

Table 2

**Allocation of retail revenue in Syracuse, NY—apple chains, by supply chain and segment**

Supply chain segment	Mainstream <sup>1</sup>						Direct		Intermediated <sup>2</sup>	
	SuperFoods GPS3 (WA-Bulk)		SuperFoods GPS1 (NY-Bulk)		SuperFoods GPS1 (NY-bagged)		Jim Jones Farm		Hannibal School District	
	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>
Producer <sup>3</sup>	0.26	14	0.26	17	0.26	26	0.40	80	0.26	29
Producer-estimated marketing costs <sup>4</sup>	-	-	-	-	-	-	0.10	20	-	-
Packer-shipper	0.40	21	0.45	30	0.34	34	-	-	0.06	7
Transport	0.23	12	0.03	2	0.03	3	-	-	-	-
Wholesaler	-	-	-	-	-	-	-	-	0.10	11
Retailer	1.00	53	0.76	51	0.37	37	-	-	0.48	53
<b>Total retail value</b>	<b>1.89</b>	<b>100</b>	<b>1.50</b>	<b>100</b>	<b>1.00</b>	<b>100</b>	<b>0.50</b>	<b>100</b>	<b>0.90<sup>5</sup></b>	<b>100</b>

Notes: - indicates "not applicable."

<sup>1</sup>GPS1 and GPS3 are grower-packer-shippers; SuperFoods is a wholesaler-retailer.

<sup>2</sup>The producer, Ontario Orchards, is a grower-packer-shipper in the school district supply chain.

<sup>3</sup>Producer prices are the monthly average for the period 2000-08 reported by USDA (<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1377>).

<sup>4</sup>Includes estimated costs of farmers market stall fees, transport to market, the opportunity cost of family labor, and tote bags for customers. Total producer per unit revenue is  $0.40+0.10 = 0.50$  (\$/lb).

<sup>5</sup>Ninety-five percent of apples in the school district are sold as part of the school menu and thus do not have a specific retail price. We calculate the retail price as the wholesale price times 2.25 ( $\$0.42 \times 2.25 = \$0.90$ ), the markup rule employed by the school district.

Source: USDA, Economic Research Service using SuperFoods records from August 2008 through July 2009 (for mainstream) and data from authors' interviews with supply chain member (for direct and intermediated).

Table 3

**Food miles and fuel use in Syracuse, NY—apple supply chains**

Supply chain segment	Food miles	Truck miles	Retail weight	Fuel use <sup>1</sup>	Fuel use per cwt shipped
<b><i>Mainstream: SuperFoods, GPS3 (WA)</i></b>	<i>Number</i>		<i>Cwt</i>	<i>Gallons</i>	
Producer to packer-shipper	150	300	100	25.0	0.25
Packer-shipper to distribution	2,600	2,600	400	433.3	1.08
Distribution to retail <sup>2</sup>	100	200	400	33.3	0.08
All segments	2,850				1.41
<b><i>Mainstream: SuperFoods, GPS1 (NY)</i></b>					
Producer to packer-shipper	25	50	100	4.2	0.04
Packer-shipper to distribution	100	200	400	33.3	0.08
Distribution to retail	100	200	400	33.3	0.08
All segments	225				0.20
<b><i>Direct: Jim Jones Farm<sup>3</sup></i></b>					
Producer to retail	61	122	20	3.1	0.16
All segments	61				0.16
<b><i>Intermediated: Hannibal School District<sup>4</sup></i></b>					
Producer to wholesaler	3	6	10.0	0.3	0.03
Wholesaler to school district	10	20	40.0	0.3	0.01
All segments	13				0.04

<sup>1</sup>Miles per gallon (mpg) vary by segment. Trailer trucks shipping apples from packing shed to the distribution center have a capacity of 40,000 pounds and obtain 6 mpg; trucks used to transport apples from the farm to the packing shed have a capacity of 10,000 pounds and obtain 12 mpg.

<sup>2</sup>Apples are about 5 percent of the total weight of products transported in trailer trucks from the distribution center to the store. These trucks have a capacity of 40,000 pounds and obtain 6 mpg.

<sup>3</sup>The box van employed in the direct market has a capacity of 2,000 pounds and obtains 20 mpg.

<sup>4</sup>The box-van employed from the producer to the wholesaler transports 1,000 pounds and obtains 20 mpg; the truck employed to transport apples from the wholesaler to the school district has a capacity of 4,000 pounds and obtains 20 mpg.

Source: USDA, Economic Research Service calculations based on case interviews.

Table 4

**Allocation of retail revenue in Portland, OR—blueberry chains, by supply chain and segment**

Supply chain segment	Mainstream		Direct		Intermediated	
	Allfoods		Thompson Farm		New Seasons	
	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>
Producer	0.86	26.8	2.43	73.0	2.53	46.4
Producer estimated marketing costs <sup>1</sup>	-	-	0.90	27.0	0.52	9.5
Packer/distributor	0.58	18.1	-	-	. <sup>2</sup>	-
Transport	0.16	5.0	-	-	-	-
Retail store	1.60	50.0	-	-	2.40	44.0
Total retail value	3.20	100	3.33	100	5.45	100

Notes: - indicates "not applicable."

<sup>1</sup>Direct: Includes estimated costs of packing, transportation, and marketing. Total farm per unit revenue is  $2.43+0.90 = 3.33$  (\$/lb). Intermediated: Includes packing and transportation costs and estimated opportunity cost of time for marketing activities. Total farm per unit revenue is  $2.53+0.52 = 3.05$  (\$/lb).

<sup>2</sup>Using a distributor in the intermediated supply chain would add another \$0.21 to producer's distribution costs and reduce net farm revenue to \$2.32.

Source: USDA, Economic Research Service.

Table 5

**Food miles and fuel use in Portland, OR—blueberry supply chains**

Supply chain segment	Food miles	Truck miles	Retail weight	Fuel use	Fuel use per cwt
<b><i>Mainstream: Allfoods<sup>1</sup></i></b>	<i>Number</i>		<i>Cwt</i>	<i>Gallons</i>	
Producer	35	70	100	7	0.07
Packer-distributor	50	100	400	16.7	0.04
Distributor-store	20	40	400	6.7	0.02
All segments	115				0.13
<b><i>Direct: Thompson Farms<sup>2</sup></i></b>					
Producer	10	20	15	1.8	0.12
All segments	10				0.12
<b><i>Intermediated: New Seasons<sup>3</sup></i></b>					
Producer	70	140	18	10.8	0.60
All segments	70				0.60

<sup>1</sup>Transportation in this chain is in open trucks with a fuel efficiency of 10 mpg for the segment between the farms and the packing facility and 48-foot trucks with a fuel efficiency of 6 mpg for the segments between the packing facility and the distribution center and between the distribution center and the stores. For each segment, the trucks are assumed to return empty, so the one-way distances are doubled.

<sup>2</sup>Transportation in this chain is in a panel truck with a fuel efficiency of 11 mpg for all trips. The truck is assumed to return empty, so the one-way distances to the marketing outlets are doubled.

<sup>3</sup>Transportation in this chain is in a delivery van with a fuel efficiency of 13 mpg for all trips. The truck is assumed to return empty, so the one-way distances to make the store deliveries is doubled.

Source: USDA, Economic Research Service calculations based on case interviews.

Table 6

**Allocation of retail revenue in Sacramento, CA—spring mix chains, by supply chain and segment**

Supply chain segment	Mainstream		Direct		Intermediated	
	Nugget Market		Fiddler's Green		Davis Food Co-op	
	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>
Producer <sup>1</sup>	0.79	12.2	5.92	74.0	3.00	50.1
Producer-estimated marketing costs <sup>2</sup>	0.02	0.30	2.08	26.0	0.75	12.5
Processor	1.16	17.9	-	-	-	-
Distributor <sup>3</sup>	0.77	11.9	-	-	-	-
Retail stores	3.75	57.8	-	-	2.24	37.4
Total retail value <sup>4</sup>	6.49	100	8.00	100	5.99	100

Notes: - indicates "not applicable." For the direct and intermediated supply chains, the farm also operates as the processor.

<sup>1</sup>Mainstream: Calculated as a weighted average of farm-gate prices paid in Monterey and Imperial Counties, 60 percent and 40 percent, respectively, and adjusted for 45 percent of the production in each county earning a 10-percent price premium for organic product. Direct and Intermediated: Includes compensation for processing activities, such as washing, mixing, and bagging.

<sup>2</sup>Mainstream: Includes estimated costs of transportation to the processor. Total farm per unit revenue is  $0.79+0.02 = 0.81$  (\$/lb). Direct: Includes estimated transportation costs, farmers market stall fees, and opportunity costs of time for marketing activities. Total farm per unit revenue is  $5.92+2.08 = 8.00$  (\$/lb). Intermediated: Includes estimated transportation and packaging costs. Total farm per unit revenue is  $3.00+0.75 = 3.75$  (\$/lb).

<sup>3</sup>Includes compensation for inbound freight charges averaging \$0.50/pound for bulk spring mix.

<sup>4</sup>Mainstream and Direct: Median retail price of bulk spring mix from January to December, 2009. Intermediated: Median retail price of bulk spring mix from January through March, 2009.

Source: USDA, Economic Research Service.

Table 7

**Food miles and fuel use in Sacramento, CA—spring mix supply chains**

Supply chain segment	Food miles	Truck miles	Retail weight	Fuel use	Fuel use per cwt shipped
<b><i>Mainstream: Nugget Market (CA)</i></b>	<i>Number</i>		<i>Cwt</i>	<i>Gallons</i>	
Producer to processor-shipper <sup>1</sup>	30	60	130	10.0	0.08
Processor-shipper to distribution <sup>2</sup>	192	372	400	67.6	0.17
Distribution to retail <sup>3</sup>	16	150	250	25.0	0.10
All segments	238				0.35
<b><i>Mainstream: Nugget Market (AZ)</i></b>					
Producer to processor-shipper <sup>1</sup>	45	90	130	15.0	0.12
Processor-shipper to distribution <sup>2</sup>	618	1250	400	227.3	0.57
Distribution to retail <sup>3</sup>	16	150	250	25.0	0.10
All segments	679				0.79
<b><i>Mainstream: Nugget Market (CA &amp; AZ combined)</i></b>					
All segments <sup>4</sup>	414				0.52
<b><i>Direct: Fiddler's Green</i></b>					
Producer to retail <sup>5</sup>	35	105	14.0	8.8	0.63
All segments	35		14.0		0.63
<b><i>Intermediated: Davis Food Co-op</i></b>					
Producer to co-op <sup>6</sup>	22	95	60.0	10.5	0.18
All segments	22				0.18

<sup>1</sup>These short-haul loads use a trailer that achieves fuel economy of 6 miles per gallon (mpg).

<sup>2</sup>These loads are transported in a tractor-trailer that achieves fuel economy of 5.5 mpg.

<sup>3</sup>These loads are transported in a tractor-trailer that achieves fuel economy of 6 mpg.

<sup>4</sup>Food miles and fuel use per hundredweight (cwt) are calculated as the average of the CA and AZ chains, weighted by the total product weight in each chain (60 percent for CA, 40 percent for AZ).

<sup>5</sup>All transport in this chain is in a box truck that achieves fuel economy of 12 mpg.

<sup>6</sup>All transport in this chain is in a refrigerated box van truck that achieves fuel economy of 10 mpg.

Source: USDA, Economic Research Service calculations based on case interviews.

Table 8

**Allocation of retail revenue in Twin Cities, MN - beef chains, by supply chain and segment**

Supply chain segment	Mainstream		Direct		Intermediated	
	Kowalski's <sup>1</sup>		SunShineHarvest <sup>2</sup>		Thousand Hills <sup>3</sup>	
	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>	<i>Revenue (\$/lb)</i>	<i>% of total</i>
Producer/finisher	2.39	38.7	3.92	70.8	2.68	37.4
Producer/finisher estimated marketing costs <sup>4</sup>	-	-	.74	13.3	-	-
Processor <sup>5</sup>	1.73 <sup>6</sup>	28.0	0.88	15.9	0.94	13.2
Distributor/agggregator	-	-	-	-	1.89	26.3
Retailer	2.06	33.3	-	-	1.65	23.1
Total retail value <sup>7</sup>	6.18	100	5.54	100	7.16	100

Notes: - indicates "not applicable."

<sup>1</sup>We assume a retail value of \$3,054 for meat from a whole animal with a live weight of 1,300 lbs and a meat yield of 494 lbs. Transportation costs from the producer to processor and from the processor to the distributor are borne by the processor. Transportation costs from the distributor to the retailer are borne by the distributor. Distributor/agggregator revenue is combined with revenue accruing to the processor segment to maintain confidentiality.

<sup>2</sup>We assume a retail value of \$2,172 for a whole animal with a live weight of 1,110 lbs and a meat yield of 392 lbs. This is based on 25 percent of meat being sold in farmers markets and 75 percent of meat being sold through buying clubs or the meat Community-Supported Agriculture.

<sup>3</sup>We assume a retail value of \$3,040 for meat from a whole animal with a live weight of 1,200 lbs and a meat yield of 424 lbs. All transportation costs are borne by the aggregator.

<sup>4</sup>Includes the estimated portion of producer revenue attributed to costs of transport to market, market stall fees, and the opportunity cost of labor devoted to marketing activities. Total per unit revenue for the producer/finisher is  $3.92+0.74=4.66$  (\$/lb).

<sup>5</sup>These calculations do not include revenue from processing byproducts.

<sup>6</sup>The processor value in the mainstream chain also includes distribution costs. For confidentiality reasons, we did not separate these values.

<sup>7</sup>Retail values are based on an estimated value for an entire animal, since prices vary considerably for cuts of meat.

Source: USDA, Economic Research Service.

Table 9

**Food miles and transportation fuel use in Twin Cities, MN—beef supply chains**

Supply chain segment	Food miles	Truck miles	Retail weight	Fuel use	Fuel use per cwt shipped
<b><i>Mainstream Chain Kowalski's<sup>1</sup></i></b>	<i>Number</i>		<i>Cwt</i>	<i>Gallons</i>	
Cow-calf to finisher	250	500	272	83.3	0.31
Finisher to processor	615	1,230	198	205	1.04
Processor to distribution	720	1,440	450	240	0.53
Distribution to retail	60	120	450	20	0.04
All segments	1,645				1.92
<b><i>Direct Chain SunShineHarvest<sup>2</sup></i></b>					
Producer to processor	20	40	11.8	2.5	0.21
Processor to distribution	20	40	11.8	2.5	0.21
Distribution to retail	35	70	2.5	4.4	1.76
All segments	75				2.18
<b><i>Intermediated Chain Thousand Hills<sup>3</sup></i></b>					
Producer to processor	250	500	115	56	0.49
Processor to distribution	5	10	106	2	0.02
Distribution to retail	45	90	76	14	0.18
All segments	300				0.69

<sup>1</sup>All transport in this chain is in semi-trailers that achieve fuel economy of 6 mpg. Live animals are assumed to yield meat with a retail weight of 494 lbs. A load of 55 live feeder cattle is transported from the cow-calf operation to the finisher. A load of 40 live cattle is transported from the finisher to the processor. In subsequent segments of the chain, 45,000-lb loads of fresh meat are transported.

<sup>2</sup>All transport in this chain is in a pickup truck that achieves fuel economy of 16 mpg. Live animals are assumed to yield meat with a retail weight of 392 lbs. Three animals are transported to the processor, and the meat from three animals is transported back from the processor.

<sup>3</sup>We assume that a load of 27 cattle born and finished on a farm 250 miles from Cannon Falls, MN, is transported in a small semi-trailer that achieves fuel efficiency of 9 mpg. Each of these cattle yields meat with a retail weight of 424 lbs. All subsequent transportation of meat is in a refrigerated delivery truck that achieves fuel efficiency of 6.5 mpg.

Source: USDA, Economic Research Service calculations based on case interviews.