Profiles of Commercial Agriculture for the Southern Willamette Valley

District II
Linn County

OSU Extension Service
Department of Geography
Oregon State University
Special Report 696

CONTENTS

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I would like to thank the committee within the county who helped formulate the survey questionnaire. The committee members were: Hugh Hickerson and Erric Ross of the Extension Service; Bill Forrest, SCS; Steve Wulff, ASCS; John Detar and Steve Michaels, Linn County Planning Department.

Kevin Harrison and Dave Nelson, Graduate Research Assistants, have been responsible for much of the data handling and analysis, as well as working closely with me on data display formatting and other aspects of the project. Dave Nelson also worked on the Delphi data analysis.

I would like to thank all of these people for contributing to the project.

James R. Pease
Principal Investigator

EXPLANATORY NOTES

This survey was administered from Oregon State University, Department of Geography, for the purpose of supplementing census data on characteristics of commercial agriculture. The data for Linn County are intended to represent baseline data for agricultural district 2, which also includes Benton, Polk, Lane, and Marion Counties. Similar surveys have been completed for districts 1, 4, and 5. The project will complete a county level survey for each of three additional districts.

In Linn County, 12 types of agriculture were surveyed. However, some types were combined with others or dropped because of too few responses per type. We also dropped all responses below $2,500 in gross annual income from the data analysis.

A farm or ranch unit is defined as all lands (owned, rented, or leased) that are operated as one unit. The fields do not have to be contiguous. A farm or ranch unit is classified as a type of agriculture by 50% or more of value of products sold. If no one type contributes 50% or more, the farm is classified as general farm. The types of agriculture correspond to Standard Industrial Classification types, which are used by the U.S. Census Bureau. These types are published in the appendix.

A summary page combines all types of agriculture in the county for certain data items. This summary serves as an overview of general agricultural characteristics.

Dominant types of agriculture for the county as a whole are ranked as well as dominant types for each landform. Dominance is measured by: number of farms, number of acres, and value of products sold. The user can then select the measure of dominance most appropriate for his or her use. In determining dominance, census of agriculture numbers are used to obtain actual numbers of farms for each SIC type. These "population" numbers are multiplied by survey sample means to obtain figures for acreage and value of products sold. Since census figures do not relate SIC type to landform, the proportion of each SIC type that occurred on a given landform (e.g. bottomlands) in the sample was assumed to be the same proportion of the actual "population" which occurred on the landform.

Data are then displayed by types of agriculture. For each type, totals are given, as well as a breakdown by landforms. By keying data to landforms, the characteristics of commercial agriculture for different agricultural areas of the county can be determined. Farm units are classified by landform according to the majority of acreage. Data item 1, for example, indicates the mean size of farm units classified on each landform, although some of the acreage may occur on another landform. Data for selected items are also displayed for size groupings, which allows comparison of characteristics among groupings.

Data are suppressed ("S") for any data cell which contains less than 3 responses and for any type of agriculture with less than 5 responses.

If data are used to calculate average net income, the user may want to adjust gross income by an asset amortization value, as well as by operating expenses. While data for asset value are given, we have not calculated an amortization value for assets or an income capitalization rate.

Data are averaged for each item, i.e., the mean is given. For some SIC types, only farms lying within given size ranges were included in the computations. These ranges account for at least 90% of the value of products sold. Farms lying outside these size ranges were dropped to prevent skewing of the data by a few very large farms or a large number of very small farms. The ranges were determined from census data and are noted in the tables. Also, we have given the median for each data item. The user should evaluate these two measures of the "average" for the purpose of his or her analysis.

A standard error is given for each data item which displays a mean. The standard error means that we can be 68% confident that the true mean is within a certain range of the sample mean. The range can be determined by subracting the standard error from the sample mean to derive the lower end of the range and by adding the standard error to the mean to get the upper end. Likewise, we can be 95% confident that the true mean lies within two standard errors, and 99% confident that it lies within three standard errors. We have provided the standard error to allow the user to determine reliability of the data for his or her purposes.

The standard error will vary according to two factors: the size of the sample and the variability of the response. The larger the sample, the smaller the standard error. Likewise, the closer together the responses, the smaller the standard error.

For some data items, a mean and standard error are not given. Instead, the number of farms in the sample must be used to evaluate the reliability of the statistic. In these items, # of farms means # of sample farms.

We drew a 33% random sample from a list of 1,536 farmers in Linn County. Of 512 farmers in the sample, we received a 63% return rate. However, 31% were unusable for a variety of reasons and others were dropped because of suppression criteria. We were left with 145 valid responses with gross sales over $2,500 per year.

In the appendix, data are tabulated for a Delphi Expert Opinion panel. Definitions of farm and landforms are the same as in the survey. An explanation of the Delphi technique and its validity are given in the appendix. Both mail-out surveys and Delphi panels are subject to error. The user should consider these error factors in utilizing the data.

The data base can be used for various research, educational, and public policy applications. We have selected certain types of analyses for this report. Many other types of analysis are possible on the original data base. The survey form is reproduced in back of the report. Reference to the survey form will clarify certain data items as well as suggest other types of analyses. Questions on data interpretation or special analysis requests should be addressed to Dr. James R. Pease, OSU Extension Service, Dept. of Geography, Oregon State University, Corvallis, 97331, or telephone 503-754-3141

DISTRICT 2
Linn County
Summary Characteristics of All
Farms Over $2500 in Gross Income

By Landforms

		Totals	Bottomlands	Terraces	Foothills
1. Size in Acres (including rented & leased land)	Mean	458.87	283.24	623.19	276.22
	Med.	231.50	260.00	350.50	149.75
2. Gross Value of Products Sold*	Mean	119.15	141.55	158.17	27.47
	Med.	39.97	70.00	62.05	9.00
3. Percent of Leased or Rented Lands	Mean	34.7	41.5	36.2	23.4
	Med.	28.6	33.3	34.5	0.9
4. Typical Field Size (acres)	Mean	41.09	36.55	46.66	26.80
	Med.	29.96	29.60	36.00	15.33
5. Minimum Field Size (acres)	Mean	10.47	14.83	10.49	6.66
	Med.	6.10	8.33	6.38	4.71
6. Percent of Farm Adjacent to Home Parcel	Mean	70.26	57.86	72.21	84.77
	Med.	99.54	70.00	95.00	99.48
7. Annual Expenses (1982)*	Mean	70.73	56.34	97.41	24.93
	Med.	27.52	27.50	78.45	14.70
8. Value of Land, Bldgs., Equipment & Livestock (1982)*	Mean	734.31	647.20	936.51	422.77
	Med.	339.00	325.00	435.50	200.00
9. Landforms Producing Greatest Income	% of Farms	N/A	25.0	47.0	28.0
	% of Tot. Income	N/A	27.2	57.2	5.9

10. Size (acres) Related To Income*		<10	10 - 19.9	20 - 39.9	40 - 69.9	70 - 99.9	100 - 249.9	250 - 499.9	500+
	Mean	84.32	121.57	452.46	387.36	245.91	603.70	956.50	1890.00
	Med.	45.50	93.50	265.00	322.50	275.00	550.00	1010.00	1215.00

LINN COUNTY
DOMINANT TYPES OF AGRICULTURE

Landform	Rank	By # of Farms	By # of Acres	By Value of Products Sold
TOTALS (for all landforms)	1.	Grazing/General Stock	Grass Seed	Grass Seed
	2.	Grass Seed	Grazing/General Stock	Animal Husbandry
	3.	Animal Husbandry	Vegetable Crops	Dairy
	4.			Vegetable Crops
	5.			Grazing/General Stock
Bottomlands	1.	Grazing/General Stock	Vegetable Crops	Vegetable Crops
	2.	Vegetable Crops	Grazing/General Stock	Dairy
	3.	Dairy	Grass Seed	Grazing
	4.	Grass Seed	General Crops	General Crops
	5.	Fruits/Berries		
	6.	General Crops		
Terraces	1.	Grass Seed	Grass Seed	Grass Seed
	2.	Grazing/General Stock	Grazing/General Stock	Animal Husbandry
	3.	Dairy	Field Crops	Dairy
	4.	Field Crops		
		Animal Husbandry		
Foothills	1.	Grazing/General Stock	Grazing/General Stock	Animal Husbandry
	2.	Animal Husbandry	Grass Seed	Grazing/General Stock
	3.	Grass Seed	Animal Husbandry	Grass Seed
	4.	Fruits/Berries		Fruits/Berries

Note: Estimates of income and acreage were made by multiplying sample means by population numbers. Estimates of number of farms for landforms were made by relating proportion of sample farms to the population numbers. Types of agriculture which account for less than 5% of totals are dropped. Cash grains are not included because of a low number of sample responses, which may affect rankings. Low response rate for field crops may also affect rankings. Livestock Grazing and General Livestock farms have been combined.

OREGON STATE UNIVERSITY
EXTENSION SERVICE

DAIRIES AND ANIMAL HUSBANDRY

District 2, Linn Co. 1983
OSU Extension Service

Type of Agriculture Dairies & Animal Husbandry
Landform[1] Terraces
Number of Survey Responses 8
Population Number (From Census Data) 163
Size Range Used in Computations all

Data Item		Totals	BY LANDFORM Bottomlands	Terraces	Foothills
1. Size (acres) of total farm unit (includes rented and leased lands)[1]	MEAN	191.25	"S"[2]	236.50	150.00
	S.E.	43.84		75.98	60.28
	MED.	137.00		144.00	200.00
	VC/MC	8/0		4/0	3/0
2. Gross Value of Products Sold (1981) (in thousands of dollars)	MEAN	231.63	"S"	367.50	77.67
	S.E.	64.52		76.74	42.45
	MED.	165.00		265.00	80.00
	VC/MC	8/0		4/0	3/0
3. Percent of leased or rented lands	MEAN	28.35	"S"	21.69	46.67
	S.E.	11.97		12.81	26.03
	MED.	6.62		6.62	50.00
	VC/MC	8/0		4/0	3/0
4. Asset Value (1981): Land, Bldg.,Equip. (In thousands of dollars) (See Item 19)	MEAN	645.13	"S"	980.52	413.00
	S.E.	221.85		359.57	171.70
	MED.	540.00		633.00	535.00
	VC/MC	8/0		4/0	3/0
5. Annual Expenses (1981) (In thousands of dollars) (See Item 20)	MEAN	117.10	"S"	210.10	32.12
	S.E.	52.75		83.82	16.18
	MED.	61.55		89.75	27.15
	VC/MC	8/0		4/0	3/0

S.E. = Standard Error MED = Median VC/MC = Valid Cases/Missing Cases

1 Farms are classified by landforms according to the majority of acreage. Some acreage of a given farm may be on another landform.

2 "S" = Suppression. Data are suppressed for any data cell with less than 3 responses.

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
6. Minimum # of acres to arrange a contract with a buyer	MEAN	"S"	"S"	"S"	No Cases
	S.E.				
	MED.				
	VC/MC				
7. Typical field size (most common acreage)	MEAN	44.71	"S"	32.00	61.67
	S.E.	16.66		5.23	40.45
	MED.	36.67		35.00	40.00
	VC/MC	7/1		4/0	3/0
8. Distance to rent typical field size (in miles, one way)	MEAN	4.00	"S"	4.50	3.33
	S.E.	1.56		1.66	3.33
	MED.	4.50		5.00	2.50
	VC/MC	7/1		4/0	3/0
9. Minimum field size (acres)	MEAN	8.00	"S"	6.00	10.67
	S.E.	2.20		1.68	4.70
	MED.	6.50		6.00	7.00
	VC/MC	7/1		4/0	3/0
10. Distance to rent minimum field size (in miles, one way)	MEAN	1.71	"S"	1.75	1.67
	S.E.	.75		.75	1.67
	MED.	1.00		1.50	1.25
	VC/MC	7/1		4/0	3/0
11. Field Proximity a. % of farm adjacent to home parcel	MEAN	67.14	"S"	65.00	"S"
	S.E.	17.00		23.63	
	MED.	96.25		80.00	
	VC/MC	7/1		4/0	
b. % of farm less than 5 miles away	MEAN	32.86	"S"	35.00	"S"
	S.E.	17.00		23.63	
	MED.	3.75		20.00	
	VC/MC	7/1		4/0	
c. % of farm 5 - 10 miles away	MEAN	0	"S"	0	"S"
	S.E.	0		0	
	MED.	0		0	
	VC/MC	7/1		4/0	

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
d. % of farm more than 10 miles away	MEAN	0	"S"	0	"S"
	S.E.	0		0	
	MED.	0		0	
	VC/MC	7/1		4/0	
12. Percent of sample farms & income, by landform	# of farms	NA	"S"	4	3
	% of farms			50	38
	% of total income			79	13

13. Type of Market (by % of product sold)		Broker	Auction	Coop. or Assoc.	Retail Sales	Other
	MEAN	25.00	12.50	48.75	3.13	10.63
	S.E	14.17	11.14	18.46	2.10	9.28
	MED.	7.50	1.67	5.00	.83	1.67
	VC/MC	8/0	8/0	8/0	8/0	8/0
14. Distance to Market (miles one way)	MEAN			60.00	"S"	"S"
	S.E			20.41		
	MED.			75.00		
	VC/MC			4/4		

15. Processing Location (by % of product)		County	Other Valley	Other In-State	Out-of-State	Other Country
	MEAN	1.88	50.63	34.38	13.13	0
	S.E.	1.88	16.38	17.00	9.77	0
	MED.	1.07	22.50	7.50	1.50	0
	VC/MC	8/0	8/0	8/0	8/0	8/0

16. Market Openness (by sample farms)		Very Limited	Somewhat Limited	Open
	#	2	3	3
	%	25.0	37.5	37.5

17. Farm Size and % by gross income group (1981) (in thousands of dollars)

	< 10	10-19.9	20-39.9	40-69.9	70-99.9	100-249.9	250-499.9	500+
% of farms	"S"	No cases	No cases	No cases	"S"	38	"S"	"S"
% of total income						28.0		
Size (ac): MEAN	"S"	No cases	No cases	No cases	"S"	156.67	"S"	"S"
S.E.						21.67		
MED.						136.00		
VC/MC						3/0		

18. Soil Types* (by sample farms)

a. Bottomlands

	Chehalis-Cloq-Newberg	McAlpin-Waldo-Bashaw	Don't Know
#	"S"	-	-
%		-	-

b. Terraces

	Day-Am-Holc-Awb-Cons	Clac-Court	Will-Wood-Mal-Sal-Cob	Don't Know
#	2		1	
%	50.0		25.0	

c. Foothills

	Jory-Nek-Bellpine	Dix-Hazel-Philomath	Don't Know
#	2	1	
%	67.0	33.3	

19. Asset Value (1981) (in thousands of dollars)

	Land (ex. leased or rented land)	Buildings (ex. home)	Machinery (new or used)	Livestock
MEAN	306.71	140.71	63.58	226.29
S.E.	92.16	38.46	25.79	97.65
MED.	250.00	150.00	45.00	225.00
VC/MC	7/1	7/1	7/1	7/1

20. Annual Expenses: (1981) (in thousands of dollars)

	Energy (fuel, electricity)	Labor (ex. operator)	Repairs & Maintenance	Taxes & Insurance
MEAN	7.34	14.97	7.07	6.36
S.E.	2.12	8.85	2.00	2.32
MED.	7.00	2.05	6.88	3.60
VC/MC	7/1	7/1	7/1	7/1

	Interest on Equipment	Replace Mach./Equip.	Replace Livestock	Other	Total
MEAN	4.86	7.64	43.08	42.50	117.10
S.E.	1.78	3.36	30.60	34.71	52.75
MED.	4.00	3.00	20.00	5.00	61.55
VC/MC	7/1	7/1	7/1	7/1	8/0

*More than one soil type per farm may be reflected in statistics, which will give a row total of more than 100%.

LINN COUNTY

SELECTED DATA BY SIZE GROUPINGS

Data Item		1-119 Acres	120 + Acres
1. Size of total farm unit (includes rented and leased lands)	Mean	"S"	214.29
	S.E.		43.07
	Med.		200.00
	VC/MC		7/0
2. Gross Value of Products Sold (1982) (in thousands of dollars)	Mean	"S"	264.29
	S.E.		64.25
	Med.		220.00
	VC/MC		7/0
3. Percent of leased or rented lands	Mean	"S"	25.3
	S.E		13.4
	Med.		5.0
	VC/MC		7/0
4. Value of investment in Land, Buildings, Machinery and Equipment (1982) (in thousands of dollars)	Mean	"S"	584.51
	S.E.		149.16
	Med.		470.03
	VC/MC		6/1
5. Annual Expenses (1982) (in thousands of dollars)	Mean	"S"	154.98
	S.E.		63.61
	Med.		63.05
	VC/MC		6/1
6. Contribution to Total Ag. Type Sales	By %	0.2	99.8

FIELD CROPS & GENERAL CROPS

Type of Agriculture Field Crops & General Crops
Landform[1] Terraces
Number of Survey Responses 13
Population Number (From Census Data) 73
Size Range Used in Computations all

Data Item		Totals	BY LANDFORM Bottomlands	Terraces	Foothills
1. Size (acres) of total farm unit (includes rented and leased lands)[1]	MEAN	358.92	232.25	555.83	"S"
	S.E.	144.40	78.65	298.29	
	MED.	299.25	163.50	302.50	
	VC/MC	13/0	4/0	6/0	
2. Gross Value of Products Sold (1981) (in thousands of dollars)	MEAN	120.57	166.75	137.65	"S"
	S.E.	49.45	116.30	77.25	
	MED.	32.00	13.00	32.55	
	VC/MC	13/0	4/0	6/0	
3. Percent of leased or rented lands	MEAN	32.48	38.68	39.54	"S"
	S.E.	8.73	10.10	17.76	
	MED.	33.80	39.75	41.67	
	VC/MC	12/1	4/0	5/1	
4. Asset Value (1981): Land, Bldg.,Equip. (In thousands of dollars) (See Item 19)	MEAN	918.27	662.88	1,537.33	"S"
	S.E.	465.96	308.37	961.75	
	MED.	245.00	256.25	230.50	
	VC/MC	13/0	4/0	6/0	
5. Annual Expenses (1981) (In thousands of dollars) (See Item 20)	MEAN	81.30	142.88	80.42	"S"
	S.E.	36.91	103.49	40.62	
	MED.	17.00	7.00	30.50	
	VC/MC	13/0	4/0	6/0	

S.E. = Standard Error MED = Median VC/MC = Valid Cases/Missing Cases

1 Farms are classified by landforms according to the majority of acreage. Some acreage of a given farm may be on another landform.

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
6. Minimum # of acres to arrange a contract with a buyer	MEAN	28.00	13.33	"S"	"S"
	S.E.	18.55	6.67		
	MED.	15.00	15.00		
	VC/MC	5/8	3/1		
7. Typical field size (most common acreage)	MEAN	33.83	26.25	40.17	"S"
	S.E.	3.92	5.54	6.08	
	MED.	30.50	22.50	42.00	
	VC/MC	12/1	4/0	6/0	
8. Distance to rent typical field size (in miles, one way)	MEAN	6.43	4.50	9.00	"S"
	S.E.	2.07	2.22	3.79	
	MED.	6.00	3.00	10.00	
	VC/MC	7/6	4/0	3/3	
9. Minimum field size (acres)	MEAN	12.50	8.25	13.00	"S"
	S.E.	3.53	2.72	5.48	
	MED.	8.00	5.50	9.00	
	VC/MC	12/1	4/0	6/0	
10. Distance to rent minimum field size (in miles, one way)	MEAN	2.90	2.75	2.60	"S"
	S.E.	.74	1.60	.81	
	MED.	2.50	.50	2.00	
	VC/MC	10/3	4/0	5/1	
11. Field Proximity a. % of farm adjacent to home parcel	MEAN	74.18	93.75	67.20	"S"
	S.E.	9.18	6.25	16.55	
	MED.	75.00	95.83	66.00	
	VC/MC	11/2	4/0	5/1	
b. % of farm less than 5 miles away	MEAN	16.90	6.25	22.80	"S"
	S.E.	5.80	6.25	9.37	
	MED.	2.00	4.17	34.00	
	VC/MC	10/3	4/0	5/1	
c. % of farm 5 - 10 miles away	MEAN	2.00	0	4.00	"S"
	S.E.	2.00	0	4.00	
	MED.	1.11	0	2.50	
	VC/MC	10/3	4/0	5/1	

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
d. % of farm more than 10 miles away	MEAN	3.00	0	6.00	"S"
	S.E.	3.00	0	6.00	
	MED.	1.67	0	3.75	
	VC/MC	10/3	4/0	5/1	
12. Percent of sample farms & income, by landform	# of farms	NA	4	6	"S"
	% of farms		31	46	
	% of total income		43	53	"S"

13. Type of Market (by % of product sold)	Broker	Auction	Coop. or Assoc.	Retail Sales	Other
MEAN	52.55	3.75	21.15	11.00	15.00
S.E	13.63	2.23	10.07	8.35	8.79
MED.	70.00	.83	1.11	0.50	2.08
VC/MC	11/2	12/1	13/0	12/1	11/2
14. Distance to Market (miles one way) MEAN	11.14	18.67	15.33	0	11.25
S.E	3.44	11.23	8.37	0	7.18
MED.	8.25	14.00	15.00	0	7.50
VC/MC	7/6	3/10	3/10	3/10	4/9

15. Processing Location (by % of product)	County	Other Valley	Other In-State	Out-of-State	Other Country
MEAN	72.73	14.00	0	1.00	4.00
S.E.	11.45	9.45	0	1.00	4.00
MED.	95.83	2.50	0	.56	2.22
VC/MC	11/2	10/3	10/3	10/3	10/3

16. Market Openness (by sample farms)	Very Limited	Somewhat Limited	Open
#	1	3	7
%	9.1	27.3	63.6

		< 10	10-19.9	20-39.9	40-69.9	70-99.9	100-249.9	250-499.9	500+
17. Farm Size and % by gross income group (1981) (in thousands of dollars)	% of farms	38	"S"	"S"	"S"	No Cases	23	No Cases	"S"
	% of total income	1.4					27.9		
	Size (ac): MEAN	51.40					446.67		
	S.E.	8.03					26.67		
	MED.	55.00					440.00		
	VC/MC	5/0					3/0		

18. Soil Types * (by sample farms)				
a. Bottomlands		Chehalis-Cloq-Newberg	McAlpin-Waldo-Bashaw	Don't Know
	#	4	-	-
	%	100	-	-

b. Terraces		Day-Am-Holc-Awb-Cons	Clac-Court	Will-Wood-Mal-Sal-Cob	Don't Know
	#	4	-	1	-
	%	66.7	-	16.6	-

c. Foothills		Jory-Nek-Bellpine	Dix-Hazel-Philomath	Don't Know
	#	-	-	-
	%	-	-	-

19. Asset Value (1981) (in thousands of dollars)		Land (ex. leased or rented land)	Buildings (ex. home)	Machinery (new or used)	Livestock
	MEAN	887.64	98.91	95.45	3.55
	S.E.	522.84	30.15	23.09	1.46
	MED.	156.67	51.75	85.00	2.75
	VC/MC	11/2	11/2	11/2	10/3

20. Annual Expenses: (1981) (in thousands of dollars)		Energy (fuel, electricity)	Labor (ex. operator)	Repairs & Maintenance	Taxes & Insurance
	MEAN	11.44	30.33	9.63	13.94
	S.E.	4.90	16.76	3.27	9.22
	MED.	4.00	0.60	4.05	1.60
	VC/MC	11/2	10/3	12/1	10/3

		Interest on Equipment	Replace Mach./Equip.	Replace Livestock	Other	Total
	MEAN	7.46	10.13	.06	25.74	81.30
	S.E.	2.79	4.69	.06	13.41	36.91
	MED.	2.35	1.01	.03	1.00	17.00
	VC/MC	8/5	8/5	8/5	9/4	13/0

*More than one soil type per farm may be reflected in statistics, which will give a row total of more than 100%

LINN COUNTY

SELECTED DATA BY SIZE GROUPINGS

Data Item		1 - 319 Acres	320+ Acres
1. Size of total farm unit (includes rented and leased lands)	Mean	123.88	735.00
	S.E.	40.02	317.33
	Med.	61.50	440.00
	VC/MC	8/0	5/0
2. Gross Value of Products Sold (1982) (in thousands of dollars)	Mean	70.55	200.60
	S.E.	61.44	76.83
	Med.	5.05	153.00
	VC/MC	8/0	5/0
3. Percent of leased or rented lands	Mean	21.3	48.2
	S.E.	9.2	14.9
	Med.	13.3	47.6
	VC/MC	7/1	5/0
4. Value of investment in Land, Buildings, Machinery and Equipment (1982) (in thousands of dollars)	Mean	517.43	2070.00
	S.E.	215.50	1409.37
	Med.	235.00	800.00
	VC/MC	7/1	4/1
5. Annual Expenses (1982) (in thousands of dollars)	Mean	7.25	"S"
	S.E.	3.31	
	Med.	4.75	
	VC/MC	4/4	
6. Contribution to Total Ag. Type Sales	By %	36.0	64.0

GRASS SEED FARMS

Type of Agriculture: Grass Seed
Landform[1]: Terraces
Number of Survey Responses: 40
Population Number (From Census Data): (Estimate) 258
Size Range Used in Computations: all

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
1. Size (acres) of total farm unit (includes rented and leased lands)[1]	MEAN	992.73	224.00	1080.54	661.25
	S.E.	181.59	57.18	247.25	140.90
	MED.	652.00	260.00	655.00	547.50
	VC/MC	40/0	3/0	28/0	4/0
2. Gross Value of Products Sold (1981) (in thousands of dollars)	MEAN	220.25	53.33	250.36	87.50
	S.E.	53.91	10.93	74.77	27.50
	MED.	125.50	45.00	126.00	45.00
	VC/MC	40/0	3/0	28/0	4/0
3. Percent of leased or rented lands	MEAN	51.73	92.31	50.41	32.13
	S.E.	4.94	7.69	5.74	14.13
	MED.	54.22	94.23	50.06	30.01
	VC/MC	38/2	3/0	26/2	4/0
4. Asset Value (1981): Land, Bldg.,Equip. (In thousands of dollars) (See Item 19)	MEAN	1426.19	509.07	1638.02	794.00
	S.E.	261.29	278.22	348.77	180.30
	MED.	1023.00	319.00	1201.00	715.00
	VC/MC	40/0	3/0	28/0	4/0
5. Annual Expenses (1981) (In thousands of dollars) (See Item 20)	MEAN	76.20	19.78	86.69	65.75
	S.E.	13.33	5.14	17.72	27.47
	MED.	47.55	14.90	71.60	37.55
	VC/MC	40/0	3/0	28/0	4/0

S.E. = Standard Error MED = Median VC/MC = Valid Cases/Missing Cases

1 Farms are classified by landforms according to the majority of acreage. Some acreage of a given farm may be on another landform.

Data Item		Totals	BY LANDFORM Bottomlands	Terraces	Foothills
6. Minimum # of acres to arrange a contract with a buyer	MEAN	46.11	"S"	65.83	"S"
	S.E.	21.66		29.85	
	MED.	20.00		27.50	
	VC/MC	9/31		6/22	
7. Typical field size (most common acreage)	MEAN	68.82	45.33	70.30	42.50
	S.E.	7.32	27.36	9.64	9.68
	MED.	60.25	20.00	59.50	37.50
	VC/MC	39/1	3/0	27/1	4/0
8. Distance to rent typical field size (in miles, one way)	MEAN	8.35	5.67	7.17	5.00
	S.E.	1.49	1.33	.93	1.08
	MED.	6.75	6.00	6.75	4.50
	VC/MC	34/6	3/0	23/5	4/0
9. Minimum field size (acres)	MEAN	12.67	37.00	11.85	4.75
	S.E.	2.84	31.01	2.34	1.93
	MED.	5.75	7.00	6.25	4.00
	VC/MC	39/1	3/0	27/1	4/0
10. Distance to rent minimum field size (in miles, one way)	MEAN	2.42	"S"	2.96	.75
	S.E.	.67		.93	.48
	MED.	1.00		1.25	.50
	VC/MC	33/7		23/5	4/0
11. Field Proximity a. % of farm adjacent to home parcel	MEAN	57.16	"S"	60.64	83.25
	S.E.	7.02		7.45	15.45
	MED.	65.25		66.00	98.00
	VC/MC	31/9		22/6	4/0
b. % of farm less than 5 miles away	MEAN	35.67	68.67	34.04	15.50
	S.E.	6.15	28.87	6.99	14.20
	MED.	25.50	95.00	30.00	2.00
	VC/MC	36/4	3/0	25/3	4/0
c. % of farm 5 - 10 miles away	MEAN	8.83	"S"	6.12	1.25
	S.E.	3.27		2.13	1.25
	MED.	.50		.71	.83
	VC/MC	36/4		25/3	4/0

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
d. % of farm more than 10 miles away	MEAN	8.76	"S"	9.58	0
	S.E.	3.60		4.32	0
	MED.	.35		.45	0
	VC/MC	37/3		26/2	4/0
12. Percent of sample farms & income, by landform	# of farms	NA	3	28	4
	% of farms		8	70	10
	% of total income		2	80	4

13. Type of Market (by % of product sold)		Broker	Auction	Coop. or Assoc.	Retail Sales	Other
	MEAN	91.33	1.14	5.46	.56	1.39
	S.E	3.75	.63	3.77	.39	1.39
	MED.	99.78	.08	.09	.29	.71
	VC/MC	39/1	36/4	37/3	36/4	36/4
14. Distance to Market (miles one way)	MEAN	12.70	19.75	3.00	0	"S"
	S.E	2.64	7.01	2.38	0	
	MED.	8.25	16.50	1.00	0	
	VC/MC	33/7	8/32	4/36	3/37	

15. Processing Location (by % of product)		County	Other Valley	Other In-State	Out-of-State	Other Country
	MEAN	94.13	4.46	0	1.32	0
	S.E.	2.79	2.94	0	.84	0
	MED.	99.38	.66	0	.21	0
	VC/MC	40/0	37/3	37/3	38/2	37/3

16. Market Openness (by sample farms)		Very Limited	Somewhat Limited	Open
	#	3	14	21
	%	7.9	36.8	55.3

		< 10	10-19.9	20-39.9	40-69.9	70-99.9	100-249.9	250-499.9	500+
17. Farm Size and % by gross income group (1981) (in thousands of dollars)	% of farms	"S"	No	No	25	8	38	18	10
	% of total income		Cases	Cases	5.4	2.6	24.1	21.3	46.5
	Size (ac): MEAN				409.20	365.67	750.67	1210.00	3687.50
	S.E.				85.10	67.05	67.73	135.24	1052.06
	MED.				325.00	347.00	650.00	1120.00	2050.00
	VC/MC				10/0	3/0	15/0	7/0	4/0

18. Soil Types (by sample farms)*		Chehalis-Cloq-Newberg	McAlpin-Waldo-Bashaw	Don't Know
a. Bottomlands	#	-	1	-
	%	-	33.3	-

		Day-Am-Holc-Awb-Cons	Clac-Court	Will-Wood-Mal-Sal-Cob	Don't Know
b. Terraces	#	19	-	5	-
	%	50.0	-	17.9	-

		Jory-Nek-Bellpine	Dix-Hazel-Philomath	Don't Know
c. Foothills	#	3	-	-
	%	75.0	-	-

19. Asset Value (1981) (in thousands of dollars)	Land (ex. leased or rented land)	Buildings (ex. home)	Machinery (new or used)	Livestock
MEAN	1254.69	99.36	195.31	8.73
S.E.	250.33	17.08	27.17	3.12
MED.	960.00	75.67	161.50	.09
VC/MC	37/3	33/7	36/4	36/4

20. Annual Expenses: (1981) (in thousands of dollars)	Energy (fuel, electricity)	Labor (ex. operator)	Repairs & Maintenance	Taxes & Insurance
MEAN	9.93	15.94	7.76	8.98
S.E.	1.85	3.50	1.45	1.40
MED.	7.98	7.53	5.08	6.80
VC/MC	35/5	34/6	36/4	37/3

	Interest on Equipment	Replace Mach./Equip.	Replace Livestock	Other	Total
MEAN	6.24	17.32	.68	30.54	76.20
S.E.	1.46	2.30	.34	9.40	13.33
MED.	5.00	12.25	.02	9.05	47.55
VC/MC	28/12	32/8	35/5	26/14	40/0

*More than one soil type per farm may be reflected in statistics, which will give a row total of more than 100%

LINN COUNTY

SELECTED DATA BY SIZE GROUPINGS

Data Item		1 - 319 Acres	320 - 999 Acres	1,000 + Acres
1. Size of total farm unit (includes rented and leased lands)	Mean	182.50	599.71	2,001.54
	S.E.	40.15	40.55	440.64
	Med.	166.50	570.00	1,400.00
	VC/MC	6/0	21/0	13/0
2. Gross Value of Products Sold (1982) (in thousands of dollars)	Mean	44.83	113.86	473.08
	S.E	9.08	13.34	143.29
	Med.	42.50	110.25	268.75
	VC/MC	6/0	21/0	13/0
3. Percent of leased or rented lands	Mean	64.4	47.2	53.8
	S.E.	19.0	7.1	6.5
	Med.	76.9	38.7	57.1
	VC/MC	5/1	20/1	13/0
4. Value of investment in Land, Buildings, Machinery and Equipment (1982) (in thousands of dollars)	Mean	478.25	984.68	2,994.06
	S.E	193.03	84.47	826.76
	Med.	309.00	. 1,020.00	1,952.50
	VC/MC	4/2	19/2	9/4
5. Annual Expenses (1982) (in thousands of dollars)	Mean	12.97	74.32	160.50
	S.E.	1.69	19.23	39.44
	Med.	14.40	47.10	140.00
	VC/MC	3/3	12/9	5/8
6. Contribution to Total Ag. Type Sales	By %	3.1	27.1	69.8

HORTICULTURAL SPECIALTIES

District 2, Linn Co. 1983
OSU Extension Service

Type of Agriculture: Horticulture
Landform[1]: Bottomlands
Number of Survey Responses: 6
Population Number (From Census Data): 18
Size Range Used in Computations: all

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
1. Size (acres) of total farm unit (includes rented and leased lands)[1]	MEAN	68.50	97.25	"S"	"S"
	S.E.	58.37	87.62		
	MED.	10.50	13.00		
	VC/MC	6/0	4/0		
2. Gross Value of Products Sold (1981) (in thousands of dollars)	MEAN	43.33	53.75		
	S.E.	11.23	14.34		
	MED.	27.50	42.50		
	VC/MC	6/0	4/0		
3. Percent of leased or rented lands	MEAN	29.40	31.60		
	S.E.	15.37	21.94		
	MED.	8.33	16.67		
	VC/MC	6/0	4/0		
4. Asset Value (1981): Land, Bldg.,Equip. (In thousands of dollars) (See Item 19)	MEAN	236.17	311.75		
	S.E.	154.02	231.28		
	MED.	112.50	123.50		
	VC/MC	6/0	4/0		
5. Annual Expenses (1981) (In thousands of dollars) (See Item 20)	MEAN	22.23	25.53		
	S.E.	7.96	12.15		
	MED.	15.36	15.40		
	VC/MC	6/0	4/0		

S.E. = Standard Error MED = Median VC/MC = Valid Cases/Missing Cases

1 Farms are classified by landforms according to the majority of acreage. Some acreage of a given farm may be on another landform.

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
6. Minimum # of acres to arrange a contract with a buyer	MEAN	"S"	No Cases	"S"	"S"
	S.E.	"S"	No Cases		
	MED.	"S"	No Cases		
	VC/MC	"S"	0/4		
7. Typical field size (most common acreage)	MEAN	35.00	55.00		
	S.E.	28.78	47.52		
	MED.	8.00	10.00		
	VC/MC	5/1	3/1		
8. Distance to rent typical field size (in miles, one way)	MEAN	3.25	2.67		
	S.E.	1.03	1.20		
	MED.	2.50	2.00		
	VC/MC	4/2	3/1		
9. Minimum field size (acres)	MEAN	6.40	9.67		
	S.E.	4.67	7.69		
	MED.	2.00	3.00		
	VC/MC	5/1	3/1		
10. Distance to rent minimum field size (in miles, one way)	MEAN	2.33	"S"		
	S.E.	1.33			
	MED.	2.00			
	VC/MC	3/3			
11. Field Proximity a. % of farm adjacent to home parcel	MEAN	85.00	91.67		
	S.E.	10.00	8.33		
	MED.	91.67	93.75		
	VC/MC	5/1	3/1		
b. % of farm less than 5 miles away	MEAN	15.00	8.33		
	S.E.	10.00	8.33		
	MED.	8.33	6.25		
	VC/MC	5/1	3/1		
c. % of farm 5 - 10 miles away	MEAN	0	"S"		
	S.E.	0			
	MED.	0			
	VC/MC	4/2			

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
d. % of farm more than 10 miles away	MEAN	0	"S"	"S"	"S"
	S.E.	0			
	MED.	0			
	VC/MC	4/2			
12. Percent of sample farms & income, by landform	# of farms		4		
	% of farms	N/A	57		
	% of total income		49		

		Broker	Auction	Coop. or Assoc.	Retail Sales	Other
13. Type of Market (by % of product sold)	MEAN	20.83	0	0	23.33	55.83
	S.E	16.35	0	0	16.67	18.73
	MED.	6.25	0	0	10.00	67.50
	VC/MC	6/0	6/0	6/0	6/0	6/0
14. Distance to Market (miles one way)	MEAN	"S"	No Cases	No Cases	"S"	"S"
	S.E					
	MED.					
	VC/MC					

15. Processing Location (by % of product)		County	Other Valley	Other In-State	Out-of-State	Other Country
	MEAN	50.00	0	10.00	0	0
	S.E.	22.36	0	10.00	0	0
	MED.	50.00	0	6.25	0	0
	VC/MC	5/1	5/1	5/1	5/1	5/1

16. Market Openness (by sample farms)		Very Limited	Somewhat Limited	Open
	#	1	2	3
	%	16.7	33.3	50.0

17. Farm Size and % by gross income group (1981) (in thousands of dollars)

	< 10	10-19.9	20-39.9	40-69.9	70-99.9	100-249.9	250-499.9	500+
% of farms	N/C	N/C	50	"S"	"S"	No Cases	No Cases	N/C
% of total income			25					
Size (ac): MEAN			127.33					
S.E.			116.45					
MED.			20.00					
VC/MC			3/0					

18. Soil Types (by sample farms)

	Chehalis-Cloq-Newberg	McAlpin-Waldo-Bashaw	Don't Know
a. Bottomlands #	3	No Cases	
a. Bottomlands %	75	No Cases	

	Day-Am-Holc-Awb-Cons	Clac-Court	Will-Wood-Mal-Sal-Cob	Don't Know
b. Terraces #	No Cases	No Cases	No Cases	
b. Terraces %	No Cases	No Cases	No Cases	

	Jory-Nek-Bellpine	Dix-Hazel-Philomath	Don't Know
c. Foothills #	1	No Cases	
c. Foothills %	100	No Cases	

19. Asset Value (1981) (in thousands of of dollars)

	Land (ex. leased or rented land)	Buildings (ex. home)	Machinery (new or used)	Livestock
MEAN	187.20	28.75	73.00	.25
S.E.	128.96	2.39	56.78	.25
MED.	70.00	27.50	18.75	.17
VC/MC	5/1	4/2	5/1	6/0

20. Annual Expenses: (1981) (in thousands of dollars)

	Energy (fuel, electricity)	Labor (ex. operator)	Repairs & Maintenance	Taxes & Insurance
MEAN	3.53	9.80	2.60	3.12
S.E.	1.43	3.43	1.02	1.45
MED.	2.10	8.00	2.00	1.30
VC/MC	6/0	5/1	5/1	6/0

	Interest on Equipment	Replace Mach./Equip.	Replace Livestock	Other	Total
MEAN	7.00	1.33	.04	3.13	22.23
S.E.	6.51	.60	.04	1.88	7.96
MED.	1.00	1.00	.03	3.13	15.63
VC/MC	3/3	3/3	5/1	2/4	6/0

LINN COUNTY

SELECTED DATA BY SIZE GROUPINGS

Data Item		1 - 19 Acres	20 + Acres
1. Size of total farm unit (includes rented and leased lands)	Mean	7.75	"S"
	S.E.	3.28	
	Med.	3.50	
	VC/MC	4/0	
2. Gross Value of Products Sold (1982) (in thousands of dollars)	Mean	53.75	"S"
	S.E.	14.34	
	Med.	42.50	
	VC/MC	4/0	
3. Percent of leased or rented lands	Mean	20.8	"S"
	S.E.	12.5	
	Med.	8.30	
	VC/MC	4/0	
4. Value of investment in Land, Buildings, Machinery and Equipment (1982) (in thousands of dollars)	Mean	102.00	"S"
	S.E.	21.50	
	Med.	115.00	
	VC/MC	3/1	
5. Annual Expenses (1982) (in thousands of dollars)	Mean	33.21	"S"
	S.E.	27.38	
	Med.	20.38	
	VC/MC	4/0	
6. Contribution to Total Ag. Type Sales	By %	82.7	17.3

LIVESTOCK GRAZING

Type of Agriculture: Livestock Grazing/ General Stock
Landform[1]: Foothills
Number of Survey Responses: 59
Population Number (From Census Data): 463
Size Range Used in Computations: all

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
1. Size (acres) of total farm unit (includes rented and leased lands)[1]	MEAN	218.49	200.38	170.46	266.27
	S.E.	55.74	40.95	58.07	115.93
	MED.	106.00	184.50	60.50	140.50
	VC/MC	59/0	8/0	22/0	26/0
2. Gross Value of Products Sold (1981) (in thousands of dollars)	MEAN	17.55	45.00	15.54	12.05
	S.E.	3.90	21.03	4.84	3.77
	MED.	7.95	12.50	5.90	7.75
	VC/MC	59/0	8/0	22/0	26/0
3. Percent of leased or rented lands	MEAN	22.74	28.94	18.35	23.01
	S.E.	4.66	14.18	7.57	6.61
	MED.	0.11	3.57	0.09	0.82
	VC/MC	56/3	8/0	20/2	25/1
4. Asset Value (1981): Land, Bldg.,Equip. (In thousands of dollars) (See Item 19)	MEAN	297.97	345.38	293.83	313.90
	S.E.	62.36	105.06	83.89	119.24
	MED.	178.85	302.50	179.60	170.50
	VC/MC	59/0	8/0	22/0	26/0
5. Annual Expenses (1981) (In thousands of dollars) (See Item 20)	MEAN	11.29	20.12	12.66	8.47
	S.E.	2.04	9.64	2.54	2.73
	MED.	4.90	5.20	6.60	3.95
	VC/MC	59/0	8/0	22/0	26/0

S.E. = Standard Error MED = Median VC/MC = Valid Cases/Missing Cases

1 Farms are classified by landforms according to the majority of acreage. Some acreage of a given farm may be on another landform.

Data Item		Totals	BY LANDFORM Bottomlands	Terraces	Foothills
6. Minimum # of acres to arrange a contract with a buyer	MEAN	35.29	"S"	10.00	71.43
	S.E.	29.22		6.55	71.43
	MED.	1.54		2.00	41.67
	VC/MC	17/42		7/15	7/19
7. Typical field size (most common acreage)	MEAN	24.29	35.13	23.96	21.67
	S.E.	2.79	12.80	3.47	3.80
	MED.	15.32	18.00	15.50	13.50
	VC/MC	56/3	8/0	22/0	24/2
8. Distance to rent typical field size (in miles, one way)	MEAN	4.20	11.00	4.72	2.44
	S.E.	0.85	5.05	1.00	1.10
	MED.	1.75	9.00	4.75	0.60
	VC/MC	41/18	4/4	18/4	16/10
9. Minimum field size (acres)	MEAN	8.31	10.17	9.25	7.29
	S.E.	1.29	1.28	2.38	1.97
	MED.	5.83	10.00	6.00	4.90
	VC/MC	52/7	6/2	20/2	24/2
10. Distance to rent minimum field size (in miles, one way)	MEAN	2.81	10.75	3.06	1.06
	S.E.	0.76	5.22	0.91	0.61
	MED.	0.41	9.00	1.33	0.29
	VC/MC	42/17	4/4	17/5	18/8
11. Field Proximity a. % of farm adjacent to home parcel	MEAN	85.27	65.43	92.35	89.32
	S.E.	3.93	16.87	3.51	5.55
	MED.	99.08	93.25	99.17	98.89
	VC/MC	52/7	7/1	20/2	22/4
b. % of farm less than 5 miles away	MEAN	6.59	0	3.14	7.61
	S.E.	2.67	0	2.01	4.83
	MED.	0.18	0	0.44	1.88
	VC/MC	53/6	7/1	20/2	23/3
c. % of farm 5 - 10 miles away	MEAN	5.51	20.29	1.50	5.00
	S.E.	2.47	13.31	1.50	3.46
	MED.	1.15	4.40	0.79	2.73
	VC/MC	53/6	7/1	20/2	24/2

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
d. % of farm more than 10 miles away	MEAN	3.08	14.29	3.00	0
	S.E.	2.08	14.29	2.19	0
	MED.	0.61	8.33	1.11	0
	VC/MC	52/7	7/1	20/2	23/3
12. Percent of sample farms & income, by landform	# of farms	NA	8	22	26
	% of farms		14	37	44
	% of total income		35	33	30

		Broker	Auction	Coop. or Assoc.	Retail Sales	Other
13. Type of Market (by % of product sold)	MEAN	24.19	49.41	4.39	13.10	13.64
	S.E	4.68	4.93	2.56	3.47	3.85
	MED.	1.02	50.00	0.43	0.31	0.18
	VC/MC	52/7	54/5	51/8	52/7	52/7
14. Distance to Market (miles one way)	MEAN	23.10	43.35	28.25	14.31	71.25
	S.E	5.02	14.43	20.76	7.17	44.52
	MED.	19.79	20.25	11.50	0.31	1.25
	VC/MC	20/39	43/16	4/55	13/46	12/47

15. Processing Location (by % of product)		County	Other Valley	Other In-State	Out-of-State	Other Country
	MEAN	36.05	24.21	16.18	16.29	3.42
	S.E.	6.74	5.91	5.14	4.98	1.92
	MED.	19.67	3.26	1.02	0.23	0.29
	VC/MC	39/20	38/21	38/21	38/21	38/21

16. Market Openness (by sample farms)		Very Limited	Somewhat Limited	Open
	#	16	19	17
	%	30.8	36.5	32.7

17. Farm Size and % by gross income group (1981) (in thousands of dollars)

	< 10	10-19.9	20-39.9	40-69.9	70-99.9	100-249.9	250-499.9	500+
% of farms	56	22	12	"S"	"S"	5	No cases	No cases
% of total income	14.9	13.8	17.8			36.7		
Size (ac): MEAN	98.27	120.62	678.57			683.33		
S.E.	18.20	17.89	404.23			220.48		
MED.	51.00	92.75	265.00			600.00		
VC/MC	33/0	13/0	7/0			3/0		

18. Soil Types* (by sample farms)

a. Bottomlands

	Chehalis-Cloq-Newberg	McAlpin-Waldo-Bashaw	Don't Know
#	3	3	
%	37.5	37.5	

b. Terraces

	Day-Am-Holc-Awb-Cons	Clac-Court	Will-Wood-Mal-Sal-Cob	Don't Know
#	10	2	6	
%	45.5	9.0	27.2	

c. Foothills

	Jory-Nek-Bellpine	Dix-Hazel-Philomath	Don't Know
#	8	6	
%	30.7	23.1	

19. Asset Value (1981) (in thousands of dollars)

	Land (ex. leased or rented land)	Buildings (ex. home)	Machinery (new or used)	Livestock
MEAN	235.64	34.88	29.94	23.13
S.E.	61.91	5.03	4.44	3.31
MED.	100.25	20.14	20.14	11.98
VC/MC	54/5	54/5	56/3	56/3

20. Annual Expenses: (1981) (in thousands of dollars)

	Energy (fuel, electricity)	Labor (ex. operator)	Repairs & Maintenance	Taxes & Insurance
MEAN	1.90	1.39	1.41	1.93
S.E.	0.42	0.41	0.22	0.27
MED.	0.75	0.50	1.00	1.50
VC/MC	46/13	45/14	51/8	51/8

	Interest on Equipment	Replace Mach./Equip.	Replace Livestock	Other	Total
MEAN	1.21	2.03	3.60	1.90	11.29
S.E.	0.44	0.47	1.66	0.72	2.04
MED.	0.02	0.98	0.51	0.51	4.90
VC/MC	34/25	40/19	44/15	34/25	59/0

*More than one soil type per farm may be reflected in statistics, which will give a row total of more than 100%

LINN COUNTY

SELECTED DATA BY SIZE GROUPINGS

Data Item		1 - 79 Acres	80 - 319 Acres	320+ Acres
1. Size of total farm unit (includes rented and leased lands)	Mean	48.37	182.50	900.63
	S.E.	3.02	13.53	327.04
	Med.	42.00	160.00	502.50
	VC/MC	27/0	24/0	8/0
2. Gross Value of Products Sold (1982) (in thousands of dollars)	Mean	5.44	15.80	63.69
	S.E.	.63	3.24	21.10
	Med.	4.92	10.05	31.50
	VC/MC	27/0	24/0	8/0
3. Percent of leased or rented lands	Mean	19.3	20.1	44.2
	S.E.	6.7	6.9	15.4
	Med.	0.3	0.1	40.0
	VC/MC	26/1	23/1	7/1
4. Value of investment in Land, Buildings, Machinery and Equipment (1982) (in thousands of dollars)	Mean	133.13	273.64	919.50
	S.E.	16.34	22.46	434.93
	Med.	106.25	272.70	380.00
	VC/MC	26/1	20/4	7/1
5. Annual Expenses (1982) (in thousands of dollars)	Mean	6.29	24.90	"S"
	S.E.	2.51	8.61	
	Med.	4.35	15.79	
	VC/MC	6/21	8/16	
6. Contribution to Total Ag. Type Sales	By %	14.2	36.6	49.2

VEGETABLE CROPS

District 2, Linn Co. 1983
OSU Extension Service

Type of Agriculture: Vegetable Crops
Landform[1]: Bottomlands
Number of Survey Responses: 11
Population Number (From Census Data): 43
Size Range Used in Computations: all

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
1. Size (acres) of total farm unit (includes rented and leased lands)[1]	MEAN	543.18	580.56	"S"	No Cases
	S.E.	106.68	128.10		
	MED.	400.00	450.00		
	VC/MC	11/0	9/0		
2. Gross Value of Products Sold (1981) (in thousands of dollars)	MEAN	309.46	335.00	"S"	
	S.E.	88.18	106.51		
	MED.	200.00	200.00		
	VC/MC	11/0	9/0		
3. Percent of leased or rented lands	MEAN	53.61	53.46	"S"	
	S.E.	8.82	10.86		
	MED.	60.00	62.50		
	VC/MC	11/0	9/0		
4. Asset Value (1981): Land, Bldg.,Equip. (In thousands of dollars) (See Item 19)	MEAN	1216.55	1208.56	"S"	
	S.E.	271.95	302.58		
	MED.	1090.00	1090.00		
	VC/MC	11/0	9/0		
5. Annual Expenses (1981) (In thousands of dollars) (See Item 20)	MEAN	117.34	130.81	"S"	
	S.E.	34.55	41.06		
	MED.	78.45	108.50		
	VC/MC	11/0	9/0		

S.E. = Standard Error MED = Median VC/MC = Valid Cases/Missing Cases

1 Farms are classified by landforms according to the majority of acreage. Some acreage of a given farm may be on another landform.

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
6. Minimum # of acres to arrange a contract with a buyer	MEAN	77.78	86.25	"S"	No Cases
	S.E.	47.60	53.12		
	MED.	22.50	25.00		
	VC/MC	9/2	8/1		
7. Typical field size (most common acreage)	MEAN	35.91	36.67	"S"	
	S.E.	5.43	6.01		
	MED.	31.67	33.33		
	VC/MC	11/0	9/0		
8. Distance to rent typical field size (in miles, one way)	MEAN	7.50	6.13	"S"	
	S.E.	1.83	1.52		
	MED.	5.17	4.83		
	VC/MC	10/1	8/1		
9. Minimum field size (acres)	MEAN	12.91	13.56	"S"	
	S.E.	2.24	2.72		
	MED.	10.67	14.50		
	VC/MC	11/0	9/0		
10. Distance to rent minimum field size (in miles, one way)	MEAN	2.60	1.38	"S"	
	S.E.	1.47	0.63		
	MED.	0.83	0.83		
	VC/MC	10/1	8/1		
11. Field Proximity a. % of farm adjacent to home parcel	MEAN	35.56	40.00	"S"	
	S.E.	12.49	13.23		
	MED.	20.00	25.00		
	VC/MC	9/2	8/1		
b. % of farm less than 5 miles away	MEAN	33.56	29.38	"S"	
	S.E.	10.19	10.54		
	MED.	25.00	15.00		
	VC/MC	9/2	8/1		
c. % of farm 5 - 10 miles away	MEAN	25.90	25.11	"S"	
	S.E.	6.91	7.68		
	MED.	21.50	21.00		
	VC/MC	10/1	9/0		

Data Item		Totals	BY LANDFORM: Bottomlands	Terraces	Foothills
d. % of farm more than 10 miles away	MEAN	10.89	9.29	"S"	No Cases
	S.E.	5.45	6.02		
	MED.	0.50	1.00		
	VC/MC	9/2	7/2		
12. Percent of sample farms & income, by landform	# of farms	NA	9	"S"	
	% of farms		82		
	% of total income		89		

13. Type of Market (by % of product sold)		Broker	Auction	Coop. or Assoc.	Retail Sales	Other
	MEAN	54.20	0.22	46.45	3.50	0
	S.E	10.95	0.22	10.02	2.99	0
	MED.	37.00	0.13	64.00	0.63	0
	VC/MC	10/1	9/2	11/0	10/1	8/3
14. Distance to Market (miles one way)	MEAN	19.50	"S"	22.13	"S"	-
	S.E	8.51		5.55		-
	MED.	10.50		15.50		-
	VC/MC	8/3		8/3		0/11

15. Processing Location (by % of product)		County	Other Valley	Other In-State	Out-of-State	Other Country
	MEAN	50.63	49.73	0	3.57	8.13
	S.E.	12.90	9.64	0	2.83	5.51
	MED.	32.50	69.50	0	1.00	2.50
	VC/MC	8/3	11/0	7/4	7/4	8/3

16. Market Openness (by sample farms)		Very Limited	Somewhat Limited	Open
	#	6	4	1
	%	54.5	36.4	9.1

District 2, Linn Co. 1983
OSU Extension Service

		< 10	10-19.9	20-39.9	40-69.9	70-99.9	100-249.9	250-499.9	500+
17. Farm Size and % by gross income group (1981) (in thousands of dollars)	% of farms	No Cases	No Cases	"S"	No Cases	"S"	27	"S"	27
	% of total income						14.4		36.8
	Size (ac): MEAN						393.33		1016.67
	S.E.						29.63		183.33
	MED.						380.00		1062.50
	VC/MC						3/0		3/0

18. Soil Types * (by sample farms)				
a. Bottomlands		Chehalis-Cloq-Newberg	McAlpin-Waldo-Bashaw	Don't Know
	#	9	-	-
	%	100	-	-

b. Terraces		Day-Am-Holc-Awb-Cons	Clac-Court	Will-Wood-Mal-Sal-Cob	Don't Know
	#	-	-	"S"	-
	%	-	-		-

c. Foothills		Jory-Nek-Bellpine	Dix-Hazel-Philomath	Don't Know
	#	-	-	-
	%	-	-	-

19. Asset Value (1981) (in thousands of dollars)	Land (ex. leased or rented land)	Buildings (ex. home)	Machinery (new or used)	Livestock
MEAN	1066.00	52.75	190.00	5.78
S.E.	245.56	13.32	44.05	5.53
MED.	945.00	31.25	160.00	0.29
VC/MC	10/1	11/0	11/0	9/2

20. Annual Expenses: (1981) (in thousands of dollars)	Energy (fuel, electricity)	Labor (ex. operator)	Repairs & Maintenance	Taxes & Insurance
MEAN	15.79	42.13	16.35	12.11
S.E.	4.15	15.93	3.92	3.79
MED.	12.00	11.00	13.32	6.31
VC/MC	11/0	11/0	11/0	11/0

	Interest on Equipment	Replace Mach./Equip.	Replace Livestock	Other	Total
MEAN	6.28	21.64	0.83	6.28	117.34
S.E.	1.29	8.22	0.83	1.70	34.55
MED.	5.50	10.50	0.50	5.00	78.45
VC/MC	10/1	10/1	6/5	9/2	11/0

*More than one soil type per farm may be reflected in statistics, which will give a row total of more than 100%

LINN COUNTY

SELECTED DATA BY SIZE GROUPINGS

Data Item		1 - 319 Acres	320 + Acres
1. Size of total farm unit (includes rented and leased lands)	Mean	"S"	587.50
	S.E.		107.28
	Med.		410.00
	VC/MC		10/0
2. Gross Value of Products Sold (1982) (in thousands of dollars)	Mean	"S"	337.40
	S.E.		92.46
	Med.		205.00
	VC/MC		10/1
3. Percent of leased or rented lands	Mean	"S"	59.0
	S.E.		7.7
	Med.		61.30
	VC/MC		10/0
4. Value of investment in Land, Buildings, Machinery and Equipment (1982) (in thousands of dollars)	Mean	"S"	1,443.33
	S.E.		274.18
	Med.		1,650.00
	VC/MC		9/1
5. Annual Expenses (1982) (in thousands of dollars)	Mean	"S"	115.89
	S.E.		37.29
	Med.		108.50
	VC/MC		5/5
6. Contribution to Total Ag. Type Sales	By %	0.9	99.1

APPENDIX A

FARM SURVEY

1. Please indicate which one of the following farm types best represents your operation. If your production occurs in more than one type, choose the type which contributes 50% or more of your total sales. If you do not produce a commodity which contributes 50% or more in sales, choose one of the last two general farm categories. (CHECK ONE)

   _____ CASH GRAINS (WHEAT, BARLEY, OATS, ETC.)
   _____ FIELD CROPS (SUGAR BEET SEED, MINT, HAY, ETC.)
   _____ GRASS SEED (RYEGRASS, BENTGRASS, ETC.)
   _____ VEGETABLE CROPS (CARROTS, SQUASH, SWEET CORN, ETC.)
   _____ BERRIES, GRAPES, TREE FRUITS AND TREE NUTS
   _____ CHRISTMAS TREES
   _____ HORTICULTURAL SPECIALTIES (NURSERIES, GREENHOUSES, ETC.)
   _____ INTENSIVE ANIMAL HUSBANDRY (FEEDLOTS, RABBITS, ETC.)
   _____ DAIRY FARMS
   _____ EXTENSIVE ANIMAL GRAZING (CATTLE, SHEEP, HORSES, ETC.)
   _____ GENERAL FARMS, PRIMARILY CROP
   _____ GENERAL FARMS, PRIMARILY LIVESTOCK

2. How many years have you been farming:

   (a)_____ IN LINN COUNTY

   (b)_____ ALTOGETHER

3. How many acres do you farm? (Including rented and leased land)

   (a)_____ ACRES

   How many of these acres, if any, are rented or leased?

   (b)_____ ACRES

4. Farmed acreage may be located any number of miles from a "home farm." Using your home farm as the starting point, please indicate what percentage of your farm land falls in each of the categories listed below.

   _____% ADJACENT TO HOME FARM

   _____% LESS THAN FIVE MILES

   _____% FIVE TO TEN MILES

   _____% MORE THAN TEN MILES

5. Referring to the enclosed map of farm districts in Linn County, in which district (I, II, OR III) is your farm located?

   _____ FARM DISTRICT

6. *Listed below are the landforms and associated soils in Linn County. Please indicate which is the* most common landform and soil association for your farm. Check only one landform and then only one associated soil for that landform.

LANDFORM (CHECK ONE)	SOIL ASSOCIATION (CHECK ONE)
_____ BOTTOMLAND SOILS ON FLOODPLAINS	_____ WELL DRAINED SILTY AND SANDY SOILS CHEHALIS - CLOQUATO - NEWBERG
	_____ WET, CLAYEY SOILS -- MCALPIN - WALDO - BASHAW
	_____ DON'T KNOW
_____ SOILS ON MAJOR TERRACES OF THE MAIN VALLEY FLOOR	_____ WET, CLAYEY SOILS ON BROAD, LEVEL TERRACES DAYTON - AMITY - HOLCOMB - AWBRIG - CONSER
	_____ WET, GRAVELLY SOILS -- CLACKAMAS - COURTNEY
	_____ WELL DRAINED SILTY AND CLAYEY SOILS - NEARLY LEVEL TO GENTLY ROLLING -- WILLAMETTE - WOODBURN - MALABON - SALEM - COBURG
	_____ DON'T KNOW
_____ HILL SOILS	_____ RED, CLAYEY, WELL DRAINED -- JORY - NEKIA - BELLPINE
	_____ DARK BROWN TO BLACK, CLAYEY -- DIXONVILLE - HAZELHAIR - PHILOMATH
	_____ DON'T KNOW
_____ DON'T KNOW	

6. (a) What is your most typical individual field size, in acres, on this landform/soil association?

_____ ACRES

(b) What is your smallest field, in acres, on this landform/soil association which can be farmed, considering equipment and other limitations?

_____ ACRES

(c) How far can you afford to travel, one way, to rent a field of typical size (6a) on this landform/soil association?

_____ MILES ONE WAY

(d) How far can you afford to travel to rent a field of minimum size (6b) on this landform/soil association?

_____ MILES ONE WAY

7. Please indicate how many miles one way you would be willing to travel to rent fields with each of the following combinations:

	MILES ONE WAY
(a) Typical field size - Better soil	_____
(b) Typical field size - Poorer soil	_____
(c) Minimum field size - Better soil	_____
(d) Minimum field size - Poorer soil	_____

8. On the average, what is the approximate annual gross value of total farm sales from your farm operation?

$_____

9. How much do you think you would need to spend, at a minimum, to buy a farm operation similar to yours in today's market? Consider the following categories:

(a) LAND . . . . . $_____

(b) BUILDINGS (excluding home) . . . . . $_____

(c) MACHINERY & EQUIPMENT . . . . . $_____
(new or used)

(d) LIVESTOCK . . . . . $_____

10. On the average, how much do you spend for each of the following items per year?

(a) LIVESTOCK REPLACEMENT . . . . . $_____
(b) ENERGY . . . . . $_____
(c) LABOR (excluding your own) . . . . . $_____
(d) REPAIRS & MAINTENANCE . . . . . $_____
(e) TAXES & INSURANCE . . . . . $_____
(f) INTEREST ON EQUIPMENT . . . . . $_____
(g) MISCELLANEOUS . . . . . $_____
(h) REPLACEMENT OF MACHINERY & EQUIPMENT $_____

11. Please indicate what percentage of your production is marketed by each outlet listed below, and give the distance in miles one way to that outlet.

	PERCENT (%)	DISTANCE MILES ONE WAY
(a) BROKER, DEALER WAREHOUSE . . . . . (Includes contract sales)	_____	_____
(b) AUCTION	_____	_____
(c) MARKETING ASSOCIATION OR CO-OP . . .	_____	_____
(d) RETAIL SALES . . . . . (for example, a roadside stand)	_____	_____
(e) OTHER MEANS, SPECIFY_____ .	_____	_____
TOTAL	100%	

12. For the locations listed below, please indicate what percentage of your production is processed (changed from its raw field form) or packaged in each:

(a) IN THE COUNTY . . . . . _____%
(b) OTHER VALLEY LOCATIONS . . . . . _____%
(c) OTHER IN-STATE LOCATIONS . . . . . _____%
(d) OUT OF STATE . . . . . _____%
(e) ANOTHER COUNTRY . . . . . _____%

13. If applicable, what is the minimum number of acres you must farm in order to arrange a contract with a buyer or processor?

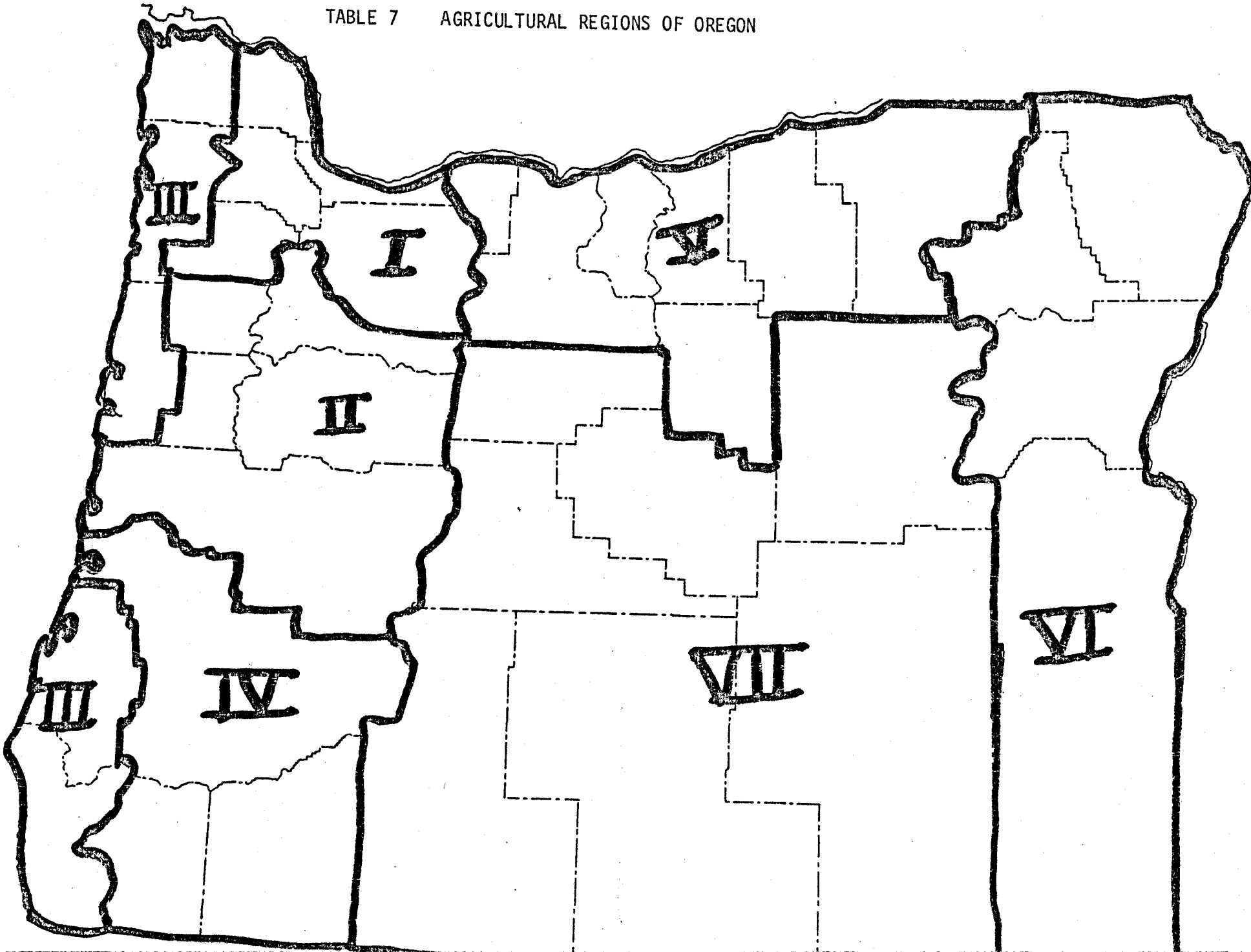
_____ ACRES

14. Would you say that the openness of the market to the purchase of products from new farm operations of your type is: (CHECK ONE)

VERY LIMITED . . . . . _____
SOMEWHAT LIMITED . . . _____
OPEN . . . . . _____

15. Is there anything else you would include to better understand the physical and financial characteristics of your type of farming in Linn County?

TABLE 7 AGRICULTURAL REGIONS OF OREGON



Counties by Agricultural Districts

District 1	District 2	District 3
Columbia	Polk	Clatsop
Washington	Lane	Coos
Yamhill	Linn	Curry
Clackamas	Marion	Lincoln
Multnomah	Benton	Tillamook
District 4	**District 5**	**District 6**
Douglas	Hood River	Union
Josephine	Wasco	Wallowa
Jackson	Sherman	Baker
	Umatilla	Malheur
	Gilliam	
	Wheeler	
	Morrow	

District 7

Lake
Deschutes
Jefferson
Harney
Klamath
Crook
Grant

APPENDIX B

A DELPHI APPLICATION FOR LAND USE DATA

James R. Pease[1]

Federal, state, and local agricultural specialists have frequent need to obtain information on characteristics of agriculture within a county or trends in agriculture on a regional and state level. Most often, this information is obtained by questionnaire or by informal discussion among USDA agency staff, farmers or ranchers, people involved in the marketing of products, and suppliers of farm equipment.

We have been involved in a project to obtain data on spatial, financial, and marketing characteristics of commercial agriculture in Oregon. These data are useful for educational and research purposes, and, since Oregon has enacted a statewide program to preserve agricultural land, for land use decisions affecting agriculture. As an alternative to a mail-out survey, we decided to test the Delphi Expert Opinion Method to obtain the information we needed.

The Delphi method was developed in the 1960's at the Rand Corporation in California as a means to obtain group consensus on military forecasting problems (Dalkey, 1969). In general, Delphi is a systematic process for obtaining consensus among a group of experts on a set of questions. The technique has been used for a wide variety of applications in both government and industry. Although used primarily as a tool for developing policy and forecasting change, Delphi has been shown to be an inexpensive and efficient method for gathering information on specific topics (Linstone and Turoff, 1975; Dodge and Clark, 1977; Mitchell, 1979).

The use of Delphi for any purpose is characterized by the following features: (1) response anonymity, (2) controlled feedback, (3) statistical summary of group responses. Central to the Delphi is the advantage a group of individuals has over a single individual in making accurate estimations, or the "n heads is better" rule (Dalkey, 1969). The usual procedure for obtaining a group opinion is through face-to-face discussion; however, as reviewed by Uhl (1971), serious problems are associated with that mode of group interaction: (1) group opinion is influenced by dominant individuals who, while not necessarilty the most knowledgeable, tend to talk the most; (2) group discussion often digresses from the question at hand to irrelevant and potentially biasing comments; and (3) group pressure to conform may distort individual judgement. Because group interaction in the Delphi is anonymous through the use of written questionnaire responses, these problems are largely avoided. In controlled studies conducted by Dalkey (1969), the Delphi proved to be consistently more accurate than traditional group discussion in answering almanac (verifiable) type questions.

The Delphi process is divided into two or more rounds: the first round elicits confidential written responses from the experts which are then statistically summarized for the group by median and interquartile range; in subsequent rounds, each participant is provided with the statistical summary of the previous round and another response is elicited. The expert may reconsider his

[1]Land Resource Management Specialist, Oregon State University Extension Service, Department of Geography, Oregon State University, Corvallis, OR 97331. This paper is based on the correlation analysis completed by David Nelson, graduate research assistant, for his master's research paper.

answer in light of the group response. Over successive iterations, individual responses tend to converge toward a group consensus as defined by the final median and interquartile spread; maximum consensus is usually achieved after two or three rounds (Linstone and Turoff, 1975). A more detailed discussion of the mechanics involved in the Delphi is provided in the following review of its specific application in Linn County, Oregon (Nelson, 1983).

Linn County Case Study

As emphasized by Linstone and Turoff (1975), the Delphi technique of structuring group communication is not a "neatly wrapped package, sitting on the shelf and ready to use"; the technique is still evolving with respect to methodological variations and the uses to which it can be applied. The application of Delphi procedures in this project was intended not only to test the validity of the technique, but also to provide the participating county with a comprehensive set of potentially valuable data.

Delphi Questionnaire

The first step in the process was the development of a questionnaire with which to facilitate and control the group communication. Based on the decision to provide the county with complete information on commercial agriculture, the questionnaire was designed to cover the full range of farm types in the area and their associated physical, financial, and marketing characteristics. The resulting format consisted of a matrix of 12 farm categories by 22 questions covering 57 individual variables.

The farm categories were defined by the Standard Industrial Classification (SIC) system used by the U.S. Bureau of Census in coding data from its census of agriculture. Grouping of SIC types was necessary to reduce the number of categories in order to maintain a questionnaire of manageable proportions. Because of their unique characteristics in Linn County, grass seed operations were separated out of the field crop SIC group and treated separately.

The spectrum of questions presented was finalized in consultation with county Extension agents and county land use planners. The first section of the questionnaire was concerned primarily with physical characteristics, e.g., geographic location, distance to rented and leased lands, total farm size, field sizes, landform, and soil type. The second section covered a variety of financial and marketing characteristics: e.g. annual operating costs, types of marketing outlets, location and distance to processors, and the openness of the market to new operations.

For each question a space was provided for the panelist to rate his/her expertise on a scale of one, (low confidence) to five (high confidence). In a study by Brown (1966), the subgroup of panelists with the highest self-rating had collectively better accuracy than the average; however, such a relationship between accuracy and self-rating was not found to be statistically significant in a later test of the Delphi by Brockoff (1975). Apparently, in some cases, the self-rating of expertise does not coincide with the panelist's actual expertise. Self-ratings were, however, considered to be potentially valuable in selecting the most accurate subgroup in this application of the technique because of the narrow limits of expertise of some of the panelists; a farmer of

one type of agriculture may have very limited knowledge of certain aspects of another type and would rate his responses accordingly.

Panel Selection

The success of the Delphi is, of course, dependent on the quality of the participants. Selection of the experts to serve on the Linn County panel was guided by the understanding that their cumulative expertise would replace random survey as the basis for the validity of the information obtained. The panelists were selected in consultation with the county Extension agents. The minimum requirements were a group which represented a breadth of knowledge on agriculture and which was most likely to provide unbiased responses.

The resulting panel consisted of fifteen farmers, two bankers, two agricultural extension agents, two processor representatives, one farm cooperative manager, one Soil Conservation Service official, one Agricultural Stabilization and Conservation official, and one farm commodity buyer for a total of 25 participants. A group of this size was considered to be ideal from the perspective of both manageability and overall accuracy.

Round I

The process of conducting the Delphi began with convening the panel of experts for an evening session at a Linn County conference facility. Notification of the scheduled meeting was sent to each panelist with an enclosed card to be returned indicating a commitment to attend. Since stimulating a willingness to participate, as well as to do so conscientiously, often requires an incentive such as a token payment or honorarium (Scheele, 1975), a banquet was provided prior to the Delphi. A brief statement of purpose preceeded the dinner and the participants and project investigators were given a chance to get acquainted. Following the dinner, the materials were distributed and a detailed explanation of the Delphi process was provided by the principal investigator. Our definitions of commercial agricultural and SIC farm categories were stressed, along with the important requirement that participants not verbally communicate with each other concerning responses to the questionnaire. The project investigators responded to questions during the session and attempted to clarify any problems in question interpretation. Upon completion, the questionnaires were collected for processing. A second round was completed by mail.

The control insturment used to validate the Delphi panel's responses was a mail-out survey. The most complete data on both the mail-out survey and the Delphi panel responses were for grass seed farms; therefore, we decided to test the panel's responses on grass seed operations. The results of the validation test are displayed in Table. I.

As the table indicates, the accuracy of the Delphi estimations was extremely good on some questions and less so on others. With respect to the main categories, the Delphi most accurately characterized marketing and processing followed by physical and then financial characteristics.

The Delphi accuracy was highest when identifying qualitative characteristics, such as predominant soil type or the typical type of marketing. Accuracy was also quite high in defining the areal extent of overall farm size and field sizes. However, the error increased when determining the distance to rented or leased land and the distance a farmer would be willing to travel to rent or lease fields of a specific size and soil quality. Some of this error is the result of the small distances being estimated and the possible tendency to "round off" to inappropriately large intervals. For example, the survey distance of 2.3 miles compared to the Delphi distance of five miles gave an error of 1.174, the highest noted for all variables. However, in application of these data, this distance difference is insignificant.

The ability of the Delphi to characterize the initial and annual expenditures of a typical grass seed operation was consistently lower than for other question categories. Questions on financial characteristics proved to be the most troublesome to the Delphi; the fewest panelists responded to these questions compared to the high survey response of farmers with access to records. In general, the Delphi underestimated the initial minimum investment necessary to start up a new operation and overestimated the annual operating costs.

Skagit County Case Study

A second validation test was conducted in Skagit County, Washington. The Washington State University Extension Service had just completed a mail-out survey, which we used as a control instrument. We decided to concentrate on one type of agriculture, vegetable farming, in order to complete the three rounds in one evening. The county Extension staff helped us to organize a panel of 16 persons, composed of farmers, USDA agency staff, processors, bankers, and equipment dealers. As in Linn County, we provided a dinner and then put the panelists to work on the task. We were able to complete the three rounds in about two and one-half hours, with the use of a personal computer to compute the group statistics at the end of each round. We found that focusing the panel on one type of agriculture and posting the group results after each round generated a much higher level of participant interest than the Linn County test where the panelists had to address 12 types of agriculture and did not receive immediate feedback. The results of the Skagit County test are shown in Table 2.

As can be seen, the Skagit County panel did not estimate the data as closely to the survey results as did the panel in Linn County. Part of this problem may be explained by the difficulty we had in composing questions for the Delphi panel that matched the survey questions. This was less of a problem in Linn County because we controlled both instruments.

However, the results in Skagit County indicate that the estimations are reasonably good for several of the questions. The panel had the most difficulty with the financial questions, as was the case in Linn County.

Conclusions

The two validation tests are not really sufficient to fully evaluate the Delphi estimations. We intend to complete at least two more Delphi tests in other Oregon counties.

However, the tests do shed light on several points. Extension workers and other USDA agency county staff often use group discussions for estimates of various characteristics of agriculture. For example, the enterprise data sheets, which provide a profile of a type of agriculture, are often based on the consensus of a group organized by the Extension agent. The validation tests conducted in Linn County and Skagit County give a rough indication of how accurate such estimates are. The Delphi procedures could be used to improve the estimates by making the process more systematic than is common now.

In terms of a time and cost comparison, the Delphi panel was about 85 percent less expensive and required 75-90 percent less time than did the mail-out survey. Once standardized feedback materials were developed for the Delphi panels, it should take about two to three days of organization and administration time to complete a Delphi report.

As an educational exercise, the Delphi technique was certainly superior to the mail-out survey. Panelists generally enjoyed the exercise and learned from it, whereas an adequate sample of mail-out survey responses was obtained only by repeated prodding through follow-up reminders.

In analyzing the results, we found a weak correlation between self-rating and accuracy of the responses. While this aspect of the process needs more testing, our preliminary conclusion is that the use of self-ratings could be eliminated, thus cutting down considerably on data handling procedures.

The panel size of 25 was necessary to cover adequately 11 types of agriculture. However, smaller panels of 6-9 persons have been found to be adequate for factual estimates (Linstone and Turoff, 1975). In future studies, we will organize a panel of 6-9 persons to address 1-3 types of agriculture. To cover all types of agriculture in a county may require 2-4 separate panels.

For persons interested in using the Delphi technique, a more complete report on the validation tests is available from the author. In summary, the Delphi technique may provide an economical alternative to traditional information gathering methods for certain purposes. We feel more testing is necessary before the technique can be fully evaluated. In any application of Delphi, the quality of the information obtained will depend on the care given to the specific procedures of the technique. Valuable lessons can be learned from our experience and from other Delphi studies.

TABLE 1

LINN COUNTY, OREGON

Comparison of the Delphi Characterization of Typical Commercial Grass Seed Operations to the Validation Instrument (Survey)

Variable	Delphi (D)	Survey (S) (Mean)	Error (S-D)/S
1. Annual value of total farm sales	$200,000	$251,206	.204
2. Size of farm on terraces (including rented and leased land)	1,000 ac.	1,076 ac.	.071
3. Size of farm on bottomlands	500 ac.	526 ac.	.049
4. Predominant landform and soil type	terraces wet, clayey	terraces wet, clayey	.000
5. Typical (modal) field size	80 ac.	78 ac.	.026
6. Minimum field size	10 ac.	10 ac.	.000
7. Percent of acreage rented or leased	60%	48.4%	.154
8. Miles willing to travel to rent fields:			
Typical size/common soil	10 mi.	8.8 mi.	.136
Minimum size/common soil	5 mi.	2.7 mi.	.851
Typical size/better soil	10 mi.	9.9 mi.	.010
9. Minimum initial investment:			
Buildings	$80,000	$111,937	.285
Machinery and equipment	$150,000	$209,687	.285
10. Annual operating costs:			
Energy	$13,000	$10,379	.253
Labor	$13,000	$17,015	.236
Repairs	$12,000	$8,460	.418
Interest on equipment	$10,000	$6,502	.538
Equipment replacement	$25,000	$17,700	.412
11. Openness of market:			
Very limited	0%	8%	***
Somewhat limited	45%	38%	.184
Open	55%	54%	.018
12. Marketing outlets:			
Broker, dealer, warehouse	90%	100%	.100
Marketing association or co-op	10%	0%	***
13. Distance to marketing outlet:			
Broker, dealer, warehouse	10 mi.	14 mi.	.286
14. Location of processor:			
In county	90%	100%	.100
Other valley counties	10%	0%	***

***Error undefined because divisor zero or unity.

TABLE 2

SKAGIT COUNTY, WASHINGTON

Comparison of the Delphi Characterization of Typical Vegetable Farm Operations To The Validation Instrument (Survey)

Variable	Delphi (D)*	Survey (S)** Mean	Survey (S)** Median	Error (S-D)/S Mean	Error (S-D)/S Median
1. Gross Family Income/Year	category 10 ($100,000-249,999)	10	10	0	0
2. Total Acreage	310	437.714	410	.2918	.2439
3. % Rented	45	44.846	51.2771	-0.003	.12
4. Distance to Market	3	3.5	3	.1428	0
5. Equipment Investment	110,000	186,643	200,000	.4106	.45
6. Building	70,000	118,286	100,000	.4082	.30
7. Other	20,000	79,071	0	.747	-
8. % Sold by Broker	15	22.143	0	.3226	-
9. % Sold by Auction	0	1.643	0	1	-
10. % Sold by Market. Assoc.	0	10.357	0	1	-
11. % Sold by Direct Sales	10	51.286	55	.8050	.8181
12. % Sold by Other Means	70	12.786	0	-4.4747	-
13. Market Factors (In order of importance)	1. Quality of Product 2. Inconsistent Demand 3. Low Prices	1. Low Prices 2. Quality of Product 3. Market Flooded and Inconsistent Demand			

*Number of panelists - 16
**Number of responses - 14

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DELPHI PANEL RESULTS

DATA ITEM	Cash Grains	Field Crops	Grass Seed Crops	Vegetables & Melons	Berries & Grapes Tree Fruits & Nuts	Christmas Trees	Horticultural Specialties	General Farms, Primarily Crop	Intensive Animal Husbandry	Dairy Farms	General Farms, Primarily Livestock	Livestock Grazing
1. What do you think is the annual value of total farm sales of a typical commercial farm? * Median	140	150	200	200	100	50	40	200	150	300	150	150
Inter-Quartile Range *	100-200	125-300	150-250	150-250	100-100	50-200	40-40	150-225	75-165	280-300	100-150	120-150
2. What do you think is the minimum number of acres required to sustain a commercial farm Operation? Median	500	400	600	200	100	50	25	500	50	100	300	1,500
Range	350-500	250-400	500-600	100-300	80-150	35-100	10-50	300-600	20-100	80-200	250-300	200-1,500
3. How many acres are there in a typical commercial farm? (rented or leased) Median	600	500	1,000	300	200	150	50	750	150	200	400	1,000
Range	500-600	400-500	600-1,200	160-450	100-200	70-200	20-50	600-800	100-250	100-200	250-500	300-1,000
4. Refer to the map of districts in Linn County. Considering the 4 most common types of agriculture encountered in each land form, rank them on a scale of 1-4, one being the most dominant & 4 being the least dominant; (by acres) Bottomlands - Median	2	3		1				4				
Terraces - Median	2		1					3			4	
Foothills - Median	3		1								2	4
5. If the size of the farm unit is different from the typical size shown in Q-3 for any type of agriculture, indicate the number of acres typical for that land-form: Bottomlands - Median	400	450	500	400	150	25	25	500	50	200	800	200
Range	300-500	400-500	300-700	100-450	100-200	25-400	25-25	250-750	50-50	200-200	200-800	150-400
Terraces - Median	600	500	1,000	300	75	200	10	650	50	200	400	600
Range	600-800	200-750	700-1,000	50-300	50-100	25-200	10-10	600-800	50-50	200-200	400-800	400-1,000
Foothills - Median	400	300	500	50	50	300	20	500	400	150	500	1,500
Range	300-400	200-550	300-800	50-50	50-160	70-300	20-20	125-600	30-400	100-150	500-2,500	600-3,000

* Thousands of Dollars Median = middlemost response Inter-Quar. Rge. incls. middle 50% of all responses

DATA ITEM		Cash Grains	Field Crops	Grass Seed Crops	Vegetables & Melons	Berries & Grapes Tree Fruits & Nuts	Christmas Trees	Horticultural Specialties	General Farms, Primarily Crop	Intensive Animal Husbandry	Dairy Farms	General Farms, Primarily Livestock	Livestock Grazing
6. What is the most typical, owner-operated field size on the most common soil?	Median	50	40	80	30	10	50	10	35	20	25	40	80
	Range	40-60	30-50	60-100	20-40	10-15	25-50	5-10	20-40	10-20	20-30	40-60	50-100
7. What is the minimum field size on the most common soil which can be farmed, considering equipment or other limitations?	Median	10	10	10	10	3	5	1	10	10	10	20	25
	Range	5-10	5-10	5-30	2-15	3-5	5-10	1-5	5-20	5-10	5-10	10-20	10-25
8. For a commercial farm of typical size, what percentage of the total acres operated is rented or leased land? (by percent)	Median	50	50	60	50	10	10	5	50	5	20	40	80
	Range	50-60	50-60	50-60	40-50	5-10	10-50	0-25	50-60	0-20	0-25	40-50	50-80
9. How far away from the home farm is the rented land in a typical commercial farm? (by percent)													
Adjacent	Median	50	65	35	70	80	30	90	50	90	90	50	40
	Range	50-60	50-75	20-50	50-70	55-80	20-30	75-90	40-50	70-100	80-90	40-50	30-40
Less than 5 miles	Median	30	30	30	40	20	25	25	25	20	10	30	30
	Range	25-40	20-40	25-40	25-40	10-40	20-30	20-25	25-30	10-30	10-20	25-40	20-30
5 to 10 miles	Median	15	5	20	5	5	30	0	20	5	0	20	20
	Range	5-15	3-15	20-25	5-10	5-5	20-30	0-0	10-20	5-10	0-5	15-20	20-25
More than 10 miles	Median	5	2	10	0	0	10	0	10	0	0	10	15
	Range	2-5	0-5	0-10	0-5	0-0	10-20	0-0	0-10	0-0	0-0	0-10	0-20
10. How far can a person afford to travel to rent a parcel of typical size on the most commonly used soil? (in miles)	Median	10	10	10	10	1	20	5	10	5	5	5	25
	Range	10-10	5-10	10-10	5-10	0-5	15-20	5-5	10-10	0-5	0-5	5-5	15-25
11. How far can one afford to travel to rent a field of minimum size on the most common soil? (in miles)	Median	5	3	5	5	1	10	2	5	1	1	5	5
	Range	2-5	2-5	1-5	1-5	0-1	2-10	1-2	1-5	0-2	0-3	5-5	5-5

DATA ITEM		Cash Grains	Field Crops	Grass Seed Crops	Vegetables & Melons	Berries & Grapes Tree Fruits & Nuts	Christmas Trees	Horticultural Specialties	General Farms Primarily Crop	Intensive Animal Husbandry	Dairy Farms	General Farms Primarily Livestock	Livestock Grazing
12. For a typical commercial farm, how much must a farmer spend for the minimum initial investment on the following:*													
Land	Median	300	250	350	480	300	150	50	350	100	200	100	100
	Range	200-800	125-1,000	250-900	200-500	70-400	80-175	20-50	200-900	80-150	100-200	100-100	50-100
Buildings	Median	50	80	100	100	75	20	25	70	100	150	100	40
	Range	40-850	40-100	40-150	40-100	40-100	0-50	10-25	30-100	80-150	100-200	80-100	20-50
Machinery & Equipment (new or used)	Median	100	200	150	200	100	40	75	100	80	60	75	20
	Range	100-150	75-200	100-200	100-200	75-100	15-50	20-100	80-200	25-100	50-650	50-75	20-50
Livestock	Median	0	0	0	0	0	0	0	0	50	100	50	50
	Range									0-50	75-150	30-50	20-60
13. How much must a typical commercial farmer spend each year for each of the following items:*													
Livestock Replacement	Median	0	0	0	0	0	0	0	0	6	20	15	6
	Range									2.5-30	10-20	5-15	6-6
Energy	Median	10	10	13	10	10	2	10	12	4	10	3.5	1.5
	Range	5-10	5-10	10-13	5-10	4-10	2-2	4-10	6-15	3-6	5-10	3.5-3.5	1.5-1.5
Labor (excluding operator's)	Median	10	15	13	40	30	4.2	5	10	10	25	10	5
	Range	10-10	10-40	10-20	40-40	20-40	4-4.2	4-5	10-10	2-20	20-25	10-10	5-5
Repairs & Maintenance	Median	7	5	12	15	15	1	5	10	7.5	10	5	2.5
	Range	7-8	5-5	10-15	10-15	10-15	.5-1	3-5	10-10.5	3-40	8-10	5-5	2.5-2.5
Taxes & Insurance	Median	8	5	9	5	5	4	5	10	5	5.5	5	3.5
	Range	7-10	5-10	5-20	5-10	5-5	.5-4	3-5	5-10	3-5	5-8	5-5	3.5-3.5
Interest on Equipment	Median	6	5	10	5	5	2.7	6	6	2	5	2.5	1.5
	Range	5-10	5-25	6-14	5-25	2-12.5	2-2.7	4-6	4-10	1.5-3	3-5	2.5-2.5	1.5-1.5
Miscellaneous (incl. marketing cost)	Median	10	10	8	5	5	2	5	7.5	3	6	3	2
	Range	5-10	5-10	5-10	4-5	4-5	2-2	2-5	6-10	2-3	5-10	3-3	2-2
Replacement Machinery or Equipment	Median	20	25	25	30	10	1	50	15	5	12	20	2
	Range	15-25	15-30	15-30	6-30	10-10	.2-1	20-50	6-20	3-6	10-12	5-20	2-2
14. If applicable, what is the minimum number of acres necessary to arrange a contract with a buyer or processor? # acres	Median	10	50	20	10	5	5	5	10	10	20	20	10
	Range	10-20	10-50	20-40	10-25	4-5	5-10	5-5	10-20	1-10	5-20	10-20	10-10

* Thousands of Dollars

DATA ITEM		Cash Grains	Field Crops	Grass Seed Crops	Vegetables & Melons	Berries & Grapes Tree Fruits & Nuts	Christmas Trees	Horticultural Specialties	General Farms Primarily Crop	Intensive Animal Husbandry	Dairy Farms	General Farms Primarily Livestock	Livestock Grazing
15. How would you characterize the openness of the market to purchase of products from new farm operations? (by percent)													
Very limited	Median		20		89	57		66		10	33		
Somewhat limited	Median		70	45	11	29	50	17	11	45	33		
Open	Median	100	10	55		14	50	17	89	45	33	100	100
16. Estimate the percentage of production that is marketed by each outlet and the distance to that market.													
Broker, Dealer,or Warehouse (includes contract sales)													
% of total sales	Median	79	90	90	44	41	17	49	55	50	39	50	60
miles	Median	15	30	10	35	25	800	1,000	15	30	20	10	50
Auction													
% of total sales	Median	0	0	N/A	N/A	N/A	0	N/A	7	20	5	34	40
miles	Median	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10	20	10	10	10
Marketing Association or Co-op													
% of total sales	Median	17	10	10	52	37	12	0	21	10	48	8	0
miles	Median	30	15	15	30	50	10	N/A	15	75	100	10	15
Retail Sales (e.g. roadside stands)													
% of total sales	Median	0	0	N/A	4	20	12	51	10	10	3	8	0
miles	Median	N/A	N/A	N/A	10	10	10	10	0	5	0	5	N/A
Other Means													
% of total sales	Median	4	N/A	N/A	N/A	2	59	N/A	7	10	5	N/A	0
miles	Median	N/A	N/A	N/A	N/A	5	10	N/A	5	10	5	N/A	0
17. What percentage of products are processed in the following locations:													
In the County	Median	11	47	90	50	53	25	100	50	18	0	22	11
Other Valley counties	Median	1	41	10	50	47	0	0	20	55	71	22	23
Other in-state locations	Median	22	12	0	0	0	0	0	10	9	29	45	33
Out of State	Median	11	0	0	0	0	75	0	0	18	0	11	33
Another country	Median	55	0	0	0	0	0	0	20	0	0	0	0

Ranges are not given for Questions 15, 16, and 17 but are available upon request.

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