

Grower Summary

FV 348c

Onions - Independent
assessment of field and storage
potential of varieties

Final 2015

Disclaimer

While the Agriculture and Horticulture Development Board seeks to ensure that the information contained within this document is accurate at the time of printing, no warranty is given in respect thereof and, to the maximum extent permitted by law the Agriculture and Horticulture Development Board accepts no liability for loss, damage or injury howsoever caused (including that caused by negligence) or suffered directly or indirectly in relation to information and opinions contained in or omitted from this document.

©Agriculture and Horticulture Development Board 2015. No part of this publication may be reproduced in any material form (including by photocopy or storage in any medium by electronic mean) or any copy or adaptation stored, published or distributed (by physical, electronic or other means) without prior permission in writing of the Agriculture and Horticulture Development Board, other than by reproduction in an unmodified form for the sole purpose of use as an information resource when the Agriculture and Horticulture Development Board or AHDB Horticulture is clearly acknowledged as the source, or in accordance with the provisions of the Copyright, Designs and Patents Act 1988. All rights reserved.

The results and conclusions in this report may be based on an investigation conducted over one year. Therefore, care must be taken with the interpretation of the results.

Use of pesticides

Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use, except where the crop or situation is the subject of an off-label extension of use.

Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

Further information

If you would like a copy of this report, please email the AHDB Horticulture office (hort.info@ahdb.org.uk), quoting your AHDB Horticulture number, alternatively contact AHDB Horticulture at the address below.

AHDB Horticulture,
AHDB
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

Tel – 0247 669 2051

AHDB Horticulture is a Division of the Agriculture and Horticulture Development Board.

Project Number:	FV 348c
Project Title:	Onions – independent assessment of field storage potential of varieties
Project Leader:	Bruce Napier, NIAB
Contractor:	NIAB
Industry Representative:	Tom Will, VCS
Report:	Final report 2015
Publication Date:	07 August 2015
Previous report/(s):	Annual report 2013 Annual report 2014
Start Date:	01 April 2012
End Date:	30 July 2015
Project Cost:	£166,000

GROWER SUMMARY

Headline

- New varieties add positively to the choices available to growers offering excellent storage potential; a broader range of red varieties; and downy mildew resistance.

Background

The aim of the work is to provide independent assessment of the yield, quality and storage potential of new onion varieties propagated from seed. There are direct comparisons of new and established varieties and growers have the opportunity to inspect the trials at key stages.

Plant breeders continue to develop improved varieties with characteristics that meet grower requirements e.g. high yield, disease resistance, good quality and storability.

Set onions account for approximately 30% of the area grown in the UK. Early maturing varieties such as Jagro are favoured to give an early harvest while the Sturon types mature later but can be stored until Christmas. Red Baron still commands a large percentage of the red area.

Drilled onions account for approximately 70% of the area grown in the UK. Early maturing varieties such as Hybing, Centro and Vision are popular. Hybound is a promising new early variety that has gained popularity. Maincrop and late maturing varieties still hold a large proportion of the acreage e.g. varieties such as Hytech and Armstrong are still important in extending the harvest window. Red Baron still commands a large percentage of the red area with Redspark also being popular.

Overwintered onions are still grown on a small scale but there are not enough varieties to warrant evaluation trials.

Results – Set Onions

Trial records and data collected – onion trials planted from sets

Table A shows key areas of interest – maturity, marketable yield and storage data.

A full set of data tables is appended to the full report.

Trial site details

Sites were agreed with AHDB Horticulture/BOPA through a steering group, storage was at NIAB in an ambient store.

The trials were hosted by (with thanks) and located as follows:

- A W Mortier Farms, nr Leiston, Suffolk - set onions
- R Oldershaw Farms, nr Weston, Lincolnshire - set onions

The trials were planted between 25th Feb. and 3rd April (Suffolk) and 11th March and 4th April (Lincs).

The trials were harvested on 17th and 31st July (Suffolk) and 22nd and 29th July (Lincs). Many counties encountered mean temperatures above the long term averages for the months March to July which resulted in crops being early.

Time of planting is crucial for the earlier maturing varieties. Land preparation and set availability hampered the timings in 2014.

Mildew was not a problem in the trials – it came in late at low levels of infection when the crops were maturing.

Table A. NIAB Spring Sown Onion Trials from sets 2014 – Varieties, Maturities, Yield & Storage

Varieties in maturity order (mean of both sites); Main 3 replicates; *Preliminary 2 replicates of data*

			Maturity	marketable yield	Ambient Storage
Variety	set source	Seed source	Date of 80% foliage fallover	(t/ha)	% sound bulbs at end April
Early Browns			Suffolk	Mean	Mean
Forum	Broer/Elsoms	Bejo/De Groot en Slot	27-Jun	58.8	-
<i>Spitfire</i>	<i>Allium Seeds UK Ltd</i>	<i>Allium Seeds UK Ltd</i>	<i>02-Jul</i>	<i>54.2</i>	-
Troy	Broer/Elsoms	Bejo/De Groot en Slot	02-Jul	46.3	-
Alpha	Allium Seeds UK Ltd	Allium Seeds UK Ltd	06-Jul	64.2	-
Jagro	English Set Company	Bejo/De Groot en Slot	16-Jul	95.8	-
<i>Griffon</i>	<i>Allium Seeds UK Ltd</i>	<i>Allium Seeds UK Ltd</i>	<i>21-Jul</i>	<i>81.9</i>	-
				66.9	
Early Reds					

Red Arrow	Allium Seeds UK Ltd	Allium Seeds UK Ltd	12-Jul	61.1	
Maincrop Browns			Mean		
Rumba	Allium Seeds UK Ltd	Allium Seeds UK Ltd	20-Jul	66.2	35
VCS 6004	English Set Company	Confidential	21-Jul	65.6	37
VCS 6005	English Set Company	Confidential	21-Jul	68.9	27
Sturon	English Set Company	Confidential	23-Jul	67.1	46
Setton	Allium Seeds UK Ltd	Allium Seeds UK Ltd	24-Jul	67.9	50
Stur BC20	Broer/Elsoms	Bejo/De Groot en Slot	25-Jul	61.2	19
				66.1	36
Maincrop Reds					
Red Baron (ELS)	Broer/Elsoms	Bejo/De Groot en Slot	20-Jul	47.8	29
Red Light F1	Broer/Elsoms	Bejo/De Groot en Slot	22-Jul	65.3	5
Red Ray F1	Broer/Elsoms	Bejo/De Groot en Slot	26-Jul	56.2	28
Garnet	Allium Seeds UK Ltd	Allium Seeds UK Ltd	26-Jul	57.1	25
				56.6	22

The following varieties are of most interest to the industry. Full information on all varieties can be found in the 'Full Trial Report'.

Sets still attract a premium as they are earlier to market than drilled crops and fill a gap when stores are becoming empty.

For organic growers and for high disease pressure years the mildew resistant varieties offer potential – Santero was not in trial but commercially does well in areas where mildew is a problem.

There is a good range of maturities allowing growers to spread their harvest period.

Establishment was good due to above average temperatures in March. Set availability was a problem and some of the early material was not planted until later which will have reduced the benefit of them potentially maturing early, but they were still up to 3 weeks earlier.

Jagro, Griffon, Troy and Red Arrow all had good early vigour.

Forum, Spitfire, Troy and Red Arrow were the earliest maturing varieties. There was not much spread of maturities in the main crop varieties.

Very little mildew was seen and this only came into crops in July so there was little damage seen.

The mean trial yields were above the 10 year average due to the mild conditions and low disease pressure.

Jagro and Griffon were the highest yielding brown earlies. Red Arrow and Red Light were the highest yielding reds.

Spitfire and Forum had the best neck finishes.

Skin quality was generally poorer than on the main crop varieties but Spitfire, Alpha and Jagro had the best skin finishes of the early material.

Early material tends not to be suitable for storage and are thus not formally recorded. However Alpha was the best of the earlies observed.

Of the brown maincrop varieties Setton and Sturon had the highest percentage of sound bulbs in April. Red Baron and Red Ray were the best of the reds.

There were quite a few rots in the harvested material and through storage. Fusarium base rots were higher than some years due to the warmer than average temperatures from March to July.

Results – Drilled Onions

Trial records and data collected – onion trials drilled from seed

Table B shows key areas of interest – maturity, marketable yield and storage data.

A full set of data tables is appended to the full report.

Trial site details

Sites were agreed with AHDB Horticulture/BOPA through a steering group, storage was at NIAB in an ambient store and at P G Rix in commercial CE store.

The trials were hosted by (with thanks) and located as follows:

- J Raker Farms, Croxton, Norfolk – drilled onions
- P G Rix Farms, nr Colchester, Essex – drilled onions

The trials were harvested on 21st August (Norfolk) and 28th August (Essex). The 2014 season was mild and maturities were earlier than in 2012 and 2013. Many counties encountered mean temperatures above the long term averages for the months March to July which resulted in crops being up to 3 weeks earlier, but a cool August then delayed harvest slightly. This contrasted starkly with 2013 where cool and grey April, May and June meant that crops were slow growing, late maturing and some varieties were taken green.

Mildew was a problem in some areas of the country with the Norfolk trial being affected.

Table B. NIAB Spring Sown Onion Trials drilled from seed 2014 – Varieties, Maturities, Yield & Storage

Varieties in maturity order (mean of both sites); Main 3 replicates; *Preliminary 2 replicates of data*

Variety	Source	Maturity Date of 80% foliage fallover	Yield marketable (t/ha)	Ambient Storage % sound bulbs at end May	CE Storage % sound bulbs at end July
BROWNS					
Hybound (BGS266)	Bejo	04-Aug	71.9	26	34
Hybing	Bejo	04-Aug	76.3	25	21
Vision	Syngenta	07-Aug	71.1	42	57
Hypark	Bejo	07-Aug	71.0	24	28
Medaillon	Syngenta	08-Aug	63.5	31	34
Centro	Hazera	09-Aug	70.7	19	23
Wellington	Syngenta	09-Aug	72.0	36	55
Napoleon	Syngenta	10-Aug	69.9	25	26
<i>Progression (ONL354)</i>	<i>Syngenta</i>	<i>10-Aug</i>	67.9	44	31
Hysky (BGS289)	Bejo	10-Aug	73.7	36	44
Paradiso	Hazera	10-Aug	67.7	32	37
Motion	Syngenta	11-Aug	71.3	47	52
SV3557ND	Seminis	11-Aug	69.7	33	33
Arthur	Hazera	11-Aug	74.3	13	22
Chico (NIZ 37-89)	Hazera	11-Aug	59.3	33	37

RS07751481	Seminis	12-Aug	74.2	28	28
Mannito	Seminis	15-Aug	69.5	26	21
Hystore (BGS290)	Bejo	16-Aug	73.2	38	31
Santero	Hazera	17-Aug	69.2	16	21
Mean		10-Aug	70.3	30	33
REDS					
af 222	Allium Farms	02-Aug	64.2	26	32
af 1.11	Allium Farms	05-Aug	62.2	26	36
Red Planet	Allium Farms	05-Aug	54.8	36	33
Red Tide	Bejo	06-Aug	65.2	38	50
Red Light	Bejo	06-Aug	69.3	4	29
Redspark	Bejo	10-Aug	64.5	27	43
Red Baron	Bejo	12-Aug	64.8	22	35
af 1.75	Allium Farms	15-Aug	55.8	38	42
Retano	Hazera	17-Aug	62.6	15	51
Mean		09-Aug	62.6	26	39

The following varieties are of most interest to the industry. Full information on all varieties can be found in the 'Full Trial Report'.

There is a good range of maturities allowing growers to spread their harvest period. In cooler years, such as 2013, the opportunities to harvest later maturing varieties can run over into October which can result in bulbs being harder to dry and some 'telescoping/tubing' occurring in material insufficiently dried.

For organic growers and for high disease pressure years the mildew resistant varieties offer potential – Santero was the highest yielding variety on the mildew affected Norfolk site.

Establishment was good, above average temperature in March through to July meant that growth was good and up to 3 weeks ahead of normal. Wet conditions in the 3rd week of August delayed harvest on some commercial crops.

Hybound and Hybing were the earliest maturing varieties of the drilled trials. However some varieties will mature in a different sequence in seasons with key drivers being soil type, fertility and the use of starter fertilizers as well as different environmental factors such as the cooler 2013 season.

Mildew was at low enough levels to be kept under control by regular fungicide applications in the Essex trial but the disease pressure was high in Norfolk and it was not possible to fully control mildew on the maturing crop.

The mean trial yield in Norfolk was below the 10 year average due to the mildew infections while the yield in the cleaner Essex trial was above average.

In the Essex trial the highest yielding brown varieties were Hybing, Hysky and Arthur. AF222 was the highest yielding red variety.

In the Norfolk trial Santero, RS07751481 and Hybing were the highest yielding browns. Red Tide and Red Baron were the highest yielding red varieties.

There were quite a few rots in the harvested material of the Norfolk drilled trial. These were mainly Fusarium base rots.

Hybound, Hybing, Hypark, Hysky, Progression, Chico, AF1.11 and Red Planet were the best of the varieties for having high percentages of single centres. Hypark, Hysky and Chico all performed well in 2013.

Storage assessments in an ambient store, were recorded in late-April and late-May 2015.

Storage potential continues to be a key factor for drilled crops. As in 2012/13 and 2013/14 Wellington, Vision and Hysky had above average percentages of sound bulbs at the late-May assessment. Progression, Motion and Hystore also performed above average in 2014/15.

Red Planet, Red Tide and AF 1.75 performed well in the reds. Redspark and AF1.11 were average but had performed above average in previous years.

Stored bulb quality was generally very good throughout most of the varieties.

The highest percentage of sound bulbs from the controlled environment store was from Vision, as in previous years, others which performed above the average were Wellington, Hysky, Motion, Paradiso and Chico With the exception of Paradiso these were all above average in the previous season's trial.

Red Tide, Retano and Redspark had the highest percentage of sound bulbs in the reds.

Main Conclusions

Set Trials

There was almost a month difference between the earliest and latest maturing varieties.

The yield potential of varieties can vary greatly. In the set trials this was almost 50 t/ha between the highest and lowest yields (mean of both trials).

Yield out of store is also important. Main set material showed a difference of up to 45%, between the best and worst storage potential from ambient store

Drilled Trials

In the drilled trials there was approx. 17t/ha between the highest and lowest yields (mean of both trials).

Drilled material showed a difference of over 40%, between the best and worst storage potential from ambient store and of approx. 35% from CE store.

Mildew resistant varieties require fewer and or cheaper fungicide programmes.

Action Points

- Select a range of varieties with different maturities to spread the harvest.
- Select varieties best suited to your storage facilities.
- For varieties not suited to long term storage growers must be able to sell their produce quickly.
- In high disease pressure years growers should take advantage of material with disease resistance e.g. mildew resistance.