HDC

Horticultural Development Council

Working for Growers

Research Report

FV/99

Field Scale Handling Adaptability of ten spring sown bulb onion varieties

FV/99

FIELD SCALE BULK HANDLING ADAPTABILITY OF TEN SPRING SOWN BULB ONION VARIETIES WHICH HAVE PERFORMED WELL IN NIAB TRIALS

OBJECTIVE

To establish the suitability on a commercial scale of varieties of spring sown onions which have performed well in conventional NIAB trials by growing 0.04 Ha (1/10th acre) plots on a farm, situated on silt in Cambridgeshire.

METHOD

The trial was drilled on the 28th March 1991, to a population of 500 000 seeds to the hectare. An average population of 43 ppm^2 was achieved with all plots having a population within ± 10% of the mean. The trial was treated for pesticide and irrigation purposes in the same way as the commercial crop surrounding it. Maliec Hydrazide was applied to the trial at 10% foliage diedown.

Maturity was assessed for each variety at 80% foliage diedown and five 30Kg samples were harvested by hand from the plots. These small samples were then dried and stored in an ambient store.

The remaining trial produce was harvested on the 12th September using commercial machinery. Samples were taken from each variety and dried and stored in one tonne bulk bins in a refrigerated store.

Both sets of samples were then graded over commercial graders and assessed for size, quality and unmarketable fractions.

RESULTS

Grading results for one tonne bulk bin samples, harvested 12.09.92 and stored in refrigerated storage. Courtesy of Mr.J.Proctor, Wisbech, Cambs.

Assessed : 2/3 June 1992

Variety	Seed Company	Date of 80% Foliage Diedown	% of Marketable Bulbs in Size Range			
			25-40 mm	40-60 mm	60-80 mm	>80 mm
Goldito	RSL	21st August	0.0	61.8	37.9	0.3
Caribo	BSL/SEG	23rd August	0.6	75.7	23.5	0.2
Markies	VDH	25th August	0.4	66.2	33.0	0.4
Alamo	BSL/SEG	26th August	0.3	71.4	28.1	0.2
Dinaro	RSL	1st September	0.3	59.4	39.8	0.5
Hystar	BJO	1st September	0.6	75.9	23.4	0.1
Polo	NIZ	2nd September	0.3	52.4	46.2	1.1
Karato	BSL/SEG	5th September	0.4	65.8	33.3	0.5
Hysam	BJO	7th September	0.4	65.1	34.3	0.2
Macho	NIZ	9th September	0.4	56.6	42.3	0.7
Mean		31st August	0.4	65.0	34.2	0.4

Key to seed company abbreviations

BJO - Bejo Zaden
BSL/SEG - Breeders Seeds/Sluis en Groot
NIZ - Nickerson Zwaan
RSL - Royal Sluis
VDH - Van der Have

Grading results for one tonne bulk bin samples, harvested 12.09.92 and stored in refrigerated storage. Courtesy of Mr.J.Proctor, Wisbech, Cambs.

Assessed : 2/3 June 1992

Variety	Seed Company	Unmarketable Bulbs After Storage		% Sound Bulbs After Storage
		% Rotten	% Skinned	
Goldito	RSL	6.7	7.4	85.9
Caribo	BSL/SEG	4.1	2.2	93.7
Markies	VDH	4.2	1.8	94.0
Alamo	BSL/SEG	7.2	4.3	88.5
Dinaro	RSL	4.7	1.1	94.2
Hystar	BJO	1.9	2.1	96.0
Polo	NIZ	8.7	0.5	90.8
Karato	BSL/SEG	6.0	1.3	92.7
Hysam	BJO	1.5	0.7	97.8
Macho	NIZ	5.4	0.5	94.1
Mean		5.0	2.2	92.8

Quality results for one tonne bulk bin samples, harvested 12.09.92 and stored in refrigerated storage. Courtesy of Mr.J.Proctor, Wisbech, Cambs.

Assessed : 2/3 June 1992

Variety	Seed Company	Bulb Quality (1-9)				
		Bulb Colour (1-9) 1=Pale Straw 9=Dark Straw	Bulb Shape (1-9) 1=Flat 5=Globe 9=Elongate	Skin Protection (1-9) 1=Poor 5=Moderate 9=Excellent	Uniformity of Bulb Shape (1-9) 1=Poor 5=Moderate 9=Excellent	Bulb Firmness (1-9) 1=Very Soft 5=Moderate 9=Very Firm
Goldito	RSL	4.2	5.1	4.5	5.5	6.4
Caribo	BSL/SEG	5.5	5.2	4.8	6.5	4.5
Markies	VDH	6.2	5.1	4.2	4.8	5.0
Alamo	BSL/SEG	5.0	4.8	4.8	4.8	5.3
Dinaro	RSL	4.5	4.7	5.5	4.2	6.5
Hystar	BJO	5.8	5.2	5.0	4.5	5.5
Polo	NIZ	5.5	4.7	6.3	4.5	4.5
Karato	BSL/SEG	5.2	5.2	5.2	5.5	5.5
Hysam	BJO	5.0	4.8	7.2	4.8	6.8
Macho	NIZ	5.0	5.7	5.9	5.0	6.5
Mean		5.2	5.1	5.3	5.0	5.7

Grading results for 30 Kg samples harvested at 80% foliage diedown and stored in an ambient store.

Assessed : 26 May 1992

Variety	Seed Company	Date of 80% Foliage Diedown	% of Marketable Bulbs in Size Range			
			25-40 mm	40-60 mm	60-80 mm	>80 mm
Goldito	RSL	21st August	0.2	63.4	36.3	0.1
Caribo	BSL/SEG	23rd August	0.7	72.1	27.1	0.1
Markies	VDH	25th August	0.5	60.4	39.0	0.1
Alamo	BSL/SEG	26th August	0.5	69.3	30.1	0.1
Dinaro	RSL	1st September	0.6	61.6	37.6	0.2
Hystar	BJO	1st September	0.7	73.7	25.3	0.3
Polo	NIZ	2nd September	0.4	49.2	50.2	0.2
Karato	BSL/SEG	5th September	0.6	68.8	30.5	0.1
Hysam	BJO	7th September	0.5	67.4	32.0	0.1
Macho	NIZ	9th September	0.3	55.9	43.6	0.2
Mean		31st August	0.5	64.2	35.2	0.1

Grading results for 30 Kg samples harvested at 80% foliage diedown and stored in an ambient store.

Assessed : 26 May 1992

Variety	Seed Company	Unmarketable Bulbs After Storage		% Sound Bulbs After Storage
		% Rotten	% Skinned	
Goldito	RSL	4.2	2.4	93.4
Caribo	BSL/SEG	6.2	2.7	91.1
Markies	VDH	0.9	2.5	96.6
Alamo	BSL/SEG	4.2	4.1	91.7
Dinaro	RSL	6.9	3.3	89.8
Hystar	BJO	1.8	4.6	93.6
Polo	NIZ	25.9	1.2	72.9
Karato	BSL/SEG	6.2	0.4	93.4
Hysam	BJO	2.5	0.6	96.9
Macho	NIZ	1.7	1.4	96.9
Mean		6.1	2.3	91.6

Grading results for 30 Kg samples harvested at 80% foliage diedown and stored in an ambient store.

Assessed : 26 May 1992

Variety	Seed Company	Bulb Quality (1-9)				
		Bulb Colour (1-9) 1=Pale Straw 9=Dark Straw	Bulb Shape (1-9) 1=Flat 5=Globe 9=Elongate	Skin Protection (1-9) 1=Poor 5=Moderate 9=Excellent	Uniformity of Bulb Shape (1-9) 1=Poor 5=Moderate 9=Excellent	Bulb Firmness (1-9) 1=Very Soft 5=Moderate 9=Very Firm
Goldito	RSL	4.3	5.0	5.8	5.5	6.0
Caribo	BSL/SEG	5.3	5.0	5.5	6.0	5.3
Markies	VDH	5.8	5.1	6.0	4.5	6.0
Alamo	BSL/SEG	5.2	4.8	5.3	5.0	5.5
Dinaro	RSL	4.7	4.7	5.2	4.5	6.3
Hystar	BJO	5.9	5.1	5.1	5.0	5.4
Polo	NIZ	5.6	5.0	5.9	4.3	4.2
Karato	BSL/SEG	5.5	5.1	5.5	5.7	5.6
Hysam	BJO	5.1	4.8	6.8	5.1	6.3
Macho	NIZ	5.0	5.5	6.2	5.0	6.4
Mean		5.2	5.0	5.7	5.1	5.7

Comments on Varieties

Goldito - Early maincrop. The earliest of the varieties trialled by two days. Above average % of bulbs in the 60-80mm size range. Pale to mid straw coloured, globe shaped bulbs of above average uniformity and firmness.

Caribo - Early maincrop. Two days later than Goldito. Below average % of bulbs in the 60-80mm size range. Mid straw coloured, globe shaped bulbs of above average uniformity but below average bulb firmness.

Markies - Early maincrop. Mid to dark straw coloured, globe shaped bulbs.

Alamo - Maincrop. Below average % of bulbs in the 60-80mm size range. Mid straw coloured, globe shaped bulbs.

Dinaro - Maincrop. Above average % of bulbs in the 60-80mm size range. Pale to mid straw coloured, flat to globe shaped bulbs of below average uniformity but above average firmness.

Hystar - Maincrop. Below average % of bulbs in the 60-80mm size range. Mid to dark straw coloured, globe shaped bulbs. Below average level of rotten bulbs after storage.

Polo - Maincrop. Above average % of bulbs in the 60-80mm size range. Mid straw coloured, flat to globe shaped bulbs with above average skin protection but below average uniformity and firmness. Above average level of rotten bulbs but below average level of skinned bulbs after storage.

Karato - Maincrop. Mid straw coloured globe shaped bulbs of above average uniformity. Below average levels of skinning after storage.

Hysam - Maincrop. Mid straw coloured, globe shaped bulbs with above average skin protection and bulb firmness. Below average levels of both rotting and skinning after storage.

Macho - Late maincrop. Above average % of bulbs in the 60-80mm size range. Mid straw coloured, globe to elongate shaped bulbs with above average skin protection and firmness. Below average levels of both rotting and skinning after storage.

CONCLUSION

Generally results were fairly consistant with conventional NIAB trial results from both the small 30Kg samples and 1 tonne bulk bin samples.

However skin protection and levels of skinning and rotting were much higher than average in the early maincrop varieties stored in the bulk bins. The probable reason for this is that these varieties were left in the field some three to four weeks after they had reached maturity, this led to a subsequent deterioration in skin quality and higher levels of rotting. Skin quality in the smaller 30Kg samples taken at 80% foliage diedown was substantially better.

Varieties Karato, Macho and Hysam all performed well, especially in store. Macho and Hysam looked particularly promising in terms of skin protection. Polo produced a high % of large bulbs with good skin protection, but did however perform rather worse than expected in both ambient and refrigerated store producing a high level of rotten bulbs.

Further Work

The problem of deteriorating bulb quality after maturity means that it will be necessary in future years to harvest and dry trial plots on or as near to peak maturity as possible in order that accurate comparisions can be made between cultivars.