

NEW HASS-LIKE AVOCADO CULTIVARS AT MERENSKY TECHNOLOGICAL SERVICES: 2003 PROGRESS REPORT ON THE EVALUATION OF HARVEST AND GEM IN SOUTH AFRICA

S Kremer-Köhne and M L Mokgalabone
Merensky Technological Services, P O Box 14, Duivelskloof 0835
E-mail: sylviak@hansmerensky.co.za

ABSTRACT

In 2003 a fifth crop was evaluated and the cumulative yields (1999-2003) were 181, 113 and 103 t/ha for 'Harvest', 'Gem' and 'Hass', respectively. Cultivars Hass, Harvest and Gem reached picking maturity in June, July and September, respectively. All three cultivars had good fruit quality, and fruit quality problems recorded for 'Harvest' in 2002, did not re-occur in 2003. Further evaluation of these two cultivars is warranted and is being extended to three other South African production regions.

INTRODUCTION

The long term aim of this project is to find a new Hass-like cultivar which consistently bears higher yields than 'Hass', and to extend the 'Hass' season. Therefore, the following new Hass-like cultivars have been evaluated at Westfalia Estate since 1996: Harvest, Gem, Jewel, Sir Prize, Nobel, 8-22-5 and Bonus. Due to low yields, large fruit, colour problems and/or the high incidence of physiological disorders, the evaluation of 'Jewel', 'Nobel', '8-22-5', 'Bonus' and 'Sir Prize' was discontinued after the 2001 season. 'Harvest' and 'Gem', however, out-produced 'Hass' and had good fruit quality (Kremer-Köhne, 2000, 2001 and 2002; Kremer-Köhne & Mokgalabone, 2003). Therefore these two cultivars were further evaluated, and data are updated in this paper.

MATERIALS AND METHODS

The new Hass-like cultivars Harvest and Gem originated from a Californian breeding program (Witney & Martin, 1995) and were top-worked at Westfalia Estate in 1996. For comparison, trees were also top-worked with 'Hass'.

In 2003, fruit were picked on several dates in June through October and fruit size distribution was

determined by taking fruit samples and weighing fruit individually. Data on yield and fruit quality after simulated shipment were collected as described previously (Kremer-Köhne, 1999). Fruit were waxed with Avoshine (Citrashine Pty. Ltd.) and fruit firmness readings were taken with a densimeter (Köhne *et al.*, 1998) before storage and upon removal from cold storage. Black cold and lenticel damage were also evaluated upon removal from cold storage, while skin colour, diseases and physiological disorders were rated when the fruit were eat ripe.

RESULTS

In 2003, 'Harvest', 'Gem' and 'Hass' produced their fifth crop. Cultivars Hass, Harvest and Gem reached picking maturity in June, July and September, respectively. Yields and the peaks of the fruit size distribution are shown in Table 1. The cumulative yield (1999 – 2003) of cultivar Harvest was 75% and 60% higher than that of 'Hass' and 'Gem' respectively. Data on fruit quality after simulated shipment is shown in Table 2 for selected picking dates. All three cultivars had good fruit quality, and fruit quality problems recorded for 'Harvest' in 2002 (Kremer-Köhne & Mokgalabone, 2003), did not re-occur in 2003.

Table 1. Yields (t/ha) and peaks of the fruit size distribution of the new Hass-like cultivars Harvest and Gem at Westfalia Estate (top-worked 1996) for the years 1999 through 2003.

Cultivar	Yield (t/ha) ¹⁾						Count peak ²⁾
	1999	2000	2001	2002	2003	Cumulative	
Harvest	29.2	37.0	52.4	19.3	42.9	180.8	12-16
Gem	11.4	28.2	23.8	27.0	22.8	113.2	12-14
Hass	2.8	20.0	29.7	35.4	15.2	103.1	16

¹⁾ extrapolated to 200 trees/ha

²⁾ based on a 4 kg carton

CONCLUSIONS

The new Hass-like cultivars Harvest and Gem matured later in the year than 'Hass'. 'Harvest' out-produced 'Hass' and 'Gem' by 75% and 60% respectively over the 5-year period 1999-2003. In 2003, all three cultivars had good fruit quality, and fruit quality problems recorded for 'Harvest' in

2002, did not re-occur in 2003. Further evaluation of these two cultivars is warranted and is being extended to three other South African production regions under a new test agreement between SAAGA and the University of California.

Table 2. Postharvest quality of the new Hass-like cultivars Harvest and Gem, compared with the standard 'Hass' after simulated shipment (28 days at 5.5°C) in 2003. Symptoms are presented as average ratings on a scale of 0 (no symptom) to 3 (severe symptom).

Cultivar	Harvest		Gem	Hass		
Date picked	16/07/03	18/09/03	07/10/03	16/07/03	18/09/03	07/10/03
Number of fruit	140	140	140	139	140	140
Densimeter	94.7	94.0	94.1	93.6	93.2	93.5
Evaluation upon removal from cold storage						
Densimeter	90.3	88.1	88.9	84.9	87.1	89.1
Black cold damage	0	0.057	0.050	0	0.021	0.021
Lenticel damage	0.750	0.057	0.457	0.993	0.128	0.157
Evaluation when eat ripe						
Skin colour						
Green/black (%)	89	73	61	100	100	24
Black (%)	11	27	39	0	0	76
Anthraco	0	0	0.035	0	0	0
Stem end rot	0.093	0.028	0	0	0	0
Grey pulp	0.023	0	0	0	0	0
Vascular browning	0.114	0.421	0.050	0.021	0.035	0
Days to ripening	6.0	4.3	5.2	5.0	2.7	6.1

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