

Economic Considerations In Weed Control



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Economic considerations in weed management



- Efficacy – impact on yield and quality
- Efficiency – cost per acre
- Resource requirements
 - Equipment, labor, materials, capital
 - Timing of operations
- Environmental concerns
- Regulations – CDPR, EPA

Weed management costs



- **Labor**
 - Hand hoeing
 - Tractor operator
- **Materials**
- **Equipment**

Equipment costs



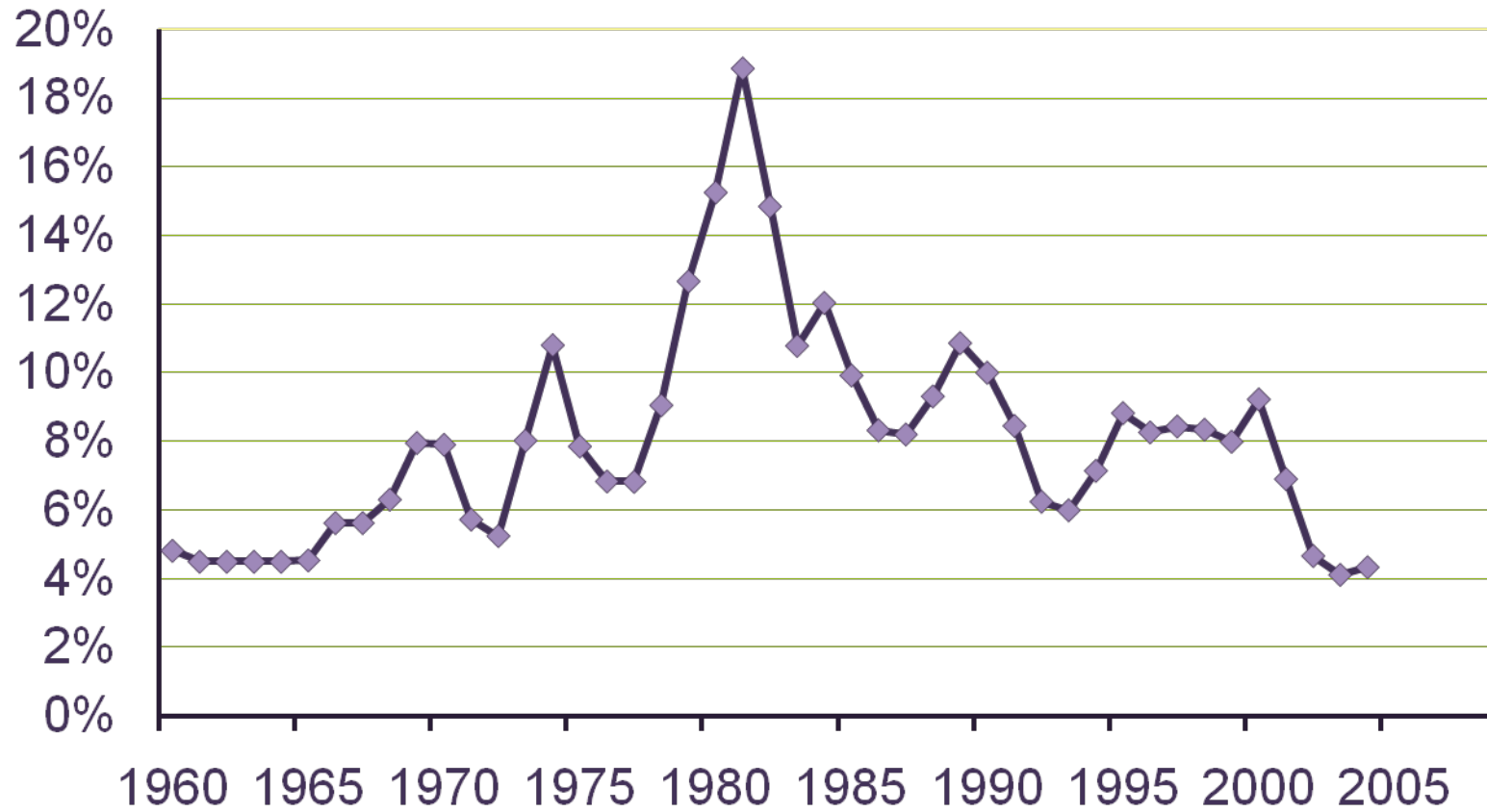
- **Operating costs**
 - Fuel and lube
 - Repairs
- **Business overhead**
 - Insurance
 - Taxes
- **Capital recovery**
 - Principle and interest or ownership costs

Weed management issues

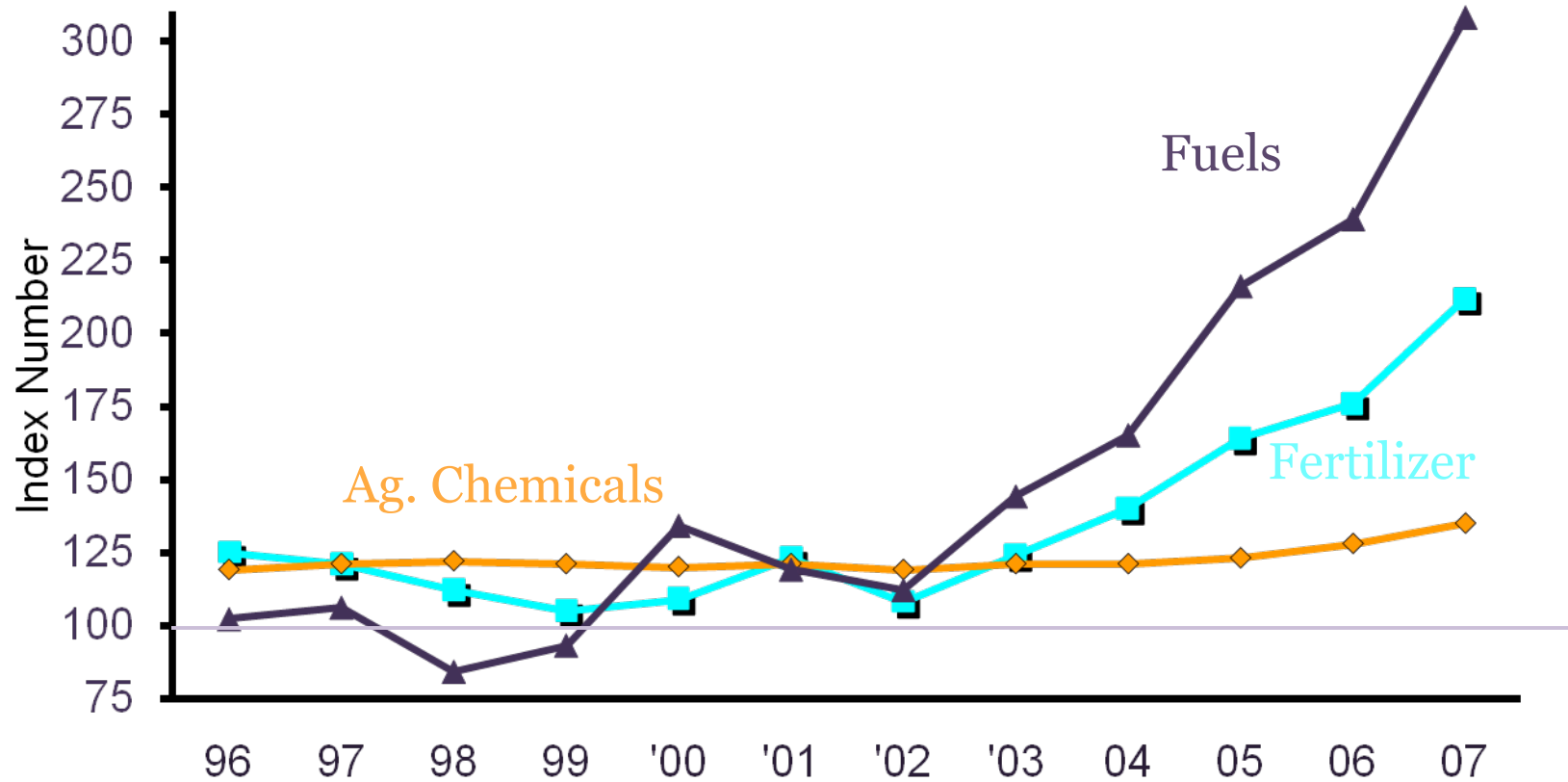


- Availability of labor
- Regulation of materials
- Intensification of high value crops
- Application methods
 - Band applications to reduce herbicide use
 - Spot spray

Prime Interest Rate

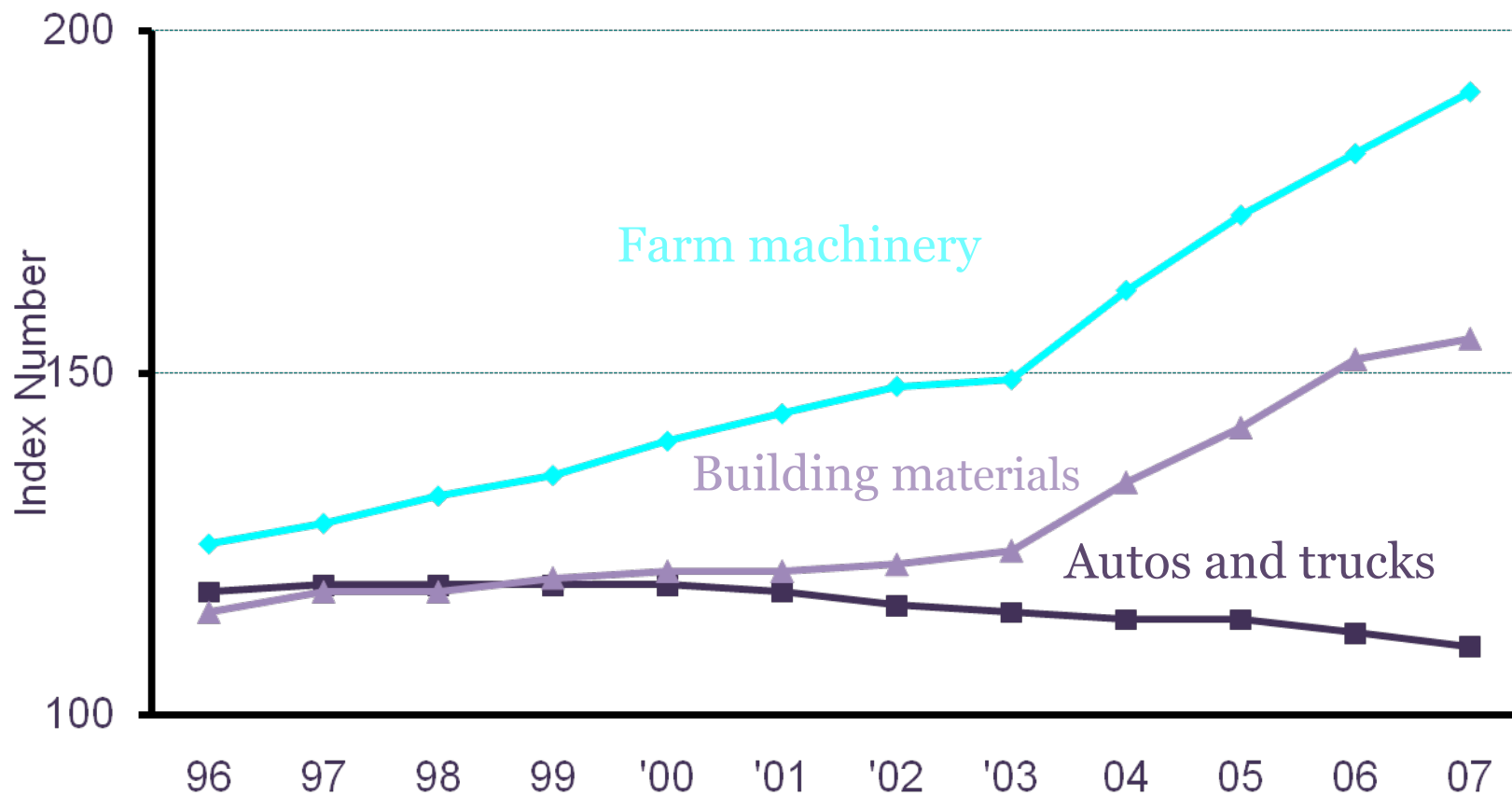


Indexes of prices paid *by* US farmers 1990-1992 = 100



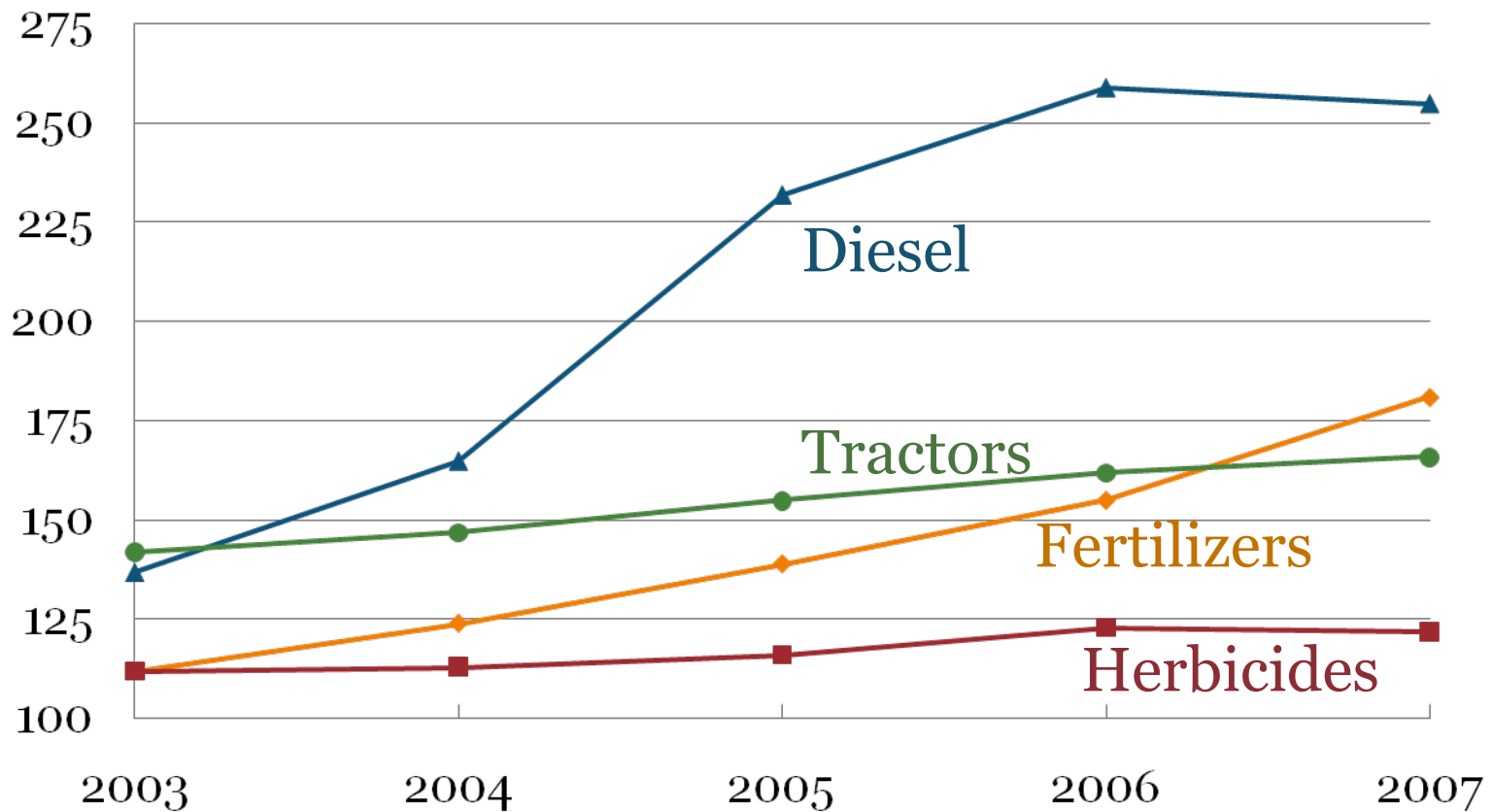
Source: National Agricultural Statistical Service, USDA.

Indexes of prices paid *by* US farmers 1990-1992 = 100



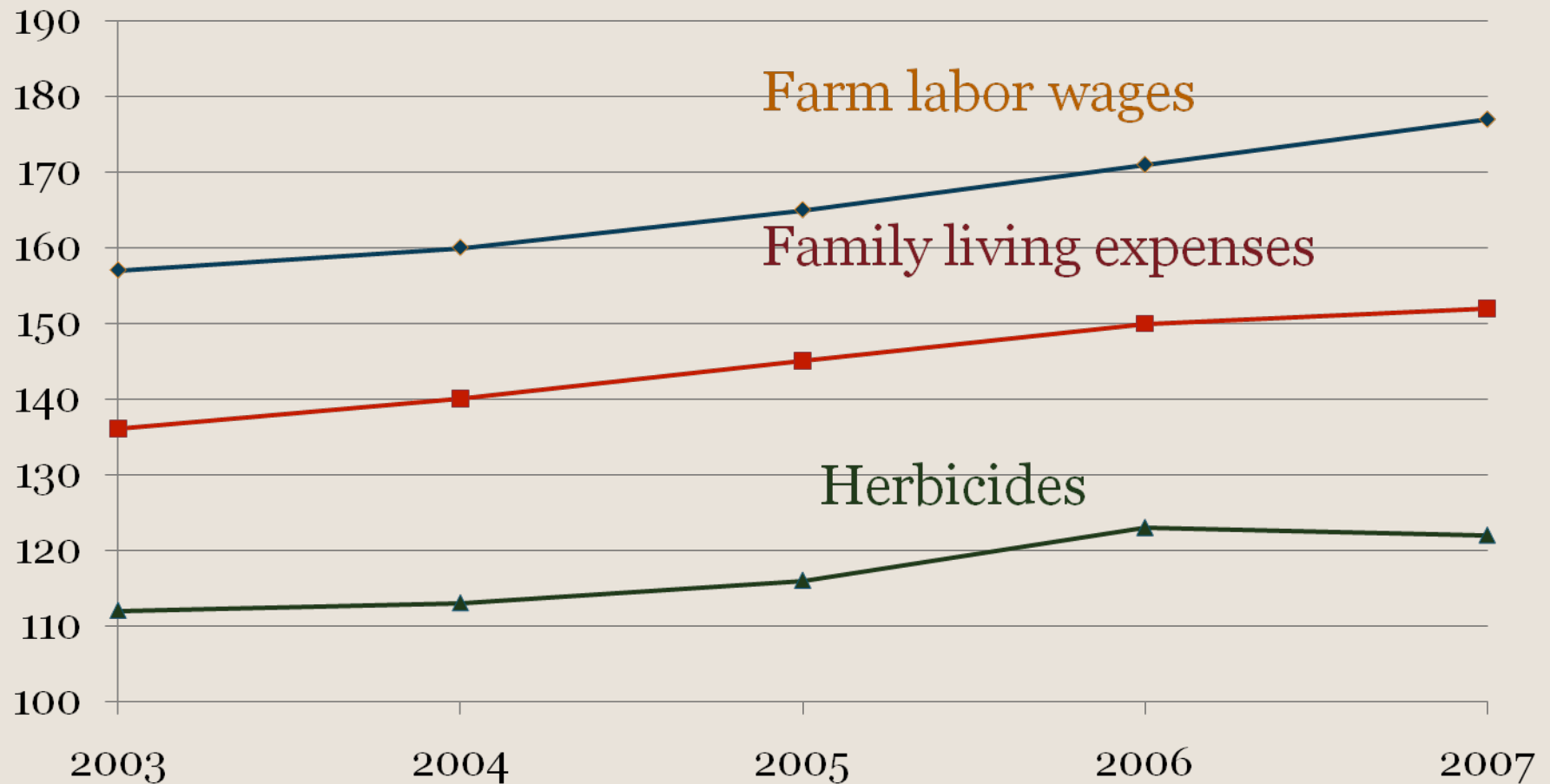
Source: National Agricultural Statistical Service, USDA.

Indexes of prices paid *by* US farmers 1990-1992 = 100



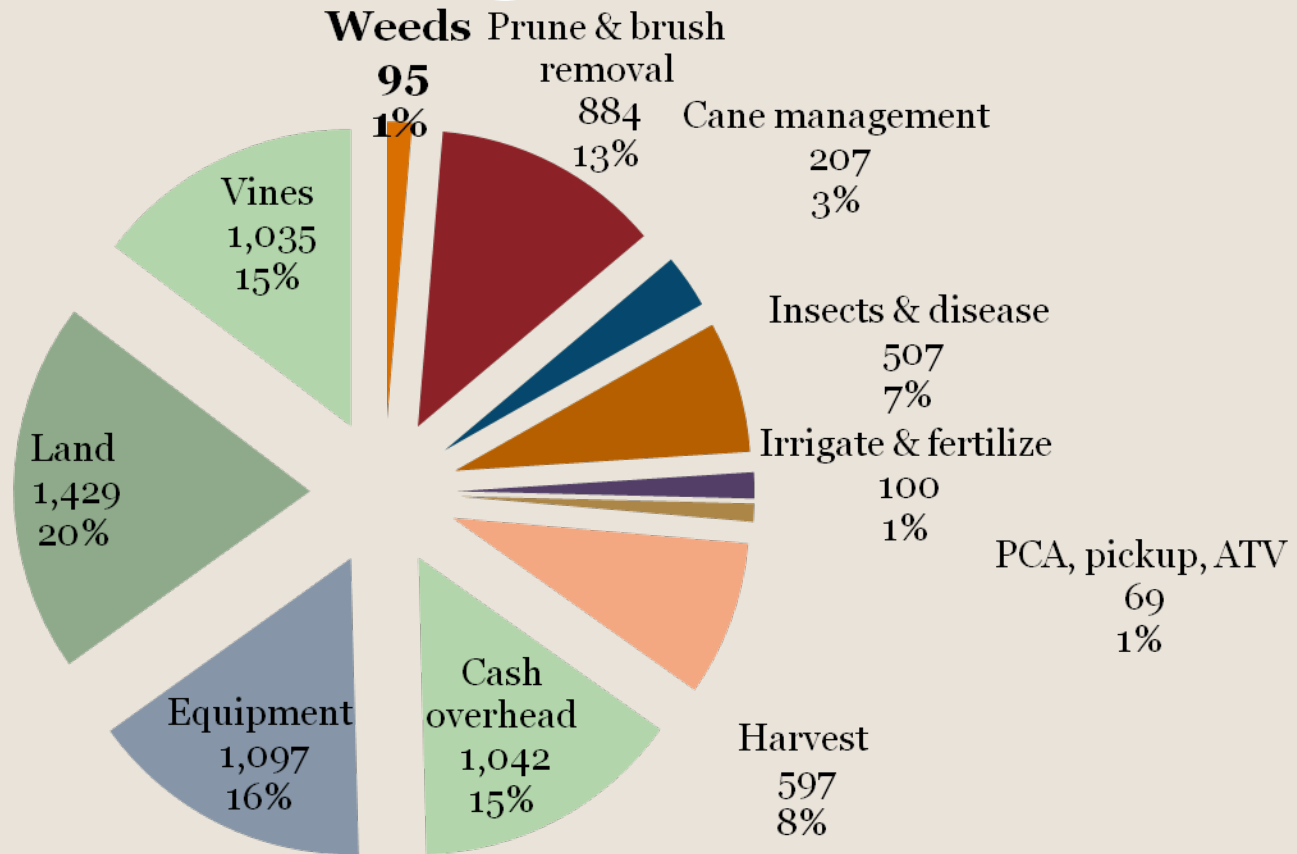
Source: NASS Agricultural Prices <http://www.nass.usda.gov/publications>

Indexes of prices paid by US farmers 1990-1992 = 100



Source: NASS Agricultural Prices
<http://www.nass.usda.gov/publications>

Cost of production, \$ per acre White winegrapes, Lake County



Weed control detail

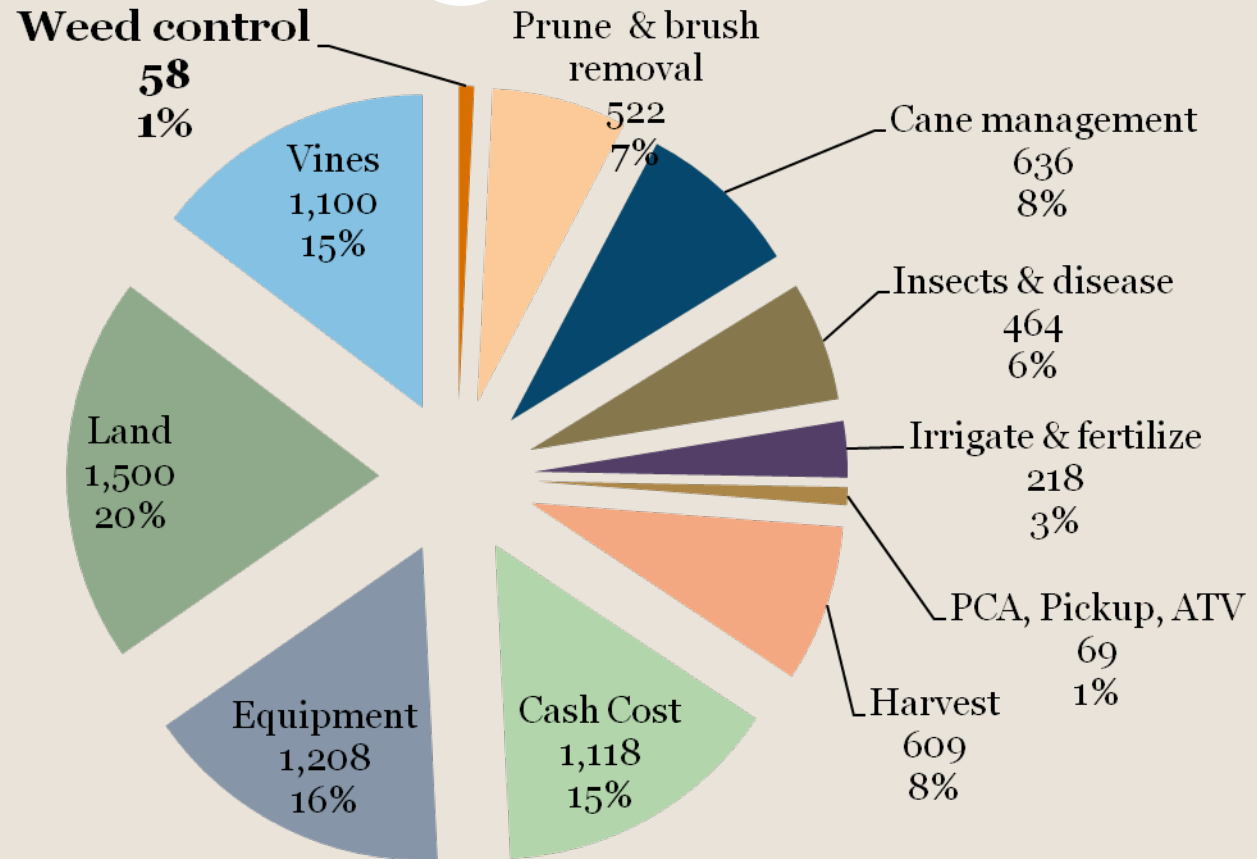
White winegrapes, Lake County



Operation	Labor	Material	Fuel, lube, and repairs	Total
Winter strip spray	\$6	\$53	\$1	\$60
Mow centers	16		12	27
Strip spot spray	5	2	1	8
Total	27	55	14	95

Operation	Month	Tractor	Implement	Material
Winter strip spray	January	ATV	Weed sprayer	Goal, Roundup, Surflan, Chateau
Mow centers	March, June	50 HP	Flail mower	
Strip spot spray	July	ATV	Weed sprayer	Roundup

Costs of Production, \$ per acre Red winegrapes, Lake County



Weed control detail

Red winegrapes, Lake County



Operation	Labor	Material	Fuel, lube, and repairs	Total
Winter strip spray	\$6	\$4	\$1	\$12
Mow centers	22		16	38
Strip spot spray	5	2	1	8
Total	33	6	18	58

Operation	Month	Tractor	Implement	Material
Winter strip spray	January	ATV	Weed sprayer	Roundup
Mow centers	March, May, June	50 HP	Flail mower	
Strip spot spray	June	ATV	Weed sprayer	Roundup

Mechanical vine row management for winegrapes



Operation	Labor	Fuel, lube & repairs	Equipment ownership	Total \$/Acre
Cultivate vine rows	\$86	\$31	\$30	\$147

Operation	Hrs /acre	Months	Equipment
Cultivate vine rows	4	April, May, July	60 HP 4WD In-row cultivator

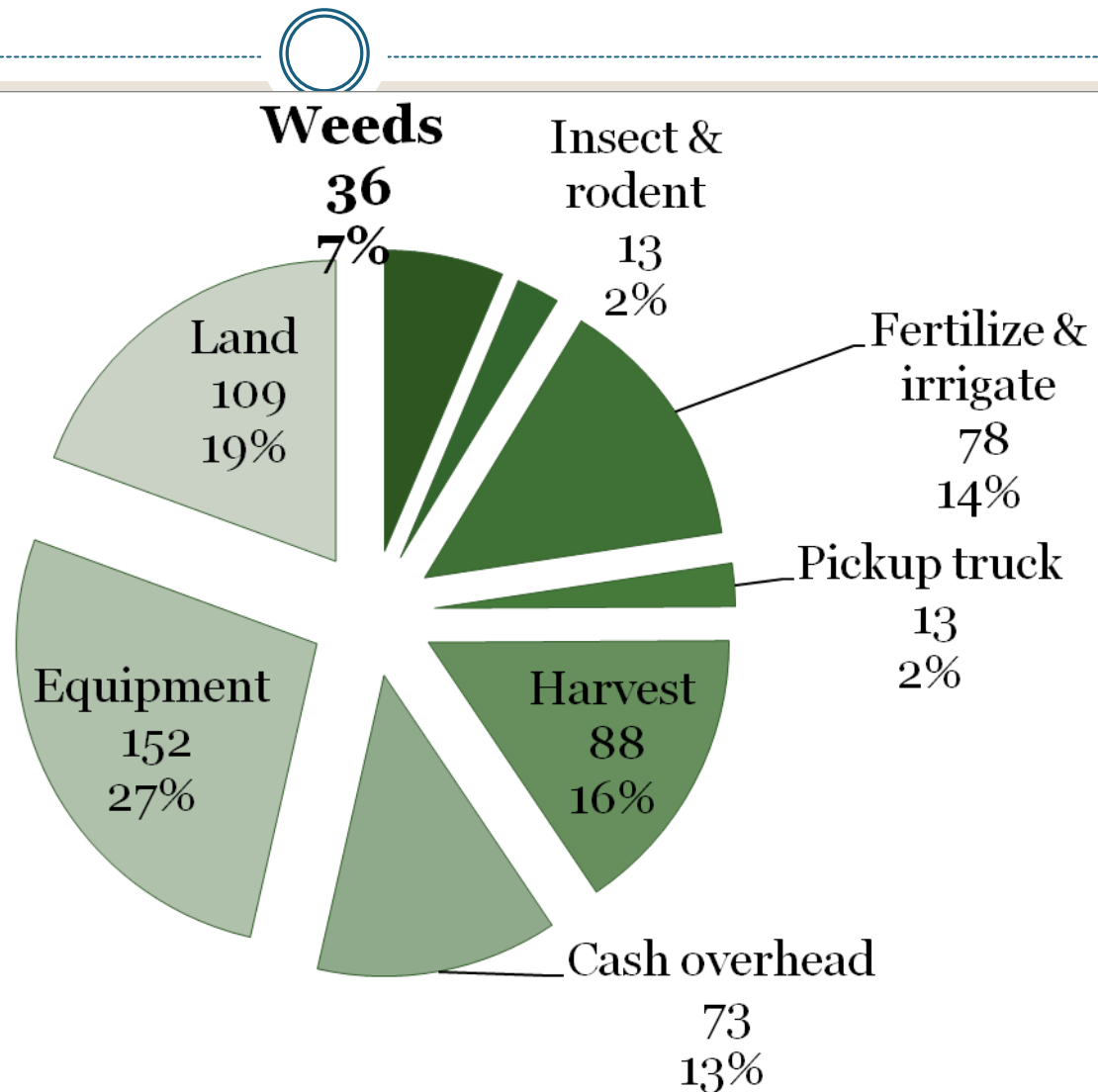
Chemical vine row management for winegrapes



Operation	Labor	Fuel, lube & repairs	Equipment ownership	Total \$/Acre
Strip spray 2X	\$43	\$2	\$16	\$61

Operation	Hrs /acre	Months	Equipment
Strip spray 2X	2	January, July	ATV Sprayer

Cost of production, \$ per acre Alfalfa, Siskiyou County



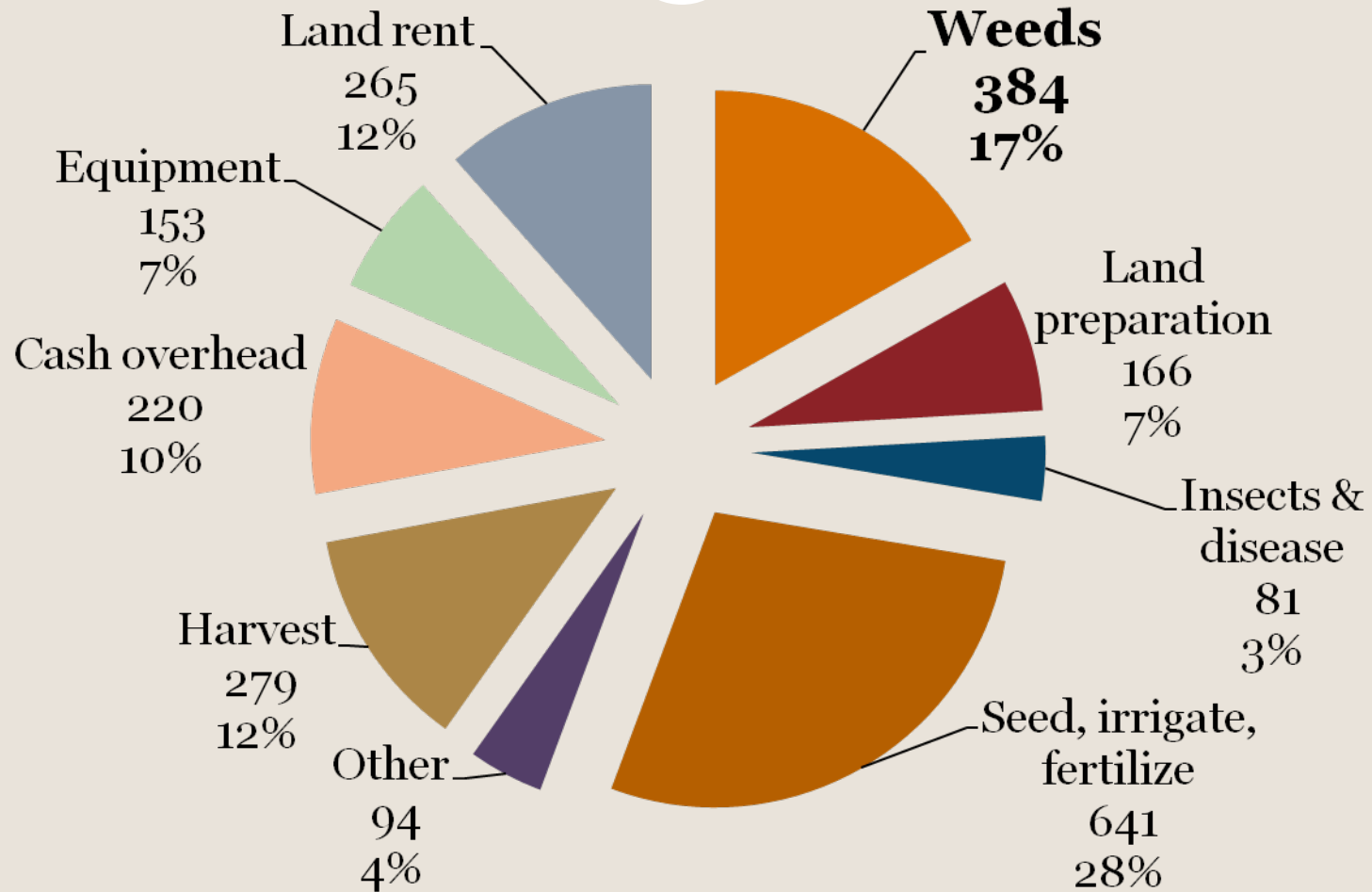
Weed control detail, \$ per acre Alfalfa production, Siskiyou County



Operation	Custom	Material	Total
Winter spray	\$7	\$29	\$36

Operation	Month	Custom	Material
Winter spray	February	Ground application	Gramoxone Max

Cost of production (\$ per acre) Processing tomatoes, Sacramento County

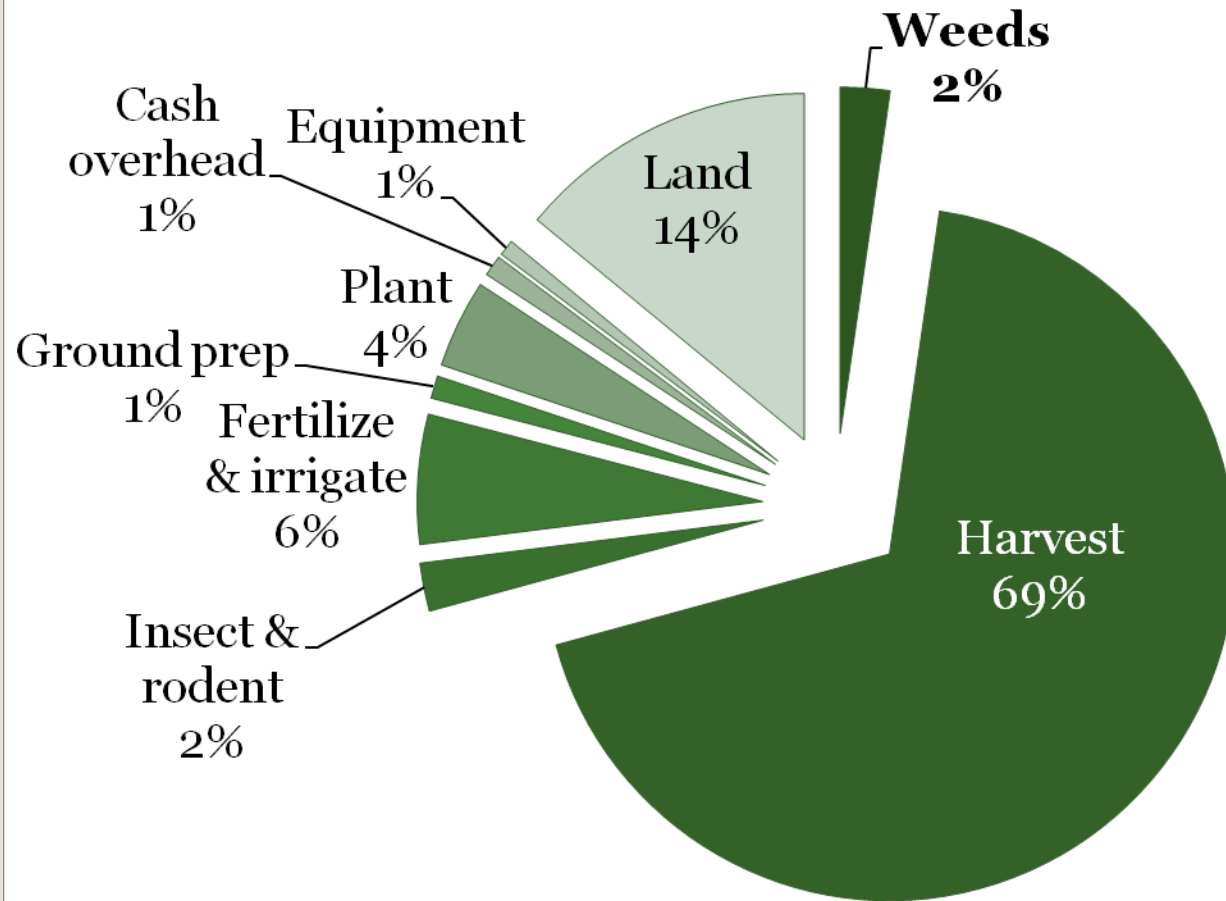


Weed management for tomatoes

Operation	Labor	Fuel, lube & repairs	Herbicide	Equipment ownership	Total \$/Acre
Herbicide 5X	\$19	\$30	\$57	\$25	\$131
Cultivate 7X	\$31	\$46		\$55	\$132
Hand hoe 2X	\$200				\$200

Operation	Hrs /acre	Months	Material	Equipment
Herbicide 5X	.76	Jan., April	Roundup, Goal, Devrinol, Matrix	110 HP, saddle tank
Cultivate 7X	1.51	Jan., April, May, July		130 HP, 3 row cultivator
Hand hoe 2X	17	April, July		

Cost of production, \$ per acre Broccoli, Monterey County



Weed management for broccoli

Operation	Labor	Fuel, lube & repairs	Herbicide	Equipment ownership	Total \$/Acre
Herbicide at planting*	\$7	\$6	\$38	\$4	\$55
Cultivate 3X	\$7	\$8		\$3	\$18
Hand hoe	\$94				\$94

Operation	Hrs /acre	Months	Herbicide	Equipment
Herbicide at planting	.28	January	Dacthal – 2 lbs.	130 HP 2WD Planter, sled
Cultivate 3X	.44	June		130 HP 2WD Cultivator 13'
Hand hoe	8	July		

Banded on 25% of the bed (two five-inch bands)

Weed management for broccoli

Operation	Labor	Fuel, lube & repairs	Herbicide	Equipment ownership	Total \$/Acre
Herbicide at planting*	\$7	\$6	\$38	\$4	\$55
Burn with fertilizer*	\$7	\$6	\$15	\$4	\$32
Cultivate 3X	\$7	\$8		\$3	\$18
Hand hoe	\$94				\$94

Operation	Hrs /acre	Months	Material	Equipment
Herbicide at planting	.28	January	Dacthal – 2 lbs.	130 HP 2WD Planter, sled
Burn with fertilizer	.28	March	AN – 20	130 HP 2WD, sled
Cultivate 3X	.44	June		130 HP 2WD Cultivator 13'
Hand hoe	8	July		

*Banded on 25% of the bed (two five-inch bands)

Weed management for organic broccoli



Operation	Labor	Fuel, lube & repairs	Equipment ownership	Total \$/Acre
Cultivate 3X	\$7	\$8	\$3	\$18
Hand hoe	\$254			\$254

Operation	Hrs /acre	Months	Equipment
Cultivate 3X	.44	June	130 HP 2WD Cultivator 13'
Hand hoe	22	July	

Environmental Regulations



- Federal Clean Air Act instructed the EPA to establish air quality standards
- States are responsible for implementation
- CA State Implementation Plan
 - Air Resources Board
 - Dept. of Pesticide Regulation
 - Cal EPA
- Calls for reduction of volatile organic compounds (VOCs) which is a precursor to ozone.
- DPR requesting all registrants to reformulate or cancel products with emission potential of 20% or greater