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# Labor Relations and Decline of the Oregon Strawberry Economy: Effects on Farm Size



**Special Report 641**  
**October 1981**



**Agricultural Experiment Station**  
**Oregon State University, Corvallis**

in cooperation with

**The Oregon Strawberry Commission**

LABOR REGULATIONS AND DECLINE OF  
THE OREGON STRAWBERRY ECONOMY:  
EFFECTS ON FARM SIZE\*

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Acknowledgments

Special appreciation is extended to the Oregon Strawberry Commission for permission to utilize annual Commission data on number of farms and production of strawberries, also for the funds to publish and circulate this report. Also appreciated are the helpful comments on an earlier draft of this report made by William G. Brown, Lloyd W. Martin, and Wilson H. Foote.

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\*Farm size pertains to strawberry acreage only.

## SUMMARY

This publication reports on a project which is researching the role that labor regulations in general and child labor prohibitions in particular have played in the decline of the Oregon strawberry economy. While labor regulations have a vital role to play in protecting and improving the health of people, they can also have severe adverse effects upon some regional economies, like North west strawberries, while having very little, if any, effect upon others. Differential effects with respect to farm size can also be expected.

Commission data on numbers of farms and processors for every year from 1967 through 1980, and on production of berries for processing by farms for the years 1967, 1974 and 1979 were analyzed. While these data do not address the issue of labor regulations as such (other data to be reported on later, will address this issue), they do give us a fix on the size structure of Oregon strawberry farming.

Three size sectors are defined as follows: small=below 4.3 acres or 30,000 pounds; medium=between 4.3 and 30.4 acres or 30,000 and 213,000 pounds; and large=above 30.4 acres or 213,000 pounds. Each has been affected differently by the economic factors responsible for the decline. This difference is illustrated by two indicators--percent of farms and percent of production--accounted for by each sector at three points in time--1967, 1974 and 1979. Respectively, the large size sector has increased from 7, to 8 to 10 percent of the farms and from 34, to 45 to 53 percent of the production; while the medium size sector has decreased from 49, to 42 to 44 percent of the farms and from 60, to 48 to 42 percent of the production. The small size sector, in which most exit and entry of strawberry farming occurs, has remained more or less constant with respect to these two indicators.

Size or scale is one of many important factors bearing on the issue of the extent to which mechanization is a practical alternative to labor. Economic feasibility studies of experimental machines generally conclude they would be more profitable than hand labor provided certain conditions hold. One of these is that they have a utilization rate of 150 hours per season. From 30 to 50 acres of strawberries are needed to achieve this. If this assumption is valid, the use of this type of machine would be practical for approximately 10 percent of Oregon's strawberry farms, as presently constituted. On the other hand, in response to increasing incentives, as machine systems become established, it could be expected that many of the current smaller strawberry growers would expand acreage to accommodate their use. Collective ownership and custom harvesting are other responses that would allow small growers to economically utilize machines.

However, a grower's ability to buy machines, expand acreage, and compete for labor is a function of his total assets. What the relationship is between total size of the farm enterprise and the size of the strawberry enterprise, and the relationship between strawberry acreage and other crops is important information that is lacking. This information will be developed in the next phase of this project.

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In 1938, Congress passed the Fair Labor Standards Act which established much needed standards regulating the use of labor in industry. Such limitations as maximum hours, minimum wage, and minimum age were among its many provisions. Agriculture, however, was considered to be a rural, community-centered, family enterprise and, therefore, was exempted from many FLSA provisions as were newspapers and wreathmakers.

The intervening decades saw changes in the structure and social image of agriculture as well as changes in the general social consciousness of people. The result is that agriculture's traditional exemptions from such labor standards, particularly as related to health--housing, sanitation and safety--became eroded.

Ultimately the politics of environmentalist and organized labor converged on the interrelated issue of pesticides and child labor and in 1974, Congress enacted an amendment to the FLSA, which for all intents and purposes eliminated agriculture's exemption to Child Labor Provisions (for workers less than 12 years of age). The agricultural constituency reacted but succeeded only in obtaining still another amendment (1977). This provided for the application for and granting of waivers by the Secretary of Labor for the use of pickers (harvesters) less than 12 years old--when the applicant (grower) submits "objective data" verifying among other things that older pickers are not available and that the "level and type of pesticides and other chemicals used would not have an adverse effect on their health and well being." Although appli-

cations for waivers and law suits on behalf of farmers have been filed, counter suits on behalf of farm-workers also have been filed, leaving the 1977 waiver amendment at an impasse.

Because of the agricultural sector's long isolation from the social and political processes affecting labor's role in the general economy, increasing legislation and regulation of farm labor practices probably are inevitable. But in the midst of this process, Congress and federal agencies must take care to translate reform from the level of symbolic meaning to the level of practical meaning.

For instance, symbolically there are two opposing images of child labor. On one side we have "child labor" which evokes politically powerful images of industrial oppression in the context of 19th century laissez faire philosophies. But the agricultural community in the Willamette Valley (as does the newspaper establishment) views "youth labor" as an opportunity for young people to make money and as a practical educational setting for summer and after school activities. Neither of these images, however, tells us very much about specific situations. In particular, we should be informed as to possible differential impacts upon regional, possibly even national, economies as well as impacts on farm size.

The factors with which labor legislation interacts also must be taken into account--such as competition from California and Mexico. Oregon is at a relative disadvantage compared to California and Mexico for a number of important reasons. For one, Oregon growers have only six weeks to harvest strawberries; California and Mexico have a much longer season. With a large farm worker population and nine months to work, California growers do not have to worry about using school children to harvest their strawberries. In addition

to having the advantage of climate, Mexico can compete with U.S. strawberries for U.S. consumers with virtually no strawberry harvesting regulations to contend with.

The impacts of labor legislation and federal regulation in general must be scrutinized more and more in the context of global competition where capital can avoid protected and relatively high cost labor in the United States and seek out exploitable and unprotected labor somewhere else while still producing commodities for export back to the United States. This is what appears to be happening in the case of Mexico where strawberries can be grown virtually free of regulation, yet compete with Oregon and U.S. strawberries (Strawberry Imperialism: An Inquiry into the Mechanisms of Dependency in Mexican Agriculture, by Ernest Feder, Editorial Campesina, Mexico City, 1978, pages 73-100).

#### General Objectives

Objectives of this study are twofold: first, to determine to what extent, if any, labor regulations have been responsible for the decline in Oregon strawberry production; and secondly, to provide additional information about how much mechanization is a practical alternative to labor.

This report examines data on production and numbers of farms from the Oregon Strawberry Commission for 1967 through 1980. Ensuing reports will examine data from interviews with a random sample of 1974 growers, including those no longer farming and those still farming but no longer growing strawberries.

There have been three abrupt, very large drops in strawberry acreage. The first came in 1957-58 and was never regained. This drop probably was unrelated to federal labor regulations. The second came in 1971-72 when a drop of 17 percent was experienced. The last and largest drop, which coincided with the 1974 FLSA amendment, came in 1974-75 with a 20 percent reduction in acreage.

### Description of Data on Number of Farms

The sources of these data are the records of the Oregon Strawberry Commission, which date to 1967, the year the Commission was formed. The records consist of Handlers' Reports to the Commission regarding per ton assessments paid by growers for the strawberries sold for processing. Although Handlers' Reports were used to obtain production figures for farms, complete anonymity was assured by assigning code numbers to processors as well as farms.

The Commission's records constitute a continuous uninterrupted record of Oregon-processed strawberry production in terms of gross pounds by farm, processor, county, and year from 1967 to present. They probably constitute the most complete data base on numbers and size of strawberry farms available.

Not having the resources or time to analyze every year, I selected three reference years: 1967, the initial year of the Commission's operation; 1974, because it was the year preceding the largest percentage drop ever in Oregon strawberry acreage, and 1979, which, when the study began, was the last year of complete records.

For every year including 1980, the number of processors reporting, the total tonnage they processed, and the number of farms they handled were recorded. Table 1 displays some results of these data and Extension data. Although 1957 was the peak acreage year for strawberries (18,500) and 1964 was the peak production year (100 million pounds), 1967 is not a bad baseline year to begin trend analyses. Acreage for 1967 is still within 71 percent of Oregon's peak in acreage, and 1967 production is 91 percent of the peak production year. In the 13 years since 1967, however, there have been dramatic declines in all gross indicators. There has been a 61 percent decline in total acreage, from 13,200 to 5,200 acres; a 50 percent decline in total production, from 91 to 46 million pounds; a 53 percent decline in aggregate production of processed strawberries,

from 88 to 42 million pounds; a 39 percent decline in the number of processors, from 33 to 20 firms; and a 67 percent decline in the number of farms or growers of berries for processing, from 1,207 to 404 (on the plus side, there have been steady increases in yield per acre, rising from an Oregon average of 6,900 pounds in 1967 to 8,900 pounds in 1980).

The significance of processed strawberry production data in relation to total strawberry production data can be seen by looking at the percent of total Oregon production that processed berries account for (Table 1). They accounted for 97 percent in 1967 and 91 percent in 1974, 1979, and 1980.

#### Decline in the Number of Farms by Year

See 1967 farms, Table 2: 1,207 farms over a seven-year period, showed a 77 percent attrition, or an average of 11 percent per year; over a 12-year period, they showed an 89 percent attrition. Over the same 12-year period, they showed an 11 percent continuity.

For 1974 farms, 510 farms, showed a 60 percent attrition over a 5-year period for an average of 12 percent per year. They showed a 25 percent continuity for that same period. Also, an interesting statistic showed up for 1974--new farms. Forty-eight (48) percent of 1974 farms growing strawberries for processing were new in terms of not having grown strawberries in 1967.

For 1979 farms, 33 percent of 423 farms were old farms in terms of 1967, 19 percent were old in terms of 1974 but, as in the case of 1974 farms, 48 percent were new in terms of not having grown strawberries for processing in 1974 and 1967.

Overall: 126 farms grew strawberries all three years. Because of a continuous, general decline in the industry, these longitudinally stable farms constituted an increasing percentage of each succeeding year's total number of farms. Respectively, they constituted 10 percent of the 1967 farms; 25 percent of the 1974 farms, and 30 percent of the 1979 farms.

TABLE 1  
Oregon Strawberries 1967 through 1980  
Acreage, Production and Number of Processors and Farms

Year	*Total planted acres	*Total production 1,000 lbs.	*Processed production 1,000 lbs.	Percent processed	Number processors	Number farms selling processed
1967	13,200	91,000	88,100	97	33	1,207
1968	12,200	70,600	68,200	97	29	1,050
1969	12,400	69,600	66,900	96	29	1,135
1970	11,400	70,800	68,400	97	27	974
1971	10,000	83,200	79,500	96	25	863
1972	8,300	54,200	51,400	95	22	694
1973	7,700	48,400	45,500	94	24	591
1974	7,500	41,500	37,600	91	22	510
1975	6,000	41,800	38,000	91	18	440
1976	5,300	47,800	41,600	87	20	414
1977	5,400	35,000	31,200	89	20	440
1978	5,200	34,000	30,400	89	19	409
1979	5,200	42,600	38,700	91	19	423
1980	5,200	46,300	42,200	91	20	404

\* Based on Oregon Commodity Data Sheets; compiled by Oregon State University Extension Service.

TABLE 2

## Decline in Number of Farms Selling Processed S/B's by Year

A. Trends based on <u>1967</u> universe of farms N = 1207	1967		1974		1979	
	freq	pct	freq	pct	freq	pct
No. farms going out of s/b's before 1974	927	77				
No. farms growing s/b's in 1974 but going out before 1979	138	12	138	27		
No. farms growing s/b's in both subsequent yrs. (i.e., 1967, 1974 and 1979)	126	10	126	25	126	30
No. farms going out of s/b's before 1974 but back to s/b's in 1979	16	1			16	3
Total 1967 farms	1207	100				
B. Trends based on <u>1974</u> universe of farms N = 510						
No. farms growing s/b's since 1967 but going out of s/b's before 1979			167	33		
No. farms growing s/b's since 1967 (i.e., in 1974 and 1979)			79	15	79	19
Total 1974 farms			510	100		
C. Trends based on <u>1979</u> universe of farms N = 423						
No. farms growing s/b's since 1974 (i.e. in 1979)					202	48
Total 1979 farms					423	100

### Differential Decline in Number of Farms by Size

Tables 3 and 4, while differing in the manner in which acreage was estimated, show very clearly that a steady decline in aggregate strawberry acreage and total number of farms has not meant a uniform, across-the-board decline in numbers of farms regardless of size. In Table 3, the acreage intervals were established first, then the intervals in terms of pounds based upon the average per acre yield for each respective year were established. In Table 4, the actual pounds produced by the farm for the year and pound intervals as indicated were used. The acreage which could be inferred from these pound intervals at  $3\frac{1}{2}$  tons or 7 thousand pounds per acre yields were then estimated.

Both tables show fairly clear size thresholds as follows: 4 acres and less, a 4 to approximately 30-acre segment, a 30 to approximately 50-acre segment and finally, a segment of 50 acres and above. The scheme, based on variable yields as a way of arriving at acreage estimates (Table 3), appears to be slightly more sensitive in terms of reflecting these thresholds. Both tables, however, show no substantial change in the percentage of farms of 4 acres or less; a decrease in the percentage of farms in the 5 to 30-acre range; no change in the percentage of farms in 30 to 50-acre range and a marked increase in the percentage of farms 50 acres and above--i.e., in the percentage of growers (the actual number in this category have stayed more or less stable) who produce more than 175 tons, or more than \$120,000 worth of strawberries annually for the processed market.

TABLE 3

Differential Decline in Number of Farms by Size\* (Acreage Constant)

1967 lb. intervals (x1000) 6,900 lbs/acre	1974 lb. intervals (x1000) 6,200 lbs/acre	1979 lb. intervals (x1000) 8,200 lbs/acre	acreage intervals	1967 freq	1974 freq	1979 freq	1967 pct	1974 pct	1979 pct
.2 - 28	.2 - 25	.2 - 33	.03 - 4	531	241	206	45	47	48
29 - 207	26 - 186	34 - 246	5 - 30	587	228	181	48	45	42
208 - 345	187 - 310	247 - 410	31 - 50	60	20	17	5	4	4
346 - 2070	311 - 1860	411 - 2460	51 - 300	29	21	19	2	4	5
mean: 73,022	mean: 72,047	mean: 92,971	Total	1,207	510	423	100	100	100

\*Size in terms of acreage, which is translated to lbs. based on average yield as per year indicated.

TABLE 4

## Differential Decline in Number of Farms by Size\* (Pounds Produced Constant)

lb. intervals (x1000)	1967 Upper limit cash value \$140/1000	1974 Upper limit cash value \$260/1000	1979 Upper limit cash value \$340/1000	Est. acreage 7000 lbs/acre	1967 freq	1974 freq	1979 freq	1967 pct	1974 pct	1979 pct
.2 - 29	\$ 4,060	\$ 7,540	\$ 9,860	.03 - 4.2	540	259	195	45	51	46
30 - 213	29,820	55,380	72,420	4.3 - 30.4	587	212	186	49	42	44
214 - 355	49,700	92,300	120,700	30.5 - 50.7	56	20	20	5	4	5
356 - 2000	280,000	520,000	680,000	50.8 - 285.7	24	19	22	2	4	5
Total					1,207	510	423	101	101	100

\*Size in terms of lbs. produced.

### Trends in Percent of Aggregate Production by Size Sector

The percent of production accounted for by the different size sectors (Table 5) provides another indication of differential decline. The smallest sector has maintained a steady contribution of about 6 percent of Oregon's production; whereas, the mean size sector (between 5 and 30 acres or between 30,000 and 213,000 pounds) shows an 18 percent decline in its percentage of contribution to Oregon's production (from 60 to 42 percent); and the largest size sector (above 50 acres ) shows a large 22 percent increase in its contribution to overall state strawberry production--from 17 percent in 1967 to 39 percent in 1979.

The comparison of trends in percent of farms with trends in percent of production among three size sectors (Table 6) clearly illustrates the consistent tendency for the large size sector (now inclusive of 30.5 to 285.7 acres) to increase at the expense of the mean sector, while being indifferent with respect to the extremely small sector or the sector which might be called the supplemental investment sector--where the cash value of the crop is as low as \$68, 1979 value (Table 5).

Overall, percent of production (as opposed to percent of farms) is a better indicator of what is going on in terms of economic change. For instance, the percentage of farms that the large farm sector accounts for shows only a 3 percent increase from 1967 to 1979, whereas, the percentage of production this sector accounts for shows a 19 percent increase.

TABLE 5

## Changes in Production Contributed by Size Sectors

lb. intervals (x1000)	1967 Upper limit cash value \$140/1000	1974 Upper limit cash value \$260/1000	1979 Upper limit cash value \$340/1000	Est. acreage 7000 lbs/acre	1967 lbs. (x1000)	1974 lbs. (x1000)	1979 lbs. (x1000)	1967 pct prod	1974 pct prod	1979 pct prod
.2- 29	\$ 4,060	\$ 7,540	\$ 9,860	.03- 4.2	5,710	2,577	1,939	6	7	5
30- 213	29,820	55,380	72,420	4.3- 30.4	52,488	17,815	16,419	60	48	42
214- 355	49,700	92,300	120,700	30.5- 50.7	14,894	5,155	5,509	17	14	14
356-2000	280,000	520,000	680,000	50.8-285.7	15,045	11,197	15,460	17	30	39
				Total	88,137	36,744	39,327	100	99	100

TABLE 6

Changes in Percentage of Farms as Compared to  
Changes in Percentage of Production by Size

lbs. intervals (x1000)	Est. acreage 7000 lbs/acre	1967		1974		1979	
		pct farms	pct prod	pct farms	pct prod	pct farms	pct prod
.2 - 29	.03 - 4.2	45	6	51	7	46	5
30 - 213	4.3 - 30.4	49	60	42	48	44	42
214 - 2000	30.5 - 285.7	7	34	8	45	10	53
Total		101	100	101	100	100	100

### Size Trends and Stable and Unstable Farms

The tendency for greater percentages of Oregon strawberry farms to show up in the very small and the large farm categories (shown in trend analyses of all farms) is demonstrated even more clearly by trend analysis of stable farms or farms growing strawberries all three years (Table 7). While the 5 to 30 acre, or 30,000 to 213,000 pound sector is the statistical mean in size (Table 5), it also marks the boundary of what can be considered the serious investment sector showing a cash value of from \$10,000 to \$72,000 based on 1979 prices. The movement is clearly away from this mean sector (from 63% in 1967 to 49% in 1979) toward alternatively smaller or larger operations. In other words, the mean sector has declined disproportionately with respect to the extremes.

On the other hand, as Table 8 demonstrates, unstable, or, in and out strawberry farming activity clearly tends to occur most frequently in the less than five-acre size sector--where rates of attrition as well as new starts occur at rates much higher than for all farms. In 1967, for instance, 45 percent of all farms were less than 5 acres, whereas, of those 1967 farms going out of strawberries (before 1974), 51 percent were in this size category. In terms of new starts in 1979, 59 percent of the new (since 1974) farms were in the .03 to 4.2 acre size, whereas, only 46 percent of all 1979 farms were in this size category.

TABLE 7

Analysis of Size Distribution of Stable Farms by Year

lb. intervals (x1000)	est. acreage 7000 lbs/acre	Farms growing s/b's all three years					
		dist. by 1967		dist. by 1974		dist. by 1979	
		production freq	production pct	production freq	production pct	production freq	production pct
.2 - 29	.03 - 4.2	26	21	28	22	38	30
30 - 213	4.3 - 30.4	79	63	75	60	62	49
214 - 2000	30.5 - 285.7	21	17	23	18	26	21
	Total	126	100	126	100	126	100

TABLE 8

## Analysis of Size Distribution of Unstable Farms by Year

lb. intervals (x1000)	est. acreage 7000 lbs/acre	1967 farms going out prior to '74		1974 farms new since '67 going out prior to '79		1979 farms new in s/b's since 1974	
		freq	pct	freq	pct	freq	pct
.2 - 29	.03 - 4.2	475	51	132	79	120	59
30 - 213	4.3 - 30.4	406	44	32	19	76	38
214 - 2000	30.5 - 285.7	45	4	3	2	6	2
Total		927	99	167	100	202	99

Comparing Size Distribution of New and Old Farms

Comparing the size distribution of new 1979 farms (from Table 8) with the 1979 size distribution of old or stable farms (from Table 7) illustrates even more dramatically the association between size and stability:

<u>acres</u>	<u>new 1979 farms</u>	<u>1979 size distribution of old (13 year) farms</u>
.2 - 4.2	59%	30%
4.3 - 30.4	38%	49%
30.5 - 285.7	2%	21%

New farms show double the percentage of the old farms in the smallest size; whereas, the old farms show 10 times the percentage of the new farms in the largest (above 30 acres) size.

In short, most of the annual exit/entry in Oregon strawberries occur in the less than five-acre size sector where strawberries are a supplementary economic activity and where only 5 percent of the production is juxtaposed with 46 percent of the farms.

Conclusions

While these data do not specifically address the issue of labor regulations, they do conclusively indicate that the economic factors responsible for the decline of Oregon strawberry acreage and aggregate production are not indifferent to size or scale of operation. These factors have favored large growers (those above 30.4 acres in size or 213,000 pounds annual production) relative to medium size growers (those between 4.3 and 30.4 acres or 30,000 and 213,000 pounds annual production). This asymmetry is illustrated by two indicators--percent of farms and percent of production--accounted for by each sector at three points in time--1967, 1974 and 1979. Respectively, the large size sector has increased from 7, to 8 to 10 percent of the farms and from 34, to 45 to 53 percent of the

production; while the medium size sector has decreased from 49, to 42 to 44 percent of the farms and from 60, to 48 to 42 percent of the production (Table 6).

The small size sector (farms below 4.3 acres or 30,000 pounds annual production) has remained more or less constant with respect to these two indicators.

Among the economic factors causing decline of strawberry farming, labor is by far the most frequently cited by researchers (Hussen 1978; Hussen, et al 1979; and Buchanan, et al 1980) and by growers themselves (Oregon Strawberry Commission 1981). Although the data in this report do not address the issue of labor regulations (forthcoming data will), they do give us a fix on the size structure of Oregon strawberry farming. Size or scale is one of many important factors bearing on the issue of to what extent mechanization is a practical alternative to labor for the industry.

The economic feasibility of mechanization--still in the experimental stages of development--has been researched by Oregon Agricultural Experiment Station scientists (Hussen, et al 1979). Basically their findings are that under varying parameters with respect to: yield (ranging from 3 to 6 tons to the acre); product quality (ranging from 4 to 8 percent of standard quality berries); and machine efficiency (ranging from 3 to 5 hours per acre; "...in most cases positive returns to Oregon growers were estimated from use of the (CML mower type) mechanical strawberry harvester (Hussen, et al 1979, page 27).") However, there are a number of important assumptions underlying these calculations. One of these assumptions is that the harvester has a utilization rate of 150 hours per season. Depending upon machine efficiency, this implies that from 30 to 50 acres of strawberries are needed to utilize the harvester at capacity (Hussen, et al 1979, page 25).

If this assumption is valid, the use of this type of machine would be limited to approximately 10 percent of Oregon's strawberry farms, as presently constituted. This is the percentage of 1979 farms estimated to be above 30.4 acres in size as

derived from pounds produced divided by an average per-acre yield of 7,000 pounds (Table 4, page 10). On the other hand, in response to increasing incentives, as machine systems become established, it could be expected that many of the current smaller strawberry growers would expand acreage to accommodate their use. Collective ownership (Hussen, et al 1979, page 25) and custom harvesting (Kim, et al 1980, page 180) are other responses that would allow small growers to economically utilize machines. Another consideration is that in terms of benefits to the State's aggregate production of strawberries, since the 30-plus-acre sector accounts for 53 percent of Oregon's strawberry production (Tables 5 and 6), mechanization, even if adopted only by this sector, would have a large impact.

In the final analysis, which this report is far from being, a strawberry grower's ability to buy machines of all kinds (not just harvesters) and his ability to expand acreage to utilize them, and, for that matter, his ability to compete for labor is a function of his total assets--including the total acreage he owns and rents and all the crops he grows. What the relationship is between total size of the farm enterprise and the size of the strawberry enterprise and the relationship between strawberry acreage and other crops is important information that is lacking.

This information is required to complete our understanding of the different responses different strawberry growers have made in the past to increasing labor regulations, and diminishing access to family and child pickers, as well as to predict what their responses will likely be in the future to the opportunity to mechanize or to the increasing availability of contract labor. What is needed at this juncture is a more analytically precise concept of "large", "medium" and "small" as these terms apply to strawberry farming enterprises. Are "small" strawberry growers really small farmers or are they generally diversified farmers who derive their main agricultural income from vegetable crops like beets, carrots, broccoli,

corn, and bush beans? Do "medium" strawberry growers tend to be general berry growers including raspberries, blackberries, and boysenberries? Are "large" strawberry growers basically specialized? What crops have replaced strawberries as land has been taken out of processed strawberry production? These and other questions relating to experience with labor, and state and federal regulations as well as perceptions of mechanization as an alternative will be sought from the growers themselves in the field interview phase of this project.

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