

# OPPORTUNITIES AND CHALLENGES OF PRODUCING WALNUTS ON SMALL ACREAGES

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# STUDY COAUTHORS

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# STUDY MOTIVATION & METHODS

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- Determine the differences in production costs for different size parcels for Sutter and Yuba Counties
- Walnuts are the main tree crop chosen by landowners on ranchettes
- Purpose was NOT to determine an economically viable size
- Costs estimated for 100, 20, and 5 acres of walnuts

# SOURCES OF INFORMATION

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- Growers operating 20 acres or less of walnuts – Sutter and Yuba Counties
- Sutter and Yuba, Central Coast, and northern San Joaquin Valley
  - Custom equipment operators
  - Farm managers / consultants
  - Handlers and processors

# ASSUMPTIONS

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- No specific variety
- 56 trees per acre
- 35 year orchard life
- Water \$56 per acre foot

# ASSUMPTIONS (cont.)

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- All size orchards custom harvest
- 20 and 5 acre also custom hire spraying and mowing
- 100 acres owns their own equipment and does their own spraying and mowing
- All sizes use the same pest and weed control materials
- Micro sprinkler irrigation

# YIELD *and* PRICE

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- 2.5 dry inshell tons per acre
- 5,000 pounds
- \$.61 per pound

# BARE LAND ASSUMPTION

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ACRES	TOTAL VALUE	\$ PER ACRE
100	\$325,000	\$3,250
20	\$325,000	\$17,500
5	\$250,000	\$50,000

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# BARE LAND VALUES

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- Bare land values range from \$2,500 to \$6,500 per acre
- Rural residential ranges from \$200,000 to \$500,000
- **Note:** Five acre sites are NOT zoned in Sutter and Yuba Counties so no sales data are available.

# EXPENSES THAT DON'T VARY WITH SIZE

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- Fertilizer through sprinkler \$100/acre
- Irrigation \$206/acre
- Gopher control \$3/acre
- Misc. ATV use \$56/acre
- SUBTOTAL \$265/acre

# EXPENSES THAT VARY WITH SIZE

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- Pruning
- Weed control
- Insect, mite, and disease control
- Harvest costs
- Cash and noncash overhead

# PRUNING ALTERNATE YEARS

ACRES	PRACTICE	\$ PER ACRE
100	Hand crew, pruning tower	\$101
	Tractor and brush rake	\$ 18
20	Grower, long pole	\$207
	ATV and trailer for prunings	\$45
5	Grower, long pole	\$207
	ATV and trailer for prunings	\$45



# WEED CONTROL

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- No cover crop
- **Tree rows** – winter and in season sprays
- **Middles** – mowed 5 times
  - Minimum charge of \$500 per mowing or \$2,500 for 5 mowings for custom
  - Both 5 and 20 acres hit minimum charge

# WEED CONTROL

ACRES	PRACTICE	\$ PER ACRE
100	Rows: Own equipment	\$72
	Middles: Own equipment	\$ 36
20	Rows: ATV with sprayer	\$69
	Middles: Custom mowing	\$125
5	Rows: ATV with sprayer	\$70
	Middles: Custom mowing	\$500



# INSECT, MITE, & DISEASE

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- Two treatments for codding moth
- One treatment for mites
- Three treatments for walnut blight
- Custom application for small acreage varies but assumed to be \$500 per application in this study
- 6 applications equals \$3,000 custom
- Materials the same for each size equals \$210 per acre

# INSECTS, MITES, & DISEASE

ACRES	PRACTICE	\$ PER ACRE
100	Grower owned equipment	\$ 240
20	Custom application, \$500 minimum per application	\$420
5	Custom application, \$500 minimum per application	\$810



# CUSTOM HARVEST COSTS

## *SHAKE, SWEEP, AND PICKUP*

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- Minimum custom charges for small acreages vary more than for cultural operations
- We assumed a minimum charge of \$1,500.
- \$300 per acre for the 5 acre orchard.
- Hauling and hand raking is assumed to equal for all size operations totaling \$55 per acre.

# SHAKE, SWEEP, & PICKUP

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Custom operators may charge by the pound or the hour. We used hourly rates for 2.5 tons.

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Operation	\$/Hour	Hours/Acre	\$/Acre
Shake	\$100	½ hour	\$50
Sweep	\$45	½ hour	\$22
Pickup	\$120	1 hour	\$120
Total			\$192

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# CUSTOM HARVEST COSTS

## *HULLING AND DRYING*

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- 100 acres - \$110 per ton
- 20 acres - \$115 per ton
- 5 acres - \$120 per ton
- Many custom operators, handlers and processors refuse new 5 acre growers. May also refuse 20 acres.
- High yielding orchard is more likely to be accepted by a handler.

# CUSTOM HARVEST 2.5 TONS PER ACRE

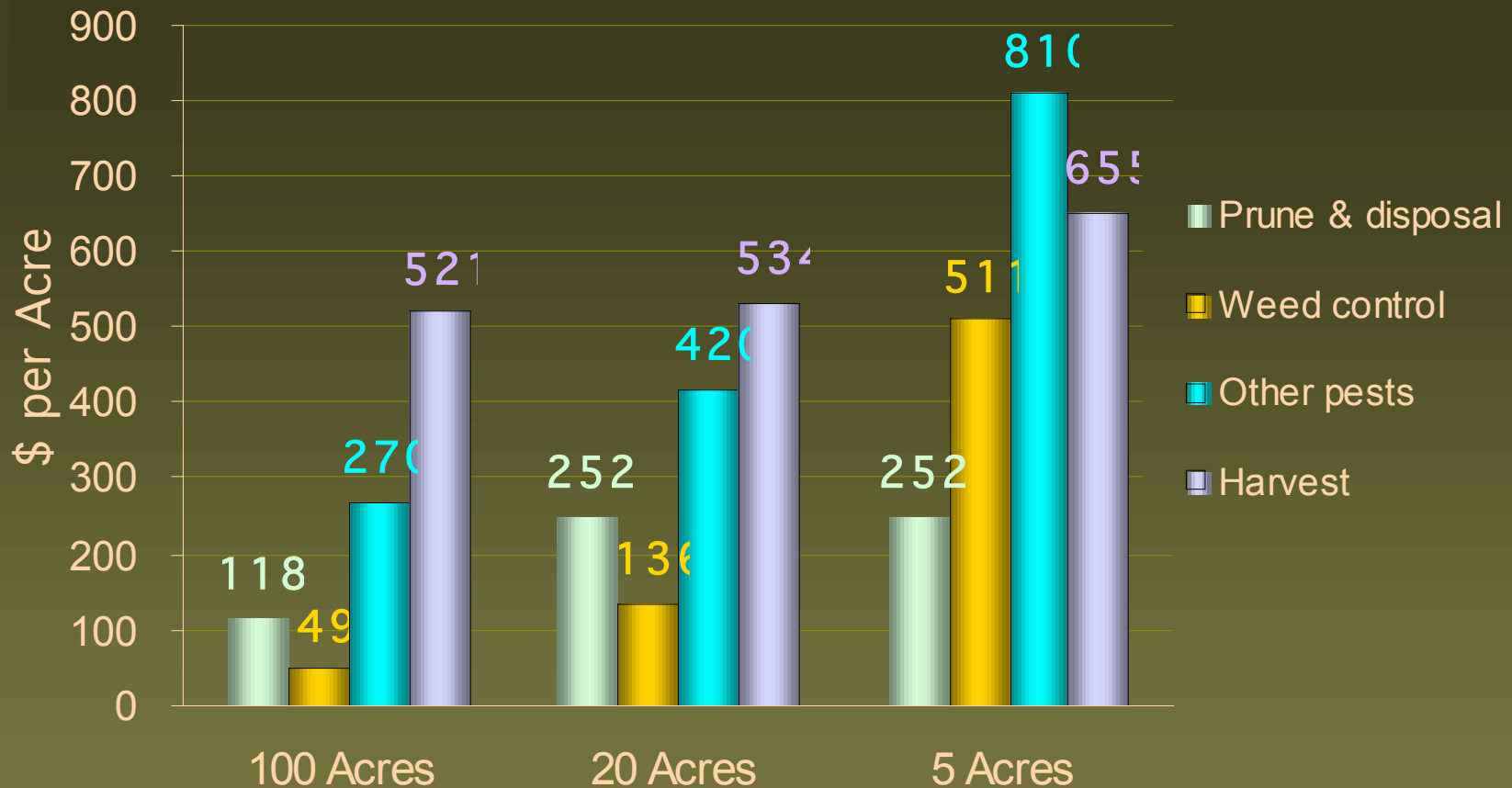
ACRES	PRACTICE	\$ PER ACRE
100	Shake, sweep, pickup	\$192
	Hulling and drying	\$275
20	Shake, sweep, pickup	\$192
	Hulling and drying	\$288
5	Shake, sweep, pickup	\$300
	Hulling and drying	\$300



# DIFFERING COSTS PER ACRE

Operation	100 Acres	20 Acres	5 Acres
Prune & disposal	\$118	\$252	\$252
Weed control	49	136	511
Other pests	270	420	810
Harvest	521	534	655
TOTAL / ACRE	\$958	\$1,342	\$2,228

# OPERATING COSTS PER ACRE



# NONCASH OVERHEAD

## *WHOLE FARM BASIS*

	100 Acres	20 Acres	5 Acres
Buildings	\$7,100		
Fuel tanks	500		
Shop tools	1,600	\$520	\$105
Irrigation	5,600	1,200	300
Equipment	8,700	2,720	770
TOTAL	\$23,500	\$4,440	\$1,175

# NONCASH OVERHEAD

## *PER ACRE BASIS*

	100 Acres	20 Acres	5 Acres
Buildings	\$71		
Fuel tanks	5		
Shop tools	16	26	21
Irrigation	56	60	60
Equipment	87	136	154
TOTAL	\$235	\$222	\$235

## EQUIPMENT INVESTMENT

	100 Acres	20 Acres	5 Acres
Tractor 75 HP	X	○	○
Brush rake	X		
Loader forks	X		
Flail mower	X	○	○
Pruning tower	X		
Air blast sprayer	X		
Weed sprayer	X	X	X
Pickup ½ ton	X	X	
ATV	X	X	X
Trailer		X	X
TOTAL	\$77,054	\$23,874	\$7,074

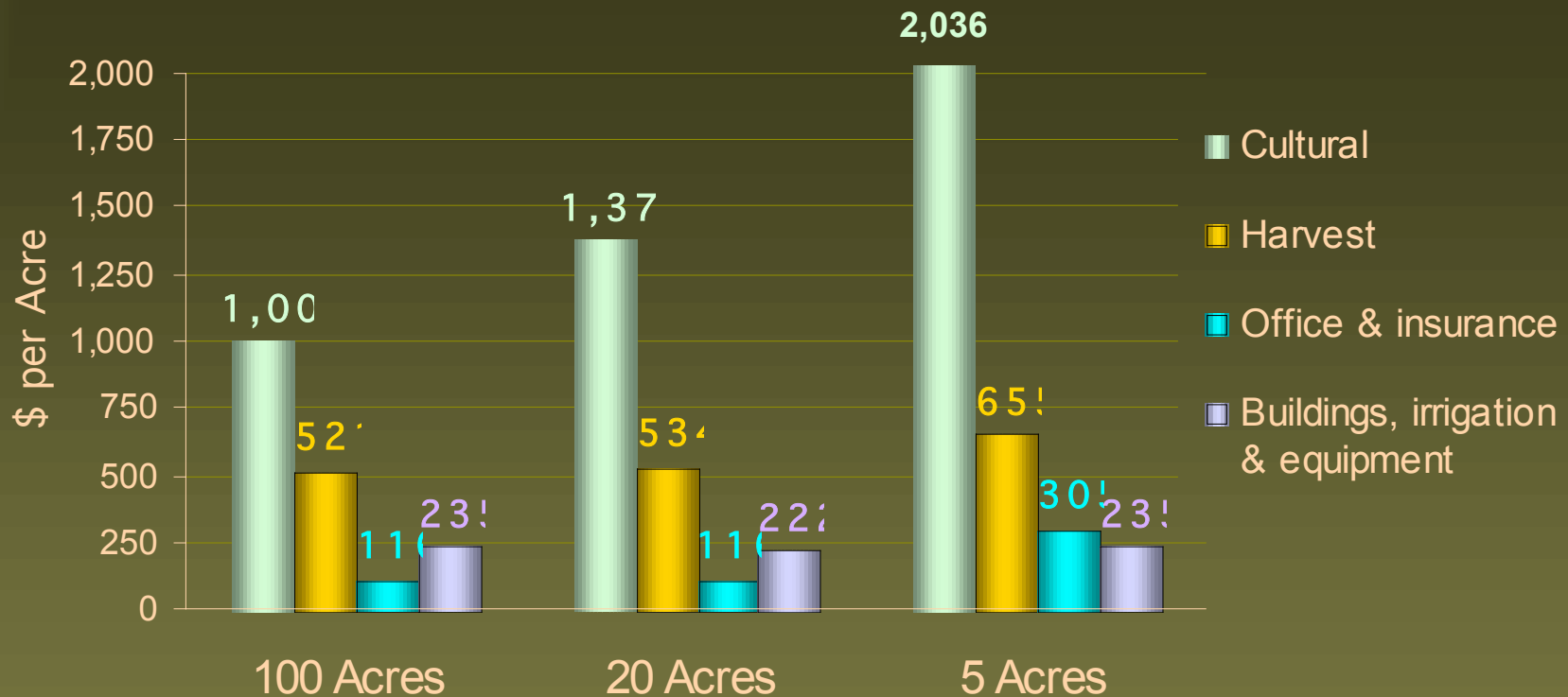
○ Some small growers own a used tractor and mower.

# PARTIAL COSTS PER ACRE EXCLUDING LAND & TREES

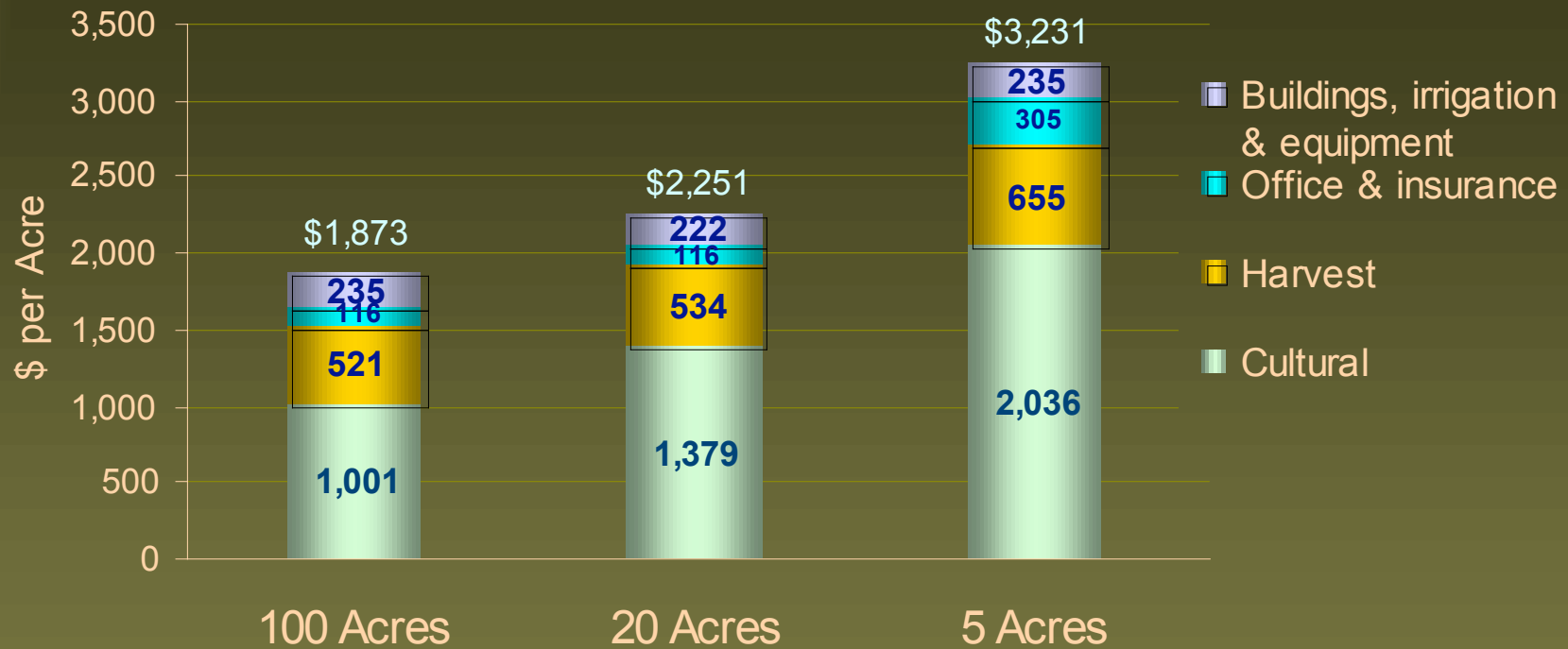
	100 Acres	20 Acres	5 Acres
INCOME / ACRE *	\$3,050	\$3,050	\$3,050
Cultural costs	1,001	1,380	2,036
Harvest	521	534	655
Office & insurance	116	116	305
Buildings, irrigation and equipment	235	222	235
PRODUCTION COST	1,873	2,251	3,231
NET RETURN	1,177	799	-181

\* 5,000 POUNDS @ \$.61 PER POUND

# COSTS PER ACRE EXCLUDING LAND AND TREES



# COSTS PER ACRE EXCLUDING LAND AND TREES



# LAND VALUES

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	Reported Range	Total Cost for Study	Per Acre Study Cost
100 Acres	\$2,500 - \$6,500*	\$352,000	\$3,250
20 Acres	\$200K - \$500K **	\$350,000	\$17,500
5 Acres	Not zoned in Sutter and Yuba **	\$250,000	\$50,000

\* CA Chapter of the American Society of Farm Managers and Rural Appraisers, "Land and Lease Values"

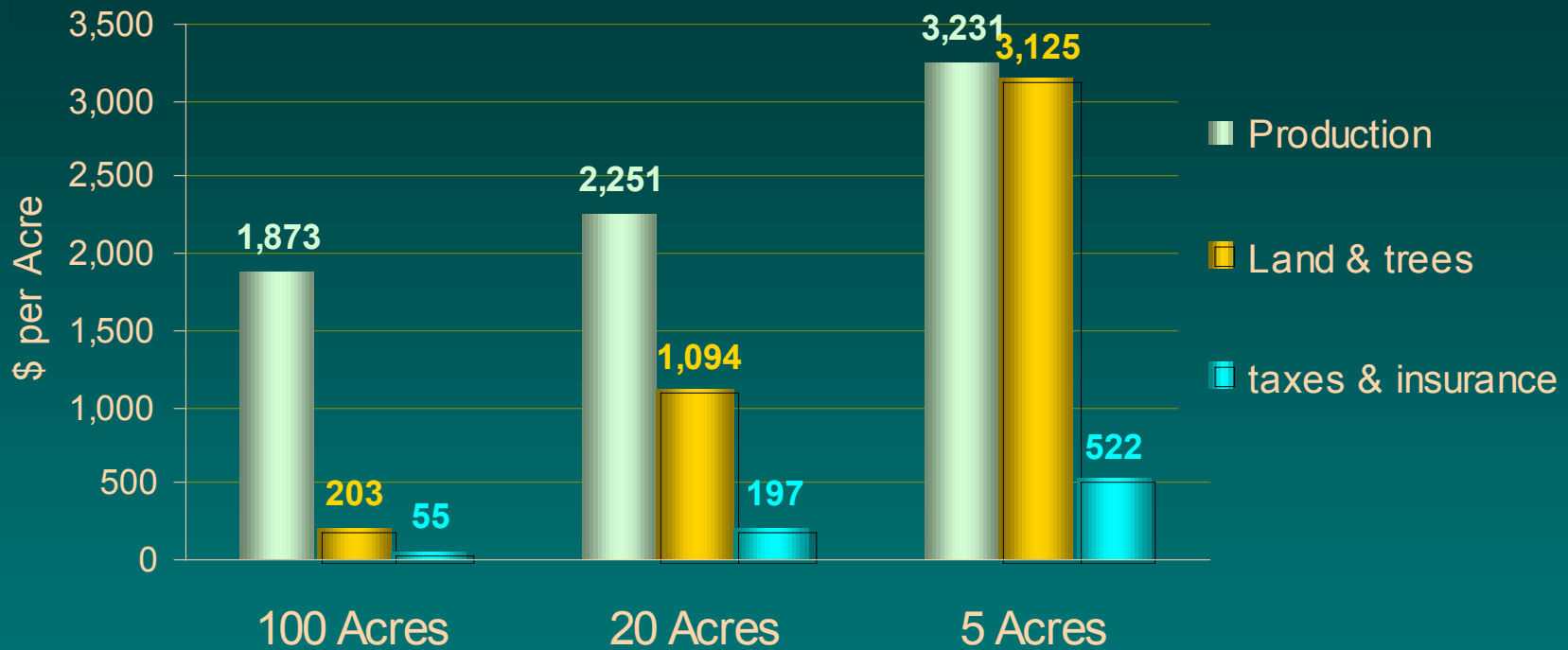
\* Interviews with local real estate agents

## COSTS PER ACRE INCLUDING LAND & TREES

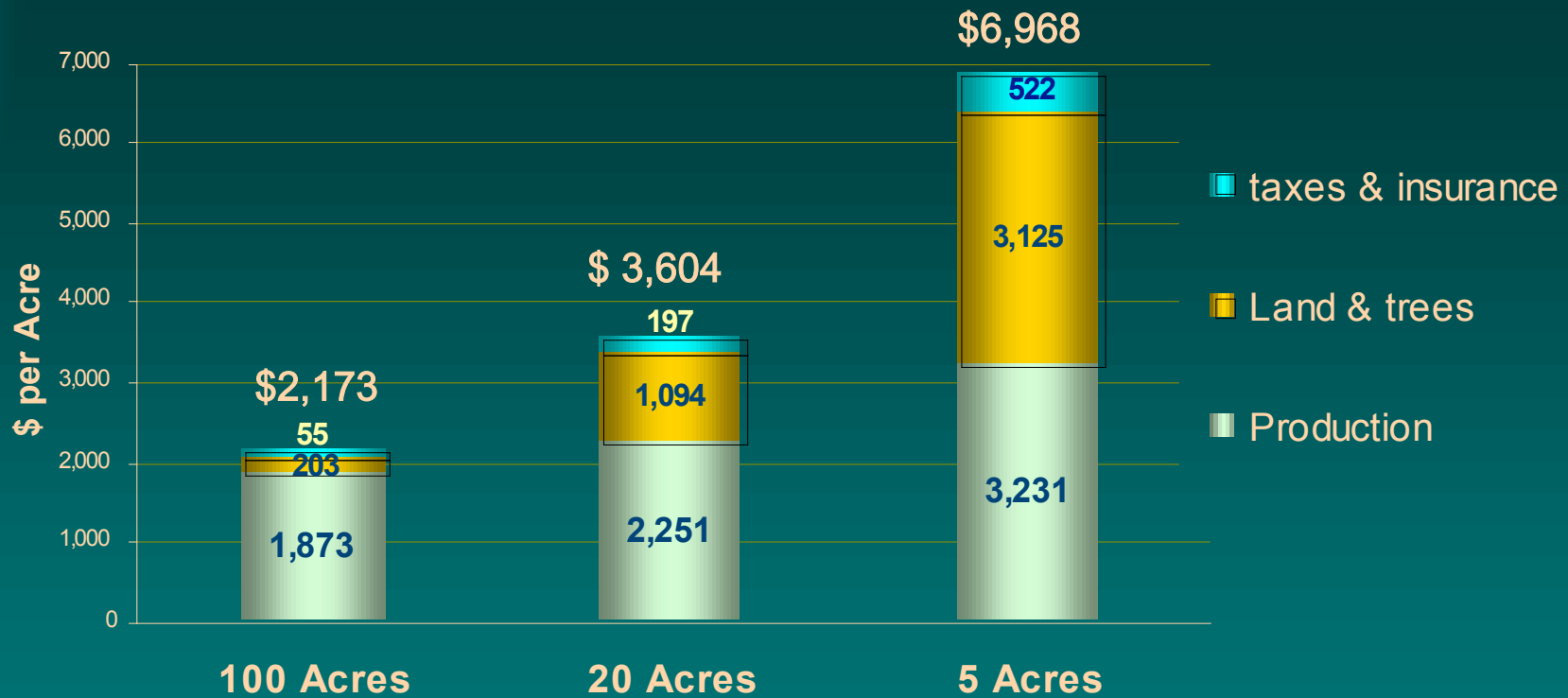
	100 Acres	20 Acres	5 Acres
INCOME / ACRE *	\$3,050	\$3,050	\$3,050
COSTS / ACRE:			
PRODUCTION COSTS	1,873	2,251	3,231
LAND & TREES	203	1,094	3,125
TAXES & INSURANCE	55	197	522
TOTAL COST	2,173	3,604	6,968
NET RETURN / ACRE	877	-554	-3,918

\* 5,000 POUNDS @ \$.61 PER POUND

# COSTS PER ACRE INCLUDING LAND AND TREES



# COSTS PER ACRE INCLUDING LAND AND TREES



# INCOME, COSTS, AND NET RETURNS WHOLE FARM BASIS

	100 Acres	20 Acres	5 Acres
INCOME / ACRE *	\$305,000	\$61,000	\$15,250
PRODUCTION COSTS	187,300	45,020	16,155
NET RETURN ABOVE PRODUCTION COSTS	117,700	15,980	-905
TOTAL COSTS INCLUDING LAND	217,300	72,080	34,840
NET RETURNS ABOVE TOTAL COSTS	87,700	-11,080	-19,590

\* 5,000 POUNDS @ \$.61 PER POUND

# CUSTOM OPERATOR & HANDLER ISSUES

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- Many custom operators, handlers and processors refuse new 5 acre growers. May also refuse 10 or 20 acres.
- High yielding orchard is more likely to be accepted by a handler.
- Concerns that orchards are not well maintained and more sticks in harvested nuts, low yields, poor quality, and extra handling.
- Not enough open space for turning equipment, parking, or loading.

# FACTORS INFLUENCING COSTS

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- Some small growers own a used tractor and mower.
- Cost depends on proximity to other commercial orchards.
- Small orchards may be a lifestyle choice and less of a business decision.
- Growers may increase their income with hedgerow plantings, organic production, or direct marketing.

# WALNUT COST AND RETURN STUDIES FROM UCCE

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- Sacramento Valley 2002
- Central Coast 2002, 5 acre homesite
- San Joaquin Valley 2001
- North Coast/Lake County 2005

*Coming soon:*

- Sacramento Valley 2007
- Sacramento Valley 2007 Organic

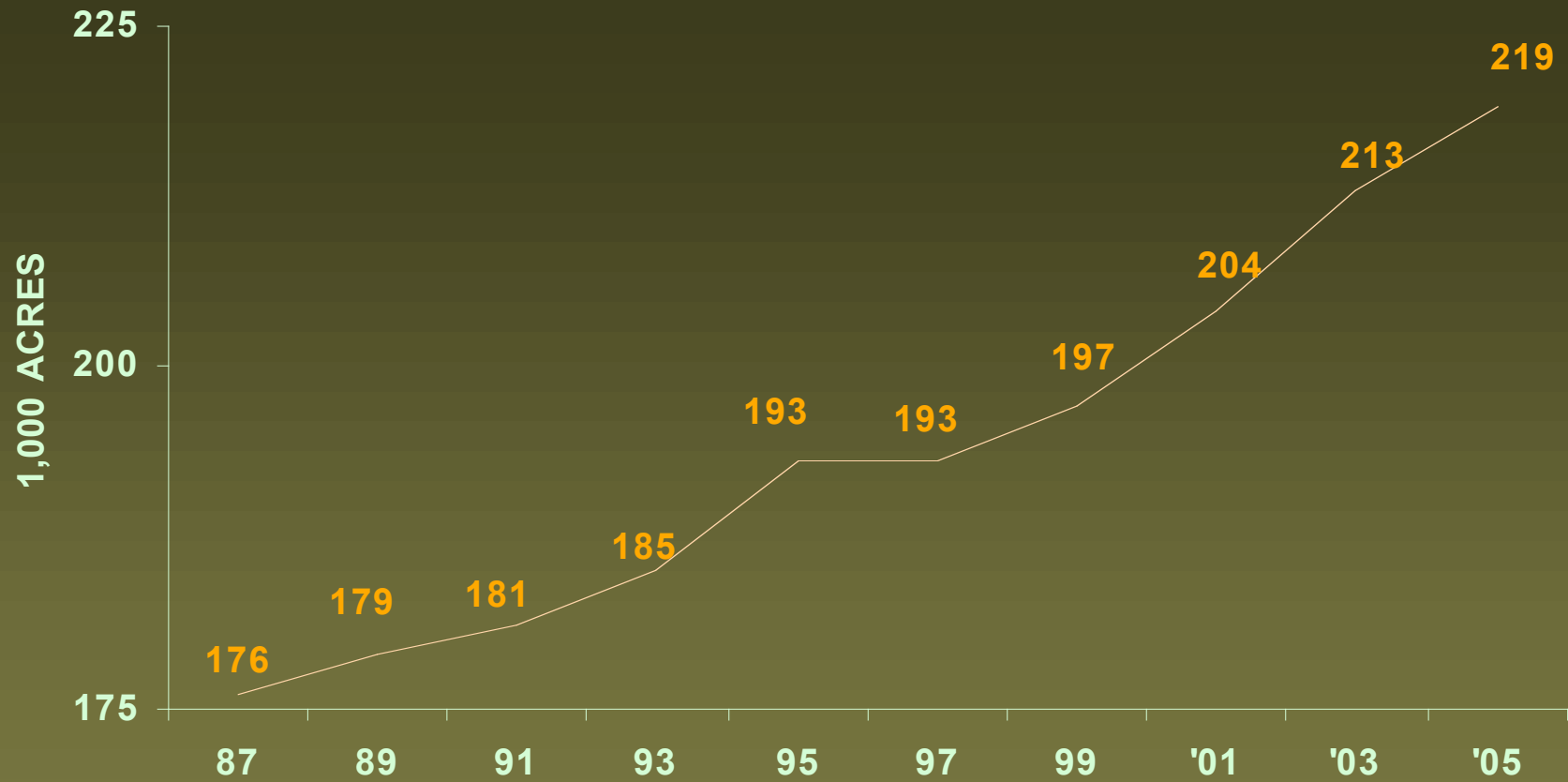
# ADVERTISEMENT

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Visit our website at:

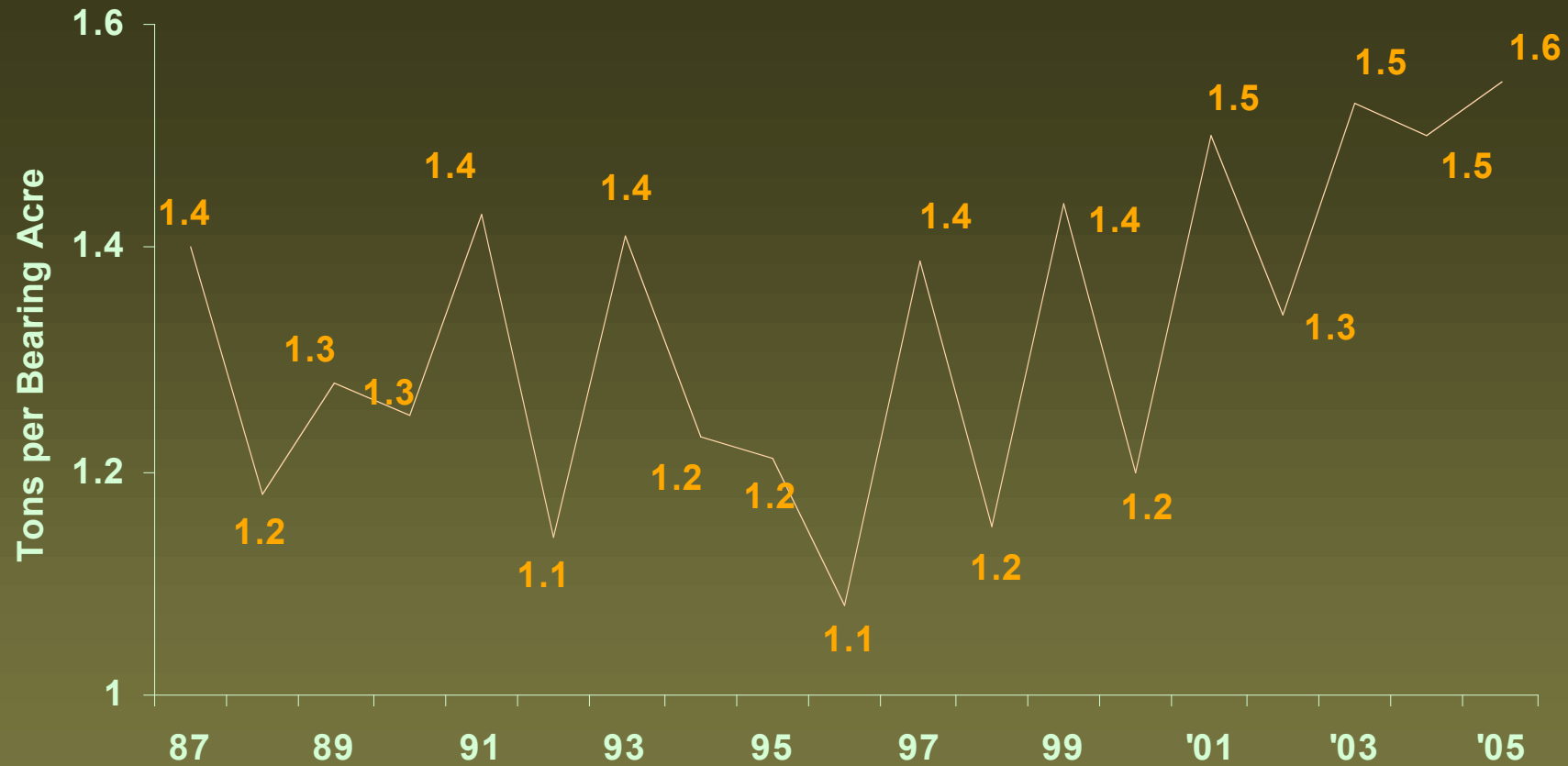
<http://coststudies.ucdavis.edu>

# CA WALNUT ACREAGE 1987 - 2005



Source: NASS

# CA WALNUT YIELD *PER* ACRE 1987 - 2005



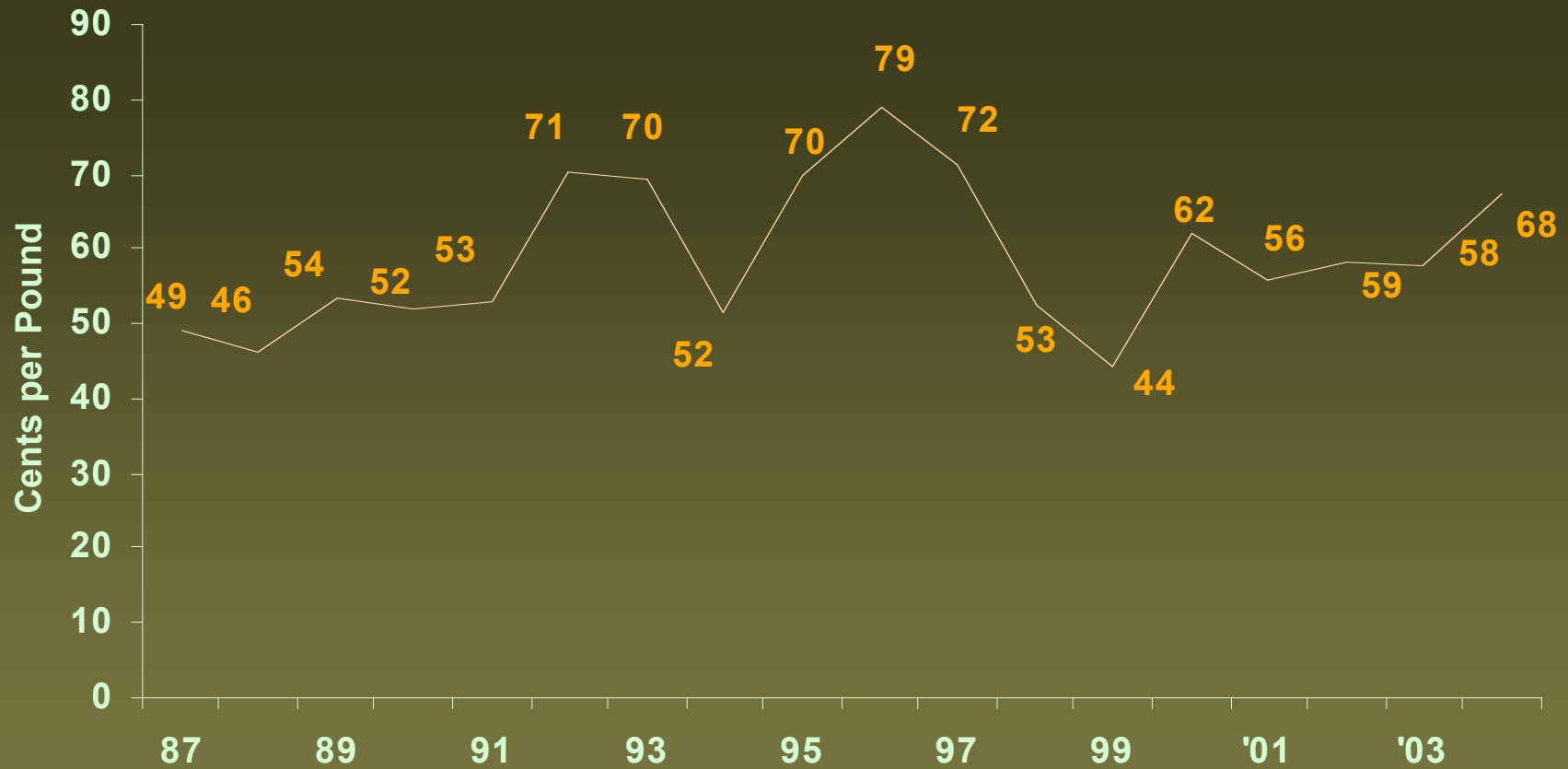
Source: NASS

# CA WALNUT TOTAL PRODUCTION 1987 - 2005



Source: NASS

# CA WALNUT AVERAGE PRICE *PER* POUND 1987 - 2004



Source: NASS

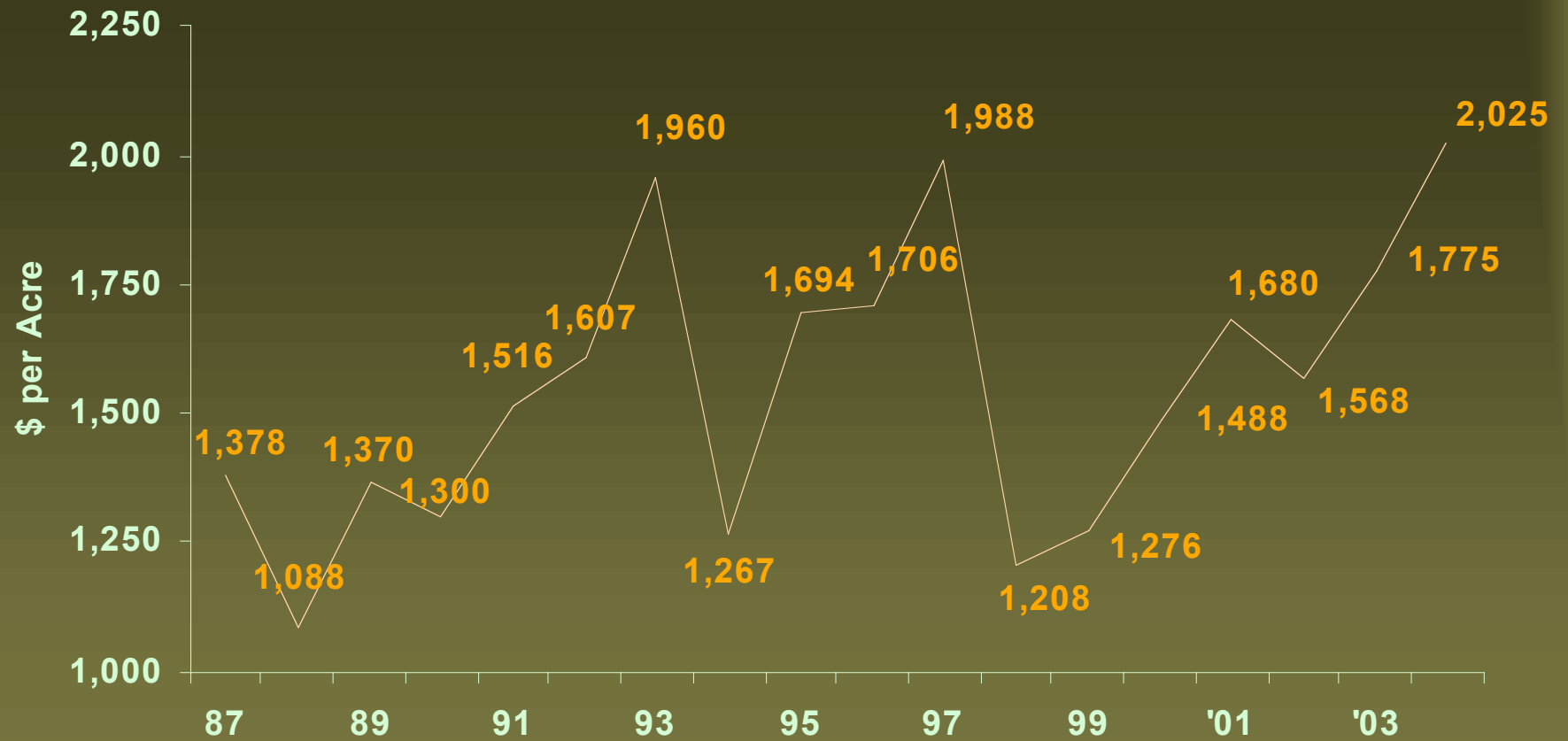
# CA WALNUT VALUE OF PRODUCTION 1987 - 2004



Source: NASS

# CA WALNUT VALUE *PER* ACRE

## 1987 - 2004



Source: NASS