cm long. 8 ripe fruits picked from one plant.*

### 'Marconi Red Patio'

Western Hybrid Seeds Inc.

Open-pollinated. Very high yield of medium-long fruit that ripen from light green to glossy red.

*Plant growing to 100cm. Short, slightly horn-shaped fruits have walls of medium thickness. Average 5cm wide, 11cm long. 23 ripe and 14 green fruits picked from one plant.*

The above entries have been recommended for the AGM, but cannot receive the award until they are named and available to the public in retail catalogues.

### 'Vesna'

Sent by Pro-Veg Seeds Ltd Seeds Ltd.

Very early, heavy, uniform crop. Blocky-shaped, fleshy fruits that mature from very pale green to an attractive bright red.

*Plant growing to 90cm. Fruits are blocky with thick walls. Average 8cm wide, 10cm long. 11 ripe and 2 green fruits picked from one plant.*

### 'White Cloud Improved'

Sent by Western Hybrid Seeds Inc.

Open-pollinated. Later maturing. Large, blocky-shaped, fleshy fruits that have a very sweet flavour. Shining, bright fruit ripen from very pale cream to light yellow.

*Plant growing to 75cm. Blocky fruits with thick walls. Average 9cm wide, 9cm long. 13 ripe fruits picked from one plant.*

## Vegetable Trials Subcommittee

**Chairman:** Colin Randel

**Vice Chairman:** Peter Dawson

### Members:

John Barker	Tony Hewitt
Ron Butler	David Jeffery
Bill Chowings	Steve Mercer
Paul Corfield	Sarah Wain
Mike Day	Ron Watts
Derrick Fuller	Tony Wilkie
Ian Gillott	

**Suttons Consumer Products Ltd**, Woodview Road, Paignton, Devon TQ4 7NG

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

**Western Hybrid Seeds Inc**, P O Box 1169, Hamilton City, CA 95951, USA

## Acknowledgements

Jim England, Mario de Pace and Curatorial staff in trials at RHS Garden Wisley

Photography by Jacquie Gray

## Senders of seed to the trial

**A L Tozer**, Pyports, Downside Bridge Road, Cobham, Surrey KT11 3EH

**Bakker Brothers**, PO Box 7, 1723 ZG Noord-Scharwoude, Netherlands

**D T Brown**, Bury Road, Kentford, Suffolk CB8 7PR

**John Bertinat Seeds**, 39 Bure Way, Aylsham, Norfolk NR11 6HL

**Johnsons Seeds**, Kentford, Newmarket, Suffolk CB8 7QB

**Kings Seeds**, Monks Farm, Kelvedon, Essex CO5 9PG

**Moles Seeds**, Turkey Cock Lane, Stanway, Essex CO3 8PD

**Mr Fothergill's Seeds Ltd**, Gazeley Road, Kentford, Suffolk CB8 7QB

**N L Chrestensen GmbH**, Zentrale Postanschrift: Postfach 854, 99008 Erfurt, Germany

**Olter Sementi SRL**, Corsa Venezia – 93, 14100 Asti, Italy

**Pro-Veg Seeds Ltd**, 6 Shingay Lane, Sawston, Cambridge CB2 4SS

**Raven Valley Plant Nursery**, Mayfields Whitmore Lane, Woking, Surrey GU4 7QB

**Samuel Dobie & Son**, Long Road, Paignton, Devon TQ4 75X

**Seeds of Italy**, Unit 3 Phoenix Industrial Estate, Rosslyn Crescent, Harrow, Middx HA12 2SP

**Simpson's Seeds**, Walled Garden Nursery, Horningsham, Wiltshire BA12 7NQ

## Further reading

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

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

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## Useful websites

**RHS Gardening Advice on growing Sweet Peppers**  
[www.rhs.org.uk/advice/profiles0701/blossom\\_end\\_rot.asp](http://www.rhs.org.uk/advice/profiles0701/blossom_end_rot.asp)

**RHS Horticultural advice**  
[www.rhs.org.uk/advice/profiles0302/chillies.asp](http://www.rhs.org.uk/advice/profiles0302/chillies.asp)

## 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 AGM 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 cultivars 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.

## RHS Herbarium

The RHS Herbarium keeps a record of trial cultivars as dried specimens with detailed descriptions and photographic images. This forms an important reference for the horticultural industry. Any new cultivars are highlighted and a Standard specimen is preserved and described.

The RHS Herbarium, stored at RHS Garden Wisley, is the largest active horticultural herbarium in the world. At present the collection contains about 80,000 herbarium specimens and over 30,000 images of plants. Material is actively collected from a wide spectrum of sources including RHS plant trials.

## RHS Bulletins

*Canna*: September 2003  
*Daisies* (yellow, perennial): September 2004  
*Delphinium*: June 2004  
*Fuchsia* (hardy): December 2005  
*Geraniums* (hardy) Stage 1: June 2005  
*Geraniums* (hardy) Stage 2: June 2006  
*Hyacinthaceae* (little blue bulbs): September 2005  
*Lavenders* (hardy): July 2003  
*Miscanthus*: October 2004  
*Potentilla* (shrubby): July 2002  
*Rhododendron yakushimanum* & hybrids: May 2006  
*Potatoes* (salad): November 2004  
*Saxifrages* (silver): May 2005  
*Spiraea japonica* (with coloured leaves): November 2003

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

[www.rhs.org.uk/plants/trials\\_bulletins.asp](http://www.rhs.org.uk/plants/trials_bulletins.asp)

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