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#### Use of Simple Sequence Repeats (SSR) to Determine Incidence and Effectiveness of Selfand Cross-pollinated Avocado Fruit in Southern California

Year 1 of 3 - End of Year Report

Project Leaders: T. L. Davenport, Z. Ying Assisted by T. Zhang and M. Bartels email: tldav@ifas.ufl.edu University of Florida, IFAS Tropical Research and Education Center 18905 SW 280 St. Homestead FL 33031 & R.J. Schnell Assisted by C. Olano USDA/ARS National Germplasm Repository for Tropical/Subtropical Fruit Crops 13601 Old Cutler Rd. Miami, FL 33158

#### **Benefits to the Industry**

SSR technology is a powerful tool to determine the pollen parents of avocado progeny of known maternal genetic background. The various SSR markers we have selected for use to determine pollen parents are powerfully informative for the range of cross pollinizing cultivars available in the selected orchards and, therefore, highly capable of discerning the specific pollen parent of each sampled fruit. The cultivars included in the study are Bacon, Ettinger, 'Fuerte, Harvest, Hass, Lamb Hass, Marvel, Nobel, SirPrize and Zutano. This, coupled with the opportunity to sample fruits in replicated experimental plots comparing cross and self pollinations in trees located various distances from pollinizing cultivars, and comparing retention of cross- vs. self-pollinated fruit over the development season makes this endeavor one of the most comprehensive ever preformed on avocado. As a result of this three-year suite of studies, avocado growers and advisors will, for the first time, unequivocally know the impact of interplanting complimentary cultivars, and how these ultimately influence the crop.

#### Objectives

The specific primary objective of this research is to determine the pollen parent of each fruit sampled early in fruit development and in those sampled late in fruit development at maturity. Secondarily with this knowledge applied to the population of fruits sampled from trees in experimental plots described below, the objectives include:

1. Estimate the proportions of successful self-pollinations with 'Hass' and cross pollinations with specific cultivars that occurred in the individual rows of various proximity to cross-pollinizing cultivars.

- 2. Determine if the proportion of outcrossed fruit increases during maturity due to preferential abscission of self-pollinated fruit as has been found for certain pollen parents of 'Hass'.
- 3. Determine if there is preferential retention of cross-pollinated fruit pollinated by a specific cultivar during maturation.

# Summary

# Fruit Collections

The experiments were conducted at the Debusschere orchard located on the coastal plain near Camarillo in Ventura County on land managed by Somis Pacific Ag. Company near Somis in Ventura County.

'Hass' fruits were first harvested prior to CAC funding on May 27, 2003 when they were about marble size. At the Debusschere orchard, approximately 20 fruits were sampled from each of ten tree rows across a block of trees interplanted every 6 rows with the cultivars listed above and nearby Lamb Hass. All of these fruit were Fed Exed to Homestead for SSR analysis. Unfortunately, the shipment arrived three days late with many of the fruit being ruined, perhaps due to in-flight chilling damage. We were able to get some usable embryo samples from these fruit. The early-harvest Debusschere fruit are still being analyzed in hopes of getting as much data as possible. Sam McIntyre, Somis pacific, later successfully sent samples of marble-sized fruit taken from trees located in the row next to the 'Bacon' row of trees,100, 200, and 300 feet away from the Bacon's in the solid block of 'Hass'.

Approximately 20 fruits per row were later harvested near maturity from the Debusschere orchard on October 1, 2003. All fruit arrived safely and were analyzed to determine the pollen parent of each fruit according to protocols. Results are presented in Table 1.

We have again sampled 20 fruits per row of marble sized fruit from the Debusschere orchard following this flowering season. They are currently being analyzed, and preliminary information obtained on some rows is included in Table 2. Sam McIntyre has recently sent a sample of marble sized fruit from this season's flowering. They have been analyzed and results from both years, 2003 and 2004, are presented in Table 3.

# **DNA Extraction and SSR Analysis:**

We used 39 SSR primer pairs and genotyped ten of the most common pollinizing cultivars interplanted in the two orchards. Thirteen primer pairs (15 SSR markers) performed well and produced a total of 90 informative alleles with an average of 6.0 alleles per marker. In most cases, three selected primer pairs were sufficient to determine the paternity of 'Hass' fruits.

Prior to analyzing any fruit, DNA was isolated from the leaves of 'Bacon', 'Ettinger', 'Fuerte', 'Harvest', 'Hass', 'Lamb Hass', 'Marvel', 'Nobel', 'SirPrize', and 'Zutano' using CTAB method

(Murray and Thompson, 1980). These were used to genotype the ten cultivars with 39 SSR primer pairs (Mhameed et al., 1997; Schnell et al., 2003). DNA was isolated from embryos using REDExtract-N-Amp Seed PCR Kit (Sigma, St. Louis, MO) and used for paternity analysis with 3 to 5 SSR primer pairs. PCR was performed in multiplex reactions on DNA from each sample in 5  $\mu$ l solution volumes containing each component at concentrations based on manufacturer's instructions (REDExtract-N-Amp Seed PCR Kit manual, Sigma, St. Louis, MO) excepting each forward primer labeled with different fluorescent dyes and adding a PCR additive, betaine, at 1  $\mu$ mol/ $\mu$ l. Conditions for thermocycling were 94°C for 4 min, 35 cycles of 94°C for 30 sec, 43-45°C for 1 min (depended on primers) and 72°C for 1 min, and a final extension at 72°C for 7 min. PCR products were separated by capillary electrophoresis on an ABI 3100 genetic analyzer (Appied Biosystems Inc., Foster City, CA) following the procedure described by Meerow et al. (2002). Raw microsatellite data were analyzed using Genotyper 2.1 software (Appied Biosystems Inc., Foster City, CA). Maternal alleles of each embryo were confirmed by comparison with the 'Hass' genotype. Paternity was determined by matching the paternal alleles with the genotype of pollinizing cultivar.

#### **Results and Discussion**

Pollen distribution, as determined in nearly mature fruit harvested on October 1, 2003 in the Debusschere orchard, was widespread throughout the orchard as evidenced by individual row data in Table 1. Most complimentary B-type cultivars were effective in cross pollination of 'Hass' when such trees were planted in the same row as the 'Hass'. Cross pollination, however, dropped off dramatically in rows further displaced from the interplanted rows. 'Zutano' was the most effective in cross pollination followed by 'Ettinger' and 'Bacon'. Overall average pollination rates throughout the orchard was topped by self pollination within 'Hass' at 30% followed by 'Zutano' at 22%, 'Ettinger' at 18%, 'Bacon' at 10% and the others at lower levels.

The pollen parents of fruit harvested on June 13 of this year are displayed in Table 2. We report information on fruit collected from one of two rows of trees in and next to those interplanted with 'Lamb Has's because we noticed 'Lamb Has's offspring in portions of the interplanted orchard block (Table 1). Little can be said about this year's sampling of marble sized fruit until all of the data analyses are in. It is also hoped that sufficient numbers of the marble sized fruit sampled last year can be successfully analyzed for comparison with the mature fruit data reported in Table 1. This comparison will hopefully address the question of preferred retention of cross pollinated fruit over self-pollinated fruit.

Results obtained from fruit sampled from a solid block of 'Hass' bordered on one side with one row of 'Bacon' trees near Somis is presented in Table 3a for 2003 and Table 3b for 2004. Occurrence of cross pollinizers other than 'Bacon' is apparent in both years. These may be complimentary cultivars that were mistaken for 'Hass' and interplanted with them when the orchard was planted in 1979. The alleles suggest 'Zutano' as a likely candidate and a less likely probability of 'Ettinger' since I do not think it was available then, but cultivars other than these may have alleles of the same size as well. Clearly self pollination dominates, and 'Bacon' is not far reaching in its distribution in the solid block.

# Conclusion

These data are only the first of three years we have proposed are needed to study some of the mechanics and events in avocado pollination. This year's data, however, suggest that self pollination is a major component of avocado pollination although pollinizer varieties significantly contribute to fruit pollination and fruit set through harvest. 'Zutano' appears at present to be the most effective in pollen distribution across the orchard block studied..

# References

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Pollinizer					Etti	nger											No	obel						
Mary Lou #		12	1	24		1		3		5		7		9		2	4		6		8		23	
Orig. Row		27		28	1	29	í.	30	(	31		32		33	÷	34		35		36		37	3	38
N. Row #		1		2		3		4		5		6		7		8		9		0		11		12
Fruits	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total	20	100	20	100	20	100	19	100	19	100	18	100	15	100	2	100	18	100	20	100	19	100	19	100
Zutano	4	20.0	2	10.0	1	5.0	1	5.3	1	5.3	7	38.9	7	46.7	0	0.0	1	5.6	4	20.0	6	31.6	0	0.0
Hass	3	15.0	2	10.0	0	0.0	2	10.5	10	52.6	5	27.8	4	26.7	1	50.0	5	27.8	10	50.0	9	47.4	7	36.8
Fuerte	0	0.0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0.0	1	5.6	0	0.0	1	5.3	1	5.3
Ettinger	12	60.0	16	80.0	19	95.0	15	78.9	4	21.1	5	27.8	3	20.0	0	0.0	6	33.3	2	10.0	2	11.8	4	21.1
Bacon	1	5.0	0	0.0	0	0.0	0	0.0	2	10.5	0	0.0	1	6.7	1	50.0	4	22.2	0	0.0	0	0.0	4	21.1
SirPrize	0	0.0	0	0.0	0	0.0	0	0.0	1	5.3	0	0.0	0	0.0	0	0.0	0	0.0	1	5.0	1	6.0	2	10.5
Marvel	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	5.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	5.3
Harvest	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Nobel	0	0.0	0	0.0	0	0.0	0	0.0	1	5.3	0	0.0	0	0.0	0	0.0	1	5.6	1	5.0	0	0.0	0	0.0
LambHass	0	0.0	0	0.0	0	0.0	1	5.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	10.0	0	0.0	0	0.0
Pollinizer					Ма	arvel											На	rvest						
Pollinizer Mary Lou #		41		39	Ma	arvel 37		35	4	40		38		34	4	42	Ha	rvest 44	۷	16		43	2	45
Pollinizer Mary Lou # Orig. Row		41		39 28	Ma	arvel 37 29		35 30	4	40 31		38 32		34 33		42 34	Ha	rvest 44 35		16 36		43 37		45 38
Pollinizer Mary Lou # Orig. Row S. Row #		41 27 1		39 28 2	Ma	arvel 37 29 3		35 30 4		40 31 5		38 32 6		34 33 7		42 34 8	Ha	rvest 44 35 9		46 36 10		43 37 11		45 38 12
Pollinizer Mary Lou # Orig. Row S. Row # Fruits	#	41 27 1 %	#	39 28 2 %	Ма (2 ///////////////////////////////////	arvel 37 29 3 %	#	35 30 4 %	#	40 31 5 %	#	38 32 6 %	#	34 33 7 %	#	42 34 8 %	Ha ; ;	rvest 44 35 9 %	  #	46 36 10 %	#	43 37 11 %	#	45 38 12 %
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total	# 18	41 27 1 % 100	# 18	39 28 2 % 100	Ma 2 # 18	arvel 37 29 3 % 100	# 17	35 30 4 % 100	# 20	40 31 5 % 100	# 11	38 32 6 % 100	; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	34 33 7 % 100	# 19	42 34 8 % 100	Ha ; ; ; ; ; ; ; ; ;	rvest 44 35 9 % 100	2 2 7 4 15	46 36 10 % 100	# 14	43 37 11 % 100	# 10	45 38 12 % 100
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano	# 18 5	41 27 1 % 100 27.8	# 18 1	39 28 2 % 100 5.6	Ma 2 # 18 1	arvel 37 29 3 % 100 5.6	# 17 1	35 30 4 % 100 5.9	# 20 2	40 31 5 % 100 10.0	# 11 1	38 32 6 % 100 9.1	# 19 1	34 33 7 % 100 5.3	# 19 1	42 34 8 % 100 5.3	Ha ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( (	rvest 44 35 9 % 100 0.0	2 3 7 4 15 1	46 36 10 % 100 6.7	# 14 1	43 37 11 % 100 7.1	# 10 0	45 38 12 % 100 0.0
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano Hass	# 18 5 4	41 27 1 % 100 27.8 22.2	# 18 1 4	39 28 2 % 100 5.6 22.2	Ma 2 # 18 1 7	arvel 37 29 3 % 100 5.6 38.9	# 17 1 4	35 30 4 % 100 5.9 23.5	# 20 2 9	40 31 5 % 100 10.0 45.0	# 11 1 7	38 32 6 % 100 9.1 63.6	# 19 15	34 33 7 % 100 5.3 78.9	# 19 14	42 34 8 % 100 5.3 73.7	Ha ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	rvest 44 35 9 % 100 0.0 47.4	2 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	46 36 10 % 100 6.7 53.3	# 14 10	43 37 11 % 100 7.1 71.4	# 10 0 3	45 38 12 % 100 0.0 30.0
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano Hass Fuerte	# 18 5 4 0	41 27 1 % 100 27.8 22.2 0.0	# 18 1 4 0	39 28 2 3 100 5.6 22.2 0.0	Ma 22 # 18 1 7 0	arvel 37 29 3 3 100 5.6 38.9 0.0	# 17 1 4 0	35 30 4 100 5.9 23.5 0.0	# 20 2 9 2	40 31 5 % 100 10.0 45.0 10.0	# 11 1 7 0	38 32 6 100 9.1 63.6 0.0	# 19 15 0	34 33 7 % 100 5.3 78.9 0.0	# 19 14 0	42 34 8 100 5.3 73.7 0.0	Ha ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	rvest 44 35 9 % 100 0.0 47.4 0.0	# 15 1 8 1	46 36 10 100 6.7 53.3 6.7	# 14 10 0	43 37 11 % 100 7.1 71.4 0.0	# 10 0 3 0	45 38 12 % 100 0.0 30.0 0.0
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano Hass Fuerte Ettinger	# 18 5 4 0 2	41 27 1 % 100 27.8 22.2 0.0 11.1	# 18 1 4 0 5	39 28 2 % 100 5.6 22.2 0.0 27.8	Ma 2 # 18 1 7 0 7	arvel 37 29 3 % 100 5.6 38.9 0.0 38.9	# 17 1 4 0 8	35 30 4 % 100 5.9 23.5 0.0 47.1	# 20 2 9 2 2 2	40 31 5 % 100 10.0 45.0 10.0 10.0	# 11 1 7 0 1	38 32 6 % 100 9.1 63.6 0.0 9.1	# 19 15 0 0	34 33 7 % 100 5.3 78.9 0.0 0.0	# 19 1 14 0 2	42 34 8 % 100 5.3 73.7 0.0 10.5	Ha 4 19 0 9 0 1	rvest 44 35 9 % 100 0.0 47.4 0.0 5.3	# 15 1 8 1 0	46 36 10 100 6.7 53.3 6.7 0.0	# 14 10 0 0	43 37 11 % 100 7.1 71.4 0.0 0.0	# 10 0 3 0 0	45 38 12 % 100 0.0 30.0 0.0 0.0
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano Hass Fuerte Ettinger Bacon	# 18 5 4 0 2 4	41 27 1 % 100 27.8 22.2 0.0 11.1 22.2	# 18 1 4 0 5 2	39 28 2 100 5.6 22.2 0.0 27.8 11.1	Ma 22 # 18 1 7 0 7 0	arvel 37 29 3 3 100 5.6 38.9 0.0 38.9 0.0	# 17 1 4 0 8 1	35 30 4 100 5.9 23.5 0.0 47.1 5.9	# 20 2 9 2 2 2 2 1	40 31 5 100 10.0 45.0 10.0 10.0 10.0 5.0	# 11 1 7 0 1 0	38 32 6 100 9.1 63.6 0.0 9.1 0.0	# 19 15 0 0 0	34 33 7 100 5.3 78.9 0.0 0.0 0.0 0.0	# 19 14 0 2 0	42 34 8 % 100 5.3 73.7 0.0 10.5 0.0	Ha # 19 0 9 0 1 3	rvest 44 35 9 % 100 0.0 47.4 0.0 5.3 15.8	# 15 1 8 1 0 2	46 36 100 6.7 53.3 6.7 0.0 13.3	# 14 10 0 0 0	43 37 11 % 100 7.1 71.4 0.0 0.0 0.0 0.0	# 10 0 3 0 0 0 3	45 38 12 30.0 30.0 0.0 0.0 30.0 30.0
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano Hass Fuerte Ettinger Bacon SirPrize	# 18 5 4 0 2 4 0	41 27 1 % 100 27.8 22.2 0.0 11.1 22.2 0.0	# 18 1 4 0 5 2 1	39 28 2 100 5.6 22.2 0.0 27.8 11.1 5.6	Ma 22 18 18 1 7 0 7 0 0 0	arvel 37 29 3 (100 5.6 38.9 0.0 38.9 0.0 0.0 0.0	# 17 1 4 0 8 1 1	35 30 4 100 5.9 23.5 0.0 47.1 5.9 5.9	# 20 2 9 2 2 2 1 0	40 31 5 100 10.0 45.0 10.0 10.0 5.0 0.0	# 11 1 7 0 1 0 1 0	38 32 6 100 9.1 63.6 0.0 9.1 0.0 9.1	# 19 15 0 0 0 0 1	34 33 7 100 5.3 78.9 0.0 0.0 0.0 0.0 5.3	# 19 1 14 0 2 0 0	42 34 8 100 5.3 73.7 0.0 10.5 0.0 5.3	Ha # 19 0 9 0 1 3 5	rvest 44 35 9 % 100 0.0 47.4 0.0 5.3 15.8 26.3	# 15 1 8 1 0 2 0	46 36 100 6.7 53.3 6.7 0.0 13.3 0.0	# 14 10 0 0 0 0	43 37 11 % 100 7.1 71.4 0.0 0.0 0.0 0.0 0.0	# 10 0 3 0 0 0 3 3 3	45 38 12 % 100 0.0 30.0 0.0 0.0 30.0 30.0 30.0
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano Hass Fuerte Ettinger Bacon SirPrize Marvel	# 18 5 4 0 2 4 0 0 0	41 27 1 % 100 27.8 22.2 0.0 11.1 22.2 0.0 0.0 0.0	# 18 1 4 0 5 2 1 1 0	39 28 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Ma 22 18 18 1 7 0 7 0 0 0 3	arvel 37 29 3 100 5.6 38.9 0.0 38.9 0.0 38.9 0.0 16.7	# 17 1 4 0 8 1 1 1 0	35 30 4 100 5.9 23.5 0.0 47.1 5.9 5.9 0.0	# 20 2 9 2 2 2 1 0 1	40 31 5 100 10.0 45.0 10.0 10.0 5.0 0.0 5.0	# 11 1 7 0 1 0 1 1 0	38 32 6 100 9.1 63.6 0.0 9.1 0.0 9.1 9.1	# 19 15 0 0 0 1 1 1	34 33 7 % 100 5.3 78.9 0.0 0.0 0.0 0.0 5.3 5.3	# 19 1 14 0 2 0 1 1 1	42 34 8 % 100 5.3 73.7 0.0 10.5 0.0 5.3 5.3	Ha # 19 0 9 0 1 3 5 0	rvest 44 35 9 % 100 0.0 47.4 0.0 5.3 15.8 26.3 0.0	# 15 1 8 1 0 2 0 0	46 36 100 6.7 53.3 6.7 0.0 13.3 0.0 0.0	# 14 10 0 0 0 0 0	43 37 11 % 100 7.1 71.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0	# 10 0 3 0 0 0 3 3 3 0	45 38 12 % 100 0.0 30.0 0.0 30.0 30.0 30.0 30.0
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano Hass Fuerte Ettinger Bacon SirPrize Marvel Harvest	# 18 5 4 0 2 4 0 0 0 0 0	41 27 1 % 100 27.8 22.2 0.0 11.1 22.2 0.0 0.0 0.0 0.0	# 18 1 4 0 5 2 1 0 0 0	39 28 2 % 100 5.6 22.2 0.0 27.8 11.1 5.6 0.0 0.0	Ma # 18 1 7 0 7 0 7 0 0 3 0	arvel 37 29 3 (100 5.6 38.9 0.0 38.9 0.0 38.9 0.0 16.7 0.0	# 17 1 4 0 8 1 1 1 0 0 0	35 30 4 100 5.9 23.5 0.0 47.1 5.9 5.9 0.0 0.0 0.0	# 20 2 9 2 2 2 1 0 1 0	40 31 5 % 100 10.0 45.0 10.0 10.0 5.0 0.0 5.0 0.0	# 11 1 7 0 1 0 1 1 0 1 0	38 32 6 100 9.1 63.6 0.0 9.1 0.0 9.1 9.1 9.1 0.0	# 19 15 0 0 0 1 1 1 0	34 33 7 100 5.3 78.9 0.0 0.0 0.0 0.0 5.3 5.3 0.0	# 19 14 0 2 0 1 1 1 0	42 34 8 % 100 5.3 73.7 0.0 10.5 0.0 5.3 5.3 0.0	Ha # 19 0 9 0 1 3 5 0 0 0	rvest 44 35 9 100 0.0 47.4 0.0 5.3 15.8 26.3 0.0 0.0	# 15 1 8 1 0 2 0 0 0 1.0	46 36 100 6.7 53.3 6.7 0.0 13.3 0.0 13.3 0.0 0.0 6.7	# 14 10 0 0 0 0 0 0 0	43 37 11 % 100 7.1 71.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	# 10 0 3 0 0 3 3 3 0 0 1	45 38 12 % 100 0.0 30.0 30.0 30.0 30.0 30.0 30.0 10.0
Pollinizer Mary Lou # Orig. Row S. Row # Fruits Total Zutano Hass Fuerte Ettinger Bacon SirPrize Marvel Harvest Nobel	# 18 5 4 0 2 4 0 0 0 0 0 0 0	41 27 1 % 100 27.8 22.2 0.0 11.1 22.2 0.0 0.0 0.0 0.0 0.0 0.0	# 18 1 4 0 5 2 1 0 0 0 3	39 28 2 % 100 5.6 22.2 0.0 27.8 11.1 5.6 0.0 0.0 16.7	Ma 2 # 18 1 7 0 7 0 7 0 0 3 0 0 0 0	arvel 37 29 3 (100 5.6 38.9 0.0 38.9 0.0 38.9 0.0 16.7 0.0 16.7 0.0 0.0	# 17 1 4 0 8 1 1 1 0 0 0 0	35 30 4 % 100 5.9 23.5 0.0 47.1 5.9 5.9 0.0 0.0 0.0 0.0	# 20 2 9 2 2 2 1 0 0 1 0 0	40 31 5 % 100 45.0 10.0 10.0 5.0 0.0 5.0 0.0 0.0 0.0	# 11 1 7 0 1 0 1 1 0 1 1 0 0	38 32 6 100 9.1 63.6 0.0 9.1 0.0 9.1 9.1 0.0 0.0	# 19 15 0 0 0 1 1 1 0 0 0	34 33 7 100 5.3 78.9 0.0 0.0 0.0 5.3 5.3 0.0 0.0 0.0	# 19 14 0 2 0 1 1 1 0 0	42 34 8 100 5.3 73.7 0.0 10.5 0.0 5.3 5.3 0.0 0.0 0.0	Ha # 19 0 9 0 1 3 5 0 0 0 0	rvest 44 35 9 (100 0.0 47.4 0.0 5.3 15.8 26.3 0.0 0.0 0.0 0.0	2 4 15 1 8 1 0 2 0 0 0 0 1.0 0	H6 36 100 6.7 53.3 6.7 0.0 13.3 0.0 13.3 0.0 0.0 6.7 0.0	# 14 10 0 0 0 0 0 0 0 0 0 0 0	43 37 11 % 100 7.1 71.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	# 10 0 3 0 0 3 3 3 0 1 1 0	45 38 12 % 100 0.0 30.0 30.0 30.0 30.0 30.0 30.0 10.0 1

Table 1a. Numbers and proportions of nearly mature 'Hass' fruit harvested on October 1, 2003 that were pollinated by all potential pollen donors in the western half of the Debusschere orchard plot. Table representing the eastern half of the plot is shown in table 1b.

				Fι	ierte											Zu	tano									
1	21		19		22		20		18		10		14		16		11		13		15		17			
	39	4	40		41		42	4	43	4	44		45	4	46		47	4	48	4	49	ļ	50			
	13		14		15		16		17		18		19	1	20		21	-	22	1	23	1	24	S	um	
#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	Fruits
18	100	19	100	20	100	19	100	17	100	18	100	20	100	19	100	17	100	19	100	14	100	12	100	421	100	Total
3	16.7	3	15.8	6	30.0	0	0.0	5	29.4	10	55.6	16	80.0	10	52.6	15	88.2	16	84.2	8	57.1	7	58.3	133	34.0	Zutano
3	16.7	4	21.1	3	15.0	4	21.1	2	11.8	6	33.3	1	5.0	1	5.3	1	5.9	1	5.3	3	21.4	1	8.3	88	22.5	Hass
5	27.8	5	26.3	8	40.0	1	5.3	1	5.9	2	11.1	0	0.0	2	10.5	0	0.0	1	5.3	0	0.0	0	0.0	28	7.2	Fuerte
1	5.6	2	10.5	1	5.0	0	0.0	1	5.9	0	0.0	2	10.0	1	5.3	0	0.0	1	5.3	2	14.3	1	8.3	100	25.6	Ettinger
1	5.6	0	0.0	0	0.0	3	15.8	1	5.9	0	0.0	0	0.0	2	10.5	1	5.9	0	0.0	0	0.0	2	16.7	23	5.9	Bacon
2	11.1	0	0.0	0	0.0	2	10.5	4	23.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	7.1	0	0.0	14	3.6	SirPrize
0	0.0	0	0.0	0	0.0	2	10.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	1.0	Marvel
0	0.0	0	0.0	0	0.0	1	5.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3	Harvest
0	0.0	0	0.0	0	0.0	0	0.0	1	5.9	0	0.0	0	0.0	1	1.3	0	0.0	0	0.0	0	0.0	0	0.0	5	1.3	Nobel
3	16.7	5	26.3	2	10.0	6	31.6	2	11.8	0	0.0	1	5.0	2	10.5	0	0.0	0	0.0	0	0.0	0	0.0	24	6.1	L.Hass
		1										-				0.	<u>.</u>									
				Ba	acon											Sir	Prize			_	10					
	47		32	Ba	acon 30		28		26		33		31		29	Sir	Prize		25		48		36			
	47		32 40	Ba	acon 30 41		28	2	26		33		31 45		29 46	Sir	Prize 27 47		25 48		48		36			
	47 39 13		32 40 14	Ba	acon 30 41 15		28 42 16	-	26 43 17		33 44 18		31 45 19		29 46 20	Sir	Prize 27 47 21		25 48 22		48 49 23		36 50 24	Si	um	<b>.</b>
#	47 39 13 %	#	32 40 14 %	Ba	acon 30 41 15 %	#	28 42 16 %	#	26 43 17 %	#	33 44 18 %	#	31 45 19 %	#	29 46 20 %	Sir	Prize 27 47 21 %	#	25 48 22 %	#	48 49 23 %	#	36 50 24 %	St #	um	Fruits
# 17	47 39 13 % 100	# 20	32 40 14 % 100	Ba # 15	acon 30 41 15 % 100	# 18	28 42 16 % 100	# 18	26 43 17 % 100	# 17	33 44 18 % 100	#	31 45 19 % 100	# 20	29 46 20 % 100	Sir 	Prize 27 47 21 % 100	# 20	25 48 22 % 100	# 19	48 49 23 % 100	# 19	36 50 24 % 100	St # 420	um % 100	Fruits Total
# 17 4	47 39 13 % 100 23.5	# 20 1	32 40 14 % 100 5.0	Ba # 15 2	acon 30 41 15 % 100 13.3	# 18 3	28 42 16 % 100 16.7	# 18 4	26 43 17 % 100 22.2	# 17 2	33 44 18 % 100 11.8	# 19 1	31 45 19 % 100 5.3	# 20 0	29 46 20 % 100 0.0	Sir # 20 3	Prize 27 47 21 % 100 15.0	# 20 5	25 48 22 % 100 25.0	# 19 2	48 49 23 % 100 10.5	# 19 7	36 50 24 % 100 36.8	St # 420 49	um % 100 11.6	Fruits Total Zutano
# 17 4 3	47 39 13 % 100 23.5 17.6	# 20 1 1	32 40 14 % 100 5.0 5.0	Ba # 15 2 1	acon 30 41 15 % 100 13.3 6.7	# 18 3 9	28 42 16 % 100 16.7 50.0	# 18 4 9	26 43 17 % 100 22.2 50.0	# 17 2 7	33 44 18 % 100 11.8 41.2	# 19 10	31 45 19 % 100 5.3 52.6	# 20 0 7	29 46 20 % 100 0.0 35.0	Sir # 20 3 12	Prize 27 47 21 % 100 15.0 60.0	# 20 5 5	25 48 22 % 100 25.0 25.0	# 19 2 6	48 49 23 % 100 10.5 31.6	# 19 7 4	36 50 24 % 100 36.8 21.1	50 # 420 49 168	um % 100 11.6 39.6	Fruits Total Zutano Hass
# 17 4 3 0	47 39 13 % 100 23.5 17.6 0.0	# 20 1 1 1	32 40 14 100 5.0 5.0 5.0	Ba # 15 2 1 1	acon 30 41 15 % 100 13.3 6.7 6.7	# 18 3 9 0	28 42 16 % 100 16.7 50.0 0.0	# 18 4 9 0	26 43 17 % 100 22.2 50.0 0.0	# 17 2 7 0	33 44 18 % 100 11.8 41.2 0.0	# 19 10 0	31 45 19 % 100 5.3 52.6 0.0	# 20 0 7 1	29 46 20 % 100 0.0 35.0 5.0	Sir # 20 3 12 0	Prize 27 47 21 % 100 15.0 60.0 0.0	# 20 5 5 0	25 48 22 % 100 25.0 25.0 0.0	# 19 2 6 0	48 49 23 100 10.5 31.6 0.0	# 19 7 4 0	36 50 24 100 36.8 21.1 0.0	St # 420 49 168 6	um % 100 11.6 39.6 1.4	Fruits Total Zutano Hass Fuerte
# 17 4 3 0	47 39 13 % 100 23.5 17.6 0.0 5.9	# 20 1 1 1 1 0	32 40 14 % 100 5.0 5.0 5.0 0.0	Ba # 15 2 1 1 2	acon 30 41 15 % 100 13.3 6.7 6.7 13.3	# 18 3 9 0 1	28 42 16 % 100 16.7 50.0 0.0 5.6	# 18 4 9 0 0	26 43 17 % 100 22.2 50.0 0.0 0.0	# 17 2 7 0 4	33 44 18 % 100 11.8 41.2 0.0 23.5	# 19 10 0 4	31 45 19 % 100 5.3 52.6 0.0 21.1 125	# 20 0 7 1 4	29 46 20 % 100 0.0 35.0 20.0 20.0	Sir # 20 3 12 0 1	Prize 27 47 21 100 15.0 60.0 0.0 5.0	# 20 5 5 0 5	25 48 22 % 100 25.0 25.0 0.0 25.0	# 19 2 6 0 3	48 49 23 100 10.5 31.6 0.0 15.8	# 19 7 4 0 1	36 50 24 100 36.8 21.1 0.0 5.3	Si # 420 49 168 6 54	um % 100 11.6 39.6 1.4 12.7	Fruits Total Zutano Hass Fuerte Ettinger
# 17 4 3 0 1 8	47 39 13 % 100 23.5 17.6 0.0 5.9 47.1	# 20 1 1 1 1 0 13	32 40 14 % 100 5.0 5.0 5.0 0.0 65.0	Ba # 15 2 1 1 2 7	acon 30 41 15 % 100 13.3 6.7 6.7 13.3 46.7	# 18 3 9 0 1 1 4	28 42 16 % 100 16.7 50.0 0.0 5.6 22.2	# 18 4 9 0 0 0	26 43 17 % 100 22.2 50.0 0.0 0.0 0.0 5.6	# 17 2 7 0 4 1	33 44 18 % 100 11.8 41.2 0.0 23.5 5.9	# 19 10 0 4 2	31 45 19 % 100 5.3 52.6 0.0 21.1 10.5	# 20 0 7 1 4 1	29 46 20 % 100 0.0 35.0 5.0 20.0 5.0	Sir # 20 3 12 0 1 0	Prize 27 47 21 % 100 15.0 60.0 0.0 5.0 0.0 0.0	# 20 5 5 0 5 1	25 48 22 % 100 25.0 25.0 0.0 25.0 25.0 25.0	# 19 2 6 0 3 1	48 49 23 100 10.5 31.6 0.0 15.8 5.3	# 19 7 4 0 1 1 4	36 50 24 % 100 36.8 21.1 0.0 5.3 21.1	Si # 420 49 168 6 54 59 20	um % 100 11.6 39.6 1.4 12.7 13.9	Fruits Total Zutano Hass Fuerte Ettinger Bacon
# 17 4 3 0 1 8 0	47 39 13 % 100 23.5 17.6 0.0 5.9 47.1 0.0	# 20 1 1 1 1 0 13 1	32 40 14 5.0 5.0 5.0 5.0 65.0 65.0 0.0	Ba # 15 2 1 1 2 7 0	acon 30 41 15 % 100 13.3 6.7 6.7 13.3 46.7 0.0	# 18 3 9 0 1 4 1	28 42 16 % 100 16.7 50.0 0.0 5.6 22.2 5.6 22.2	# 18 4 9 0 0 0 1 4	26 43 17 % 100 22.2 50.0 0.0 0.0 5.6 22.2	# 17 2 7 0 4 1 2	33 44 18 % 100 11.8 41.2 0.0 23.5 5.9 11.8 0.0	# 19 10 0 4 2 1	31 45 19 % 100 5.3 52.6 0.0 21.1 10.5 5.3	# 20 0 7 1 4 1 5	29 46 20 	Sir # 20 3 12 0 1 0 1 0 4	Prize 27 47 21 % 100 15.0 60.0 0.0 5.0 0.0 20.0	# 20 5 5 5 0 5 1 4	25 48 22 % 100 25.0 25.0 25.0 25.0 25.0 5.0 20.0	# 19 2 6 0 3 1 3	48 49 23 100 10.5 31.6 0.0 15.8 5.3 15.8 5.3	# 19 7 4 0 1 1 4 0	36 50 24 100 36.8 21.1 0.0 5.3 21.1 0.0	50 # 420 49 168 6 54 59 38 2	um % 100 11.6 39.6 1.4 12.7 13.9 9.0	Fruits Total Zutano Hass Fuerte Ettinger Bacon SirPrize
# 17 4 3 0 1 8 0 1	47 39 13 % 100 23.5 17.6 0.0 5.9 47.1 0.0 5.9	# 20 1 1 1 1 0 13 1 0 0	32 40 14 % 100 5.0 5.0 5.0 65.0 65.0 5.0 0.0	Ba # 15 2 1 1 2 7 0 0 0	acon 30 41 15 % 100 13.3 6.7 6.7 13.3 46.7 0.0 0.0	# 18 3 9 0 1 1 4 1 0 0	28 42 16 % 100 16.7 50.0 0.0 5.6 22.2 5.6 0.0	# 18 4 9 0 0 0 0 1 4 0 0	26 43 17 % 100 22.2 50.0 0.0 0.0 5.6 22.2 0.0	# 17 2 7 0 4 1 2 0	33 44 18 % 100 11.8 41.2 0.0 23.5 5.9 11.8 0.0	# 19 10 0 4 2 1 0 0	31 45 19 % 100 5.3 52.6 0.0 21.1 10.5 5.3 0.0	# 20 0 7 1 4 1 5 0	29 46 20 % 100 0.0 35.0 5.0 20.0 5.0 25.0 0.0	Sir # 20 3 12 0 1 0 1 0 4 0	Prize 27 47 21 100 15.0 60.0 0.0 5.0 0.0 20.0 0.0 20.0	# 20 5 5 5 0 5 1 4 0 0	25 48 22 % 100 25.0 25.0 25.0 25.0 25.0 25.0 20.0 20	# 19 2 6 0 3 1 3 1 3	48 49 23 100 10.5 31.6 0.0 15.8 5.3 15.8 5.3	# 19 7 4 0 1 1 4 0 0	36 50 24 100 36.8 21.1 0.0 5.3 21.1 0.0 0.0	50 # 420 49 168 6 54 59 38 9 9	um % 100 11.6 39.6 1.4 12.7 13.9 9.0 2.1	Fruits Total Zutano Hass Fuerte Ettinger Bacon SirPrize Marvel
# 17 4 3 0 1 8 0 1 0 0	47 39 13 % 100 23.5 17.6 0.0 5.9 47.1 0.0 5.9 0.0 0.0	# 20 1 1 1 0 13 1 0 2 2	32 40 14 % 100 5.0 5.0 5.0 65.0 65.0 65.0 0.0 0.0 10.0	Ba # 15 2 1 1 2 7 0 0 0 0	acon 30 41 15 % 100 13.3 6.7 6.7 13.3 46.7 0.0 0.0 0.0 0.0	# 18 3 9 0 1 1 4 1 0 0	28 42 16 % 100 16.7 50.0 0.0 5.6 22.2 5.6 0.0 0.0 0.0	# 18 4 9 0 0 0 1 4 0 0 0	26 43 17 % 100 22.2 50.0 0.0 0.0 5.6 22.2 0.0 0.0 0.0 0.0	# 17 2 7 0 4 1 2 0 0 0	33 44 18 % 100 11.8 41.2 0.0 23.5 5.9 11.8 0.0 0.0 0.0	# 19 10 0 4 2 1 0 0	31 45 19 % 100 5.3 52.6 0.0 21.1 10.5 5.3 0.0 0.0 0.0	# 20 0 7 1 4 1 5 0 0	29 46 20 % 100 0.0 35.0 5.0 20.0 5.0 25.0 0.0 0.0 0.0	Sir # 20 3 12 0 1 0 1 0 4 0 0	Prize 27 47 21 % 100 15.0 60.0 0.0 5.0 0.0 20.0 20.0 0.0 0.0	# 20 5 5 0 5 1 4 0 0	25 48 22 % 100 25.0 25.0 25.0 25.0 25.0 25.0 20.0 20	# 19 2 6 0 3 1 3 1 0	48 49 23 100 10.5 31.6 0.0 15.8 5.3 15.8 5.3 0.0 0.0	# 19 7 4 0 1 4 0 0 0 0	36 50 24 36.8 21.1 0.0 5.3 21.1 0.0 0.0 0.0 0.0	50 # 420 49 168 6 54 59 38 9 4 6	Jm % 100 11.6 39.6 1.4 12.7 13.9 9.0 2.1 0.9 4.4	Fruits Total Zutano Hass Fuerte Ettinger Bacon SirPrize Marvel Harvest
# 17 4 3 0 1 8 0 1 8 0 1 0 0	47 39 13 % 100 23.5 17.6 0.0 5.9 47.1 0.0 5.9 0.0 0.0 0.0	# 20 1 1 1 1 0 13 1 0 2 0	32 40 14 % 100 5.0 5.0 5.0 65.0 65.0 65.0 0.0 10.0 0.0 10.0 0.0	Ba # 15 2 1 1 2 7 0 0 0 0 0	acon 30 41 15 % 100 13.3 6.7 6.7 13.3 46.7 0.0 0.0 0.0 0.0 0.0	# 18 3 9 0 1 1 4 1 0 0 0 0	28 42 16 % 100 16.7 50.0 0.0 5.6 22.2 5.6 0.0 0.0 0.0 0.0	# 18 4 9 0 0 0 1 4 0 0 0 0	26 43 17 % 100 22.2 50.0 0.0 5.6 22.2 0.0 0.0 0.0 0.0 0.0	# 17 2 7 0 4 1 2 0 0 0 0 0	33 44 18 % 100 11.8 41.2 0.0 23.5 5.9 11.8 0.0 0.0 0.0 0.0	# 19 1 10 0 4 2 1 0 0 0 1	31 45 19 % 100 5.3 52.6 0.0 21.1 10.5 5.3 0.0 0.0 5.3 0.0	# 20 0 7 1 4 1 5 0 0 0 0	29 46 20 % 100 35.0 5.0 20.0 5.0 25.0 25.0 0.0 0.0 0.0	Sir # 20 3 12 0 1 0 1 0 4 0 0 0 0	Prize 27 47 21 % 100 15.0 60.0 0.0 5.0 0.0 20.0 0.0 0.0 0.0 0.0	# 20 5 5 0 5 1 4 0 0 0 0	25 48 22 % 100 25.0 25.0 25.0 25.0 25.0 20.0 20.0 0.0 0.0 0.0 0.0	# 19 2 6 0 3 1 3 1 0 1	48 49 23 % 100 10.5 31.6 0.0 15.8 5.3 15.8 5.3 15.8 5.3 0.0 5.3	# 19 7 4 0 1 4 0 0 0 0 0 1	36 50 24 % 100 36.8 21.1 0.0 5.3 21.1 0.0 0.0 0.0 5.3 10.5	54 59 38 9 420 49 168 6 54 59 38 9 4 6 0 7	um % 100 11.6 39.6 1.4 12.7 13.9 9.0 2.1 0.9 1.4 0.9	Fruits Total Zutano Hass Fuerte Ettinger Bacon SirPrize Marvel Harvest Nobel

Table 1b. Numbers and proportions of nearly mature 'Hass' fruit harvested on October 1, 2003 that were pollinated by all potential pollen donors in the eastern half of the Debusschere orchard plot. Table representing the western half of the plot is shown in table 1a.

Figure 2a. Numbers and proportions of marble sized 'Hass' fruit harvested on June 13, 2004 that were pollinated by all potential pollen donors in the western half of the Debusschere orchard plot. Table representing the eastern half of the plot is shown in table 2b.

Pollinizer					Ett	tinger											Ν	lobel						
Orig. Row		27		28		29		30		31		32		33		34		35		36		37		38
N. Row #		1		2		3		4		5		6		7		8		9		10		11		12
Fruits	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total			21	100	23	100																		
Zutano			0	0	0	0																		
Hass			10	48	1	4																		
Fuerte			0	0	0	0																		
Ettinger			10	48	20	87																		
Bacon			0	0	0	0																		
SirPrize			0	0	0	0																		
Marvel			1	5	0	0																		
Harvest			0	0	1	4																		
Nobel			0	0	1	4																		
LambHass			0	0	0	0																		
Pollinizer					M	arvel											Ha	arvest						
Orig. Row		27		28		29		30		31		32		33		34		35		36		37		38
S. Row #		1		2		3		4		5		6		7		8		9		10		11		12
Fruits	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total	18	100	23	100	19	100					22	100	24	100	23	100								
Zutano	0	0	0	0	0	0					1	5	1	4	1	4								
Hass	9	50	11	48	8	42					20	91	20	83	17	74								
Fuerte	0	0	0	0	0	0					0	0	0	0	0	0								
Ettinger	1	6	3	13	0	0					0	0	1	4	2	9								
Bacon	0	0	0	0	0	0					0	0	0	0	0	0								
SirPrize	0	0	0	0	0	0					0	0	0	0	0	0								
Marvel	6	33	5	22	7	37					1	5	0	0	2	9								
Harvest	0	0	0	0	0	0					0	0	0	0	0	0								
Nobel	2	11	2	9	4	21					0	0	2	8	1	4								
LambHass	0	0	2	9		0					0	0		0		0								
Pollinizer					Lam	bHass											Lan	nbHass						
Orig. Row		27		28		29		30		31		32		33		34		35		36		37		38
S. Row #		1		2		3		4		5		6		7		8		9		10		11		12
Fruits	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total																			17	100				
Zutano																			0	0				
Hass																			14	82.4				
Fuerte																			0	0.0				
Ettinger																			1	5.9				
Bacon																			0	0.0				
SirPrize																			0	0.0				
Marvel																			0	0.0				
Harvest																			0	0.0				
Nobel																			0	0.0				
LambHass																			2	11.8				
		1		I		I		I		t		t		I		1		1	· -			t		I

	39		40		41		42		43		44		45		46		47		48		49		50			
	13		14		15		16		17		18		19		20		21		22		23		24		Sum	
#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	Fruits
																15	100	22	100							Total
																5	33	0	0							Zutano
																5	33	12	55							Hass
																0	0	0	0							Fuerte
																1	7	3	14							Ettinger
																0	0	0	0							Bacon
																0	0	0	0							SirPrize
																0	0	2	9							Marvel
																0	0	0	0							Harvest
																0	0	3	14							Nobel
																4	27	2	9							L.Hass
																			-							
				В	acon											Sir	Prize									
	39		40		41		42		43		44		45		46		47		48		49		50	1		
	13		14		15		16		17		18		19		20		21		22		23		24		Sum	
#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	#	%	#	%	#	%	Fruits
24	100	24	100	23	100						, .		, .				, •				7.				, •	
1	4	2	8	3	13																					
13	54	16	67	13	57																					
0	0	2	8	1	4																					
0	0	0	0	0	0																					
1	4	0	0	1	4																					
0	0	0	0	0	0																					
3	13	2	8	0	0																					
1	4	0	0	0	0																					
1	4	0	0	1	4																					
4	17	2	8	4	17																					
			Ţ																							
				Larr	nbHass											Lam	bHass									
	39		40		41		42		43		44		45		46		47		48		49		50			
	13		14		15		16		17		18		19		20		21		22		23		24	5	Sum	
#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	Fruits
							1																	1		
					1		1															1	1	1		

Figure 2b. Numbers and proportions of marble sized 'Hass' fruit harvested on June 13, 2004 that were pollinated by all potential pollen donors in the eastern half of the Debusschere orchard plot. Table representing the western half of the plot is shown in Table 2a.

Table 3a. Marble-sized fruit harvested July 7, 2003 from an orchard managed by Somis Pacific near Somis. Block was solid 'Hass' edged on one side by one row of 'Bacon' trees. Samplings were taken at various distances from the 'Bacon' row.

Distance (Rows)	Hass	Bacon	Zutano	Ettinger	Others else	# Fruits tested	% of Bacon	% of selfing
Next to Bacon	2	11	0	0	1	14	78.6	14.3
100' Away	12	4	0	1	0	17	23.5	70.6
200' Away	8	2	1	0	4	15	13.3	53.3
300' Away	7	2	0	1	6	16	12.5	43.8
Sum	29	19	1	2	11	49	38.8	59.2
Percentage	74.4	48.7	2.6	5.1	28.2			

Table 3b. Marble-sized fruit harvested July 9, 2004 from an orchard managed by Somis Pacific near Somis. Block was solid 'Hass' edged on one side by one row of 'Bacon' trees. Samplings were taken at various distances from the 'Bacon' row.

Distance (Rows)	Hass	Bacon	Zutano	Ettinger	Others else	# Fruits tested	% of Bacon	% of selfing
Next to Bacon	4	6	0	0	0	10	60.0	40.0
100' Away	8	2	0	0	0	10	20.0	80.0
200' Away	8	1	0	0	0	9	11.1	88.9
300' Away	6	1	3	0	0	10	10.0	60.0
Sum	26	10	3	0	0	39	25.6	66.7
Percentage	66.7	25.6	7.7	0.0	0.0			