Grower Summary

FV 348d

Onions - Independent assessment of field and storage potential of varieties

Annual Report 2019

Project title:	Onions - Independent assessment of field and storage potential of varieties
Project number:	FV 348d
Project leader:	Bruce Napier, NIAB
Report:	Annual Report
Previous report:	
Key staff:	Bruce Napier Shaun Coleman
Location of project:	NIAB, Cambridge Drilled trials: Essex and Norfolk
Industry Representative:	Tom Will, VCS
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[The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.]

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

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GROWER SUMMARY

Headline

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

Background

The aim of the work is to provide independent assessment of the growing habits, 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.

Drilled onions account for approximately 70% of the area grown in the UK. Early maturing varieties such as Hybing, Hybound, Centro and Vision are popular. New material is competing to take a share of the early maturing variety market. Early main crop varieties hold the majority of the acreage but mid-range and late maturing varieties still hold a proportion but in cool seasons are only likely to mature properly on fertile soils. A range of maturities can still play an important part in spreading the harvest window. Red Baron still commands a large but diminishing percentage of the red area with Redspark, Red Tide and Retano gaining popularity.

Onion set crops account for the majority of the remaining 30%. Overwintered onions are still grown but there are not enough varieties to warrant evaluation trials.

Results of the Variety Trials

Results – Drilled Onions

Trial records and data collected –onion trials drilled from seed

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 and at P G Rix in commercial cold 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 31st August (Norfolk) and 6th September (Essex). The 2018 season maturities were over a week earlier than the 10 year average while 2017 season was over two weeks earlier than the average.
Fusarium was a major problem in the Essex trial and bacterial rots in the Norfolk trial The Fusarium had a significant impact on yield and storage results.

Table A. NIAB Spring Sown Onion Trials drilled from seed 2018 – 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 >40mm (t/ha)	Ambient Storage % sound bulbs at end May	Cold Storage % sound bulbs at end July
BROWNS					
Goblin	*Enza*	*03-Aug*	*35.8*	*43*	*56*
Hybing	Bejo/DGS	11-Aug	58.0	61	33
Hypark	Bejo/DGS	15-Aug	59.8	64	30
Fasto (37-104)	Hazera	16-Aug	59.1	77	45
Hybound (BGS 266)	Bejo/DGS	17-Aug	62.6	72	46
Numbito (SV3557ND)	Agility/Seminis	17-Aug	53.7	67	49
Vision	Syngenta	18-Aug	51.8	64	68
Bruce (TEON813)	Takii	18-Aug	55.2	72	79
Novista	Takii	19-Aug	45.5	61	47
Medaillon	Syngenta	19-Aug	45.7	54	38
Bennito	Agility/Seminis	20-Aug	53.7	51	38
Centro	Hazera	20-Aug	56.4	62	40
Packito (SV8528ND)	Agility/Seminis	22-Aug	51.5	51	35
Hytech	Bejo/DGS	23-Aug	56.1	63	51
Hyroad (BGS 337)	*Bejo/DGS*	*24-Aug*	*56.0*	*74*	*43*
Santero	Hazera	24-Aug	47.2	52	35
Hysky (BGS 289)	Bejo/DGS	25-Aug	55.6	74	49
Chico (37-89)	Hazera	25-Aug	48.1	69	38
Hyfive	Bejo/DGS	26-Aug	57.4	83	59

Motion	Syngenta	26-Aug	57.9	71	36
Hyway	Bejo/DGS	27-Aug	59.7	74	66
Bossito (SV1332ND)	Agility/Seminis	27-Aug	54.1	61	57
Elista	ProVeg	01-Sep	38.4	53	45
means		**21-Aug**	**53.0**	**64**	**47**
REDS					
Ruby Star (TEON502)	Takii	04-Aug	48.0	87	36
Red Light	Bejo/DGS	11-Aug	64.2	28	28
37-219	*Hazera*	*15-Aug*	*37.3*	*51*	*37*
37-111	Hazera	16-Aug	41.9	52	15
Monastrell	*Enza*	*16-Aug*	*57.3*	*16*	*2*
37-222	Hazera	16-Aug	44.3	67	30
Karminka	ProVeg	16-Aug	32.5	22	26
Retano	Hazera	17-Aug	45.1	54	46
Red Herald	Allium Seeds	19-Aug	43.0	64	21
Red Tide	Bejo/DGS	20-Aug	50.1	74	57
Redspark	Bejo/DGS	21-Aug	48.1	60	37
Red Baron	Bejo/DGS	25-Aug	46.3	58	33
Red Baron (AS)	Allium Seeds	27-Aug	46.0	54	27
means		**17-Aug**	**46.5**	**54**	**30**

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. However, 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.

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 in 2014.

Finding a drilling window was tricky and establishment was compromised by some capping on the Essex site. Seed beds at both sites had good tilth and the trial seed was drilled into moisture. The growing season started with a cold, dry spring followed by prolonged dry and hot weather. Crops matured earlier than usual.

Goblin, Hybing, Fasto and Hybing were the earliest maturing brown varieties of the drilled trials. Red Light and TEON502 were the earliest of the reds.

The mean of trial yields in Norfolk was 60t/ha browns and 53t/ha reds, the trial was affected by bacterial rots.

The Essex trial yield means were 46t/ha browns and 41t/ha reds. High levels of Fusarium had a significant impact on yields with many bulbs too rotten to harvest.

The highest yielding brown varieties were Fasto, Hyway, Hybound, Bossito and Hypark. Red Light was the highest yielding red variety.

Numbito, Hytech, Santero and Chico were the best of the brown varieties for having high percentages of single centres. Redspark, 37-111 and Red Tide were the best of the reds for single centres.

Storage assessments in an ambient store were recorded in late-April and late-May 2019. Cold storage assessments were recorded in July 2019.

Storage potential continues to be a key factor for drilled crops.

Fasto, Hyroad, Hyway, Hysky and Hyfive all performed significantly above average in 2018/19.
Medaillon, Hyway, and Vision have consistently had above average percentages of sound bulbs at the late-May assessment.
Red Tide, Red Herald, Ruby Star and 37-222 performed well in the reds.

In cold storage the varieties Vision, Bruce, Hyway and Hyfive were the best brown varieties for storage.
Red Tide and Retano were the best performing of the red varieties.

Stored bulb quality was generally poor throughout most of the brown varieties and the reds showed more softening. This was due to poor quality and high disease pressure going into store.

Main Conclusions

Drilled Trials

Varieties need to match the grower's requirements and ideally have two or more above average characteristics e.g. for early maturity and high green plot yields, Fasto, Hybound and Hypark are suitable choices; for green plot yield and post storage yields Hyway performed well – Medaillon and Vision performed well in previous years. Fasto, and Numbito are newer varieties to keep an eye on over the next couple of seasons.

In the drilled trials there was approx. 32t/ha between the highest and lowest yields (mean of both trials).

Drilled material showed a difference of over 70%, between the best and worst storage potential from ambient store and of approx. 75% from cold storage.

Mildew resistant varieties should require fewer and or cheaper fungicide programmes.

Action Points

- Select a range of varieties according to soil type, desired harvest period, habit vigour and disease tolerance.
- Select varieties best suited to your storage facilities.
- Varieties should match the market and available storage facilities – longer storing varieties give more options.
- In high disease pressure years growers material with good disease resistance e.g. mildew resistance – grow a range of varieties and use local knowledge of fields that could be disease hot spots.
- Seed cost is a factor in the selection of varieties