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COSTS AND PRACTICES IN FIBER FLAX PRODUCTION IN OREGON

A Progress Report

by
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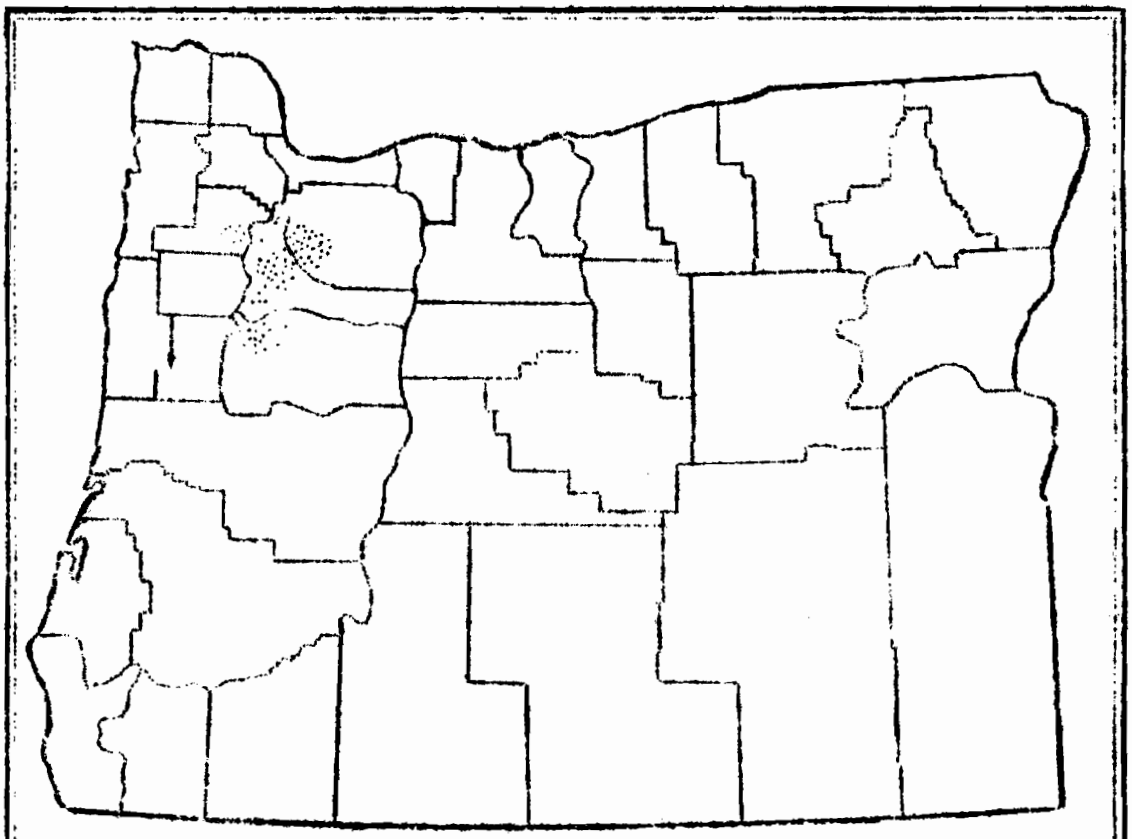

Location of the Flax Fields That Were Studied

ACKNOWLEDGMENTS

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COSTS AND PRACTICES IN FIBER FLAX PRODUCTION IN OREGON

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THE SITUATION

Oregon produces practically all of the flax grown for spinning fiber in the United States. This position of leadership was attained chiefly because the Willamette Valley of Oregon possesses natural climatic conditions especially conducive to fiber flax production. The fiber flax plant requires not only an abundance of rainfall and cool, cloudy weather during the growing season, but a precipitation well distributed in many light showers rather than in downpours which will cause lodging of the plants.

In conjunction with ideal climatic conditions for fiber flax production, the Willamette Valley is favored with a number of soils suitable for maximum plant growth. The well drained or tiled medium heavy soils found in this region are ideal for fiber flax, and these soils also lend themselves to the adoption of systematic crop rotations, which are fundamental to the maintenance of proper cultural conditions as required for continued flax production.

Since the State Flax Industry* has demonstrated over a period of years that this crop is suitable to many Willamette Valley areas where cash crops are desired and where new manufacturing industries are needed, considerable promotion work naturally has been done in attempts to increase the size of this enterprise in the Northwest.

The future of the enterprise in Oregon and the extent to which it may be safely increased seem dependent to a considerable degree on whether Oregon growers can capitalize natural advantages into low cost of production or a superior quality of product.

It is obvious that manufacturers cannot be expected to invest money in manufacturing plants until it can be demonstrated that supplies of high grade flax can and will be produced at a cost which will permit successful operation of these plants.

PURPOSE OF STUDY

The purpose of this study is (1) to determine the cost of producing fiber flax under varying conditions, (2) to determine major factors affecting the cost of production, and (3) to point out methods of reducing these costs.

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* A state organization which buys and processes fiber flax. Until recently this organization provided the chief market for Oregon's crop of fiber flax.

The report which follows is preliminary in nature and does not cover completely the above listed objectives. It is presented in order that information concerning certain phases of this study may be made available to the many people interested in data of this nature.

SCOPE OF THE STUDY

During the winter of 1935, representatives of the Oregon Agricultural Experiment Station and the United States Department of Agriculture visited 124 flax growers located throughout the flax-growing districts of the Willamette Valley, and obtained detailed information regarding the production, management, and disposal of the 1934 fiber flax crop. Data were collected covering the growing of 1119 acres of fiber flax which produced 2405 tons. The approximate locations of the farms studied are shown on the cover page map.

Although the 1935 acreage of fiber flax was practically a complete failure on many farms, data were nevertheless gathered on 31 of the farms previously visited in 1934 in order to fully appraise the effect of this adverse season on the cost of production. The summary of these data is included in Appendix A of this report.

This study is to be continued for the 1936 crop so that the average of the figures obtained over a period of years will tend to represent normal conditions for the enterprise.

THE COST OF PRODUCING FIBER FLAX*

The average cost of producing fiber flax in 1934 on the farms of the growers who cooperated in this study was $35.49 an acre (Table 1). Since the average yield of flax straw obtained by these producers in 1934 was 2.1 tons an acre, the average cost a ton was $16.53. These costs include not only cash or out-of-pocket expenditures, but also cover such items as the unpaid labor of the operator or members of his family, depreciation on machinery and equipment, and 5% interest on capital invested in farm machinery and land used for flax production.

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* Explanation of methodology employed in determining such items as the charge made for use of land, equipment, and labor will be found in Appendix B.

TABLE 1. COST OF PRODUCING FIBER FLAX, 1934

(For 124 Willamette Valley flax growers who raised 1119 acres of flax, producing 2405 tons of clean fiber flax. Average yield 2.1 tons an acre.)

Cost items	Average cost per acre	Percent of total cost
Fertilizing	$ .47	1.3%
Preparing seed bed	4.16	11.7
Seed and sowing	5.15	14.5
Weeding	.92	2.6
Pre-harvest costs	$10.70	30.1%
Pulling	$ 8.13	22.9%
Shocking, tying and loading	2.01	5.7
Hauling	6.66	18.7
Harvest costs	$16.80	47.3%
Taxes on land	$ 1.71	4.8%
Interest on land @ 5%	6.28	17.8
Other costs	$ 7.99	22.6%
TOTAL COST OF PRODUCTION	$35.49	100.0%
COST PER TON	$16.53	-

Of this total cost of production, $10.70 or 30 percent is pre-harvest expense, including cost of seed; $7.99 or about 23 percent is a charge made for the use of the land; and $16.80 or 47 percent is harvesting expense which includes trucking to the state flax mill plant at Salem.

In considering these costs for the year 1934, it should be remembered that during the past 11 years only two crops have yielded as well as this 1934 crop. Hence the low costs a ton for the 1934 crop do not represent the normal conditions.

CASH COSTS OF PRODUCING FIBER FLAX

While total cost is the long-time determinant or measure of the desirability which an enterprise holds for the producer, he is also interested in a segregation of his costs on the basis of cash or out-of-pocket expenditures as contrasted to the so-called non-cash items (Table 2). Naturally such a division of expenses must involve some assumptions, more or less arbitrarily determined, but the division of costs presented here are indicative of a situation that exists in every farm enterprise.

TABLE 2. CASH AND NON-CASH COSTS OF PRODUCING FIBER FLAX, 1934

(124 Willamette Valley Flax Growers)

Cost items	Average cost an acre		
	Total	Cash	Non-cash
Operator's labor (13.5 hrs. an acre)	$ 3.32	-	$ 3.32
Family labor (4.0 " " ")	.93	-	.93
Hired labor (6.3 " " ")	1.54	$ 1.54	-
Total labor (23.8 " " ")	$ 5.79	$ 1.54	$ 4.25
Use of horses (17.4 " " ")	$ 1.74	-	$ 1.74
Machinery depreciation	.82	-	.82
" repairs	.33	.33	-
" rent	.07	.07	-
Tractor fuel	.43	.43	-
Commercial fertilizer	.05	.05	-
Farm manure	.25	-	.25
Taxes on land	1.71	1.71	-
Total miscellaneous expense	$ 5.40	$ 2.59	$ 2.81
Interest on land @ 5%	$ 6.28	-	$ 6.28
" " equipment @ 5%	.28	-	.28
Total interest charge	$ 6.56	-	$ 6.56
Seed expense	$ 4.15	$ 4.15	-
Contracted pre-harvest expense	.15	.15	-
" harvest expense	6.82	6.82	-
" hauling "	6.62	6.62	-
Total contracted expense	$17.74	$17.74	-
TOTAL COST OF GROWING FLAX	$35.49	$21.87	$13.62
Percentage of total cost	100%	62%	38%

Of the $35.49 total cost an acre for growing flax, $21.87 or 62 percent is cash outlay. The largest item of cash cost is the contracted harvesting, which constitutes 31 percent of all cash expense for the year. Approximately as large is the cost of hauling, which amounts to 30 percent of the cash expended, while seed expense ranks next with 19 percent of the cash cost. Of minor importance among the cash items are the property tax on land, amounting to 8 per cent of the total, and hired farm labor exclusive of contracted work, which accounts for 7 percent of the total cash costs. On some farms these cash costs will be augmented by interest on mortgage indebtedness. Owing to the difficulty of accurately prorating this item to flax, all interest was considered as a non-cash cost.

Non-cash items include a nominal wage for the work of the farm operator and his family, a charge for the use of horse labor, allowance for depreciation and interest on machinery, a value for farm manure applied to the field, and a charge for interest on the value of the land. Each year, however, some farmers actually incur expense for new machinery, for horses, for interest or rent on land, and a farmer with his family help must depend largely on the earnings of their own labor for a livelihood.

It is readily apparent that these cash costs must be met by the receipts from sale of the crop. If cash costs can be met, producers may be able to weather several years of low yields or poor prices, which do not meet the total costs of production. However, an enterprise cannot long survive in present-day economy unless it is able to pay all costs and perhaps a fair profit in addition.

Few farm enterprises show such a high percentage of cash cost as fiber flax. Hence this enterprise must be considered in the high-risk group, for short crops or low prices may cause considerable cash loss. Riskiness, however, is not a major factor as long as fiber flax is grown on a diversified farm in conjunction with other income-producing enterprises, for a loss on one enterprise is partially offset by returns which may be received from some other enterprise.

VARIATIONS IN THE COST OF PRODUCING FIBER FLAX

Variations in the cost of producing fiber flax occur (a) from year to year on the same farm and for the enterprise as a whole, and (b) from farm to farm during the same year. Flax enthusiasts frequently confine their quotations of costs and profits to years of good yield and high prices, such as 1930, while to truly present the status of the enterprise both good and poor yields and prices and both low and high cost farmers must be considered.

Year to year variations. Data are not yet available to show accurately the year to year variation in costs per acre and per ton either on individual farms or for the enterprise as a whole. It is safe to assume, however, that considerable variation exists, especially in the costs per ton, for during the past 11 years, yields for the flax under contract to the State Flax Industry have varied from a low of 0.58 ton an acre in 1935 to a high of 2.35 tons an acre in 1930 (Table 4). The average yield for this 11-year period is 1.62 tons an acre; hence the costs for this period will probably average less per acre and more per ton than the figures reported herein for 1934.

Farm to farm variations during the same year. A typical example of the variation in production costs between different farms during the same year is presented (Table 3). Extremes in production cost ranged from $11.48 a ton for one very efficiently operated and high-yielding field, to $30 a ton for a low-yielding, weedy field.

TABLE 3. VARIATION IN THE COST OF PRODUCING FIBER FLAX, 1934

(124 Willamette Valley flax growers)

Range in cost a ton	Average cost a ton	Percent of farms
Below $14.00	$12.82	9.7
$14.01 to $15.00	14.62	12.1
$15.01 to $16.00	15.74	16.9
$16.01 to $17.00	16.38	16.1
$17.01 to $18.00	17.59	9.7
$18.01 to $19.00	18.54	11.3
$19.01 to $20.00	19.61	8.9
$20.01 to $22.00	20.86	8.0
$22.00 and over	24.72	7.3

Although often quoted to show what can be done, individual figures showing extremely high yields and extremely low costs are of little significance. It is significant, however, that 9.7 percent of the producers grew flax for less than $14 a ton, while 15.3 percent reported costs of over $20 a ton. When a substantial number of growers can produce fiber flax at $6 a ton less than another equally large group of growers, it is highly important that the conditions surrounding the production in each instance be carefully analyzed to ascertain what causes this difference. Such an analysis is one of the major objectives of this study, but definite conclusions are necessarily deferred until data covering the entire study can be analyzed.

RETURNS FROM FIBER FLAX PRODUCTION

Practically all of the fiber flax raised in Oregon during recent years has been sold to the State Flax Industry Plant. During the past 11 years this flax has yielded an average gross return of $50.64 an acre (Table 4). Since the average yearly planting during this period was 10.7 acres, the growers' average gross return from this acreage of flax amounted to about $542. This enterprise, therefore, constitutes a substantial unit in a diversified system of farming. Owing to the necessity of rotating this crop with legumes and grains it seems probable that fiber flax growing will likely continue to occupy about this same position in the farm organization.

TABLE 4. PRODUCTION, PRICES, AND RECEIPTS OBTAINED FROM FIBER FLAX ACREAGE BY GROWERS IN OREGON, 1925-35

(Courtesy State Flax Industry)

Year	Number of growers	Number of acres	Yield (tons)	Average price a ton paid growers	Gross returns an acre
1925	225	2100	1.26	$31.60	$40.00
1926	141	1644	1.44	37.20	53.75
1927	127	2100	1.81	34.85	63.10
1928	205	2782	1.37	33.85	46.30
1929	277	3462	1.72	34.65	59.50
1930	332	3811	2.35	36.00	82.55
1931	208	1793	1.68	23.35	39.28
1932	103	713	1.46	21.17	32.38
1933	52	461	2.04	19.41	39.57
1934	228	1904	2.04	22.50	45.85
1935	271	2465	0.58*	15.15	9.45
Average (11 years)	197	2112	1.62*	$31.20	$50.64

* Also harvested 1131 bushels of seed from this acreage, valued at $1810 and included in gross returns listed.

Farmers generally stated that they reserved their best land for flax production. The bottom soils of the Chehalis series and old valley filling soils of the Willamette series seemed to be especially favored for flax planting. In considering the returns from flax it should be remembered that Chehalis and Willamette soils are also suitable for growing hops, alfalfa, truck, small fruits, tree fruits, filberts and other intensive or semi-intensive crops which likewise may yield rather high gross returns.

SOME MAJOR FACTORS AFFECTING PRODUCTION COSTS OF FIBER FLAX

Most of the discussion relating to factors affecting cost must be deferred until the conclusion of the study. In this report only two factors, namely, yield and the effect of the preceding crop, will be discussed.

THE EFFECT OF YIELD ON COST

During any given year the yield of fiber flax varies from farm to farm (Table 5). Apparently better yields were obtained by those growers having the smaller acreages of flax. Owing to the fact that most of the operations, aside from harvesting, cost about as much for a light as a heavy crop, and further, that costs such as interest, taxes and depreciation are practically constant, it is quite apparent that low costs per ton are likely to be associated with good production per acre. Some very efficient farmers can produce flax fairly cheaply even with low yields, but on the average the production cost per ton rises with poor yields and decreases with good yields.

TABLE 5. EFFECT OF YIELD ON COST OF PRODUCING FIBER FLAX, 1934
(124 Willamette Valley Flax Growers)

Items	Yield in tons		
	1.2-1.9	2.0-2.7	2.8-3.5
Number on farms	46	62	16
Flax acreage	14.7	8.6	7.4
Yield (tons an acre)	1.8	2.3	3.0
Costs per ton:			
Fertilizing and manuring	$ .17	$ .22	$ .32
Soil preparation	2.15	1.90	1.55
Seeding	2.89	2.22	1.87
Weeding	.41	.40	.56
Harvesting	5.08	4.63	4.18
Hauling	3.17	3.15	2.76
Use of land	4.21	3.60	3.00
TOTAL COSTS PER TON	$18.08	$16.12	$14.23

THE EFFECT OF PRECEDING CROP ON YIELD AND COST

The data gathered on the 1934 fiber flax crop indicate that yields and returns from flax following a cultivated crop rank highest, those from flax following clover or alfalfa rank second, and those from flax following a grain crop rank lowest (Table 6). The costs per ton of flax vary in inverse ratio to these yields and returns.

TABLE 6. EFFECT OF PRECEDING CROP ON YIELD AND COST OF GROWING FIBER FLAX, 1934

Items	Number of farms	Returns an acre		Cost	
		Yield (tons)	Gross value	Per acre	Per ton
Flax following a cultivated crop:					
On bottomland	17	2.7	$60.32	$39.77	$14.83
On valley floor soils	11	2.4	54.48	38.59	15.98
Flax following clover or alfalfa:					
On bottomland	5	2.3	51.27	33.75	14.82
On valley floor soils	56	2.2	48.30	36.22	16.83
Flax following small grains:					
On bottomland	8	1.9	43.40	32.13	16.68
On valley floor soils	27	1.9	41.91	32.71	17.57

To some extent the preceding crop will be determined by the soil type. It is of interest that nearly two thirds of the "cultivated crop" group of fields were found to be Chehalis soil types, which are fertile bottomland soils, while most of the fields in the "clover-alfalfa" and "small grain" groups were benchland soils. Willamette soils, the higher types of benchlands, constituted 43 percent of the "grain" group of fields, while 34 percent of these fields were Amity soils.

The problem of obtaining satisfactory yields of fiber flax has generally been taken care of in Oregon, since under the supervision of the state flax plant the growers have been encouraged to adopt certain approved practices such as growing flax only on the better grades of land, having flax follow a legume or a cultivated crop in a crop rotation system, and sowing the seed at the rate and in the season recommended.

PRACTICES FOLLOWED IN PRODUCING FIBER FLAX

Growers of fiber flax in Oregon follow the cultural practices typical of spring-sown grains. Where barnyard manure was available on the farms, it was usually applied to the preceding clover or cultivated crops, rather than directly

to the flax crop. Only 5 percent of the acreage in flax in 1934 received any manure that year. Neither was there much interest shown in commercial fertilizers by the flax producers.

Size and type of enterprise. The fiber flax plantings averaged 9 acres in size for all farms in this study, and ranged from 1½ up to 33 acres. The field men for the State Flax Industry afford careful guidance to flax growers and encourage diversification and rotation of crops from year to year to insure against low yields, and avoidance of insect, disease, and weed infestations.

Time of plowing. An analysis of the records to determine the effect of time of plowing on yields obtained and the amounts of early and late weeding required showed no significant relationships for this one year.

Method of seeding. Flax was almost invariably sown early (March or April). Many growers used a grain drill or an alfalfa drill, while others used either a broadcast seeder, a horn seeder, or merely a bucket from which the seed was scattered by hand.

The prevailing seeding practice with a drill or seeder was to drop or broadcast the seed on the ground or on a board attached beneath the machine (not using the disc blades or cultivator shovels), and then have it covered as shallow as the machinery would permit, either by simply dragging the drill chains or by dragging a light plank behind the implement. Sometimes the seeding was followed by a very light harrowing. With this method of seeding it is important to have a rich, mellow seed-bed, with an adequate moisture content and sufficient organic matter to avoid excessive hardening of the surface soil following a heavy rain before the tiny seedlings have emerged.

Weeding. Since the presence of weeds in the flax bundles at harvest time results in dockage to the grower, it is customary to remove this pest insofar as practical. This cost of weeding was estimated at 91 cents an acre in 1934. Only 28 percent of this cost was incurred for early weeding, and 72 percent was for removing weeds at harvest time--usually just ahead of the pulling machine.

The percentage of dockage varied from 0 to 7 percent, averaging 3½ percent for all growers in 1934. Weeds, in addition to causing a reduction in price received and an expense for pulling and hauling to market, also reduced the yield by competing with the crop for moisture and plant food.

Harvesting. Pulling of the fiber flax in the field has rapidly shifted from the hand method to the tractor-drawn mechanical puller. A number of these machines were operated by growers on a custom basis. While about one fifth of the growers reported some hand pulling in 1934, this amounted to only 8 percent of the total acreage grown. This was in addition to the hand pulling of a narrow strip ahead of the tractor and puller to avoid waste in opening fields for harvest.

Most of the regular hand pulling occurred in Linn and in Marion counties either on outlying farms where machine pullers were not readily available or on farms where the flax acreage was very small. The cost of harvesting with machine pullers, including labor, board, and twine, averaged only $7.82 an acre, as compared to $11.45 an acre for pulling by hand.

Shocking, tying and loading. Immediately after the fiber flax has been pulled the bundles are set up in shocks to dry. Since the drying of the straw results in shrinking of the bundles and therefore makes them hard to haul, it is customary just before loading to tie these together in larger, firmer bundles of three each. Because all the growers did not proceed uniformly through these three operations, the costs were combined into the one figure of $2.01 an acre or 96 cents a ton.

Hauling. Because of its bulky nature, fiber flax must necessarily be grown within such a radius of the processing plant as will enable growers to make delivery at a reasonable hauling cost. The average distance to the Salem plant in 1934 was 25 miles, and the average hauling cost was $3.14 a ton or 13 cents a ton-mile (Table 7). It is customary for the commercial trucks to haul large loads of this crop in order to minimize the cost per ton.

TABLE 7. COST OF HAULING FIBER FLAX, 1934

Items	Number of miles to flax plant					
	Under 15	16-20	21-25	26-30	Over 30	Total
Number of farms	10	26	24	49	15	124
Average distance to Salem	11	18	24	30	34	25
Cost per ton	$2.22	$2.62	$3.17	$3.46	$3.38	$3.14
Cost per ton-mile	.20	.14	.13	.12	.10	.13

APPENDIX A

THE FIBER FLAX SITUATION IN 1935

Adverse weather conditions in the spring of 1935 resulted in a very short growth of flax in the Willamette Valley that season. The yield of 0.58 ton an acre in 1935 was less than half of the previous low record yield of 1.26 tons in 1925. While some of the very earliest sown flax attained sufficient length to sell at the standard contract price of $25 a ton for spinning purposes, the bulk of the acreage was cut with either the binder or mower and sold for tow. This tow flax straw brought $12 a ton delivered in Salem. Some of the very poorest stands were not worth hauling to the flax plant and were merely threshed for the seed contained, which brought an average price of $1.60 a bushel at the flax plant (Table 8).

TABLE 8. DISPOSAL, YIELD, AND INCOME OF FIBER FLAX, 1935
(31 Willamette Valley growers, sowing 425 acres of flax)

Items	Number of acres	Yield per acre	Gross returns per acre
Flax pulled for fiber	70	1.4 T	$25.90
Flax mowed for fiber	251½	.46 T	5.56
Flax threshed for seed	82	114 lbs.	3.16
Flax acreage abandoned	21½	*	*

*No attempt was made to evaluate the production of emergency crops on this acreage, for the results were negligible.

For the group of flax growers as a whole the total production expense, after deducting the receipts for seed threshed on the farms and sold, amounted to $20.66 an acre or $35.62 a ton for the flax delivered. Since the price received for all the flax marketed averaged only $15 a ton, obviously, the cash receipts on many fields were much below the cost of production and in some instances the crop did not cover the seed expense (Table 9). Fortunately for the producer the charge for seed received from the state was reduced from the contract price of $3 a bushel down to $2 when final settlement was made by the state flax plant.

TABLE 9. COST OF PRODUCING FIBER FLAX, 1935

(For 31 Willamette Valley growers who raised 425 acres of flax producing 215 tons of flax straw*. Average yield 0.58 ton an acre.)

Cost items	Average cost per acre	Percent of total cost
Fertilizing	$ .84	4.0%
Preparing seed bed	3.59	17.4
Seed and sowing	4.13	20.0
Weeding	.09	.4
Pre-harvest costs	$ 8.65	41.8%
Pulling or mowing	$ 1.41	7.0%
Shocking, tying and loading	.50	2.3
Hauling	1.62	7.8
Harvest costs	$ 3.53	17.1%
Taxes on land	$ 1.92	9.3%
Interest on land @ 5%	6.56	31.8
Other costs	$ 8.48	41.1%
TOTAL COST OF PRODUCTION	$20.66	100.0%
Cost per ton	$35.62	
Average price received per ton of straw	$15.00	

*A miscellaneous credit for 9377 pounds of flax seed harvested from part of this acreage, and selling for $260, was credited on harvest expense, leaving $35.62 as the net cost of producing the marketable flax.

Costs of growing a crop like flax do not decline proportionately with yield. While the seed expense was slightly reduced to relieve the distress of the grower and the job of harvesting a light crop was less costly than was that of the good crop the preceding year, yet growing costs were no less, land costs were the same, and the expense of hauling loose straw the long distance to the plant was higher per ton than the expense for hauling the bundle flax the preceding year.

Although drought years like 1935 have been infrequent in the history of Oregon's flax industry, their occasional occurrence emphasizes the need of some consideration for risk when computing possible income and expense.

APPENDIX B

EXPLANATION OF COST ITEMS

Land. The value of land sown to flax was estimated by the farmer on the basis of productivity and the normal market price for similar land in the neighborhood. The interest charge for the use of the land was fixed at 5 percent on this investment and property tax was prorated from the total amount paid by the owner of the farm.

Equipment. The proportion of the use of farm equipment chargeable to the flax acreage was carefully estimated by the farmer. Expense for repairs, depreciation based on the years of remaining life of each implement, and interest computed at the rate of 5 percent on the present value of the machinery, were the items of cost on which the charges to the flax enterprise were made.

Man labor. Hired work done on the flax crop either on a contract basis or on an hourly rate of pay was charged directly to the particular operation performed and included a value for board if furnished. The rate for family labor put on this crop was estimated at the wage rate prevailing in the community as indicated above.

Harvesting machinery. Flax pullers were owned and operated by a number of growers who contracted to do custom work in the community at a certain rate per ton for puller, tractor, and crew. Usually this rate covered the twine used for binding, and the farmer furnished the meals for the crew operating the puller and tractor.

Horse labor. Use of horses, including harness, was charged uniformly at 10 cents a horse hour.

Tractor work. The hourly rate for work done by the farm tractor was computed on the basis of the annual depreciation, repairs, fuel costs, and an interest charge of 5 percent on the present value of the machine.

Auto and truck use. Since the use of the auto in connection with the flax crop was limited on most farms to the one trip to Salem to get the flax seed, the cost of this hauling was estimated on a mileage basis (averaged approximately 4 cents a mile). Practically all hauling of the flax was contracted on a tonnage basis.

Charge for manure. The cost of applying manure to the flax ground was determined by estimating the value of the labor involved, the use of equipment, and a nominal charge for the fertilizer based on its alternative value for other crops. While it is a recognized fact that manure has a residual effect on crops extending beyond the year of its application, the value of this residue is difficult to estimate, and since approximately equal areas of land are fertilized by a particular group of producers each year, the total outlay for fertilization would tend to be typical for the enterprise. Producers must bear in mind that under this method of accounting, their individual costs may be unusually high for the year in which they applied the manure.

Individual costs. All information secured from the individual producers is kept strictly confidential. Each cooperator is furnished with a copy of his individual costs in order that he may compare his results with the averages. Other growers may be interested in estimating how their costs compare with the data presented in this report.
