

Progress report on the evaluation of the new Hass-like avocado cultivars Harvest and Gem in 2002

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ABSTRACT

In 2002 a fourth crop was evaluated and the cumulative yields (1999-2002) were 138, 90 and 88 t/ha for 'Harvest', 'Gem' and 'Hass', respectively. The new Hass-like cultivars Harvest and Gem matured later in the year than 'Hass'. Fruit quality problems were recorded for the first time in 2002 for 'Harvest', with many fruit having vascular browning. As in previous years 'Gem', however, had good fruit quality. Further testing of these two cultivars is warranted and is to be extended to three other South African production regions in 2003.

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). Therefore these two cultivars were further evaluated, and data are updated in this paper.

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 2002.

Cultivar	Yield (t/ha) ¹⁾					Count peak ²⁾
	1999	2000	2001	2002	Cumulative	
Harvest	29.2	37.0	52.4	19.3	137.9	12-16
Gem	11.4	28.2	23.8	27.0	90.4	12-14
Hass	2.8	20.0	29.7	35.4	87.9	16

¹⁾ extrapolated to 200 trees/ha

²⁾ based on a 4 kg carton

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 2002, fruit were picked on several dates in July through August 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. In addition to the simulated shipment, a test consignment of 'Harvest'

and 'Gem' was exported to Europe on vessel 928, and evaluated by the SAAGA overseas technical officer in Paris in 2002.

RESULTS

In 2002, 'Harvest', 'Gem' and 'Hass' produced their fourth crop. 'Hass' ripened in June through August, while 'Harvest' and 'Gem' ripened in July through August which confirms previous results. Yields and the peaks of the fruit size distribution are shown in Table 1. The cumulative yield (1999 – 2002) of cultivar Harvest was 57% and 53% higher than that of 'Hass' and 'Gem' respectively. Fruit quality after simulated shipment is shown in Table 2. In 2002, fruit quality problems were recorded for the first time for 'Harvest'. Many 'Harvest' fruit had severe vascular browning which was probably caused by low orchard temperatures. Further, a hard tissue layer around the seed was observed in some 'Harvest' fruit. 'Gem', however, had

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 2002. Symptoms are presented as average ratings on a scale of 0 (no symptom) to 3 (severe symptom).

Cultivar	Harvest		Gem		Hass
Date picked	18/07/02	09/08/02	18/07/02	07/08/02	07/08/02
Number of fruit	139	129	140	120	140
Densimeter	n.d.	94.9	n.d.	95.7	93.8
Evaluation upon removal from cold storage					
Densimeter	87.6	85.2	89.6	87.8	83.2
Black cold damage	0	0	0	0	0
Lenticel damage	0.612	0.930	0.657	0.900	0.379
Evaluation when eat ripe					
Skin colour					
Green/black (%)	68	100	42	52	49
Black (%)	32	0	58	48	51
Anthracnose	0	0	0	0	0
Stem-end rot	0	0	0	0	0.007
Grey pulp	0	0.008	0	0.033	0
Vascular browning	1.245	0.566	0.271	0.558	0.136
Days to ripening	3.3	3.6	3.4	4.0	4.0

n.d. = not determined

good fruit quality as in previous years. These postharvest results obtained from the simulated shipment were in agreement with those of the real shipment.

CONCLUSIONS

The new Hass-like cultivars Harvest and Gem matured later in the year than 'Hass'. 'Harvest' out-produced 'Hass' and 'Gem' by 57% and 53% respectively over the 4-year period 1999-2002. In 2002, however, 'Harvest' was affected by fruit quality problems for the first time while 'Gem', as in previous years, had good fruit quality. The potentially inferior fruit quality of 'Harvest' is a major drawback on the excellent yields. Further testing of these two cultivars is warranted and is to be extended to three other South African production regions in 2003.

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