ONIONS FOR WINDOWS
1995

An Onion Variety Introduction Program

The Texas Agricultural Experiment Station
The Texas Agricultural Extension Service
Texas A&M University System

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1995

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Texas A&M Agricultural Research and Extension Center
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Acknowledgment

We are grateful to Dr. Charlie Hall, Extension Economist for guidance in determining market windows for vegetable crops grown on the Texas High Plains and for his continuing support of educational programs for vegetable growers.

Definition

"Onions For Windows" is a system which Texas A&M University horticulturists use to define market windows for Northwest Texas onions and introduce new onion cultivars which produce superior quality and yield for commercial growers within these market windows. Experiment Station research and Extension-Grower demonstrations are conducted to reach these objectives.

Summary

A market window for onion occurs when f.o.b. prices are above grower break-even price for a period of four to six weeks. Market windows were calculated to occur from late June to early August and from early October through December for Northwest Texas onions. Five-year average prices ranged from $6.25 to $7.40 (1990-1994) and a break-even price of $5.38/50-lb. sack was calculated from an analysis of total costs of production and marketing and historic yields. Ongoing research and grower demonstrations with advanced breeding lines, commercial cultivars, and selections from yellow, white, and red cultivars have defined certain varieties which display superior attributes and mature within the market window. Superior varieties adapted to the first market window include: XPH-87N60, Sunre 1445, Sunre 1462, Yula, Spano, Cimarron, Riviera, Utopia, and Alabaster. Superior varieties adapted to the second market window include: Sweet Perfection, Sterling, Vega, Bravo, Capri, Vaquero, El Charro, Quest, Shasta, and Vision. Vaquero, Sunre 1462, Sunre 1445, El Charro, and Viceroy have potential for short-term storage for October to December markets.

Background

Average 5-year yellow onion prices ranged from near $6.25 from late June through early August and increased from $5.75 in early October to $7.40 by mid December. During the Northwest Texas market window, white onion prices quoted in the Packer have been higher and red onion prices much higher than the historical 5-year average-by-month onion prices published by NASS. However, in July-August 1995 supplies of white onions were high enough to result in f.o.b. prices not much higher those paid for yellow onions. High quality dark red onions continue to bring premium prices throughout our market windows.

Break-even prices for mechanically transplanted onions on the Texas High Plains were estimated to be as follows:

Yield	Break-even Price per 50-lb. Sack
640 sacks	$5.65
720 sacks	5.50
800 sacks	5.38
880 sacks	5.28
960 sacks	5.20

Production and marketing costs vary with acreage, yields, and marketing methods. Marketing costs vary from grower to grower. Growers are encouraged to calculate costs unique to their situation.

Methods

Methods used for the on-Station replicated direct-seeded and transplanted variety research plots (outlined on page 4) and the transplanted demonstration plots at Jones Produce, Inc. were similar. A 8-row Holland articulated transplanter powered by a hydrostatic, 4-wheel drive John Deere

was used to plant both locations. Spacing was 2 rows 18 inches apart, centered on a 40-inch bed with plants 5 inches apart in the row for a plant population of 62,726 plants per acre. The Jones plots received a total of 150 lb. N and 50 lb. P per acre. Irrigation was on a 5 to 7-day schedule in April, on a 4 to 6-day interval in May and on a 4-day interval in June and July with allowance for rainfall. Rovral was applied twice for Botrytis control in Jones plots. Bulbs were harvested by undercutting with a tractor-drawn knife rig, allowing one day of dry down, cutting tops at least two inches from bulb shoulder and field drying in burlap bags for 2 days.

Numbers of tops down were recorded during July to establish maturation chronology, and succession of maturity for varieties. Bulbs were graded into 5 size categories and weighed. The direct-seeded bulb samples were stored and evaluated for storage potential on November 2.

Discussion of Results

Varieties, seed companies, and color/day length class of each entry are listed on page 5.

On Station transplanted variety yields and bulb sizes are found on page 6, and transplanted varieties Tops Down table is on page 7. The top yield category in **on-station transplants** included 14 varieties that yielded over 700 sacks/acre. Those **over 800 sacks:** El Charro, XPH 87N60, and Quest; **over 760:** Sunre 1445, Ole', Vaquero, Shasta, HM94CO014, and Vision; **over 700:** Yula, Seville, Capri, Spano, and Viceroy. Finally, **over 650:** AX-1514, Madrid, Cimarron, Riviera, Utopia, and Sweet Perfection. Great variability in yield caused by hail damage rendered separation of variety differences by analysis of variance unproductive. **Intermediate-day hybrids:** Yula and Spano yielded over 700 sacks and were 50% down by July 20, and July 13, respectfully. Cimarron (mature by 7/5), Riviera (mature by 7/20), and Utopia (mature by 7/15) produced over 650 sacks/acre. A new **intermediate-day white** Alabaster was 50% down by July 5. Sunre 1462 (red), a new **intermediate-day red** was 50% down by July 17, and could have been taken earlier by careful undercutting of roots.

On-Station direct-seeded plots (table on page 8) yielded higher than the transplants because they were younger when hail hit and recovered better. In **over 900 sacks:** El Charro topped 1024 sacks, Seville made 996 and AX-1514 at 898 in the top range; **over 725:** Sunre 1445, Quest, Vaquero, Riviera, Ole', Madrid, and Capri; **over 600:** Utopia, Yula, Shasta, Sterling, Viceroy, Cimarron, Alabaster, Sunre 1462, Vision and Spano. **Intermediate-day hybrids from seed made Jumbo and larger:** Riviera = 70%, Utopia = 48%, Yula = 49%, Cimarron = 48%, Alabaster = 50%, Sunre 1462 (red) = 38%, Spano = 50%.

At **Jones Produce-Transplanted plots,** (table on page 8) producing **over 900 sacks were:** Quest, Vaquero, Capri, Sterling, and Sweet Perfection; **over 800:** Sunre 1445, Vision, Yula, Ole', Riviera, and Shasta; **over 700:** HM94CO014, Seville, Spano, El Charro, and Viceroy. Bulb shapes are on page 10. **Intermediate-day hybrids produced size:** Sunre 1462 (red) = 47% Jumbo or larger; Alabaster = 54%; Yula = 82%; Spano = 92%; Utopia = 47%; Cimarron = 64%; and Riviera = 83%. Maturities, indicated by 50% tops down were: Alabaster = 7/7, Cimarron = 7/7, Spano = 7/5, Sunre 1462 = 7/20, Riviera = 7/20 or later, Yula = 7/20 or later, and Utopia = 7/18 or later.

Storage qualities of varieties varied, as discussed on pages 11 and 12. **Short term potential** was evident for: Sunre 1462, Utopia, Shasta, Vaquero, El Charro, Viceroy, Alabaster, Cimarron, Sunre 1445, Spano, and Riviera.

Sunre 1462, Vaquero, and Sunre 1445 showed potential for storage up to several months. Storage details on pages 11, 12. Center rot can be prevented by timely harvest after careful undercutting and by either leaving tops on or topping to no closer than two inches from the bulb shoulder.

1995 Onion Variety Trial

David A. Bender and Roland E. Roberts
Texas A&M Agricultural Research and Extension Center
Lubbock, Texas

Greenhouse seeding date:	I February
Field seeding date:	21 March
Transplant date:	3 April
Fertilization:	400 lb 16-20-0 preplant 3 0 lb N in irrigation water on II May, 5 June and I July
Herbicide:	Prowl 0.75 pt/A PPI Goal 0.75 pt/A on 18 May
Irrigation:	Drip irrigation based on tensiometers
Plots:	I bed (40" centers) X 13 ft
Experimental design:	Randomized complete block with 3 replications
Insecticide:	Karate 0.01 lb ai/A for thrips
Treatment dates:	7 and 21 June

Weather

Temperatures were near normal during the 1995 growing season (Figure 1). As usual, fluctuations were greater in the spring, with more stable conditions during the summer months. Rainfall was well below normal, with only 5.58 inches falling between I April and 31 July. A moderate hail on 2 June tattered foliage during early bulbing, resulting in yield loss and leaving the plants susceptible to disease. Botrytis blight subsequently appeared, but was controlled fairly well with fungicides.

1995 Onion Variety Trial & Demonstration

Texas A&M Research and Extension Center, Lubbock, Texas
and
Jones Produce, Inc., Lubbock, Texas

Trial	Variety	Seed Company	Description
1	Capri	Aristogenes	Yellow, Long Day
2	Seville	Aristogenes	Yellow, Long Day
3	Madrid	Aristogenes	Yellow, Long Day
4	AX-1514	Aristogenes	Yellow, Long Day
5	Ole'	Abbott & Cobb	Yellow, Long Day
6	El Charro	Abbott & Cobb	Yellow, Long Day
7	Fury	Asgrow	Yellow, Long Day
8	Viceroy	Asgrow	Yellow, Long Day
9	Utopia	Asgrow	Yellow, Long Day
10	Riviera	Asgrow	Yellow, Intermediate Day
11	Yula	Asgrow	Yellow, Intermediate Day
12	HM94C0014	Harris-Moran	Yellow, Intermediate Day
13	White Delite A	Crookham	White, Long Day
14	Sweet Perfection	Crookham	Yellow, Long Day
15	XPH 87N60	Crookham	Yellow, Intermediate Day
16	Spano	Sunseeds	Yellow, Intermediate Day
17	Vaquero	Sunseeds	Yellow, Intermediate Day
18	Sunre 1462	Sunseeds	Red, Intermediate Day
19	Sunre 1445	Sunseeds	Yellow, Long Day
20	Alabaster	Sunseeds	White, Intermediate Day
21	Cimarron	Sunseeds	Yellow, Intermediate Day
22	Quest	Peto	Yellow, Long Day
23	Sterling	Peto	White, Long Day

24	Vision	Peto	Yellow, Long Day
25	Blizzard	Peto	White, Long Day
26	Shasta	Peto	Yellow, Long Day

1995 Transplanted Onion Varieties

		Bulbs	Percentage of bulbs						Yield (sacksIA)	
No	Variety	per plot	<2.5'	2.5-3.0"	3.0-3.5"	3.5-4.0"	>4.0"	Split	Rot	Marketable	Total
6	El Charro	57	2	10	39	45	3	0	2	866 a	886
15	Xph87N60	58	2	12	43	38	4	1	1	865 a	879
22	Quest	61	1	9	57	31	0	0	2	805 ab	813
19	Sunre 1445	59	3	13	54	29	2	0	0	799 ab	799
5	Ole	58	1	7	33	42	2	0	15	786 ab	892
17	Vaquero	61	3	19	54	20	3	0	1	781 a-c	786
26	Shasta	57	5	17	54	22	2	0	0	766 a-c	766
12	HM94CO014	59	8	18	46	26	1	1	1	762 a-c	774
24	Vision	60	4	17	53	20	3	0	3	760 a-c	785
11	Yula	60	8	14	46	28	3	0	1	734 a-c	736
2	Seville	59	2	14	41	29	2	0	12	734 a-c	845
1	Capri	54	5	16	42	29	4	0	4	730 a-c	766
16	Spano	59	6	19	48	24	3	0	0	722 a-d	722
8	Viceroy	59	7	24	52	16	0	1	0	703 a-e	709
4	AX-1 514	56	6	12	36	31	3	0	11	694 b-e	769
3	Madrid	59	5	10	47	24	2	1	11	693 b-e	809
21	Cimarron	56	2	*21*	57	18	1	0	2	688 b-e	698
10	Riviera	57	6	17	48	27	1	0	1	680 b-e	682
9	Utopia	58	5	20	49	26	1	0	0	665 b-e	665
14	Sweet Perfe	57	5	19	49	16	0	1	10	656 b-e	734
25	Blizzard	54	3	19	42	21	2	0	13	615 c-e	687
23	Sterling	57	11	13	35	21	1	0	20	554 d-g	687
18	Sunre 1462	59	8	42	46	3	0	0	1	539 e-g	541
20	Alabaster	58	11	36	46	6	0	0	1	537 e-g	540
13	White Delite	55	7	46	31	5	0	3	9	470 fg	518
7	Fury	57	35	44	16	2	0	1	3	412-g	428

1995 Transplanted Onion Vareties Tops Down -- Sorted by Maturities

Percentage of Tops Down

		July								
No.	Variety	3	5	7	11	13	14	17	19	22
21	Cimarron	32	57	62	65	82	82	87	76	95
20	Alabaster	22	41	52	53	68	68	82	79	93
16	Spano	12	35	43	45	54	54	84	90	93
9	Utopia	6	21	26	26	44	44	66	78	86
18	Sunre 1462	5	14	17	20	34	34	54	80	83
15	Xph 87N60	0	1	1	4	17	17	29	47	67
11	Yula	2	4	4	5	15	15	30	49	63
10	Riviera	0	2	3	5	12	12	27	35	52
19	Sunre 1445	0	0	0	0	0	0	7	13	45
17	Vaquero	0	0	0	0	1	1	5	10	40
24	Vision	3	10	13	13	19	19	28	30	37
26	Shasta	0	1	1	1	2	2	4	10	24
12	HM94CO01	4	0	0	0	0	1	1	4	20
7	Fury	0	0	0	1	2	2	7	10	17
22	Quest	0	0	0	0	2	2	3	7	16
14	Sweet Perfection	0	0	0	1	4	2	4	7	13
8	Viceroy	0	0	0	0	0	0	1	3	8
25	Blizzard	0	0	0	0	0	0	1	2	7
23	Sterling	0	0	0	0	1	1	1	2	6
13	White Delite A	0	0	0	0	0	0	1	1	4
6	El Charro	0	0	0	0	1	1	1	1	4
4	AX-1 514	0	0	0	1	1	1	1	1	2
2	Seville	0	0	0	1	1	1	1	2	2
3	Madrid	0	0	0	0	1	1	1	1	1
5	Ole’	0	0	1	1	1	1	1	1	1
1	Capri	0	1	1	1	1	1	1	1	0

1995 Direct Seeded Onion Varieties

No	Variety	Percentage of bulbs							Yield	Bulbs per plot
		<2.5"	2.5-3.0"	3.0-3.5"	3.5-4.0"	>4.0"	Split	Rot	(sacks)	
6	El Charro	10	19	35	34	2	0	0	21024 a	76
2	Seville	10	21	38	29	1	1	0	996 a	78
4	AX- 1 514	11	16	43	26	3	3	0	898 ab	71
19	Sunre 1445	20	24	45	10	0	0	0	807 bc	81
22	Quest	14	19	52	16	0	0	0	801 bc	71
17	Vaquero	17	22	29	31	1	1	1	784 bc	66
10	Riviera	12	18	45	25	0	0	0	779 b-d	70
5	Ole’	27	14	37	22	0	0	1	730 b-d	68
3	Madrid	23	25	27	25	1	0	0	729 b-d	68
1	Capri	20	27	37	15	0	0	2	726 b-d	70
14	Sweet Perfection	18	24	38	19	1	3	5	712cd	63
9·	Utopia	21	30	32	14	2	1	2	674 c-e	69
11	Yula	28	23	34	15	0	3	0	670 c-e	73
26	Shasta	29	40	27	4	0	0	0	659 c-e	78
23	Sterling	18	21	42	19	1	0	1	654 c-e	66
8	Viceroy	21	37	38	4	0	0	3	651 c-e	71
21	Cimarron	24	27	37	11	0	0	0	649 c-e	73
20	Alabaster	18	31	39	11	0	0	0	647 c-f	70
18	Sunre 1462	24	37	33	5	0	0	1	641 c-f	78
24	Vision	26	23	45	6	0	1	1	627 c-f	66
16	Spano	26	25	33	15	2	0	4	601 d-f	63
7	Fury	41	33	21	3	0	1	1	518 e-g	68
12	HM94CO014	26	26	37	11	0	2	1	501 e-g	68
25	Blizzard	35	27	32	7	0	0	0	467 f-g	56
13	White Delite A	49	30	17	4	0	5	4	403 gh	62
15	Xph 87N60	4	6	38	31	21	12	0	286 h	17

1995 Jones Farm Onion Variety Demonstration --Yields (50# sacks/acre)

* 13 ft plots -- grams/plot X 0.0443223 = 50# sacks/A

Variety	Company	Harv. Date	Total Bulbs	Percentage of bulbs <2.51'	2.5-3.0"	3.0-3.5"	3.5-4.0"	>.4.0"	Total Yield
Fury	ASG	4-Aug	68	44	34	22	0	0	434
Sunre 1445	SUN	4-Aug	62	8	10	26	56	0	879
HM94CO014	HMO	4-Aug	68	15	22	40	24	0	739
Vision	PET	4-Aug	63	3	16	48	33	0	848
Sunre 1462	SUN	27-Jul	59	14	39	37	10	0	518
Alabaster	SUN	27-Jul	67	9	37	45	9	0	658
AX-1 514	ARI	4-Aug	59	17	17	49	17	0	652
Quest	PET	4-Aug	64	6	8	38	47	2	923
Seville	ARI	4-Aug	60	5	17	35	43	0	799
Yula	ASG	4-Aug	67	1	16	48	31	3	886
Vaquero	SUN	4-Aug	60	5	10	37	40	8	900
CapriARI	4-Aug	61	3	10	34	48	5	905	
Spano	SUN	27-Jul	57	0	9	67	25	0	771
Sterling	PET	4-Aug	59	2	7	31	53	8	973
Ole'	ACO	4-Aug	62	6	23	27	40	3	824
Utopia	ASG	4-Aug	61	33	23	41	3	0	493
Madrid	ARI	4-Aug	58	14	24	43	19	0	658
White Delite A	CRO	4-Aug	59	36	25	34	5	0	462
El Charro	ACO	4-Aug	68	6	16	60	18	0	785
Cimarron	SUN	27-Jul	58	9	28	52	12	0	637
Sweet Perfection	CRO	4-Aug	76	7	13	45	36	0	957
Viceroy	ASG	4-Aug	63	8	29	44	19	0	730

Sunre 1462	SUN	4-Aug	66	17	30	42	11	0	613
Riviera	ASG	4-Aug	68	3	13	50	32	1	829
Utopia	ASG	27-Jul	68	9	43	35	13	0	641
Shasta	PET	4-Aug	63	13	19	30	35	3	835

1995 Jones Farm Onion Variety Demonstration -- Bulb Shapes

		Percent				Deep
Variety	Date	Flat	Top	Globe	Globe	Torpedo
Fury	4-Aug	8	29	48	11	5
Sunre 1445	4-Aug	26	0	68	2	5
Vision	4-Aug	42	2	50	6	0
Quest	4-Aug	29	0	68	3	0
Vaquero	4-Aug	46	0	49	3	2
Madrid	4-Aug	17	7	55	12	9
White Delite A	4-Aug	22	19	37	15	7
El Charro	4-Aug	46	0	51	3	0
Cimarron	27-Jul	8	5	63	22	2
Spano	27-Jul	22	10	52	16	0
Sunre 1462	4-Aug	43	49	3	0	4
Viceroy	4-Aug	14	3	67	13	3
Utopia	27-Jul	53	9	36	2	0
Riviera	4-Aug	67	8	26	0	0
Seville	4-Aug	42	2	54	2	0
Sweet Perfection	4-Aug	38	5	51	3	3

Capri	4-Aug	53	5	38	2	2
Sunre 1462	27-Jul	32	47	19	2	0
HM94CO014	4-Aug	43	3	40	9	5
Utopia	4-Aug	48	0	51	2	0
Ole’	4-Aug	43	2	50	0	5
Sterling	4-Aug	51	0	47	2	0
Alabaster	27-Jul	33	9	47	11	0
Yula	4-Aug	51	2	46	0	2
Shasta	4-Aug	22	0	69	9	0
AX-1514	4-Aug	44	2	53	0	2

POST HARVEST EVALUATION OF LONG DAY ONION CULTIVARS
TEXAS A&M UNIVERSITY RESEARCH & EXTENSION CENTER
LUBBOCK, TEXAS

Onion bulbs harvested from the direct-seeded planting were examined on November 2 to 7, 1995. The crop was planted on March 21, and harvested the first week of October after exposure to over 5 inches rainfall in September. The bulbs were fan dried with ambient air in sacks for 7 days and held in ambient air (minimum 65 degrees F.) until early November. This crop received a high degree of wet weather pressure after reaching maturity. Each bulb was examined for symptoms of decay. Necks of 20 bulbs of each variety were cut at bulb shoulder to determine whether or not neck had rotted down into bulb.

* * Sunre 1462 -- Red Intermediate; thin to medium neck* * *; very little rot; good scale; dark red color outside; good scale retention; holding well (<5% center rot).

Sweet Perfection -- Yellow Long Day; thick-medium neck; variable size; >50% center rot.

*Utopia -- Yellow Intermediate; bulbs flatter than transplant crop, more rot (20% center rot) than Riviera and Yula; thin to medium neck.

White Delight --White Long Day; medium neck; shoulders rot; >50% center rot.

8ON59 -- Yellow Long Day; medium to thick necks, variable color and size; 40% center rot.

AX- 1 514 -- Yellow Long Day; medium tight neck; 40% center rot.

Quest -- Yellow Long Day; medium tight neck; > 50%center rot.

Seville-- Yellow Long Day; thick neck; 30% center rot; hard shoulder.

Madrid -- Yellow Long Day; very thick neck; >50% center rot.

Sterling -- White Long Day; medium to thick neck; >50 % center rot.

Blizzard -- White Long Day; medium neck; >50% center rot.

Vision -- Yellow Long Day; medium-thick neck; >50% center rot.

*Shasta -- Yellow Long Day; medium neck; good scale; 20% center rot.

**Vaquero -- Yellow Long Day; small tight neck; holding well; very good scale retention (2 to 3dry scales intact) and good scale color in spite of rainy weather: 8 % center rot.

Ole' -- Yellow Long Day; thick neck; >50% center rot.

*El Charro -- Yellow Long Day: medium to thin, good scale retention; tight neck; 10% center rot.

Fury -- Yellow Long Day; medium neck; 30% center rot.

*Viceroy -- Yellow Long Day; medium thin, tight neck; 8% center rot.

*Alabaster -- White Intermediate; few sprouting; tight small neck; fair scale retention; 12% center rot.

*Cimarron -- Yellow Intermediate; flat (Bermuda-like shape) bulb; <5% center rot; some sprouts.

**Sunre 1445 -- Yellow Long Day; tight thin-medium neck; no rot; no sprouting.

*Yula -- Yellow Early Long Day; tight thin neck; 8% center rot.

HM94 -- Yellow Intermediate to Early Long Day; thick to medium neck; >50% center rot.

*Spano -- Yellow Intermediate Day; thin neck; flatter shape than transplanted crop; some sprouting; 8% center rot.

*Riviera -- Yellow Intermediate Day; rot; 10% sprouts; Refined thin neck; Flat to flat-round shape; quality holding well for early maturity variety; 8% center rot.

_____

* = Has clear potential for direct seeded, short term storage production under drip or LEPA.
** = Has clear potential for longer term storage if harvested when mature and before exposure to rainy weather.
*** = Neck diameter is measured at bulb shoulder: Thin neck is 2/8 to 3/8" diameter; Medium neck is 3/8 to 4/8" diameter; Thick neck is >4/8" diameter.

Seed Company Plant Breeders and Seed Consultants

We are grateful to these fine people and their companies for providing superior lines and varieties plus generous funding for our onion cultivar performance trials and demonstrations.

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