

TRIALS REPORT

2010-2011

Winter Squash

(excluding Pumpkins and Butternut Squash)

Trials Office
The Royal Horticultural Society Garden, Wisley, Woking, Surrey, GU23 6QB



Trial of Winter Squash

(excluding pumpkin and butternut squash)

2010-2011



A selection of squash on display at the Wisley Taste of Autumn Fair 2010

Entries receiving the Award of Garden Merit (H3)

'Celebration' [Tn 2] AGM (H3) 2011

Sent by and available from Tozer Seeds.
Also available in other retail catalogues.

Pepo group. High sugar, acorn type. Decorative, ridged, yellow and gold fruit with green mottling. Mid-size fruits with firm flesh with a sweet flavour. Compact central growth of plant; semi-bush. High yield per plant. Excellent storage. Typical fruit diameter 10-12cm.



'Harlequin' [Tn 7] AGM (H3) 2011

Sent by and available from Tozer Seeds.
Also available in other retail catalogues.

Pepo group. High sugar, acorn type. Very attractive ridged gold and green striped fruits of mid size. Good yield and excellent storage. Plant has a semi bush habit. Firm flesh of smooth texture and sweet flavour. Typical diameter 10-13cm.

'Heart of Gold' [Tn 8] AGM (H3) 2011

Sent by and available from Tozer Seeds.
Available in at least one retail catalogue.

Pepo group. Attractive ridged, acorn type. Fruits are cream and gold, speckled green. Good texture and flavour. Semi bush habit. High yield and good storage. Typical diameter 11-13cm.



'Honey Bear' [Tn 9] AGM (H3) 2011

Sent by and available from Unwins Seeds Ltd.
Also available in other retail catalogues.

Pepo group. High sugar, mini acorn type. Dark green fruit of uniform size. Shows good resistance to mildew. Compact, bushy habit. Fair yield, with excellent storage. Smooth textured, sweet flesh of ideal size for baking whole. Typically 8-10cm diameter.

'Sweet Dumpling' [Tn 12A] AGM (H3) 2011

Sent by and available from Mr Fothergill's Seeds. Also sent by Western Hybrid Seeds Inc. Available in retail catalogues.

Pepo group. High sugar, dumpling type. Good crop of fairly uniform mid size fruit. Fruits are ridged and cream coloured with green speckles. Have a lovely flavour. Plant has a trailing habit, producing fairly uniform fruits. Typically 9-10cm diameter.



'Sweet Lightening' [Tn 13] AGM (H3) 2011

Sent by and available from Tozer Seeds. Also available in other retail catalogues.

Pepo group. High sugar, dumpling type. Attractive fruit; cream with orange stripes. Plant has a trailing habit. Dense flesh of good flavour. Excellent storage, and early to ripen. Uniform, small fruit, typically 8-10cm diameter.

'Crown Prince' [Tn 21] AGM (H3) 2011

Sent by and available from Tozer Seeds. Widely available in retail catalogues.

Maxima group. Large fruits, with blue-grey skin. Excellent storage quality. High flesh content of deep orange colour with and excellent flavour. Typical diameter 25-30cm.



'Sunspot' [Tn 30] AGM (H3) 2011

Sent by and available from Tozer Seeds. Available in at least one retail catalogue.

Maxima group. High sugar, kabocha type. Smallish onion-shaped fruit. Attractive bright orange skin. Dense, deep orange flesh, with firm, smooth texture. Excellent flavour. Typically 10-12cm diameter.

'Sunshine' [Tn 31] AGM (H3) 2011

Sent by Tozer Seeds. Available in retail catalogues.

Maxima group. High sugar, kabocha type. Fruit of mid size. Not demonstrating high yield, but flesh quality excellent, almost chestnut flavour. Semi bush habit. Foliage showing good mildew resistance. Typically 10-12cm diameter.



'Kabocha Large Fruited' [Tn 32] AGM (H3) 2011

Sent by Tozer Seeds. Available in retail catalogues.

Maxima group. Kabocha type. Dark green flattened fruit. Good storage. Flesh is thick, sweet and smooth. Typically 15-17cm diameter.

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.

Sources of seed for these cultivars vary from year to year. Please see the Royal Horticultural Society's leaflet *Award of Garden Merit*  *Vegetables* for current stockists.

This leaflet is available on the web at http://www.rhs.org.uk/plants/award_plants.asp

A copy can also be obtained by sending an A4 sized, self addressed envelope with two first class stamps to: 'AGM List', Botany Department, Royal Horticultural Society Garden, Wisley, Woking, Surrey GU23 6QB

Trial Notes

Introduction:

Originating in the Americas, pumpkins and squashes have been in cultivation for over 4000 years. These fruits are still very popular in America, and are now increasing in popularity across the world as more breeding is being done to produce cultivars that store better and ripen earlier (to prevent frost losses), as well as having a higher sugar content.

Squashes belong within the *Cucurbitaceae*; a family which also includes gourds. There are four species of *Curcubita* in cultivation, which include a mixture of squash and pumpkin cultivars;

- *Cucurbita pepo* (acorn, sweet dumpling, spaghetti, Halloween pumpkins, marrows and courgettes)
- *Cucurbita moschata* (butternut and others)
- *Cucurbita mixta* (cushaw squash)
- *Cucurbita maxima* (hubbard, turban, buttercup, kabocha and others)

This is the first trial of Winter Squash which has been undertaken by the RHS. Previous related trials include Summer Squash (2006) and Butternut Squash (2008). The results of these trials can be found on the RHS website: <http://www.rhs.org.uk/trials>.

Objectives:

- To compare and assess a range of winter squash, including high sugar varieties (excluding pumpkin and butternut) suitable to mature in the UK.
- To recommend the Award of Garden Merit  to outstanding cultivars for garden use.
- To demonstrate the cultivation of this crop.

Entries:

There were 47 entries submitted to trial by various seed companies in the UK and USA.

Cultivation:

The seeds were sown under glass on the 12th May, using peat free compost. This sowing is late enough to ensure that the young plants were protected from any late cold-weather spells. The plants were then transplanted to the trials field on the 8th June. Prior to transplanting the bed was raked and marked out. The seedlings were planted through landscape fabric, which helps to protect from pests and suppress weeds. One cultivar was planted per row, and each row consisted of five plants, which were spaced 1.5m apart, and the rows were also spaced 1.5m apart.

The panel examined the plants, before any fruit had been harvested, on the 13th August and again on the 22nd September. Not unexpectedly, a number of plants were showing signs of

mildew by September. Squash and pumpkins are often prone to mildew later in the growing season.

The fruits were harvested on the 18th and 19th of October, before the frosts had arrived. The fruit were initially stored in crates in a poly-tunnel, and these crates were then transferred to the fruit store, protected from frosts. They remained in storage until 12 January 2011.

The panel requested six fruit of each entry to be stored until after Christmas, to assess storage quality. On the 12th January, the committee examined and taste tested the 20 cultivars they had previously selected. The squash were diced and cooked in the microwave for a few minutes until just tender.

For information on cultivation, pests, disease please see the RHS advice page at: <http://www.rhs.org.uk/advice>.

Judging:

The Vegetable Trials Assessment Panel inspected and assessed the trial on the 13th August and 22nd September 2010. They met again on the 12th January 2011 to assess the storability and taste of the fruits for the Award of Garden Merit [AGM] . Fruits of each entry were considered using the following criteria:

earliness & maturity : taste (microwave) : storage quality :
fruit size : ease of harvest : yield

Above and Below: The Panel assessing the fruit in January.



Findings:

Some of the squash had started to deteriorate by the time the committee came to assess them on the 12th January, whilst others demonstrated excellent storage quality. As well as storage quality, taste was a critical factor in the AGM assessment.

One of the other main assessment criteria was the fruit yield per plant. The plants had trailed more than anticipated, probably due to the rich nutrient levels in the soil; -no fertilizer had been added to the soil prior to, or during the trial.



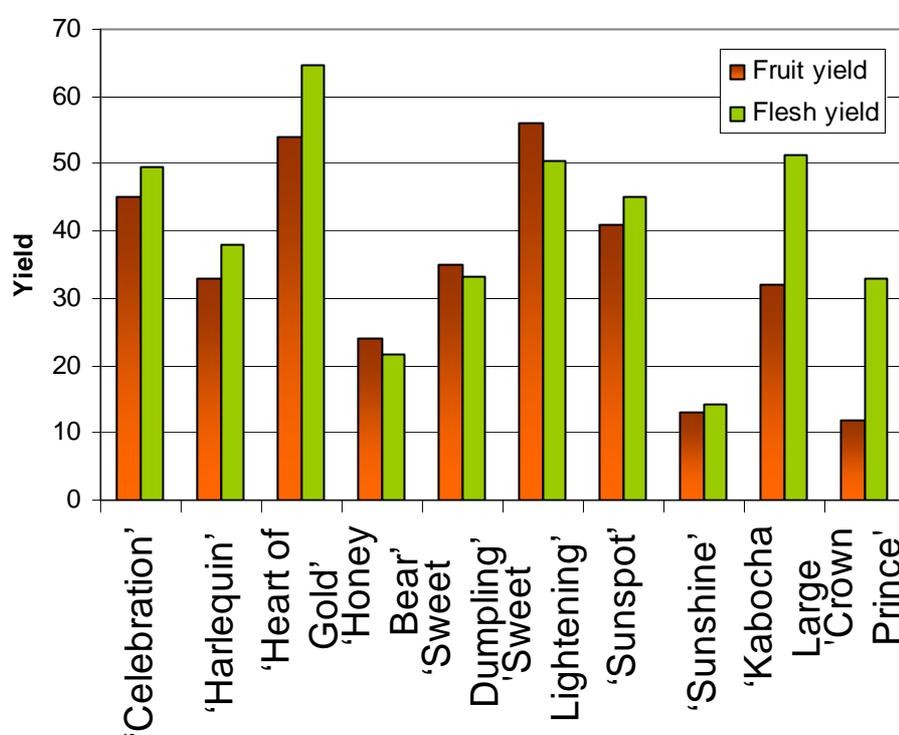
The 8 highest yielding cultivars and all AGM's cultivars are listed in the table below:

Rank	Tn.	Cultivar	Awards	Fruit yield from 5 plants	Average number of fruits per plant
1	6	'Gemstore'		110	22
2	10	'Little Pump-Ke-Mon'		70	14
3	17	SC4-15		62	12.4
4	13	'Sweet Lightening'	AGM 2011	56	11.2
5	14	'Table Ace'		56	11.2
6	8	'Heart of Gold'	AGM 2011	54	10.8
7	11	'Pepo Siam'		54	10.8
8	16	'Table Star'		46	9.2
Cultivars Awarded an AGM, not in the top 10.					

11	2	'Celebration'	AGM 2011	45	9
12	30	'Sunspot'	AGM 2011	41	8.2
17	12	'Sweet Dumpling'	AGM 2011	35	7
18	7	'Harlequin'	AGM 2011	33	6.6
19	32	'Kabocha Large Fruited'	AGM 2011	32	6.4
21	9	'Honey Bear'	AGM 2011	24	4.8
35	31	'Sunshine'	AGM 2011	13	2.6
37	21	'Crown Prince'	AGM 2011	12	2.4

Although the number of fruit produced per plant is important, a few large fruit may produce a comparable amount of flesh to a large number smaller fruit. The graph below shows the Fruit Yield (the number of fruit produced from 5 plants), and the Flesh Yield (the proportional yield calculated as the yield from 5 plants, multiplied by the average diameter of the fruit) for each of the AGM cultivars.

A graph showing the Fruit Yield and Flesh Yield values for AGM winning cultivars



Although the Flesh Yield is not an absolute measure of productivity, it does give an indication of which were particularly productive varieties. For example, of the AGM cultivars, 'Heart of Gold' produced the greatest Flesh Yield, yet the highest Fruit Yield variety was 'Sweet Lightening'.

'Crown Prince' and 'Kabocha Large Fruited' are large compared with, for example, 'Sweet Dumpling'. However 'Sweet Dumpling' produces almost three times as many fruit per plant as 'Crown Prince', and the overall Flesh Yields are very similar for the two cultivars.

Another factor to consider is the losses per fruit from skin and seeds. Many smaller fruit will result in a greater proportion of waste, compared to a few larger fruit. This said, smaller and bigger fruit have different culinary functions; for example smaller fruit can be stuffed, baked whole, and can be easier to prepare than larger squash.

Other cultivars which were commended by the committee, although they did not receive the AGM were; 'Table Star' [Tn 16], 'Cornells Bush Delicata' [Tn 18] and 'Autumn Crown' (TZ9146) [Tn 20].

Below is a selection of AGM cultivars halved to show their flesh to cavity ratio.



[Tn 2] 'Celebration'



[Tn 7] 'Harlequin'



[Tn 13] 'Sweet Lightening'



[Tn 9] 'Honey Bear'



[Tn 12A] 'Sweet Dumpling'



[Tn 30] 'Sunspot'

Ripeness and Maturity:

Maturity and ripeness is generally indicated by the flesh and skin colour – ideally dark orange flesh should have a well developed flavour. Select the most mature fruit – look for orange hues on the rind, especially on the underside. Cure the fruit prior to storage by keeping it at a higher temperature for a few days. An ideal place to cure fruits would be a greenhouse. Store the cured fruit in a cool, frost-free environment.

List of Trial Entries:

No	Name	AGM	Sender
1	'Buffy'		Pro-Veg Seeds Ltd
2	'Celebration'	AGM (H3) 2011	Tozer Seeds
3	'Delicata'		Western Hybrid Seeds Inc
4	'Festival'		S E Marshall
5	'Flat Striped'		Pro-Veg Seeds Ltd
6	'Gemstore'		Tozer Seeds

No	Name	AGM	Sender
7	'Harlequin'	AGM (H3) 2011	Tozer Seeds
8	'Heart of Gold'	AGM (H3) 2011	Tozer Seeds
9	'Honey Bear'	AGM (H3) 2011	Unwins Seeds Ltd
10	'Little Pump-Ke-Mon'		Pro-Veg Seeds Ltd
11	'Pepo Siam'		Pro-Veg Seeds Ltd
12A	'Sweet Dumpling'	AGM (H3) 2011	Mr Fothergill's Seeds
12B	'Sweet Dumpling' – duplicate entry		Western Hybrid Seeds Inc
13	'Sweet Lightening'	AGM (H3) 2011	Tozer Seeds
14	'Table Ace'		Tozer Seeds
15	'Table Gold'		Tozer Seeds
16	'Table Star'		Tozer Seeds
17	'SC4-15'		Pro-Veg Seeds Ltd
18	'Cornells Bush Delicata'		Samuel Dobie & Son
19	'Confection'		Tozer Seeds
20	'Autumn Crown' TZ 9146		Tozer Seeds
21	'Crown Prince'	AGM (H3) 2011	Tozer Seeds
22	'Amazonka'		Pro-Veg Seeds Ltd
23	'Gold Nugget'		Western Hybrid Seeds Inc
24	'Orange Queen'		Pro-Veg Seeds Ltd
25	'Red Kuri'		Western Hybrid Seeds Inc
26	'Mini Red Turban'		Pro-Veg Seeds Ltd
27	'Space Station'		Pro-Veg Seeds Ltd
28	'Bonbon'		Mr Fothergill's Seeds Ltd
29	'Buttercup Bush Emerald'		Western Hybrid Seeds Inc
30	'Sunspot'	AGM (H3) 2011	Tozer Seeds
31	'Sunshine'	AGM (H3) 2011	Tozer Seeds
32	'Kabocha Large Fruited'	AGM (H3) 2011	Tozer Seeds
33	'Tonda Padana' =		Pro-Veg Seeds Ltd
34	'Americana Tonda'		Seeds of Italy
35	'Zucca Da Marmellata'		Seeds of Italy
36	'Marina Di Chioggia'		Seeds of Italy
37	'Turks Turban'		Thompson & Morgan Ltd
38	'Turks Turban Aladdin'		Tozer Seeds
39	'Berrettina Piacentina'		Seeds of Italy
40	'Blue Hubbard'		Mr Fothergill's Seeds Ltd
41	'Hubbard Baby Blue'		Western Hybrid Seeds Inc
42	'Hubbard Mini Green'		Western Hybrid Seeds Inc
43	'Jarradahle'		Pro-Veg Seeds Ltd
44	'Queensland Blue'		Tozer Seeds
45	'Snow Delite'		Pro-Veg Seeds Ltd
46	'Triamble'		Pro-Veg Seeds Ltd
47	'White Pony'		Pro-Veg Seeds Ltd

Addresses of Senders

Tozer Seeds, Pyports, Downside Bridge Road, Cobham, Surrey KT11 3EH

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

Pro-Veg Seeds Ltd, 6 Shingay Lane, Sawston, Cambridge, CN2 4SS

S E Marshall, Regal Road, Wisbech PE 13 2RF

Samuel Dobie & Son , Long Road, Paignton, Devon TQ4 7SX

Seeds of Italy, Phoenix Industrial Est., Unit C3, Rosslyn Crescent, Harrow, Middx. HA1 2SP

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

Unwins Seeds Ltd, Elm House Nurseries, Alconbury Hill, Huntingdon, Cambs, PE28 4HY

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

Source: Trials Office, The Royal Horticultural Society Garden, Wisley, Woking,
Surrey GU23 6QB

e-mail: trials@rhs.org.uk.

More information about RHS Trials and other colour illustrated reports can be
found on the RHS Website : <http://www.rhs.org.uk/plants/awards2006.asp>